



Transport for the South East

---

# **FREIGHT SPECIFIC INFRASTRUCTURE**

Technical Report





Transport for the South East

---

# FREIGHT SPECIFIC INFRASTRUCTURE

## Technical Report

**PUBLIC**

**PROJECT NO. 70079897**

**DATE: JANUARY 2021**

**WSP**

Kings Orchard  
1 Queen Street  
Bristol  
BS2 0HQ

**Phone: +44 117 930 6200**

**WSP.com**



# QUALITY CONTROL

---

Issue/revision	Revision 1	Revision 2	Revision 3	Revision 4
Date	28/09/2021	07/10/21	28/10/2021	04/01/2022
Prepared by	Sandy Moller	Sandy Moller	Sandy Moller	Sandy Moller
Checked by	Chris Douglas	Chris Douglas	Chris Douglas	Chris Douglas

# CONTENTS

---

## EXECUTIVE SUMMARY

<b>1</b>	<b>INTRODUCTION</b>	<b>1</b>
1.1	PURPOSE OF THE REPORT	1
<b>2</b>	<b>VISION &amp; OBJECTIVES</b>	<b>3</b>
2.1	INTRODUCTION	3
2.2	THE VISION	3
2.3	THE OBJECTIVES	4
<b>3</b>	<b>PROBLEM STATEMENTS</b>	<b>6</b>
3.1	INTRODUCTION	6
3.2	MULTI-MODAL INFRASTRUCTURE	6
3.3	AIRPORT INFRASTRUCTURE	6
3.4	ROAD INFRASTRUCTURE	7
3.5	RAIL INFRASTRUCTURE	7
3.6	ENERGY NETWORKS	7
3.7	SOCIAL/ENVIRONMENTAL CHALLENGE	7
3.8	PORT/WATERBORNE FREIGHT FACILITIES	7
<b>4</b>	<b>IDENTIFICATION OF INTERVENTIONS</b>	<b>9</b>
4.1	INTRODUCTION	9
4.2	SELECTION RATIONALE	9
<b>5</b>	<b>LIST OF INTERVENTIONS</b>	<b>12</b>
5.1	INTRODUCTION	12
5.2	FORMAT	12

<b>6</b>	<b>RAIL FREIGHT</b>	<b>15</b>
6.1	RAIL NETWORK ENHANCEMENTS	15
6.2	RAIL ELECTRIFICATION & ALTERNATIVE FUELS	30
<b>7</b>	<b>ROAD FREIGHT</b>	<b>41</b>
7.1	ROAD NETWORK ENHANCEMENTS	41
7.2	LORRY PARKING	53
7.3	ALTERNATIVE FUELS FOR ROAD FREIGHT	62
<b>8</b>	<b>ACCESS TO INTERNATIONAL GATEWAYS</b>	<b>71</b>
8.1	ACCESS TO PORTS	71
8.2	ACCESS TO AIRPORTS	86
<b>9</b>	<b>WATERBORNE FREIGHT</b>	<b>98</b>
9.1	CAPACITY AT SEA PORTS	98
9.2	COASTAL SHIPPING	108
9.3	ALTERNATIVE FUELS FOR WATERBORNE FREIGHT	113
<b>10</b>	<b>INTERMODAL INTERCHANGES</b>	<b>124</b>
<b>11</b>	<b>WAREHOUSING, FULFILMENT AND CONSOLIDATION CENTRES</b>	<b>137</b>
11.1	REGIONAL DISTRIBUTION CENTRES	137
11.2	PORT CENTRIC LOGISTICS	145
11.3	URBAN CONSOLIDATION CENTRES	151
11.4	MICRO CONSOLIDATION CENTRES	158
11.5	MULTI USE MOBILITY HUBS	162
<b>12</b>	<b>CONCLUSIONS &amp; RECOMMENDATIONS</b>	<b>168</b>
12.1	OVERVIEW OF INTERVENTIONS	168
12.2	FURTHER RESEARCH REQUIRED	170

## TABLES

Table 12-1 - Overview of Intervention Scoring	168
---	-----

## FIGURES

Figure 6-1 - Rail Freight Moved by Commodity Type Across Great Britain (1998–2015)	17
Figure 6-2 - Terminal Tonnages by Rail Freight: Origin Plus Destination (Network Rail, 2019)	18
Figure 6-3 - Key Freight Routes	19
Figure 6-4 - Daily Rail Freight Flows 2016/2017 (Network Rail, 2017)	20
Figure 6-5 - Rail Gauge Gaps & Aspirations (Network Rail, 2017)	22
Figure 6-6 - Priority Corridors for Short Term Enhancements (Network Rail, 2017)	26
Figure 6-7 - Identified Rail Freight Enhancements along the Southampton/WCML Corridor (Extracted from 'Freight Network Study', 2017)	27
Figure 6-8 - Identified Rail Freight Enhancements along the (Classic) Channel Tunnel Links (Extracted from Network Rail's 'Freight Network Study, 2017)	28
Figure 6-9 - Electrified Rail Network across the UK (Network Rail, 2020)	32
Figure 6-10 - Recommended Technology to Decarbonise the Unelectrified UK Railway	37
Figure 7-1 - Annual HGV Flows on the UK Road Network (DfT, 2019)	44
Figure 7-2 - Traffic delay on the SRN (2014-2015) (DfT, 2019)	45
Figure 7-4 - Proposed Lorry Parking Provision (New/Expanded) (WSP, 2021)	59
Figure 8-1 - Traffic Breakdown at Major Ports by Cargo Type (DfT, 2020)	72
Figure 8-2 - Estimates of Tonnage Moved Through Major UK Ports (DfT, 2019)	73
Figure 8-3 - Top 10 UK Major Ports by Tonnage (DfT, 2021)	74
Figure 8-4 - Road Connections to UK ports (DfT, 2018)	77
Figure 8-5 - Rail Connections to UK Ports (DfT, 2018)	78
Figure 8-6 - SRN Connections to Major UK Airports (Highways England, 2016)	89
Figure 9-1 - Inland Freight Routes across the UK	99
Figure 9-2 - Domestic coastal shipping traffic by type since 2000 (DfT, 2021)	109
Figure 9-3 - Annual Total UK Port Electricity Demand Under BAU (Frontier Economics, 2019)	116

Figure 10-1 - Intermodal Rail Terminals (Network Rail, 2021)	126
Figure 10-2 - Strategic Freight Sites situated Across the South East of England (Network Rail, 2021)	127
Figure 10-3 - Map of Rail Served Aggregate Handling Sites (Network Rail, 2021)	129
Figure 11-1 - Warehousing Types and Locations Across the Transport for the South East Area (WSP, 2019)	139
Figure 11-2 - Location of Distribution Space Over 8,000 sqm Across England (DfT, 2019)	140
Figure 11-3 - Potential Remote Consolidation Centre Locations (WSP, 2021)	156
Figure 11-4 - Mobility hubs deployed in various contexts (WSP, 2021)	163

---

## ***APPENDICES***

### APPENDIX A

#### INTERNATIONAL GATEWAY DASHBOARDS

### APPENDIX B

#### DFT ROAD FREIGHT DATASETS

## ACRONYMS

---

**3PL** – Third Party Logistics

**ABP** – Associated British Ports

**AEI** – Atmospheric Emission Inventory

**AQMAs** – Air Quality Management Areas

**BEVs** – Battery Electric Vehicles

**BID** – Business Improvement District

**CAZ** – Clean Air Zone

**CIHT** – Chartered Institute of Highways and Transportation

**CILT** – Chartered Institute of Logistics and Transport

**CLOCS** – Construction Logistics and Community Safety (scheme)

**CNG** – Compressed Natural Gas

**CSRG** – Continuing Survey of Road Goods Transport

**DDRT** – Dynamic Demand Responsive Transport

**DfT** – Department for Transport

**DNOs** – Distribution Network Operators

**DWDR** – Dover's Western Docks Revival

**ECAs** – Emission Control Areas

**ELNA** – Employment Land Needs Assessment

**EMS** – Environmental Management System

**EMUs** – Electric Multiple Units

**ERS** – Electric Road System

**ESPO** – The European Sea Ports Organisation

**FMZs** – Future Mobility Zones

**FOCs** – (Rail) Freight Operating Companies

**FORS** – Fleet Operator Recognition Scheme

**FQP** – Freight Quality Partnership

**FTZ** – Future Transport Zone

**GHG** – Green House Gases

**GLA** – Greater London Authority

**GTL** – Gas to Liquid

**GVA** – Gross Value Added





**GWML** – Great Western Main Line  
**HE** – Highways England (now National Highways)  
**HGV** – Heavy Goods Vehicle  
**HS1** – High Speed 1  
**HULEZ** – Heathrow Ultra Low Emission Zone  
**HVO** – Hydro Treated Vegetable Oils  
**ICE** – Internal Combustion Engine  
**IMO** – International Maritime Organisation  
**IWW** – Inland Water Ways  
**JIT** – Just in Time  
**LGV** – Light Goods Vehicle  
**LNG** – Liquefied Natural Gas  
**LO-LO** – Lift on Lift Off  
**MaaS** – Mobility as a Service  
**MRN** – Major Road Network  
**MSRS** – Mode Shift Revenue Support  
**NDCs** – National Distribution Centres  
**NPPF** – National Planning Policy Framework  
**NSIP** – National Significant Infrastructure Project  
**ODs** – Origins & Destinations  
**OIP** – Optimised Infrastructure Plan  
**OLE** – Overhead Line Equipment  
**ORR** – Office of Rail & Road  
**PCL** – Port Centric Logistics  
**PERS** – Port Environmental Review System  
**PLA** – Port of London Authority  
**RCT** – Refrigerated Cargo Terminal  
**RDCs** – Regional Distribution Centres  
**RIS** – Road Investment Strategy  
**Ro-Ro** – Roll on Roll Off  
**ROUK** – Rail Operations UK Limited  
**RSSB** – Rail Safety & Standards Board  
**SAEG** – Southampton Airport Economic Gateway



**SAtH** – Southern Access to Heathrow

**SDC** – Sustainable Distribution Centre

**SFSS** – Strategic Freight Sites

**SHENA** – Strategic Housing & Economic Needs Assessment

**SME** – Small/Medium Enterprises

**SRFI** – Strategic Rail Freight Interchanges

**SRN** – Strategic Road Network

**SSSI** – Site of Special Scientific Interest

**STBs** – Sub-National Transport Bodies

**STKs** – Single Track Kilometres

**SWOC** – Strengths, Weaknesses, Opportunities, Challenges

**TAP** – Traffic Assessment Project

**TEN-T** – Trans European Transport Network

**WCML** – West Coast Mainline

**WRLTH** – Western Rail Link to Heathrow

**ZEBS** – Zero Emissions Berth Standard

# EXECUTIVE SUMMARY

This technical report develops and describes the suitability and geographical fit for freight specific infrastructure across the TfSE region to inform the emerging freight strategy. The selection of different interventions, the long list, has been compiled from a combination of stakeholder consultation and identified key problem statements informed by previous scoping studies.

The type of interventions selected (and the freight strategy more broadly), takes a vision led approach towards imagining the safe, sustainable and efficient movement of goods in the future which puts people and places, not vehicles, at the heart of all recommendations. The vision for the strategy captures this ethos:

*“By 2030, the South East will have a more efficient, sustainable and safer logistics sector, to support sustainable economic growth, with significantly reduced impacts on communities and the environment.”*

The objectives and sub objectives of the strategy, by which each intervention would be assessed, has been informed by the development of a freight forum and steering group. These are centred around satisfying three core pillars.



## ECONOMIC

- Improve operational efficiency;
- Enhance freight and logistics' contribution as an industrial sector, in its own right (especially to employment); and
- Improve connectivity to and from the Transport for the South East area's international gateways, including through enhanced infrastructure capacity where needed.



## ENVIRONMENTAL

- Reduce greenhouse gas emissions and achieve net zero carbon by 2050 at the latest; and
- Reduce wider environmental impact of freight.



## SOCIAL (HEALTH & WELLBEING)

- Improve operational safety (especially for vulnerable road users);
- Improve air quality;
- Better management of (and facilities for) lorry parking; and
- Better integration between freight's operational needs and planning/placemaking.

A high level impact assessment, using a RAG traffic light scoring system for illustrating 'impact' was developed for each intervention to convey how the infrastructure could address identified problem statements and the extent to which they could be accurately deployed (geographically) across the region. This would require extensive research per intervention 'theme' to generate data insights to inform the viability and type of infrastructure deemed necessary to support the objectives and sub objectives of the strategy.

Background information, a rationale and comprehensive policy background and evidence base were also developed in each instance to help define the applicability of infrastructure types and variations within a regional context. The below illustrates the scoring applied to the infrastructure interventions and convey the following:

- The greater certainty surrounding the (geographical) deployment of rail and road enhancements, lorry parking and energy/alternative fuel networks across the region in contrast to maritime infrastructure and logistics spaces (e.g., warehousing);
- The opportunity presented by port centric logistics, enhanced port connections and comprehensive upgrades to the rail network for tackling many problem statements raised by stakeholders during consultation;
- The cross cutting benefits of deploying all the interventions and satisfying the objectives (and sub objectives) of the freight strategy; with road network enhancements and wharves and waterways having a lower impact generally.

Freight Infrastructure	Economic	Environmental	Social (H&W)	Problem Statements	Recommendations/Locations
Rail Network Enhancements	Medium	High	Medium	1,2,4,10,12,13,14,15,16,17,20	★★★★
Rail Electrification & Alternative Fuels	Medium	High	Medium	1,2,4,10,12,13,14,15,16,17,20	★★
Road Network Enhancements	High	Low	Low	1,2,3,4,10	★★★★
Lorry Parking	Low	Medium	High	8,9,18,20	★★★★
Alternative Fuels for Road Freight	High	High	Low	8,9,16,18,19,20	★★★★
Access to Ports	High	High	Medium	1,2,4,5,11,12,14,16,17,20,21	★★
Access to Airports	Medium	Medium	Medium	1,6,7,14,17	★★
Capacity at Sea Ports (Wharves & Waterways)	Low	Low	Low	2,3,4,5,22,23,24	★
Coastal Shipping	Medium	Medium	Low	2,3,4,5,23,24	★
Alternative Fuels for Waterborne Freight	Medium	High	Medium	8,9,18,19,20	★★
Strategic Rail Freight Interchanges (SRFIs)	Medium	Medium	Low	1,5,10,11, 17, 21, 23	★★
Regional Distribution Centres (RDCs)	High	Low	Medium	1,4,5, 21,23	★
Port Centric Logistics	High	High	Medium	1,2,4,5,10,11,12,17,20,21,23,24	★
Urban Consolidation Centres	High	High	Medium	1,3,4,5,18,20,23	★★
Micro Consolidation Centres	Medium	High	High	1,3,4,5,18,20,23	★★
Multi Use Mobility Hubs	Low	Medium	High	1,14,18,20	★



The following table alludes to more specific variations of each infrastructure intervention that should look to be pursued by TfSE. This includes priority actions to inform the emerging freight strategy.

Freight Infrastructure	Recommended Variations of Infrastructure Provision	Priority Actions
Rail Network Enhancements	<ul style="list-style-type: none"> <li>Consolidating existing freight flows and improving diversionary routes to build network resilience and unlock new markets along three core corridors through the region.</li> <li>Delivering Tier 1 W12 gauge clearances with a view to more substantial grade separation on the Solent to Midlands line and exploring scope for nodal yards and electrification.</li> </ul>	<ul style="list-style-type: none"> <li>Exploring the role of nodal yards and link between rail enhancements, interchanges and new markets.</li> <li>Working with industry partners to understand freight path potential (on capacity grounds).</li> </ul>
Rail Electrification & Alternative Fuels	<ul style="list-style-type: none"> <li>Full electrification of the Solent to Midlands rail corridor (as a priority out of the three core corridors) using OLE and third rail capacity (pending upgrades to support heavy rail freight).</li> <li>Overseeing development and use of 'multiple traction technologies', including HVO and battery powered locomotives on trunk routes and smaller shunting yards respectively.</li> </ul>	<ul style="list-style-type: none"> <li>Scoping out interest in bimodal locomotives (battery/electric) that can use core and diversionary routes longer term.</li> <li>Working with industry and freight generators alongside DfT to gauge relative interest in hydrogen as a preferred fuel.</li> </ul>
Road Network Enhancements	<ul style="list-style-type: none"> <li>Focusing on improving network resilience and prioritising junction upgrades and corridors that serve to interact with international gateways and support portcentricity in RfS3.</li> <li>More specific interventions include: <ul style="list-style-type: none"> <li>The A2 Dover Access (dualling and integration with TAP2) linked to DWDR</li> <li>Upgrades to the Junction 8 M27 for links to the port of Southampton.</li> <li>Improved flow through M3 Junction 9 south of Winchester</li> <li>The A249 (Swale Transport Infrastructure HIF) and M2 Junction 5</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Working with industry to gather support for shaping and influencing the interventions within RfS3.</li> <li>Avoiding a return to 'predict and provide' and looking at removing car based movements to free up network capacity.</li> </ul>
Lorry Parking	<ul style="list-style-type: none"> <li>Addressing capacity issues at existing lorry parking locations (off site/services) where there is 'critical' demand for additional provision. Seven locations have been identified where an expansion of sites would address acute shortages (and where HGV flows are greatest particularly for international road freight movements). These include Lydden, Stop 24 Folkestone, Gravesend, Ashford, Sevenoaks, Northeast Maidstone and Cobham.</li> </ul>	<ul style="list-style-type: none"> <li>Detailed studies required to firm up feasibility of expansions, including sense checking sites with industry and exploring options with landowners and service station operators. Public Private Partnership should be considered.</li> </ul>
Alternative Fuels for Road Freight	<ul style="list-style-type: none"> <li>Continued investment in densifying 'rapid' EV charging network within urban conurbations and the SRN to support re-fueling of LCVs whilst monitoring trial ambitions of the Electric Road System across the SRN core corridors for HGVs. (to trigger uptake in battery electric)</li> <li>Hydrogen hubs and refuelling facilities should be pursued at major trip generators (larger ports and airports) to serve largest customer base and at existing service stations or lorry parks along the SRN where there are heavy HGV flows (namely along the M20, M3, M27)</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring DfT announcements on funding, investment and policy priorities, as well as trials of alternative fuels whilst guiding long term future towards the uptake of electric, battery electric and hydrogen technologies.</li> <li>Working with major trip generators (ports, service stations etc) at scaling up adoption and delivery of hydrogen and other alternative fuels.</li> </ul>
Access to Ports	<ul style="list-style-type: none"> <li>Centring early investment (road and rail) around strategic and local access to ports of national significance, namely Dover (A2/A20) and Southampton (A33/A34 and from Junction 2, M27 via the A326). This links into proposed expansion plans.</li> <li>Targeted investment at road junctions, namely the M25 Junction 30/A13 and M2 Junction 5 are key to accessing ports in the Thames Estuary and Medway Ports respectively. Localised upgrades to road network at smaller ports should be leveraged through local investment.</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring developments and guidance around freeport status at the Solent and subsequent infrastructure demands.</li> <li>Working with the rail industry to understand the feasibility of a rail connection into the Port of Dover.</li> <li>Continuing to support and promote mode shift to rail at Medway Ports, Newhaven and Southampton.</li> </ul>
Access to Airports	<ul style="list-style-type: none"> <li>Promoting mode shift and use of the rail network to offset road based freight movements. This includes supporting new rail links into Heathrow (WRLTH and SATH) for current and burgeoning markets and airport centric developments.</li> <li>Travel demand management around M23 utilising smart motorway technology alongside access improvements on terminal approach roads around Gatwick Airport. Upgrades to junctions and scale of SRN investment around Heathrow pending expansion plans.</li> <li>Exploring small scale improvements to the local road network and A335 to link into the M27 (Junction 5) around Southampton for road freight connectivity whilst exploring feasibility of rail freight as part of the broader SAEG development around the airport facility.</li> </ul>	<ul style="list-style-type: none"> <li>Closely monitoring expansion plans at Heathrow and promoting use of new rail link (WRLTH and SATH) for construction and express parcel deliveries.</li> <li>Developing a more granular understanding (through a feasibility study) of rail freight potential and last mile road connections serving Southampton Airport.</li> </ul>
Sea Port Capacity (Wharves & Waterways)	<ul style="list-style-type: none"> <li>There is no one size fits all for developing infrastructure along Inland Water Ways (IWW). With the exception of the River Thames, Kennett &amp; Avon and the River Medway (up to Allington Locks), there is limited potential for IWWs across the region to carry freight consignments.</li> <li>Investment in infrastructure would be pending further research. IWW could be utilised at a high level for site specific aggregate movements within/near to urban conurbations (stipulated through planning conditions) or by 3PLs at select locations.</li> </ul>	<ul style="list-style-type: none"> <li>Further, detailed research is required to capture data on utilisation of the IWW network and existing or potential capacity of wharf infrastructure (with a view to safeguarding)</li> <li>Understanding whether the use of waterborne freight is stipulated within local planning conditions, providing sections of IWWs are navigable</li> </ul>
Coastal Shipping	<ul style="list-style-type: none"> <li>Investment in infrastructure at ports will likely be driven by the private sector and port owners/authorities at a local level, to accommodate additional cargo volumes and cater for the different means by which goods are being transport domestically and internationally.</li> <li>Planned developments, namely the DWDR project at Dover will be based on supporting an uplift in coastal shipping activity between mainline Europe – and may present an opportunity for supporting domestic movements to other UK ports.</li> </ul>	<ul style="list-style-type: none"> <li>Steer required from port authorities exploring coastal shipping markets, including offshore wind projects.</li> <li>There is very limited data and information on coastal shipping that can help to pinpoint infrastructure demands across the region. The lack of information on coastal shipping therefore requires a deeper investigation into its potential.</li> </ul>
Alternative Fuels for Waterborne Freight	<ul style="list-style-type: none"> <li>Promoting and investing in a combination of alternative fuel propulsion and shore side measures to aid with the decarbonisation of waterborne transport. The latter must start with site specific assessments of local energy (grid) capacity across all ports (some of which like Shoreham are seeking self sufficiency through on site and local generation).</li> <li>Working with Southampton Port on testing shoreside power and hydrogen hub facilities, and scaling up LNG (or drop in fuels) as short term, low carbon, transition fuels at Portsmouth and Dover</li> </ul>	<ul style="list-style-type: none"> <li>Mapping local network capacity (electricity) and portside connections to deliver shoreside power with ports across the region.</li> <li>Sharing best (and emerging) practice on use of low carbon fuels and drop in fuels.</li> </ul>
Strategic Rail Freight Interchanges (SRFIs)	<ul style="list-style-type: none"> <li>Applying effort to develop a Strategic Rail Freight Interchange (SRFI) on or intersecting with AA34/M27 and burgeoning logistic centre developments (ports and SAEG) and reviving London based SRFI plugged into the M25 (all subject to more detailed feasibility).</li> <li>Smaller terminals and intermodal facilities around West Berkshire and Farnham also require more detailed investigation to reduce localised congestion, remove HGV movements and tap into new and existing freight markets (commodities moved).</li> </ul>	<ul style="list-style-type: none"> <li>Working with industry partners, such as Network Rail, to understand future freight train path availability/capacity</li> <li>Working with public authorities to monitor land use designations for logistics space adjacent to rail network</li> </ul>
Regional Distribution Centres (RDCs)	<ul style="list-style-type: none"> <li>Supporting B8 facilities close to urban centres, near end users (urban conurbations) and along strategic road and rail corridors. The size and scale will vary depending on land availability and land use designation. 'Shared use' facilities should also be promoted (but development will ultimately be private sector led).</li> <li>A more granular understanding of prospective sites is required to inform the exact requirements for distribution centres and how the demands of 3PLs can be reconciled with other requirements (e.g. foodstuffs, retail products and construction materials)</li> </ul>	<ul style="list-style-type: none"> <li>A logistics property study is recommended to understand future demand and provision requirements. Key to this conversation will be the growing demand for larger warehousing sites for 3PLs and online retail chains.</li> <li>Reviews of local development plans and land use designation of land for B8 relative to other demands (e.g. housing) alongside conversations with industry (e.g. 3PLs) on prospective sites and site characteristics.</li> </ul>

Freight Infrastructure	Recommended Variations of Infrastructure Provision	Priority Actions
Port Centric Logistics	<ul style="list-style-type: none"> <li>PCL has different applications depending on the scale and complexity of port operations. As an emerging concept, there are also varying applications of what could be termed PCL. The majority of ports are trust or privately owned so will be dictated by investment priorities and strategies.</li> <li>Unlocking technological and business clusters at smaller ports (Shoreham/Newhaven/Sheerness) as well as expansion plans and the strategic land reserve at Southampton appear to be key target areas (initially)</li> </ul>	<ul style="list-style-type: none"> <li>Port centric logistics should form part of the aforementioned logistics property study proposal.</li> <li>TfSE should seek to work with port authorities to understand the investment required on site and future collective bid work for infrastructure investment across the wider zone of influence.</li> </ul>
Urban Consolidation Centres	<ul style="list-style-type: none"> <li>Focused investment where there are triggers and conditions for new and additional consolidation activity can take place, particularly shared use facilities that involve public subsidy (pump priming) and involvement (as part of a PPP with industry). This includes Southampton, Portsmouth, Reading, Brighton and Canterbury.</li> </ul>	<ul style="list-style-type: none"> <li>More granular investigation required as part of the aforementioned logistics study proposal.</li> <li>Work with existing facilities (Southampton) to boost interest and uptake (including applying complementary measures)</li> </ul>
Micro Consolidation Centres	<ul style="list-style-type: none"> <li>Urban depots (cooperative or privately operated, owned and served), would ideally form part of a broader focus on consolidation. The Solent FTZ programme and Southampton and Portsmouth particularly would be an ideal test bed for trials.</li> </ul>	<ul style="list-style-type: none"> <li>More granular investigation required as part of the aforementioned logistics property study proposal.</li> <li>Work with the Solent FTZ team to develop trials and longer term schemes.</li> </ul>
Multi Use Mobility Hubs	<ul style="list-style-type: none"> <li>Investment needs to take place at a more granular level working with public authorities to embed in a freight offer across emerging transport developments in urban areas that seek to pivot around interchanges at three scales; mass transit corridors, campuses and community hub locations.</li> </ul>	<ul style="list-style-type: none"> <li>More granular investigation required as part of the aforementioned logistics property study proposal.</li> <li>Work with the Solent FTZ team to develop trials and longer term schemes.</li> </ul>

## Study Overall Conclusions

The following key messages can be gleaned from the process of reviewing and scoping out the impact of different infrastructure interventions across the region as part of the study:

- Enhancements to the rail network, both in terms of upgrading capacity (to provide more train paths and more journey time reliability) and the use of alternative fuels, score very positively. There are opportunities to explore modal shift along key freight corridors and upgrade gauge clearances and diversionary routes to build in network resilience and future mode share growth. Rail investment can help satisfy a number of problem statements because of its interactions with different freight networks and supply chains. There is some certainty around targeted locations.
- In light of the decarbonisation agenda and review of RIS2 and the emerging RIS3, investment in widespread road infrastructure would not fully satisfy environmental and social objectives and only goes some way to addressing problem statements. Road investment should still take place, but this should be targeted at specific locations, which have been identified, to leverage the role of international gateways and to improve network resilience, rather than simply boost capacity. It is of paramount importance that energy and alternative fuel networks for decarbonising road freight are pursued with opportunities already in the pipeline that can be supported.
- There is some certainty around the location of additional lorry parking required across the Transport for the South-East area, which is heavily informed by the National Lorry Parking Survey and complemented by policy evidence across individual local authority areas. Whilst this doesn't satisfy as many problem statements and objectives as other infrastructure investments, it will be necessary to start unlocking identified sites to address the chronic shortage of quality provision.
- The delivery of interventions is heavily reliant on third parties or private sector industry to mobilise which will be determined by market forces. The difficulty forecasting future trade activity and consumer habits make this difficult to gauge with any certainty whilst new initiatives (such as Freeports) are likely to influence local decision making.
- The delivery of infrastructure measures, such as enhanced port connections, rely on joint partnership work between different bodies, as well as the availability of funding. In all instances, ports across the Transport for the South-East area have identified improvements, so prioritising regional investment is a more detailed exercise with more granular data that needs to take place separately. Account should also be taken of port freight forecasts from DfT - for example, the forecast for increased freight tonnage over the medium to long term at Southampton port.

- The changing priorities for investment over the short and long term as the importance of establishing and re-establishing supply chain links for moving essential goods takes precedence post pandemic and during the transition from leaving the European Union. Freight sectors, such as maritime freight are responding to changes to global supply chains and emerging initiatives (e.g., freeports, Eco ports) whilst immediate support is being provided by the Government to confront the immediate shortage of HGV drivers. These currently rank high of the list of priorities to maintain the flow of goods in, out and around the South East and the UK.
- The specific requirements for coastal shipping, wharves and waterways are more of an unknown across the South East. Whilst there is a defined need and demand to support coastal shipping in particular, the type of investment may be more attuned to adapting to changes in freight practices (e.g., reduction in accompanied vehicles and need for extra storage locations at ports) rather than purely expanding capacity (e.g., additional berths). In many respects, investment in port connections and alternative fuels coincide with supporting coastal shipping and decarbonising the sector more broadly.

### Next Steps

On the basis of completing this technical report, two detailed studies are required to better discern the propensity for serving future freight requirements and demands across the region. These would cover the areas of:

- **Logistics Property:** Understanding the future scope for physical provision across the Transport for the South East area; taking into account land use and spatial planning constraints and forecast market demand for urban logistics, rail freight and future industry trends. The provision of lorry parking should also be factored into this study.

**Waterborne Transport:** Developing a more comprehensive oversight of all waterborne freight movements and potential uses cases/aspirations for deep sea, short sea and coastal shipping (including selected use of inland waterways such as the River Thames and the River Medway) across the Transport for the South East area.

---

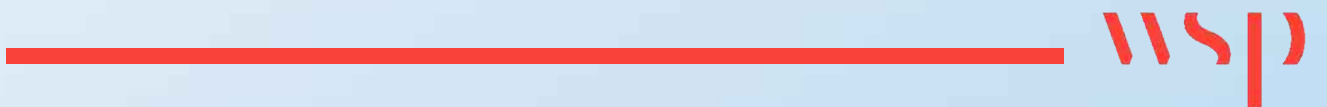
**Contact name: Sandy Neisig Moller**

Contact details | [Sandy.NeisigMoller@wsp.com](mailto:Sandy.NeisigMoller@wsp.com)



1

# INTRODUCTION





# 1 INTRODUCTION

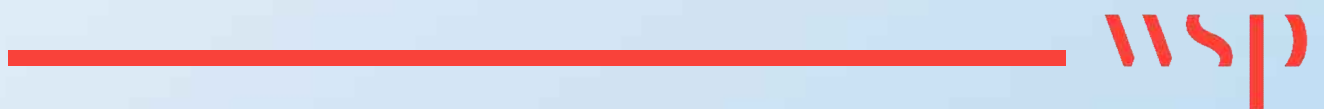
---

## 1.1 PURPOSE OF THE REPORT

- 1.1.1. This technical report sets out the need for freight specific interventions across the Transport for the South East area and describes how the interventions were identified and where the interventions fit into the future strategy development for freight in the South East region.
- 1.1.2. The development of freight specific interventions, as part of a longlist, is the core output of *Work Package 3 – Infrastructure*; one of five work packages that have been undertaken as part of the development of a freight, logistics and gateways strategy for the Transport for the South East area. This work was commissioned by Transport for the South East in January 2021. This work followed on from previous freight strategy scoping work undertaken by AECOM in 2020 and a freight, logistics and international gateways review for the South East, carried out by WSP in 2019.
- 1.1.3. This report presents:
- The vision and objectives of WP3 and the freight strategy;
  - The problem statements identified, following stakeholder engagement;
  - The identification of interventions;
  - The list of interventions and individual assessments of each intervention; and
  - Summary and recommendations.

# 2

## VISION & OBJECTIVES



## 2 VISION & OBJECTIVES

---

### 2.1 INTRODUCTION

- 2.1.1. The development of a freight strategy complements the bold vision set out in a Transport Strategy for the South East of England. The South East is a vibrant, hugely important region of national significance but success has come at a cost. Growing congestion and a historic lack of investment means the transport network is under intense strain.
- 2.1.2. Historically, transport strategies were devised on a “predict and provide” basis, whereby planners forecast future transport demand based on past trends, with investment focused on expanding existing transport systems. The approach with the new transport strategy for the South East is different. A vision-led approach aims to set out what future is desired for the region and to then plan ahead for bringing that to fruition. This means putting people and places, not vehicles, at the heart of proposals.
- 2.1.3. The aim of the future freight logistics and gateway strategy is to provide the basis for creating a sustainable means of moving goods into, out of, across and within the region. This means improving network performance across modes and fostering modal shift away from road freight, as well as ensuring that a ‘freight lens’ is applied to decision making.
- 2.1.4. It also means introducing demand management approaches, to influence travel behaviour and minimising the externalities from freight movements, alongside shaping the supply of logistics-centric activity and nurturing an upskilled workforce to support the industry.
- 2.1.5. Reducing car based movements and stimulating mode shift away from single occupancy vehicle trips will also free up capacity for more constructive use of the road network for road haulage movements. Planning for active travel, public transport and freight all go hand in hand as part of a sustainable transport ecosystem.

### 2.2 THE VISION

- 2.2.1. The vision for the Freight Logistics and Gateways Strategy originated from scoping work undertaken in 2020 and was agreed with stakeholders during the development of the Transport Strategy. This set the overall tone and narrative of the strategy and what it seeks to achieve:

*“By 2030, the South East will have a more efficient, sustainable and safer logistics sector, to support sustainable economic growth, with significantly reduced impacts on communities and the environment.”*

- 2.2.2. Two key roles of the freight and logistics sector were also identified. These have informed the key ‘pillars’ are the strategy and are:
  - Improved efficiency, integration, capacity and connectivity, to support sustainable economic growth; and
  - Improved safety and sustainability, to reduce environmental and social impacts.

## 2.3 THE OBJECTIVES

- 2.3.1. Following consultation with the Transport for the South East Freight Forum and Strategy Steering Group, established during 2021 to support this freight strategy development work, a number of objectives were formulated to guide the development of the freight logistics and gateways strategy. The objectives cover the economic, social and environmental pillars of sustainable economic growth and include a series of sub objectives as set out below. These objectives and sub-objectives have also guided the identification of the freight specific infrastructure needs of the Transport for the South East area.
- 2.3.2. Every freight-specific infrastructure intervention in this report has been assessed against its impact on meeting the objectives and sub objectives, presented below, as well as the problem statements (described in the following section) provided by stakeholders:



### ECONOMIC

- Improve operational efficiency;
- Enhance freight and logistics' contribution as an industrial sector, in its own right (especially to employment); and
- Improve connectivity to and from the Transport for the South East area's international gateways, including through enhanced infrastructure capacity where needed



### ENVIRONMENTAL

- Reduce greenhouse gas emissions and achieve net zero carbon by 2050 at the latest; and
- Reduce wider environmental impact of freight.

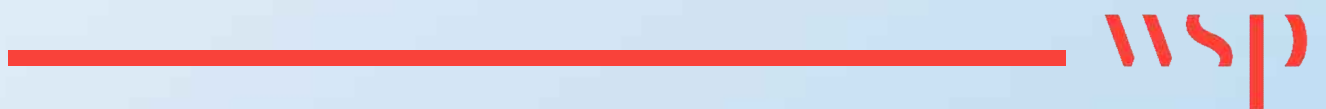


### SOCIAL (HEALTH & WELLBEING)

- Improve operational safety (especially for vulnerable road users);
- Improve air quality;
- Better management of (and facilities for) lorry parking; and
- Better integration between freight's operational needs and planning/placemaking.

3

## PROBLEM STATEMENTS



## 3 PROBLEM STATEMENTS

---

### 3.1 INTRODUCTION

- 3.1.1. A number of problem statements have been identified, drawing on the outputs of the previous 2019 WSP and 2020 AECOM studies, SWOC (Strengths, Weaknesses, Opportunities, Challenges) analysis from this phase of work and the inputs of stakeholders, to articulate the need for interventions to benefit freight movements.
- 3.1.2. Problem statements present an issue or opportunity which could be addressed by a number of different solutions. They are presented across seven categories:
- 1 Multi-modal infrastructure;
  - 2 Airport infrastructure;
  - 3 Road infrastructure;
  - 4 Rail infrastructure;
  - 5 Energy networks;
  - 6 Social/environmental challenge; and
  - 7 Port/waterborne freight facilities.
- 3.1.3. The collation of problem statements has helped to bring together a set of infrastructure measures and shape the freight narrative. Infrastructure can play a role in addressing some of the issues but other measures relating to the use of technology and decarbonisation, planning and industry-related changes need to take place separately, or concurrently, to have the desired impact on addressing the problem statements listed. A 'freight lens' has also been applied, where possible, for the proposed or planned delivery of infrastructure.

### 3.2 MULTI-MODAL INFRASTRUCTURE

- 1 Quality infrastructure is essential to enable good connectivity to markets – domestic and international, via key freight gateways. It is also essential to enable better integration between modes;
- 2 General lack of freight connectivity across all modes exists along the coastal communities;
- 3 The impact of major development growth (e.g. London Resort) on the transport network creates uncertainties for the efficiency of future freight movement;
- 4 'Levelling up' investment in freight infrastructure between the north and the south can lead to a negative impact in the more deprived areas in the South East; and
- 5 Lack of available land for urban freight management, for both smaller and larger scale sites.

### 3.3 AIRPORT INFRASTRUCTURE

- 6 Lack of existing rail freight infrastructure connecting to airports means movements between the two modes isn't widely available; and
- 7 Extending or building additional runways at Gatwick, Heathrow and Southampton is unpopular with the public.

### 3.4 ROAD INFRASTRUCTURE

- 8 HGV parking in the South East is limited, with demand exceeding supply on a regular basis. This can lead to unauthorised parking in inappropriate locations, creating nuisance and impacting local amenity;
- 9 Cost of implementing and maintaining safety infrastructure for HGVs is higher than for other freight modes; and
- 10 Capacity constraints on the network; such as on the M20, M25 and A2, A34 lead to unreliable journey times and create congestion hot spots.

### 3.5 RAIL INFRASTRUCTURE

- 11 There are insufficient Strategic Rail Freight Interchanges (SRFI) facilities in the South East region;
- 12 Rail is a challenge for the types of traffic Dover handles on ferries. No direct rail link exists into the port. Tunnels are a major constraint and costly infrastructure requirement;
- 13 Victorian infrastructure makes upkeep and improvement a challenge, particularly for bridges and tunnels;
- 14 The challenge of a mixed-use passenger and freight railway, with competing demands for reliable train paths and overall capacity
- 15 The challenge of extending runway capacity at London Heathrow, London Gatwick and Southampton airports while dealing appropriately with environmental concerns.
- 16 Significant parts of the rail freight network are not electrified, creating capacity and environmental issues; and
- 17 Gauge enhancements are required, particularly in Kent, to effectively handle rail freight.

### 3.6 ENERGY NETWORKS

- 18 Transition of industry fleets to more sustainable vehicle options calls for quality alternative fuel networks to support industrial use, at a large scale; and
- 19 Lack of understanding across public and private sectors on how to establish a decarbonised energy network and the associated charging refuelling infrastructure, particularly for HGVs

### 3.7 SOCIAL/ENVIRONMENTAL CHALLENGE

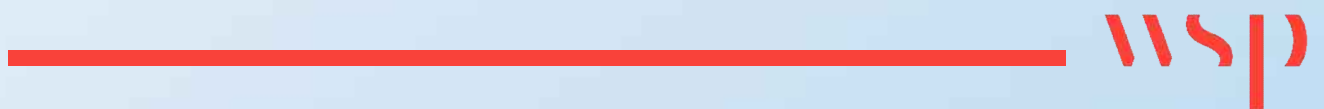
- 20 Negative social and environmental views of the increase in distribution centre developments and associated activity, particularly in existing green/sensitive areas.

### 3.8 PORT/WATERBORNE FREIGHT FACILITIES

- 21 Port capacity issues in the South East region. Port requirements beyond RO-RO and major LO-LO are not met in the South East region;
- 22 Connections to inland waterways and the ability to use them are insufficient in the South East region;
- 23 Lack of facilities evident for the breakdown of cargo containers dockside for first/last mile delivery centres; and
- 24 Coastal shipping facilities between ports are insufficient in the South East region.

# 4

## IDENTIFICATION OF INTERVENTIONS





## 4 IDENTIFICATION OF INTERVENTIONS

---

### 4.1 INTRODUCTION

- 4.1.1. There are many freight-specific infrastructures interventions that have been developed to help with the safe, sustainable and efficient movement of goods. This report brings together the most relevant cluster of intervention types for the Transport for the South East area, based on a review of key policy documents available within the public domain and also from stakeholder feedback.
- 4.1.2. Infrastructure can be described as the tangible, physical features to enable a system to function – in this case, a safe, sustainable and efficient freight network across the Transport for the South East area. The proposed list of infrastructure intervention measures provided has been developed with a view to shortlisting the options that should be pursued as part of the emerging Transport for the South East freight strategy.

### 4.2 SELECTION RATIONALE

- 4.2.1. There is a wide range of organisations with direct and indirect interest in freight and logistics within the South East, ranging from shippers and receivers (who generate freight trips), to the operators and carriers who service that demand - and then to the strategy and policy makers who create the operating environment within which freight moves, across all modes.
- 4.2.2. There is a real challenge in meeting the needs and objectives of those numerous stakeholders, to protect the environment and local amenity, while also ensuring efficient flow of commodities at the local, regional, national and international levels. This is particularly important in the South East, as it has a role in accommodating freight originating from/destined for elsewhere in the UK.
- 4.2.3. There is a plethora of possible interventions that can be applied to improve the efficiency, safety and the sustainability of goods movements. The long list of interventions that have been identified and expanded upon in this report are drawn from previous stakeholder engagement conducted during the initial scoping activity for the freight logistics and gateways strategy.
- 4.2.4. The key messages and indicative options have been sourced from the following documents:
  - AECOM Scoping Study (2019);
  - WSP Freight Logistics & Gateway Review (2019); and
  - Steer/WSP/Atkins Freight Topic Paper (2021).
- 4.2.5. The interventions selected have been considered relevant due to:
  - Predicted increase in freight volumes (e.g., DfT port forecasts and rail freight mode share)
  - Emerging trends that are influencing the way in which goods are consumed;
  - Current and future scenarios that are forcing the industry to change its practices;
  - Technology and innovations that can be explored to decarbonise the industry;
  - Improving the integration of freight into wider land use and transport decision making;
  - Reducing the dependency on road freight as the dominant means of moving goods; and
  - Growing the freight and logistics industry as an important economic driver and employer.

4.2.6. More specifically, the outline of infrastructure-specific interventions below, gathered during the scoping work, has been expanded upon in this report. These capture the interests of industry, trade bodies and public authorities, all of which are well placed to inform choices of intervention across the South East of England.

- **Road and rail network maintenance and enhancements** – improving the existing network to improve connectivity and reduce congestion for long distance freight movements and to minimise traffic mixing, where this impacts efficiency, safety and sustainability. This includes prioritising connectivity to international gateways and ensuring seamless links between local roads and the SRN.
- **Port and airport connectivity, capacity and systems development** – to respond to the repercussions of leaving the European Union and to accommodate changes in commodity flow, freight volumes and transshipment processes, to ensure waiting and processing times are minimised, as well as a programme of development to improve connectivity to road and rail networks.
- **Rail modal shift** – encouraging and accommodating a shift from road to rail, including new innovation and alternative approaches such as the use of off-peak commuter services for movement of compatible freight traffic, using existing passenger rolling stock, with suitable load handling systems.
- **Alternative waterborne modes** – exploring the use of inland waterways and coastal shipping between ports and identifying potentially suitable commodity flows which could be transferred from road and the SRN in large volumes.
- **Lorry parking** – approaches to overnight lorry parking, with demand exceeding capacity and the pressures on existing facilities for alternative land uses. Using technology to enable real-time availability and advanced booking for better journey planning and providing the right type of facilities to stem inappropriate parking by HGV drivers.
- **Land use and planning for freight and logistics** – considering the broader needs of the freight and logistics industry at all stages of the supply chain. There is a need to upskill those engaged in land use, development and transport planning, to adequately consider the needs of the industry and, crucially, the impacts of their decisions.
- **Alternative fuels and networks** – acknowledging and planning for cleaner fuel types and the extensive infrastructure provision that this requires to scale up adoption. This is essential to ensure recharging/refuelling is possible while out on the road – and also when back at base. Robust networks, including energy, will be required to accommodate ever-growing demand, as conventional diesel commercial vehicle fleets transition to alternatives.
- **Future foresight and technology** – ensuring there is continuous innovation in the freight and logistics industry and exploring how infrastructure and systems can meet current and future needs.

# 5

## LIST OF INTERVENTIONS



## 5 LIST OF INTERVENTIONS

---

### 5.1 INTRODUCTION

5.1.1. A long list of infrastructure interventions is presented in detail throughout the remainder of this report.

5.1.2. The infrastructure interventions sit under six main categories and are as follows:

**1 Rail freight (Chapter 6):**

- a Rail network enhancements; and
- b Rail electrification and alternative fuels.

**2 Road freight (Chapter 7):**

- a Road network enhancements;
- b Lorry parking; and
- c Alternative fuels for road freight.

**3 Access to international gateways (Chapter 8):**

- a Access to ports; and
- b Access to airports.

**4 Waterborne freight (Chapter 9):**

- a Capacity at sea ports;
- b Coastal shipping; and
- c Alternative fuels for waterborne freight.

**5 Intermodal interchanges (Chapter 10):**

- a Strategic Rail Freight Interchanges (SRFIs)

**6 Warehousing, fulfilment and consolidation centres (Chapter 11):**

- a Regional distribution centres;
- b Port-centric logistics;
- c Urban consolidation centres;
- d Micro consolidation centres; and
- e Multi-use mobility hubs.

### 5.2 FORMAT

5.2.1. To help with providing a clear assessment of each freight infrastructure intervention, the following format has been developed for each of the interventions in the following chapters.

#### DESCRIPTION

5.2.2. A brief explanation as to what the infrastructure intervention is and its relevance to freight and logistics.

## **RATIONALE**

- 5.2.3. This section presents the role that the infrastructure intervention can have on creating a safe, efficient and sustainable freight network.

## **POLICY BACKGROUND & EVIDENCE**

- 5.2.4. This presents the results of research to collate a picture of the local policy context and evidence to help assess the need, and demand, for the infrastructure intervention type across the Transport for the South East area. More specifically, a high-level assessment has been provided for the purposes of this 'long list' of measures based on:
- National guidance, reports and best practice materials across the freight, highways and general transport sector within the UK;
  - High level analysis of Local Transport Plans (in place or emerging), individual port & airport masterplans and strategies; and
  - Feedback from initial engagement with major stakeholders across the Transport for the South East area, covering measures and priorities.

## **INTERVENTION OPTIONS**

- 5.2.5. The different types and alternative means of deploying the infrastructure interventions.

## **RECOMMENDATIONS & LOCATIONS**

- 5.2.6. A star system has been applied under the recommendations section of each freight infrastructure intervention, to indicate levels of confidence in recommended locations for their application. These are:

- ★★★ Indicative locations have been identified, where infrastructure could be deployed.
- ★★ Further detailed discussions and scoping are required with the Area Studies teams.
- ★ Additional work/evidence is required to more accurately define locations and demand.

## **KEY CHALLENGES**

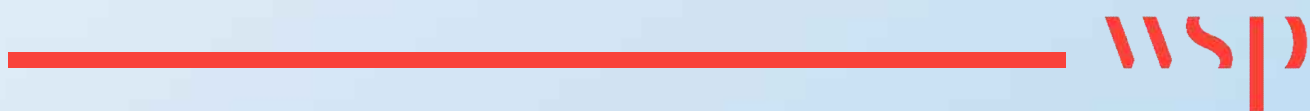
- 5.2.1. Change to business as usual will likely be met with some resistance, so this section presents a number of concise bullets highlighting potential barriers and issues to adoption of the intervention, such as public acceptability through to land use constraints.

## **IMPACT ASSESSMENT**

- 5.2.2. A subjective assessment conducted to help score the potential effectiveness of the intervention and its relevance to the strategy.
- Problem statements that the infrastructure intervention seeks to resolve (referencing the statement numbers); and
  - Impact of the interventions relating to the objectives and sub objectives, using a red/amber/green (RAG) traffic light scoring system, ranging from 'High', to 'Medium', to 'Low' impact.

6

## RAIL FREIGHT



## 6 RAIL FREIGHT

---

### 6.1 RAIL NETWORK ENHANCEMENTS

#### DESCRIPTION

- 6.1.1. Rail freight plays an increasingly important role in the movement of goods across the UK (For example, see ORR Freight Usage Statistics; <https://dataportal.orr.gov.uk/statistics/usage/freight-rail-usage-and-performance/>; Rail Freight Group facts and figures: <http://www.rfg.org.uk/rail-freight/facts-figures/>; and GB Railfreight's <https://www.gbrailfreight.com/safety-environment/environment/>).
- 6.1.2. According to the Rail Delivery Group<sup>1</sup>, rail freight makes up 11% of all inland freight movements. This includes shipping goods from international gateways and major freight generators along rail freight corridors. Rail infrastructure needs to be continually maintained and enhanced to carry certain types of loads and be competitive to road alternatives, particularly HGV movements, which make up 14% of all UK transport emissions<sup>2</sup>, with road freight being the primary target for freight emission reduction.

#### RATIONALE

- Rail enhancements can reduce the number of HGVs on roads; reducing congestion, pollution and road accidents. Each freight train can take approximately 43-76 HGVs off the roads<sup>3</sup>;
- Rail enhancements and an efficient rail network can support supply chain connectivity; with reliability helping to unlock new markets;
- Rail enhancements can help support the growth in deep sea port operations and growing markets, such as intermodal and construction traffic flows;
- Enhancements, such as electrification, can help reduce the sector's contribution to GHG emissions and air quality issues; and
- Enhancements can boost network resilience and be able to offer greater flexibility and reliability to compete with road-based freight transport.

---

<sup>1</sup> Rail Delivery Group (2014) Keeping the Lights on and the Traffic Moving [https://www.raildeliverygroup.com/files/Publications/archive/2014-05\\_keeping\\_the\\_lights\\_on.pdf](https://www.raildeliverygroup.com/files/Publications/archive/2014-05_keeping_the_lights_on.pdf)

<sup>2</sup> Department for Transport (2016) Rail Freight Strategy [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/552492/rail-freight-strategy.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/552492/rail-freight-strategy.pdf)

<sup>3</sup> RDG (2014).

## POLICY BACKGROUND & EVIDENCE

### Snapshot Overview

- 6.1.3. Rail freight is forecast to play a more prominent role in the future freight mix across the UK and the South East of England. Currently Network Rail estimates that between the period between April 2019 – March 2024, the regional network carries over 7,000 passenger and freight services daily and moved 266,000 tonnes of freight each week.<sup>4</sup>
- 6.1.4. The types of goods being transported by rail is however changing. The total tonnage of rail freight lifted has fell from 115m tonnes to 86m tonnes between 2004-2016, as a consequence of the reduction in dry bulk commodities being moved. This can be strongly attributed to government energy policy and the shift away from fossil fuels, particularly coal, originating across the Midlands and North East of the UK. This has taken place concurrently with the burgeoning markets for intermodal container traffic and construction traffic, with the overall growth in rail freight tonne kilometres expected to rise by 2.9% per year between 2011-2043.<sup>5</sup>
- 6.1.5. There has undoubtedly been an impact on freight activity as a result of COVID-19. According to DfT traffic statistics, approximately 50% of the UK's HGV fleet was parked up in the first week of April 2020, as a direct result of the pandemic and its impact on supply chains. However, by September 2020, road freight traffic had reverted back to the same levels as in the baseline week at the beginning of February 2020.
- 6.1.6. Similarly, rail freight traffic<sup>6</sup> recovered to pre-pandemic levels by late 2020 and has increased by around 2% since 2019 (see footnote for details). This contrasts to rail passenger volumes which have stabilised at around 60% of pre-Covid levels. Boosting rail freight is also a key component of the recent Williams-Shapps Report Plan for Rail and is key to serving current and emerging markets for commodities (intermodal and aggregate movements particularly as well as express parcels).  
The freight network is responding to strong and growing markets in domestic intermodal and construction freight traffic (

<sup>4</sup> Network Rail (2021) Southern Strategic Plan, <https://www.networkrail.co.uk/wp-content/uploads/2021/05/Southern-Strategic-Plan.pdf>

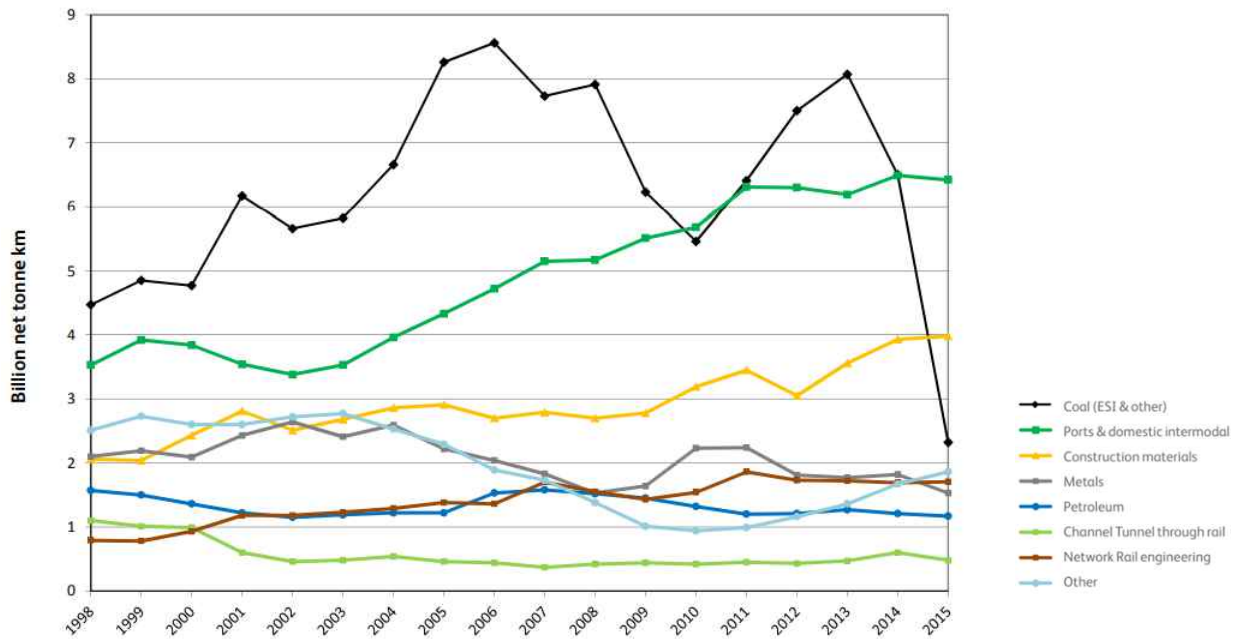
<sup>5</sup> DfT (2016) Rail Freight Strategy [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/552492/rail-freight-strategy.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/552492/rail-freight-strategy.pdf).

<sup>6</sup> DfT (2020) Rail Factsheet 2020 to be updated in January 2022), [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/942425/rail-factsheet-2020.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/942425/rail-factsheet-2020.pdf) & <https://www.gov.uk/government/statistics/announcements/rail-factsheet-2021>



- 6.1.7. Figure 6-1); with one in four containers entering the UK's South East deep sea ports travelling by rail towards key inland sites. Freight trains can also carry enough material to build 30 houses with 40% of construction materials in London being carried by rail.

**Figure 6-1 - Rail Freight Moved by Commodity Type Across Great Britain (1998–2015)<sup>7</sup>**

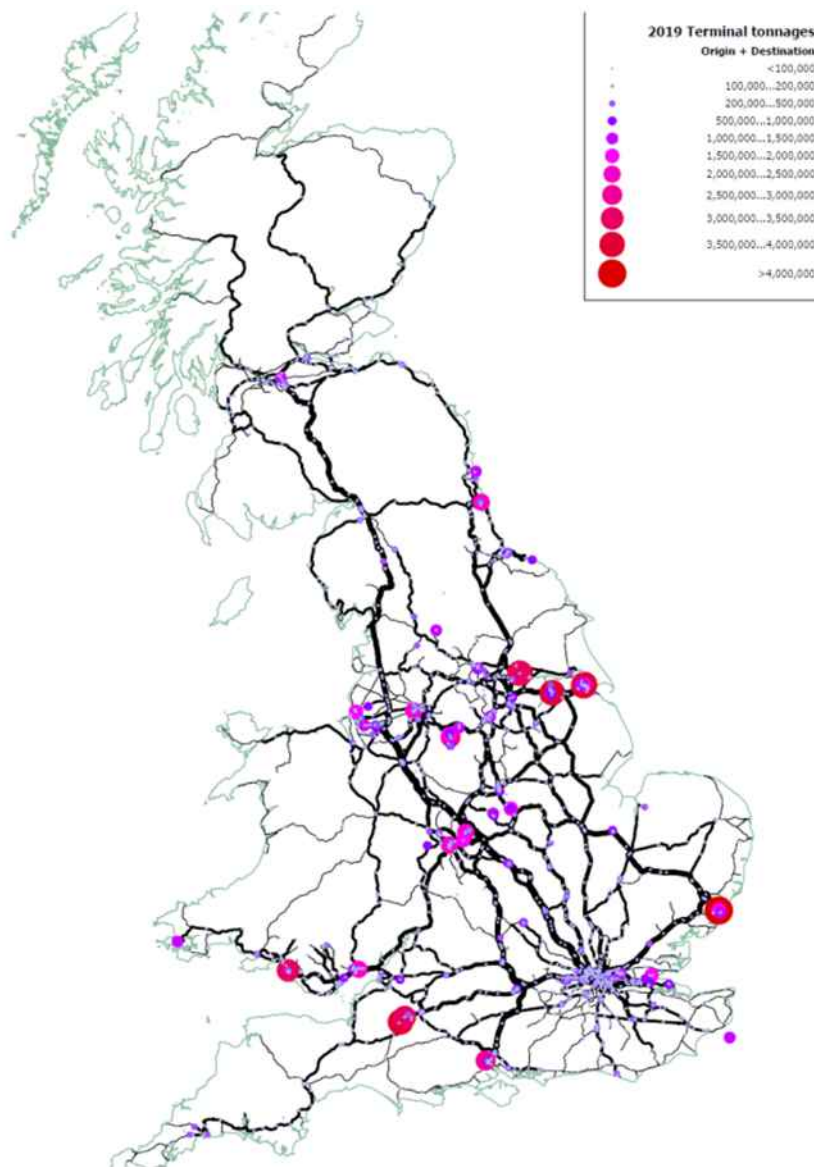


- 6.1.8. The central case forecasts (2011-2043) indicate rail freight volumes are forecast to increase by around 3% per annum, driven by a continual rise in intermodal and construction traffic, assuming that sufficient capacity on the network exists. Indeed, rail (and rail freight specifically) is increasingly recognised as an economically attractive and environmentally efficient form of transport, clearly earmarked for growth within the DfT's recent Transport Decarbonisation Plan.
- 6.1.9. Rail freight can carry all means of goods. In order for the rail network to carry a greater proportion of the regions and nation's freight, the cost effectiveness and efficiency gains must be promoted (especially for strategic trips) alongside providing the associated infrastructure, namely inland intermodal terminals for handling and transferring goods between road and rail. This is one of the most significant constraints to mode shift across the Transport for the South East region although rail freight terminals for construction materials, especially at ports and wharves on the Thames are well placed for moving additional volumes.
- 6.1.10.

<sup>7</sup> Network Rail (2017) Freight Network Study, <https://www.networkrail.co.uk/wp-content/uploads/2017/04/Freight-Network-Study-April-2017.pdf>.

- 6.1.11. Figure 6-2 illustrates the relative prominence of tonnage arriving and departing terminals in Southampton by rail annually (with the largest up to 3 million tonnes) and the clustering of activity around North Kent and Medway Towns. Through no coincidence, these are also the locations with the highest density of warehousing, distribution and logistics activity.

**Figure 6-2 - Terminal Tonnages by Rail Freight: Origin Plus Destination (Network Rail, 2019)**



## Regional Context

- 6.1.12. There are three key rail freight routes throughout the South East of England (Figure 6-3) that have been identified by Network Rail, which carry the vast majority of freight tonnage on local and strategic journeys; namely:
- Southampton (Port) to the West Midlands and the West Coast Mainline (WCML), as well as diversionary routes for port, domestic intermodal and automotive freight;
  - Channel Tunnel for intermodal, automotive and metals movements, travelling internationally & through to London/Midlands; and
  - Cross London traffic, including Thameside, between ports of Tilbury, London Gateway through to Reading/Berkshire for construction, automotive and mail freight traffic.

**Figure 6-3 - Key Freight Routes<sup>8</sup>**

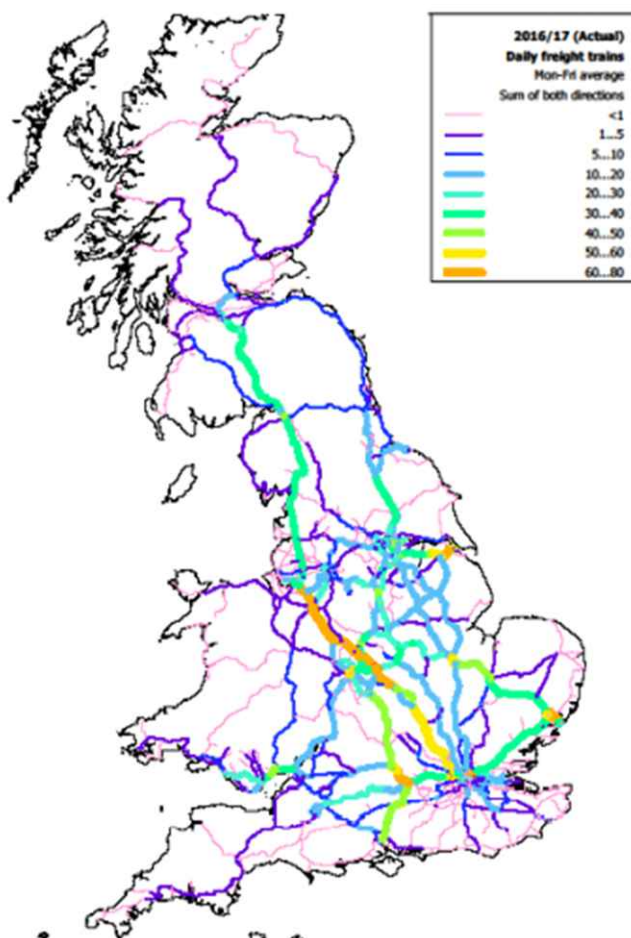


- 6.1.13. The Brighton Mainline and North Kent Lines also play a key regional role in moving goods. The former is a highly complex and well utilised route helping to move construction traffic whilst the North Kent Lines to the South of London via Dartford is another artery providing materials for burgeoning markets for aggregate as well as the supply of aviation fuel to international gateways. The Croydon Area Remodelling Scheme (CARS) is a key component for boosting freight service provision.
- 6.1.14. The demise of long distance commuting and business travel coupled with flexible (home) working may open up opportunities for additional network capacity and freight paths. This will depend on capacity and the provision for handling rail freight outside the Transport for the South East region along viable long distance rail freight routes (e.g. north of Oxford towards the West Midlands, and through Greater London on the North London Line and West London Line).

<sup>8</sup> Network Rail (2017) Freight Network Study, <https://www.networkrail.co.uk/wp-content/uploads/2017/04/Freight-Network-Study-April-2017.pdf>

- 6.1.15. Across the South East, a core freight network, carrying the bulk of freight traffic, is complemented by a range of diversionary routes, which provide network resilience in the event of disruptions, delays or engineering works. These combined make rail an attractive proposition for the rail freight industry, as well as suppliers.
- 6.1.16. The clear policy stance across the region is in developing capacity and capability along key strategic corridors, particularly between key international gateways, due to their importance for the national economy as well as local prosperity. These corridors also serve as key connections to smaller feeder routes and freight flows from across the region. In some instances, daily freight trains can exceed 40-50 trains along the Southampton to Midlands line (both directions) with heightened levels of freight moved by train across North Kent (Figure 6-4).

**Figure 6-4 - Daily Rail Freight Flows 2016/2017 (Network Rail, 2017)<sup>9</sup>**



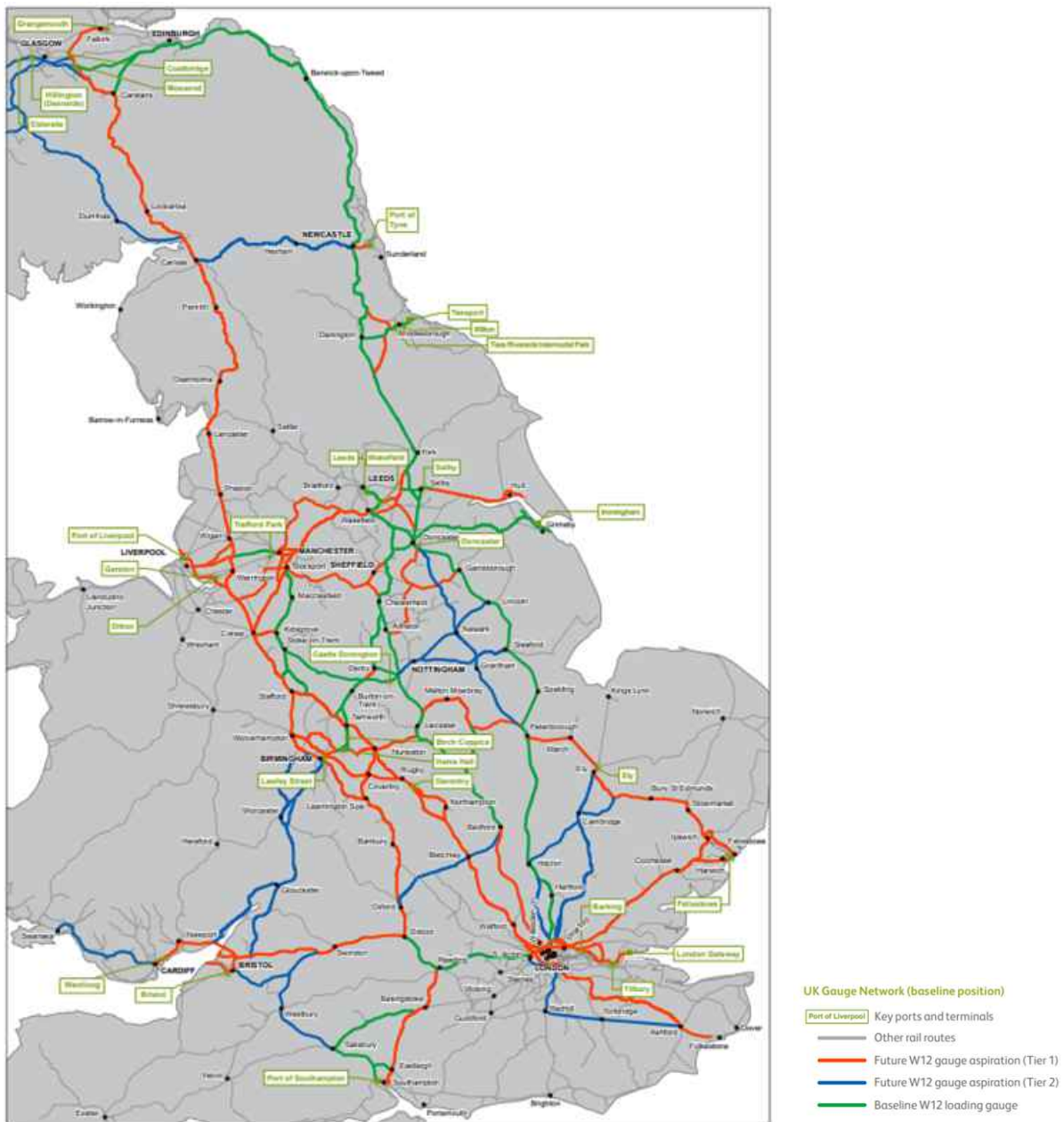
<sup>9</sup> Network Rail (2017) Freight Network Study, <https://www.networkrail.co.uk/wp-content/uploads/2017/04/Freight-Network-Study-April-2017.pdf>

- 6.1.17. The short-term strategy that forms part of the Network Rail Freight Network Study proposes the creation of a core arterial, nationally cohesive freight network, with complete 'line of route' enhancements, to reflect the forecast growth in intermodal traffic. Currently, all sea-to-rail freight traffic in the south east is international in origin, however, other regions do see domestic rail freight traffic, using "swap-body" rail to road containers for onward distribution. This identifies links to major ports and terminal locations across the Solent and Kent, via the Channel Tunnel. Delivering capacity for rail freight growth, network resilience, operational reliability and suitable diversionary routes are all key to growing rail mode share.
- 6.1.18. The Channel Tunnel link and the Southampton to WCML link form part of the Trans European Transport Network (TEN-T) which focuses on route availability and train length availability (accommodating 740m trains by 2030), as part of future requirements and strategy. This is an important consideration as there are only short sections which currently fulfil that demand, namely between Ashford at the Channel Tunnel and Southampton to the West Midlands, via Reading.
- The freight industry has also prioritised the requirement to create a more extensive W12 gauge network (

- 6.1.19. Figure 6-5). Development of W12 gauge cleared routes would enable new capability, primarily for short sea intermodal services. The industry aspiration for the gauging of new routes is to, where feasible, deliver W12 capability as the standard gauge requirement. By delivering to W12 in the first instance, this removes the need to upgrade routes at a later date. W12 upgrades come under:
- Tier One – Short Term Gauge Investments; and
  - Tier Two – Longer Term Gauge Investments.
- 6.1.20. The Tier 1 W12 aspiration is focused on the links from key short sea ports and the Channel Tunnel to a range of freight terminals in the North East, West Midlands and the North West, to create a baseline core network.
- The Tier 1 network builds upon current W12 cleared sections, to give key line of route clearance to enable the development of new markets and traffic flows.
  - Tier 2 priorities focus on creating diversionary routes for increased network resilience.
- 6.1.21. As the specific W12 market demand grows, the case for gauge clearance of new routes will be evaluated accordingly. Additionally, the ongoing industry standard is that when current structures are being rebuilt or renewed, for example due to electrification works, then works will be specified to W12 enhancement at that time.
- 6.1.22. The rail freight industry has also noted the aspiration for an increase in the number of temporary gauge cleared routes in order to enable diversionary options.



**Figure 6-5 - Rail Gauge Gaps & Aspirations (Network Rail, 201710)**



6.1.23. With regards to nodal yards, these must be strategically located at corridor intersections enabling regulation, relief, run-round and recess of freight traffic, with high average speed paths between key locations. At this moment in time, Eastleigh, serving Southampton Port, is the only point that has been identified as a future location due to its 1,500m standage capability, to match splitting/joining of future super-length autos services.

<sup>10</sup> Network Rail (2017) Freight Network Study, <https://www.networkrail.co.uk/wp-content/uploads/2017/04/Freight-Network-Study-April-2017.pdf>

## Southampton – Solent to Midlands Corridor

- 6.1.24. Southampton, at the southern end of the Solent to Midlands corridor, serves the automotive, bulk freight and container sectors and key economic and distribution hubs - it is key to national prosperity. Didcot and Basingstoke are locations of key capacity constraints on the Southampton to WCML route; the latter also impacting the Great Western Main Line (GWML). Ensuring network resilience and providing diversionary routing in this case is key to growing rail mode share along the corridor and the competitiveness of rail versus road freight, in terms of reliability and flexibility.
- 6.1.25. More specifically, the highest priorities for investment in the short term (likely to benefit passenger traffic primarily), agreed by the Freight Network Study Working Group, include the Southampton to West Midlands & West Coast Mainline and the desire to see investment to Didcot East Junction to Oxford north Junction; grade separation at Didcot East Junction and either grade separation at Oxford North Junction or four tracking at Didcot to Oxford. This is with a view to enhancing journey times and allowing additional freight paths on what is the busiest freight line across the Transport for the South East area.
- 6.1.26. The general aspiration across the rail network is to upgrade the gauge of the core intermodal network to W10 and W12 standard to develop a resilience rail network and leverage the operational and economic advantages of rail freight (relative to road) and cater for taller shipping containers and wider wagon loads. There is already a baseline W12 gauge between Southampton and Basingstoke, via Salisbury, and providing sufficient gauge clearances on diversionary routes, via Westbury, will also be key. This will help to boost confidence in rail freight and responsiveness to delays or trackside issues and aspirations for the main route to be upgraded to W12 (Tier 1).
- 6.1.27. The ability to carry more rail freight per train is also an objective of the rail industry. There is the desire to make 775m freight train capability the baseline length for intermodal trains. However, this is also reliant on adequate loading and unloading facilities, particularly at ports and terminals.

## Channel Tunnel – Classic Links (Kent)

- 6.1.28. The Channel Tunnel link, served by Getlink, carries 2,077 freight trains annually and 22 million tonnes of freight (which has risen from 14.2 over almost a ten year period). Over 30% of UK exports to the EU (£43.6bn) and 22% of imports (£47.8bn) travelled internationally in 2018<sup>11</sup>.
- 6.1.29. Rail connections between Kent, namely Dover, along the Channel Tunnel corridor, are hindered by constraints along the 'classic' routes (non HS1) despite being identified as a key growth area by FOCs. Although there is path capacity for additional services, the market is currently constrained by the limited W12 gauge cleared routeing options and by the restriction on overnight access to the High Speed 1 (HS1) route. Gaps in electrification capability of the network prevent continuous running between the Channel Tunnel and London on all W12 routes. These are the key priorities out of the 11 freight corridors across the UK.

<sup>11</sup> WSP (2019) Freight, Logistics & Gateways, <https://transportforthesoutheast.org.uk/app/uploads/2020/11/Freight-logistics-and-gateway-review.pdf>

- 6.1.30. Network resilience and diversionary routes are also key to rail modal share through the region. The highest priority scheme in the short term starts with the Channel Tunnel and creating a W12 gauge clearance to Wembley, via both Maidstone and Tonbridge. There is also a W12 gauge aspiration between Ashford and Redhill (Tier 2) but this is uncommitted at this stage. The Freight Network Study Working Group have also been keen to explore the capability and capacity for upgrades of electric traction on all Channel Tunnel links.
- 6.1.31. In terms of adding rail capacity elsewhere across Kent, the Area Route Study<sup>12</sup> alludes to the potential choice for funders for adding a third track between Peckham Rye and Nunhead. If progressed, this could allow for freight regulation and potentially provide additional capacity for Channel Tunnel freight traffic (and movement of aggregates).

## INTERVENTION OPTIONS

- 6.1.32. There are a number of freight specific rail enhancements that can be made to the network to support operational efficiency, capacity and freight mode shift from road. This primarily centres around:
- Electrification: reduce freight journey times, increase capacity, timetable performance, capacity utilisation and the environmental performance of freight services (discussed as a separate intervention);
  - Grade separation: reducing bottlenecks and congestion around junctions on the network through the provision of direct lines over or underneath existing infrastructure;
  - Train lengthening: enable operators to carry greater loads per path, thereby acting to increase freight capacity on the network (also extends into freight/rail terminals);
  - Gauge clearances: development of the intermodal market is dependent on gauge capability. To enable new flows, W10 and W12 standard clearances of key corridors & diversionary routes is required; and
  - Nodal Yards: act as regulation points to enable quality freight paths, whilst facilitating key ancillary services, including wagon maintenance, locomotive fuelling and driver/staff change over.
- 6.1.33. Rail investments must be considered alongside changes to other freight transport across the region. The move towards 'mega vessels' and larger ships from ports, a growing sector, is likely to favour rail, given its strength in moving large volumes, over longer distances, quickly. There is a focus on construction, intermodal and even parcel traffic on lines/areas which are growing rail freight sectors across the Transport for the South East area. With more freight traffic now requiring access to population centres, the industry is also diversifying away from a focus on largely bulky low value materials, such as coal, towards faster moving goods and JIT supply chains. Rail enhancements serving ports and airports are covered in another section.

<sup>12</sup> Network Rail (2018) South East Route: Kent Area Route Study <https://www.networkrail.co.uk/wp-content/uploads/2018/06/South-East-Kent-route-study-print-version.pdf>

## RECOMMENDATIONS & LOCATIONS ★ ★ ★

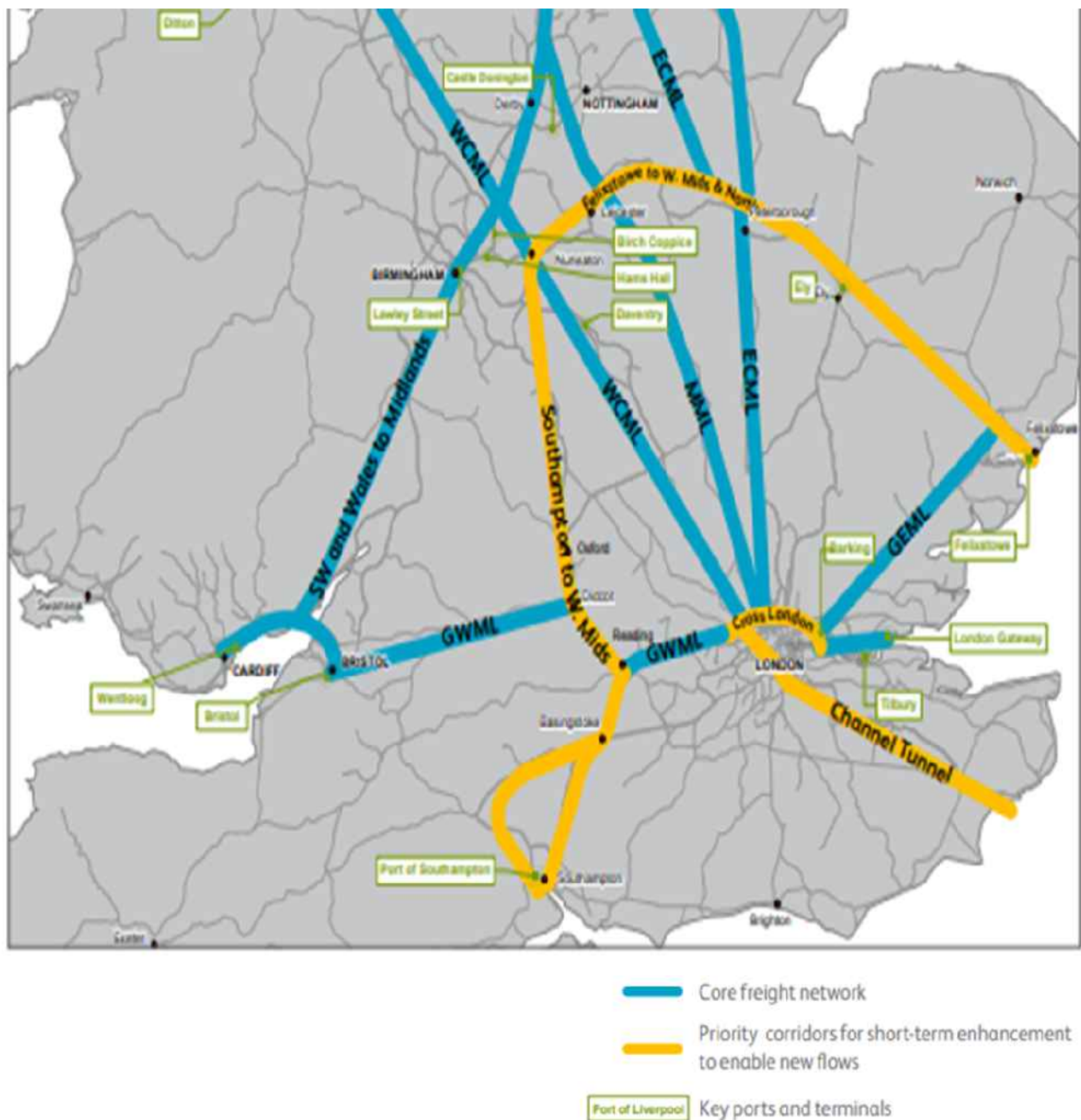
6.1.34. In general, rail freight in the region is constrained by two key issues (G06):

- Capacity on major rail corridors, being shared with passenger services;
- Shortage of railheads / terminals for intermodal transfers; and
- Low standards of gauge clearance.

There is clear guidance as to where future priorities lie for the enhancement of the rail network for the movement of freight across the Transport for the South East area. The Network Rail Freight Network Study clearly identifies locations for freight related rail enhancements across the area, focused around Key Freight Routes (Figure 6-3), including core and diversionary routes, taking into account gauge clearances, nodal yards, train lengthening and electrification, over different time periods. Undoubtedly, short term, the overwhelming focus is on consolidating and supporting existing freight flows and new opportunities along existing core corridors and delivering interventions which can quickly support a shift towards rail freight (

6.1.35. Figure 6-6).

Figure 6-6 - Priority Corridors for Short Term Enhancements (Network Rail, 2017<sup>13</sup>)

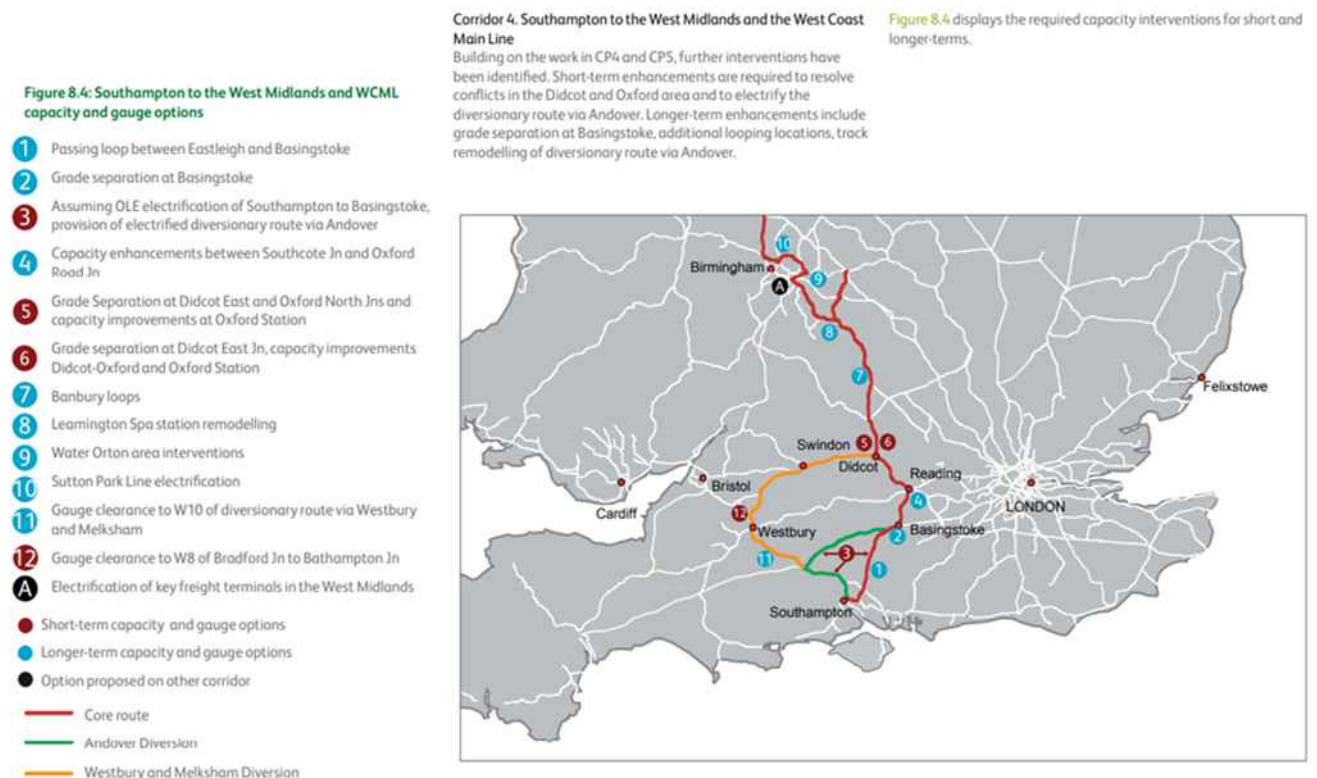


<sup>13</sup> Network Rail (2017) Freight Network Study, <https://www.networkrail.co.uk/wp-content/uploads/2017/04/Freight-Network-Study-April-2017.pdf>



- 6.1.36. Gauge clearances should form the focus on investment, based on the aforementioned tiered system of implementation, to create reliable diversionary routes and boost network resilience. Delivering Tier 1 W12 gauge improvements to the core corridor should ideally coincide with planning for grade separation around Didcot on the Solent to Midlands line and aspirations for electrification (Figure 6-7). The development of the network may then lead to future demand for nodal yards which is a subject that requires further investigation and may be more likely to be driven by changes in market demand.

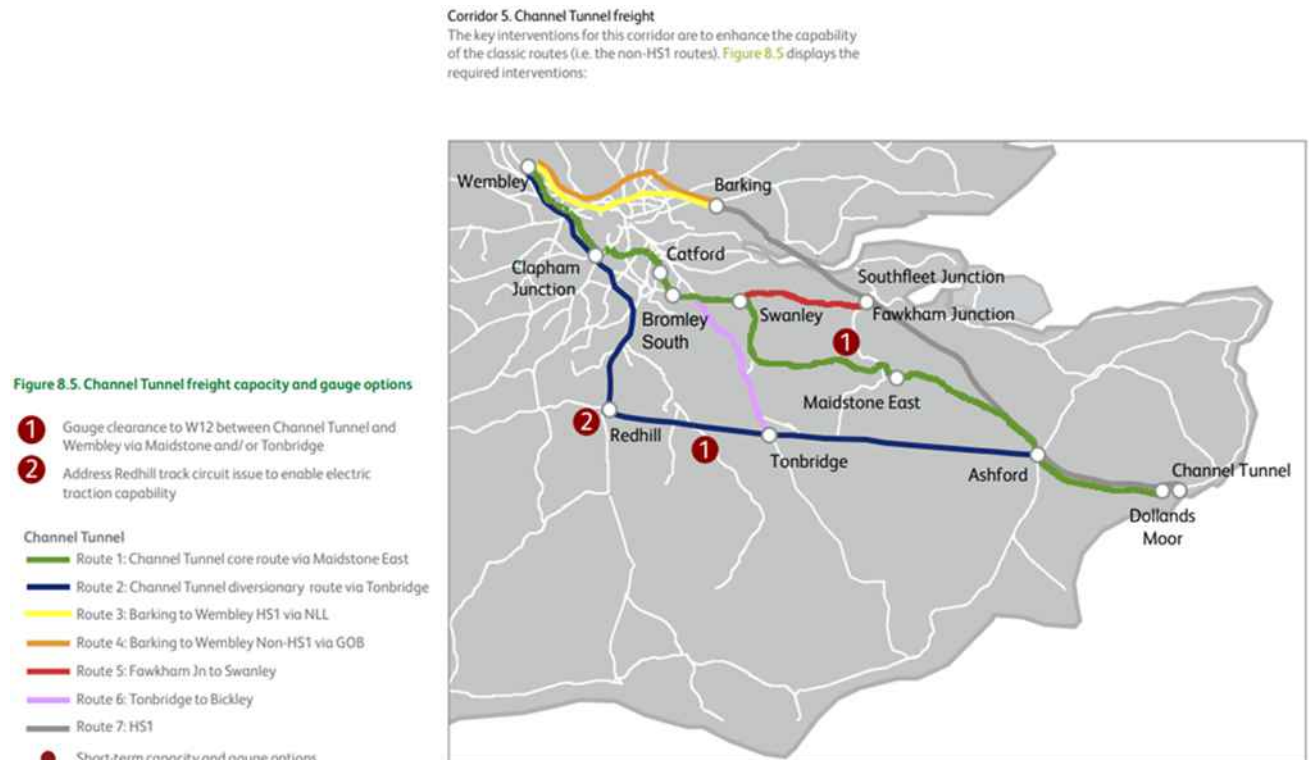
**Figure 6-7 - Identified Rail Freight Enhancements along the Southampton/WCML Corridor (Extracted from 'Freight Network Study', 2017<sup>14</sup>)**



- 6.1.37. Similarly, upgrades to gauge clearance (W12) should be the initial priority for unlocking capacity and freight flows along the Classic Routes (between the Chamel Tunnel and Wembley) through Kent, including diversionary routes via Redhill and Tonbridge. This would serve both the burgeoning construction industry and movement of aggregate materials from Medway Towns to London, as well as strategic journeys passing through the region. The opportunity for enabling electric-battery traction should also be pursued as part of this package (Figure 6-8).
- 6.1.38. The other key upgrade is the need to address the lack of gauge cleared diversionary route for the Reading to Basingstoke section of the Southampton to Midlands corridor by upgrading the route via Westbury and Melksham to W10/W12.

<sup>14</sup> Network Rail (2017) Freight Network Study, <https://www.networkrail.co.uk/wp-content/uploads/2017/04/Freight-Network-Study-April-2017.pdf>

**Figure 6-8 - Identified Rail Freight Enhancements along the (Classic) Channel Tunnel Links  
(Extracted from Network Rail's 'Freight Network Study, 2017'<sup>15</sup>)**



- 6.1.39. The key requirement is that any rail enhancements must take place concurrently with fulfilling and matching aspirations for the growth and expansion of port traffic and major trip generators, particularly serving Southampton (with the largest rail freight flows) and along the 'Classic' Channel Tunnel Links across Kent (rail links to Gatwick are explored in the Enhanced Airport Connection section).
- 6.1.40. Furthermore, the huge rise in e-commerce and potential for rail enhancements to support the growth in rail for JIT supply chains and the rise of 3PLs are significant. There is an area that requires further investigation, to assess whether rail has a greater role in moving unitised goods between ports, distribution centres and end users, as well as inter and intra urban parcel express services. The latter, which is still very much in its infancy, may require the development or reinstatement of infrastructure at local/mainline railway stations to meet this demand. On this basis, Transport for the South East could look to work with the rail industry, namely Network Rail and individual TOCs, as part of a logistics study that would involve collaboration with industry (see the later section on Warehousing, Fulfilment and Consolidation Centres).

<sup>15</sup> Network Rail (2017) Freight Network Study, <https://www.networkrail.co.uk/wp-content/uploads/2017/04/Freight-Network-Study-April-2017.pdf>



## KEY CHALLENGES

- The speed in which the rail industry can deliver tangible infrastructure upgrades to core corridors and how this is matched against the desired growth of rail freight share over the next decade;
- The potential ramifications on rail freight mode share from network enhancements short term, relative to the competitiveness (and flexibility afforded) of road freight transport;
- The estate capacity for freight generators to accommodate additional freight trains (paths and sidings) over the short and longer terms, with predicted rises in intermodal traffic; and
- The short term uncertainty surrounding rail-related investment (both freight and passenger) amidst changes in consumer preferences and working practices (e.g. passenger demand).

## IMPACT ASSESSMENT

Problem Statements	1,2,4,10,12,13,14,15,16,17,20				
Economic	Med	Environmental	High	Social	Med
Improve operational efficiency	Med	Reduce greenhouse gas emissions, and achieve net zero carbon by 2050 at the latest	Med	Improve operational safety (especially for vulnerable road users)	Low
Enhance freight and logistics' contribution as an industrial sector in its own right (especially to employment)	Low	Reduce wider environmental impact of freight	High	Better integration between freight's operational needs and planning/place making'	Med
Improve connectivity to and from the Transport for the South East area's international gateways, including through enhanced infrastructure capacity where needed	High			Better management of (and facilities for) lorry parking	Low
				Improve air quality	Med

## 6.2 RAIL ELECTRIFICATION & ALTERNATIVE FUELS

### DESCRIPTION

- 6.2.1. Rail contributes some 1% of total UK annual GHG emissions<sup>16</sup> but is an industry that has the greatest potential to shift towards zero carbon fuel solutions such as hydrogen, battery electric locomotives and the use of HVO. Reliable and resilient rail infrastructure is required along core freight routes and diversionary routes to support rail electrification, with fuelling stations helping to grow the use of alternative fuels at depots, stations, ports and major freight and distribution sites. The rise of alternative fuel technologies dovetails other modal aspirations for decarbonising the transport industry.

### RATIONALE

- Rail electrification and alternative fuels present a genuine opportunity to help decarbonise the transport sector and reduce overall GHG emissions and noise pollution;
- Upgrades to infrastructure provision can and will need to dovetail with enhanced energy efficiency and network capacity at key interchanges, terminals and corridors;
- There is scope for alternative fuels to offer an interim solution to comprehensive electrification of the rail network (and mainly freight routes);
- Electrification generally enhances network reliability and resilience, as well as supporting faster journey times; helping to optimise freight and passenger train paths; and
- Extensive development of alternative fuels and rail electrification will help with job creation.

### POLICY BACKGROUND & EVIDENCE

#### Snapshot Overview

- 6.2.2. The majority of rail freight services are provided by diesel-powered locomotives across the UK. DfT has stated its ambitions to phase out diesel-only traction by 2040, as part of the recent Transport Decarbonisation Plan (2050). Currently there are around 850 locomotives in the UK with around 630 of these in operational service across the various Freight Operating Companies (FOCs).
- 6.2.3. Rail freight used 75 million kWh of electricity in 2019, up 12.7% from the previous year), whilst 153 million litres of diesel were expended (a decrease of 6.7% over the same period). However, diesel usage then increased by 12.5% in 2019-20, with electricity usage falling 6.3%, from 75 million kWh in 2018-19 to 70 million kWh in 2020<sup>17</sup>. However, despite an increase in diesel usage, freight moved in tonne km's dropped to 16.6 billion, the lowest total in 23 years and a fall of 4.6% from 2018-19<sup>18</sup>. Total freight moved has remained low since the peak of the time series in 2013-14.

<sup>16</sup> Network Rail (2020) Traction Decarbonisation Network Strategy, <https://www.networkrail.co.uk/wp-content/uploads/2020/09/Traction-Decarbonisation-Network-Strategy-Interim-Programme-Business-Case.pdf>

<sup>17</sup> Office of Rail & Road (2019) 2018-19 Annual Statistical Release, <https://dataportal.orr.gov.uk/media/1550/rail-emissions-2018-19.pdf>

<sup>18</sup> Office of Road & Rail (2020) Rail Emissions 2019-20, <https://dataportal.orr.gov.uk/media/1843/rail-emissions-2019-20.pdf>

- 6.2.4. The importance of decarbonising the rail industry has been widely acknowledged as a future priority. This involves setting in motion a transition towards the use of alternative fuels working across the sector, namely Network Rail which is responsible for maintaining the rail infrastructure and FOCs which lease and operate the locomotives.
- 6.2.5. The rail freight industry is privatised, so any efforts to decarbonise will be heavily tailored by cost efficiency and profit margins. The use of alternative fuels and traction power will effectively need to be de-risked to stimulate uptake and build confidence in investment decisions. The introduction of new battery and hydrogen rolling stock (and the all-important associated infrastructure) will be complex and costly and will require new standards, operating procedures and products.

### **Electrification**

- 6.2.6. As a result of various electrification schemes across Great Britain, 6,049 km of the mainline railway route is now electrified. This is 38% of all route kilometres<sup>19</sup>. Only a small percentage of rail freight (around 5%) is currently powered by electric traction, due to the distances travelled and intersection with non-electrified route sections. As further electrification of the network is completed, FOCs will progressively increase their fleets of electrically-hauled or biofuel locomotives. Electric traction provides greater haulage power and faster acceleration.
- 6.2.7. Network Rail set out a vision for future electrification and use of alternative fuels<sup>20</sup>; noting that, in terms of wider network optimisation and capacity maximisation, electrification could support potential forecast growth at UK ports and inland freight distribution facilities. However, the transition from diesel to electric traction would likely require a significant number of power supply upgrade projects on selected parts of the network.

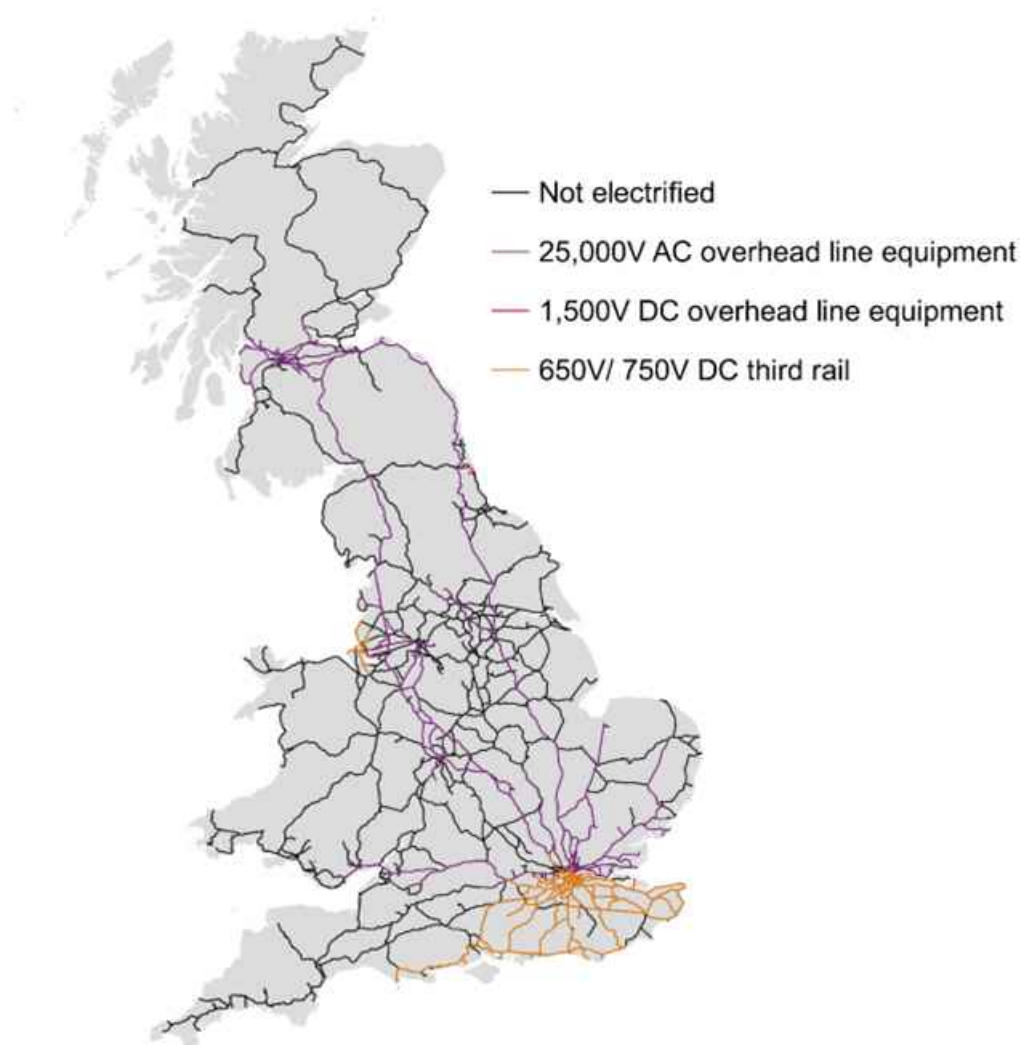
Electricity supply problems will limit draw. On the basis of freight services utilising the existing electrified infrastructure, 38 supply points would require enhancement; translating as 41% of all supply points on the UK network including locations in the South East of England. This includes enhancing the current Third Rail capacity which stretches across the Transport for the South East area (

<sup>19</sup> Office of Road & Rail (2021) Rail Infrastructure and Assets 2019-20 <https://dataportal.orr.gov.uk/media/1842/rail-infrastructure-assets-2019-20.pdf>

<sup>20</sup> Network Rail (2020) Traction Decarbonisation Network Strategy, <https://www.networkrail.co.uk/wp-content/uploads/2020/09/Traction-Decarbonisation-Network-Strategy-Interim-Programme-Business-Case.pdf>

6.2.8. Figure 6-9).

**Figure 6-9 - Electrified Rail Network across the UK (Network Rail, 2020<sup>21</sup>)**



- 6.2.9. The conversion to electric rail traction, widely acknowledged as an aspiration along major corridors, is challenging. This would need to entail a critical mass of electrified network, including diversionary routes, last mile capability into terminals and upgrades to loading infrastructure mechanism at ports and gateways. The proposals by Network Rail (and supported by industry) call for a rolling programme of electrification, complemented by the emerging use of alternative fuel technologies.

### **Alternative Fuels**

- 6.2.10. A number of alternative fuel options are currently available and being piloted across the industry. This seeks to accommodate a 'transitional approach' toward decarbonisation, which includes improving the efficiency of diesel engines, especially those undertaking cross boundary movements and strategic freight journeys, which will often operate part of their journey away from the electrified network.

<sup>21</sup> Network Rail (2020) Traction Decarbonisation Network Strategy, <https://www.networkrail.co.uk/wp-content/uploads/2020/09/Traction-Decarbonisation-Network-Strategy-Interim-Programme-Business-Case.pdf>

- 6.2.11. Hybridisation, combining diesel and electric traction, offers a reliable and realistic short and medium terms investment option for rail freight decarbonisation. This approach will help reduce GHG emissions for individual rail freight services and enables scaling up of the rail freight offer along freight routes before electrification can take hold at scale. Rolling stock can be easily converted at a future point in time.
- 6.2.12. Likewise, hybrid diesel trains, using diesel and battery systems, can reduce diesel usage in high energy requirement areas. In all instances, hybridisation also complements aspirations for rail first/last mile integration into ports and rail terminals, with battery powered shunting locomotives also being a consideration over shorter distances.
- 6.2.13. Hydrogen powered trains, using hydrogen fuel cells and batteries to provide traction, do have an extended range that would cover the mileage of freight services moving through the Transport for the South East area, with high top speeds. Refuelling infrastructure, absent in most cases, would be a pre-requisite at stabling facilities or major freight generators with facilities to scale up use.
- 6.2.14. The option of combining fuelling stations or developing fuelling hubs could lead to economies of scale and serve multiple modes. This includes at ports, rail stations and airports, as well as depots and SRFIs where demand could be secured. Hydrogen-powered trains would require being refuelled once every 24hrs and have the range potential for strategic journeys, with minimal change to trackside infrastructure.
- 6.2.15. There is a clear commercial interest from gas suppliers about supplying the rail industry, due to the potential stability of the rail market share longer term<sup>22</sup>. This is currently being scoped, with the suggestion that fuel would need to be sourced locally to reduce refuelling costs and the challenge of moving it by road.
- 6.2.16. For rail traction decarbonisation specifically, it is unlikely that there will be any availability of biofuels at scale, as this is more likely to be used in areas which will struggle to decarbonise by 2050, such as aviation and shipping<sup>23</sup>. Likewise, the commerciality of natural gas options (LNG, CNG) and the potential safety considerations, alongside their operational range, also make scaling up demand and uptake less likely longer term. The latter may still be relevant for small and larger ports and branch line activity not directly connected into the mainline (the Grain Line, for example, within the Transport for the South East area and its link to Hoo junction, where the Third Rail connection starts).

### **Regional Context**

- 6.2.17. The South East benefits from existing electrification, through the network of Third Rail infrastructure (750v DC) across Kent, Wessex, Sussex and Surrey with High Speed 1 (HS1) being electrified using 25kV AC overhead line. Third rail is used for freight operations and has done historically but modern traction power upgrades may be required. Third rail (750v DC) is reputed to be less efficient than overhead (25 kv AC) electrification.

<sup>22</sup> RSSB (2018) Intelligent Power Solutions to Decarbonise Rail, <https://dkf1ato8y5dsg.cloudfront.net/uploads/15/131/2018-11-research-and-innovation-competitions-highres.pdf>

<sup>23</sup> Network Rail (2020) Traction Decarbonisation Network Strategy, <https://www.networkrail.co.uk/wp-content/uploads/2020/09/Traction-Decarbonisation-Network-Strategy-Interim-Programme-Business-Case.pdf>

- 6.2.18. The long-term use of third rail for freight operations remains subject to further investigation and scrutiny; with a significant investment likely required in third rail infrastructure to meet the electrical current demand for freight trains (compared to its primary use for passenger traction units and rolling stock) based on current and future flows.
- 6.2.19. This would reduce the rail-side infrastructure requirements although issues with pathing and traffic mixing remain a challenge. Traditional electric trains require dedicated infrastructure, in the form of a contact system and power distribution network, along the full length of the route intended for their travel<sup>24</sup>. The system in place across the whole network across the Transport for the South East area must have the capacity to support all trains or performance will be compromised; with the network reliant on network grid supply.
- 6.2.20. Overhead electrification will be necessary to aid the future decarbonisation of the rail freight sector with future rolling stock having both overhead and third rail capability owing to the presence of the network across the South East and the need for cross boundary and cross network running<sup>25</sup>. This acknowledges the international as well as domestic role that the network in the South East of England plays in moving goods. There is a requirement for the Ten-T Core Rail Network to be electrified; ranging from Southampton to Basingstoke, Reading and Didcot and from Basingstoke eastbound towards into London.
- 6.2.21. The extent of the Third Rail across the Transport for the South East area would, in theory, lend itself to more battery powered traction; assuming there is capacity. This is due to the potential for recharging whilst in transit using an existing contact system. However, they do have limited range (60-80km), require charging down time (15 minutes) and do experience diminishing returns after a period, based on overall usage and individual journey usage (leading to a need to manage heating etc).

## INTERVENTION OPTIONS

- 6.2.22. There are variations of traction technologies that will stimulate a need to invest in rail infrastructure provision across the Transport for the South East area to decarbonise the rail (freight) sector:
- Electrification: acts to reduce freight journey times, increase capacity, timetable performance, capacity utilisation and the environmental credentials of freight services (discussed as a separate measure).
- 6.2.23. Self-Powered (Fuel) Alternatives
- Hydrogen: Prototype hydrogen powered trains are being developed with future interest in providing fuel bunkers for scaling up operations in the future at rail depots, stations and SRFIs;
  - Battery Trains: These are locomotives or electric multiple units that use on board batteries or connect to external infrastructure (e.g. pantograph) for traction power; and
  - Biofuels: HVO, for example, used as a 'drop in fuel' that is currently explored as an alternative to red diesel by the rail industry.

<sup>24</sup> Network Rail (2020) Traction Decarbonisation Network Strategy, <https://www.networkrail.co.uk/wp-content/uploads/2020/09/Traction-Decarbonisation-Network-Strategy-Interim-Programme-Business-Case.pdf>

<sup>25</sup> Network Rail & Highways England (2021) Solent to the Midlands Freight Strategy, <https://highwaysengland.co.uk/media/rc4bekfn/solent-to-the-midlands-multimodal-freight-strategy.pdf>



- 6.2.24. HVO should be considered as part of the 'fuel mix' for rail traction providing it is sourced sustainably. Currently, the production of biofuels is dominated by established biofuels such as crop-based ethanol and bio-diesel but more emphasis is being placed on waste-based biodiesel which has lower GHG balances and associated land-use change risks<sup>26</sup>.
- 6.2.25. Furthermore, the trajectories associated with scaling up adoption will not be achieved unless more ambitious strategies are implemented. The interest in HVO is partly attributed to it being easily integrated into existing fuel delivery and infrastructure systems and use of waste-based materials, which present a lower risk than alternative options, whilst being quicker to mobilise and trial. HVO and biofuels more generally can also increase energy security and reduce a reliance on imported reserves.
- 6.2.26. Other fuels, namely Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) are not viewed as being commercially viable at this point in time<sup>27</sup>. Hybridisation, where multi-mode trains combine diesel traction with electric running potential, could be considered and would coincide with the programme of electrification. These are popular due to their relative flexibility and quick deployment but would require limited infrastructure provision. These are viewed as more 'transitional' solutions rather than permanent longer term solutions.
- 6.2.27. The adoption of alternative fuels may also require a macroeconomic approach that looks at carbon pricing, providing stable policy frameworks (for research and technological development) and switching away from fossil fuel subsidy (and use of tax incentives). The cost of producing biodiesel is higher than fossil fuels, so feedstock is a key factor for consideration; especially for assessing its competitiveness to global oil prices and conventional fuels.
- 6.2.28. Commercial trials are ongoing to scale up deployment across the industry, with DB Cargo having evidenced the opportunity for HVO to reduce carbon emissions by up to 90 percent, compared to diesel<sup>28</sup>. Similarly to hybridisation, the use of 'drop in' biofuels would require limited changes being made to trackside re-fuelling and locomotives and offers the industry a potentially quick way to begin the journey towards decarbonisation.

---

<sup>26</sup> IEA (2020) The Role of Renewable Transport Fuels in Decarbonizing Road Transport, <https://www.ieabioenergy.com/wp-content/uploads/2020/11/Deployment-Barriers-and-Policy-Recommendations.pdf>

<sup>27</sup> RSSB (2019) Final Report to the Minister for Rail, Rail Industry Decarbonisation Taskforce, <https://www.rssb.co.uk/en/sustainability/decarbonisation/decarbonisation-our-final-report-to-the-rail-minister>

<sup>28</sup> DB Cargo (2021) DB Cargo UK successfully trials new HVO fuel in bid to decarbonise its operations, <https://uk.dbcargo.com/rail-uk-en/metaNavi/news/DB-Cargo-UK-successfully-trials-new-HVO-fuel-in-bid-to-decarbonise-its-operations-5764438>



## RECOMMENDATIONS & LOCATIONS ★ ★ ★

6.2.29. To achieve traction and network decarbonisation, work would need to commence across approximately 15,400 Single Track Kilometres (STKs) of unelectrified network across the UK. This is based on the Network Rail's business case<sup>29</sup> and hints at the type of technology preferred for deployment across the UK network, including the Transport for the South East area. This would be split across the following:

- An additional 11,700 STKs of electrification for long-distance, high-speed freight;
- Hydrogen train deployment over c. 900 STKs of infrastructure; and
- Battery train deployment over c. 400 STKs of infrastructure.

6.2.30. There are 2,400 STKs where a single technology choice is not immediately obvious. The following splits have been identified in the business case:

- An additional 1,340 STKs of electrification;
- 400 STKs of infrastructure for hydrogen deployment;
- Approximately 400 STKs of infrastructure for battery train deployment; and
- Around 260 STKs would still need to be determined.

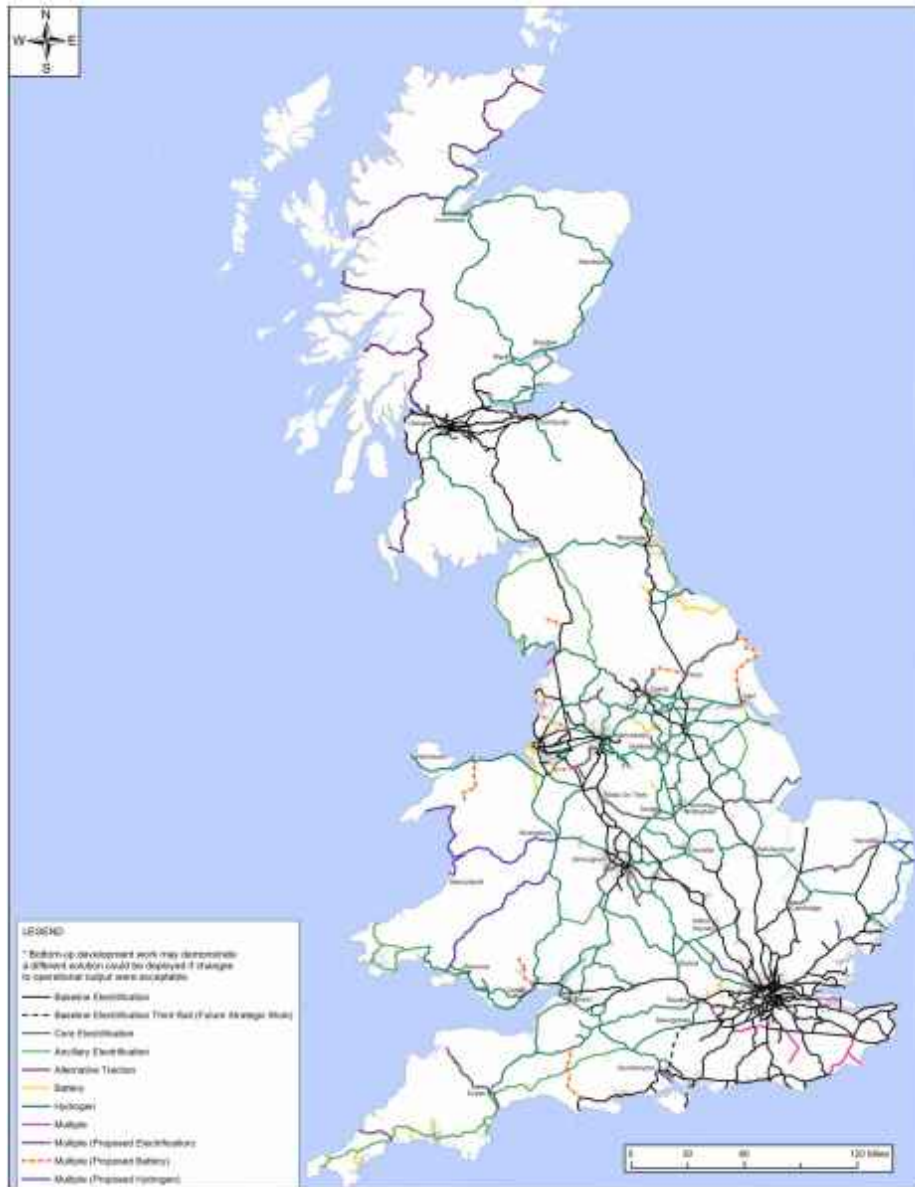
Network Rail has a series of recommendations on the technology that could be deployed across the UK for decarbonising the rail network (

---

<sup>29</sup> Network Rail (2020) Traction Decarbonisation Network Strategy, <https://www.networkrail.co.uk/wp-content/uploads/2020/09/Traction-Decarbonisation-Network-Strategy-Interim-Programme-Business-Case.pdf>

- 6.2.31. Figure 6-10 illustrates the aspired network). Across the Transport for the South East area, the emphasis is placed on electrification, with the use of Third Rail (pending future strategic work, which was noted as a requirement) and Overhead Line Equipment (OLE) along the Southampton to WCML corridor via Basingstoke.
- 6.2.32. The options included:
- A do-nothing and continue with diesel traction (not recommended due to extensive freight flows and opportunity to reduce GHG emissions);
  - Enhancing and upgrading 'Third Rail' as demonstrated in Kent (previously) to support heavy freight operations; and
  - Conversion to 25kV overhead line (which, despite the cost and disruption, would add to the baseline electrification of the network).

**Figure 6-10 - Recommended Technology to Decarbonise the Unelectrified UK Railway<sup>30</sup>**



- 6.2.33. To build network resilience, ‘core electrification’ is proposed on the diversionary route via Andover and connections further across the South West via Westbury. The provision of an electrified diversionary route via Andover would be viewed favourably as a short term investment to complement the W12 gauge clearance along the line. This would help inspire confidence for investing in road-rail mode shift along the Solent to Midlands Corridor. This would allow for conversion to electric freight traction with associated performance benefits and would cost between £300-£500m<sup>31</sup>.

<sup>30</sup> Network Rail (2020) Traction Decarbonisation Network Strategy, <https://www.networkrail.co.uk/wp-content/uploads/2020/09/Traction-Decarbonisation-Network-Strategy-Interim-Programme-Business-Case.pdf>

<sup>31</sup> Network Rail (2017) Freight Network Study, <https://www.networkrail.co.uk/wp-content/uploads/2017/04/Freight-Network-Study-April-2017.pdf>

- 6.2.34. Despite the extensive reach of the Third Rail, its role in supporting freight services does require additional consideration, especially to cater for heavy freight from the Channel Tunnel on 'classic' routes around Kent and Sussex. This is a live discussion that will need to be informed by emerging studies from Network Rail, RSSB and the ORR, which are due to be released by the end of 2021. One key opportunity lies in addressing incompatibility issues between the Redhill track circuit system and Class 92 locomotives which, if addressed, could also unlock the use of electric traction from Channel Tunnel to London via Redhill.
- 6.2.35. Electrification and the provision of OLE is expensive and programmes have been notorious for delays, as programme timeframes extend longer term. Realistically, electrification for rail freight movements should be confined to major corridors but don't solve the immediate challenge of decarbonising the industry. As per the Traction Decarbonisation Network Strategy, more specific work also needs to be undertaken on the region-wide approach, including enhancing the current flow of the Third Rail (as developed in Kent) to support heavy freight operations or conversion to 25kV overhead line; the latter of which is likely to be costly, disruptive and time-consuming.
- 6.2.36. Looking beyond the Transport for the South East area, priority should be attached to the electrification of the connection between Basingstoke, Didcot and the Midlands to help deliver reduced emissions for trains travelling along this core freight corridor. This would require partnership working across multiple authorities and substantial national investment which TfSE should look to initiate with relevant teams at Network Rail. Elsewhere, smaller sections of the network running parallel to the M25 and coastal route around Folkestone to Hastings have also been highlighted for the use of 'multiple technologies' but what this entails will require further examination.
- 6.2.37. The deployment and expansion of hydrogen as an alternative fuel for other transport modes, hubs and refuelling infrastructure should be explored in the context of larger trip generators, such as ports with rail links and built into planning processes and emerging developments of SRFIs and distribution/lorry park facilities. Sites such as Southampton Port (where a feasibility study has proposed a flagship hydrogen hub for HGVs), proposed SRFI around the M25 and Eastleigh, as well as larger train depots across the Transport for the South East areas, could be considered.
- 6.2.38. Hybridisation/bimodal trains would be an attractive intermediate option along major freight corridors/route network, as an interim, with Third Rail infill across spurs to complete the network (although these are small sections with limited freight flows and impact on 'freight' decarbonisation). However, concerted efforts must be made towards exploring bimodal operations, namely electric-hydrogen or electric-battery longer term, which could offer a realistic and practical course of action.
- 6.2.39. This realises the incremental benefits enabled by electrification, as this is expanded progressively across the network, whilst supporting an interim zero-carbon traction solution, where electrification may take place post-2050. It is important to note that the deployment of discontinuous and discrete electrification is not suitable for freight traffic, as electric freight services require continuous contact with the electrical contact system.
- 6.2.40. There is limited scope to explore the use of alternative fuelled locomotives (battery powered/bimodal) along the designated freight routes/branch lines across the Transport for the South East area. However, battery electric locomotives could be considered where there are shunters already in use within a closed port environment, servicing an expansive freight yard or over the first and last mile, where network electrification cannot be pursued.

## KEY CHALLENGES

- The cost effectiveness and subsequent appeal to FOCs for scaling up fleet renewal (e.g. bimodal locomotives) or adopting 'drop in fuels' (e.g. HVO) in the short-medium term;
- Historic issues with electrification and delivery of OLE and the potential delays and compromises made to programme delivery (hence focus on a few core route sections);
- The need for robust electrical power systems and a sufficient energy network for electrification of freight train paths. This is still relatively unknown; and
- The costs and safety requirements that may be prohibitive for the widespread adoption of alternative fuels, such as hydrogen – which will require new fuelling infrastructure.

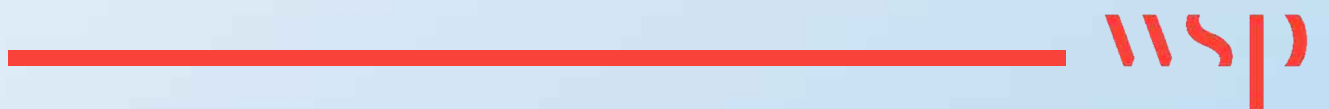
## IMPACT ASSESSMENT

Problem Statements	1,2,4,10,12,13,14,15,16,17,20				
Economic	Med	Environmental	High	Social	Med
Improve operational efficiency	Med	Reduce greenhouse gas emissions, and achieve net zero carbon by 2050 at the latest	High	Improve operational safety (especially for vulnerable road users)	Low
Enhance freight and logistics' contribution as an industrial sector, in its own right (especially to employment)	Med	Reduce wider environmental impact of freight	High	Better integration between freight's operational needs and planning/place making	Med
Improve connectivity to and from the Transport for the South East area's international gateways, including through enhanced infrastructure capacity where needed	Med			Better management of (and facilities for) lorry parking	Low
				Improve air quality	High



7

## ROAD FREIGHT



## 7 ROAD FREIGHT

---

### 7.1 ROAD NETWORK ENHANCEMENTS

#### DESCRIPTION

- 7.1.1. Road freight transport is the dominant mode of moving goods across the UK and throughout the Transport for the South East area. It depends on reliable, high quality and appropriate highway infrastructure being in place, particularly across the Strategic Road Network (SRN - overseen by National Highways) and the Major Road Network (MRN - overseen by local highway authorities). Freight shares the road with passenger movements and must be connected into other infrastructure, such as warehousing, to move goods through the supply chain.
- 7.1.2. The vast majority of goods that are moved on the road network are by LGVs and HGVs, although the proportion of road freight shifting to other modes is slowly changing, to respond, partly, to the decarbonisation agenda. While road freight will inevitably remain the dominant mode, its negative impacts need to be fully considered and mitigated by reducing trip demand, selecting the most efficient and sustainable vehicle options for movements undertaken and by minimising the detrimental effects of trips ultimately made. Not all freight can be accommodated by other means so road access will remain critical.
- 7.1.3. HGV numbers have remained relatively constant for the last two decades, while van registrations have increased significantly in recent years, partly attributable to growth in online retail and the resulting deliveries from businesses direct to consumers (B2C). The impacts of both van and HGV use of the networks need to be addressed as a priority to deliver on decarbonisation targets.

#### RATIONALE

- Road enhancements are important for improving network resilience; responding to delays and congestion, to reduce the time and cost implications for freight operators;
- Road enhancements can help to reduce localised congestion and emissions, for example through the use of smart technologies, to enhance routing efficiency and network capacity;
- Enhanced road infrastructure can attract businesses and industries to the area, which are seeking good connections to the SRN and the local road network;
- Road enhancements can help improve safety reducing risk of freight vehicles in conflict with other (especially vulnerable) road users; and
- While road freight movements should be accommodated on high quality and high performing infrastructure, there is a need to continually manage goods vehicle flows and seek opportunities for alternative mode use. Simply adding extra capacity to the road network to accommodate freight growth is not sustainable.

## POLICY BACKGROUND & EVIDENCE

### Snapshot Overview

- 7.1.4. Road freight currently plays the most prominent role in moving goods along the SRN and MRN around the UK and across the South East of England. In 2019, of the 196 billion tonne kilometres of domestic freight moved within the UK, 79% was by road, 13% by water and 8% by rail<sup>32</sup>. The SRN consists of approximately 3,000kms of motorways and 4,100 km's of trunk A roads - and whilst it represents only 2% of the total road network, it accommodates 66% of HGV tonnes-km's due to the strategic, long distance nature of freight movements.
- 7.1.5. The 2020 DfT Road Investment Strategy<sup>33</sup> sets out a vision for 2050, stating a desire for the SRN to support the freight and logistics industry and to continue carrying more freight and more business than any other part of the transport system. This includes being resilient to changing circumstances and being better integrated with the wider transport network; recognising that a 'second class' service will not cater sufficiently for the two thirds of HGV miles travelled on the SRN.
- 7.1.6. This must ensure that core and diversionary routes are suitable, whilst taking a 'zero tolerance' approach to deficiencies in quality (road surface, markings and lighting) to aid legibility and fuel efficiency<sup>34</sup>. The notion of 'trunking' junctions, where the SRN interfaces with local roads, can help to clarify enhancement responsibilities, with emphasis being placed on upgrading existing assets alongside consideration for roadbuilding initiatives.
- 7.1.7. The National Infrastructure Commission<sup>35</sup> suggests that more emphasis should be placed on maintenance and incremental upgrading of roads, rather than wholesale, major projects; with the focus being on enhancing connectivity with international gateways.
- 7.1.8. There is some acknowledgement of the use of smart technology and infrastructure beyond the use of smart motorways. This includes the application of Variable Message Signs (VMS) to help freight operators schedule journeys and respond to live road conditions, whilst helping to enhance productivity and unlock economic growth by focusing investment around potential growth drivers, such as rail freight terminals, enterprise zones and distribution parks. Upgrades to the road network are also dovetailing the use of alternative technologies, such as 5G coverage (planned from 2025) which could accelerate the transition towards connected and autonomous vehicles.
- 7.1.9. There is a role for supporting sustainable transport connections that foster mode shift away from single vehicle occupancy trips to free capacity on the SRN around larger conurbations where 'traffic mixing' takes place. This can help improve journey time reliability for road haulage operations, improve overall operational efficiency of the sector and the attractiveness of locations for future logistics activity (e.g. warehousing). Examples include short 'hop on-hop off' trips on the SRN around Southampton and Portsmouth.

<sup>32</sup> DfT (2021) Transport Statistics Great Britain 2020, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/945829/tsgb-2020.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/945829/tsgb-2020.pdf)

<sup>33</sup> DfT (2020) Road Investment Strategy 2: 2020–2025, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/951100/road-investment-strategy-2-2020-2025.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/951100/road-investment-strategy-2-2020-2025.pdf)

<sup>34</sup> Transport Focus (2020) Road users' priorities for the Road Investment Strategy, 2020-25, <https://d3cez36w5wymxj.cloudfront.net/wp-content/uploads/2017/06/28081709/Road-users%E2%80%99priorities-for-the-Road-Investment-Strategy-2020-25-FINAL.pdf>

<sup>35</sup> National Infrastructure Commission (2018) National Infrastructure Assessment, [https://nic.org.uk/app/uploads/CCS001\\_CCS0618917350-001\\_NIC-NIA\\_Accessible-1.pdf](https://nic.org.uk/app/uploads/CCS001_CCS0618917350-001_NIC-NIA_Accessible-1.pdf)



## **The Road Investment Strategy (RIS2/RIS3)**

- 7.1.10. Current road building plans featured within RIS2 (2020-25) (and informing the emerging RIS3, 2025-30) are pending review of the National Policy Statement on Roads. RIS2 sets out £14.7bn of upgrades across the UK, covering over 100 junctions, supporting more than 100,000 homes and improving links to 14 ports and 7 airports.
- 7.1.11. This has been designed in response to traffic growth on the SRN, which is forecast to be significant in all scenarios across the UK, ranging between growth of 29% and 59% by 2050 and driven by forecast increases in the number of car trips and trip distances, as well as increasing Light Goods Vehicles<sup>36</sup>.
- 7.1.12. Locations that serve a freight specific interest take into consideration RIS2 and the desire to invest in road infrastructure, based on the following:
- Tackle congestion and improve journey reliability and economic productivity;
  - Unlock economic growth and reduce barriers to movement, to support levelling up of the economy across the country;
  - Better connect sites of high growth (for example Enterprise Zones and major developments) and around potential drivers of growth, including warehousing and logistics sites;
  - Better connect ports and airports to support exporters and develop new business opportunities (the Port Infrastructure Fund has previously contributed £13 million to improve access to the Port of Dover, Felixstowe and Southampton); and
  - Support road freight moved by catering for the specific needs of HGV traffic on the SRN, including consideration of the need for sufficient HGV parking facilities.

## **The Solent to Midlands Multimodal Strategy**

- 7.1.13. The Solent to the Midlands Multimodal Freight Strategy outlines the value of one of the most important freight routes in the UK and future investment priorities. The A34 corridor connects Winchester and Oxford whilst feeding into the wider SRN routes such as the M3, M4, A303 and M40. The A34 is the busiest, non-motorway truck road in the UK carrying 6,000 lorries in both northbound & southbound directions daily with a parallel rail link carrying goods between the south coast ports and the 'Golden Triangle' of distribution and logistics activity in the Midlands. Road resilience is key, whilst increased integration and mode shift to rail being recommended to support future growth in strategic freight flows (automobiles, perishables and chemical products).

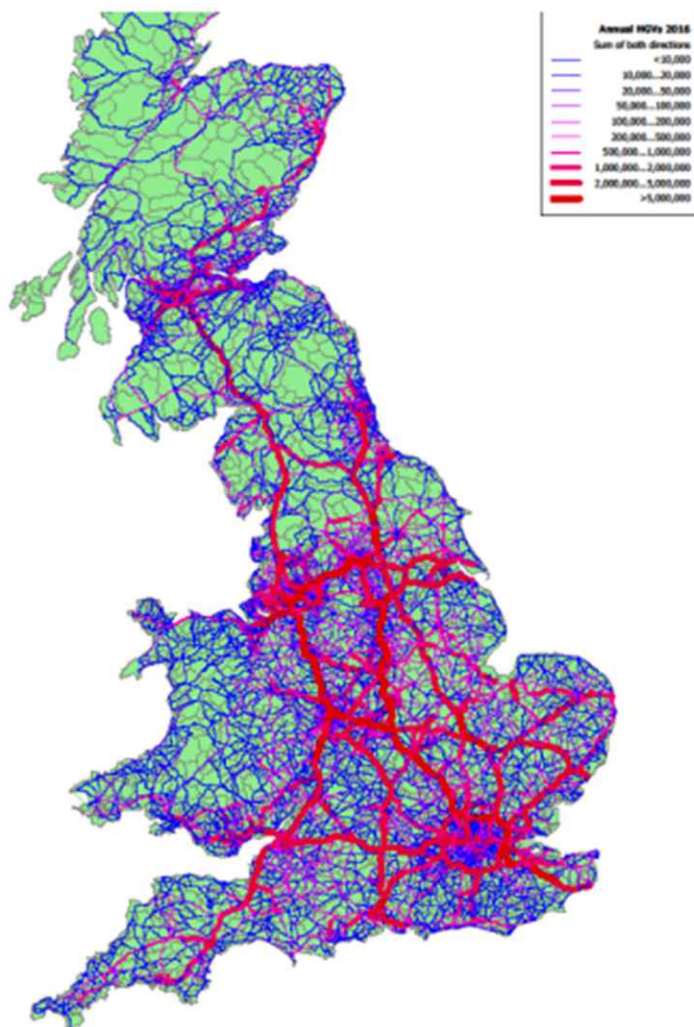
## **Regional Context**

- 7.1.14. The most prominent HGV flows through the Transport for the South East area is clearly illustrated in Figure 7-1 and include the M3, A34, M27, M4, M25, M23, M20, A2, M2, which pass through the counties of Kent, Berkshire, Hampshire, Surrey and West Sussex respectively. These are the major arteries that feed local, national and international markets by connecting major conurbations, international gateways and economic hubs.

<sup>36</sup> DfT (2020) Road Investment Strategy 2: 2020–2025, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/951100/road-investment-strategy-2-2020-2025.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/951100/road-investment-strategy-2-2020-2025.pdf)

- 7.1.15. Across the Transport for the South East area, HGV numbers (both directions) can reach in excess of 2 million annually, with north/south connections from Dover to the M25 orbital and Solent to the Midlands being particularly core to the movements of goods by road freight.
- 7.1.16. Large sections of the M25 orbital (south of London) experience the most hours of delay across the SRN (Figure 7-2). In many cases, this amounts to over 500,000 hours annually, with particular hotspots around the Dartford Crossing, between Junctions 5-6 of the M25 and the M3 between Farnborough, on the M3 and the M25. Significant delays are experienced around the Solent and the A27 around Brighton.
- 7.1.17. Seven out of the ten ports have SRN links that are in the top 30%, in terms of proportion of HGVs relative to other traffic types to volumes. Dover, due to its hugely significant role accommodating Ro-Ro traffic, has developed a particular dependency on high quality SRN connections. The M25 between Junctions 14-15 is the busiest link on the SRN network, serving Heathrow Airport and the West of London.

**Figure 7-1 - Annual HGV Flows on the UK Road Network (DfT, 2019<sup>37</sup>)**



<sup>37</sup> DfT (2019) Understanding the UK Freight Transport System, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/777781/fom\\_understanding\\_freight\\_transport\\_system.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/777781/fom_understanding_freight_transport_system.pdf)

Figure 7-2 - Traffic delay on the SRN (2014-2015) (DfT, 2019<sup>38</sup>)



<sup>38</sup> DfT (2019) Understanding the UK Freight Transport System, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/777781/fom\\_understanding\\_freight\\_transport\\_system.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/777781/fom_understanding_freight_transport_system.pdf)

- 7.1.18. There have been significant investments in the SRN in recent years. The Dartford Crossing was formerly a bottleneck, often causing major delays on either side of the toll booths, stretching back several miles along the M25. Delays have been recently addressed through free-flow tolling; with 30% of HGV trips interacting with the crossing having some connection to Dover and with trip origins or destinations in the South East<sup>39</sup>.
- 7.1.19. The Lower Thames Crossing, which is due to open in 2028, will have a national impact; delivering a potentially uncongested route to Dover, avoiding Dartford, with the opportunity for A2 improvements to dovetail, opening in 2027 (which is being considered as part of RIS3). RIS1 committed to some degree of funding for developing upgrade schemes through the Port Infrastructure Fund, including the A2 near Dover and junctions approaching Southampton port, with RIS2 looking to further expand support to other key gateways.

### **DfT Road Freight Data**

- 7.1.20. A number of road freight datasets have been collected and collated through DfT, which help to illustrate LGV and HGV movements across the Transport for the South East area and domestically across the UK. The main map outputs can be located in Appendix B. A number of caveats can be applied to the outputs and the analysis of the data, namely:
- The data model, which uses LADS, Middle Layer Super Output Area (MSOA) only captures the spread of domestic road freight data and not international journeys. The results are therefore not truly reflective of the scale and breadth of road freight journeys (as well as those undertaken by foreign registered vehicles) and the mixing taking place on core corridors, particularly relevant for the South East.
  - There are some challenges with capturing the granularity of origin-destination data and therefore the accuracy of freight flows being freight generators and freight locations (including the routing of trips). The data captured also represents a snapshot in time and may therefore not offer a reliable picture of freight flows through the Transport for the South East area in the current period.
- 7.1.21. A number of indicative conclusions can be drawn from the analysis of the DfT Road Freight Data. These are as follows.

### **HGVs - Flows within the Transport for the South East catchment area**

- The highest concentration of HGV AM peak movements tend to take place around conurbations skirting the northern periphery of the Transport for the South East area, namely Maidstone, Medway Towns and Slough/Maidenhead. This perhaps reflects the prominence of major industrial and logistics operations in these areas. Relative to HGV PM peak movements, there is a greater dispersal (or polycentric pattern of freight flows) of HGV AM trips around the bigger conurbations which tend to be shorter in length.
- HGV Peak Period freight flows tend to be longer in length than during the AM period, with a notable high flow of HGVs moving between the South Coast (Dover) and the rest of the Transport for the South East area. This may reflect movements between the port environment and major markets.

<sup>39</sup> ICE (2021) State of the Nation Infrastructure and the Net-Zero Target [ice.org.uk State of the Nation 2020: Infrastructure and the 2050 net-zero target, https://www.ice.org.uk/ICEDevelopmentWebPortal/media/Documents/News/ICE%20News/State-of-the-Nation-2020-Infrastructure-and-the-net-zero-target.pdf](https://www.ice.org.uk/ICEDevelopmentWebPortal/media/Documents/News/ICE%20News/State-of-the-Nation-2020-Infrastructure-and-the-net-zero-target.pdf)

- The scale and concentration of Interpeak HGV freight flows across the Transport for the South East area bear a resemblance to the peak period; with a high density of short movements across the Medway Towns, alongside longer distance freight flows from the ports across the rest of the Transport for the South East area. Interestingly there are limited strategic flows across the southern coastline.

### **HGVs - Flows outside the Transport for the South East catchment area**

- The vast majority of HGV trips originating in the Transport for the South East area during the AM period are generally bound for the Midlands and the North. The highest average hourly trip flow concentrations tend to derive from the middle of the Transport for the South East area, between Gatwick, Crawley and Brighton and conurbations shadowing the M25 to the west of London (although these locations may not be entirely reflective of actual locations – see caveats). There are some cross country, east to west movements but these are limited in comparison.
- Similar HGV freight flow characteristics can be observed in the opposite direction; whereby trips ending in the Transport for the South East area tend to be concentrated around the aforementioned origin points of HGV trips – with a similar degree of hourly trip flows being witnessed. This all indicates that there is a strong pattern of movement and reciprocating freight flows between established centres across the South East and the Midlands/North.
- Looking at PM HGV freight flow, there is a very similar story. Trips either ending or originating in the Transport for the South East area tend to do so around the same linear freight flow between north and south, although the average hourly trip numbers are smaller than the AM period.
- However, the volume and average hourly trips interpeak of HGVs travelling outside the boundary of the Transport for the South East area or into the Transport for the South East area are more than the AM/PM peaks – but the direction of freight flows remain roughly the same.
- A surprising observation on all accounts is the limited spread of HGV freight flows originating in or concluding across the Transport for the South East area, such as around the Medway Towns and Solent areas. This may be attributed to the fact that international trips and foreign registered vehicle traffic make up a large proportion of freight flows in these areas (particularly across Kent). The data also indicates that there are very minimal flows towards the west of the UK.

### **LGVs – Flows within the Transport for the South East catchment area**

- The concentration density of AM LGV flows across the Transport for the South East are far greater than HGVs during the same period. with average hourly trips exceeding 100 in almost all cities and towns. The distances travelled are also shorter (not surprising, with HGVs typically operating strategic trips). AM LGV flows stretch across the Solent, between Portsmouth and Southampton, whilst there is a concentration of LGV AM freight flows around the border with London.
- LGV PM flows display very similar characteristics to the AM period, whilst there is limited change in LGV Interpeak freight flows and the scale of hourly trips recorded on average between peak AM and PM periods. This hints at the regularity of LGV movements and routine trip patterns taking place within defined catchment areas, often in and around the major towns and cities.



- In comparison to HGV flows, there are far more LGV movements along the Southern Coastline and a distinct flow of LGVs between Brighton, on the coast, towards Gatwick and Redhill (located near the M25). The two prime areas where LGV flows are most prominent and concentrated throughout the course of the day are around the Medway Towns and the Solent. These should be key considerations when prioritising road investment decisions.

### **LGVs - Flows outside the Transport for the South East catchment area**

- There is a far more polycentric trip pattern to LGV freight flows originating in the Transport for the South East area during the AM peak period. Average hourly trip rates are also more than double in some instances along the core north to south corridor but with flows of between 100-199 for freight moving down towards the South West of England, as well as parts of Lincolnshire and the Midlands. The same pattern applies to LGV freight flows ending in the Transport for the South East area, during the AM peak period.
- There is limited variation between peak period LGV freight flows in the AM to the PM, with most of the origins and destinations being similar, if not the same. There is a greater concentration of LGV movements taking place during the interpeak period that have departed from or arrived within the Transport for the South East area. This is witnessed along the main north-south axis.
- Interestingly, the map outputs help to illustrate the magnitude of short and longer distance LGV trips taking place on the road network that intersect with the Transport for the South East area. Whilst higher HGV freight flows tend to be concentrated along a north-south axis, there is a greater dispersion of LGV flows to other parts of the country.

### **Route Challenges – Freight Highlights**

- 7.1.22. The freight sector wants to see network resilience ensured, to safeguard journey time reliability against potential delays and congestion. This includes a focus on diversionary routes. Sections of the TEN-T European network also pass through the Transport for the South East area, which need to uphold certain standards.
- 7.1.23. Five Route Strategies have been developed by National Highways (previously Highways England), which help steer the focus of investment. These are:
- South Coast Central;
  - London Orbital & M23 to Gatwick;
  - Kent Corridor to M25 (M2 & M20);
  - Solent to Midlands; and
  - South West Peninsula.
- 7.1.24. The M25 is a critical link for the movement of goods around the UK; providing a preferred east-west movement for road transport across the Transport for the South East area and London; in the absence of alternative trunk roads. Congestion is a notorious challenge, despite investment in smart motorways, junction improvements and road widening. The north side of the M25, particularly Junctions 21a-27, has a relatively high proportion of freight traffic connecting from the Midlands/North and the access points to the continent at Thames Gateway and the Kent Coast<sup>40</sup>.

<sup>40</sup> Highways England (2017) London Orbital and M23 to Gatwick Route Strategy, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/600313/London\\_Orbital\\_M23\\_to\\_Gatwick\\_Final.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/600313/London_Orbital_M23_to_Gatwick_Final.pdf)

- 7.1.25. Real emphasis has been placed on creating a reliable alternative freight route between the M25 and Dover on the A2/M2 and tackling congestion, particularly between Junctions 2/3 on the M2 and around the Port of Dover<sup>41</sup>. The M2 is hugely significant for providing access to Thamesport, Medway Ports and industry along the North Kent coastline.
- 7.1.26. The A27-M27 serves the major ports along the south coast across Hampshire and the Solent, as well as Southampton & Brighton airports. These also form part of the TEN-T network. Substandard sections around Arundel and Worthing and congestion around the Chichester bypass are concerns that impact on wider freight flows and distribution<sup>42</sup>. The A23 is essential for moving goods to and from Newhaven and Shoreham ports. Both the A23 and the A27 suffer from heightened safety issues, specifically poor junction visibility and road surface alignment.
- 7.1.27. The M3 is a vital artery for road freight movements across the Transport for the South East area, connecting international gateways with the Midlands/North of England but it suffers from (HGV) congestion and limited diversionary routes. Mode shift is seen as the best approach in the event of parallel running of freight trains, although issues with local traffic mixing will remain around urban conurbations and intersections with the SRN at locations such as Farnborough (A3/M25).
- 7.1.28. Likewise, the A34 and the M27, are two pivotal port links for Southampton and Portsmouth, which suffer from a lack of diversionary routes for HGVs and poor network resilience. Road surface deterioration on the A34 is increasing road safety risk and causing more noise pollution. This is partly due to the high movements of goods vehicles (container traffic in particular) along the corridor and peak hour congestion (across Junctions 1-11 M27) and pinch points around Winchester (Junction 9, M3)<sup>43</sup>.

## INTERVENTION OPTIONS

- 7.1.29. Road enhancements come in many different forms and are tailored to local circumstances. Upgrades and improvements may not be freight-specific but enhancing route efficiency, reducing delays and creating safe connections will all have a positive impact on the flows of road freight and, ultimately, on industry productivity.
- 7.1.30. As a core principle, the aim of a freight interventions are usually to reduce the distance and duration of time (and subsequent impact) that freight vehicles have on sensitive local environments and to provide infrastructure that supports larger volumes of goods being transported over longer distances. The type and scale of infrastructure required in each instance will therefore be different, to cater for both local journeys and strategic journeys. The real aim is to encourage road freight, particularly HGVs, to use the SRN for as long as possible and to limit their interaction with local roads before reaching their destinations. This brings benefits to local air quality, congestion and road safety.

<sup>41</sup> Highways England (2017) Kent Corridor to M25 Route Strategy, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/600312/Kent\\_Corridors\\_to\\_M25\\_Final.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/600312/Kent_Corridors_to_M25_Final.pdf)

<sup>42</sup> Highways England (2017) South Coast Central Route Strategy, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/600332/South\\_Coast\\_Central\\_Final.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/600332/South_Coast_Central_Final.pdf)

<sup>43</sup> Highways England (2017) Solent to Midlands Route Strategy, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/600330/Solent\\_to\\_Midlands\\_Final.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/600330/Solent_to_Midlands_Final.pdf)

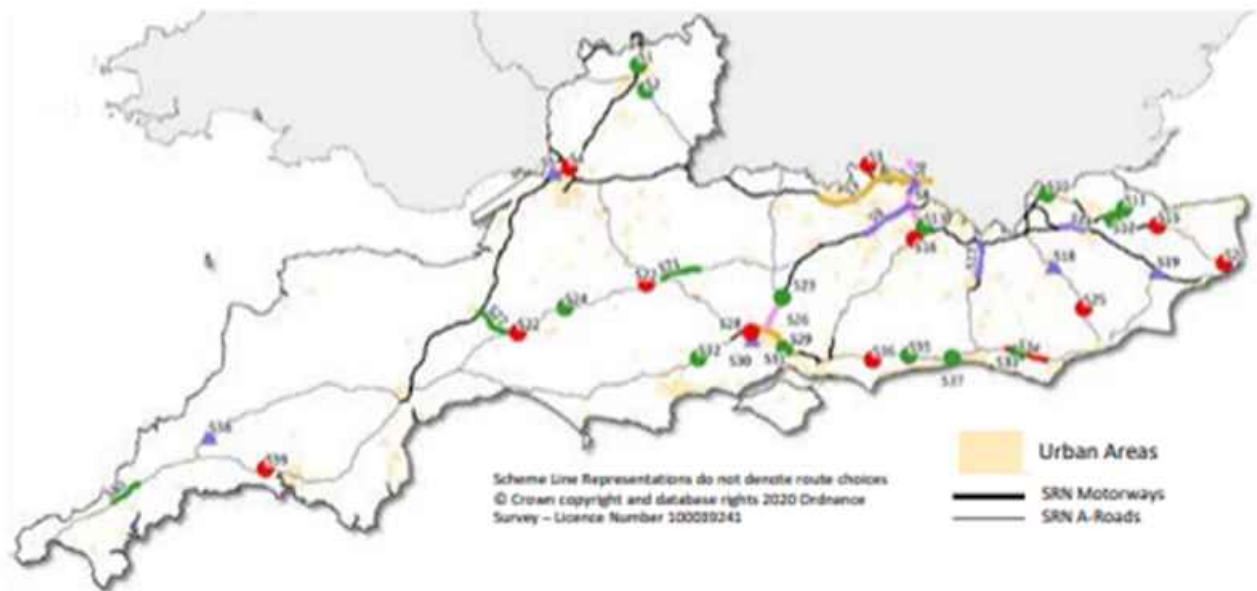
7.1.31. Some of the interventions along the SRN include, but are not limited to, the following:

- Smart motorways;
- Junction and roundabout/access improvements;
- Road dualling/lane extension;
- Technology upgrades (use of VMS); and
- Noise barriers.

## RECOMMENDATIONS & LOCATIONS ★ ★ ★

7.1.32. It can be difficult to define the exact locations and type of infrastructure requirement for road freight beyond reiterating the need to support strategic, nationally important corridors that radiate from origins in Southampton and Dover, through to the London, Midlands and the North and travel along the M25 orbital. Detailed feasibility studies will be required in each instance across the schemes identified as part of RIS2 (**Error! Reference source not found.**) and the emerging RIS3.

**Figure 7-3 - Proposed Road Enhancement Schemes (DfT, 2020<sup>44</sup>)**



	Open to Traffic		Under Construction
S5	M49 Avonmouth Junction	S7	M4 Junctions 3-12
S8	M4 Heathrow slip road	S29	M27 Junctions 4-11
S9	M3 Junction 2-4A		Smart Motorways (subject to stocktake)
S14	M20 Junctions 3-5	S6	M25 1-16
S17	M23 Junctions 8-10	S26	M3 9-14

<sup>44</sup> DfT (2020) Road Investment Strategy 2: 2020–2025, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/951100/road-investment-strategy-2-2020-2025.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/951100/road-investment-strategy-2-2020-2025.pdf)



S18	A21 Tonbridge to Pembury		RIS3 Pipeline
S19	M20 Junction 10a	S3	A404 Bisham Junction
S30	M271/A35 Redbridge roundabout upgrade	S4	Severn Resilience Package
S38	A30 Temple to Carblake	S15	A2 Brenley Corner
	Committed for RP2	S16	A3/A247 Ripley South
S1	M5 Junction 10 & Link Road (Glos HIF)	S20	A2 Dover Access
S2	A417 Air Balloon	S22	A303 Phase 2 Upgrade
S10	A2 Bean & Ebbsfleet	S25	A21 Safety Package
S11	A249 Swale Transport Infrastructure	S28	M27 Southampton Access
S12	M2 Junction 5	S34	A27 Lewes to Polegate
S13	M25 Junction 10	S36	A27 Chichester Improvements
S21	A303 Amesbury to Berwick Down	S39	A38 Trerulefoot – Carkeel Safety Package
S23	M3 Junction 9		
S24	A303 Sparkford to Ilchester		
S27	A358 Taunton to Southfields		
S31	M27 Junction 8		
S32	A31 Ringwood		
S33	A27 East of Lewes Package		
S35	A27 Arundel Bypass		
S37	A27 Worthing & Lancing Improvements		
S40	A30 Chiverton to Carland Cross		

- 7.1.33. Reviewing the road improvements schemes ‘committed’ under RS12, a number of these should be prioritised.
- 7.1.34. M3 Junction 9 south of Winchester would be a priority to retain as part of the review, due to its strategic location along the Midlands-Solent Corridor and connection to the A34. Equally, committed projects in Kent around the A249 (Swale Transport Infrastructure HIF) and M2 Junction 5 are key components of links between Medway Towns, the M25 and Dover that are currently heavily congested and carry higher flows of HGV traffic.
- 7.1.35. The Lower Thames Crossing could offset the focus on the A2 at Bean and Ebbsfleet which is currently a pinch point on the network. This development would expand capacity of the current Thames crossing by over 90%; taking pressure off Junction 2 of the M25, improving safety, particularly on the M25 junctions 16, 21a, 23 and 25 and junctions 5-4b on the M4.

- 7.1.36. Network resilience is key for the freight sector, which stands to benefit from the delivery of the Lower Thames Crossing. However, more reliable links will be required across the rest of the Transport for the South East area around the bigger conurbations and the southern coastline to support both strategic and local door to door journeys, for domestic and international supply chains.
- 7.1.37. The RIS3 pipeline is already being developed, with STBs being requested to play an active role in articulating the benefits of proposals being examined for their respective areas. Transport for the South East should be seeking to focus on selected corridors and access to international gateways as a priority. This is founded on future trends towards port-centric developments and continued growth in both freight and passenger traffic.
- 7.1.38. In this instance, enhanced connectivity across the Thames must be matched with addressing congestion along routes through North Kent connecting into the Medway Towns, as well as further south towards Dover along the A2/M2 and A20/M20. The A2 Dover Access (dualling and integration with TAP2) would form a key component of supporting the DWDR and longer term prominence (and growth) of Ro-Ro traffic, whilst upgrades to the Junction 8 M27 (most notably) will enhance access into the port of Southampton. The A27 Chichester improvements programme is also a key point for improving coastline connectivity, especially as there are limited diversionary routes in place.

## KEY CHALLENGES

- Comprehensive road building is not only controversial from an environmental perspective but is under review as part of the release of the UK Government's Transport Decarbonisation Plan 2020-50. This review process will inform RIS2 and RIS3.
- Investment in roads and the continued dominance of car and vehicle-based travel remains culturally and socially acceptable, with no definitive policy in place to reject schemes or overrule decisions (unlike the Future Generations Act in Wales, 2016)
- Road freight is likely to remain the main means by which goods are moved around the country for the foreseeable future. Distances travelled and tonnages carried continue to increase incrementally and will reach saturation point at selected locations without clear priorities for investment.
- The reliance on road freight to sustaining quality of life and enabling businesses and residents to conduct everyday tasks is well known. However, 'predict and provide' approaches are proven not to ease congestion and delays over the medium-long term.
- The sheer scale of potential improvements and schemes makes it very difficult to prioritise investment, especially if a more detailed understanding of the alternative options needs to be explored.

## IMPACT ASSESSMENT

Problem Statements	1,2,3,4,10				
Economic	High	Environmental	Low	Social	Low
Improve operational efficiency	High	Reduce greenhouse gas emissions, and achieve net zero carbon by 2050 at the latest	Low	Improve operational safety (especially for vulnerable road users)	Low
Enhance freight and logistics' contribution as an industrial sector, in its own right (especially to employment)	Med	Reduce wider environmental impact of freight	Low	Better integration between freight's operational needs and planning/place making	Med
Improve connectivity to and from the Transport for the South East area's international gateways, including through enhanced infrastructure capacity where needed	High			Better management of (and facilities for) lorry parking	Med
				Improve air quality	Low

## 7.2 LORRY PARKING

### DESCRIPTION

- 7.2.1. A Lorry Park (or truckstop) is a recognised and designated area available for HGVs along or adjacent to the public highway (SRN) that can be used by road freight transport drivers, for statutory requirements of breaks from driving and daily/weekly rest periods.
- 7.2.2. Lorry Parks are strategically located along transport corridors and adjacent to major freight generators, to enable drivers to rest sufficiently and plan routing. There are many variations of lorry parking, with a range of different facilities and provision, to serve the interests of drivers across the industry.

### RATIONALE

- Lorry Parks are a key component in fulfilling long distance haulage and national/international freight movements;
- Strategically located lorry parking can aid with route planning and reducing congestion around access points/trip generators;
- Lorry Parks are key for ensuring driver welfare, meeting working time and drivers' hours regulations and enhancing road safety;
- Designated official facilities can help reduce incidents of theft, vehicle damage and threats to drivers' personal safety;
- Well located, sufficient provision can reduce undesirable issues with informal parking, littering and road safety concerns within urban settings; and

- Lorry parking is key for reducing pressure on the SRN and informal parking impacting road safety on hard shoulders and laybys.

## POLICY BACKGROUND & EVIDENCE

### Snapshot Overview

- 7.2.3. The absence and appropriateness of official lorry parking is a notorious issue that has been identified across the UK and the South East of England. National Planning Policy Framework (NPPF) (paragraph 107) requests that planning decisions and future investment duly consider the importance of providing adequate overnight lorry parking facilities, especially where this can help satisfy local shortages.
- 7.2.4. There are many factors influencing the use of lorry parking sites<sup>45</sup>. The main reasons for drivers wishing to park in lorry parks are their security, closely followed by the availability of facilities such as showers and toilets. Price and location are the two main reasons (apart from habit) stopping drivers using lorry parks over laybys and other unofficial parking. These are important considerations, especially as there is both an issue with the quality and availability of provision across the Transport for the South East area. Developing an appropriate and realistic cost range at sites is crucial but challenging, especially due to costs of acquiring and managing desirable land sites in the South East of England.

### Regional Context

- 7.2.5. A Lorry Parking Rating has been applied (based on a European Truck Park Area Certification System (LABEL), which helped shape the National Lorry Parking Study (DfT, 2017), to assess national lorry parking provision. The South East has a higher proportion of basic provision relative to other regions and a lower proportion of better quality facilities. The South East has the third highest average price for accessing paid sites (£18.60), including long term stays in motorway service areas (MSAs).
- 1 Basic provision with Toilets (7%)
  - 2 As Above + Café (31%)
  - 3 As Above + Shower (52%)
  - 4 As Above + Lighting & Security Fence (6%)
  - 5 As Above + Accommodation & CCTV (4%)
- 7.2.6. The general view from the Transport for the South East Freight & Logistics Gateway Review<sup>46</sup> is that the outcomes from the National Lorry Survey need to be considered and that any new road infrastructure needs to have proposals for new services – to include provision for HGVs with current motorway facilities being inadequate and leading to negative externalities (i.e. littering, breaking regulations and poor industry image).

<sup>45</sup> DfT (2009) Lorry Parking Baseline Report Understanding the Current Situation, <http://www.trans-top.com/LorryParksUK.pdf>

<sup>46</sup> WSP (2019) Freight, Logistics & Gateway Review.

- 7.2.7. This is reinforced in current UK Road Investment Strategy 2 (2020-2025)<sup>47</sup>, with freight moved by road being of strategic, national importance – validating the need for HGV parking facilities on the SRN. Suggestions to improve/increase lorry parking provision include co-locating provision nearby warehousing, distribution and manufacturing ‘clusters’ to help with reducing the possible externalities from informal/illegal parking on local communities and for efficiency purposes (time to access site).

### **Current Provision**

- 7.2.8. There is the notable provision of dedicated, secure and reputable Lorry Parks located within close proximity to major international (port) gateways namely Dover, Southampton, Portsmouth, Folkestone and locations bordering the M25 orbital, to cater for traffic circulating the capital.
- 7.2.9. The lack of lorry parking and the substandard quality of existing provision (compared to continental facilities) also contributes towards the lack of new drivers entering the freight and logistics profession. This situation, which has come to fore in recent years, has a knock on impact this has on supply chain efficiency and the ability to fulfil order requests and meet societal demand.
- 7.2.10. Lorry Parking capacity has been exceeded across the South East; with approximately 3,700 vehicles requiring access per day/night and only 3,300 spaces available across a range of Laybys, truck parks and industrial estates. Utilisation rose substantially from 71% in 2010 to 84% in 2017; There is now a ‘critical’ need for provision with many off road sites oversubscribed. There is limited parking in South London, which also pushes demand to the wider South East region.
- 7.2.11. The National Lorry Parking Survey<sup>48</sup> indicated that critical requirements, aimed at the South East, would entail developing between an additional 210 spaces (in theory for every lorry counted overnight) to 470 spaces (practical based on all lorries being able to park overnight to site capacity) being realised from a total of 1,731 across the region. Overall, 24 sites were identified as being at ‘critical capacity’ across the South East, with the M20 corridor also designed to serve burgeoning logistics and transport industrial sectors.
- 7.2.12. Out of the 3,723 parked vehicles observed in the National Lorry Parking Survey, 890 were parked off site (24%). The off-site density is particularly acute in Kent along the corridor between Dover and London Gateway, parallel to the M20, M2 and A2. The SRN surrounding the three ports in the South East are under particular pressure for additional lorry parking.
- 7.2.13. A number of efforts have been made in recent years to clamp down on informal HGV activity (offsite parking). Kent County Council, who have been particularly active, were recently forced to revoke an HGV ban and restriction across major urban areas to try and offset the implications of informal parking on residential streets and industrial estates. Operation Kindle, a multi stakeholder effort, has been underway for many years.
- 7.2.14. A site at Stanford West was due to be located just west of Junction 11 of the M20, close to the existing Stop24 Service Area but was scrapped.

<sup>47</sup> DfT (2020) Road Investment Strategy 2: 2020–2025, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/951100/road-investment-strategy-2-2020-2025.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/951100/road-investment-strategy-2-2020-2025.pdf)

<sup>48</sup> DfT (2017) National Lorry Parking Survey, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/723349/national-survey-of-lorry-parking-report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/723349/national-survey-of-lorry-parking-report.pdf)

- 7.2.15. The new 66 acre Inland Border Facility at Sevington, off the M20, to cater for 1,000 new trucks as part of an effort to accommodate customs procedures (acting as an inland port) for major sea ports, namely Dover, in response to leaving the European Union. This, like the other IBFs, should not be considered as lorry parking sites as they provide little if any driver welfare facilities beyond toilet blocks and do not permit long stay parking on site.

### **Kent Context**

- 7.2.16. Kent is the focus of attention regarding Lorry Parking due to the publicity surrounding Operation Stack and the predicted shortage of between 1,00-1,200 spaces across the county, linked to international gateways and particularly access to the Port of Dover for Ro-Ro services. As the trip length across the Channel is short of a full driver rest period, additional capacity is required within a concentrated area. Around 88% of all mainland European road freight comes in via Kent.
- 7.2.17. The Kent Local Transport Plan 4 makes explicit reference to the provision of overnight lorry parking (without committing to locations) although Ashford was noted as a long term solution for Operation Stack. Much of its content echoes the views from the National Lorry Parking Survey, including the M25 also being a hot spot with severe truck parking shortages. Lack of capacity for trucks at Cobham Motorway Service Area is identified as a specific issue.
- 7.2.18. The Kent Overnight Lorry Parking Study<sup>49</sup> had previously raised the demand for overnight provision (15% of overall HGV traffic) and that drivers were reluctant to deviate from their core route and ran out of hours when opting to park in Kent. Security was an issue that was also raised (compared to parking in France for long distance hauliers). Within the package of measures proposed, new HGV parking facilities at new industrial estates, smaller facilities and the need for a single major new facility were proposed.
- 7.2.19. The Freight Action Plan for Kent<sup>50</sup> also alludes to developing a network of small lorry parks with districts and the police utilising new technologies to help manage and direct HGV movements. Swale was noted as the district with the highest proportion of inappropriately parked HGVs (particularly around Sheerness Port).
- 7.2.20. Highways England (HE)<sup>51</sup> referenced a proposed lorry park and the formalisation of Dover TAP to reduce port-related congestion issues. Transport Focus's Road Users' priorities for the Road Investment Strategy (2020-25)<sup>52</sup> research also seeks to work with HE on the provision of lorry parking more broadly, including how to support domestic and foreign registered drivers with locating and using formal lorry parking provision.

<sup>49</sup> AECOM, Faber Maunsell (2005) Kent Overnight Lorry Parking Study, [https://democracy.kent.gov.uk/Data/Kent%20Transport%20Board/20050921/Agenda/\\$Item%203%20-%20Overnight%20Lorry%20Parking%20Study%20-%20Update.doc.pdf](https://democracy.kent.gov.uk/Data/Kent%20Transport%20Board/20050921/Agenda/$Item%203%20-%20Overnight%20Lorry%20Parking%20Study%20-%20Update.doc.pdf)

<sup>50</sup> Kent County Council (2019) Freight Action Plan for Kent, [https://www.kent.gov.uk/\\_data/assets/pdf\\_file/0012/6105/Freight-action-plan.pdf](https://www.kent.gov.uk/_data/assets/pdf_file/0012/6105/Freight-action-plan.pdf)

<sup>51</sup> Highways England (2017) Kent Corridor to M25 Route Strategy, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/600312/Kent\\_Corridors\\_to\\_M25\\_Final.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/600312/Kent_Corridors_to_M25_Final.pdf)

<sup>52</sup> Transport Focus (2020) Road users' priorities for the Road Investment Strategy, 2020-25, <https://d3cez36w5wymxj.cloudfront.net/wp-content/uploads/2017/06/28081709/Road-users%E2%80%99priorities-for-the-Road-Investment-Strategy-2020-25-FINAL.pdf>



## Solent Context

- 7.2.21. The A34 leading north from the ports of Southampton and Portsmouth has high levels of off-site parking and well used lorry parks – although a lot of this is outside the ‘50km’ defined distance from the ports, it is the logical route leading north from the ports. The Solent area and the M3 southern section were highlighted in the Lorry Parking Study as being areas with inadequate parking capacity.
- 7.2.22. HGV movements and traffic flows throughout the South East have been impacted during the transition from leaving the European Union, including by customs procedures. A number of sites have been developed on a temporary basis to support the transition process (e.g., Manston Airport, Ebbsfleet International etc) but lack of HGV parking capacity has been a longstanding and unresolved issue.
- 7.2.23. At the time of the study, 41% of the parked vehicles observed in the study were foreign registered (the highest across the English regions), which is unsurprising, based on the international and long distance road movements across the Dover Straits and Channel Tunnel. Some European countries also legislate against cab rests and HGV movements at weekends, further exacerbating demand. The scale of HGVs ‘moved on’ (494 in two months, 2016<sup>53</sup>) as a result of parking across slip roads, on hard shoulders on the M20, A20 & A2 hints at the scale of the problem.

## London

- 7.2.24. The report into Overnight Lorry Parking Provision in South London<sup>54</sup> noted that official truck parking in South London was particularly scarce; subsequently putting pressure on provision further afield across (what is now) the Transport for the South East area at facilities in Horsham, Sevenoaks and Moto Medway (or resulting in informal/illegal parking within the M25 orbital). No specific locations were identified to expand capacity beyond negotiating shared use agreements for underutilised land for HGVs parking (a compromised scenario).

## West Berkshire

- 7.2.25. The West Berkshire Freight Strategy<sup>55</sup> does reference the district’s position on the confluence of the M4 and A34 strategic axis and the substantial HGV flows and lorry parking requirements this demands. Action Plan FAP1 seeks to offset informal parking around laybys and industrial estates (Faraday Road Industrial Estate in Newbury, Colthorp Industrial Estate, Thatcham and at various laybys on the A4 between Colthorp & Theale, the A4 west of Newbury, Halfway and the Faraday Industrial Estate, Newbury) as well as processing plants along the A4 corridor in the Beenham area.

<sup>53</sup> DfT (2017) National Lorry Parking Survey, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/723349/national-survey-of-lorry-parking-report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/723349/national-survey-of-lorry-parking-report.pdf)

<sup>54</sup> TTR (2010) Overnight Lorry Parking Provision in South London, <https://www.centallondonfqp.org/app/download/12255073/South+London+FQP+Overnight+Lorry+Parking+Study+Final+Report.pdf>

<sup>55</sup> West Berkshire Council (2014) West Berkshire Local Transport Plan Freight Strategy, [https://info.westberks.gov.uk/CHttpHandler.ashx?id=38703&p=0#:~:text=The%20Freight%20Strategy%20is%20West,PIan%20\(LTP\)%20to%202026.](https://info.westberks.gov.uk/CHttpHandler.ashx?id=38703&p=0#:~:text=The%20Freight%20Strategy%20is%20West,PIan%20(LTP)%20to%202026.)

## INTERVENTION VARIATIONS

- **Laybys (On Site):**
  - Simple; often in a remote location with minimal facilities (which may include bins or toilets).
  - Complementary Parking; provision of toilets and bins adjacent to additional facilities and services i.e., café.
- **Open Access (On Site):** Basic provision (toilets, bins) and mobile refreshment unit situated in an off-road location, with informal signage and no on-site security/lighting arrangements. No booking is required (Turn up & Go). Could include laybys.
- **Secure Compound (On Site):** High quality, purpose built site, with fencing, CCTV and barriered entrance, with complementary range of accommodation, driver welfare and refreshment options. More expensive sites often developed around key gateway locations on the SRN.

7.2.26. SETPOS, a pilot project initiated by the European Commission provides a guide to the key factors for consideration when supporting the development of lorry parking facilities:

- **Security** – are drivers, goods and vehicles in a secured environment?
- **Comfort and dignity** – for example, can drivers take a shower?
- **Food and shopping** – for example, are warm meals provided?
- **Services** – for example, can basic repairs be undertaken?
- **Safety** – for example, are there personal, vehicle and load safety measures at the truck parking area?

## RECOMMENDATIONS & LOCATIONS ★ ★ ★

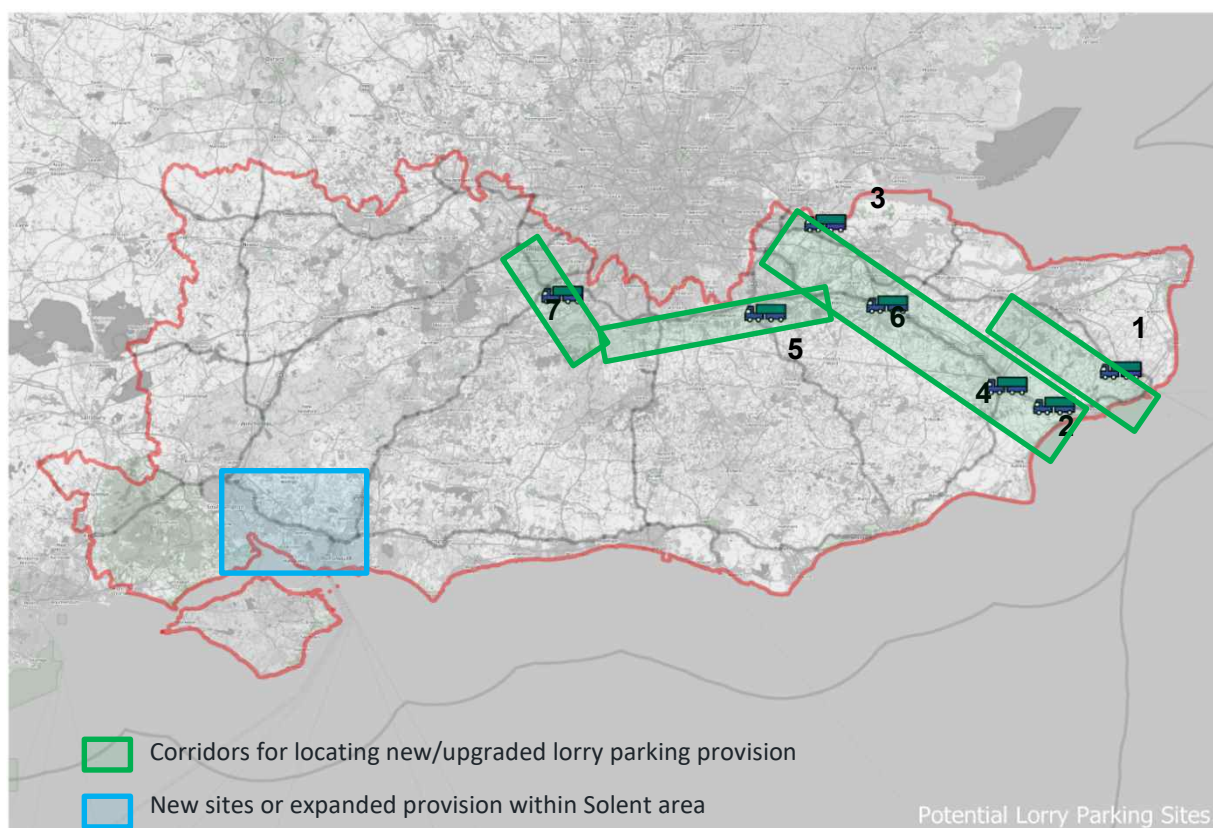
- 7.2.27. The need to confront a chronic lack of lorry parking has been very clear for some time. Addressing capacity issues at 'critical' locations will be key initially, alongside the need to futureproof provision within planning conditions for new, upgraded sites across the Transport for the South East area. The National Lorry Parking Survey provides a clear picture as to where the chronic shortage of lorry parking exists and provides recommendations on ideal locations for expansion.
- 7.2.28. It is worth noting that, at the time of drafting (December 2021), DfT has put out to tender a project to update the National Lorry Parking Study from 2017 (which reported in 2018). That study is to use the same methodology to capture up-to-date capacity and current demand across England. Work is to commence in January 2022 and is to be completed by the end of September, 2022.
- 7.2.29. Overall, 24 sites were at critical capacity across the South East (from the National Lorry Parking Study in 2017) with additional lorry parking being urgently required across the region. Sevington Lorry Park opened in early December 2021 and new proposals have been put forward and are in planning stages at Wrotham off the A20 London Road near the junction with the M26.
- 7.2.30. KCC is currently encouraging consideration of a site at Brenley Corner given its role and function on the strategic road network, its prospect for upgrade by National Highways, and the live Local Plan development work by local authorities considering site allocation policy development for housing delivery in the vicinity.



7.2.31. There is a particularly acute shortages identified along corridors between Dover and Greater London (and across Kent, more broadly) Based on the National Lorry Parking Study recommendations, the expansion and upgrade of lorry parking provision has been prioritised at the following locations or/and along three core corridors. (Figure 7-3).

- |                      |  |                       |
|----------------------|--|-----------------------|
| 1 Lydden             | 4 Ashford (dual use of Sevington site) | 6 Northeast Maidstone |
| 2 Stop 24 Folkestone | 5 Sevenoaks                            | 7 Cobham              |
| 3 Gravesend          |  |                       |

**Figure 7-3 - Proposed Lorry Parking Provision (New/Expanded) (WSP, 2021)**



7.2.32. The expansion of established, recognised lorry parking sites, particularly serving port locations on key connecting routes, would also be advantageous and could be integrated with portside booking systems and support a complementary range of added value services (benefiting from economies of scale).

7.2.33. Expanded and upgraded sites, featuring better driver welfare facilities and security, can also act as social hubs, as well as offering opportunities for locating alternative fuel infrastructure (hydrogen hubs). Upgrading or developing new sites must be undertaken in union with limiting layby use to short breaks and emergency stops, although it has been acknowledged that this may be hard to achieve. Other key considerations should include:

- Better information on space availability to help plan ahead;
- Getting the right resources in place, depending on context;
- Balance of simple free parking and more established lorry parking options; and
- Simple provision around industrial/distribution centres.

- 7.2.34. Kent is the immediate target of investment because of the links to Dover (and Medway Ports) which handle a substantial level of the UK's Ro-Ro traffic and where mode shift to rail is unlikely to greatly impact forecast traffic growth along the corridor. It is also where drivers (both domestic and foreign registered), operating on long distance haulage, will tend to take breaks and rest periods (both daily and weekly, as required by EU Drivers' Hours rules).
- 7.2.35. Enhancing capacity and the quality of provision across Kent can support the demand generated for provision in South London, around the M25 orbital; with future designated provision less likely to materialise, due to land requirements and opportunity costs. A key consideration for public authorities is whether land values of lorry park sites mean that they can be more profitable for landowners to redevelop for other uses.
- 7.2.36. Public ownership of the sites should, therefore, be considered, with the management of the sites operated by the private sector. This will be highly dependent on identifying public authority land, whilst recognising the potential conflicts of interest in developing and allocating land for housing and other key functions.
- 7.2.37. The other area of focus, however, must seek to centre on upgrading existing lorry parking and adding additional sites around the periphery of Southampton and Portsmouth, to cater for access and connections between the ports and the Midlands. Lorry Parks in this vicinity could also double up as locations to manage access to the port, using virtual booking systems. However, the majority of sites are lay-bys with only two purpose-built sites along the A34 (despite 6,000 lorries travelling both northbound & southbound daily<sup>56</sup>).
- 7.2.38. Discussions have also been taking place informally about supporting lorry parking provision in West Berkshire around the confluence of the M4 and the A34, north of Newbury. This is a key intersection for interchanging and on two core freight networks that host strategic trips between the South Coast and the Midlands, as well as from the South East and the South West of the UK. No sites have been defined, as yet, but this would present an ideal opportunity for a combination of short stay and long stay lorry parking provision. This area also supports HGV use of the UK land bridge.
- 7.2.39. Whilst there is a general consensus around the focus of upgrading existing lorry parking facilities across the South East, targeting Kent and the M25 initially, as well as the Solent area, further study work is required to both firm up the feasibility of expansions, as well as engage with operators and the haulage industry on what would make prospective sites more appealing to use. This may consist of;
- Engaging with the owners and operators of the identified lorry parking sites, to understand the potential for expansion and how this links into wider aspirations to upgrade and enhance infrastructure. This would need to involve public authority representatives, to account for planning considerations and development control.
  - Liaising with trade bodies and the road haulage industry, through the Transport for the South East freight forum/steering group, to sense check prospective locations and the 'triggers' for lorry parking provision. This could consist of qualitative based interviews and feedback that captures stated preferences – rather than route and parking characteristics.

<sup>56</sup> Network Rail & Highways England (2021) Solent to the Midlands Freight Strategy, <https://highwaysengland.co.uk/media/rc4bekfn/solent-to-the-midlands-multimodal-freight-strategy.pdf>

- Understanding freight flows through an observational analysis and quantitative data analysis of lorry movements around other parts of the Transport for the South East area; for example, building on informal discussions in West Berkshire around the confluence of the M4 and A34 (and what informal activity is taking place in this area).

## KEY CHALLENGES

- This is a notoriously challenging subject to raise and address, with limited support and provision provided historically (in recent years) to counteract the problem of informal lorry parking.
- The perceived value for money for investing in lorry parking versus other land uses in the South East of England and who is likely to purchase and manage new sites.
- Poor public opinion and perceptions of lorry parking and HGV drivers, to warrant interest and development of additional capacity.
- Finding the balance between provision that is well located, affordable and offers value added services, to reduce informal parking

## IMPACT ASSESSMENT

Problem Statements	8,9,18,20				
Economic	Low	Environmental	Med	Social	High
Improve operational efficiency	Low	Reduce greenhouse gas emissions, and achieve net zero carbon by 2050 at the latest	Low	Improve operational safety (especially for vulnerable road users)	Med
Enhance freight and logistics' contribution as an industrial sector, in its own right (especially to employment)	Low	Reduce wider environmental impact of freight	Med	Better integration between freight's operational needs and planning/place making	Med
Improve connectivity to and from the Transport for the South East area's international gateways, including through enhanced infrastructure capacity where needed	Med			Better management of (and facilities for) lorry parking	High
				Improve air quality	Low

## 7.3 ALTERNATIVE FUELS FOR ROAD FREIGHT

### DESCRIPTION

- 7.3.1. This infrastructure intervention focuses on expanding the network for alternative fuels to cater for, amongst others, increases in Battery Electric Vehicles (BEVs) and hydrogen-powered HGVs. This coincides with the transition away from conventional fuels and internal combustion engines, with a focus on delivering quick and rapid refuelling points and hubs along the SRN that will reduce range anxiety and reduce GHG emissions. In this instance, network infrastructure is classed as the charging points and hub locations installed along the SRN and within urban conurbations (where relevant), available in the public domain, rather than on-site at operator depots.

### RATIONALE

- A critical component of industry-wide ambitions to quickly and sensitively decarbonise road freight transport;
- A hydrogen network is key for reducing the proportion of GHG emissions from HGV movements (prevalent in the South East);
- New infrastructure stimulates growth and opens up new markets; catering for both private and commercial vehicles;
- Use of renewable and clean energy sources/networks can reduce overheads for businesses across the industry;
- Scaling up on public provision is key to dictating the growth of electric and hydrogen vehicles (UK and foreign registered); and
- Reducing externalities from GHG emissions on local communities, including noise pollution.

### POLICY BACKGROUND & EVIDENCE

- 7.3.2. The recent DfT Transport Decarbonisation Plan<sup>57</sup> announced by the UK Government, sets out ambitious plans for shifting road freight away from the use of fossil fuels. The proposals include:
- Ending the sale of new diesel heavy trucks over 26 tonnes by 2040;
  - Ending the sale of ICE lorries weighing between 3.5 tonnes and 26 tonnes by 2035; and
  - Prohibiting sales of new petrol and diesel cars and vans by 2030
- 7.3.3. The aim of the plan is to spur the adoption of new alternative fuels and cleaner vehicles and to foster employment opportunities within this sector as part of a 'net zero' strategy. Currently HGVs and LGVs contribute 31% of NOx emissions from transport (despite being only 21% of traffic) with more than 90% of all HGVs still running on conventional fossil fuels<sup>58</sup>. Concerns have been raised around the ease and speed of a 'just' transition that recognises the current limited availability and financial viability of the road haulage sector to adopting alternative fuels (and vehicles).

<sup>57</sup> DfT (2021) Decarbonising Transport, A Better Greener Future, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1009448/decarbonising-transport-a-better-greener-britain.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1009448/decarbonising-transport-a-better-greener-britain.pdf)

<sup>58</sup> DfT (2021) Transport and Environment Statistics 2021 Annual report, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/984685/transport-and-environment-statistics-2021.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/984685/transport-and-environment-statistics-2021.pdf)

- 7.3.4. Decarbonising HGVs and providing alternative infrastructure will be the hardest challenge<sup>59</sup> and will require the need to upscale infrastructure and vehicle numbers on the back of large scale demonstrations by 2030. As with alternative fuel technologies generally, infrastructure deployment is a 'chicken & egg' problem; whereby demand is currently not sufficient for increasing the supply of infrastructure and vehicles through market conditions.
- 7.3.5. Alternative fuel networks, more specifically EV charging, are already being developed by multiple providers across the UK and in the South East; both on the SRN and within urban areas. They feature heavily as the focus of the freight industry's attempts to decarbonise. However, fleet electrification is particularly challenging for HGVs, especially short to medium term, due to the limited range of battery technology, charging capacity and the power requirements for the size of vehicle<sup>60</sup>.
- 7.3.6. This does present a particular challenge to smaller hauliers/fleets to transition with the costs of new vehicle models likely to be prohibitive for battery electric vehicles without substantial financial support and incentives, as well as access to the appropriate infrastructure, especially on the SRN.
- 7.3.7. Nonetheless, Battery Electric Vehicles (BEV) are viewed as the future for LGVs and smaller freight vehicles in the short term. The Road to Zero Strategy<sup>61</sup> notes that the investment in 'transformative' policies will come into play, including the provision of rapid and higher-powered charge points along the SRN. This complements the need to prepare detailed assessments of the infrastructure required to enable the uptake of battery electric or hydrogen HGVs, including the refuelling requirements at depots and key rest areas on major freight routes<sup>62</sup>.
- 7.3.8. BEV are anticipated to be one of the main reasons for a forecast doubling of peak electricity consumption by 2050<sup>63</sup>, although this is likely to come through the use of private vehicles and LGVs short term. Accelerating infrastructure provision is something that can be delivered immediately, pending the right regulatory conditions but that infrastructure must also be compatible between owner vehicles. This includes developing future energy requirements to power vehicle fleets.
- 7.3.9. The role of National Government and STBs will be crucial in facilitating a just transition and the scaling up of alternative fuels. The former must aid with investment in infrastructure and provide guidance on how to transition over forthcoming decades with STBs, in this instance Transport for the South East, being flexible enough to adapt to whichever alternative fuel takes dominance. A number of trials are ongoing to test different alternative fuels for HGVs.

<sup>59</sup> Transport Catapult (2021) Transition to Zero-Emission Transport – A Pathway for Long-Haul Heavy Goods Vehicles, <https://1hir952z6ozmkc7ej3xlcfc-wpengine.netdna-ssl.com/wp-content/uploads/2021/03/A-Pathway-for-Long-Haul-Heavy-Goods-Vehicles-March-2021-FINAL.pdf>

<sup>60</sup> SMMT (2021) Fuelling the Fleet, Delivering Commercial Vehicle Decarbonisation, <https://www.smmmt.co.uk/wp-content/uploads/sites/2/SMMT-Fuelling-the-Fleet-Driving-Commercial-Vehicle-Decarbonisation.pdf>

<sup>61</sup> HM Government (2018) The Road to Zero, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/739460/road-to-zero.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739460/road-to-zero.pdf)

<sup>62</sup> National Infrastructure Commission (2018) Better Delivery: The Challenge for Freight, <https://nic.org.uk/app/uploads/Better-Delivery-April-2019.pdf>

<sup>63</sup> Energy Network Association (2021) Electric Vehicle Charging Market Study, Invitation to Comment, [https://assets.publishing.service.gov.uk/media/6038ec098fa8f5048da59dbf/Energy\\_Networks\\_Association.pdf](https://assets.publishing.service.gov.uk/media/6038ec098fa8f5048da59dbf/Energy_Networks_Association.pdf)



- 7.3.10. At a national level, there has been an additional £80 million to support charging infrastructure deployment, alongside £15 million from National Highways, to ensure rapid charge points every 20 miles across 95 per cent of England's Strategic Road Network. This is beneficial for powering LGV movements, with the South East having the second highest number of public charging points in the UK.
- 7.3.11. Another innovative option for decarbonising the road haulage industry is the adoption of electric charging on the SRN, via battery electric technology or overhead electricity (gantries) on network routes. This has the propensity to make recharging cost effective by integrating more renewable energy into the national grid and enabling vehicles to charge whilst in motion. There are also efficiency gains of integrating into the grid through regenerative braking; which can recover the energy from slowing down and convert it into recharging batteries.
- 7.3.12. Termed the 'Electric Road System', the aspiration, UK wide, is for overhead cables to extend across 7,500kms of the SRN to power 65% of all HGVs at a cost of £19.3 billion (Walker, 2020). Pilots being conducted in Lincolnshire (20km section in Scunthorpe), will help to legitimise wider adoption, which would bring together delivery bodies to deploy sections at scale and quickly.
- 7.3.13. The proposals, developed by the Centre for Sustainable Road Freight, would be developed across three phases and include sections across the Transport for the South East area, namely:
- Phase 1 (2 years, £5.6 billion): M25 orbital and M20 (towards Dover). This would bring significant benefits for capturing the largest road freight flows (road and port traffic) through the South East, travelling northbound towards the Midlands, which is likely to continue longer term. The upgrades would also coincide with ongoing smart motorway sections around the M25 orbital and connections to the major airports.
  - Phase 2: (2.6 years, £5.1billion). Key connections towards Gatwick along the M23 and the M3 connection between Southampton and the M25. The role of the A34 for Solent-Midlands freight flows is also acknowledged at this stage and the interconnections with the A303 across West Berkshire.
  - Phase 3: (2.5 years, £7.1 billion) Upgrades to the M2/A2, a key alternative route between Dover and London Gateway/Tilbury) and alternative route to the M3 between the M25 and the Solent (Portsmouth) via the A3. Upgrades planned also include better links across the Solent, along the M27.
- 7.3.14. The routes and phases can provide a useful proxy by which to determine the perceived core freight routes where long distance haulage is most prominent, 'off road' sections are limited (reliance on battery power) and air quality needs to be addressed. As well as the potential advantages offered through collaborative construction and delivery of a network (and dovetailing existing or proposed road enhancement projects), the use of the electric road system could also aid with vehicle taxation and data monitoring.
- 7.3.15. However, an electric road system could potentially undermine modal shift opportunities from road to rail for the strategic movement of goods, particularly along the Solent to Midlands Corridor if this is viewed as the silver bullet to decarbonise the freight sector longer term and an alternative to mode shift to rail. Furthermore, alongside the system, there would need to be a transformational shift in the production and purchase of battery electric HGVs in a 15 year period. This would require substantial financial support being provided to aid the transition across to cleaner vehicles (going against the current grain of annual rises in HGV age, especially amongst smaller hauliers).

- 7.3.16. Additionally, large swathes of the SRN across the South East pass through protected landscapes with gantry equipment and construction traffic likely to generate opposition locally. The experience from recent rail electrification projects also hints at the likelihood of programme delays and scaling back of ambitions, whilst relying entirely on a single network would significantly reduce network resilience.
- 7.3.17. Hydrogen, for use as an alternative fuel, can be carbon intensive to produce and is notoriously difficult and expensive to transport and to store, particularly at scale. Hydrogen HGVs may also use three times more energy than an electric road system, due to the loss of energy at every conversion phase (between solar energy to create hydrogen and then the shift towards fuel cells for electricity).

### Regional Context

- 7.3.18. London & the South East received 45% of all new charge points across the UK in 2020<sup>64</sup>, with the network having expanded by almost a fifth over the year and with £1.3billion worth of investment planned in infrastructure across the UK over the next decade. Across the South East, urban areas, namely Brighton, have a relatively dense network, compared to rural areas, whilst the charge points are geared up to LGVs.
- 7.3.19. However, there are also examples of alternative fuels available to HGVs. There are 15 operational Hydrogen Refuelling Stations across the UK; the majority based along motorways (6) or peri urban (6) locations (40% of locations are near motorways). There are several based in the South East, namely at:
- Shell, Gatwick (RH6 0NX) - Operated by: ITM Power;
  - Shell, M25 Cobham Services, Surrey (KT11 3JS) - ITM Power;
  - Power CEME Innovation Centre, Marsh Way, Rainham (RM13 8EU) - ITM Power; and
  - Shell, M40 Beaconsfield Services, Buckinghamshire (HP9 2SE) - ITM Power.
- 7.3.20. With the exception of two sites in London, there is only a single CNG station at Reading, provided by Air Liquide, with restricted access to site. This is despite the fact that, as well as reducing GHG emissions by up to 85%, biomethane provides a saving of 30-35% compared with equivalent journeys on diesel fuel. CNG is considered to still bring about significant emissions during production and has yet to be scaled up across the UK.
- 7.3.21. There is some evidence of alternative fuel infrastructure being deployed across the Transport for the South East area. A new HGV refuelling bunker site at the Port of Southampton will feature eight high speed refuelling pumps and cater for the high volume of HGVs that pass through the port each day. The new refuelling facility will dispense DERV, red diesel, AdBlue and cleaner-burning diesel alternative, Shell GTL Fuel, which can all be used immediately in HGVs to reduce harmful emissions of nitrogen oxides (NOx) and particulate matter (PM), without having to make engine or equipment modifications.

<sup>64</sup> The Guardian (2021) Regional disparities in electric car-charging points revealed, <https://www.theguardian.com/environment/2020/nov/23/regional-disparities-in-electric-car-charging-points-revealed>

- 7.3.22. EV Charging, Hydrogen Fuelling Infrastructure and CNG Fleet Refuelling form part of The South East LEP Energy South2East Action Plan<sup>65</sup> 'Transport Revolution' under their Five Priority Themes for the Local Energy Plan. Project Model 12 seeks to 'scale up' provision across the sub region with an estimated 38,000 public access points required and relationships with providers being formed (Pivot Power, National Grid etc) to develop a network by 2032. Project Model 13 looks specifically at deploying CNG Fleet Refuelling infrastructure
- 7.3.23. At a city scale, Southampton is seeking to expand on the 44 publicly available EV charging points across the city, working with partners to put additional provision in car parks, new developments and on street (Policy Z1 Zero Emission City). This is designed to meet current and future need and provide a service that fills the gap around shorter, more convenient charging. They should also be interoperable. The City Council is also open to the use of other low emission technologies and is targeting uptake of their public fleet, buses and also provision within the Port of Southampton.
- 7.3.24. Likewise, Portsmouth is also seeking to install EV charging points parallel to greening their respective fleet in line with proposals for a Clean Air Zone (CAZ). Policy 2 directly outlines the 'Support infrastructure for alternative fuelled vehicles', including hydrogen, with rapid chargers being proposed at key locations across the city, such as on strategic corridors and at ferry ports. There is a desire to explore the use of hydrogen and to work with organisations seeking to pursue this avenue.
- 7.3.25. Surrey County Council has been active setting down policy; its Low Emissions Transport Strategy<sup>66</sup> gives additional weight to air quality problems and consider ways to tackle emissions from HGVs by supporting infrastructure for low emission HGV fuels, learning from the Low Emissions Freight and Logistics Trial and offsetting the growth in LGVs and low emissions local delivery partnerships /technology solutions.
- 7.3.26. The Surrey Electric Vehicle Strategy<sup>67</sup> and West Sussex Transport Plan Review<sup>68</sup> also acknowledge the absence of a comprehensive network to support, whilst underlining the dependency on network capacity to expand provision at scale (but does not reference LGV and freight related impact explicitly). West Berkshire LTP<sup>69</sup> loosely references new technologies and charging infrastructure.
- 7.3.27. Smaller towns and cities across the South East are pursuing a modest expansion of EV charging points, with little reference to CNG or Hydrogen. Dover Port does refer to conducting a feasibility study for EV charging points for port stakeholders on the port estate (short term). Hydrogen is only referenced to vessels and not to on-shore power generation and distribution.

<sup>65</sup> South East LEP (2019) Local Energy Strategy, <https://www.southeastlep.com/app/uploads/2019/03/Local-Energy-Strategy-FINAL.pdf>

<sup>66</sup> Surrey County Council (2018) Low Emissions Transport Strategy, [https://www.surreycc.gov.uk/\\_data/assets/pdf\\_file/0020/189101/Low-Emissions-Transport-Strategy\\_p1.pdf](https://www.surreycc.gov.uk/_data/assets/pdf_file/0020/189101/Low-Emissions-Transport-Strategy_p1.pdf)

<sup>67</sup> Surrey County Council (2018) Electric Vehicle Strategy, [https://www.surreycc.gov.uk/\\_data/assets/pdf\\_file/0008/189107/Electric-Vehicle-Strategy\\_p1.pdf](https://www.surreycc.gov.uk/_data/assets/pdf_file/0008/189107/Electric-Vehicle-Strategy_p1.pdf)

<sup>68</sup> West Sussex County Council (2021) West Sussex Transport Plan 2022 to 2036, [https://www.westsussex.gov.uk/media/16025/draft\\_wstpv.pdf](https://www.westsussex.gov.uk/media/16025/draft_wstpv.pdf)

<sup>69</sup> West Berkshire Council (2011) Local Transport Plan, <https://info.westberks.gov.uk/CHttpHandler.ashx?id=36911&p=0>



- 7.3.28. Major airports across the Transport for the South East area, namely Gatwick, Heathrow and Southampton, are also actively increasing electric charging networks. Gatwick in particular is working with Crawley Borough Council to extend provision to offset air quality hotspots in the immediate vicinity. They have also committed to enhancing the provision of infrastructure for electric and hybrid vehicles, although this is mainly targeted at passenger and internal fleets, rather than the freight industry<sup>70</sup>.
- 7.3.29. Road freight decarbonisation can also dovetail proposals within ports, such as Dover, which is working to support British exports, increase global trade and deliver sustainable logistics by developing the UK's first Global Trade & Innovation Zone and zero emissions logistics corridors<sup>71</sup>. This is through an ambitious and innovative Freeports concept and bid. The development of such corridors will consider the alternative fuel, infrastructure and system requirements necessary, as well as leading-edge new technologies for the movement of goods.

## INTERVENTION OPTIONS

- 7.3.30. Alternative fuel networks, in this respect, are affiliated with road freight transport and can be split between their respective potential users:
- **Electric Road System (ERS):** Providing electric power through OLE along strategic freight corridors with battery electric vehicles being powered whilst in motion.
  - **Electric Vehicle Charging Network:** Aimed at LGVs (i.e. cars/vans) where there is an increasing variety of models available on the market. A network can be established in both a strategic context (i.e. SRN) or at key locations/trip attractors in an urban setting. Already a well-established presence across the UK. The types of chargers include both rapid and fast.
  - **Hydrogen Re-Fuelling Stations/Hubs:** Aimed at HGVs with fuelling practices similar to conventional stations. Tend to be larger sites located in peripheral locations (off the SRN) to benefit from multiple user access /economies of scale. Emerging as a realistic option at major trip generators.
  - **Compressed Natural Gas (CNG) Network:** Aimed at HGVs with parallels with Hydrogen hubs for the ease of fuelling and use of 'clean fuels' (specifically biomethane) with low/no emissions. New network would also need to be provided. The transition provides a direct alternative to diesel immediately. More cost effective and easier to scale than hydrogen but would need connections into the gas network for deployment.

## RECOMMENDATIONS & LOCATIONS ★ ★ ★

- 7.3.31. There is a pronounced move towards establishing public access EV charging networks across the South East, particularly in urban areas which would go some way to supporting LGV and low emission vehicle movements of goods and ultimately tackle concerns around air quality and pollution. Supporting HGV fleet decarbonisation, however, remains a major challenge.

<sup>70</sup> Gatwick Airport (2019) Gatwick Capital Investment Programme, [https://www.gatwickairport.com/globalassets/publicationfiles/business\\_and\\_community/all\\_public\\_publications/transforming\\_gatwick/2019-cip---final-public-version---published-august-2019.pdf](https://www.gatwickairport.com/globalassets/publicationfiles/business_and_community/all_public_publications/transforming_gatwick/2019-cip---final-public-version---published-august-2019.pdf)

<sup>71</sup> Port of Dover (2020) Port Air Quality Strategy 2020, [https://www.doverport.co.uk/administrator/tiny\\_mce/source/Environment/Port%20of%20Dover%20Air%20Quality%20Strategy.pdf](https://www.doverport.co.uk/administrator/tiny_mce/source/Environment/Port%20of%20Dover%20Air%20Quality%20Strategy.pdf)

- 7.3.32. While many clear policy documents exist indicating network development locations, further investigation through the Area Studies would help build on the loose reference to the uptake of BEVs in relation to reducing the exposure to the adverse environmental impacts of road traffic on orbital corridors that pass through urban centres such as Gosport, Hastings, Portsmouth and Worthing. This will help to build a clearer picture on the investment requirements.
- 7.3.33. However, limited explicit reference is made within local policy to Hydrogen or CNG for HGVs and the network infrastructure for strategic journeys by freight; partly as these technologies are still in their infancy. There are also a number of variations in fuelling stations, depending on scale and vehicle types (fast fill in peri urban locations v time fill stations are best suited for larger fleets on strategic network/fuelling centrally).
- 7.3.34. This does mirror the view within the Transport for the South East Transport Strategy<sup>72</sup>, that technology and innovation in transport technology – vehicle, fuel and digital technologies – is supported but that the widespread roll-out of some beneficial technologies may only be realised in the medium to long term. Greater research will be required into the use and deployment of Hydrogen and CNG but both may offer huge benefits in the following locations:
- Major trip generators, namely ports, e.g., Dover, Southampton (see alternative fuel for ports), Portsmouth and airports, e.g. Gatwick, where hydrogen hubs (for example) can serve a larger market;
  - SRN, namely the M20, M3, M27; key routes for HGV movements which could be tied in with existing service stations and lorry parks; and
  - Smaller hub locations within peri urban or urban locations to serve growing local authority fleets (linked to green fleet policies).
- 7.3.35. The delivery of the ERS, pending trial feedback, may offer a medium term opportunity for accelerating the decarbonisation of the road freight industry and specifically long distance haulage. However, an improved network of alternative fuels needs to be developed over the short, medium and long term which acknowledges the immediacy of the decarbonisation agenda and the requirement for transitioning towards an optimal, carbon neutral fuel network.
- 7.3.36. The reality is that the speed of transition will vary between fleet operators (depending on size, use, budgets and vehicle availability), as well as infrastructure investment, to make alternatives attractive. The ‘fuel mix’, to transition away from diesel consumption, should seek to explore renewable biomethane (which can emit 84% less CO<sub>2</sub> than equivalent diesel vehicles, at stations along the SRN, whilst saving fleet operators 35-40% of fuel costs) (Network, 2017).
- 7.3.37. Hydrogen refuelling stations, also developed across other parts of the South East, would also offer another alternative; although greater investment would be required to manage safety and capacity concerns. In either case, refuelling should ideally take place at current fuelling locations along the SRN (where possible) to aid accessibility.

<sup>72</sup> Transport for the South East (2020) Transport Strategy for the South East, <https://transportforthesoutheast.org.uk/app/uploads/2020/09/Transport-for-the-South-East-transport-strategy.pdf>

- 7.3.38. The ultimate longer term aim is to be delivering on the use of hydrogen electric vehicles and ERS, which are both underpinned by the development in battery technology. This will require re-fuelling stations alongside overhead gantries, with a watching brief on the progress being made with pure battery electric vehicle capacity to have a suitable range for fulfilling strategic HGV trips.

## KEY CHALLENGES

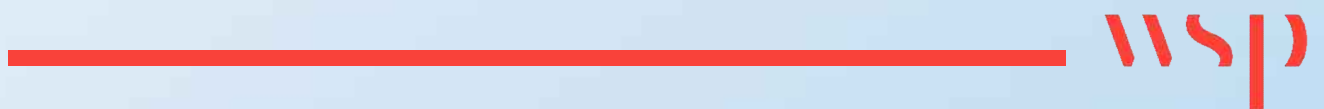
- Ensuring there is a 'just' transition and a range of options for decarbonisation of vehicle fleets due to the disproportionate financial outlay and risk involved for smaller operators, versus multinationals.
- The risk of creating a fragmented and incoherent network of fuelling options that provide limited use for drivers wishing to refuel whilst undertaking strategic trips on the road network.
- The organisation and sector responsible and taking the initiative to invest in alternative fuel infrastructure and the 'chicken and egg' issue with leaving investment to the market.
- Scaling up alternative fuels at pace, to match the level of ambition set out in the transport decarbonisation plan, during a time when the average ages of LGV/HGV are also rising.
- The requirement to upgrade the energy and fuel network working with DNOs and utility companies to deliver sufficient power and fuel stores/connections across the region.

## IMPACT ASSESSMENT

Problem Statements	8,9,16,18,19,20				
Economic	High	Environmental	High	Social	Low
Improve operational efficiency	High	Reduce greenhouse gas emissions, and achieve net zero carbon by 2050 at the latest	High	Improve operational safety (especially for vulnerable road users)	Low
Enhance freight and logistics' contribution as an industrial sector in its own right (especially to employment)	Med	Reduce wider environmental impact of freight	High	Better integration between freight's operational needs and planning/'place making'	Low
Improve connectivity to and from the Transport for the South East area's international gateways, including through enhanced infrastructure capacity where needed	Med			Better management of (and facilities for) lorry parking	Med
				Improve air quality	High

# 8

## **ACCESS TO INTERNATIONAL GATEWAYS**



## 8 ACCESS TO INTERNATIONAL GATEWAYS

---

### 8.1 ACCESS TO PORTS

#### DESCRIPTION

- 8.1.1. Ports are key international gateways that rely on inland connections by road and rail to aid with exporting and importing of goods. Every port requires road access for HGV traffic carrying a variety of bulky loads with different ports specialising in Lo-Lo and/or Ro-Ro traffic.
- 8.1.2. Some ports also have a rail link to enable goods to be delivered by train. New or upgraded connections entail improving capacity to handle additional goods and can be linked to port growth and expansion plans, efforts to meet local policy objectives and in response to site constraints. Enhancing port connectivity is crucial, especially in light of leaving the European Union and the additional customs procedures that this entails (and impact on freight flows and processing). Connectivity and capacity are also key issues given the forecast increases in port throughput in the TfSE area in the medium to long term (see DfT Port Forecasts, 2019).

#### RATIONALE

- New or upgraded connections can unlock future expansion plans and forecasted growth in goods shipments by sea.
- Port connections may be crucial in the context of addressing congestion and air quality concerns within the port vicinity and, more generally, facilitating the expedited movement of flows.
- Enhancing port connections may be needed in response to port-centric logistics and supporting burgeoning economic clusters.
- Upgrades to existing provision, combined with the use of smart technologies, can increase cost efficiencies and reduce delays.
- New or upgraded rail connections can look to support a shift away from road-based freight and support decarbonisation of the industry.
- Better connections can help mitigate the pressure on customs procedures, following the UK leaving the European Union.

#### POLICY BACKGROUND & EVIDENCE

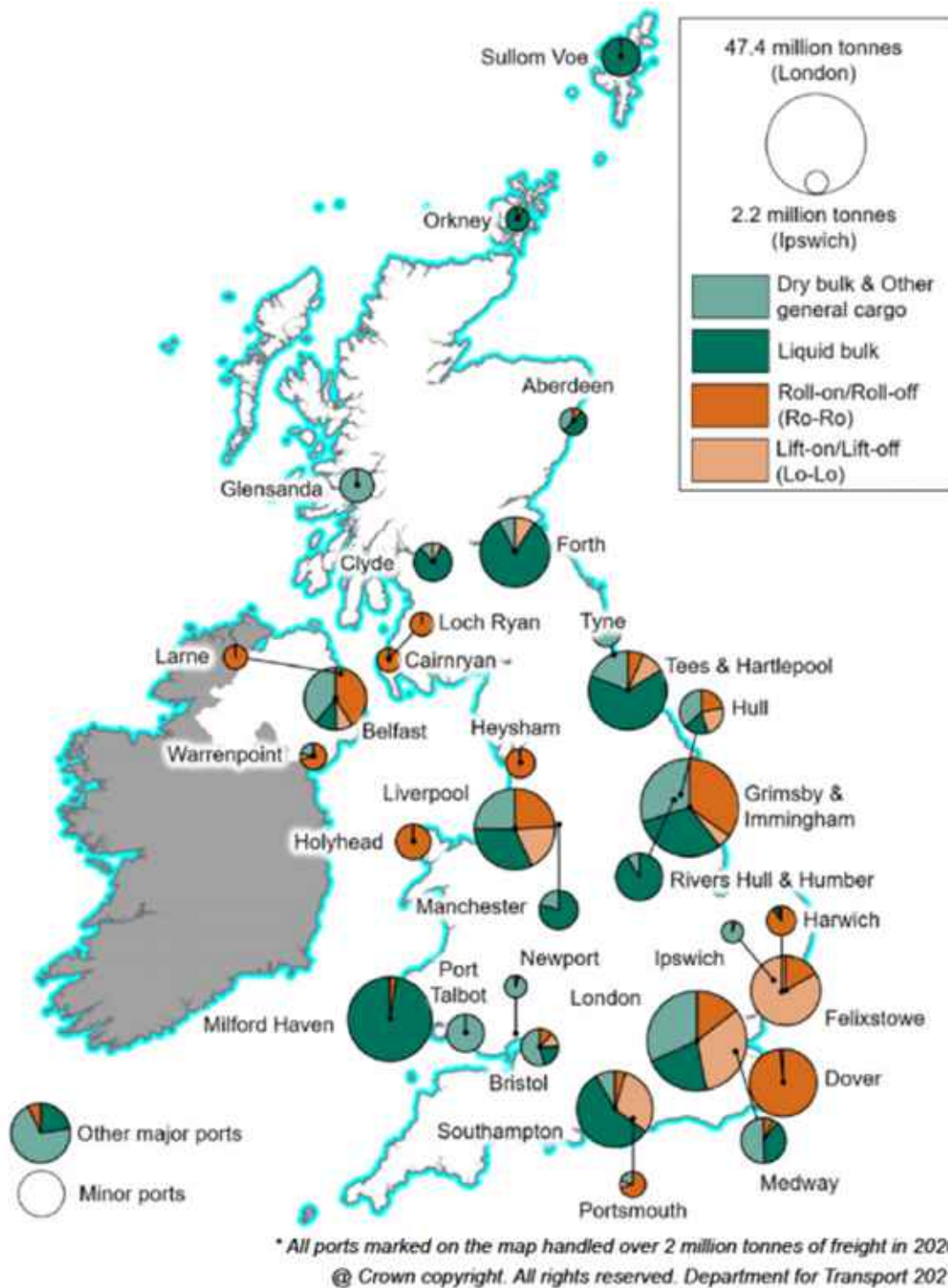
##### Snapshot Overview – Port Traffic

There are several port locations across the Transport for the South East area, ranging in size and importance, with varying levels of access by road and rail. These are often in competition with each other, as commercial operators, and serve particular commodity markets (

8.1.3. Figure 8-1).

8.1.4. A set of port 'dashboards' have been developed as part of the Freight, Logistics & Gateway Review undertaken by WSP in 2019, which provide a snapshot of the freight related activity and connectivity of each gateway (Appendix A).

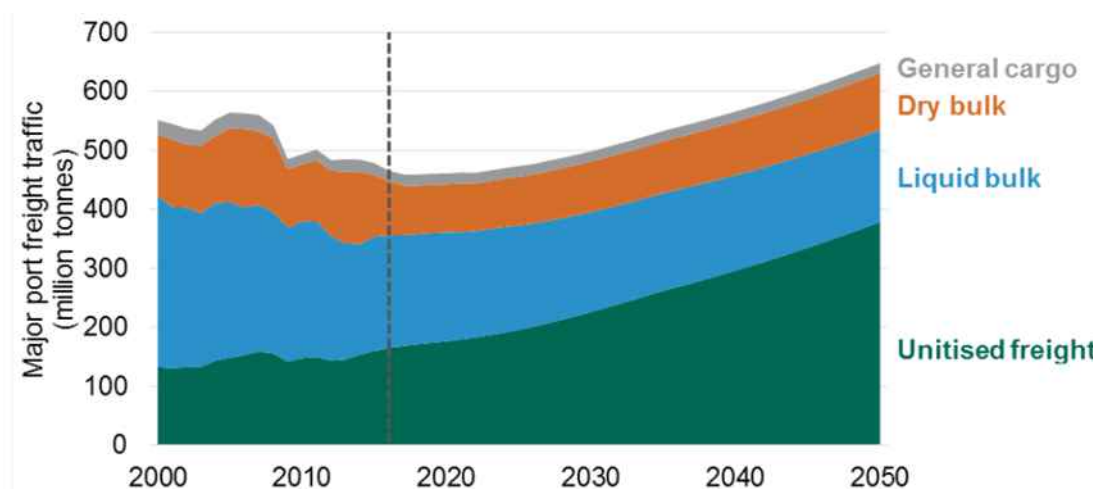
Figure 8-1 - Traffic Breakdown at Major Ports by Cargo Type (DfT,2020)





- 8.1.5. Enhancing connections to ports will be key for meeting current and future port traffic demand. At a national level, port traffic is forecast to remain stable in the short term but tonnage is expected to grow by 39% from 2016 levels to 2050<sup>73</sup>. This will be driven by unitised freight traffic (intermodal containerisation) despite a reduction in liquid and dry bulk movements (e.g. oil, coal) (Figure 8-2).
- 8.1.6. Lo-Lo and Ro-Ro freight tonnages are forecast to increase by 2.5% annually, although predicting this is challenging in the current climate, due to changes in global shipping and the repercussions from leaving the European Union, the Covid 19 pandemic and the decarbonisation agenda on supply chains. However, Southampton port is the second largest container terminal in the UK and one of only 3 deep sea ports, alongside Felixstowe and Liverpool, for Lo-Lo movements due to navigational channel availability and proximity to shipping lanes heading to/from northern Europe. It is therefore important that all three ports are operationally resilient moving forward to withstand the volumes of containers likely to increase in forthcoming years. It will be important to monitor the capacity and access challenges faced at these ports in the event this has an effect on shipping paths in the future (including across ports in the South East of the UK).
- 8.1.7. Changes to global shipping paths and international supply chains are also likely to have an impact, with demand likely to be concentrated longer term at the largest ports because of their facilities and economies of scale (berth size for bigger vessels and proximity to major shipping lanes). Currently 98% of all port freight tonnage is delivered through major ports across the UK.<sup>74</sup> However, smaller ports, such as Shoreham and Newham, are branding themselves differently (in this instance 'Green Ports') with a more holistic offer locally for serving businesses and residents.

**Figure 8-2 - Estimates of Tonnage Moved Through Major UK Ports (DfT, 2019)**



<sup>73</sup> DfT (2019) UK Port Freight Traffic 2019 Forecasts, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/771852/port-freight-forecasts.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/771852/port-freight-forecasts.pdf)

<sup>74</sup> DfT (2021) UK Port Freight Statistics: 2020, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1014546/port-freight-annual-statistics-2020.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1014546/port-freight-annual-statistics-2020.pdf)



- 8.1.8. However, Southampton, London and Grimsby & Immingham were the major ports impacted by the fall in liquid bulk in 2020; which accounted for 61% of all tonnage decline across the UK. Overall, tonnage in 2020 was 9% lower compared to 2019 and 12% lower than 2009 levels, with most of the top 10 ports in the UK experiencing a decline in tonnage during 2020. Incidentally Southampton experienced the biggest change due to the drop in crude oil but its ability to cater for containerised, unitised traffic should help to ensure longer term market resilience (Figure 8-3).

**Figure 8-3 - Top 10 UK Major Ports by Tonnage (DfT, 2021)**



- 8.1.9. Ports across the Transport for the South East area are likely to be the recipients of tonnage growth going forward, including across intermodal, automobile and construction sectors and are proactively growing existing market share through their respective masterplans. The likes of Dover in particular, operate well established Ro-Ro short sea shipping services that are unlikely to be impacted by shifts in global shipping compared to larger deep sea ports, such as Felixstowe with global shipping paths.
- 8.1.10. Even with declines in unitised traffic, driven by lockdown measures, Dover handled a fraction less of all Ro-Ro units and tonnage in 2020 than in 2019 and consolidated its market position. Indeed, Dover handles the largest proportion of Ro-Ro traffic in the world, with over half of all freight passing onto other parts of the country, whilst Southampton sees £71 million of international trade annually and is the principal port for the automotive industry.

## Future Demand Trends

- 8.1.11. There is much uncertainty surrounding future trade implications from leaving the European Union combined with changes to global shipping paths and activities in response to the pandemic longer term. In the last year, ports, namely Felixstowe, have been hit by shipping delays and backlogs portside resulting from a combination of slow container turnaround times (through a lack of HGV drivers) and teething issues with vehicle booking systems. This has led to supply chain delays and diversion of larger vessels to dock on the continent, namely at Rotterdam. Container turnaround times have doubled from 2020 to 2021 to 9 days 'dwell' time, reducing capacity on site<sup>75</sup>.
- 8.1.12. This situation, which could befall all UK ports and is partly attributable to the lack of HGV drivers, may set in longer term trends to dock on the continent and deliver goods via ports in the South Coast where there is greater sense of security. The cost of a shipping container has also risen sixfold in the past year as a consequence which may affect goods moved and routing (including the choice of port) especially if delays are assumed. This may also stem to intermodal freight market.
- 8.1.13. Longer term, a paradigm shift could manifest if significant attention being paid to full supply chain requirements as countries and companies become more self-sufficient and pursue autarkist policies which essentially reduce reliance on import traffic through ports. 'Reshoring' may lead to less trade coming from around the globe into deep sea ports, such as Southampton, Felixstowe and Immingham, to name but a few. There is still uncertainty around the trade balance from EU countries and non-EU countries before 2022 and the progress with securing free trade deals.
- 8.1.14. The automobile and food processing industries may face tariffs on component imports; although it remains at the discretion of national government to apply such levies. The food industry may also face high tariffs exporting to the EU with this impacting Portsmouth in particular, one of the largest ports handling fruit and vegetables in the UK. The use of ports by the automobile and manufacturing sectors will ultimately be shaped by supply side potential and competitiveness of the domestic economy and by global demand conditions. This is also uncertain in the current climate.
- 8.1.15. Understanding the future balance of trade between the South Coast ports and others across the UK, the likes of Dover and Southampton occupy a healthy market share of EU and non-EU trade<sup>76</sup>. This is due to their ability to accommodate a range of vessels, including deep sea cargo ships (Southampton), proximity to major shipping lanes and systems for managing access to site (with ports activity being heavily determined by levels of imports). This resilience should be attractive to prospective markets. The consequences of leaving the European Union are also likely to have a more material impact on those ports engaged in short sea trade; although this factor may just influence how goods are moved (unaccompanied v accompanied).

<sup>75</sup> The Guardian (2021) Felixstowe backlog risks delays in run up to Christmas for £1.5bn of imports, <https://www.theguardian.com/business/2021/oct/13/felixstowe-backlog-improving-so-shop-normally-for-christmas-says-minister>

<sup>76</sup> Policy Exchange (2018) Prospects for trade and Britain's maritime ports, <https://policyexchange.org.uk/wp-content/uploads/2018/07/Prospects-for-trade-and-Britains-maritime-ports.pdf>

- 8.1.16. Freeport designations, designed to boost trade and foster ‘portcentricity’ and the diversification of ports into more holistic economic catalysts, may be a symptomatic trend of the declining role of global shipping trends. Designated areas around the south, including The Solent and Thames will be competing for trade and business custom with other sites across the UK, including the Humber region, Liverpool City Region and Teesside.

### **Regional Connections**

- 8.1.17. The National Policy Statement on Ports<sup>77</sup> describes an overarching objective to promote sustainable port development that caters for long-term forecast growth in imports and exports with minimising GHG emissions and enhancing port access/sustainable transport forming part of the infrastructure requirement.
- 8.1.18. The vast majority of road freight uses the SRN and local roads to connect into ports. These, not surprisingly, have high proportions of HGVs, with volumes varying over the course of the day. At major ports, local roads can experience a high proportion of HGVs from between 10.5% of all vehicles to 47% of all vehicles at certain times<sup>78</sup>.
- 8.1.19. The need to improve access to international gateways was identified in the Transport for the South East Economic Connectivity Review<sup>79</sup>, based on the overarching view of the South East area’s current economic geography and potential up to 2050. The two main ports, Southampton and Dover, are particularly key to national prosperity and rely on sound connectivity.
- 8.1.20. Most of the ports across the Transport for the South East area that handle over 1 million tonnes of cargo annually, are connected into the SRN via a combination of motorways and dual carriageway A roads (

<sup>77</sup> DfT (2012) The National Policy Statement on Ports, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/3931/national-policy-statement-ports.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/3931/national-policy-statement-ports.pdf)

<sup>78</sup> Highways England (2016) International gateways and the strategic road network, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/600269/SEGP - Underpinning Report - International gateways and the SRN.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/600269/SEGP_-_Underpinning_Report_-_International_gateways_and_the_SRN.pdf)

<sup>79</sup> Transport for the South East (2018) Economic Connectivity Review <https://transportforthesoutheast.org.uk/app/uploads/2020/10/FINAL-Economic-Connectivity-Review.pdf>

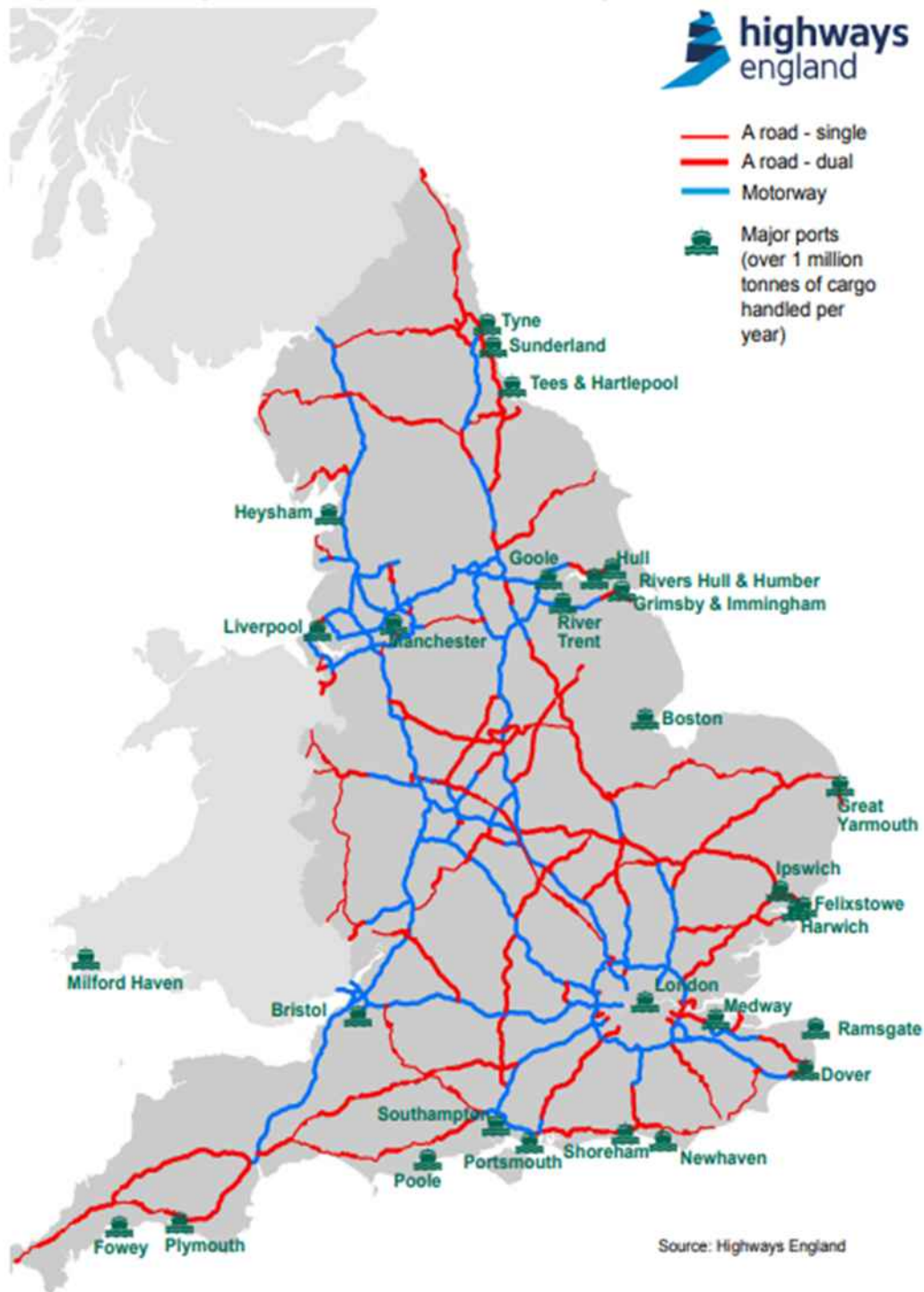
8.1.21. Figure 8-4), with often a need to use local roads for accessing the port estate directly. The 'first & last' mile link between these two networks is often where congestion and issues with air quality and local amenity tend to concentrate and where traffic mixing takes place.

Only a selection of ports are currently served by rail. These are Southampton, Portsmouth (which is served by rail 'off site' and not recorded on

Figure 8-5), Newhaven (reinstated recently but not illustrated on this map) and Medway Ports and London Thamesport (just outside the TfSE area). Network Rail advise that the former rail link to Sheerness (one of the Medway Ports) would be straightforward to reinstate. These are illustrated in

8.1.22. Figure 8-5.

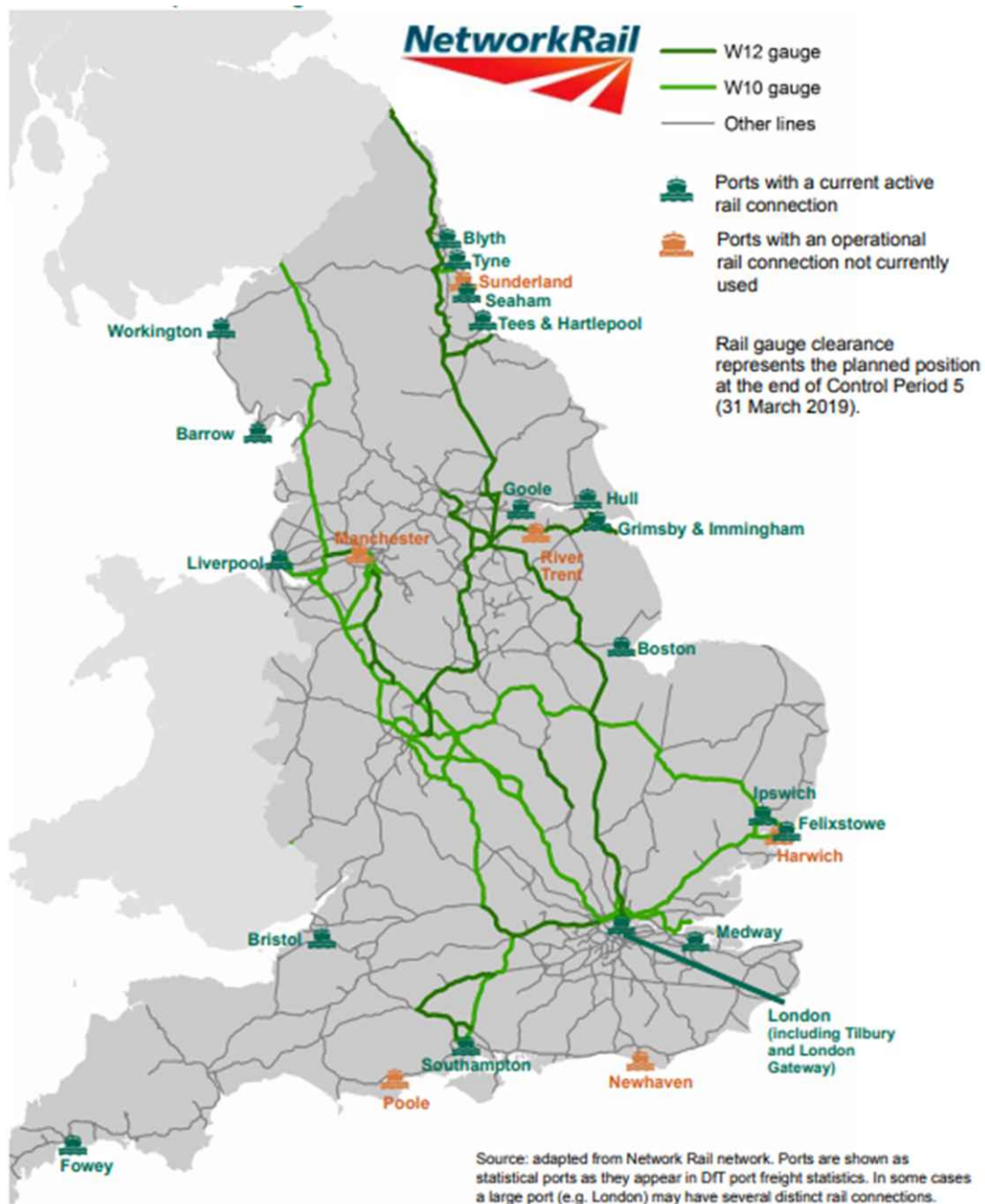
Figure 8-4 - Road Connections to UK ports (DfT, 2018<sup>80</sup>)



<sup>80</sup> DfT (2018) England's Port Connectivity: the current picture 9 regional case studies, [Port Connectivity Study: Regional Case Studies \(publishing.service.gov.uk\)](https://www.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700798/Port-Connectivity-Study-Regional-Case-Studies.pdf)



Figure 8-5 - Rail Connections to UK Ports (DfT, 2018<sup>81</sup>)



<sup>81</sup> DfT (2018) England's Port Connectivity: the current picture 9 regional case studies, [Port Connectivity Study: Regional Case Studies \(publishing.service.gov.uk\)](https://www.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700798/Port-Connectivity-Study-Regional-Case-Studies.pdf)

## Freeport Status & Connectivity

- 8.1.24. The recent designation of eight ‘freeports’ across the UK, including across the Solent and Thames, from April 2022, is designed to have a catalytic impact on regenerating deprived coastal communities by incentivising development around major ports and international gateways. The timing of the designation is significant, as it mirrors the transition period and disruption taking place across other freight networks in response to leaving the European Union. In terms of connectivity and freight activity. An announcement will be made on the Solent Freeport in early 2022 following the recent opening of the Teesside and Thamesport freeports.
- 8.1.25. Freeport status could lead to:
- Shifting potential supply chain activity and maritime freight paths (for coastal shipping, as well as deep sea container vessels) between UK ports; with implications on road and rail freight demand (and by that nature, the scale of future provision that will be required to accommodate additional freight flows).
  - Reducing customs processing, land and labour requirements, by simplifying planning processes, customs procedures and accessing additional government support. This could enhance the appeal of designated ports for road freight but may have possible repercussions on network capacity without mode shift taking place.
  - Freeports cover all international gateways, such as airports or rail hubs, although no announcement has been made to the latter with respect to the Transport for the South East area. However, as an emerging trend, there will be a requirement to identify and futureproof candidate sites and the potential land and infrastructure requirements to foster business clusters and added value services (e.g., Marchwood in Southampton).
  - The potential offered by freeports to support mode shift towards rail freight could be better explored, especially if streamlined planning processes can overcome notorious issues with siting Strategic Rail Freight Interchanges (SRFI) across the South East of the UK.
  - Freeport status will seek to solidify the Solent’s strong track record and status for international trade and will continue to rely on utilising domestic connections by road and rail towards the Midlands. Additional funding and focus will be on this corridor, in particular.

## Strategic Links

- 8.1.26. As identified in the Transport for the South East Transport Strategy the key corridors that enable road freight to access the major sea ports (with limited reference to smaller ports) are as follows:
- The A2/M2 corridor from Dover to the East of England, Midlands and North of England via the Dartford Crossing;
  - The A20/M20 corridor from Dover and the Channel Tunnel terminal at Cheriton to the East of England and North of England via the Dartford Crossing, or the West of England and Midlands via the M25 and M4/M40; and
  - the M3/A34 corridor from Southampton to the Midlands and the M27 around the Solent area

- 8.1.27. From a rail perspective, the South Western Main Line, Cross Country Lines and High Speed 1/North Kent Line/South Eastern Main Line between Dover/Folkestone and London are key arteries for rail freight, whilst local links around Southampton are vital to the movement of container/intermodal goods, for commodities associated with the automotive industry (20% of all vehicle scheduled for export through Southampton arrive by rail from the Midlands) and chemical, gypsum and foodstuff sectors. Dover currently has no rail link and Portsmouth Fratton line/sidings are underutilised.
- 8.1.28. The Network Rail Freight Study<sup>82</sup> notes that the strategy for future rail freight network prioritises capacity and capability enhancements for access to the major ports and that the rising demand for intermodal freight requires gauge clearances (to W10/W12), increased train lengths, electrified sections of track and nodal yard concepts. This is a key consideration when designing port connections but the specifics of which need to be defined within or nearby port estates.
- 8.1.29. England's Port Connectivity: The Current Picture report<sup>83</sup> alludes to a number of key strategic challenges that have been identified for (international) port connections, namely M3/A34, A326 and Junction 2 M27 improvements, linked into the expansion of Southampton Port and Dover Port access and rail gauge clearances.
- 8.1.30. The A2 trunk road is also key for local resilience alongside accessing customs border facilities that are not directly at port locations (to avoid backlogs). The effect of the Lower Thames Crossing will likely be that the proportion of traffic travelling to the Port on the A2 increases, with the implication that traffic management may be needed on the A2 near Dover, mirroring the TAP system in place on the A20 (TAP2). There are also parts of the A2 which need to be converted into dual carriageway to support the volumes of traffic anticipated to use this route and improve overall resilience of the Kent corridor.
- 8.1.31. Access to the Port of Dover and the Port of Southampton, as well as the Dartford Crossing, are named challenges that need to explore enhanced port connections by road and rail. With the exception of the Dartford Crossing, these ports are of regional and international significance, transporting 76 million tonnes of port freight (16% of the UK total) per annum.
- 8.1.32. The M3/South Western Main Line Corridor provides important connectivity for freight traffic using the Port of Southampton, which is set to expand. It is currently heavily utilised and congested. It is better served than smaller ports, such as Shoreham, but handles significantly more goods and serves a number of high profile industries that are key for wider UK prosperity.

### **Local Links – Dover**

- 8.1.33. Dover currently has a reliance on local road connections for access with no rail freight alternative. Future network resilience is key due to the dependency on Ro-Ro traffic and road freight access (diversification may help reduce reliance on Ro-Ro too). This is highly likely to be the case going forward, as road freight remains commercially attractive (low cost and high frequency short sea shipping) with suppliers opting instead to move goods by rail through alternative, deep-sea ports if this is viewed as desirable.

<sup>82</sup> Network Rail (2017) Freight Network Study, <https://www.networkrail.co.uk/wp-content/uploads/2017/04/Freight-Network-Study-April-2017.pdf>

<sup>83</sup> DfT (2019) The DfT England's Port Connectivity: The Current Picture, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/701352/england-port-connectivity-the-current-picture.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/701352/england-port-connectivity-the-current-picture.pdf)

- 8.1.34. In Dover, the A20, which provides access to the Eastern Docks for Ro-Ro traffic, also sits within an active AQMA. For the port to meet growth forecasts, further concerted efforts should be pursued that help to manage/stagger HGV flows using existing vehicle booking systems, combined with a combination of access 'slip roads' and additional lorry parking provision within the immediate catchment area (45 minutes radius).
- 8.1.35. One of the principal concerns around access to the Port of Dover is the congestion that regularly occurs along the A20 Tornwall Street, with 'buffer zones' being contemplated by the Dover Harbour Authority to manage access accordingly. The DWDR would go some way to addressing the challenge; at least for local traffic mixing.
- 8.1.36. The transfer of freight from road to rail, a policy previously outlined in an Air Quality Action Plan (2007), still holds weight for reducing the dependency on HGVs, whilst the action plan within the Port of Dover Air Quality Strategy (2020) alludes to investigating opportunities for modal shift from road to rail over the short term (0-3 years); a very ambitious target.
- 8.1.37. Explicit reference is also made to growing air quality concerns, owing to its use by HGVs. The A2 approaching the town is of an inferior quality to the rest of the route, with sections of single carriageway; with a pressing need to dual these remaining sections and improve the Duke of York's Roundabout. The Dover TAP has been a short-term solution, but an improved strategic road network is required.
- 8.1.38. The Port of Dover Plan for 2045<sup>84</sup> makes strong reference to ensuring traffic fluidity, especially with customs procedures now in place. The development of a logistics park (DWDR project) whilst creating logistics opportunities adjacent to the park also revives the question around providing a direct rail link to the docks to facilitate multi modal operations, whilst road network resilience (M2/A2) dual carriageway and use of TAP are key to future connectivity.
- 8.1.39. The DWDR project, which would see the transfer of cargo operations to a new cargo terminal with two container berths and a new distribution centre, will provide Dover with the long-term capacity to continue to be a key international gateway. The development will seek to handle trade to the value of £119bn, representing 17% of UK trade in goods, with road access being key for sustaining and accommodating levels of Ro-Ro traffic (over 95% of which is moved by road) in the absence of a direct rail connection.
- 8.1.40. The Port of Dover is also working to support British exports, increase global trade and deliver sustainable logistics, by developing the UK's first Global Trade and Innovation Zone, which will also comprise a zero-emission logistics corridor through its designation as a Freeport. This offers synergies with enhancing infrastructure connectivity to fulfil growth aspirations.

### **Local Links – Southampton**

- 8.1.41. The Port of Southampton Masterplan (2016-2035) makes direct reference to the need for efficient inland (and marine) access routes for minimising delays. There has been previous investment in port traffic management schemes and booking systems to support better access and there is a desire to shift more freight from road to rail, especially on the basis of forecast growth in tonnages.

---

<sup>84</sup> Port of Dover (2020) The port of Dover Plan for 2045, First round masterplan consultation document, [https://www.doverport.co.uk/administrator/tinyMCE/source/Mater%20Planning/Master%20Planning%20Document\\_WEB.pdf](https://www.doverport.co.uk/administrator/tinyMCE/source/Mater%20Planning/Master%20Planning%20Document_WEB.pdf)

- 8.1.42. Concerns around air quality have been raised on the main access road to the Port of Southampton (A33 Millbrook Road) which is in the top 30% across the UK, in terms of total delay to vehicles.<sup>85</sup>
- 8.1.43. The declaration of Air Quality Management Areas (AQMAs) around principal access routes to the port by Southampton City Council and New Forest District Council, raises the question around suitability of new or upgraded connections, especially by road. There is a commitment as part of the Solent freeport bid that aspires to port-centric logistics and manufacturing, to be developed within or adjacent to the port curtilage (e.g. Marchwood and Cracknore Industrial Estates) which will lead to growth in freight movements.
- 8.1.44. On this basis, informal discussions have taken place around the need for improvement to road approaches to cater for increased activity as a result of port expansion including at Solent Gateway. Proposals have been lodged to dual the A326 as part of the emerging transport strategy, to cater for increased activity towards the west side of Southampton Port, including at Marchwood Military Port and the potential redevelopment of Dibden Bay. A robust business case will need to consider the potential environmental impacts, the scale of potential journey time savings and overall cost effectiveness
- 8.1.45. The Southampton City Centre Action Plan (adopted 2015) and Policy AP4, outlines the Council's support for the growth and competitiveness of the port, whilst referencing the need for developments not to have an adverse impact on strategic or secondary access to site.
- 8.1.46. A Freight Train Lengthening Scheme was completed in Southampton Port ( Western Dock) in February 2021 to boost train lengths to 775m. Redbridge sidings are also due to be upgraded as part of the project. On this basis, the expansion of ports must be supported by appropriate highway access and railway networks; although constraints on gauge clearances limit the expansion of container shipments by rail.

#### **Local Links – Portsmouth**

- 8.1.47. The Port Master Plan for Portsmouth International Port (Planning to 2026) outlines The Trafalgar Gate Link Road Scheme as a major infrastructure investment under Strategy 1 of its publication. This was completed and renamed the Princess Royal Way to improve access to the port and to keep HGVs out of the stream of traffic entering the city and allows for the smooth departure onto the motorway network. The refurbished Fratton Goods Yard and rail link remain long-term assets and an alternative to road freight (but services were previously unsustainable commercially) with aspirations to explore a combined domestic intermodal terminal and zero emission last mile hub for removing HGV access into the town.
- 8.1.48. Portsmouth International Port has good rail access off site via an underutilised facility at Fratton (which has been converted for use again but is not in operation). However, the port predominantly serves Ro-Ro traffic (third busiest in the UK in terms of tonnage throughout) and there are instead future aspirations to bring this back into use for domestic intermodal traffic serving the centre of the town which would include the introduction of zero emission vehicles for last mile logistics.

---

<sup>85</sup> Highways England (2016) International Gateways and the Strategic Road Network, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/600269/SEGP - Underpinning Report - International gateways and the SRN.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/600269/SEGP_-_Underpinning_Report_-_International_gateways_and_the_SRN.pdf)



## Local Links – Medway Ports

- 8.1.49. Smaller ports, such as the Port of Medway cluster owned by Peel Ports Group have limited (or underutilised) rail connections (e.g. Sheerness) but future demand is uncertain and significant traffic has rediverted to London Gateway. That said, the Grain Line continues to facilitate the import/export of aggregates and is associated with the aviation fuel storage depot and Thamesport activity. Rail access to Northfleet terminals are limited and Gillingham lacks any rail connection. Flows of aviation fuel to Colnbrook and Heathrow from the Isle of Grain are estimated to be 1.1million tonnes per annum<sup>86</sup>.
- 8.1.50. Network Rail have highlighted its potential in the Kent Route Study (as implied in the emerging Medway Local Plan Policy T3), whilst the historic Medway Local Transport Plan (2011) loosely refers to better management of freight and improved access to the international gateway at Grain to boost regeneration and economic competitiveness.
- 8.1.51. The Port of Sheerness, part of the Medway Ports Cluster, that is owned and managed by Peel Ports, loosely refers to their aspirations for boosting rail freight activity and recycling a former steelworks branch line in their masterplan (2016). This would require upgrades to the rail terminal to increase mode share of Lo-Lo traffic. This remains an aspiration; with the aim of connecting the port with Liverpool via the Midlands and to serve the automobile and dry bulk sectors via the Isle of Sheppey around London and on to the West Coast mainline. The A249 and M2 are key road connections for the Medway Ports; the former having been improved in recent years through the Second Swale Crossing.

## Local Links – Shoreham

- 8.1.52. The Transport Strategy for Shoreham Harbour (2016) seeks to support the regeneration of the facilities to connect the harbour with its surroundings (It sets out that opportunities will be sought to standardise the road capacity along the A259 and reduce its severance effect with the seafront and improvements to sustainable transport along the A259), reduce congestion within the town centre and improve port access (via upgrades to key junctions, to support uplift in cargo handling). More specifically, a package for each corridor would be required to address the specific challenges and conditions of the corridor between:
- A259 between Norfolk Bridge and Hove;
  - A283 Old Shoreham Road from Shoreham town centre to A27; and
  - A293 Church Road-Trafalgar Road-Handleton Link Road from Portslade to A27.
- 8.1.53. Proposals within the Shoreham Port Masterplan (2010) also seek to minimise the impact of port operations on the public highway; with the widening and extending of Basin Road North helping to lead HGVs more directly to the advisory lorry route on A293 and onwards to the A27, which will reduce the amount of port-related traffic on the A259 between Church Road and Wharf Road.

---

<sup>86</sup> WSP (2019) Freight Logistics and Gateways Review

- 8.1.54. Enhancing access is required (Strategy Outcome OC3) due to the presence of three AQMAs in the vicinity of the harbour area, noise pollution and accident clusters (A293/A259 corridors, alongside the forecast growth and development of the facility. Whilst road access to Shoreham is constrained, there is no alternative rail connection to the mainline. The LEP has identified improvements to the A23 as being important to improve access to all the South Coast ports more broadly.

#### **Local Links – Newhaven**

- 8.1.55. The Newhaven Port Masterplan (2012) acknowledges that the port is already well served by land (Port Access Road developed recently) and by rail, through a reactivated line and railhead catering for bulk flows of aggregate materials and in harmony with a major re-signalling programme locally. Scope has been identified in the plan for further improvements through more integrated regional and local transport strategy around the port and the town more broadly as part of ambitions to become a 'green port'.
- 8.1.56. The Newhaven Port Access Road Business Case (2018) identifies the role of the A23 as key to southern port access but better diversionary routes are required to improve local resilience. The route also links into the Manor Royal Trading Estate, one of the largest in the UK and a major freight generator.
- 8.1.57. Rail freight often travels on the Solent to Folkestone corridor via Lewes and Brighton, as well as the congested Brighton Mainline north to London. This hints at the opportunities available for the port to plug into well utilised links for the movement of goods across the coast and further north.

#### **Local Links - Ramsgate**

- 8.1.58. Ramsgate was a commercial port and, until recently, operated ferry services to both Dunkirk and Ostend. It is now primarily a construction/operation/maintenance base for three nearby offshore wind farms<sup>87</sup>. There is limited data and information on port traffic (freight) and the ease of access via road (it has no rail connection). The A299 is the main connection which feeds into the M2. As part of planning for leaving the European Union, brief consideration was given to the prospect of Ramsgate Port providing extra resilience to Dover; although ultimately no specific actions were taken to bring it back into operation.

### **INTERVENTION OPTIONS**

- 8.1.59. In this instance, a distinction is made between port connections that take place at two scales for two modes of transport:
- Strategic: Key corridors, part of the SRN, that have been shown to have a direct impact on the ease of access and freight flows through to port facilities and of regional/national importance.
  - Local: Links and connections within the immediacy of a port often identified by the ports themselves as key investment targets and linking in with local policy discourse
- 8.1.60. Enhancing port connections refers to:
- Road Connections: Links using the local and strategic road network (haulage) to move goods.

<sup>87</sup> WSP (2019) Freight Logistics & Gateways Review, <https://transportforthesoutheast.org.uk/app/uploads/2020/11/Freight-logistics-and-gateway-review.pdf>



- Rail Connections: Links using the national rail network and any spur lines (often with multimodal facilities/railheads).

## RECOMMENDATIONS & LOCATIONS ★ ★

- 8.1.61. There are many references to providing appropriate links and improvements to the highways and railway networks at expanding ports in the South East; targeting ports of international significance and national prosperity. These are also the ports that handle the most tonnage (now and in the future) whilst benefiting in the short to medium terms from either Freeport status or large scale regeneration plans.
- 8.1.62. Liaison with National Highways will be key. The 2020 DfT Road Investment Strategy 2<sup>88</sup> references the desire to work with partners for delivering the Port Infrastructure Fund that focuses on making improvements in Dover and Southampton (as well as at Felixstowe). Transport for the South East should therefore look to work closely on delivering the fund and extending cooperation to future investment in strategic and local links, to reach respective port estates.
- 8.1.63. On this basis, efforts should centre on making improvements to strategic road and rail connections, namely the M3/A34, M27/M271 and A326, and parallel road connections routes e.g. A33 (serving Southampton) and the A2/M2 (serving Dover) as the priority hotspots. There are targeted congestion hotspots around Portsmouth International Port, namely around:
- Rudmore Roundabout, providing access between the port and the M275
  - London Road (A2047) and Stubbington Avenue
  - London Road (A2407) and Kingston Crescent
- 8.1.64. The Port of Southampton (ABP and Solent Gateway) has development proposals to meet predicted demand for port facilities and services. The area's highway network will require scrutiny to assess highway capacity and related air quality issues.. The city road network is fragile and requires addressing to accommodate future growth forecasts, future port expansion (and unlocking of the Strategic Land Reserve), as well as tackling issues with localised congestion and air quality.
- 8.1.65. Other more targeted priority inventions include:
- A20 Access to Dover: Local improvements to enhance access to the Port of Dover from the A20, which includes redesigning two junctions to provide free flow journeys for HGVs and dualling the final section, to enable 'stacking' of vehicles (with TAP in place)
  - M25 Junction 30 (A13): comprehensive expansion of the junction, including free-flowing links from the southbound M25 to the eastbound A13. The scheme improves access to ports in the Thames estuary.
  - M2 Junction 5: improvements to a key junction on the M2 that will enhance access to the Medway Ports and a key confluence on the SRN in North Kent.

<sup>88</sup> DfT (2020) Road Investment Strategy 2: 2020–2025, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/951100/road-investment-strategy-2-2020-2025.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/951100/road-investment-strategy-2-2020-2025.pdf)

## KEY CHALLENGES

- Matching port growth forecasts with improvements to rail and road access short term, especially in response to additional customs checks required after leaving the European Union.
- Dependence on road access and improvements to selected ports (particularly Dover) and the consequent conflict between economic, environmental and social objectives.
- The costs required to reinstate rail links and the necessary gauge clearance and siding lengths required to accommodate rail loads.
- Managing the relationship and splitting responsibilities between public authorities and their highway elements and access improvements with port estates and other third parties.

## IMPACT ASSESSMENT

Problem Statements	1,2,4,5,11,12,14,16,17,20,21				
Economic	High	Environmental	High	Social	Med
Improve operational efficiency	High	Reduce greenhouse gas emissions, and achieve net zero carbon by 2050 at the latest	Med	Improve operational safety (especially for vulnerable road users)	Med
Enhance freight and logistics' contribution as an industrial sector in its own right (especially to employment)	Med	Reduce wider environmental impact of freight	High	Better integration between freight's operational needs and planning/place making	Med
Improve connectivity to and from the Transport for the South East area's international gateways, including through enhanced infrastructure capacity where needed	High			Better management of (and facilities for) lorry parking	Med
				Improve air quality	Med

## 8.2 ACCESS TO AIRPORTS

### DESCRIPTION

- 8.2.1. Airports, like ports, are key international gateways that rely on connections by road and rail to aid with exporting and importing goods. Air cargo typically consists of low volume or high value courier consignments, mail and parcels operating Just in Time (JIT) express deliveries, carried in the hold of passenger planes - but can also include certain types of bulk materials. Similar to port logistics, there is an increasing trend towards airport economic clusters which, together with the need to move goods between the airport and goods origin/destinations, rely on sound local and regional links by road and rail.

- 8.2.2. This is set against a backdrop of airport expansions planned across the region and the need to accelerate decarbonisation of the aviation industry. This applies both to surface access transport, covering operational airport vehicles and from travellers accessing the airport, as well as the aircraft utilising alternative technologies and aviation fuels to lower domestic/international emissions. The Jet Zero Strategy, currently under consultation<sup>89</sup>, will focus on the steps towards reaching net zero emissions by 2050 which should take into account the impact of freight movements.

## RATIONALE

- New or upgraded road connections can unlock economic agglomeration around key logistics sectors (e.g. 3PLs, wholesalers);
- Upgraded road links can be combined with the suite of traffic management technologies (VBSs) to reduce localised congestion;
- Rail connections can help to move bulk freight on strategic journeys and contribute towards plans to reduce airport emissions;
- New road connections can serve to support the efficient and safe movement of goods and people in and around the local area;
- New and upgraded rail links can enhance clearance capacity and provide additional resilience on the network; and
- Enhanced connectivity will ultimately serve to optimise transshipment periods, improve operational and supply chain efficiency.

## POLICY BACKGROUND & EVIDENCE

- 8.2.3. Air freight is particularly relevant to the South East of England. Heathrow is the largest airport hub in the UK and handles more air cargo than all other UK airports combined. Whilst the airport sits outside the TfSE area it serves as the main distribution point for all means of air cargo across the south of England, ranging from express JIT delivery of small scale, high value goods, through to bulkier cargo consignments.
- 8.2.4. Heathrow handles almost 1.7million freight tonnes per annum, compared to 97,000 freight tonnes at Gatwick and 200 freight tonnes using Southampton airport, the other main commercial airports across the region. Other airports, located in Farnborough and Brighton, have not been considered in this study due to their relative size and future capacity to support growth in air cargo.
- 8.2.5. Across the UK, before the pandemic, record quantity of freight was handled at UK airports, growing twice as fast as global trade with cargo having risen by over 25% to 112,570 million tonnes between 2017-2018<sup>90</sup>. Whilst this reduced during the pandemic, disruptions to global shipping and regulatory changes rising from leaving the European Union are expected to stimulate new and renewed interest in air freight, due to its reliability and speed.

<sup>89</sup> DfT (2021) Jet Zero Consultation A consultation on our strategy for net zero aviation, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1002716/jet-zero-consultation-a-consultation-on-our-strategy-for-net-zero-aviation.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1002716/jet-zero-consultation-a-consultation-on-our-strategy-for-net-zero-aviation.pdf)

<sup>90</sup> Steer (2018) Assessment of the value of air freight services to the UK economy, <https://airlinesuk.org/wp-content/uploads/2018/10/Assessment-of-the-value-of-air-freight-services-to-the-UK-economy-Final-Report-v22-Oct-2018-b-SENT.pdf>

- 8.2.6. This is particularly the case for certain markets, particularly low volume, high value goods (particularly the manufacturing sector), as well as consolidation of existing markets in perishable goods, with the vast majority of freight being held in the ‘belly’ of passenger aircraft (95%). Night flying is particularly relevant for major airports in the South East of England, to help deliver the express freight market, which allows UK consumers to receive products from around the world in ever shorter timescales. This in effect requires seamless supply chain integration and logistics to take place for moving goods between the airport and origins/destinations throughout the course of a 24hr period.
- 8.2.7. Airports have catalytic impacts on the UK economy as well as local, neighbouring communities. In total, air freight and associated businesses deliver over 46,000 jobs and contribute over £1.4 billion to the UK economy<sup>91</sup>. Large airports across the UK, including Gatwick and Heathrow, also have well established business and logistics clusters to serve the air freight market, with customers extending across the country.

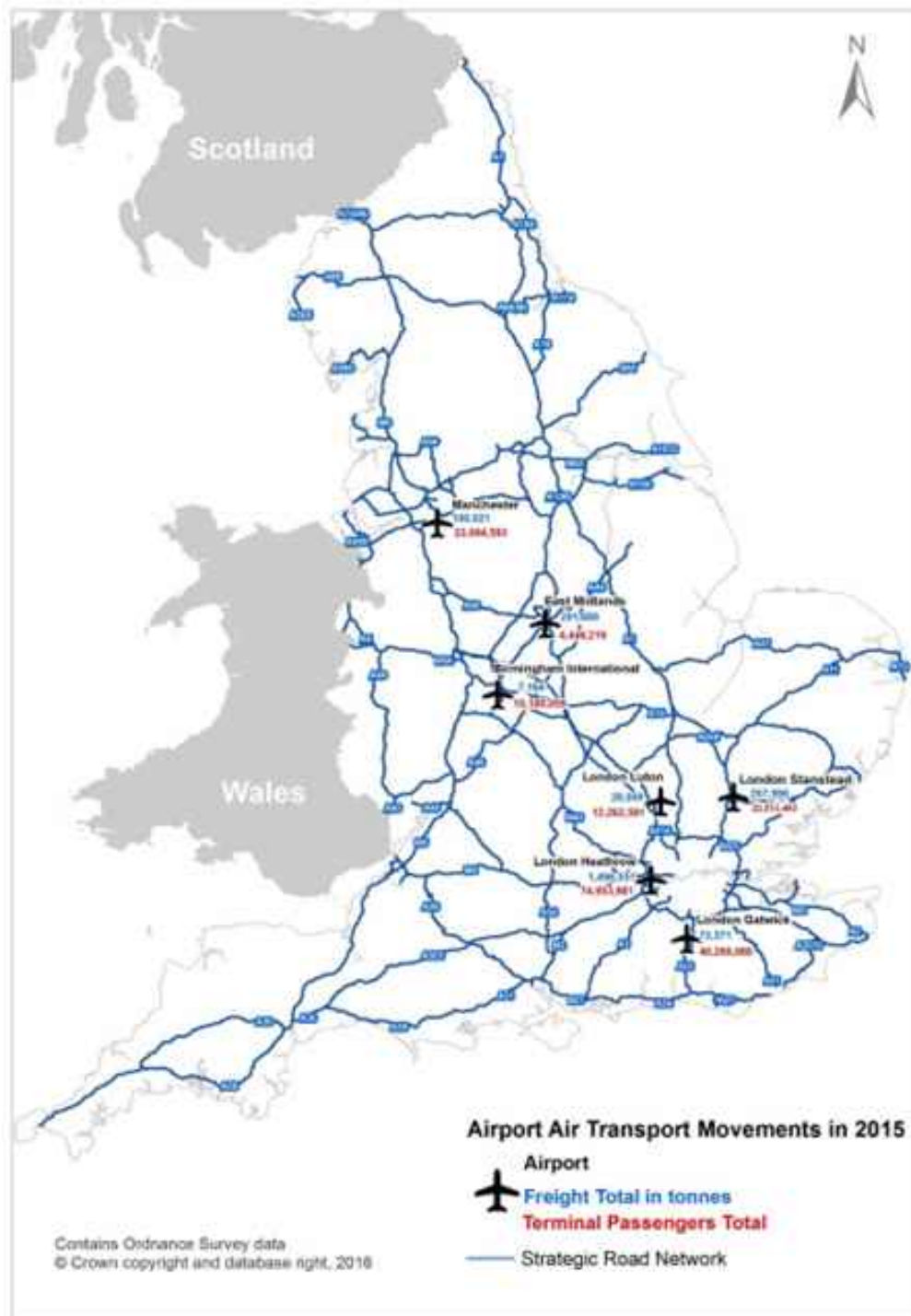
At a strategic level, the most important corridors for accessing the South East area’s airports are the M4/Great Western Main Line and M25 corridors for Heathrow Airport; and the A23/M23/Brighton Main Line corridor for Gatwick Airport. The M27/M3/A3 are the main connecting points for Southampton Airport and strategic freight trips serving communities across the south coast and origins/destinations further northbound. These three international gateways are expected to grow with masterplans in place to help minimise the adverse impacts on communities whilst supporting development of additional freight carrying capacity. In all cases, this will add freight flows serving the airport. (

---

<sup>91</sup> Airlines UK (2018) Assessment of the value of air freight services to the UK economy, [Assessment of the value of air freight services to the UK economy \(airlinesuk.org\)](https://airlinesuk.org/wp-content/uploads/2018/06/Assessment-of-the-value-of-air-freight-services-to-the-UK-economy.pdf)

8.2.8. Figure 8-6)

Figure 8-6 - SRN Connections to Major UK Airports (Highways England, 2016<sup>92</sup>)



<sup>92</sup> Highways England (2016) International Gateways and the Strategic Road Network, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/600269/SEGP\\_-\\_Underpinning\\_Report\\_-\\_International\\_gateways\\_and\\_the\\_SRN.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/600269/SEGP_-_Underpinning_Report_-_International_gateways_and_the_SRN.pdf)

## Heathrow

- 8.2.9. Heathrow is the UK's only international cargo hub and Britain's largest port by value, handling 30% of non-EU exports and being within 95% of the global economy within a direct flight path<sup>93</sup>. The airport has aspirations of lifting 3 million tonnes a year by 2040, through enhanced capacity and improved service provision; almost double the current quantity lifted. This includes streamlining air-to-air processes, which includes reducing surface transport emissions and reducing trucking costs for handlers and forwarders.
- 8.2.10. In terms of tonnage, fresh or chilled fish (46,677) and printed books (27,468) make up the vast majority of non-EU exports alongside JIT delivery of parts and accessories for the automotive industry, packaged substances for medical treatments and gas utility equipment. These require efficient, lean international supply chains that rely on good access and regional connectivity to deliver between origins/destinations. Currently over 2.75 million freight vehicle movements are undertaken each year to support the airport's cargo operations<sup>94</sup>.
- 8.2.11. The government supports growth in the air freight sector and maximising the capacity at existing airports to facilitate global trade from Heathrow. The Northwest Runway scheme, for example, was recently endorsed, which is estimated to nearly double the airport capacity to 3 million tonnes per year<sup>95</sup>. Heathrow is also reviewing facilities with shippers and forwarders, to incorporate a perishable/pharmaceutical centre, goods vehicle call forward facilities and expanded distribution centres on site – all of which are in response to or to cater for local freight movements by road.
- 8.2.12. More specifically, preferred masterplan proposals have outlined the need for additional freight forwarding warehouses in a consolidated site to the south of the airport, with easy access to the cargo hub. The rationale includes the need to provide additional lorry parking capacity to the northwest of Stanwell Moor junction, which suffers from congestion and will require localised upgrades. This is particularly relevant for serving the business and logistics activity taking place across the wider area more generally, with shuttle movements to and from airport warehousing representing a third of cargo related trips<sup>96</sup>.
- 8.2.13. Heathrow has also been unveiled as one of sixty-five Logistic Hub locations for construction and manufacturing which will help the airport deliver its expansion plan. The Logistics Hubs aim to reduce emissions through transporting assembled components to site in fewer lorries and will work by pre-assembling components off-site before transporting them in consolidated loads to Heathrow, just as they are needed.

<sup>93</sup> Heathrow Airport Limited (2016) Heathrow Cargo Strategy, <https://www.heathrow.com/content/dam/heathrow/web/common/documents/company/cargo/cargo-strategy.pdf>

<sup>94</sup> Heathrow Airport Limited (2016) Heathrow Cargo Strategy, <https://www.heathrow.com/content/dam/heathrow/web/common/documents/company/cargo/cargo-strategy.pdf>

<sup>95</sup> DfT (2018) Aviation 2050 The future of UK aviation, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/769695/aviation-2050-web.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/769695/aviation-2050-web.pdf)

<sup>96</sup> Surrey Chambers of Commerce (2017) Heathrow's New Blueprint for Sustainable Freight Plan, <https://www.surrey-chambers.co.uk/news-listing/heathrows-new-blueprint-for-sustainable-freight-plan/>



- 8.2.14. Future proposals refer to London's growing population and the potential issues with future congestion on the M4, although this is seen as a wider issue than just airport capacity (schemes are due for completion in 2022). There is a risk it could hold back the economic benefits arising from improved global connectivity delivered by expansion at Heathrow.
- 8.2.15. Rail access will be key for serving Heathrow in the future and is likely to play a pivotal role in the movement of freight regardless of expansion plans, due to the congestion on the SRN. This would likely include:
- Delivering aviation fuel. This takes place three times a day with a fifth of its aviation fuel being supplied by cross London flows of trains (from the Isle of Grain) which will increase proportionally with any expansion plans coming to fruition.
  - Aggregates - in low quantities from Thorney Hill after the sidings were reinstated in 2021 which use the same line for transporting materials from the Midlands and accessing the burgeoning markets/construction industry in London.
  - Catering supplies – serving the airport directly with propensity to shift volumes from road to rail longer term and increasing volumes in line with the proposed new terminal/runway.
  - Construction (Heathrow) – Rail freight would play a role in delivering goods during expansion plans (third runway) to mitigate social and environmental externalities. This forms part of the proposals submitted by Heathrow Airport Limited.
- 8.2.16. Express rail freight deliveries, using converted passenger rolling stock, is an emerging market with converted Electric Multiple Units (EMUs) previously used to access Heathrow being converted to handle light logistics. An agreement between Rail Operations UK Limited (ROUK) and Heathrow Airport Limited has been made to establish a service.
- 8.2.17. Much of the demand for shifting freight from road to rail has been driven by climate change legislation, greater road congestion locally and a boom in e-commerce, with the pandemic having driven the demand for fast, reliable trunk route logistics<sup>97</sup>. Unlike aggregate services, which operate a closed loop supply chain of regular, periodic services, scope may be limited by the infrequency of future services and the integration with passenger train paths.
- 8.2.18. There are aspirations to realign the Colnbrook branch line through the Western Rail Link to Heathrow (WRLTH) and provide a new rail head (Terminal 5) to optimise the sustainable transportation of materials, whilst more flexible train paths have been previously explored along the Great Western Mainline to provide greater west to east connectivity. The plans would serve to ease congestion on roads, including the M4, M3 and M25, resulting in lower CO<sub>2</sub> emissions equivalent to approximately 30 million road miles per year<sup>98</sup>.

<sup>97</sup> Rail freight (2021) Heathrow line passenger trains converted for fast freight service, <https://www.railfreight.com/railfreight/2021/03/02/heathrow-line-passenger-trains-converted-for-fast-freight-service/>

<sup>98</sup> Network Rail (2018) Improving rail links to Heathrow, <https://consultations.networkrail.co.uk/communications/improving-rail-links-to-heathrow/>

- 8.2.19. Proposals for a new southern rail access to Heathrow, being considered through the Southern Access to Heathrow (SAth) programme), is at an earlier stage of development and will be subject to an acceptable business case being presented and planning consent being obtained<sup>99</sup>. This would seek to commence operations as soon as reasonably practicable, pending a decision on the third runway.

### **Gatwick**

- 8.2.20. The Gatwick Airport Masterplan (2019) refers to the expanded role of air cargo; stating that 102,000 tonnes of cargo were handled in 2017/2018, a 24% increase on the previous year. This is likely to continue rising to 220,000 by 2032/2033. The rapid growth is discussed in the context of managing considerable changes to road and rail access proposed over the next few years.
- 8.2.21. Gatwick Airport facilities include a cargo centre, covering 10ha, including HGV loading and unloading area, storage and office accommodation, with logistics operations run by DHL. The clustering of businesses in the 'Gatwick Diamond' seeks to benefit from enhanced connectivity to serve the movement of air cargo and to leverage further economic agglomeration. These are all owned and managed by third parties.
- 8.2.22. Planned aspirations as part of RIS3 for smart motorway extension to Gatwick from the M25 is currently under review. Gatwick's scheme includes the introduction of a new exit from the M23 to the airport, which will simplify airport access and will be paid for by the airport<sup>100</sup>. This is partly to offset the 47,000 vehicles which enter the airport via its two main road access points; the South Terminal and North Terminal roundabouts<sup>101</sup>. This includes both freight and passenger traffic 'mixing'.
- 8.2.23. In contrast to Heathrow, 'Gatwick's road and rail strategy does not require the endorsement of any new projects and is already being delivered in partnership with National Highways, Network Rail and Train Operators, to achieve wider benefits'<sup>102</sup>. Explicit reference is made to the M23 Smart Motorway and how this has both unlocked local road capacity (30%) and led to the airport allocating funding towards enhancing main access junctions to cater for future demand (up to 2028).

<sup>99</sup> DfT (2018) Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/858533/airports-nps-new-runway-capacity-and-infrastructure-at-airports-in-the-south-east-of-england-web-version.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/858533/airports-nps-new-runway-capacity-and-infrastructure-at-airports-in-the-south-east-of-england-web-version.pdf)

<sup>100</sup> Gatwick Airport (2016) Airport Expansion: The Updated Case for Gatwick, [https://www.gatwickairport.com/globalassets/publicationfiles/business\\_and\\_community/all\\_public\\_publications/second\\_runway/gov\\_submissions/329-the-case-for-gatwick-document-27-sep-16.pdf](https://www.gatwickairport.com/globalassets/publicationfiles/business_and_community/all_public_publications/second_runway/gov_submissions/329-the-case-for-gatwick-document-27-sep-16.pdf)

<sup>101</sup> Gatwick Airport (2019) Gatwick Airport: Masterplan 2019, <https://www.gatwickairport.com/globalassets/business--community/growing-gatwick/master-plan-2019/gatwick-master-plan-2019.pdf>

<sup>102</sup> Gatwick Airport (2016) Airport Expansion: The Updated Case for Gatwick, p16 [https://www.gatwickairport.com/globalassets/publicationfiles/business\\_and\\_community/all\\_public\\_publications/second\\_runway/gov\\_submissions/329-the-case-for-gatwick-document-27-sep-16.pdf](https://www.gatwickairport.com/globalassets/publicationfiles/business_and_community/all_public_publications/second_runway/gov_submissions/329-the-case-for-gatwick-document-27-sep-16.pdf)

- 8.2.24. There is a so called ‘connectivity gap’ between Gatwick Airport and conurbations towards the east and west of the site. Orbital connectivity to Gatwick Airport by rail from the east and the west is also poor in comparison to the radial connectivity to the airport from the north and the south. This severely limits the role of rail freight – with few alternatives being presented at this point in time.

### **Southampton**

- 8.2.25. Southampton Airport’s air cargo typically consists of courier and express deliveries; carried in the hold of passenger craft with occasional freight only schedules with airport expansion tied into runway capacity. As the airport is closed at night it is not used by specific air freight customers who tend to undertake night flying; with no aspirations to do so in the short to medium term. This is no direct rail freight connection to the station and limited interest in exploring this option.
- 8.2.26. Nonetheless, the airport wishes to expand its range and volume of passenger flights with cargo continuing to be carried in passenger aircraft. More importantly, the north east zone of the site (Southampton Airport Economic Gateway (SAEG) comprising of 137 hectares of land, will seek to benefit from connectivity to the London-Weymouth rail link and M27; with the hub supporting supply chain operations (and links to 3PLs)<sup>103</sup>.
- 8.2.27. This has been recognised by Solent LEP to support a ‘prestigious’ gateway, that will support supply chain opportunities and contribute towards additional inward investment potential. There is a real desire to unlock this potential by delivering road access improvements and a potential role for rail freight is a direct link if feasible. Currently freight access is via the A335, the main access road to the airport which passes adjacent to Southampton Airport Parkway.
- 8.2.28. The development of SAEG has relied heavily on seeing through access proposals, namely along Chickenhall Lane Link Road, with associated costs of up to £120 million. Options for transport interventions have been based on lower cost and deliverability, whilst making use of existing infrastructure (e.g., Wide Lane).

### **INTERVENTION OPTIONS**

- 8.2.29. The same variations apply to Airports as Ports. A distinction can be made between airport connections that take place at two scales for two modes of transport:
- Strategic: Key corridors, part of the SRN, that have been shown to have a direct impact of the ease of access and freight flows, through to port facilities and of regional/national importance; and
  - Local: Links and connections within the immediate area of an airport, often identified by the airports themselves as key investment targets and linking into local policy discourse.

Enhancing airport connections refers to:

- Road Connections: Links using the local and strategic road network (haulage) to move goods; and
- Rail Connections: Links using the national rail network and any spur lines (often with multimodal facilities/railheads).

<sup>103</sup> Southampton Airport (2018) Southampton Airport: A Vision for Sustainable Growth, <https://www.southamptonairport.com/media/fwnh31wg/sou-a-vision-for-sustainable-growth.pdf>

- 8.2.30. The size of the airport (runway and ancillary services/land) and its capacity to handle certain goods, dictates the types of goods being moved and the infrastructure available and required on and off site. Heathrow and Gatwick are by far the most significantly developed for serving local, national and international air cargo demands and all airports can handle wide belly planes.
- 8.2.31. The type of infrastructure required will also vary between whether the airports operate night cargo to support different uses of road and rail connections during different times of the day and cater for freight specific aircraft (customers) operating services 'at scale'.

## RECOMMENDATIONS & LOCATIONS ★ ★

- 8.2.32. The focus of infrastructure investment for airports across/adjacent to the Transport for the South East area should look to dovetailing growth plans at internationally significant locations, namely Gatwick and Heathrow. There are ongoing upgrades to the SRN around both airports which will unlock future capacity, whilst plans are laid out to enhance local access conditions to reduce localised congestion and support the forecast growth in air cargo.
- 8.2.33. Whilst there is a great level of detail on road enhancements, there is a limited level of detail and aspirations for scaling up the role of rail freight serving airports. This is not surprising, given the nature of rail freight and air cargo are very different. There is a desire to see road-rail mode shift take place but further detail is required on how proposed rail improvements for passenger services could tie in with expanding the freight offer in each case (and whether this would be for local or strategic consignments). This is particularly the case at Gatwick and Southampton, despite being served by direct, well established rail links (but not a dedicated branch line like Heathrow).
- 8.2.34. Key suggestions for improved connections follow below but further detailed investigation on locations and suitability of freight specific infrastructure would need to be explored.
- Gatwick: Enhancing local connections on the road (including prioritisation of vehicle movements) on the network around the main access points. More detail required on potential of rail freight offer tied into better orbital rail links.
  - Heathrow: Scale of interventions pending decision on third runway and will entail significant upgrades to SRN in and around the airport and within the site. Rail freight is set to grow but investment in new and upgraded railheads needs greater detail.
  - Southampton: Last mile connections to the SRN via local roads and exploring the role of rail along the Solent to Midlands Corridor.

### Heathrow

- 8.2.35. Expansion plans would require rediverting a number of roads around the airport, including the M25, as well as other local and strategic roads such as the A4, A3044 and associated junctions and on-airport station works and safeguarding. According to the project outline, the realignment of the M25 would be expected to be constructed off-line, with minimal construction or roadworks taking place on live roads, to avoid disruption to existing motorway traffic.
- 8.2.36. Although RIS2 is currently under review, RIS3 should seek to include upgrades to the M4 junctions 3-12 and M25 junctions 10-16 to Smart Motorway around the airport, whether or not the airport is expanded. This is based on current congestion conditions. Whilst this may be later offset by a Heathrow Ultra Low Emission Zone (HULEZ) and an enhanced role of rail freight, expanded logistics and warehousing sites will need to be well connected and the area futureproofed.

- 8.2.37. On this basis, local road improvements indicated in the masterplan document to Stanwell Moor Junction, the Southern Perimeter Road and a new landside link through the cargo area and road tunnel to the Central Terminal Area are all recommended. The use of technology will also help manage access to site (for HGVs). to reduce on site and local congestion, whilst emerging platforms (such as the Heathrow CargoCloud) should be promoted as part of a complementary package of travel demand management measures to optimise freight journeys on the network.
- 8.2.38. From a rail perspective, the WRLH was one of the schemes named as being in the ‘develop’ phase in the Rail Network Enhancements Pipeline<sup>104</sup> and, subject to obtaining planning consent, it is expected to commence operations before 2030. This marks a significant opportunity to exploit further use of the line for transporting bulk aggregates alongside airport specific freight movements that support future construction activity on site, daily operational requirements and express parcels deliveries.
- 8.2.39. Transport for the South East are encouraged to keep up to speed on the progress of the SAtH concurrently with plans for the third runway, to understand the potential rail freight opportunities that may arise. It is recommended that ongoing dialogue takes place with Network Rail on the ‘Digital Railway’, to understand how future rail freight capacity can be unlocked through a programme of upgrades to points and signalling across the region.

#### **Gatwick**

- 8.2.40. The ongoing delivery of the smart motorways project along the M23 should help reduce peak period congestion along the SRN but specific pressure will need to be relieved at junctions 8-10 to improve traffic flow and road safety. More specifically this would include:
- Signalisation of North Terminal and South Terminal roundabouts, with vehicle actuated signal control, with queue detection;
  - Increase in circulating capacity at North Terminal Roundabout;
  - Widening on approaches and exit lanes from roundabouts to increase capacity;
  - Revisions to lane marking and signs; and
  - Dedicated “free-flow” lanes for individual movements where required.
- 8.2.41. Gatwick has huge potential to exploit its fantastic rail connections and passenger rail services, up to 26 trains per hour, to provide an expanded rail freight offer that integrates with transport and logistics companies based in the Gatwick Diamond. However, with limited detailed information on rail freight, Transport for the South East should seek to work with the airport, DHL, TOCs and Network Rail, to explore the feasibility of building in small scale infrastructure for express freight services to coincide with planned £150 million upgrades to the railway station.

#### **Southampton**

- 8.2.42. The major aim, in the short term, would be to work with partners to unlock the potential of the SAEG through small scale local road improvements to the Chickenhall Lane Link Road, Wide Lane and the A335 linking into Junction 5 of the M27.

<sup>104</sup> DfT (2018) Rail Network Enhancements Pipeline A New Approach for Rail Enhancements, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/877989/rail-network-enhancements-pipeline-document.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/877989/rail-network-enhancements-pipeline-document.pdf)

- 8.2.43. A detailed feasibility study would be highly recommended to understand the potential scope for rail freight operations, particularly express parcel deliveries along the Solent to Midlands corridor for transferring consignments between the South East and the Midlands. This may be particularly relevant for 3PLs looking to move goods between the airport direct into Southampton and Portsmouth. Whether this would entail adding additional, separate, converted trains or utilising existing passenger services would need to be defined – and the actual market demand for this type of enhancement would need careful examination to justify any investment.

## KEY CHALLENGES

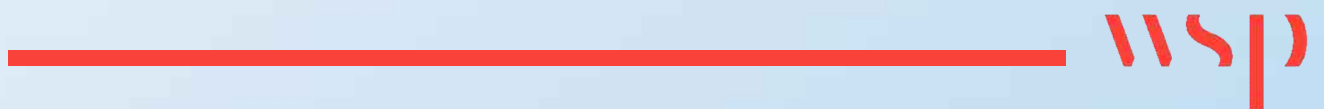
- Ongoing controversy surrounding airport expansion plans (especially given current focus on the decarbonisation agenda) and the impact that a decision will have on future planning.
- The absence/lack of attention relatively for rail freight improvements relative to road based schemes for enhanced connectivity conveyed through expansion masterplans/consultation.
- The dependency on Heathrow and Gatwick for accessing international routes and dedicated air cargo facilities across the South of England.
- Limited freight offer and airport connections by road or rail (the latter in particular) from Southampton, to reduce centralisation of operations and stem mileage from Gatwick/ Heathrow.

## IMPACT ASSESSMENT

Problem Statements	1,6,7,14,17				
Economic	Med	Environmental	Med	Social	Med
Improve operational efficiency	Med	Reduce greenhouse gas emissions, and achieve net zero carbon by 2050 at the latest	Med	Improve operational safety (especially for vulnerable road users)	Low
Enhance freight and logistics' contribution as an industrial sector, in its own right (especially to employment)	Med	Reduce wider environmental impact of freight	Med	Better integration between freight's operational needs and planning/place making	Med
Improve connectivity to and from the Transport for the South East area's international gateways, including through enhanced infrastructure capacity where needed	High			Better management of (and facilities for) lorry parking	Low
				Improve air quality	Med

# 9

## **WATERBORNE FREIGHT**





## 9 WATERBORNE FREIGHT

---

### 9.1 CAPACITY AT SEA PORTS

#### DESCRIPTION

- 9.1.1. Capacity at Sea Ports, including Wharves and Inland Water Ways (IWW) are key components of waterborne freight, with traffic consisting of barges (internal traffic) and seagoing vessels (which crossover from the sea to IWW). IWW were traditionally used for moving goods domestically and should be considered as a potential means to reduce air pollution and emissions and as an alternative to road-based freight in urban areas, where congestion is a key issue. Coastal Shipping is discussed separately in this report but there is some cross-over between it and IWW movements.

#### RATIONALE

- Wharves and waterways, as part of a commercial freight network, can deliver mode shift benefits (currently estimated at around £260k 2012/2013 – UK wide)<sup>105</sup>.
- Wharf facilities can form part of wider regeneration of industrial/urban areas, including port-centric logistics, to drive local economy growth and agglomeration.
- IWW can support the movement of bulky goods (like aggregates) and construction traffic; particularly pertinent in the South East and around Kent and Greater London.
- There is scope to integrate IWW with deep sea ports and combine domestic and foreign based freight movements to reduce pressure on road and rail access.

#### POLICY BACKGROUND & EVIDENCE

##### Snapshot Overview

- 9.1.2. Across the UK, most of the IWW system (4,650km) is non-tidal and consists mainly of canals and rivers that have been made navigable. The tidal waterways consist mainly of naturally navigable rivers and their estuaries. In England and Wales there are four main categories of waterway:
- Estuaries and tidal rivers;
  - Large non-tidal waterways;
  - Broad waterways; and
  - Narrow canals.
- 9.1.3. There are a number of navigable routes that form part of the Inland Water Way (IWW) system across the South East; ranging from rivers, such as the River Medway, River Arun and the River Rother, through to canals, namely the Kennet & Avon which runs through West Berkshire and across the country to Bath and Bristol in the South West.

---

<sup>105</sup> Canal \* River Trust (2021) Inland Freight Routes, <http://www.cboa.org.uk/downloads/091116-inland-waterway-freight-routes-abnormal-indivisible-loads.pdf>

- 9.1.4. However, there are only 10 commercial waterways in the UK (those that are principally available for waterborne freight movements), although few are located in the South East of England (Figure 9-1). Inland navigation characteristics vary in terms of scale of operation and governance arrangements, which will also go some way to shaping future investment priorities.
- 9.1.5. The River Medway is the only real significant natural watercourse outside of the River Thames that supports waterborne freight movements inland between Sheerness and Allington Locks. All wharf activity is concentrated along the Thames within London and to the west of the capital, south of Slough. No inland freight routes nor wharf facilities are designated across the rest of the South East.

**Figure 9-1 - Inland Freight Routes across the UK<sup>106</sup>**



<sup>106</sup> Canal \* River Trust (2021) Inland Freight Routes, <http://www.cboa.org.uk/downloads/091116-inland-waterway-freight-routes-abnormal-indiviable-loads.pdf>

- 9.1.6. The total amount of goods moved by domestic waterborne freight from 2016-2017 declined by 18% to 24.9 billion tonne kilometres<sup>107</sup>; driven by the decline of one port and coastal traffic. However, from 2016-2017 inland waterway traffic increased by 2% with the River Thames handling more than half of all total traffic on UK waterways.
- 9.1.7. The goods lifted along the River Thames, amounted to 1.7million tonnes, compared to 0.1 million tonnes for the River Medway for internal freight traffic in 2018<sup>108</sup>. The former has topped 3 million tonnes in 2014, whilst internal freight traffic has also reached higher volumes along the River Medway between 2007-2019.
- 9.1.8. The million tonnes of goods lifted for seagoing traffic along both watercourses is higher in comparison to internal traffic, with 19.2 million tonnes and 1.5 million tonnes, on average, being lifted on the River Thames and River Medway respectively between 2007-2019. This all indicates that limited movements take place across the Transport for the South East area (with more emphasis on coastal shipping).

### **The Thames – Current & Future Trade**

- 9.1.9. The River Thames is the busiest inland waterway in the United Kingdom, carrying 60% of all goods lifted on the UK's inland waterway network and helping to remove in excess of 130,000 lorry movements a year off London's congested roads in 2013<sup>109</sup>. The Port of London, a trust port mainly active on the tidal Thames and nearby docks, is overseen by the Port of London Authority (PLA) who act as custodians of 95 miles of the river. The PLA has aspirations to increase freight movements from 45 million tonnes to 80 million tonnes by 2055, with movements along the Thames being relevant to freight flows across the Transport for the South East area.
- 9.1.10. Three of the ports which fall within the PLA area, generate significant flows into the Transport for the South East area, with each undergoing expansion; putting additional freight on the Thames and wharf/waterway capacity and growing logistics activity. These are:
- Purfleet (50 acres assigned for development); a commercial port owned by The Cobelfret Group which features a 92-acre Thames Terminal (PTT) intermodal terminal handling approximately 250,000 trailers, containers and tanks and importing/exporting 400,000 vehicles annually<sup>110</sup>.
  - Tilbury (development of Tilbury Two); a commercial port owned by Forth Ports, with an annual throughput of 16 million tonnes (around £8.7 billion) features a 1,000 acre estate for short and deep sea vessels. The port supports Ro-Ro, container, forest products, grain and bulks as well as cruises and property solutions<sup>111</sup>;

<sup>107</sup> DfT (2017) Domestic Waterborne Freight: UK 2017, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/735335/domestic-waterborne-freight-2017.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/735335/domestic-waterborne-freight-2017.pdf)

<sup>108</sup> DfT (2020) Major Inland Waterway Routes, Goods Lifted, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/908092/port0704.ods](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/908092/port0704.ods)

<sup>109</sup> FTA (2016) Growing the UK inland water freight sector: lessons from the Thames, <https://logistics.org.uk/CMSPages/GetFile.aspx?guid=c50e975f-cb4e-4905-8281-dbbbb60289be&lang=en-GB>

<sup>110</sup> Freight Link (2021) Purfleet, <https://www.freightlink.co.uk/ferry-port/purfleet>

<sup>111</sup> Forth Ports Group (2021) London's Major Port, <https://www.forthports.co.uk/our-ports/tilbury-london/>

- London Gateway (port-centric distribution); a commercial port owned by DP World with associated, integrated logistics park and an onsite capacity for 2.4 million TEU: Throughput grew by 10% in 2019 with 25% moving by rail (45 freight services weekly) to take advantage of one of the longest rail terminals in the UK<sup>112</sup>.

- 9.1.11. Ports along the Thames reached peak trade in 2019 (54 million tonnes), compared to a baseline of 45 million in 2015, with the majority of flows being inter-trade (with other ports)<sup>113</sup>. This has taken place concurrently with major investments at Tilbury 2, London Gateway Berth 3, C-Ro Purfleet and new OIKOS deep-water jetty. Almost a billion pounds worth of investment in terminals has been outlined over the next five years (to 2025), which strongly hints at the trend towards coastal shipping. Intra port cargo movements between terminals on the River Thames and cargo from Medway and Brightlingsea accounted for over 4 million tonnes<sup>114</sup>.
- 9.1.12. Projections for a Net Zero 'balanced pathway' (referred to as the central scenario) indicate a scaling up of cargo volumes through the Port of London, with total volumes increasing to 77 million by 2050 (an increase of 18 million tonnes)<sup>115</sup>. This is likely to be driven by unitised cargo (rising by 19 million tonnes between 2019-2050), with modest increases in timber imports for construction. Bulk liquids, such as ammonia, to aid with the production of hydrogen, are likely to increase; although this will not offset the drop in petroleum imports that is already currently taking place.
- 9.1.13. Freight along the Thames has fluctuated in response to the short term impact of the pandemic, however total movements, including major projects, reached 4.8 million tonnes in 2019, compared to a baseline of 2.7 million tonnes in 2015<sup>116</sup>. In a high trade scenario projected by Oxford Economics total intra port cargo flows could reach 92 million tonnes by 2050 subject to population growth and economic activity.
- 9.1.14. This is likely to continue serving and consolidating existing waterborne freight markets, namely in building materials, waste and recycling, to serve a burgeoning construction industry. This scenario can help mitigate road freight based externalities, with river freight logistics being explored, to a limited extent at this stage, for aiding more sustainable urban logistics. The Thames Estuary Growth Board recently commissioned work to assess the potential to grow 'light' freight along the Thames. 'Light' freight in this instance comprises parcels, food and non-food retail flows. The potential benefits in terms of modal shift from road to river freight (particularly for goods carried in vans) are significant but challenges exist in terms of riverside infrastructure availability, as well as customer service level agreements and the costs of additional handling of items when changing from one mode to another, including last mile/first mile zero emission delivery activity.

<sup>112</sup> DP World (2021) DP World London Gateway The definitive guide, <https://www.dpworld.com/london-gateway/-/media/project/dpwg/dpwg-tenant/europe/london-gateway/media-files/the-definitive-guide-v3.pdf?rev=3b34e04781f34a759f67ac498e7cf926>

<sup>113</sup> PLA (2021) Thames Vision Progress Review 2016-2020, <https://pla.co.uk/assets/thames-vision-progress-review-2016-2020.pdf>

<sup>114</sup> PLA (2021)

<sup>115</sup> PLA (2021) Future Trade through the Port of London, Alternative Decarbonisation and Growth Pathway, <https://www.pla.co.uk/assets/oeportoflondonreport-summaryfinal.pdf>

<sup>116</sup> PLA (2021)

- 9.1.15. More generally, infrastructure and policy developments have been progressed and waterborne freight is featuring more prominently across local planning discourse in London (with over 90% of riparian boroughs have policies referring to river freight logistics). This has positive bearings on future investment and accommodating trade from the Transport for the South East area, particularly short sea shipping from Medway Ports, with at least five additional facilities set to come into operation by 2025 to provide additional cargo handling and storage capacity (including Peruvian and Royal Primrose wharves, acquired by PLA in 2019). However, projections of waterborne growth presented by PLA are based on unconstrained infrastructure capacity, which is a significant assumption.

### The Thames - Vision

- 9.1.16. The PLA has recently (July) concluded its consultation on the Thames Vision 2050. This follows on from the 2035 Vision launched in 2016 and acknowledges some of the challenges and opportunities presented by landmark triggers, such as Britain's exit from the European Union, changing patterns of consumption and the evolution of technology. The new vision is also shaped by DfT's Maritime 2050: Navigating the Future<sup>117</sup>, which sets out the following priorities:
- Leading the way on clean maritime growth;
  - Setting the pace in maritime innovation;
  - Developing an increasingly diverse maritime workforce; and
  - Supporting continued multi-billion-pound commercial investment in maritime infrastructure.
- 9.1.17. Four main building blocks for successful sustainable development on the Thames were also highlighted: technological innovation, skills development, infrastructure and safety. These are key for informing 'action categories' for consideration, which include<sup>118</sup>:
- **Port trade** – for example, technological innovation or skills development required for clean, smart operations;
  - **Freight and passenger transport and logistics** – for example, the wharf and pier infrastructure required to accommodate movements; and
  - **Leisure activities, including sport, culture** – for example, the safety measures required for activities that promote wellbeing.
- 9.1.18. Part of the PLA Investment Plan includes diversifying income streams, with a particular focus on 'category one' investments; supporting river and port use to generate commercial rates of return which has, to date, been centred on wharf acquisition for reactivation and cargo handling equipment. A number of notable infrastructure opportunities (and challenges) present themselves including:
- The potential increased demand for diverse amenities in local areas along the estuary, impacted by changing consumption patterns (including evolution of cargoes shipped);
  - Logistics operations' responses to changing patterns of consumption and policy measures; and

<sup>117</sup> DfT (2019) Maritime 2050: Navigating the Future, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/872194/Maritime\\_2050\\_Report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/872194/Maritime_2050_Report.pdf)

<sup>118</sup> PLA (2021) Thames Vision 2050, Initial Stakeholder Engagement, <https://www.pla.co.uk/assets/visionengagement-x.pdf>



- The role of the Thames in supporting changes to energy demand and supply for the wider economy and society and the shifts in vessel technologies and energy power (to hit net zero transition).

### **The River Medway**

- 9.1.19. Realistically, beyond the Thames focus above, the role of IWW across the Transport for the South East area is more limited. The River Medway, a tidal river and estuary between Garrison Point and Allington Locks, is one of only a few realistic sections of IWW that could unlock commercial opportunities. The network authority, Environment Agency and Peel Ports Medway, oversee 18 miles of network, including 10 locks, with the river playing an historic role in the area's manufacturing and industrial heritage. The waterway can handle bulk carriage and containers and abnormal loads, with seagoing traffic able to extend its journey inland.
- 9.1.20. The Medway waterfront supports aggregates importation, marine engineering and leisure activities and accommodates the movement of dry bulk materials towards London, to serve the construction industry, as an alternative to the complex and congested road network. These commodity markets have been previously identified as key growth sectors<sup>119</sup>, with the potential for waterside multimodal interchange being considered (e.g. Isle of Grain).
- 9.1.21. On the basis of future forecast growth in the capital, local plans are encouraged to safeguard and upgrade wharf infrastructure concurrently with rising demand. The 2015 North Kent Strategic Housing & Economic Needs Assessment (SHENA)<sup>120</sup> highlighted the role of waterfront logistics sites as influential factors in business location and labour market conditions, with the affiliated Employment Land Needs Assessment (ELNA) highlighting businesses', including the Medway City Estate's, reliance on wharf sites (including timber industries, which are a growing market).
- 9.1.22. The ELNA commissioned as part of the SHENA, also offers prospective businesses significant space for those reliant on wharves alongside those that already benefit from active wharves located on the Medway City Estate. The ELNA recommends that the Medway City Peninsula – Wharf/Specialist Use is safeguarded and maintained, alongside vacant land at Kingsnorth and the Isle of Grain to accommodate growth in wharf users.
- 9.1.23. Section 11 of the emerging Medway Local Plan<sup>121</sup> refers to the network of piers, jetties, slipways, steps and stairs located along the urban stretches of the river and note that these are in a state of disrepair; with the council supporting the potential for new services on the river to complement wider regeneration efforts. Retaining wharves and piers features under Policy T5 (Riverside Infrastructure) to attract businesses and for helping to transport mineral, waste and other materials.

<sup>119</sup> British Waterways (2002) Freight on our Waterways, [http://www.britishwaterways.co.uk/media/documents/publications/Freight\\_on\\_our\\_waterways.pdf](http://www.britishwaterways.co.uk/media/documents/publications/Freight_on_our_waterways.pdf)

<sup>120</sup> Gravesham Borough Council and Medway Council (2015) North Kent Strategic Housing and Economic Needs Assessment Baseline Report, [https://www.medway.gov.uk/download/downloads/id/631/north\\_kent\\_shena\\_baseline\\_report.pdf](https://www.medway.gov.uk/download/downloads/id/631/north_kent_shena_baseline_report.pdf)

<sup>121</sup> Medway Council (2020) Section 11, Transport, <https://www.medway.gov.uk/download/downloads/id/2199/transport.pdf>

## Other Locations

- 9.1.24. Elsewhere across the Transport for the South East area, many of the IWW that are currently in fair working order are restricted by a number of factors, including but not limited to:
- Canal dimensions: watercourse is limited to narrow beam traffic, limiting carrying capacity and vessel payload and thereby restricting volume.
  - Dredging: Highly relevant for commercial vessels that are now larger and require additional clearance that won't be provided in shallower canal systems or smaller harbours.
  - Habitats & Ecology: IWWs are now havens for wildlife and protected species and are unsuited to heightened numbers of vessels generating noise, visual and air pollution.
  - Tidal Flows: Highly relevant for developing an efficient scheduling of goods movement with lock infrastructure needing to be upgraded or restored.
  - Leisure Crafts: The challenge presented by traffic mixing along IWWs, with leisure and recreational travel now dominating.
- 9.1.25. By comparison with other commercial inland waterways in the rest of the UK (e.g. Manchester Ship Canal, Sheffield & South Yorkshire Navigation, Aire & Calder Navigation, River Trent etc), the South East appears to have little to offer, aside of any new build projects or the tidal Thames or River Medway. More specifically, there is limited potential to utilise IWW across the Transport for the South East as described below:
- Stretches of the Arun and Rother rivers are navigable by small, motorised craft but are not suited to larger inland commercial vessels. The lower Arun has very fast tidal currents which would make it an unappealing commercial venture by limiting use to certain times of the day.
  - The Royal Military Canal, running 28 miles between Seabrook, near Folkestone, and Cliff End, Hastings, was constructed as a defensive structure and not for commercial freight operations. It therefore lacks any relevant waterside infrastructure.
  - The Portsmouth and Arundel canal is un-navigable and fragmented with only a small section on the east side of Chichester Harbour being visibly used as moorings. There are no plans for comprehensive reopening.
  - The Wey and Arun Canal, originally running between Portsmouth and London, is also un-navigable but efforts are underway to restore sections of the canal for leisure and recreational use only. There is no potential for commercial freight operations.
  - The Basingstoke Canal runs for 32 miles from Greywell Village in Hampshire to Woodham in Surrey and is almost entirely navigable. It connects to the navigable River Wey and then to the River Thames. It is constrained by its narrow dimensions, which limit its commerciality for larger freight operations. The canal does pass through and adjacent to a number of larger settlements namely Woking, Farnborough and Aldershot, which may offer opportunities for small scale inter-urban and intra-urban freight movements.
  - Slough is connected into the Grand Union Canal (Slough Arm), over a 4.6 mile section which has easy access onto the Thames via Brentford locks. It originally served the brick making industry in the local area and carried freight commercially up until 1960. Whilst lock and canal dimensions are likely to stem substantial freight movements, there may be scope to explore how the branch could support waterside industrial estates and the regeneration of the canal basin in Slough.



- The River Ouse, from Newhaven to Lewes, was previously a commercial freight route with barge traffic in operation up until the 1950s. Whilst the Sussex Ouse Restoration Trust is hoping to see navigation restored to the upper river, proposals are controversial and have been contested by the Ouse and Adur Rivers Trust, including on the grounds that the Lewes Brooks area of the levels is a Site of Special Scientific Interest (SSSI). Trade along the Ouse Navigation consisted mostly of lime, chalk, manure, aggregates and coal, most of which is now imported or is no longer a key freight commodity.
- Great Stour, Canterbury and the Solent up to Winchester are other major watercourses that previously played a role in moving freight but are no longer equipped to handle goods nor cost effective/attractive as means of transporting consignments.
- The River Darent into Dartford could play an enhanced role in the future although derelict locks would need to be restored. The limited air draft at A206 Bob Dunn Way and the redevelopment of the former GlaxoSmithKline lands north of Dartford station make extensive commercial freight use look unlikely.
- The Kennet & Avon Canal may be suitable where 'slow' freight comprising materials such as gravel beds/aggregates/waste may be moved within an urban context<sup>122</sup> and where origins and destinations intersect the River Thames.

## INTERVENTION OPTIONS

- 9.1.26. Inland waterways include any area of water not categorised as 'sea' - e.g. canals, tidal and non-tidal rivers, lakes and some estuarial waters (an arm of sea that extends inland to meet the mouth of a river<sup>123</sup>).
- 9.1.27. There is no 'one size fits all' for developing infrastructure along different inland waterways, as this will be very specific to place<sup>124</sup>. These can vary significantly and will inevitably require more specific, detailed studies on a case by case basis, which may involve exploring:
- Raising, strengthening, replacing or otherwise modifying quays, jetties, moorings, embankments or bank protection.
  - Handling equipment, storage capabilities and boat maintenance sites /dry docks.
  - Wharves, warehousing, storage, platoons and mini ports.

<sup>122</sup> West Berkshire Council (2014) West Berkshire Local Transport Plan Freight Strategy, [https://info.westberks.gov.uk/CHttpHandler.ashx?id=38703&p=0#:~:text=The%20Freight%20Strategy%20is%20West,P lan%20\(LTP\)%20to%202026](https://info.westberks.gov.uk/CHttpHandler.ashx?id=38703&p=0#:~:text=The%20Freight%20Strategy%20is%20West,P lan%20(LTP)%20to%202026).

<sup>123</sup> HM Government (2021) Inland waterways and categorisation of waters, <https://www.gov.uk/guidance/inland-waterways-and-categorisation-of-waters>

<sup>124</sup> Brooke, Jan (2018) A Climate Change Report Card for Infrastructure Working Technical Paper Transport: Inland Waterways, Ports and Marine Infrastructure, <https://nerc.ukri.org/research/partnerships/ride/lwec/report-cards/infrastructure-source03/>

## RECOMMENDATIONS & LOCATIONS ★

- 9.1.28. Most of the active inland waterway freight movements take place along the River Thames, with the section east of London within scope of the TfSE area and important on commercial grounds for the movements of freight. The river also hugs the east of the Greater London Authority (GLA) boundary, the northern edge of Kent and the western boundary of the GLA to Streatley. The safeguarding and development of wharf infrastructure is required to continue growing waterborne freight movements, especially in the wider context of removing HGV traffic, the introduction of ULEZ and port-centric logistics developments in and around London and the TfSE region.
- 9.1.29. A review should be undertaken of existing and potential capacity of active and inactive wharves in the South East, identified constraints on capacity, proposed wharves and terminals and the need to safeguard infrastructure in local development documents.
- 9.1.30. In London, this has been more recently reinforced through The Implementation Report on Safeguarded Wharves Review which outlines the need to protect riverside wharves for their reactivation for cargo handling and future freight flows using the River Thames. The FTA (now Logistics UK), in response to the review, strongly supports use of inland water freight where infrastructure is in place to ease pressure on the congested road network and suggested that reviewing safeguarded facilities (i.e., wharves) would constitute best practice.
- 9.1.31. On this basis, planning issues, such as engaging early in applications, alongside the status of safeguarded wharves are two key issues for delivering the necessary infrastructure to deliver services. Whilst this is taking place across the Thames, additional impetus would be welcomed across conurbations and sites aligned to the River Medway.
- 9.1.32. The River Medway appears to be the only other inland freight route where an enhanced freight offer could be explored. There are potential benefits, particularly for the movement of construction materials, timber (a growing market) and parcels, as well as high value freight, where an urban area is linked directly by an inland waterway to international sea ports<sup>125</sup>, as in the case of the River Medway. The movement of aggregates is particularly relevant in Kent, alongside the desire to reduce London-bound HGV movements through the county.
- 9.1.33. The Medway cluster has potential in this respect, with the Council actively supporting investment in riverside infrastructure along the River Medway and wider integration with local economic regeneration and ports. The potential disturbance to wildlife sites and operational and safety issues with leisure users, in most cases outside of London, may negate the use of inland waterways in many instances.
- 9.1.34. However, in general, more detailed insight is required into capturing the volume of cargo currently being transported on IWWs (this is likely to be bulkier loads/aggregates) but more importantly, future forecasts of goods moved and the extent to which IWW are being considered as part of the freight network. This will help to determine future infrastructure requirements along existing inland freight routes (e.g. River Thames & River Medway), as well as other IWWs such as the Kennet & Avon Canal (West Berkshire) and the River Wey/Basingstoke Canal (which are leisure only currently) and the need for wharves, handling equipment and pontoons to facilitate waterborne freight movements.

<sup>125</sup> MDS Transmodal (2013) PTEG: Freight in the City Regions, <https://www.urbantransportgroup.org/system/files/general-docs/Freight%20in%20the%20City%20Regions%20Final%20Report.pdf>

9.1.35. The requirement for new IWW infrastructure investment that achieves enhanced capabilities of inland waterways in the Transport for the South East area would be based around the following set of circumstances:

- Site specific opportunity for reducing aggregate movements and floating construction barges with temporary pontoons at processing sites (origins) and destinations to reduce HGV movements within or close to urban conurbations. The use of waterborne freight could be stipulated within local planning conditions, providing the section of watercourse is navigable.
- Where infrastructure, consisting of mini ports and transshipment points, to serve 'slow', non-perishable consignments of bulk goods near processing or manufacturing sites could benefit from economies of scale and present a low cost, visually unobtrusive and socially acceptable alternative – again with a focus on urban areas and sections linked into harbours.
- Where the IWW network passes adjacent to logistics and business parks (e.g. Theale, Thatcham, New Hythe, Allington) featuring 3PLs and where vessels could be used for shipments up and down stream over the first & last mile from land-based facilities. These would be light (and potentially electric) vessels and would need industry interest to pursue local upgrades.

## KEY CHALLENGES

- Development pressures along the Thames and the River Medway which may conflict with aspirations to retain and upgrade waterway and wharf infrastructure.
- Many of the IWW across the South East are particularly narrow, have been backfilled or are converted to recreational use, thereby limiting their role for moving freight by water.
- Significant resource would be required to reinstate handling equipment and wharf infrastructure across IWWs, especially to cater for different types of commodity flows (e.g., parcels)
- There is not an obvious demand for 'slow freight' by IWW, beyond the movement of aggregates, construction material, waste and parcels – and the scale of investment is difficult to define.
- There are potentially many parties involved in the ownership and management of watercourses and competing interests and uses of IWW.
- IWW is a niche specialist area and requires dedicated resource to develop and monitor the scope for investment in infrastructure and to oversee this coming to fruition.

## IMPACT ASSESSMENT

<b>Problem Statements</b>	2,3,4,5,22,23,24				
<b>Economic</b>	<b>Low</b>	<b>Environmental</b>	<b>Low</b>	<b>Social</b>	<b>Low</b>
Improve operational efficiency	Low	Reduce greenhouse gas emissions, and achieve net zero carbon by 2050 at the latest	Med	Improve operational safety (especially for vulnerable road users)	Low
Enhance freight and logistics' contribution as an industrial sector, in its own right (especially to employment)	Low	Reduce wider environmental impact of freight	Low	Better integration between freight's operational needs and planning/place making	Low
Improve connectivity to and from the Transport for the South East area's international gateways, including through enhanced infrastructure capacity where needed	Med			Better management of (and facilities for) lorry parking	Low
				Improve air quality	Med

## 9.2 COASTAL SHIPPING

### DESCRIPTION

- 9.2.1. Coastal Shipping or Short Sea Shipping is the movement of cargo and passengers by sea over short distances including along the coast between domestic ports and to and from the UK to adjacent European ports. There are parallels with Inland Water Ways (IWW) in terms of the use and access of coastal waters and the provision of infrastructure but they are separate methods of moving cargoes. Coastal shipping requires the use of infrastructure for loading and unloading and berths, jetties and wharves to dock at sites to be able to undertake the movement of goods and perform any substantial freight activity.

### RATIONALE

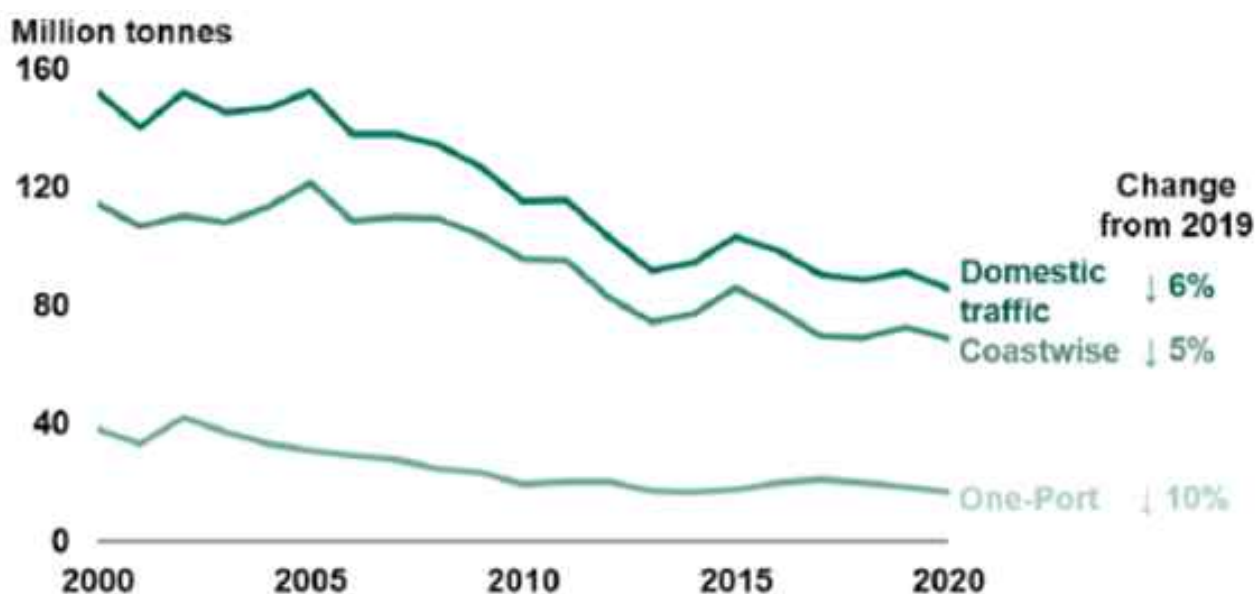
- Coastal shipping reduces congestion caused by road transport and can provide air quality improvements through greater fuel economy and lower emissions of CO<sub>2</sub>.
- Coastal shipping can be a cost-effective means of transporting high volume freight to increase business revenue for operators and reduce costs for suppliers.
- Landing facilities allow the transfer of waste from towns and cities for disposal, with wharves being important to the movement of construction, demolition and excavation waste.
- Coastal shipping, especially at Dover, is key to growth aspirations and is one of the main market drivers for the regeneration of port facilities.

## POLICY BACKGROUND & EVIDENCE

### Snapshot Overview

- 9.2.2. Short-sea shipping refers to the use of shipping instead of an inland/overland transport leg for the movement of goods. The DfT's Maritime Plan<sup>126</sup> states that the 'volume of short-sea shipping and movement of domestic freight between UK ports is likely to increase, potentially becoming a viable alternative to road and rail and boosting opportunities for a wide range of ports'. On this basis, 'ports will need to invest to keep pace with technological and environmental advances and vessel types, particularly those involved in short-sea and coastal shipping markets'.
- 9.2.3. According to the British Ports Association<sup>127</sup>, UK ports currently handle the largest amount of coastal shipping traffic in Europe, with growth sectors for coastal traffic including aggregates and construction materials, project cargo and container traffic. Much of this tends to be concentrated within the Greater London area and outside the scope of this study. There are growth sectors for the mode including in the movement of sea dredge aggregates and offshore energy installation, as well as container traffic with liquid bulk having declined substantially over recent years.
- 9.2.4. Coastal shipping has potential to grow across the UK and the South East and competes directly with inland freight options (road/rail). It is very much complementary to short sea and deep sea shipping and integrated within a hub and spoke approach towards high volume distribution of cargo. However, domestic traffic tonnes have reduced between 2000-2020 across all types of coastal shipping (Figure 9-2).

**Figure 9-2 - Domestic coastal shipping traffic by type since 2000 (DfT, 2021)**



<sup>126</sup> DfT (2019) Maritime 2050: Navigating the Future, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/872194/Maritime\\_2050\\_Report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/872194/Maritime_2050_Report.pdf)

<sup>127</sup> BPA (2019) British Ports Association looks at opportunities and challenges for coastal shipping, <https://www.britishports.org.uk/news/british-ports-association-looks-at-opportunities-and-challenges-for-coastal-shipping>

- 9.2.5. The adoption of alternative fuel infrastructure will be likely to make coastal and short sea shipping far more appealing as a cost-effective option, as long as the infrastructure can be provided on site (driven by private sector investment). Coastal shipping will need to respond to Emission Control Areas (ECAs) as well as broader GHG emission reductions (50% by 2050) and vessel efficiency standards set by the International Maritime Organisation (IMO).
- 9.2.6. DfT's National Policy Statement for Ports<sup>128</sup> outlines the need for infrastructure to encourage coastal shipping and effective competition between ports. These will typically require capital intensive upgrades to physical infrastructure, such as dredging, quays and cranes to accommodate additional, larger vessels, especially for short sea shipping. This is alongside fuelling infrastructure.

### **Current Outlook**

- 9.2.7. In absolute tonnage, coastal shipping across domestic one stop, domestic two stop and international coastal sub sectors, fell 18 tonnes (or 4%) between 2010-2016 before leaving the European Union<sup>129</sup>. However, at the time, the sector transported 18% of all UK tonnage (365.9 million tonnes, 2016), with almost half being liquid bulk cargo (which, as a flow, has suffered in recent years due to the shift away from fossil fuels).
- 9.2.8. The EU will continue to be the UK's largest maritime trading partner, which currently accounts for 55% of all international tonnage moved through major ports in the UK and 78% of all short sea shipping in 2020<sup>130</sup>. This is up from 75% in 2019. A slightly higher proportion are imports than exports with Ro-Ro traffic accounting for an (increasingly) higher proportion of tonnage relative to other cargoes.
- 9.2.9. Short sea shipping is of strategic interest to the EU, even post-Brexit, with changes potentially taking place in the volume and type of cargo being transported. This is likely driven by additional customs checks and clearances increasing congestion and operational costs, as well as future changes in cabotage rules (loaded voyages reducing from three to two trips for non-UK freight forwarders).
- 9.2.10. Leaving the European Union has had relatively limited impact on international coastal shipping trade volumes (certainly compared to the pandemic) but has instead changed the type of services offered (e.g., accompanied v unaccompanied Ro-Ro). This raises infrastructure demands at port side for handling goods and managing on site traffic effectively.
- 9.2.11. Domestically, the vast majority of tonnage consists of unaccompanied road goods trailers (70%) and accompanied road goods vehicles (29%) (across major ports); the latter of which declined 13% in 2020 (influenced by the pandemic). The decrease in domestic coastal shipping started before leaving the European Union but Ro-Ro traffic continues to be resilient, regardless of circumstance.

<sup>128</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/3931/national-policy-statement-ports.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/3931/national-policy-statement-ports.pdf)

<sup>129</sup> Arkevista (2018) An exploration of recent UK coastal shipping activity and potential future drivers of traffic, [bpa\\_coastal\\_shipping\\_seminar\\_29.11.18\\_-\\_peter\\_holland.pdf](https://www.britishports.org.uk/bpa_coastal_shipping_seminar_29.11.18_-_peter_holland.pdf) (britishports.org.uk)

<sup>130</sup> DfT (2021) UK Port Freight Statistics: 2020, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1014546/port-freight-annual-statistics-2020.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1014546/port-freight-annual-statistics-2020.pdf)



- 9.2.12. Future trade for coastal shipping is likely to develop around dry bulk materials for the construction industry (e.g., aggregates, timber), with handling equipment being key to catering for future demand projections. Whilst trade volumes internationally will continue to be determined by economic, social and environmental drivers and be shaped by market fluctuations, existing ports in the South East are likely to continue playing to their strengths and growing in capacity over the next decade.

### Regional Context

- 9.2.13. The Transport for the South East Logistics & Gateway Review<sup>131</sup> notes feedback from the industry suggesting areas that present specific road freight challenges for them, including coastal access between Chichester - Brighton – Folkestone. Coastal shipping (between UK ports) is generally focused on shipments of bulk materials, for example between oil terminals and refineries, as well as construction aggregates/waste in London. Mineral and Waste planning authorities also have the ability to safeguard wharfs for this purpose; as Hampshire have already done, for example.
- 9.2.14. The South East Inshore Marine Plan<sup>132</sup> states the role of the region in supporting short sea shipping and the various types of infrastructure required to realise the economic benefits of marine activities. Specific reference is made to landing facilities to the sustainable supply and handling of cargoes and commodities, including construction and waste materials. Policy SE-PS-4 and SE-PS-1 promote the development of infrastructure for marine activity alongside the following:
- Policy SE-INF-1 Infrastructure – appropriate land-based infrastructure which facilitates marine activity (and vice versa) should be supported.
  - Policy SE-INF-2 Infrastructure – seeks to safeguard landing facilities as a priority, due to their critical role in the handling of construction, aggregates and waste.
- 9.2.15. There are a number of safeguarded landing facilities around the Thames, with a sparse number across Kent in the Medway Towns, Margate/Ramsgate and Dover. Any sustainable increase in coastal shipping would have to be made with reference to policy SEW-AIR-1 and Maritime 2050 (chapter 8), to support a move to new environmental standards in line with the UK Clean Air Strategy.
- 9.2.16. The Dover Port Masterplan<sup>133</sup> makes specific reference to creating additional holding space and assembly areas for the future mix of traffic, including unaccompanied freight/road vehicles. The DWDR project, which includes the relocation and development of a new cargo terminal and distribution centre will seek to cater for a 40% increase in freight volumes from 2016-2030 and the 80% plus rise in vessel visits just in the short term (Dover Harbour Board, 2018).
- 9.2.17. Recently DFDS, for example, has announced new unaccompanied freight services between the Port of Sheerness and Calais, to complement services that typically connect from Dover to Calais/Dunkirk, with plans to scale up also likely to require similar type of intervention.

<sup>131</sup> WSP (2019) Freight Logistics & Gateways Review, <https://transportforthesoutheast.org.uk/app/uploads/2020/11/Freight-logistics-and-gateway-review.pdf>

<sup>132</sup> HM Government (2021)

<sup>133</sup> Port of Dover (2021) The Port of Dover Plan for 2045: First Round Masterplan Consultation Document, [https://www.doverport.co.uk/administrator/tiny\\_mce/source/Mater%20Planning/Master%20Planning%20Document\\_WEB.pdf](https://www.doverport.co.uk/administrator/tiny_mce/source/Mater%20Planning/Master%20Planning%20Document_WEB.pdf)



## INTERVENTION OPTIONS

- 9.2.18. The South East Inshore Marine Plan<sup>134</sup> identifies land-based infrastructure associated with coastal and short sea shipping as:
- New or a changed infrastructure at ports for maritime trade, including short sea shipping and to service the North Sea energy and offshore wind sectors.
  - Quays and landing facilities for fisheries, shellfisheries and their associated processing facilities, transport links and markets.
  - Wharves and specialised goods handling equipment for serving the construction industry (aggregates) and waste transfer.
- 9.2.19. Short-sea and coastal shipping movements along major estuaries, such as the Solent and Thames, are recorded as inland waterway movements for statistical purposes with the Canal & River Trust being responsible for the development of freight activity on most rivers and canals since 2012.

## RECOMMENDATIONS & LOCATIONS ★

- 9.2.20. There is very limited data and information on coastal shipping that can help to pinpoint and steer investment in infrastructure across the Transport for the South East area. The lack of information for a clear coastal shipping strategy therefore requires a deeper investigation into its role as part of a freight strategy. This includes starting off with identifying the demand for coastal services, particularly on the south coast between domestic ports, and understanding how that correlates to onsite provision.
- 9.2.21. Furthermore, investment in infrastructure at ports will likely be driven by the private sector and port owners/authorities at a local level, to accommodate additional cargo volumes and cater for the different means by which goods are being transport domestically and internationally (i.e. Ro-Ro increases – focused on unaccompanied rather than accompanied – with repercussions on storage of road vehicles and efficient booking/collection systems). It will be crucial to forge good collaboration with ports to better understand infrastructure requirements and investment decisions, which may have been influenced by recent events.
- 9.2.22. There is an immediate opportunity to support the planned investments through the DWDR project, which will seek to diversify the commodities capability of the port beyond its current exclusive role in Ro-Ro freight. This will include the provision of additional cargo business; in the form of a new distribution centres and two deep sea berths.
- 9.2.23. Transport for the South East should instead focus on access improvements to port facilities as identified in the “Access to Ports” section of this report, including working closely with Network Rail on specific rail spur connections (Sheerness, Isle of Grain, Dover) that could offer multi modal interchanges between rail and coastal/short sea shipping.

<sup>134</sup> HM Government (2021) South East Inshore Marine Plan, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1004493/FINAL\\_South\\_East\\_Marine\\_Plan\\_1\\_.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1004493/FINAL_South_East_Marine_Plan_1_.pdf)

## KEY CHALLENGES

- The uptake of coastal shipping, as a cost-effective means to transport goods, will likely be determined by regulations and offsetting the financial risk to port authorities.
- Ports and water authorities will need to understand future trends around vessel sizes and fuelling requirements (or should proactively shape these) to develop suitable infrastructure.
- New environmental regulations coming into play (namely around use of alternative fuel technologies), alongside existing legislation, may dictate the popularity of coastal shipping.
- Potential increase in shipping paths, from converting HGV movements to coastal shipping trips, brings with it risks around bottlenecks and port congestion.

## IMPACT ASSESSMENT

Problem Statements	2,3,4,5,23,24				
Economic	Med	Environmental	Med	Social	Low
Improve operational efficiency	Med	Reduce greenhouse gas emissions, and achieve net zero carbon by 2050 at the latest	Med	Improve operational safety (especially for vulnerable road users)	Low
Enhance freight and logistics' contribution as an industrial sector, in its own right (especially to employment)	Low	Reduce wider environmental impact of freight	Med	Better integration between freight's operational needs and planning/place making	Low
Improve connectivity to and from the Transport for the South East area's international gateways, including through enhanced infrastructure capacity where needed	Med			Better management of (and facilities for) lorry parking	Low
				Improve air quality	Med

## 9.3 ALTERNATIVE FUELS FOR WATERBORNE FREIGHT

### DESCRIPTION

- 9.3.1. All transport industries, including shipping, are seeking to decarbonise and move towards the use of alternative fuels and clean energy networks to support propulsion and on shore power connections when moored/berthed. Most vessels and freight carrying fleets run on diesel engines, which contribute negatively to local emissions and air quality, with alternative fuel infrastructure and energy networks aiming to meet national and local objectives and strategy aspirations.

## RATIONALE

- Alternative fuels and electrification will primarily aid with the decarbonisation agenda and reduce GHG emissions.
- New clusters of infrastructure/ technological development can be a driver of economic growth locally and provide skilled jobs.
- The development of alternative fuel infrastructure can seek to support a wider range of port-based activity, not just vessels.
- Shore power can cut local air pollution by connecting ships into the national grid whilst moored (preventing diesel engines running).
- Shore power is seen by many ship operators as a means to reduce wear and tear on engines, leading to lower maintenance costs.

## POLICY BACKGROUND & EVIDENCE

### Snapshot Overview

- 9.3.2. DfT's Clean Maritime Plan<sup>135</sup> sets out a roadmap for all ships to be zero emission by 2050 and for this transition to take place rapidly across the UK. By 2025, the aspiration is for all vessels in UK waters to be using energy efficient options, whilst 'clusters' of infrastructure associated with zero emissions, including bunkering, are being pursued. This scenario presents an opportunity to improve and upskill UK labour along coastal communities, supporting innovation, manufacturing and market development within this space.
- 9.3.3. However, in order to achieve the reductions in GHGs required by the International Maritime Organisation (IMO) GHG Strategy<sup>136</sup>, it is estimated that energy efficiency improvements alone will not be sufficient and that the use of alternative fuels (such as hydrogen, ammonia or methanol) will be required. However, since no alternative fuels are currently widely used for marine propulsion, their uptake will require the development of both safety standards and bunkering infrastructure. The suggestion is that technologies should seek to offer the UK a competitive advantage by playing on its role as leaders in hydrogen and ammonia technologies, before onboard batteries and electric propulsion – but recognising that charging infrastructure and capacity from the energy network will be key.
- 9.3.4. The UK Government's 'Ten Point Plan for a Green Industrial Revolution'<sup>137</sup> provides an outline of a decarbonisation pathway for shipping and emphasises the role of hydrogen and ammonia fuelled ships (and infrastructure). The scene has also been set by The British Ports Association, which has advocated a "Zero-emissions berth standard" (ZEBS) for vessels.

<sup>135</sup> DfT (2019) Clean Maritime Plan, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/815664/clean-maritime-plan.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/815664/clean-maritime-plan.pdf)

<sup>136</sup> IMO (2021) Initial IMO GHG Strategy, <https://www.imo.org/en/MediaCentre/HotTopics/Pages/Reducing-greenhouse-gas-emissions-from-ships.aspx>

<sup>137</sup> HM Government (2020) The Ten Point Plan for a Green Industrial Revolution, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/936567/10\\_POINT\\_PLAN\\_BOOKLET.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936567/10_POINT_PLAN_BOOKLET.pdf)

- 9.3.5. The European Sea Ports Organisation (ESPO) also supports setting of targets for ship emission reduction at berths. This focus on vessels would help ensure that port infrastructure investments aim to be fully utilised, although the general industry consensus was that operators prefer the flexibility of zero emissions options. In other words, having the option of a ‘fuel mix’.
- 9.3.6. Concerted efforts should be explored for developing sustainable power provision whilst vessels are berthed, as well as in transit, by working with longstanding operators. Within the boundary of the Port of Dover, ferries should be the key target as they contribute towards 83% of all NOx vessel emissions<sup>138</sup>. P&O Ferries already considering the adoption of new vessels to replace the current fleet (a possible demonstration partner for shipping lines, with Brittany Ferries in Portsmouth offering a useful case study for the use of LNG).

### **Shoreside Power & Energy Requirements**

- 9.3.7. The report on Reducing the UK Maritime Sector’s Contribution to Air Pollution and Climate Change<sup>139</sup> refers to the options ports can take to utilise local distribution networks for electricity supply, to eliminate the use of auxiliary engines whilst moored. The study recognises the cost and complexity of providing electric charging points are likely to differ, depending on their existing electricity connections, location and the enhancement to infrastructure that would be required.
- 9.3.8. The total electricity generation capacity at ports could increase tenfold with renewables accounting for at least 70% of their total electricity generation, compared to 5% today<sup>140</sup>. This varies from port to port, with the overarching trend towards increased energy use at ports running parallel to forecast growth in shipping activity and spurred on by future targets for zero emission fleets and infrastructure by 2050.
- 9.3.9. Electric propulsion will play a relatively small role (and with smaller vessels). However, total electricity demand is likely to increase significantly, driven by demand for shore power from container vessels (from 20 GWH in 2016 to 250 GWH in 2050). Shoreside power demand for UK port electricity (major ports) under a ‘business as usual’ situation (with no increase in battery powered vessels) is set to increase substantially on 2021 levels (

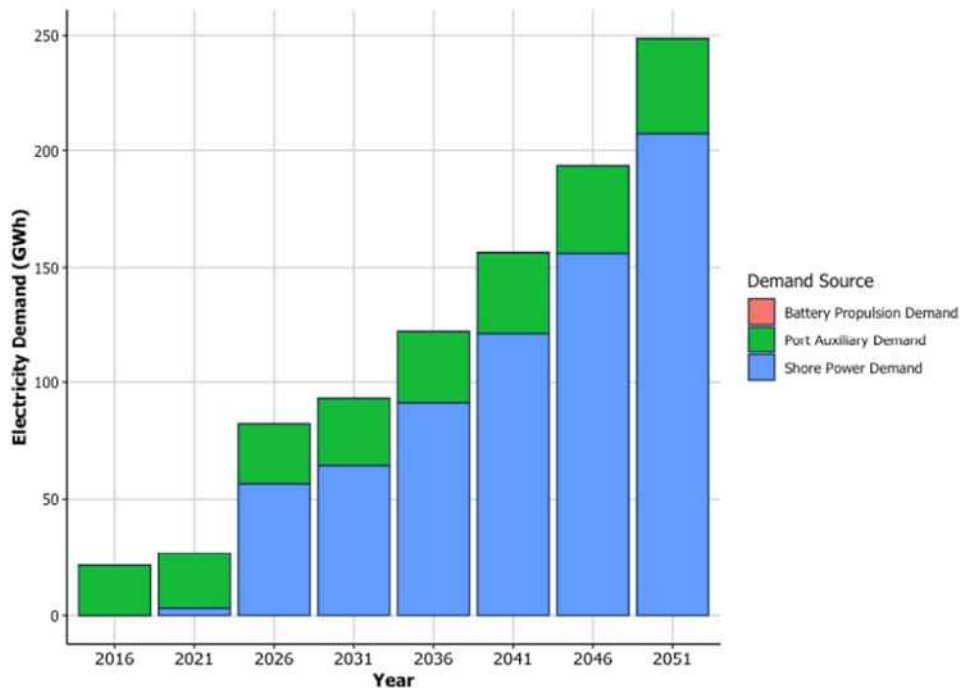
<sup>138</sup> Port of Dover (2020) Port Air Quality Strategy 2020, <https://www.doverport.co.uk/administrator/tinyMCE/source/Environment/Port%20of%20Dover%20Air%20Quality%20Strategy.pdf>

<sup>139</sup> Frontier Economics (2019) Reducing the maritime sectors contribution to climate change and air pollution, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/816015/maritime-emission-reduction-options.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/816015/maritime-emission-reduction-options.pdf)

<sup>140</sup> DNV & GL (2020) Ports: Green gateways to Europe 10 Transitions to turn ports into decarbonization hubs, [https://mseinternational.org/res/files/decarbonisation/DNV-GL\\_Ports\\_Green\\_Gateways\\_to\\_Europe.pdf](https://mseinternational.org/res/files/decarbonisation/DNV-GL_Ports_Green_Gateways_to_Europe.pdf)

- 9.3.10. Figure 9-3). This increase is estimated to be primarily from the uptake of shore power and modest electrification of port infrastructure and hints at the basic requirement of every port to develop its energy supply for increases in shoreside power from visiting vessels.

**Figure 9-3 - Annual Total UK Port Electricity Demand Under BAU (Frontier Economics, 2019)**



9.3.11. Recognising the potential energy requirements of shoreside power, it may be appropriate, initially, for ports to consider whether demand could be spread, to avoid the peak-load before addressing several supply-side options. The latter would entail enhancing access to the power network (very context specific) via a substation or a direct connection to the transmission system. Alternative systems could draw power stored in ships' batteries. Where infrastructure enhancements are required, these would need to be discussed with the DNO for each port and are highly tailored to local context and a matter for each port authority to address individually.

9.3.12. The freight decarbonisation agenda will require ports to be major energy hubs, supplying electricity and fuels to a mix of surface transport vehicles, haulage companies (HGVs) and shipping vessels, as well as the estate infrastructure (e.g. warehousing). Electrification will increase the need for demand management, cluster control and energy storage, whilst requiring significant investment in supply side infrastructure to connect or generate energy on site. The PORTOS project offers a useful reference to the integrated use of renewable energy to power Atlantic Area Ports, such as:

- Installing solar panels on estate buildings;
- Establishing internal power plant;
- Manufacturing electricity using natural gas; and
- Marine renewable energies, such as wave, tidal and wind energy.

9.3.13. The PORTOS project seeks to conduct the following activities:

- 1 Audits on energy efficiency in case studies ports;
- 2 Implementation Plans for marine renewable energy;
- 3 Establish a road map to be used as a guide to achieving energy self-sufficiency in ports;
- 4 Hybrid technologies demonstration;

- 5 Creation of a decision-making support system, for the implementation of renewable energies;
- 6 Organisation of conferences and "Open Day/Open Lab" activities, to involve society and create awareness about the importance of marine renewable energy development; and
- 7 Transfer of knowledge to stakeholders, end-users and society.

- 9.3.14. The cost effectiveness of on shore power varies across ship types and sizes, influencing the viability of associated infrastructure provision. It is likely some form of upgrade of the electricity connection to the energy network would be required for on shore charging, requiring an application to grid operators and enhancements by the DNOs. Evidence, including research by the BPA in late 2021<sup>141</sup>, also suggests that every shore power facility globally has had to have some form of government investment to mobilise whilst few commercial operators have new or upgraded vessels with shore power capacity.
- 9.3.15. According to the Maritime Plan<sup>142</sup> 2050, the sector should start to make the most of opportunities associated with a predicted increase in offshore wind generation, playing a key role in UK energy supply and generation and exploring hubs for trialling and developing new fuelling options. One of the medium term aims (5-15 years) is for at least one major port in the UK to have all ship-side activity zero emission (including non-road mobile machinery like cranes, as well as vessels while docked in port). This may also help overcome the fact that the costs of electricity in the UK are some of the highest in Europe<sup>143</sup> whilst power availability from the grid is currently limited.

### **Port of Southampton**

- 9.3.16. Across the Transport for the South East area, Southampton has the most established alternative fuel provision to aid the transition towards cleaner fuels and energy networks. The Port is planning to provide shore side power to cruise vessels initially and already provides ship to ship LNG bunkering at a number of berths, the first of its kind in the UK.
- 9.3.17. An electric shore connection is due to be installed at the Mayflower terminal, to complement the provision being incorporated into the design of the Horizon cruise terminal (using the same plug in technology). These will only be able to provide power for one large ferry cruise at a time.
- 9.3.18. According to Associated British Ports (ABP) the port could start seeing CO2 emission savings of up to 863 kg in CO2 and 10.5 kg of Nitrogen Oxide (NOx) per (cruise) vessel call each year. The ability to deliver additional shore side power will be dependent on additional grid capacity and funding being sourced simultaneously with an expansion of new or retrofitted vessels with shore side power capability.
- 9.3.19. Southampton LNG bunkering facilities available within the port's Ocean terminal are ready to accommodate LNG powered P&O cruises and also cater for LNG powered Ro-Ro vessels arriving on a weekly basis. The Royal Navy base at Portsmouth also has a major shore power facility, although this is restricted to relevant vessels and is not open for commercial use.

<sup>141</sup> BPA (2021) COP26 Transport Day: MPs back co-investment model for shore power, <https://www.britishports.org.uk/cop26-transport-day-mps-back-co-investment-model-for-shore-power/>

<sup>142</sup> DfT (2019) Maritime 2050: Navigating the Future, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/872194/Maritime\\_2050\\_Report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/872194/Maritime_2050_Report.pdf)

<sup>143</sup> S&P Global (2021) FACTBOX: UK electricity prices now most expensive in Europe, <https://www.spglobal.com/platts/en/market-insights/latest-news/electric-power/091321-factbox-uk-electricity-prices-now-most-expensive-in-europe>



## Port of Dover

- 9.3.20. The Port of Dover was the first port in Europe to be certified for its Environmental Management System (EMS) through Eco Ports' Port Environmental Review System (PERS) in 2002<sup>144</sup>.
- 9.3.21. The sheer frequency of short sea shipping traffic taking place at the port, over 17,000 vessel calls in 2018, demands further attention be paid towards providing alternative shoreside power and working with operators (namely DFDS and P&O Ferries) to transition towards greener fleets. There is limited reference to alternative fuels within the DWDR project and the 2045 masterplan consultation material, although Dover Port was an integral component of the PASSAGE project (2016-2020), which aimed to deliver low carbon transition across the strait of Dover. This included the development of low carbon transport hubs, an energy and low emissions strategy and lobbying for increased regulation of emissions from maritime transport (Port of Dover, 2020).
- 9.3.22. The comprehensive list of emission reduction measures implemented by the Port of Dover across its estate, including renewable energy and energy efficiency and road access, was recognised by the Carbon Trust on 2017 (when it reduced emissions by 17% over two years). However, limited progress has been made towards adopting alternative fuel technologies for vessel operations due to the level of control of organisations interacting with the facility and the significant engineering issues and costs associated with installing and connecting with local grid capacity.
- 9.3.23. The Port of Dover Air Quality Strategy<sup>145</sup> notes that The Port of Dover lies within the North Sea Sulphur Emissions Control Area, requiring all vessels to use ultra-low emissions fuel types or abatement to meet the emissions standards. The port has been consulting with operators on adaptation of vessels and the potential for shoreside power (cold ironing).
- 9.3.24. The Atmospheric Emission Inventory (AEI) highlighted that emissions from shipping was the largest contributor to emissions from the Port of Dover, therefore measures such as the provision of shoreside power or alternative fuel facilities for vessels could have a significant effect in reducing emissions from within the port boundary.
- 9.3.25. The accompanying action plan references the opportunity to work with introducing charging schemes based on vessel emission performance and vessel replacement programmes in the medium term (3-10 years), with adoption of low emission fuels being classified as a longer term (10+ years) target. Emissions reduction measures related to shoreside operations, namely alternative fuels facilities, are also longer term ambitions.
- 9.3.26. Feasibility studies, referenced in the Air Quality Strategy, allude to the challenges faced with local grid capacity, to prevent widespread adoption. On this basis, 'greening' of vessels and port infrastructure has been limited, with further discussions required with ferry companies, namely P&O and DFDS Seaways, to explore 'drop in' fuels or non-fuel equivalents.
- 9.3.27. Whilst the port does not have an LNG terminal, it can host bunkering for vessels, with shipping operators being responsible for sourcing specific suppliers/tanker companies and working with the relevant parties to get operational approval.

<sup>144</sup> Green Port (2020) Dover is LNG Ready, <https://www.greenport.com/news101/lng/dover-is-lng-ready>

<sup>145</sup> Port of Dover (2020) Port Air Quality Strategy 2020, <https://www.doverport.co.uk/administrator/tinyMCE/source/Environment/Port%20of%20Dover%20Air%20Quality%20Strategy.pdf>

- 9.3.28. Alternative fuels can also apply to other shoreside port operations, as identified in the strategy, including the transition away from red diesel around port estates and replacing equipment with low emission alternatives (electric and battery electric, where distances are short and charge points can be installed). This also extends to working with 'in port' third parties due to the cost implications of fuel duty changes.

### **Shoreham Port**

- 9.3.29. The Port of Shoreham is also PERS accredited and offers a blueprint for reaching net zero emissions by 2030. Shoreham has reduced a reliance on fossil fuels through renewable energy production via a combination of large scale solar and wind energy production, as well as delivering a source heat pump that will remove 70 tonnes of CO<sub>2</sub> annually (Shoreham Port, 2021). Shoreham would gain their power from neighbouring DNO regions (adding costs to boosting connectivity), which may have influenced its decision to become energy self-sufficient - and in the absence of a large demand for electricity from larger vessels (relative to deep sea ports).
- 9.3.30. Currently the port saves 2,418 kWp (kiloWatt peak)/820 tonnes of CO<sub>2</sub> per year with the plan to increase this to 3,988 kWp/1,300 tonnes of CO<sub>2</sub> by 2024. The port also focuses on demand management, having developed a 'sustainable development template' to help minimise energy required through renewable sources, with the combination of demand and supply measures key to port self-sufficiency.
- 9.3.31. The port also offers a useful case study. By adapting its fuelling infrastructure, it was able to supply Gas To Liquid (GTL) to its fleet of over 60 operational vehicles, including forklifts, cranes, telehandlers and work-platforms. This led to reducing emissions by 37.5 tonnes of CO<sub>2</sub> per year, engine particulates by up to 90% and nitrogen oxides by up to 25%<sup>146</sup>.

### **Portsmouth International Port**

- 9.3.32. Portsmouth International Port is also hoping to be one of the UKs first zero emission ports by 2030, with proposals, subject to capital funding, for shoreside power as part of its Port Air Quality and Carbon Action Plan. This includes the short term development of a battery storage solution, for providing shore power to smaller cruise vessels, as well as a long-term ambition of supplying all vessels that visit the port. A strategy for shore power provision was provision was approved in October 2021 with a caveat that government support would be required.
- 9.3.33. Similarly, to all ports across the Transport for the South East area, investment is being sought to help deliver energy efficiency savings across the estate within the control of the port authorities, with efforts to engage with operators on conversion to alternative fuels.

## **INTERVENTION OPTIONS**

- 9.3.34. There are a number of different alternative fuels, with the focus on infrastructure investment looking towards the longer term transition to low/zero carbon options. It is important to recognise that ports and port authorities do not have direct control over vessels, HGV fleets or rail operators and thereby rely on partnership working with the freight and logistics sector to bring interventions to fruition.

<sup>146</sup> Shoreham Port (2020) Sustainability Report 2020, [https://www.shoreham-port.co.uk/fileadmin/uploads/shorehamport/Documents/Sustainability/Shoreham\\_Port\\_Sustainability\\_Report\\_2020.pdf](https://www.shoreham-port.co.uk/fileadmin/uploads/shorehamport/Documents/Sustainability/Shoreham_Port_Sustainability_Report_2020.pdf)

## Alternative Fuel Propulsion

9.3.35. The fuels that propel vessels and require shore side infrastructure for storage (bunkering):

- **‘Drop In’ Fuels:** These are commonly known as alternative diesel fuels and include recycled and less polluting/energy intensive options, without the need for substitute infrastructure or engine system alterations.
- **Low/Zero Carbon Fuels:** Namely the use of Liquefied Natural Gas (LNG), Biofuels, Hydrogen or Ammonia, which are prominent as the transition or long term future fuel that will inevitably require on shore power/provision.

## Shore Side Measures

9.3.36. The energy network and infrastructure provision to reduce vessel emissions, including the release of nitrogen oxides, sulphur oxides and particulates within relatively close proximity of land. The measures must take into account the scale of vessels (and their power requirements) and be complemented by regulations to foster uptake by ports and operating companies.

- **Shoreside power or ‘cold ironing’;** The process by which energy, typically electricity, is supplied to vessels to eliminate the emissions of auxiliary engines at berth. This may include additional storage capacity and plug in infrastructure.
- **Electricity Generators:** The retrofitting process required at ports through the provision of land based power generators (via an electric utility company) or an external remote generator, the latter powered sustainably by wind or solar energy.
- **Grid Network Capacity:** Upgrading regional grid networks to accommodate additional electricity demand, including influencing energy demand and supply alongside investing in energy self-sufficiency through on site or off short wind and solar farms.

## RECOMMENDATIONS & LOCATIONS ★ ★

9.3.37. The Clean Maritime Plan does refer to three challenges of providing alternative fuels and bunkering facilities, as well as the energy infrastructure required to provide shoreside power at scale. The need for site specific assessment of local energy network capacity alongside broader sector and industry wide engagement is a pre-requisite to accurately locating and defining alternative fuel infrastructure.

9.3.38. Electricity capacity is a key issue beyond just shore power, as ports electrify more generally. The suggestion is that a working group convene to develop a simple, clear framework for enabling the development of port smart grids or enhanced energy networks with providers. Locations for further shore-based provision will be determined, to some extent, by a capital fund and changes to electricity network planning and regulations with discussions taking place with the port industry to match aspirations and ambitions for future demand, specifically looking at freight vessels/industry.

9.3.39. This will also likely be informed by the proposed development of a Zero Emission Shipping Clusters Study by the Clean Maritime Council and the UK Government, which will be critical in guiding the infrastructure required to enable the uptake of alternatively fuelled vessels, as well as suitable geographic locations for the production, storage and distribution of alternative fuels for shipping. This also includes any dependencies or synergies with other economic sectors, such as heating or other transport modes.

9.3.40. Overall, consideration is needed across the following:

- **Regulatory** - compliance with safety standards for storage and gaining planning permission;
- **Investment** – The upfront capital costs which may be a barrier to entry for any ports without government support/incentives; and
- **Market** – compatibility with ships and vessels using the ports and the need for longer term industry coordination to provide certainty.

9.3.41. The most immediate step would be to support ports with ambitions to increase shore power or who are on the journey of delivering alternative fuels, to develop the proof of concept. Southampton Port, which is proactively working with industry to support the transition, should continue to be a test bed for shoreside power (expanding to all berths) and trialling the effectiveness of the hydrogen hub (linking to serving wider port operations and HGVs) which is being delivered by SNG.

9.3.42. The same applies to Portsmouth and Shoreham where use of LNG and ‘demand management’ techniques (energy efficiency of buildings) should be supported. This could sit alongside best practice examples being shared across the industry (providing operators and port authorities are prepared to share intelligence). This would help with scaling up adoption elsewhere across the Transport for the South East area.

9.3.43. The innovative approach taken by Adur & Worthing Councils for exploring the potential role of hydrogen transport/fuel technology at Shoreham Port (to develop a Green Energy Hub), could also be supported, especially because of the potential for it to be an economic driver for the region. This is alongside the environmental benefits from the creation, storage and commercial use of hydrogen as an alternative fuel to reduce shipping emissions.

9.3.44. Due to the constraints with adopting shoreside power short term, especially at Dover, more constructive engagement is required with industry, to adopt ‘drop in’ fuels as a bare minimum for transitioning towards cleaner maritime freight transport. This could also mean creating a permanent LNG bunkering facility on site, to serve visiting vessels – although hydrogen would be the longer term preference due to the better compatibility with road freight and Ro-Ro traffic using the port estate longer term.

## KEY CHALLENGES

- The initial capital costs required to scale up shoreside power options can be sizeable, especially (though not exclusively) for larger ports requiring shoreside power/bunkering and energy for buildings and equipment.
- Port authorities have a limited level of influence over stimulating the use of alternative fuels by visiting vessels and require national (and international) regulations to come into play and engagement with multiple parties, including FOCs, energy suppliers and ferry operators
- Similarly to the range of alternative fuels available to road freight, there is a risk of creating a fragmented network of fuelling options, which may limit shipping paths and port suitability.
- Ensuring both the private and public sector grasp the opportunity for the development of alternative fuel and energy networks, to drive job creation

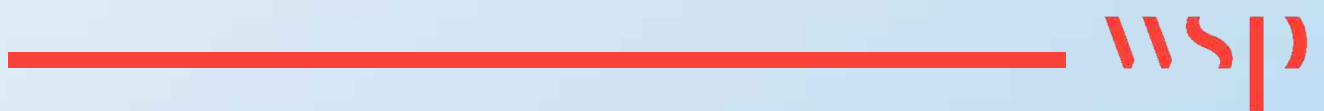
## IMPACT ASSESSMENT

Problem Statements	8,9,18,19,20				
Economic	Med	Environmental	High	Social	Med
Improve operational efficiency	Med	Reduce greenhouse gas emissions, and achieve net zero carbon by 2050 at the latest	High	Improve operational safety (especially for vulnerable road users)	Low
Enhance freight and logistics' contribution as an industrial sector, in its own right (especially to employment)	Med	Reduce wider environmental impact of freight	High	Better integration between freight's operational needs and planning/place making	Low
Improve connectivity to and from the Transport for the South East area's international gateways, including through enhanced infrastructure capacity where needed	Low			Better management of (and facilities for) lorry parking	Med
				Improve air quality	Med



10

## **INTERMODAL INTERCHANGES**



## 10 INTERMODAL INTERCHANGES

---

### DESCRIPTION

- 10.1.1. An intermodal transport interchange can commonly be associated with a large road and rail served facility, often comprising warehousing, goods handling equipment and ancillary ‘added value’ services, processing (and, sometimes, manufacturing facilities) linked into both rail network and the strategic road network. This is with the aim of being able to move different types of goods between different carriers and expanding the role of rail to reduce pressure on the road network and exploit its cost effectiveness and reliability over longer distances.

### RATIONALE

- Maximise efficiency and sustainability in how goods are moved from the point of supply to the point of demand (using the best mode for each stage in the interests of carbon reduction);
- Buildings and facilities can encourage wider uptake of rail related services and act as an economic/employment cluster;
- Can help support re-moding of road to rail freight, tied in with connections to ports;
- Rail freight is apt at carrying bulk loads over long distances and offers journey time reliability complementing last mile road transport over short distances;
- Interchanges can free up capacity on the road network for other freight movements and passenger transport (enhancing resilience);
- Strategically located intermodal (rail-road) freight interchanges can be a driver for increased domestic and port-related freight services, delivered by FOCs (and including trunk leg of supply chains.<sup>147</sup>).

### POLICY BACKGROUND & EVIDENCE

#### Snapshot Overview

- 10.1.2. Intermodal freight and a network of facilities to support mode shift are clearly communicated in the National Networks’ NPS (para 2.42 to 2.58) to help play a role in a low carbon economy and to help address climate change, whilst, in turn, also improving trade links with European neighbours, improving international connectivity and supporting the growth of ports.
- 10.1.3. Reference can be made to the Network Capacity Improvement Programme objectives<sup>148</sup>, which aim to grow the rail freight market by expanding network capacity. This revolves around bringing redundant land back into use, maximising operational efficiency and redeveloping sites to cater for increased flows of port and aggregate traffic.

---

<sup>147</sup> Worth (2021) Modal switch of freight to rail: how, how much and where?, <https://www.keymodernrailways.com/article/modal-switch-freight-rail-how-how-much-and-where>

<sup>148</sup> Network Rail (2019) South East Route Control Period 6 Delivery Plan, <https://www.networkrail.co.uk/wp-content/uploads/2019/06/Route-Strategic-Plan-South-East.pdf>



- 10.1.4. The relatively low forecast growth in rail modal share from ports and domestic intermodal volumes, pre-pandemic, was partly attributed to a low rate of growth in rail-connected terminals, which are key enablers for this type of traffic flow. Without a substantial increase in the current number (and total area) of rail-connected warehousing sites across Great Britain, significant growth will not be delivered<sup>149</sup>.
- 10.1.5. SRFI are typically located near business markets that they will serve and are linked to key supply chain routes alongside access to the SRN and rail network, restricting choice<sup>150</sup>. Flexibility is needed to respond to changing market demands, although expanding existing facilities may be a particular challenge in the South East, due to land use availability and cost related factors.
- 10.1.6. SRFI are typically co-located alongside NDCs; which are concentrated in the Midlands, as opposed to the South East, which has few rail connected RDCs in comparison. The solution may well be a revision to planning policy guidelines to zone land at key locations along main rail routes for logistics use. Indeed, public authorities can help designate appropriate locations, secure substantial developer contributions and sub-regional/national funding and coordinate the broader apparatus of provision (e.g. access roads) to mobilise sites of such scale. Public authorities can ultimately minimising the risks posed to private sector industry for investing in a facility.
- 10.1.7. The impact of intermodal interchanges cannot be understated. According to the analysis of DfT HGV data by CILT<sup>151</sup>, over a third (38%) of all HGV tonne kilometres is likely to well suited to modal transfer to rail, with a further 14% having possibilities for modal transfer in the longer term. The target commodity areas are flows of container and automotive traffic to and from ports travelling between 100-200 miles inland.
- 10.1.8. There are many examples already of this type of movement across the UK and would equate to 1 to 2 additional freight trains per hour in each direction along core routes. The transfer of other tonne kilometres, over shorter distances, may be coupled with decarbonised HGV capability for local and regional distribution.

### Regional Context

- 10.1.9. There are relatively few intermodal transport interchanges across the Transport for the South East area, with the exception of those provided at deep sea ports. These serve the automotive sector as well as other commodity flows at Southampton (containers which make up 30% of all rail freight to/from the port and 20% of all export vehicles) whilst supply chains are linked to NDCs located across other parts of the UK from London Gateway/Tilbury. There are no inland SRFIs.
- 10.1.10. The ABP Port of Southampton has the following rail terminals: Maritime (Freightliner), Berth 109 Terminal (Solent Stevedores), and two automotive rail heads (ABP). Solent Gateway is also rail served. These are the only terminals located on the coastline of South England. However, there is a concentration of intermodal rail freight terminals located in North Kent bordering the Thames, as well as within the Solent, across the Transport for the South East area (Figure 10-1). These primarily serve the main ports and are managed by a number of different operators. There is a distinct lack of intermodal rail freight terminals elsewhere across the Transport for the South East area.

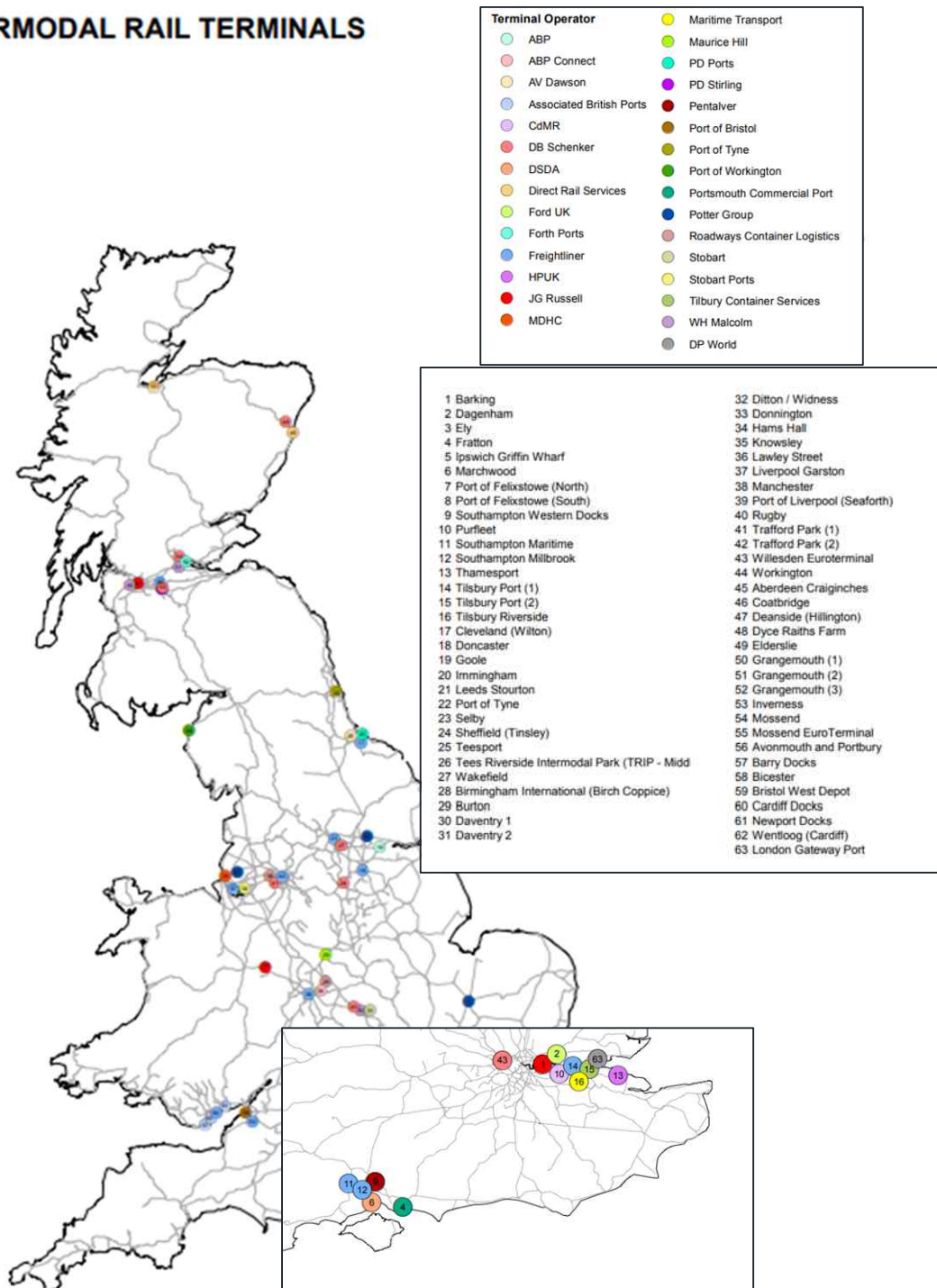
<sup>149</sup> Network Rail (2017) Freight Network Study, <https://www.networkrail.co.uk/wp-content/uploads/2017/04/Freight-Network-Study-April-2017.pdf>

<sup>150</sup> DfT (2011) Strategic Rail Freight Interchange Policy Guidance, <http://planning.northwarks.gov.uk/portal/servlets/AttachmentShowServlet?ImageName=242811>

<sup>151</sup> Worth, JK (2021) Stakeholder feedback on the TfSE Strategy and Action Plan

Figure 10-1 - Intermodal Rail Terminals (Network Rail, 2021<sup>152</sup>)

## INTERMODAL RAIL TERMINALS

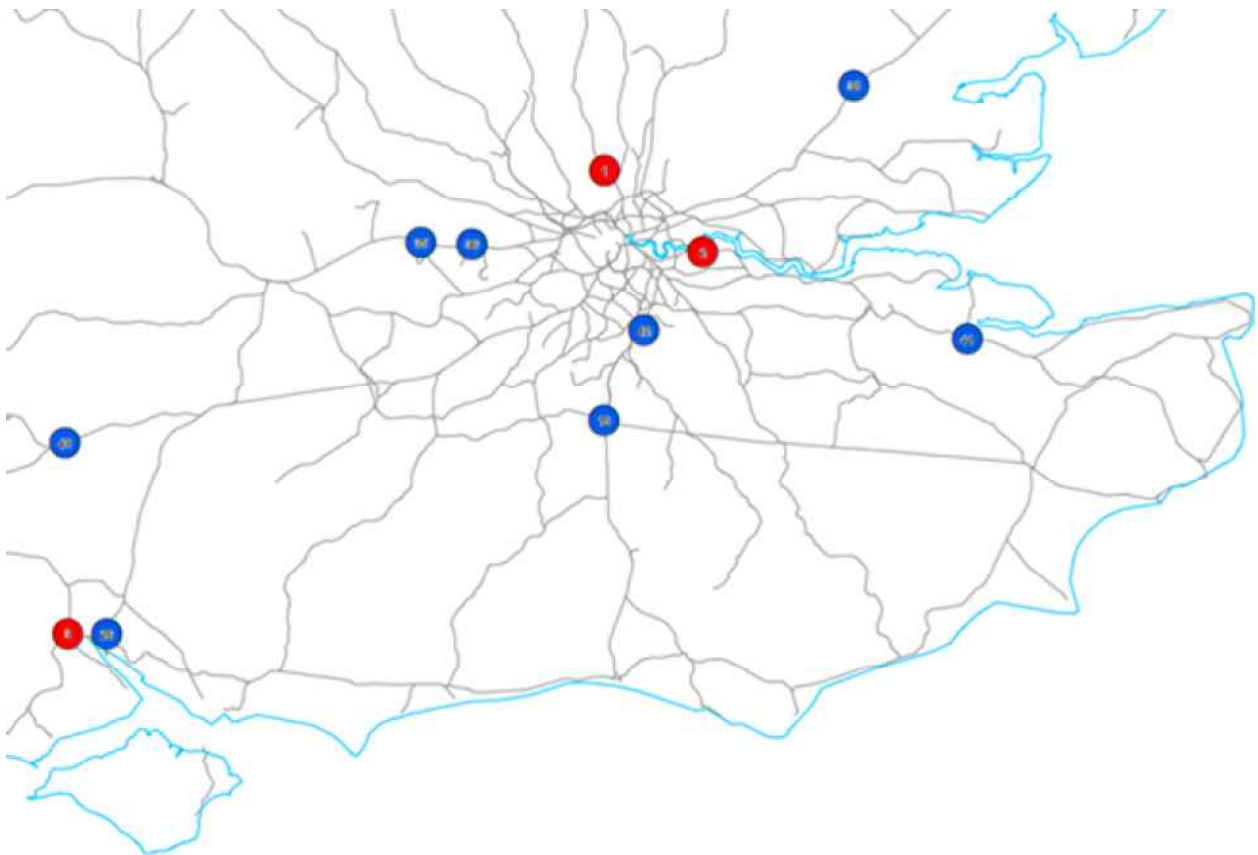


<sup>152</sup> Network Rail (2021) Intermodal Rail Terminal Map, <https://sacuksprodnrdigital0001.blob.core.windows.net/freight/Freight/Strategic%20freight%20sites/Map%20of%20intermodal%20rail%20terminals.pdf>

10.1.11. Similarly, there are few Strategic Freight Sites (SFSs) which are loosely defined by Network Rail across the Transport for the South East area, which also tend to be located around the same geographical locations (Figure 10-2). The specific locations are as listed below:

- Redhill Redland Aggregates
- Sittingbourne
- Andover
- Totton
- Bevois Park, Southampton

**Figure 10-2 - Strategic Freight Sites situated Across the South East of England (Network Rail, 2021<sup>153</sup>)**



10.1.12. The assumption is that these are sites that can handle a mixture of goods and intermodal traffic, with limited loading and handling capacity but not on the scale of an SRFI. They also tend to be sidings located adjacent to operational passenger railway stations. It should be noted that these sites are safeguarded for freight use but it is uncertain as to whether they are all fully operational at this point in time.

<sup>153</sup> Network Rail (2021) Strategic Freight Sites Map, <https://cdn.networkrail.co.uk/wp-content/uploads/2017/12/Strategic-freight-sites-map.pdf>

- 10.1.13. There is an ambition to boost the level of domestic (as well as international) intermodal container services using swap bodies on freight trains feeding into urban rail terminals which could be transferred onto zero emission vehicles to supply stores and reduce HGV access and mileage. Aspirations for such models include bringing into play the underutilised rail head at Fratton, Portsmouth working with Tesco who already have established examples across the UK. However, there are a number of connected aggregate handling sites (

- 10.1.14. Figure 10-3) across the South East that serve a broader geographical area. These are concentrated around the Solent, as well as along major radial routes between the south coast and east coast of Kent and London and are well placed to serve the burgeoning construction industry in the capital.
- 10.1.15. There are no metal or bulk handling sites served by rail across the Transport for the South East area but Mountfield is the only example of a rail-served specialist minerals depot in the South East, including London.
- 10.1.16. Lafarge Tarmac also have three rail connected cement handling depots across the South East which connect directly into the mainline at Holborough, Northfleet and West Thurrock. The facility sits outside the TfSE area but movements inevitable pass through the region.
- 10.1.17. Most other rail terminals (the majority handling construction materials) are small scale railheads and poorly located in relation to the markets that they serve and are not operating at a scale to support a strategic transformational shift from road.





## Regional Demand

### Solent – Midlands Corridor

- 10.1.18. The Solent to Midlands corridor for rail and road freight transport is key for connecting distribution and economic clusters in the Midlands/North with the ports of Southampton and Portsmouth on the south coast<sup>155</sup>. More importantly, this corridor is where there is opportunity for road to rail mode shift, to free road capacity for journeys that are greater than 50 miles and greater than 100 miles for bulk and consumer goods.
- 10.1.19. Rail is considered to be more cost effective for larger volume, longer distance consignments, with the Phase 1 of the strategy helping to illustrate the potential markets for mode shift. The dominant commodities moved from the Solent to the Midlands are grouped goods (intermodal sector) and perishable goods (food, beverages, tobacco) and chemical products.
- 10.1.20. Further investigation would be required with hauliers and end customers to assess the potential for mode shift to rail. For inbound movements to the Solent (and its ports), the list of products extends to raw materials, waste and metal ore (although volumes are likely to fluctuate), with rail potentially offering more low carbon and financially efficient ways of moving goods, most notably waste.
- 10.1.21. Despite its relatively small share of freight flows, the mail and parcels sector can look to pursue mode shift to take pressure off the existing road network and connect distribution centres in the Golden Triangle (Midlands) with the Solent. Any potential shift of goods from road to rail needs further examination and investigation with end customers and hauliers, particularly in the foodstuffs, beverage and chemical sectors, which will determine the type and location of intermodal facilities required.
- 10.1.22. Further along the coastline, the Port of Portsmouth<sup>156</sup> has plans for exploring intermodal or railhead facilities, developing the Port as one hub of an intermodal transport facility.
- 10.1.23. The SFS at Totton, which is maintained by Network Rail, has been earmarked for developing and expanding rail market share to link into the surrounding port, road and business expansion plans. The site is currently underutilised, with the port potentially seeking to utilise its capacity and rail connection to support the movement of unitised freight northbound.

### London – M25 Orbital

- 10.1.24. The Kent Local Transport Plan<sup>157</sup> promotes the shift of freight from road to rail and states the aim of using rail freight as a means to reduce pressure on the road network, reduce GHG emissions and air pollutants per tonne. Reference is made to rail freight on HS1 and mainline wherever possible, providing there are no capacity limitations on the rail network (with the need to look at additional paths for freight trains).

---

<sup>155</sup> Network Rail & Highways England (2021) Solent to the Midlands Freight Strategy, <https://highwaysengland.co.uk/media/rc4bekfn/solent-to-the-midlands-multimodal-freight-strategy.pdf>

<sup>156</sup> Portsmouth International Port (2020) Port Masterplan, [https://www.portsmouth-port.co.uk/uploads/downloads/PORT\\_MASTER\\_PLAN\\_Final\\_10\\_10\\_11.pdf](https://www.portsmouth-port.co.uk/uploads/downloads/PORT_MASTER_PLAN_Final_10_10_11.pdf)

<sup>157</sup> Kent County Council (2020) Local Transport Plan 4: Delivering Growth without Gridlock 2016–2031, [https://www.kent.gov.uk/\\_data/assets/pdf\\_file/0011/72668/Local-transport-plan-4.pdf](https://www.kent.gov.uk/_data/assets/pdf_file/0011/72668/Local-transport-plan-4.pdf)



- 10.1.25. There is a real desire to unlock movement of freight traffic at Kent terminals and London distribution centres to deliver aggregates for the construction industry across the UK. Overall, rail freight currently contributes £87 million of benefits to South East London and Kent<sup>158</sup> and there is a commitment to maintain the efficient movement of freight between Kent terminals (with plans at the time to also support inland customs clearance, to reduce the risk of congestion at Dollands Moor Freight Yard, post-Brexit).
- 10.1.26. There is a direct reference to the need for a Strategic Rail Freight Interchange at Howbury, in the London Borough of Bexley and its potential to remove 540 HGVs from the road network. Previous planning applications were refused by the Secretary of State on the grounds that the conditions to satisfy the “very special circumstances” for approving development in the Green Belt were not satisfied. More specifically, the proposals were deemed to have very constrained operating arrangements, with limited scope for incorporating additional freight train paths.
- 10.1.27. There have been Intermodal Freight Interchanges proposed for Colnbrook near Heathrow which suffered the same fate. A revised plan for the former was also refused despite being reduced in size. Plans for an SRFI in Kent, adjacent to an existing train depot in Slade Green, Erith, was also refused in 2019, based on the site’s potential impact on road capacity in the vicinity, as well as the environmental consequences of siting the facility in the Green Belt. The development of London Gateway has been declared a better placed SRFI that can serve London and the South East more broadly.
- 10.1.28. Intermodal facilities have experienced difficulties in being granted planning permission, despite national policy being in place. This is despite previous Strategic Rail Freight Interchange Policy asserting the need for three to four facilities to meet capacity at the time around the periphery of the M25, where they would be best placed to take advantage of key road and rail intersections and strategic rail freight routes.
- 10.1.29. SRFIs are also seen as an opportunity for growing intermodal traffic and to address demand for inland terminals, whilst acknowledging the challenge in doing so through the planning process<sup>159</sup>. Hopes are pinned on Howbury Park as a major logistics hub but partnerships with developers are required to achieve strategic fit. Connections to new terminals would also require early collaboration with stakeholders, with new locations also including lineside loading (e.g. aggregates).
- 10.1.30. The London Rail Freight Strategy Summary Report<sup>160</sup> notes that rail freight in and around the capital is maintaining sufficient rail connected terminals across the city and securing capacity for trains to reach them. The study promotes the protection and potential reuse of disused rail connected sites and requests local authorities to consider this within planning applications.

<sup>158</sup> Rail Delivery Group (2018) Rail companies launch joint plan to boost jobs, services and investment in South East London and Kent’s railway, <https://media.raildeliverygroup.com/news/rail-companies-launch-joint-plan-to-boost-jobs-services-and-investment-in-south-east-london-and-kent-s-railway>

<sup>159</sup> Network Rail (2019) South East Route Control Period 6 Delivery Plan, <https://cdn.networkrail.co.uk/wp-content/uploads/2019/06/Route-Strategic-Plan-South-East.pdf>

<sup>160</sup> Network Rail (2021) The London Rail Freight Strategy, Options for the future, [London Rail Freight Strategy Summary Report \(networkrail.co.uk\)](https://www.networkrail.co.uk/Reports/London-Rail-Freight-Strategy-Summary-Report)

10.1.31. Ensuring terminals also accept electrically hauled, longer trains will also likely attract additional custom. The same study also suggests that good freight links between London (and beyond) and the Channel Tunnel could remove considerable numbers of lorry movements if in conjunction with SRFI facilities close to the M25.

### **Other Corridors**

10.1.32. The future location of an SRFI in West Berkshire has been considered, along the rail corridor between Reading and Newbury at Theale, Aldermaston Wharf or Thatcham. This would likely be smaller in scale than those constructed elsewhere across the UK and would not share the same characteristics of a 'conventional' SRFI in its typical sense. The locations offer the following:

- The site at Theale would offer the chance to incorporate in the current aggregate bulk offer and associated sidings with immediate access to the A4 (dualled) and M4 Junction 12. The site could also be broadly integrated within Arlington Business Park, which is home to a number of 3PLs and online retailers, where there may be potential new markets for unitised freight flows.
- The site at Aldermaston Wharf would dovetail or replace (longer term) the current oil refinery facility and sidings, whilst being sited adjacent to the Kennet & Avon Canal for potential use for slower freight consignments towards Newbury and Reading, respectively.
- The site at Thatcham at Colthorp Business Park, also abutting the Kennet & Avon Canal, which hosts a large number of 3PLs and freight and logistics companies. Similar to the Theale option, more investigation would be required into the demand for moving parcel commodities. This site sits directly south of a proposed large scale housing development on Bath Road (A4).

## **INTERVENTION OPTIONS**

10.1.33. An intermodal transport interchange, in this context, refers to the location where road and rail networks purposefully intersect, to transfer goods from one mode to another. All variations share the same aim but can vary in size and location, depending on the type of goods moved and their role in supporting freight flows along corridors across the Transport for the South East area.

### **Strategic Rail Freight Interchange (SRFI)**

10.1.34. These facilities operate at scale, transfer high volumes and are key to driving growth in rail freight at a sub-national and national scale. This is a facility which optimises the use of rail in the freight journey and minimises the secondary distribution leg by road.

10.1.35. Intermodal Rail Freight Interchanges are necessary for growth in all sectors of the freight market, for both existing and potential business and they offer a shared access point between road and rail networks. The core principles are as follows:

- Development of traditional rail markets or where rail freight is likely to continue to grow to meet business and local objectives.
- Capturing greater market share of rail for imports and exports, requiring expanded port facilities and major inland terminals.
- Expansion of the rail role for the increased proportion of warehousing.

## Rail Freight Sites/Terminals/Railheads

10.1.36. These vary significantly in size and commodities handled and are most commonly owned and managed by a single company for their own supply chain, processing and production purposes, either line side or with a designated branch/siding. Information and data on these sites and the nature of their use are often commercially sensitive, so there is limited feedback on utilisation within the public domain.

## RECOMMENDATIONS & LOCATIONS ★ ★

10.1.37. There have been challenges with developing the infrastructure to support mode shift and the transshipment of goods from road to rail across the Transport for the South East area for many years. Other than railhead sites contained within a port setting or pre-existing sidings safeguarded for future use or in private ownership, issues of commercial viability and land control have hampered progress to date.

10.1.38. Taking a 'conventional' SRFI, the scale of a site is a key consideration and will distinguish the approach towards gaining planning permission. A site with at least 60 hectares, connected to the SRN and capable of handling either consignments of goods from more than one consignor and to more than one consignee and with at least four goods trains a day, will be classed as a Nationally Significant Infrastructure Project (NSIP), under the Planning Act 2008.

10.1.39. A number of factors are key when exploring more specific sites, namely:

- Locations that are well connected to the transport network, due to the requirement for access to the site 24/7.
- Locations that serve or focus on major urban centres, groups of centres or key supply chain routes/corridors.
- Locations that are part of or led by a logistics/wider business-centric network and with higher scope for mode shift.
- Locations that benefit from the nearby presence of a labour force with the necessary skills for helping to deliver numerous employment functions.
- Locations that are able to expand and accommodate future rail freight growth (future proofing).

10.1.40. Furthermore, there are further conditions for SRFIs outlined in the National Policy Statement for National Networks (DfT, 2014) and more specific technical requirements that need consideration (Arup, 2017) including;

- Rail access from all mainline directions.
- Size range 60 – 400Ha.
- Operational rail connection, a number of rail connected buildings, intermodal handling and container storage.
- Capable of handling over 4 goods trains per day.
- Capable of receiving 775m long trains (and associated need for sidings).
- At least W8 gauge.
- Trackside access/maintenance roads.
- Signal spacing (and mainline integration).

- 10.1.41. Developments would need to be supported by appropriate gauge clearances and sufficient network capacity, particularly for heavier bulk traffic. SRFIs are also embedded within logistic-centric developments from the outset and take a long-term view towards encouraging a conversion from road to rail. However, there are challenges with sourcing land across the South East of England which will impact the ease and costs of acquiring suitable sites of the scale described.
- 10.1.42. Further exploration will be required to understand why freight customers choose the mode of transportation for their goods and that the relationship between Network Rail and National Highways is key going forward, to address structural limitations and unlock new opportunities for mode shift from road to rail, to meet carbon challenges. This includes working with the former to accurately define operational and non-operational SFS sites.
- 10.1.43. This should also include a comprehensive review of railway-adjacent land across the London area, with a view to the identification and safeguarding of any remaining sites with potential to be of value for future freight use. The expectation is that whilst larger hubs will be located further afield, small intermodal sites would be envisaged around the capital. It also notes that a cross-London programme of works would also be useful to realise a consistent operational standard for construction sector terminals.
- 10.1.44. The MSRS scheme could also be expanded and better promoted to encourage industry to move towards the use of rail (and other modes) and to ultimately reduce dependency on road haulage. This would be a timely intervention to unlock suppressed demand and whilst passenger levels on the network remain (and are likely to remain) fall short of pre pandemic levels. Increased use of rail requires increasing the number of train paths, better reliability, reduced journey times and, where necessary, additional rail terminal capacity.
- 10.1.45. Individual rail freight terminals should continue to be supported where there is the scope to move goods by rail mediated by industry. In terms of SRFI and despite the challenges observed with successfully locating facilities, a number of locations would need to be explored in the following geographical locations:
- A34/Cross Country Corridor, north of Southampton that can link into the M27 and burgeoning logistics/business parks (Eastleigh) or enhancing portside facilities as part of docks expansion or Southampton Airport Economic Gateway (SAEG).
  - The Medway Valley where a number of RDCs are already located and where there is an opportunity to unlock brownfield land, adjacent to the rail network, with regeneration efforts that promote the clustering of freight and logistics activity. The line also connects into the W9 gauge Channel Tunnel route at Paddock Wood.
  - Exploring the role of an intermodal facility at Portsmouth Port or upgrading an underutilised site at Fratton as a small-scale hub.
  - Better understanding the scope, appeal and strategic role for one of three intermodal sites within West Berkshire, which intersects with the Great Western Mainline and A34 (West Berkshire).
  - Pursuing a London based SRFI within close proximity to the M25 and along the strategic rail freight network (with a need to determine a strategic fit, to avoid further failed attempts). This includes whether to allocate three/four smaller or one larger site (which would be subject to the NSIP) taking into account London Gateway.

## KEY CHALLENGES

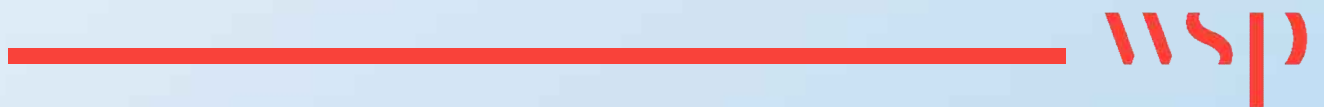
- Identifying and developing suitable sites that can satisfy a particular freight demand/flow and where access and integration with the road and rail networks is good.
- Trying to redefine an SRFI in a South East context to mean any facility that can support movement of goods between road and rail (and vice versa), regardless of scale.
- Funding requirements and ultimately the level of interest expressed by private industry to develop and manage a site (as these tend not to be driven purely by public authorities).
- Having some short and longer term guarantees around the availability and future growth of rail freight paths and FOC investment in services.
- The lack of incentives on offer and disincentives to switch between road and rail for journey legs, relative to moving goods along the same freight corridor.

## IMPACT ASSESSMENT

Problem Statements	1,5,10,11,17,21,23				
Economic	Med	Environmental	Med	Social	Low
Improve operational efficiency	High	Reduce greenhouse gas emissions, and achieve net zero carbon by 2050 at the latest	Med	Improve operational safety (especially for vulnerable road users)	Low
Enhance freight and logistics' contribution as an industrial sector, in its own right (especially to employment)	Med	Reduce wider environmental impact of freight	Med	Better integration between freight's operational needs and planning/place making	Low
Improve connectivity to and from the Transport for the South East area's international gateways, including through enhanced infrastructure capacity where needed	Med			Better management of (and facilities for) lorry parking	Low
				Improve air quality	Med

11

## **WAREHOUSING, FULFILMENT AND CONSOLIDATION CENTRES**



## 11 WAREHOUSING, FULFILMENT AND CONSOLIDATION CENTRES

---

### 11.1 REGIONAL DISTRIBUTION CENTRES

#### DESCRIPTION

- 11.1.1. Distribution centres (warehousing) and fulfilment centres, strategically located off the SRN (and potentially adjacent to the rail network), offer economies of scale and support supply chain connectivity. Sites serve several freight related industries and sectors, with land and premises required to store, process and organise the delivery of goods. Units can vary in scale and specialisms and currently require a ready supply of labour (or automation) and access to end customers, as well as other functions, particularly manufacturing. For this reason, distribution and fulfilment centres tend to be co-located and concentrated around other land uses, as well as the transport network.

#### RATIONALE

- Distribution centres and warehousing are key to supporting global and local supply chain connectivity and the movement of goods.
- Facilities can be major economic drivers (as well as major trip generators) and follow growth in online/3PL logistics operations.
- Distribution centres, warehousing and fulfilment centres can be major employers and contribute towards local prosperity.
- Warehousing and fulfilment centres provide the hub location for onward distribution (the spokes) into local urban & rural areas.
- Warehousing has been pivotal to the storage and management of goods amidst supply chain and customs clearance changes.

#### POLICY BACKGROUND & EVIDENCE

##### Snapshot Overview

- 11.1.2. The terms 'distribution centres (warehousing) and fulfilment centres – known colloquially as 'sheds' - are used interchangeably in this context. They can be highly specialised units, for example storing and handling refrigerated products, through to simple, mass volume units catering for parcels and packages, with sorting lines and quick turnover times. Automation and the use of highly sophisticated inventory management software is likely to form part of the 'sheds' of the future.
- 11.1.3. Major supply chains tend to operate a complex web of National Distribution Centres (NDCs) and Regional Distribution Centres (RDCs); with the former typically situated in the Midlands, within the Golden Triangle and served by RDCs. Historically, there has been limited cross over and shared use of RDCs/NDCs between different companies but this may change, with pressures on land and warehousing supply, alongside the need for flexible inventory management to maximise cost efficiency. Concerns relating to shared facilities around theft, contamination or competition (all wrapped up as commercial sensitivity) can be overcome through new data innovations and automated warehousing management systems – an emerging trend for the future.



- 11.1.4. Demand for warehousing is changing. Whereas in 2015, high street retailers were the dominant sector requesting and searching for warehousing capacity, 3PLs and online retailers are now the main players. There has been a 42% increase in 3PLs' occupation levels across the UK and a staggering 614% rise in online retailers' occupancy.
- 11.1.5. This is perhaps no coincidence with online spending, as a proportion of total UK retail sales, hitting a record of 36.3% in January 2021<sup>161</sup>. These organisations look to be located near urban areas, alongside manufacturers who are increasingly looking to avoid supply chain disruption by co-locating inventory closer to 'home' and near end user markets.
- 11.1.6. The latest UKWA Size & Make Up of the UK Warehousing Sector report<sup>162</sup> notes a 32% overall rise in warehousing units and a trend towards larger warehousing, with a rise of 242% for units over 1m+ sq ft and the average sized units increasing from 217,000 sq ft to 340,000 sq ft, across the UK, over the last five years.
- 11.1.7. The UK is predicted to need an extra 60 million sq ft of warehousing space by 2025. Affordability is also a concern which could drive the densification of warehousing space (e.g. multi storey) in existing locations. Conversely, initial trends point towards developers pushing out facilities along motorway corridors with well-connected populations and population growth - making locations such as Southampton and Medway towns ideal locations, as opposed to sites around London.
- 11.1.8. According to the CBRE<sup>163</sup>, location will be a key determinant for logistics occupiers moving forward, with rental growth for secondary sites (those that are not as well established or 'connected') to lag behind well-connected units. A 'flight to quality' that values location and specifications, is one of the expected outcomes of ongoing supply chain reconfiguration and expansion.

### **Regional Context**

- 11.1.9. There is a notable absence of major warehousing and distribution centres across the Transport for the South East area, due to several factors, including the limited supply and availability of suitable land. This can be partly attributed to the absence of major manufacturing plants, where typically a distribution or fulfilment centre would be located. The vast majority of distribution and fulfilment centres in the South East tend to be located around ports or clusters of manufacturing activity (mainly around Medway Towns).
- 11.1.10. However, the rise of e-commerce has fostered a move towards being located in closer proximity to end customers, where there is increasing need for additional provision to meet current and future demand. Figure 11-1 illustrates a selection of major warehousing across the South East and clearly illustrates the role of North Kent (Medway) and Solent for hosting such provision. It also illustrates the prominence of 'general logistics' sites around the Solent and the west of the M25 and the clustering of food and drink distribution facilities in North Kent. It is important to note that this figure dates from 2019, pre-pandemic and before the huge growth in online retail experienced in 2020/21.

<sup>161</sup> Financial Times (2021) Online shopping boom in pandemic drives demand for warehouse space, <https://www.ft.com/content/1ddf26ac-6bf5-4fb0-bdec-8ab70d61197f>

<sup>162</sup> UKWA (2021) The Size and makeup of the UK Warehousing Sector, <https://www.cambridgeshirechamber.co.uk/downloadlibrary/UKWA%20Savills.pdf>

<sup>163</sup> CBRE (2021) UK real estate market outlook, <https://www.cbre.co.uk/research-and-reports/2021-UK-Real-Estate-Market-Outlook>

**Figure 11-1 - Warehousing Types and Locations Across the Transport for the South East Area (WSP, 2019<sup>164</sup>)**

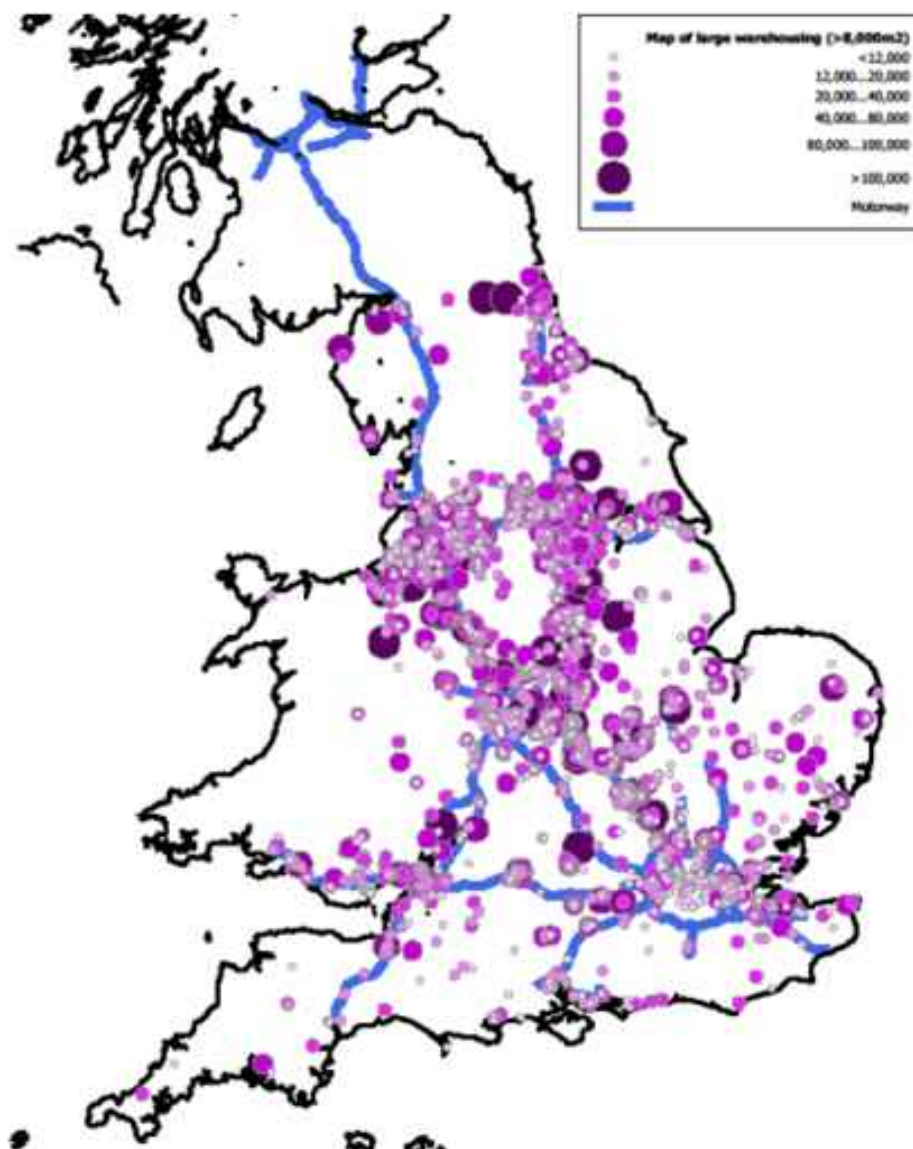


11.1.11. There is a distinct lack of large warehousing facilities in the South East (above 80,000m<sup>2</sup>), with concentrations of provision in urban areas, such as the Medway towns, Kent, and along the south coast between Southampton and Portsmouth (

<sup>164</sup> WSP (2019) Freight Logistics and Gateways Review

11.1.12. Figure 11-2). In comparison to the Midlands, there are few locations along the major motorway network (e.g. M3, M20, M2, M25) despite these being key connections with the largest HGV freight flows across the region.

Figure 11-2 - Location of Distribution Space Over 8,000 sqm Across England (DfT, 2019<sup>165</sup>)



11.1.13. The Medway Towns have been previous beneficiaries of changing demand for warehousing and distribution space, with anchor tenants such as Amazon and Wincanton having invested in slightly cheaper locations, with labour force and land outside of London. The West Sussex Local Transport Plan Review<sup>166</sup> also notes the virtues of airport related logistics, distribution and warehousing facilities in proximity to the 'Gatwick Diamond' and the role this plays in the local economy of Crawley and the wider sub region, likely for years to come.

<sup>165</sup> DfT (2019) Understanding the UK Freight Transport System, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/777781/fom\\_understanding\\_freight\\_transport\\_system.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/777781/fom_understanding_freight_transport_system.pdf)

<sup>166</sup> West Sussex County Council (2021) West Sussex Transport Plan 2022 to 2036 Draft for consultation, [https://www.westsussex.gov.uk/media/16025/draft\\_wstpv.pdf](https://www.westsussex.gov.uk/media/16025/draft_wstpv.pdf)

- 11.1.14. Medway is an area of interest for logistics operators, due to its large population and manufacturing sector requiring distribution with recent expansion of activity (e.g. London Medway Commercial Park at Kingsnorth). One of the largest warehouses in the UK, at 2.3 million sq ft, is under construction at Dartford by Amazon, with data centres, which store digital information, process orders and handle shipping and supply chain logistics, also occupying a significant, but understated part of the warehousing share across the UK (the second largest in the world, being based adjacent to the M25).
- 11.1.15. Across South Hampshire, opportunities have previously been explored for co-locating developments that generate substantial freight movements for the environmental and economic gains that this could entail. This is driven, in part, by a lack of land and property space, which is preventing inward investment and prohibiting companies from expanding (or relocating). Over 15 years ago, there was already an outstanding requirement for over 70,000 sq m of large purpose-built distribution space, with weak transportation links, lack of appropriate buildings and also the perceived lack of labour (due in part to high living costs) informing this assessment<sup>167</sup>.
- 11.1.16. Ports are increasingly viewed as alternative locations because of the seamless interaction with globalised supply chains (see the earlier section on Port Logistics) and the need to avoid double handling. Land availability remains a challenge and port-centric development is also driven by market demand, across private port estates. The designation of Freeports will be interesting to assess, in terms of their actual ability to attract added value services and deliver efficiencies.

### **Warehousing Supply**

- 11.1.17. The undersupply of warehousing across the South East presents a genuine threat to supply chain operators who may be unable to cope with the accelerated adoption of e-commerce. This ranges from 3PLs through to online retailers, supermarket chains and the NHS; all of whom are vying for optimal distribution capabilities, including shorter supply chains and inventory held closer to markets/sites. Warehousing growth will also be running parallel to ambitious plans to construct 240,000 homes annually across the UK, especially across the South East, which has a chronic shortage of homes and a cost of living crisis that has been prioritised to be addressed.
- 11.1.18. However, given the higher land values and rental levels and the fact the South East lacks warehousing units over 1m+ sq ft, compared to other regions, the region, including London, has witnessed an increase in total stock levels by 27m sq. ft, reflecting a rise of 29%<sup>168</sup>. This means that the South East now has over 120m sq ft of warehouse stock. This still pales in comparison to the sq ft of space across the Midlands 'Golden Triangle' but growth change in warehouse stock between 2015-2021 across the South East is on par with the East and West Midlands.

<sup>167</sup> Roger Tym & Partners (2006) Property requirements for distribution and logistics, <https://www.portsmouth.gov.uk/wp-content/uploads/2020/05/development-and-planning-push-property-requirements-for-distribution-and-logistics.pdf>

<sup>168</sup> Savills (2021) The size and make-up of the UK warehousing sector – 2021, [https://www.savills.co.uk/research\\_articles/229130/315446-0](https://www.savills.co.uk/research_articles/229130/315446-0)

11.1.19. Rental growth is likely to increase for well-located warehousing, with this likely to be strongest in London and the South East; driven by the growth in e-commerce with proximity to and around urban areas and ports likely to outperform regional growth. Alongside online retailers seeking to expand their networks, the implications of Brexit are also driving increases in warehousing as storage for important product lines. The drive for warehousing has reduced vacancy rates to 3.49%, the lowest in five years<sup>169</sup>.

11.1.20. Rising land and rental prices are having an impact on acquisitions of land for warehousing, due to the commercial value of the investments. The lack of availability for optimal sites may be having the following impacts:

- Cascading demand for warehousing space 'downstream'; evidenced along the motorway corridors in Kent, where facilities are based around regional, well-connected towns, with a more accessible labour force (Medway and Southampton receiving particular attention).
- Longer stem mileage between distribution/warehousing sites and markets that increase supplier operational costs and (short term) carbon emissions, whilst reducing supply chain resilience (in the event of delays/disruptions). In some sub-sectors, such as perishable goods, access must simply be within range of urban conurbations.
- Challenges attracting labour where access to site is poor and the cost of travel is prohibitive. This potentially exacerbates a known problem with evidence of warehousing spreading across other parts of the Transport for the South East area, away from the M25 orbital towards the Medway Towns for its access to labour, transport connections and lower land costs.
- Switch towards retrofitting older stock by smaller companies that operate on smaller margins and may compromise the quality of facilities (access and storage) for the availability and cost of premises within their respective budgets. This can lead to sub optimal conditions.
- Increased trend towards shared warehousing assets and flexible storage solutions that could potentially offer better utilisation of total warehousing capacity and a streamlined supply chain for smaller companies. Subterranean warehousing is also being explored (e.g. Formal Investments at Heathrow) by investors that highly value quality access/locations.
- The challenge in meeting customer expectations around personalised, same day deliveries and the appeal of areas to larger organisations (3PLs) looking to base themselves in the South East, around major conurbations. The sheer popularity of warehousing as an investment, with strong rates of return, has only spurred demand, regardless of price.

## INTERVENTION VARIATIONS

- RDCs and fulfilment centres can handle food, construction materials, retail products etc and can be owned and managed by larger real estate investment companies, large chains or (increasingly) by 3PLs. These are increasingly based close to urban centres, near end users and customer markets and located on strategic road and rail corridors. This is a change away from the traditional model of NDCs and RDCs and hub and spoke operational structures. It involves bringing stock products closer to the end consumer, to meet demanding customer service level expectations.

<sup>169</sup> Savills (2021) The Logistics Market in London & the South East, [https://www.savills.co.uk/research\\_articles/229130/309572-0](https://www.savills.co.uk/research_articles/229130/309572-0)



- What constitutes warehousing (classed as B8 use class) is also changing, with the rise of automated equipment and operational software to efficiently manage stock. Transshipment activity is on the rise to improve supply chain efficiency and to respond to warehousing shortages.
- Technology is helping with optimising the use of warehouse space through flexible sharing/renting – driving interest in facilities and reducing barriers to entry. Changing customer expectations and the expansion of populations, particularly around urban centres, is also dictating a new demand for certain sizes of facility.
- Key requirements for B8 occupiers, particularly of buildings over 2000 sq m, include high eaves, bigger yards, better access to motorways and trunk roads, flexible planning consents to allow B1 and B2 activities to take place on the same site, no restrictions on hours of use/vehicle movements and ample vehicle parking and open storage services.

## RECOMMENDATIONS & LOCATIONS ★

- 11.1.21. In an ideal scenario, distribution centres would be situated adjacent to economic drivers (conurbations) to take advantage of their proximity to end customers and a ready supply of labour, within an accessible location off the SRN and key public transport connections. Development of warehousing is typically private sector-driven, with limited involvement or awareness of public authorities as to potential sites.
- 11.1.22. One of the major challenges will be ensuring warehousing capacity matches the scales of population growth in urban areas across the Transport for the South East area. This is on the basis that more people will generate growth in freight deliveries, particularly courier services/home deliveries. Popular locations will likely be around existing business and logistics parks and, increasingly, sites with a rail link for mode shift from road to rail.
- 11.1.23. The availability of warehouse staff, who are typically in low paid, low skilled roles, will remain a key determinant. This means continuing to focus investment in accessible locations, in close proximity to urban areas and other larger freight generators. However, the delivery of distribution space will rely on the planning system, with conflicting geographical issues, namely the green belts surrounding urban conurbations, national parks and the sensitivity of locating logistics sites near residential areas.
- 11.1.24. Warehousing design also has to be suitable to offset concerns about overspill and detrimental impacts of HGV movement, parking and 24/7 access, on local communities. In this respect, locations for warehousing and distribution centres should ideally be co-located in proximity to lorry parks or factor in such provision (including marshalling yards) within planning conditions for new sites.
- 11.1.25. Sharing existing warehousing capacity may offer a short term solution to a lack of larger facilities and challenges with securing land. This is based on the principle of sweating existing assets and ensuring freight operators can also gain from minimising costs/overheads. This may also be another theme within a logistics property study, with a more detailed deep dive into potential shared locations.



- 11.1.26. The drive towards ‘big sheds’ continues and is driven by larger private equity firms and multinational 3PLs and online retailers. Transport for the South East and the role of public authorities must seek to reflect the interest and needs of local communities in strategic site assessments and whether the type of development is suitable to meet social and environmental objectives, as well as the economic benefits of allocating land for such facilities (e.g. quality of jobs, protection of local amenity etc).
- 11.1.27. The warehousing sector should be encouraged to optimise current space and increase the density of new and existing warehousing space within a smaller footprint. The balance of power must also be addressed between capital rich market leaders and smaller businesses, reflected in local planning discourse and policy (e.g. multi-let unit sizes, conditions for employment, local social value, living wage employer etc).
- 11.1.28. Transport for the South East could also start to push the opportunity for ‘small sheds’ that are better interwoven into the urban fabric and based on attaining higher standards of sustainability across transport and building efficiency.

### **Logistics Study**

- 11.1.29. A logistics property study is recommended to understand future demand and provision requirements. Key to this conversation will be the growing demand for larger warehousing sites for 3PLs and online retail chains, although caution must be exerted as consumer behaviours may change post-pandemic.
- 11.1.30. Regardless, this process should include reviewing local development plans and the designation of land at peri urban locations or weighing up the balance between supporting investment through port-centric developments around key gateways. A balance will need to be made between supporting growth of warehousing and distribution centres in more remote locations, where land supply may be more readily available, relative to urban areas, despite the potential drawbacks (although ‘secondary sites’ may not prove to be popular investment options).
- 11.1.31. The study could look to explore the possibility of securing an anchor tenant required for future logistics development, to deliver infrastructure. As warehousing is a commercial investment, the financial return must be attractive to the investor, whether this is a key industry partner or property developer, offering site leases. This may ultimately dictate suitable locations, with inspiration taken from across other parts of the UK (Aldi at Harworth) and the South East (Amazon and Wincanton in Kent). Equally the use of shared warehousing for different commodities could also be pursued, working with industry on delivery in areas where there is heightened demand.

### **KEY CHALLENGES**

- The conflicting and competing uses of land for housing, commercial property and transport infrastructure, which can be highly politicised and controversial and may take time to resolve.
- The longer term risk of warehousing and distribution space moving to other parts of the UK as a consequence of lack of land availability and high costs, to the detriment of the local/regional economy.
- Responding to the rapid rise of e-commerce and online retailing and the pressure this is creating on satisfying demand for space.
- The disproportionate influence of larger organisations to monopolise space and assets, leading to increases in warehousing costs and difficulties for smaller organisations with warehousing needs.

- The environmental and social ramifications of building 'big sheds' across the South East, including on local amenity, employment prospects and the transport network.

## IMPACT ASSESSMENT

Problem Statements	1,4,5,21,23				
Economic	High	Environmental	Low	Social	Med
Improve operational efficiency	Med	Reduce greenhouse gas emissions, and achieve net zero carbon by 2050 at the latest	Low	Improve operational safety (especially for vulnerable road users)	Low
Enhance freight and logistics' contribution as an industrial sector, in its own right (especially to employment)	High	Reduce wider environmental impact of freight	Low	Better integration between freight's operational needs and planning/place making	Med
Improve connectivity to and from the Transport for the South East area's international gateways, including through enhanced infrastructure capacity where needed	Med			Better management of (and facilities for) lorry parking	Low
				Improve air quality	Med

## 11.2 PORT CENTRIC LOGISTICS

### DESCRIPTION

- 11.2.1. Port Centric Logistics (PCL) looks to boost the role of ports as an integral part of supply chains. In practice, this approach covers a range of elements but with the primary aim of streamlining operations (picking, sorting, processing, storing and distributing) from cluster sites within a port environment. This is a trend that has been accelerated by Brexit and Covid-19. The approach combines the use of technology with infrastructure and essentially reduces handling throughout the process and, in theory, saves time and money. PCL is also viewed through the lens of providing plentiful employment opportunities, particularly linked to the potential of Freeports.

### BENEFITS & RATIONALE

- PCL can significantly reduce road freight miles and movements by minimising the length of supply chain connections and the interactions with road freight.
- PCL, notably the additional provision of warehousing/distribution space, can alleviate the pressure on finding land inland and benefit from workforce proximity.
- PCL at some ports (e.g., Southampton) also benefits from a direct rail link and intermodal capacity, serving a growing freight market and can dovetail with a local sustainability agenda.
- PCL has also risen in prominence in response to changes to customs processes and suppliers seeking to store stock in case of delays to global supply chains.

- A PCL approach is a major economic driver, seeking to develop and build on economic agglomeration and economies of scale, aggregation and scope.

## POLICY BACKGROUND & EVIDENCE

### Snapshot Overview

- 11.2.2. The challenge in locating warehousing and distribution facilities inland, as well as SRFIs, to accommodate growth in new and expanding commodity markets, alongside addressing decarbonising the freight sector, shines a light on ports and their broader strategic economic and social roles.
- 11.2.3. Ports are the vital gateways for UK global supply chains, with 95% of all freight leaving or entering the UK arriving via this method. PCL is a response to the evolution of online retail and mature manufacturing supply chains are also restructuring delivery away from major retail outlets to low volume, multiple drop solutions, straight to end customers. It is a response to how modern logistics has moved from being dominated by a cost minimisation agenda, to encompassing a wider range of value criteria when assessing the true cost of logistics services.
- 11.2.4. Relocating or prioritising logistics operations from inland locations can also remove duplicated travel time for products distributed across the South East of the UK. This area represents a significant market, as current freight movements transferred to an inland distribution centre within the 'Golden Triangle' are then distributed to a London based customer, in effect wasting miles.
- 11.2.5. National Highways<sup>170</sup> stress the role of ports in serving manufacturing sectors and as burgeoning inter-modal points for logistics and distribution and are highly dependent on road connectivity. They suggest that port-centric logistics can help reduce congestion and localise supply chains around the process of economic agglomeration and can be viewed as an alternative to inland facilities, especially where there are land constraints and concerns around accessibility and connectivity.
- 11.2.6. An ideal outcome, as indicated by Savills' report on Port Centric Logistics<sup>171</sup> is to help regenerate deprived areas through a clustering effect of new innovation, supporting smoother international trading and incentivising companies to invest in facilities that support end to end supply chains. The ports sector is estimated to directly employ 24,000 people across the UK and generate value added of some £1.7bn. Including indirect, induced and wider activities undertaken in ports increases this to 101,000 jobs and £7.6bn value added<sup>172</sup>. The maritime sector, in total, generated £14.5bn direct value added contribution to the UK economy in 2016, including 40% of our food and at least 25% of our energy.

<sup>170</sup> Highways England (2016) International Gateways and the Strategic Road Network, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/600269/SEGP - Underpinning Report - International gateways and the SRN.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/600269/SEGP_-_Underpinning_Report_-_International_gateways_and_the_SRN.pdf)

<sup>171</sup> Savills (2020) Port Centric Logistics, [https://www.savills.co.uk/research\\_articles/229130/307715-0](https://www.savills.co.uk/research_articles/229130/307715-0)

<sup>172</sup> DfT (2018) Ports Good Governance Guidance, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/918508/ports-good-governance-guidance.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/918508/ports-good-governance-guidance.pdf)

## Regional Context

- 11.2.7. The DfT report, England's Port Connectivity: The Current Picture<sup>173</sup>, outlines the main connectivity issues for three regions that fall within the Transport for the South East area and explicitly mentions the growing logistics sector activity around the Medway Ports to service London markets, alongside the future prominence of the Solent ports for supporting local logistics requirements.
- 11.2.8. There is already evidence that warehousing investment is being funnelled towards ports as part of a more port-centric logistics approach to handling and transferring goods. Peel Ports invested £27 million in increasing its port capacity, which included expanding floorspace at Sheerness (30,000 sq m), whilst more specialist facilities were developed in 2019 at Dover, in the form of temperature-controlled warehousing as part of a Refrigerated Cargo Terminal (RCT).
- 11.2.9. The DWDR seeks to enhance long-term capacity for a key international gateway handling trade to the value of £119bn, representing up to 17% of UK trade in goods<sup>174</sup>. This includes the relocation and further development of the cargo business with a new cargo terminal and distribution centre alongside creating additional space for ferry traffic. There is potential that the growth in on-site logistics movements, combined with additional recreational activity in the western bay, can lead to traffic mixing on access roads. This could constrain growth, particularly when considered alongside the impact of opening of the Lower Thames Crossing on traffic flows along the A2 (without dualling or TAP2 being in place).
- 11.2.10. Portsmouth too has boosted warehouse capacity in the last decade and is recognised as a leading hub for fruit imports and distribution and has successfully developed warehousing and handling equipment to meet demand. Smaller ports, such as around the Medway Towns, have touched upon the potential clustering of activities within the port environment (for example, Shoreham as an innovative Eco-Port), although capacity/land constraints and economies of scale are viewed as barriers to investment alongside the absence of a direct rail connection – a major factor influencing PCL operations.
- 11.2.11. Nonetheless, Peel Ports' London Medway have applied a flexible approach to warehousing supply to prospective customers, to encourage business growth and is marketing the appeal of port-centric logistics as a 'perfect base' for rapid access to London via the SRN. Diversification is key whilst reconfigured space on site provides a hub for a range of businesses seeking access to London (as the key market).
- 11.2.12. A strong case has been put forward historically by the Solent LEP to develop port-centric logistics operations. Port Logistics is of critical importance to the Solent going forward. The Solent has a higher proportion of transport and warehousing than the national average but is underrepresented in this sector by comparison with the wider South East<sup>175</sup>, despite it playing a key role in the local economy.

<sup>173</sup> DfT (2019) The DfT England's Port Connectivity: The Current Picture, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/701352/england-port-connectivity-the-current-picture.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/701352/england-port-connectivity-the-current-picture.pdf)

<sup>174</sup> VolkerStevin (2021) Dover Western Docks Revival, <https://www.volkerstevin.co.uk/en/our-projects/detail/dover-western-docks-revival>

<sup>175</sup> Solent LEP (2014) Solent Strategic Economic Plan, [https://solentlep.org.uk/media/1332/solent\\_strategic\\_economic\\_plan.pdf](https://solentlep.org.uk/media/1332/solent_strategic_economic_plan.pdf)

- 11.2.13. However, ABP Southampton and Delamode UK has recently added an additional 20,000 sq.m of supply with more units being proposed under the Solent Freeports initiative. This will complement the 40,000sq.m of warehousing, including cold storage facilities already on site,
- 11.2.14. The Transforming Solent Growth Strategy<sup>176</sup> goes further by listing out its six priorities, one of which is focusing on developing strategic sectors and clusters of marine, aerospace and defence, advanced manufacturing, engineering, transport and logistics businesses, low carbon and the visitor economy – establishing the area as a business gateway and developing local supply chains.
- 11.2.15. The strategy acknowledges the lack of port-centric facilities around southern UK ports generally but emphasises that port-centric logistics could unlock up to 3,000 new jobs in the Solent and add approximately £150m p.a. in GVA. ABP, the port authority at Southampton, alongside Import Services (a leading port-centric logistics company in the UK) have already developed a distribution centre (200,000 sq ft), adjacent to the container port at the Port of Southampton in response to this growing trend.
- 11.2.16. However, growth at the Port of Southampton will be constrained by insufficient road infrastructure which is creating congestion and delays, reducing productivity and discouraging inward investment. Unlocking constraints will enable the port to grow from contributing £1.75bn to national GDP to £2.9 billion by 2030<sup>177</sup>. These figures are based on the strong belief that the port can take advantage of rapid global growth in such facilities, driven by the demand for short supply chains and a ‘Just in Case’ approach to storage and distribution (as well as JIT).
- 11.2.17. The Freeports initiative, likely implemented within the next few years, will also enable nominated ports to offer economic and planning benefits and accelerate this trend. These locations, which include ports within the Solent (Southampton/Portsmouth), as well as the Thames (London Gateway, Tilbury), will enable goods to be exempt from tax charges, benefit from streamlined customs processes and be boosted by targeted regeneration.

## INTERVENTION OPTIONS

- 11.2.18. PCL has different applications depending on the scale and complexity of port operations. As an emerging concept, there are also varying applications of what could be termed PCL, which could be condensed down to the following types of infrastructure investment:
- **Distribution & Warehousing:** The designation and development of land within or adjacent to a port complex for the storage and processing of goods as an alternative to NDCs or RDCs.
  - **Utilisation Yard Space:** Expanded on-site capacity for transshipment and goods movement within the internal estate of the port, to enable efficient access/distribution.
  - **Cargo and Container Handling:** Investment in equipment and apparatus to support the safe and efficient transshipment of goods between modes and different parts of the port estate.
  - **Added Value Operations:** These can range significantly between ports and could well involve supporting road freight operator requirements, such as HGV Hydrogen refuelling.

<sup>176</sup> Solent LEP (2015) Transforming Solent Growth Strategy, [https://solentlep.org.uk/media/1508/transforming\\_solent\\_growth\\_strategy\\_-\\_jan\\_2015.pdf](https://solentlep.org.uk/media/1508/transforming_solent_growth_strategy_-_jan_2015.pdf)

<sup>177</sup> Solent LEP (2014) Transforming Solent: Solent Strategic Economic Plan, [https://solentlep.org.uk/media/1332/solent\\_strategic\\_economic\\_plan.pdf](https://solentlep.org.uk/media/1332/solent_strategic_economic_plan.pdf)

11.2.19. There is a current debate as to whether PCL offers greater potential to more ‘conventional’ RDC/NDC infrastructure further inland and the opportunities that sites across the Transport for the South East could provide, depending on:

- **Land Availability:** how this compares between inland options and within a port estate (even within close proximity to the port)
- **Freeport Designation:** The opportunity to exploit land use planning conditions, to scale up PCL and support economic agglomeration.

## RECOMMENDATIONS & LOCATIONS ★ ★

11.2.20. There are a number of key considerations for the appropriateness and delivery of PCL across the Transport for the South East area, to build on the experiences across port estates already in existence. The two star scoring reflects the need for greater clarity on the Solent freeport designation and the need for more rigorous assessments of port centric logistics across all ports across the South East area.

11.2.21. The majority of ports operate on a commercial basis, without public support and are in competition with each other (both domestically and abroad), with sources of revenue including harbour dues, other charges for the use of the harbour and income from property. This is also dependent on the markets served by the ports and their business models. Most ports across the Transport for the South East area operate commercially and are privately owned but local authorities, guided by Transport for the South East, can have a constructive role in:

- Developing joint bids, supporting funding applications or collective lobbying to DfT, for example, supporting existing infrastructure developments, such as the Transforming Cities fund which includes two cities within the Transport for the South East area and the development of Southampton and Portsmouth as key logistics hubs.
- Helping deliver objectives of local economic strategies around skills development and employment growth, particularly in emerging technology or business sectors/clusters (e.g. Shoreham, Newhaven and Sheerness), as well as broader GVA targets. This also includes addressing issues around AQMAs (in Dover/Southampton).

11.2.22. Freeport status, combined with the need for PCL to be served by improved and existing access by road and rail, lends itself to prioritising developments along the Solent. This is where economies of scale can be explored, match funding and transport programmes (Future Transport Zones, for example) can be dovetailed and challenges with locating warehousing can be addressed.

11.2.23. The Port of Southampton has ambitious future expansion plans and is already on track for supporting PCL operations but does recognise the need for further studies on how to expand the port, including for storage and combined with new road and rail access. This would include development of the Strategic Land Reserve (1,000 acres) to serve demand for port and port centric logistics.

11.2.24. This will require working closely with National Highways (particularly for coordinating any upgrades to the A326) and Hampshire County Council with Network Rail, to prioritise future schemes, including Solent Gateway as a whole, and ensure appropriate investment. Portsmouth, the other major port in the Solent, has received relatively little attention in this respect but has aspirations for improving rail links and consolidating its market position for the distribution of perishable goods.



11.2.25. In summary, more research is required to identify what exactly would be appropriate and required to support PCL in each case over the next 5-10 years, with local stakeholders, including industry at selected port locations. This will help to better define what constitutes relevant freight infrastructure but is also necessary for aligning investment plans within the port estate to proposed interventions across the SRN and rail networks.

## KEY CHALLENGES

- The ability for port estate capacity to incorporate additional logistics infrastructure and activity, ranging from warehousing and storage yards, through to handling equipment and rail sidings.
- Increased port and logistics activity combined could exacerbate congestion around the port and on local roads, in the absence of modal shift taking place.
- PCL can potentially draw away investment and shipping paths from neighbouring ports by influencing international and domestic supply chains.
- PCL is typically private sector-led and driven by market conditions but collaboration with public authorities is key for coordinating wider investment and supporting strategic land use allocations.
- Manufacturers and businesses have less flexibility because there are fewer routing options, whilst the complexity of the dock system may prove to be a hindrance to logistics activity.

## IMPACT ASSESSMENT

Problem Statements	1,2,4,5,10,11,12,17,20,21,23,24				
Economic	High	Environmental	Med	Social	Med
Improve operational efficiency	High	Reduce greenhouse gas emissions, and achieve net zero carbon by 2050 at the latest	Low	Improve operational safety (especially for vulnerable road users)	Low
Enhance freight and logistics' contribution as an industrial sector, in its own right (especially to employment)	High	Reduce wider environmental impact of freight	Med	Better integration between freight's operational needs and planning/place making	Med
Improve connectivity to and from the Transport for the South East area's international gateways, including through enhanced infrastructure capacity where needed	Med			Better management of (and facilities for) lorry parking	High
				Improve air quality	Low



## 11.3 URBAN CONSOLIDATION CENTRES

### DESCRIPTION

- 11.3.1. Consolidation can be defined as the process of combining small goods shipments, predominantly by road, into fewer larger deliveries, to reduce the number of freight vehicles entering an urban area and to maximise carrying capacity. This process often links to providing net zero carbon deliveries over the first & last mile. A consolidation centre is the facility, situated in close proximity to the urban area, that serves as a warehousing and inventory management location, where goods are handled. The scale, type and means of access vary significantly, depending on context and demand.

### RATIONALE

- Consolidation is all about improving freight efficiency and reducing freight miles by optimising vehicle 'payloads'.
- Consolidation potentially saves businesses money as the 'first & last mile' is often the most expensive to be undertaken because of urban congestion and delay – although the costs of consolidation centre use are often cited as a barrier to uptake and use.
- Consolidation centres can be intermodal; well situated to take advantage of road, rail and water transport networks.
- Consolidation is particularly apt in urban settings but can be scaled up or down and tailored to local contexts.
- Consolidation enables re-moding to take place and plays a role in improving air quality and reducing congestion.
- A network of consolidation centres can help complement wider access changes and proposals to manage access to city centres.
- Freight consolidation is by no means a new concept and has been demonstrated effectively for decades in mail, parcels, supermarket retail and general groupage operations.

### POLICY BACKGROUND & EVIDENCE

#### Snapshot Overview

- 11.3.2. Consolidation Centres, sometimes referred to as Sustainable Distribution Centres, are a type of distribution facility that often complement efforts to introduce zero emission deliveries and reduce the impact of road freight movements. Remote Consolidation Centres tend to be focused around larger urban conurbations and have become associated with courier services and parcel consignments but can include other goods, such as wholesale produce, construction materials, waste/recycling and non-food retail. Consolidation serves delivery and reverse logistics flows and may be targeted at particular areas, sites or cities.
- 11.3.3. A distinction has been made between remote and micro consolidation based on the following:
- These operate in different geographical contexts; as the name implies, remote consolidation takes place at peripheral, peri urban locations adjacent to the SRN to cater for HGV movements and for handling, processing and temporarily storing a higher volume of goods. Micro consolidation (urban depots) are woven into the urban fabric and host smaller quantities of goods, served by smaller vehicles or even e-cargo bikes and foot porters. Micro consolidation sites tend also to serve a particular market segment (e.g., parcels).

- Micro consolidation can come in different forms; manned v unmanned, meanwhile space v permanent purpose built facility, in contrast to remote consolidation centres that will require a facility with a host of technical requirements (inventory management systems, handling equipment, greater staff resource). The costs and complexity of developing remote sites contrasts to urban depots, especially with the latter being able to use vacant units in the changing high street landscape.
- Remote consolidation and micro consolidation centres can be seen as being part of a consolidation hierarchy and complementary to each other; with zero emission vehicles passing between them to deliver goods over the first and last mile. They are not mutually exclusive.

- 11.3.4. Urban Consolidation is building momentum, although there is a need to incentivise the uptake of consolidation and better define its relevance to urban conurbations. Corridors that serve both long-distance and short-distance freight trips and traffic mixing risks creating conflicts between heavy road traffic and more vulnerable road users, such as pedestrians and cyclists. This type of scenario can be mitigated through consolidation and re-modelling.
- 11.3.5. Consolidation often forms part of a package of measures to manage peak period congestion and air quality issues. There are issues with collaboration, lack of incentives and common standards on load descriptions. Companies working across the freight sector naturally consolidate to save time and money by maximising vehicle utilisation, but it is sometimes difficult to ascertain private and industry led depots and networks, compared to public sector-led approaches, due to a lack of publicity/transparency.
- 11.3.6. The cost of an additional link (or links) in the supply chain present challenges around open access, shared resource facilities.
- 11.3.7. Historically, entirely voluntary facilities have failed and there needs to be a commercial or clear logistics reason for the use of the centre, potentially driven by local operating constraints or local regulations making direct servicing unattractive and expensive.

## **Regional Context**

### **Southampton**

- 11.3.8. The most obvious and notable example of consolidation in action is the Sustainable Distribution Centre (SDC) in Southampton, established by Southampton City Council in 2012. This formed part of a solution to last mile logistics by using a location outside of the city and using smaller, more efficient vehicles to take packages onwards to major anchor institutions.
- 11.3.9. However, the service is currently underused, with efforts being made to attract other users, such as the Port and City Centre Traders. Southampton Airports also expressed an interest in consolidation, with the site being within a five mile radius of the airport.
- 11.3.10. There are ambitions to attract other users to using existing consolidation centres, namely the SDC in Southampton whilst the Solent FTZ is exploring smaller local SDCs in district centres or neighbourhoods that use electric vans or e-bikes to take goods to front doors. The trend towards consolidation is also discussed in more granular detail in technical work package two.
- 11.3.11. A strategic partnership between Meachers Global Logistics (who operate the SDC with SCC) and Steve Porter Transport Group was formed in 2013 to develop an industry led Cross Solent Consolidation Centre, to handle single pallet and groupage full loads with next day delivery.

- 11.3.12. DHL have a fully-fledged depot based out of a major transport hub, Gatwick Airport, to transition goods between air and road freight movements and arrange waste management within the air cargo building. DHL also run the well-established centre at Heathrow Airport and the Bristol retail consolidation centre, which had significant public sector subsidy for many years.
- 11.3.13. To meet the Sustainable Growth challenge in Southampton, there is a desire to see a focus on consolidating freight and logistics on the edge of the City and delivering goods and support services in clean, low-emission ways<sup>178</sup>. Policy C4: Freight & Last Mile Logistics supports greater consolidation of deliveries through the Sustainable and Local Distribution Centres and supports a move towards smaller low and zero emission vehicles for last mile logistics, to reduce the impact on both traffic and air quality, whilst still ensuring that customers receive a convenient, timely and efficient service.

### Other Urban Areas

- 11.3.14. Freight consolidation is part of the response to a number of the local authorities in the Transport for the South East area, including Brighton and Hove City Council, the Royal Borough of Windsor and Maidenhead, Reading, Chichester District Council and Sevenoaks District Council, who have Air Quality Action Plans in place to address the air quality issues in their areas. Central Government has also mandated Southampton & Portsmouth to produce such plans.
- 11.3.15. Reading Transport Strategy<sup>179</sup> also points towards working with operators to support and deliver consolidation centres to reduce the number of last mile trips and boost efficiency (Policy RTS24 Freight & Sustainable Distribution) and to work with operators to deliver sustainable deliveries. This would have an impact on freight flows and vehicle routing through West Berkshire.
- 11.3.16. The same approach, plus emphasis on consolidation links to MaaS and Mobility Hubs, features in the 'Changes to Future Mobility' section of the Portsmouth Transport Strategy<sup>180</sup> under Policy 17. Trials are noted at a range of scales (remote along the SRN) with focus too on Just in Time (JIT) scope and possible links between macro and micro facilities, the latter to be embedded in business/shopping parks.
- 11.3.17. The West Sussex Transport Plan Review<sup>181</sup> makes fleeting reference to efficient movement of goods and the use of collection centres and transport infrastructure that optimises freight trips as a means to reduce business costs. However, there is no geographical reference to locations.

<sup>178</sup> Southampton City Council (2019) Connected Southampton 2040: Transport Strategy, <https://transport.southampton.gov.uk/media/1073/mrd-1-connected-southampton-transport-strategy-2040.pdf>

<sup>179</sup> Reading Borough Council (2020) Reading Transport Strategy 2036, <https://democracy.reading.gov.uk/documents/s10695/Annex%20A%20-%20Reading%20Transport%20Strategy%202036%20-%20Draft%20for%20Consultation.pdf>

<sup>180</sup> Portsmouth City Council (2020) Draft Portsmouth Transport Strategy 2020–2036, [https://travel.portsmouth.gov.uk/wp-content/uploads/2020/10/74.522-Travel-Portsmouth-plan\\_web-ready-2.pdf](https://travel.portsmouth.gov.uk/wp-content/uploads/2020/10/74.522-Travel-Portsmouth-plan_web-ready-2.pdf)

<sup>181</sup> West Sussex County Council (2021) West Sussex Transport Plan 2022 to 2036, [https://www.westsussex.gov.uk/media/16025/draft\\_wstpv.pdf](https://www.westsussex.gov.uk/media/16025/draft_wstpv.pdf)

- 11.3.18. The Brighton & Hove City Plan Strategic Transport Assessment<sup>182</sup> acknowledges the rise in freight traffic and the disproportionate impact HGV movements have on local air quality, with the need to optimise vehicle utilisation to reduce trip demand (Air Quality Action Plan).
- 11.3.19. Brighton were also working with the National Infrastructure Commission to pilot new freight infrastructure and see the need for this approach to explore a 'liveable city centre' and to complement popular schemes such as the e-Cargo Bike Accelerator.
- 11.3.20. Smaller urban areas and cities make fleeting reference to freight and logistics but still mention the concept of consolidation as a means to help with minimising the impacts of goods movements. In Canterbury, possible HGV time restrictions through the city's AQMA were referenced alongside consolidation as a key 'trigger' for a city centre freight transport strategy and the need to re-time and consolidate deliveries<sup>183</sup>.
- 11.3.21. Emerging Local Transport Plan Reviews, including for Hampshire, outline the desire to reduce empty return lorry running and the need to co-locate similar businesses in the supply chain to reduce freight movement, which includes consideration of local distribution centres to promote zero emission last mile deliveries. This is not the case in Kent, where the overriding focus is on managing strategic trips on the network and where fleeting reference is made to urban-based solutions to counter congestion etc.
- 11.3.22. At a port level, The Port of Dover's Air Quality Strategy<sup>184</sup> outlines emissions reduction measures related to road vehicles in the short term (0-3 years), including investigating the feasibility of establishing a remote freight 'consolidation centre', with electric tug forwarding to/from Port. This is more a remote marshalling point for trailers and semi-trailers than a traditional consolidation centre.

## VARIATIONS

- 11.3.23. Remote Consolidation Centres, as implied, are located in peripheral/peri-urban settings, off the SRN, served by HGVs/LGVs with larger warehousing/storage capacity. Consolidation Centres can either be:
- **Open Access (HUB):** A shared facility, with low entry costs for multiple companies, including SMEs to access and use to consolidate deliveries.
  - **Single Access:** A single facility owned or leased solely by a third party logistics provider to transfer goods between vehicles and with a broad geographical remit.
  - **Industry Led:** A market-led development by industry partners that is embedded into existing supply chains and triggered by cost and efficiency savings.
  - **State Led:** Funded through local government, often as a means to reduce externalities from delivery activity, and in partnership with 'anchor institutions'.

<sup>182</sup> Brighton & Hove City Council (2013) Strategic Transport Assessment, <https://www.brighton-hove.gov.uk/sites/default/files/migrated/article/inline/Brighton%20%26%20Hove%20City%20Plan%20-%20Final%20Transport%20Assessment%20including%20Appendix.pdf>

<sup>183</sup> Canterbury Alliance for Sustainable Transport (2020) The New Transport Strategy for Canterbury A vision for 2030 and how to travel there, <https://www.ccap.org.uk/wp-content/uploads/2020/07/CAST-The-New-Canterbury-Transport-Strategy-2020.pdf>.

<sup>184</sup> Port of Dover (2020) Port Air Quality Strategy 2020, <https://www.doverport.co.uk/administrator/tinyMCE/source/Environment/Port%20of%20Dover%20Air%20Quality%20Strategy.pdf>.

## RECOMMENDATIONS & LOCATIONS ★ ★

11.3.24. Urban consolidation is particularly suited where there are a number of strong ‘triggers’ in place to shift travel behaviours and local decision-making and where there is ultimately a clear incentive for the freight industry to use an open access site. Crucially, consolidation must be treated as part of a package of measures being explored/deployed in an urban context that provide both a ‘stick’ and ‘carrot’ for changing travel behaviours. These can include, but are not limited to:

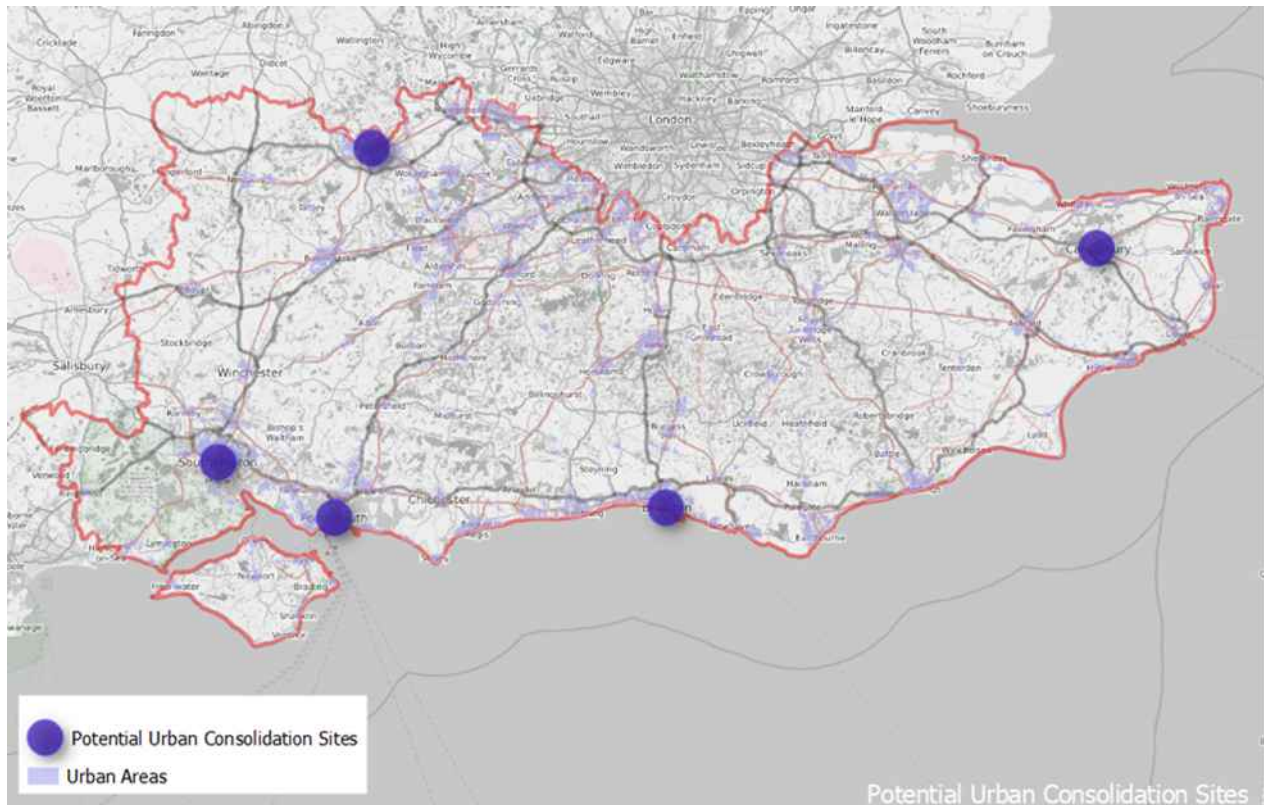
- Historic, protected built environments with width, height and weight restrictions imposed. This severely limits HGV movements (and LGVs, to some extent) to reduce externalities (air, noise and visual intrusion).
- Heightened air quality concerns and active presence of an AQAP. Where the latter is in place, consolidation should be considered as part of a package of measures (not exclusively, nor as a first step towards addressing problems).
- Chronic urban congestion that reduces journey time reliability and freight efficiency. This is a key driver for industry which will wish to optimise and save fuel costs and will consider alternatives if these present a clear financial saving.
- Implementation of traffic regulations and restrictions and a clear placemaking agenda, which was particularly pertinent during the pandemic and as part of the changing role of the high street and emphasis on promoting active travel.
- Political buy-in to boosting sustainable travel and reducing vehicle based movements is the key towards gaining buy in across public authorities. This provides the platform for consolidation (and other measures) to have weight throughout implementation.
- Community activism and opportunities to dovetail existing zero emission initiatives. Consolidation centres on a smaller scale may form part of a natural next step to complement the existing workstreams of local operators/schemes, especially in smaller towns.
- Strong business ecosystem and leadership to steer businesses towards utilising services. Most major conurbations have established BIDs that act as the link between public authorities, operators and businesses.
- Local policy reference to consolidation and engagement on the subject of urban logistics.
- Presence of 3PL providers already within the conurbation urban boundary. This presents an early opportunity to liaise with providers on scoping potential for greater consolidation activity and to share best practice.
- Opportunities to dovetail ambitious, innovative transport/mobility schemes (e.g. FTZ). This very much concerns aligning consolidation with other measures and schemes that inevitably look to reduce single occupancy/sub optimally loaded vehicle trips.

11.3.25. The focus initially should also be on exploring consolidation where some of the aforementioned triggers can be recognised. These are likely to be in larger urban areas where there is likely to be greater demand to sustain operation of a centre, with economies of scale, a key barrier to implementation and longer term financial viability. Potential has been identified across the following locations (Figure 11-3).

- Southampton
- Portsmouth
- Reading
- Brighton
- Canterbury



**Figure 11-3 - Potential Remote Consolidation Centre Locations (WSP, 2021)**



- 11.3.26. Longer term studies targeting Tunbridge Wells and Maidstone could be explored because of the combined implications of congestion, historic urban realm and the confluence of major A roads in each respective locality, which make them ripe for consolidation centre use.
- 11.3.27. Further information and assessments would be required on a site/urban-specific level to determine suitability as only loose reference has been offered as to the role of consolidation, rather than its practical application in a real life scenario. Trials would also be a useful way in which to gauge interest, which could involve developing pop up sites (using meanwhile spaces), whilst consolidation could be considered alongside a complementary range of other measures as part of an AQAP. The key ingredients for consolidation and opportunities to link this with other ongoing initiatives, such as e-cargo bike schemes and access restrictions, make these urban areas more attractive options for entering into greater feasibility details.
- 11.3.28. A Public Private Partnership would be the preferred model, with soft market testing with industry partners to determine whether a single access and shared access options would be attractive (the latter explored with local FQPs or Freight Forums to determine interest). ‘Support’ has been vaguely referenced by local authorities in most cases but a steer is essential from industry to ensure that consolidation activity can be easily integrated into supply chains.
- 11.3.29. For this reason, detailed scoping would be required through the area-based studies, to expand on identified urban areas/cities for promoting and rolling out consolidation with industry partners. This must take into consideration the cost of land in the South East and the financial viability of a scheme, whilst also considering any reservations expressed by local communities on the impacts of vehicle routing in the vicinity.

11.3.30. Open access, shared consolidation centres, especially initiated by public authorities, will require early stage subsidy (both capital and revenue). The amount and from where this would originate (e.g. Transforming Cities Fund and FTZ funding in Southampton, versus Local Authority seed corn funding), will vary from place to place but opportunities should be explored where schemes can be dovetailed.

11.3.31. Regulatory requirements will also aid the shift towards consolidation but further research is required on suitable locations serving Southampton & Portsmouth (which will have a Clean Air Zone in the near future). The development of Air Quality Management Plans in Southampton and Portsmouth would also act as key triggers for promoting consolidation. Canterbury has also recently invested in automated bollards to manage access (timed closure) to the historic city centre, making it ideal for first mile logistics operations.

## KEY CHALLENGES

- Developing financially viable centres that can withstand the test of time and be driven by the needs and interests of industry supply chains, as well as the more holistic aims of public authorities.
- Ensuring that consolidation takes place around key triggers/conditions and that financial support will likely be required to set up anything resembling a shared use case.
- The willingness to cooperate between different operators and public authorities, to share data insights and the operational costs and management of a consolidation centre.
- Sourcing suitable locations that can meet the desirable characteristics of a site – which tend to bear similarities to other ‘in demand’ land uses (such as warehousing).
- Stimulating interest from businesses and organisations if a consolidation centre is voluntary, in contrast to developing a much more likely successful mandatory scheme.



## IMPACT ASSESSMENT

Problem Statements	1,3,4,5,18,20,23				
Economic	High	Environmental	High	Social	Med
Improve operational efficiency	High	Reduce greenhouse gas emissions, and achieve net zero carbon by 2050 at the latest	Med	Improve operational safety (especially for vulnerable road users)	High
Enhance freight and logistics' contribution as an industrial sector, in its own right (especially to employment)	High	Reduce wider environmental impact of freight	High	Better integration between freight's operational needs and planning/place making	High
Improve connectivity to and from the Transport for the South East area's international gateways, including through enhanced infrastructure capacity where needed	Med			Better management of (and facilities for) lorry parking	Low
				Improve air quality	High

## 11.4 MICRO CONSOLIDATION CENTRES

### DESCRIPTION

- 11.4.1. Micro Consolidation Centres (often called Urban Depots) are a response to the rapid rise in e-commerce, parcel/courier consignments and JIT requests, as well as tighter restrictions on net zero carbon emission activities in urban areas. These are typically small manned or unmanned units stationed within a central, accessible location, with last mile/first mile logistics undertaken by bike or on foot (walking portage). Sites can be equipped with charging infrastructure, with parallels to the development of mobility hubs. They can also form part of a hierarchy of consolidation points and be connected into the broader transport network serving a city.

### RATIONALE

- Closer proximity to the end user/consumer of deliveries, to respond to JIT and express delivery requests. This serves to meet growing and changing customer expectations.
- Enhances cost efficiencies; the last mile or last 250m is the most expensive part of an urban journey for moving goods due to delays and congestion.
- Environmental benefits of mode shift away from conventional fuel powered vehicles towards zero emission vehicles, reducing air pollution and improving air quality.
- Depots can form part of the local social infrastructure by offering a range of added value services and social functions for employees and local residents.

- Dovetail the evolving role of the high street and emphasis on placemaking, by seamlessly fitting in with the local environment (in both old and new locations & meanwhile spaces) through logistics-centric development.

## POLICY BACKGROUND & EVIDENCE

### Snapshot Overview

- 11.4.2. Urban depots and micro consolidation have grown concurrently with last mile logistics and increasing demand for Just in Time (JIT) distribution and e-commerce alongside other, less explicit factors affecting all conurbations, such as outsourcing of service functions, growth in construction industry and general B2C and C2B movements.
- 11.4.3. Urban depots are tied into the decarbonisation agenda and emerging trends in urban logistics, towards zero emission deliveries in response to triggers such as Clean Air Zones. Local authorities can also be key facilitators by providing area-wide Freight & Servicing Action Plans and working with industry to identify and source plots of land that are accessible to the SRN, within a customer catchment area.
- 11.4.4. Increased collaborative working between logistics providers may influence infrastructure requirements (especially where land use values are high) with a carrier of carriers approach being sought to help ensure depots are financially viable<sup>185</sup>.
- 11.4.5. There are many examples of trials and schemes exploring the potential of micro consolidation which have been both industry-led and those directly supported by local authorities. The latter can explore the capacity and scope for utilising its own estate locally and assess freight/fleet movements across departments (as well as storage arrangements and procurement practices) to develop their own hub locations.
- 11.4.6. Likewise, industry and the private sector are increasingly acknowledging and responding to the need to incorporate urban freight management solutions into new developments by design. This may include subterranean options, or on-site concierge services, as well as space for distribution and waste/servicing activities. This is with the aim of reducing vehicle movements in sensitive areas and helping improve the quality of the urban realm.
- 11.4.7. Attempting to define what constitutes a 'successful' consolidation centre and how this is measured is very difficult, as there are so many variations and examples that are highly tailored to the local context and local demand. As these are almost always led by the private sector, there is limited information and data to help provide a blueprint for future investments. There are three metrics to consider:
  - Environmental impact focused on positive impact versus current or modelled baseline – vehicle movements to end location, CO<sup>2</sup>, associated vehicle accidents, adherence to approved routes, recycled waste etc. Plus local impacts, such as local employment levels, apprentice positions etc.
  - Operational performance focused on minimising disruption to end users – arrivals on time (supplier into consol centre), deliveries on time (consol centre to end user).
  - Financial – cost per case, plus value add, including off-site storage, consolidated procurement etc.

<sup>185</sup> DfT (2019) Last mile urban freight in the UK: how and why is it changing? [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/777682/fom\\_last\\_mile\\_road\\_freight.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/777682/fom_last_mile_road_freight.pdf)

- 11.4.8. The longer term financial viability of consolidation centres (both remote and micro) is a challenge and very few examples exist of commercially operated sites delivered by public authorities that have existed beyond a trial phase (which has been significant in duration in many cases). This can be attributed to the ability for site operations to develop around operator supply chains (especially if this is a voluntary centre) to ensure uptake and interest across industry.

### Regional Context

- 11.4.9. There is an opportunity to build on expressions of interest and schemes that have developed across the Transport for the South East area. The feasibility of a micro consolidation in Newbury (Action Plan ref FAP4<sup>186</sup>) was noted as a means of contributing towards improving town centre congestion and air quality issues. This was set to be explored in 2016/2017, with future scope to build on existing models. Towns such as Fareham are considering micro consolidation at local locations as part of a package of interventions within their respective Optimised Infrastructure Plan (OIP), as a means to reduce HGV movements within sensitive areas, namely the town centre.
- 11.4.10. Southampton and Portsmouth, alongside Poole, form part of the Solent FTZ which seeks to explore innovative urban logistics and freight trials for moving goods, including micro consolidation. This presents an opportunity to dovetail plans whilst complementing the heightened delivery costs and behaviour change that may be incurred through the introduction of Clean Air Zones in Portsmouth & Southampton.
- 11.4.11. There are already some established depots (i.e. Brighton) for industry across the bigger cities, such as Zedify, whose business model centres around smaller urban depots and last mile logistics by e-cargo bike and electric vans. A number of small urban logistics operators are present across towns and cities in the Transport for the South East area, although many are not affiliated with an urban depot of any nature (delivering a B2C 'Only Mile' service).

### INTERVENTION VARIATIONS

- 11.4.12. Similar to Remote Consolidation Centres, there is some variety in the range of micro consolidation and urban depots that can be explored, including:
- **Private/3PL Urban Depot:** A location, purpose built or retrofitted unit, owned and accessed by a single operator, often as part of a local network of hubs in bigger cities.
  - **Cooperative Urban Depots:** Similar to the above, a shared use facility served by multiple operators that may be used for mail, parcels etc collections and deliveries during a day. These facilities lower the barrier to entry for providers (and are sometimes referred to as 'logistics hotels' with local authority/industry partnerships).
  - **Pick up/Collect Point:** These range from parcel lockers (mentioned as part of Multi Use Mobility Hubs) and can feature as part of an urban depot, standalone or in existing shops and can reduce 'wasted trips'

<sup>186</sup> West Berkshire Council (2014) West Berkshire Local Transport Plan Freight Strategy, [https://info.westberks.gov.uk/CHttpHandler.ashx?id=38703&p=0#:~:text=The%20Freight%20Strategy%20is%20West,P lan%20\(LTP\)%20to%202026.](https://info.westberks.gov.uk/CHttpHandler.ashx?id=38703&p=0#:~:text=The%20Freight%20Strategy%20is%20West,P lan%20(LTP)%20to%202026.)

## RECOMMENDATIONS & LOCATIONS ★ ★

- 11.4.13. The delivery of micro consolidation centres will be heavily determined by context which can only be gleaned through detailed, localised studies. On this basis, it is highly recommended that Transport for the South East undertake further research and work with area study teams to be able to accurately define locations and partners for developing micro consolidation sites and urban depots.
- 11.4.14. The requirements may also range from a network of provision, such as in larger conurbations and tied to remote centres (such as in Southampton), to standalone sites that are driven by local enterprise and specific use cases in smaller towns. Local authorities can help by identifying and safeguarding key 'zones' for depots and working with BIDs to highlight potential meanwhile spaces for trial schemes.
- 11.4.15. Urban depots and pick up/collection points should form a key component for FTZ aspirations in Southampton and Portsmouth, therefore priority should be attached to exploring opportunities in the Solent context – especially where combined with multi-use mobility hubs.

## KEY CHALLENGES

- Affordability and availability of premises in accessible locations, within towns and cities across the Transport for the South East area, especially for funding the initial capital costs ('meanwhile' spaces are an option).
- The timing of implementation may be likely shaped by market conditions and the presence of key triggers/conditions for deployment.
- Electricity supply for being able to power zero emission vehicles, particularly in older parts of a town or city.
- Regulatory or legislative parameters (set through local planning conditions) that may restrict or inhibit added value services.

## IMPACT ASSESSMENT

Problem Statements	1,3,4,5,18,20,23				
Economic	High	Environmental	High	Social	Med
Improve operational efficiency	High	Reduce greenhouse gas emissions, and achieve net zero carbon by 2050 at the latest	Med	Improve operational safety (especially for vulnerable road users)	High
Enhance freight and logistics' contribution as an industrial sector, in its own right (especially to employment)	High	Reduce wider environmental impact of freight	High	Better integration between freight's operational needs and planning/place making	High
Improve connectivity to and from the Transport for the South East area's international gateways, including through enhanced infrastructure capacity where needed	Med			Better management of (and facilities for) lorry parking	Low
				Improve air quality	High

## 11.5 MULTI USE MOBILITY HUBS

### DESCRIPTION

- 11.5.1. These are modern transport interchanges and key nodes bringing together more conventional and innovative new modes and services that take advantage of emerging technologies, with a range of value-added services and supportive infrastructure on site, to aid the safe, sustainable and efficient movement of goods and people.
- 11.5.2. Mobility hubs, in a freight capacity, increase the demand for zero emission first mile/last mile logistics and can offer an added value services that complement the role of hubs for other forms of private and public transport options.

### RATIONALE

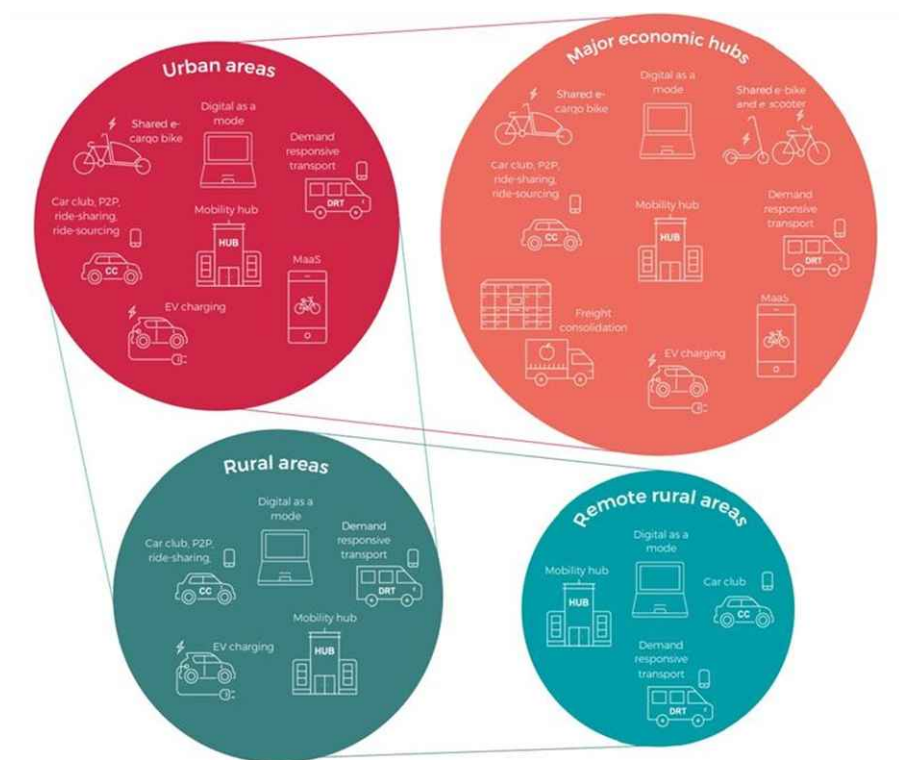
- Multi use hubs are likely to be more financially resilient as services, space and supply can be responsive to demand, especially when combined with MaaS.
- Multi use mobility hubs operate as part of a joined-up network and can have greater exposure/integration with other services to help aggregate services at a range of scales.
- Multi use mobility hubs can be appropriately scaled and tailored to respond to emerging trends and technologies (a vision and validate approach) working with other partners.
- Multi use mobility hubs can be pop up and temporary or could sweat underutilised assets as well as being purpose built within a community to help reduce private freight miles.

## POLICY BACKGROUND & EVIDENCE

### Snapshot Overview

- 11.5.3. To date, multi-use mobility hubs have been mainly confined to ‘natural’ locations, in urban areas, where transport networks, business activity and footfall levels intersect at major transport interchanges. The freight offer has also been limited to the likes of bare minimum measures such as locker facilities, although EV charging points and cycle parking equally support the freight offer on site.
- 11.5.4. Mobility hubs are more likely to become more commonplace and adopted by both industry and end users with the rise of MaaS and data hubs that together will provide the platforms for responsive transport and freight specific options. UK Mobility Hubs Guidance<sup>187</sup> refers to the freight/logistics offer being weaved into large interchanges and hubs, as well as business parks and new housing developments and along transport corridors, smaller interchanges and linked hubs.
- 11.5.5. Multi use mobility hubs encompass a broad range of requirements and services that go beyond providing tangible infrastructure. As they can be scaled and tailored around local context and local needs (Figure 11-4), further detailed work with the area studies teams would be required to properly determine the scope and location of hubs and freight specific options.

**Figure 11-4 - Mobility hubs deployed in various contexts (WSP, 2021)**



<sup>187</sup> Como UK (2019) Mobility Hubs Guidance, <https://como.org.uk/wp-content/uploads/2019/10/Mobility-Hub-Guide-241019-final.pdf>.

- 11.5.6. Consultation on DfT's Future Transport: Rural Strategy<sup>188</sup> notes how mobility hubs can play an instrumental role in co-locating community services, including urban logistics measures like parcel lockers, as part of a broader trend towards using multi use hubs as part of a local area's social infrastructure. Delivery of consignments by bus, community transport and Dynamic Demand Responsive Transport (DDRT) to selected points to both help reduce the demand to travel and to improve access to services and goods is also covered.
- 11.5.7. Portsmouth and Southampton, both within the Solent FTZ area, are exploring the role of mobility hubs in the context of trialling micro consolidation facilities to reduce congestion and pollution. These would be tailored to sites with high demand for deliveries, such as business parks, student halls or residential areas (to link into the demand for online shopping). Whilst 'click and collect' at hubs would reduce the demand to drive for personal freight trips.

## INTERVENTION OPTIONS

- 11.5.8. The very nature of mobility hubs serving numerous functions for the movement of people and goods means they tend to be both urban-centric and deployed in economic hubs, as well as rural areas and scaled accordingly to demand and purpose. Multi-use mobility hubs must be shaped by place, activity and scale.
- 11.5.9. In this context, there are a number of freight-related options that can dovetail with a planned or existing mobility hub or transport interchange, with opportunities to build in alternative freight infrastructure. The type of facility will vary considerably, with multi use mobility hubs encompassing a range of possible options, which could look to accommodate a freight offer, such as:
- Micro consolidation in the form of delivery lockers (manned or unmanned) located at visible, established nodes on the transport network or within local social infrastructure.
  - Click & Collect options comprising a manned facility that extends to rail and bus stations through to village halls and shopping centres/sites.
  - Shared Warehousing/Micro Depots offering businesses a space to store items (if shared), with the application of JIT deliveries/last mile logistics.
  - Open access parking areas and storage centres for different forms of micro mobility and bicycles (such as e-cargo bikes), alongside loading and unloading areas.
  - Electric Vehicle Charging Points and other forms of alternative fuel infrastructure, to help support the decarbonisation agenda.

## RECOMMENDATIONS & LOCATIONS ★

- 11.5.10. The development of multi-use mobility hubs must begin at the local level. Transport for the South East should seek to work with public authorities to embed a local freight offer as part of existing transport programmes and projects where they would be most suitable.

<sup>188</sup> DfT (2020) Future of Transport: rural strategy – call for evidence, <https://www.gov.uk/government/consultations/future-of-transport-rural-strategy-call-for-evidence/future-of-transport-rural-strategy-call-for-evidence#developments-in-innovation-for-rural-transport>.



11.5.11. The first step required involves identifying potential sites where mobility hubs could be upgraded or whether there are gaps in the network to explore. The freight offer needs to be frontloaded into the identification of hub locations and matched against local specifications. This will require delving into more granular data and information on the location of the aforementioned intervention options.

11.5.12. The type of multi-use mobility hubs that could be categorised per public authority area across the South East of England include:

#### **Corridor hubs**

- Building on the CoMoUK typology of transport corridor, smaller interchanges/linking hubs, these hubs will be on the existing public transport network, with frequent services to key destinations. They are likely to be at P&R sites, rail stations and on mass transit routes and bus corridors with frequent services.
- Some of these sites may already have other transport modes integrated, whereas others will not yet. The intention is to integrate more mobility solutions and improve legibility and accessibility through prioritised sites of this typology.
- Sites will be subject to a prioritisation process, with hubs of this typology on frequent PT corridors offering first/last mile solutions to extend the catchment of the services that currently operate. They would also act as an interchange point for those travelling from a smaller mobility hub of the typologies below.

#### **Campus hubs**

- Building on the CoMoUK typology of business park/new housing development hubs, this would focus on the large, key destinations across the region that are less likely to be used as interchange points than other typologies and instead are places where trips are often terminated.
- They are different to city centre locations, as often there will be only one use type on the site, as opposed to multiple use types in the city centre, where activities such as business, shopping, leisure and tourism are often co-located. These campus sites are likely to have PT services accessing them, with the intention of integrating more mobility solutions and improving legibility and accessibility to prioritised sites.
- Prioritised hubs of this typology will offer first/last mile solutions to extend the catchment of the PT services that currently run and offer solutions for people on the campus to make trips throughout the day, for example, off-site meetings, by sustainable modes.

#### **Community hubs**

- Building on the CoMoUK typology of suburbs/mini hubs, this typology will be within neighbourhoods to enable residents to better connect to key destinations, by providing mobility solutions for either a direct local or further journey, or to connect to the network of mobility hubs to access a wider range of mobility options.
- These locations may have PT services but the focus of these hubs is to be at the heart of the community, to offer services to connect more widely, or for local purposes. These hubs could also become community focal points, offering services that reduce the need for travel, such as parcel drop points.

- Additional mobility and community options could be developed in focused locations at prioritised sites. As with all hub site locations, sites would be subject to a prioritisation process but with a requirement that hubs should be within reasonable proximity to larger mobility hubs, giving the opportunity for people to connect to the wider PT network and extend the offer of services available.

## KEY CHALLENGES

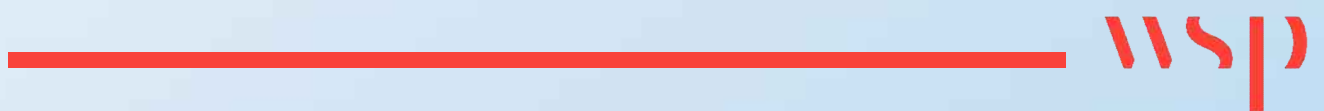
- The time and research required to accurately define what constitutes a mobility hub, which is very specific to place, scale and activity.
- No obvious examples of multi-use mobility hubs developed and delivered across the UK that bring together various services, including an urban freight component.
- Often require multiple third parties coming together to develop the necessary infrastructure, which can create different layers of ownership, management and financial risk.
- Will present an ongoing revenue cost that would have to be sustained longer term – providing that reliable anchor partners can be sourced (e.g. for parcel lockers).
- Risk that there is an inherent ‘transport’ focus to multi-use hubs that ignore the requirement for locations to bring together various services and functions to create a good ‘place’.

## IMPACT ASSESSMENT

Problem Statements	1,3,4,5,18,20,23				
Economic	Low	Environmental	Med	Social	High
Improve operational efficiency	High	Reduce greenhouse gas emissions, and achieve net zero carbon by 2050 at the latest	Med	Improve operational safety (especially for vulnerable road users)	Med
Enhance freight and logistics' contribution as an industrial sector, in its own right (especially to employment)	Med	Reduce wider environmental impact of freight	Med	Better integration between freight's operational needs and planning/place making	High
Improve connectivity to and from the Transport for the South East area's international gateways, including through enhanced infrastructure capacity where needed	Low			Better management of (and facilities for) lorry parking	Low
				Improve air quality	High

# 12

## **CONCLUSIONS & RECOMMENDATIONS**



## 12 CONCLUSIONS & RECOMMENDATIONS

### 12.1 OVERVIEW OF INTERVENTIONS

- 12.1.1. This report has presented a number of freight-specific infrastructure interventions for application across the Transport for the South East area. These have been identified on the basis of reviewing local policy documents and evidence, as well as through stakeholder engagement, to develop a set of recommendations and locations for deployment. Each intervention was also cross referenced to the impact it would have on satisfying three strategy objectives, plus sub objectives, and helping address problem statements.
- 12.1.2. Table 12-1 provides a high level summary of the freight infrastructure interventions, with scores against how they meet the study/strategy objectives and the problem statements. Reference is also made to the level of confidence placed in defining geographical locations for infrastructure investments. This is conveyed using the star system under the 'recommendations/locations' column whereby three stars implies greater accuracy than a single star.

**Table 12-1 - Overview of Intervention Scoring**

Freight Infrastructure	Economic	Environmental	Social (H&W)	Problem Statements	Recommendations/Locations
Rail Network Enhancements	Medium	High	Medium	1,2,4,10,12,13,14,15,16,17,20	★★★
Rail Electrification & Alternative Fuels	Medium	High	Medium	1,2,4,10,12,13,14,15,16,17,20	★★
Road Network Enhancements	High	Low	Low	1,2,3,4,10	★★★
Lorry Parking	Low	Medium	High	8,9,18,20	★★★
Alternative Fuels for Road Freight	High	High	Low	8,9,16,18,19,20	★★★
Access to Ports	High	High	Medium	1,2,4,5,11,12,14,16,17,20,21	★★
Access to Airports	Medium	Medium	Medium	1,6,7,14,17	★★
Capacity at Sea Ports (Wharves & Waterways)	Low	Low	Low	2,3,4,5,22,23,24	★
Coastal Shipping	Medium	Medium	Low	2,3,4,5,23,24	★
Alternative Fuels for Waterborne Freight	Medium	High	Medium	8,9,18,19,20	★★
Strategic Rail Freight Interchanges (SRFIs)	Medium	Medium	Low	1,5,10,11, 17, 21, 23	★★
Regional Distribution Centres (RDCs)	High	Low	Medium	1,4,5, 21,23	★
Port Centric Logistics	High	High	Medium	1,2,4,5,10,11,12,17,20,21,23,24	★
Urban Consolidation Centres	High	High	Medium	1,3,4,5,18,20,23	★★
Micro Consolidation Centres	Medium	High	High	1,3,4,5,18,20,23	★★
Multi Use Mobility Hubs	Low	Medium	High	1,14,18,20	★

12.1.3. The main conclusions that can be drawn from this work are as follows:

- Enhancements to the rail network, both in terms of upgrading capacity and supporting electrification and the use of alternative fuels, score very positively. There are opportunities to explore modal shift along key freight corridors and upgrade gauge clearances and diversionary, routes to build in network resilience and future mode share growth. Rail investment can help satisfy a number of problem statements because of its interactions with different freight networks and supply chains. There is some certainty around targeted locations.
- In light of the decarbonisation agenda and review of RIS2 and the emerging RIS3, investment in widespread road infrastructure would not fully satisfy environmental and social objectives and only goes some way to addressing problem statements. Road investment should still take place, but this should be targeted at specific locations, which have been identified, to leverage the role of international gateways and to improve network resilience, rather than simply boost capacity. It is of paramount importance that energy and alternative fuel networks for decarbonising road freight are pursued with opportunities already in the pipeline that can be supported.
- There is some certainty around the location of additional lorry parking required across the Transport for the South East area, which is heavily informed by the National Lorry Parking Survey (2017) and complemented by policy evidence across individual local authority areas. Whilst this doesn't satisfy as many problem statements and objectives as other infrastructure investments, it will be necessary to start unlocking identified sites to address the chronic shortage of quality provision.
- There is a number of interventions that score highly when meeting the study objectives and problem statements but where identifying specific locations is challenging. This applies to the two different types of consolidation centre and particularly port related infrastructure; both of which should be pursued in greater detail at a more local level. The role and importance of ports generally across the Transport for the South East area cannot be understated.
- The delivery of interventions is heavily reliant on third parties or private sector industry to mobilise which will be determined by market forces. The difficulty forecasting future trade activity and consumer habits make this difficult to gauge with any certainty whilst new initiatives (such as Freeports) are likely to influence local decision making.
- The delivery of infrastructure measures, such as enhanced port connections, rely on joint partnership work between different bodies, as well as the availability of funding. In all instances, ports across the Transport for the South East area have identified improvements, so prioritising regional investment is a more detailed exercise that needs to take place separately (using a MCAF).
- The specific requirements for coastal shipping, wharves and waterways are more of an unknown across the South East. Whilst there is a defined need and demand to support coastal shipping in particular, the type of investment may be more attuned to adapting to changes in freight practices (e.g. reduction in accompanied vehicles and need for extra storage locations at ports) rather than purely expanding capacity (e.g. additional berths). In many respects, investment in port connections and alternative fuels coincide with supporting coastal shipping.

## 12.2 FURTHER RESEARCH REQUIRED

Reflecting on Table 1 and the 'recommendations/locations' column, further research is required for more accurately defining the locations of five freight infrastructure interventions. These have not been captured to date through the area studies work and so exact locations for investment will require developing with stakeholders through the freight forum and steering group.

- **Wharves and Waterways (capacity at sea ports):** There is a distinct lack of data, policy and interventions that can help weigh up the future potential of inland waterway use for freight movements and limited insight into the role it could play in the future, beyond supporting activity between Medway Ports and The Thames. It was also challenging to define what constitutes relevant infrastructure, despite this being raised as a problem statement (22). The scale of engineering investment required to bring other rivers and canals into play would not be cost effective when there is no defined market appeal at this moment in time.
- **Coastal Shipping:** Equally, there is a challenge with defining the type of freight specific infrastructure that would support coastal or short sea shipping and how this also differs from port related infrastructure. It is of paramount importance that this brings together ferry and cargo operators with port/harbour authorities.
- **Warehousing, Fulfilment & Consolidation Centres:** Whilst these are high in demand, there are multiple factors that influence any investment (which is often industry led) and designation (local authority led). Indicative, best practice areas could be illustrated but realistic sites need further investigation (and planning policy reviewed in respect to land allocations/conditions).
- **Multi-Use Mobility Hubs:** As these are a new concept which will be linked into Future Mobility Zones (FMZs) and emerging Local Transport Plans, designations at this stage would be premature without detailed scoping to complement the typologies listed.
- **Port-centric Logistics:** Similar to Distribution (Warehousing) and Fulfilment Centres, indicative locations could be provided. However, in this case, the type of infrastructure requirement per port will vary and needs to be properly examined, working with port and harbour authorities.

The five interventions listed above can be split into two detailed study recommendations covering:

- **Logistics Property:** Understanding the future scope for physical provision across the Transport for the South East area; taking into account land use and spatial planning constraints and forecast market demand for urban logistics, rail freight and future industry trends. The provision of lorry parking should also be factored into this study.
- **Waterborne Transport:** Developing a more comprehensive oversight of waterborne freight movements and potential use cases/aspirations for coastal shipping and shortsea shipping (and selected use of inland waterways along the River Medway/Thames) across the Transport for the South East area. This will better define future infrastructure requirements.

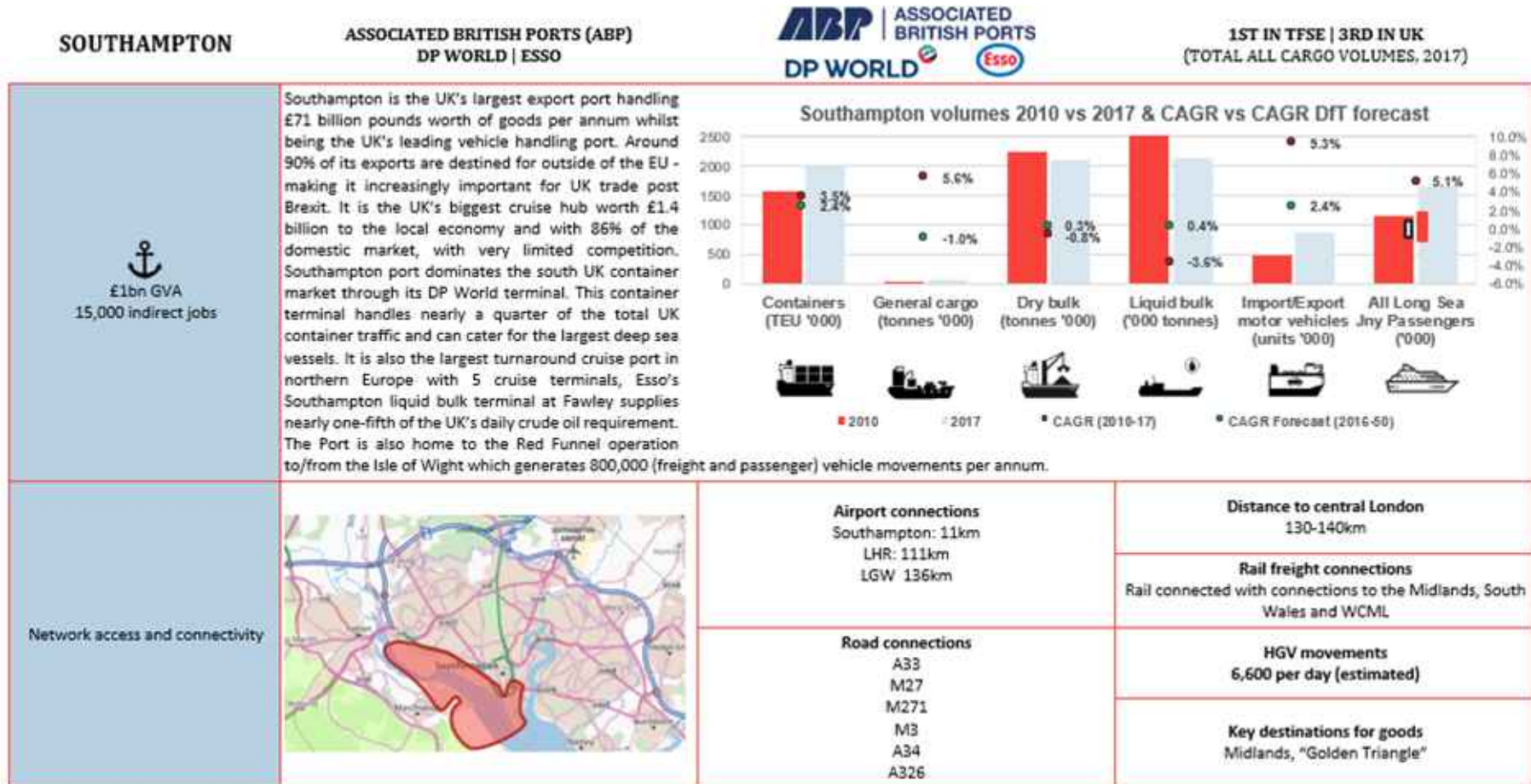
# Appendix A

## **INTERNATIONAL GATEWAY DASHBOARDS**





All dashboards have been sourced from the Transport for the South East Freight and Logistics Gateways Study undertaken by WSP in 2019 and updated with the latest relevant information.



Recent investments Comprehensive	<p>Investment policy is to increase utilisation of the premises it already operates, thus, increasing efficiencies. Through its investment pattern, ABP is anticipating growth in all commodities it manages.</p>	
Relevant points	<p><b>Summary of growth to maximise potential / competitor challenges</b></p> <ul style="list-style-type: none"> <li>▪ Increase market share by expansion or efficiency upgrades in the road network</li> <li>▪ Challenge of Liverpool container terminal development</li> </ul>	<p><b>Opportunity to develop the port further</b></p> <ul style="list-style-type: none"> <li>▪ Further develop links with future trading nations of the UK</li> <li>▪ Grow through development of the strategic land reserve</li> <li>▪ The Import Export Automobile industry poses a limited risk in Southampton case as many car manufacturers have the EU headquarters/destinations</li> <li>▪ Longer term, demand for port services is significant with a 40% uplift in container volumes; doubling of the numbers of cruise passengers and automotive units.</li> </ul>
<p><b>Strengths</b></p>	<ul style="list-style-type: none"> <li>▪ Exports not reliant on EU market</li> <li>▪ Deepwater berth for Ultra Large container ships</li> <li>▪ #1 UK cruise hub</li> <li>▪ Location adjacent to major shipping lanes</li> <li>▪ Freeport status</li> </ul>	<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>▪ Strategic land available</li> <li>▪ Further utilisation of rail</li> <li>▪ Linkages with Southampton Airport</li> </ul>
<p><b>Weaknesses</b></p>	<ul style="list-style-type: none"> <li>▪ Bulk forecasts high over-leveraged</li> <li>▪ Container quayside capacity limited</li> <li>▪ Liquid bulk facilities</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>▪ Sensitive to automotive manufacture sector</li> <li>▪ Need to increase rail mode share to meet growth projections</li> </ul>
Conclusion	<p>Southampton Port has good market positioning in the container sphere and has shown continued growth across most commodity groups. The undeveloped land owned by Southampton port is an important asset that could be expanded with any future demand developments, subject to planning and environmental approvals. It should be noted that Felixstowe and London Gateway, as the two other major UK container terminals, with significantly less congested road networks surroundings and modern facilities, pose the biggest competitive threat in serving the UK from eastern markets – specifically Asia.</p>	
	<p><b>Importance</b></p> <p>Local: 10 Regional: 10 National: 10 <b>Total Score: 30</b></p>	

## DOVER

## DOVER HARBOUR BOARD

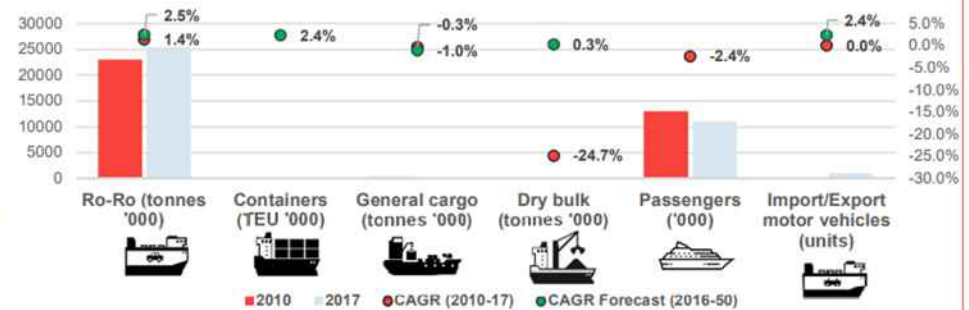


2ND IN TFSE | 9TH IN UK  
(TOTAL ALL CARGO VOLUMES, 2017)

£10.2m (2017) operating profit

Dover is the busiest international RoRo port in Europe based on volume. Annually 2,600,000 freight vehicles are handled at the port and around 50% of the traffic goes beyond the South-East region in the UK. The Port of Dover handles 17% of the UK's total trade in goods. Dover is currently served by ad-hoc refrigerated calls as well as scheduled liner freight refrigerated services. The port's established trade routes are; the Peru - Ecuador - Europe reefer service of Seatrade, and the Geest Lines' Caribbean - Europe reefer service. These services are handled at the Eastern Docks.

Dover volumes 2010 vs 2017 & CAGR vs CAGR DfT forecast



Network access and connectivity



**Airport connections**  
Southampton: 240km  
LHR: 127 km  
LGW 168 km

**Distance to central London**  
133 km





**Rail freight connections**  
None

**Road connections**  
M20 direct to A20 link  
M2 to A2 link  
M20  
M2  
A20  
A2

**HGV movements**  
2.6 million freight vehicles a year

**Key destinations for goods**  
Half of the vehicles going beyond the South East, typically to the Midlands and the North.



Recent investments Comprehensive	<div><div>2017 £115m Marine civil engineering contract for Dover Western Docks Revival (DWDR)</div><div>2019 Purchase of Two Konecranes Gottwald Model 5 mobile harbour cranes for the new multipurpose terminal (part of DWDR)</div><div>2019 £15m temperature-controlled warehouse to form new Refrigerated Cargo Terminal (RCT) (part DWDR)</div></div> <p>Investments from Dover through the DWDR project will diversify the commodity capabilities of the Port. With Dover's strong market presence, they are investing to attract additional freight from non-RoRo shipping.</p>		
Relevant points	Summary of growth to maximise potential / competitor challenges		Opportunity to develop the port further
	<ul style="list-style-type: none"><li>Through the DWDR project Dover's revenue stream should diversify</li><li>New passenger and freight routes to Belgium or further afield</li><li>Ramsgate challenge appears to have almost entirely diminished</li></ul>		<ul style="list-style-type: none"><li>Brexit may provide opportunities for Dover to capitalise</li><li>The DWDR investments underway should prepare for a capture of any such changes</li></ul>
 Strengths	<ul style="list-style-type: none"><li>New redevelopment/diversification</li><li>Focal point of UK - France access</li><li>Geographical location</li></ul>		 Opportunities <ul style="list-style-type: none"><li>Strategic expansion</li><li>New routes</li><li>Collaboration with Channel Tunnel</li></ul>
 Weaknesses	<ul style="list-style-type: none"><li>Reliance on UK – France/EU relations</li><li>Reliance on road network 75% of revenue from RoRo/ferries</li><li>Very limited land area</li><li>No rail freight alternative</li></ul>		 Threats <ul style="list-style-type: none"><li>Congestion/strike action</li><li>Human migration issue unresolved</li><li>Channel Tunnel to secure passenger and freight business</li></ul>
Conclusion	Dover port will remain a key player in the continental Europe to UK market. With the DWDR development, Dover will be able to diversify, which should mean less reliance on RoRo traffic. Opportunities to attract cargo from further afield may also be possible if efficient truck loading facilities are developed appropriately. Further collaboration with Ramsgate port, for example, could be developed.		<div>Importance</div> <div>Local: 10 Regional: 5 National: 10</div> <div>Total Score: 23/30</div>

## MEDWAY

## PEEL PORTS GROUP & INDEPENDENT PORTS

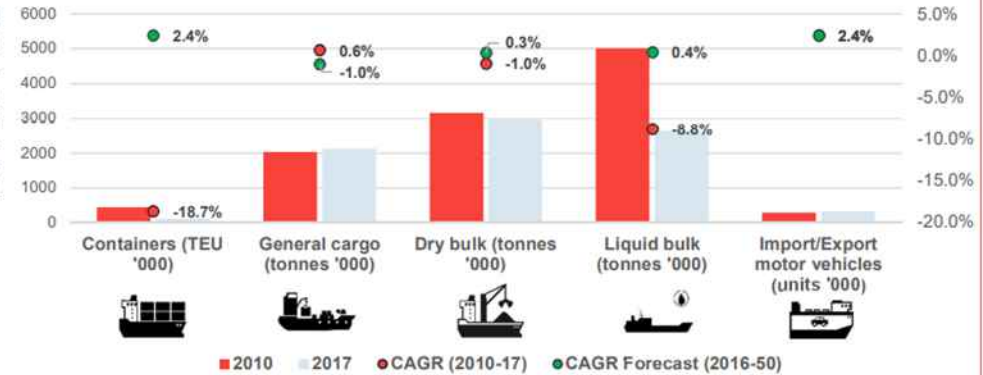


3RD IN TFSE | 15TH IN UK  
(TOTAL ALL CARGO VOLUMES, 2017)

£226m EBITDA\*  
1,640 jobs\*

The Port of Medway cluster consists of multiple small-to-medium ports including, Sheerness, Chatham, Thamesport (Isle of Grain and owned by Hutchison), Rochester, Ridham Dock, and Queenborough. The Peel Group owns and operates Sheerness port and Chatham port. Volumes through the Medway area has fallen across each sector except general cargo and import/export motor vehicles, which have experienced minor growth. The port which attracts the most volumes in the area is the import/export motor terminal at the Port of Sheerness.

Medway volumes 2010 vs 2017 & CAGR vs CAGR DfT forecast



### Network access and connectivity



#### Airport connections

Southampton: 208 km  
LHR: 128 km  
LGW 94 km

#### Distance to central London

90 km

#### Rail freight connections

Some limited rail connections at Thamesport and unused facility at Sheerness

#### Road connections

A249  
M2  
A2

#### HGV movements

2,000 loaded trips / day (estimated)

#### Key destinations for goods

Forest products, steel, automotive (Midlands)

Recent investments Low	<div>2015-19</div> <div>Peel Ports Group: £27m investment in vehicle storage and warehouse capacity. Warehousing increasing by 30,000 square meters at Sheerness. Grain facilities improved £5.4m (included in the £27m)</div> <div></div> <div>Investments in the Medway area have been minor. The appetite to expand is likely discouraged by the presence of Tilbury docks and London Gateway, which dominate the growth sectors of containers and Roll on Roll off (RoRo) with superior facilities, and which have a similar distance to the London market but without the barrier of the M25 / Dartford Crossing to the rest of the UK.</div>		
Relevant points	Summary of growth to maximise potential / competitor challenges		Opportunity to develop the port further
	<ul style="list-style-type: none"><li>▪ Liquid Natural Gas (LNG) imports, expected to rise in the UK, should be capitalised on</li><li>▪ Facilities should be maintained and developed to maintain market share against faster growing competitors</li></ul>		<ul style="list-style-type: none"><li>▪ With numerous small ports in the Medway region, there is potential scope for collaboration</li><li>▪ Development of facilities to compete with major Thames river ports is required</li></ul>
<div>Strengths</div>	<ul style="list-style-type: none"><li>▪ Liquid Natural Gas ingress point</li><li>▪ Short distance to London</li></ul>	<div>Opportunities</div>	<ul style="list-style-type: none"><li>▪ Collaboration</li><li>▪ Further develop import/export vehicle hub</li><li>▪ Underutilised Thamesport could be developed for short sea Lift on Lift off (LoLo)</li></ul>
<div>Weaknesses</div>	<ul style="list-style-type: none"><li>▪ Internal area competition</li><li>▪ Demand uncertain</li></ul>	<div>Threats</div>	<ul style="list-style-type: none"><li>▪ Tilbury 2 expansion</li><li>▪ Container volume loss</li></ul>
Conclusion	<div>London Medway port cluster has lost significant container traffic to the recently developed and growing London Gateway – which is focussed on containers and has a good location next to the M25. Total volumes have gradually decreased across most areas and the Medway ports could benefit from working together to improve competitiveness and continually advertise their strategic position of being quick to access London. Further developments in the Liquid Natural Gas market specifically should be considered to capitalise on forecasted volume growth. With most other commodities, the competition from Tilbury will continue to be threatening - even if increased competitiveness is achieved by London Medway.</div>		
			<div>Importance</div> <div>Local: 7</div> <div>Regional: 10</div> <div>National: 5</div> <div>Total Score: 23/30</div>

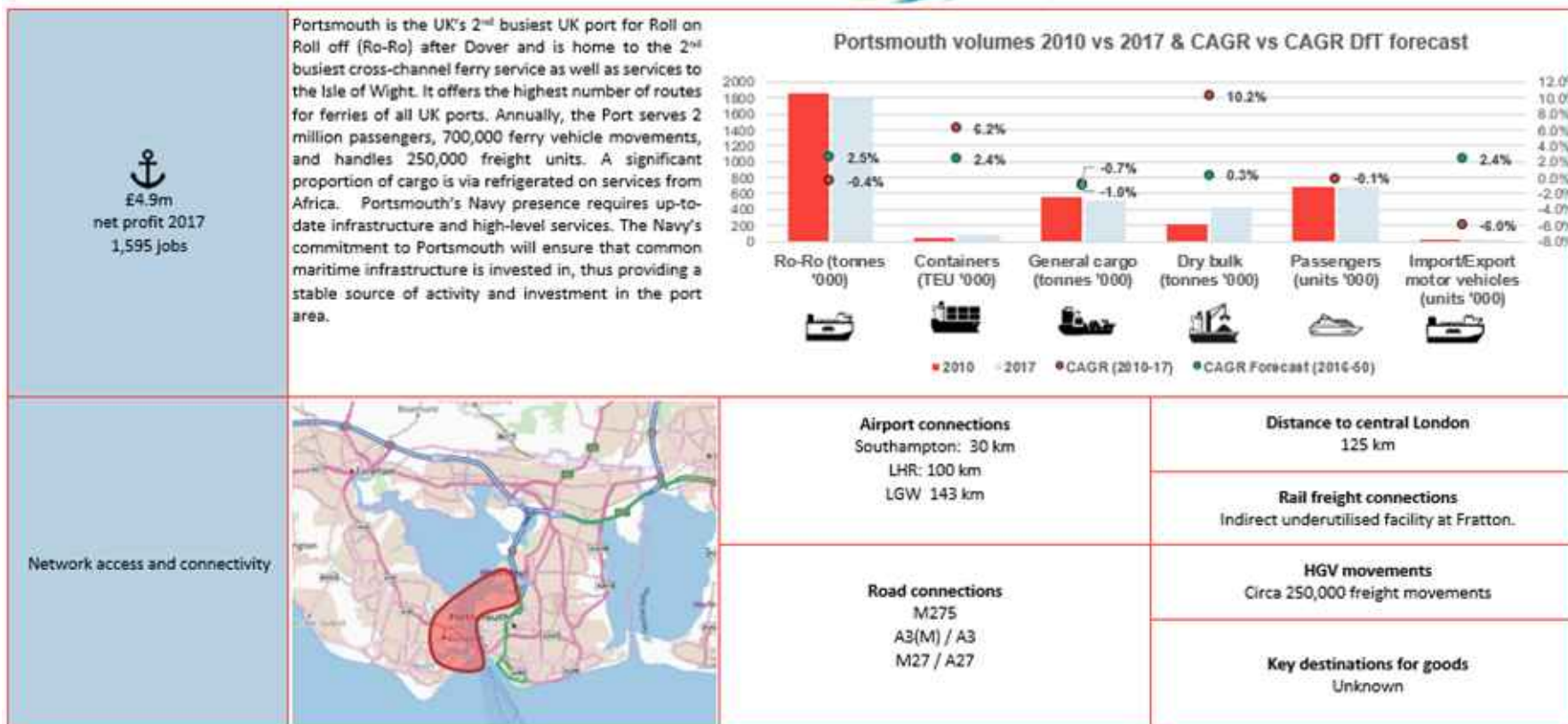


# PORTSMOUTH

COUNCIL OPERATED



4TH IN TFSE | 25TH IN UK  
[TOTAL ALL CARGO VOLUMES, 2017]





Recent investments Comprehensive	<div> <div>2011 New cruise terminal - part of investment in new passenger facilities £16.5m</div> <div>2012 New cranes and new warehouses. 2 shipping berths being upgraded</div> <div>2019 £100m refit for the dry dock and dredging improvements by the Royal Navy</div> <div>2019 £18.7m to improve ferry operations and cruise market</div> </div> <p>Investment policy of Portsmouth is following the trend of the cruise sector growth, although its numbers have not been convincingly positive.</p>	
Relevant points	<b>Summary of growth to maximise potential / competitor challenges</b> <ul style="list-style-type: none"> <li>Attract passenger traffic to/from Dover - if it experiences congestion.</li> <li>Collaboration with the Navy should be maintained as infrastructure developments could be supported by military funds.</li> </ul>	<b>Opportunity to develop the port further</b> <ul style="list-style-type: none"> <li>Development of the refrigerated market</li> </ul>
<b>Strengths</b>	<ul style="list-style-type: none"> <li>Established and varied cruise routes</li> <li>Non-EU refrigerated routes</li> </ul>	<b>Opportunities</b> <ul style="list-style-type: none"> <li>Further distribution to midlands and south east</li> <li>Cooperation with military funding</li> <li>Potential for better rail integration</li> </ul>
<b>Weaknesses</b>	<ul style="list-style-type: none"> <li>Flat ferry/RoRo market volumes</li> <li>Lack of space / land</li> <li>Over-congestion</li> </ul>	<b>Threats</b> <ul style="list-style-type: none"> <li>Reduction in market share</li> <li>Immediate impact of Brexit and integration with new Inland Border Facility</li> </ul>
Conclusion	<p>Portsmouth has seen declines in throughput in most commodity groups. General bulk and refrigerated trade are likely to be the most stable import/export group in the near future as demand in the local hinterland appears stable. The outlook for upscaling at the port is unlikely other than in freight sectors that complement rather than compete with the well-established large and diverse port of Southampton. Partnership with the Navy can be mutually beneficial in providing for modern infrastructure and facilities utilisation.</p>	
	<b>Importance</b> Local: 7 Regional: 6 National: 7 <b>Total Score: 20/30</b>	

## SHOREHAM

TRUST PORT  
INDEPENDENT STATUTORY BODY

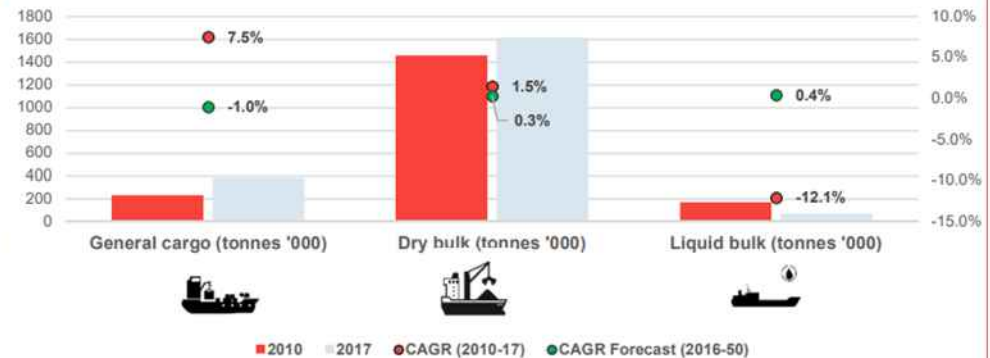


5TH IN TFSE | 34TH IN UK  
(TOTAL ALL CARGO VOLUMES, 2017)

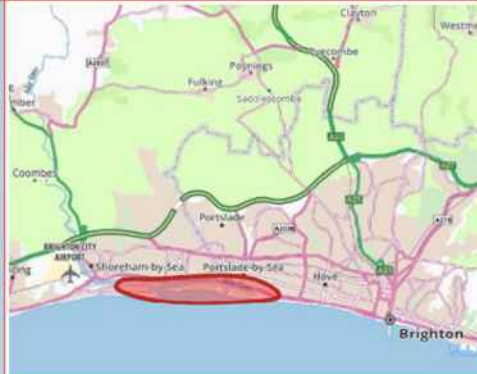
£424k operating profit  
2017  
1,600 jobs

Shoreham is a small UK trust port which operates primarily in short sea shipping (the movement of goods by ship without crossing an ocean). The port's primary cargoes are associated with construction (timber / aggregates / steel) agricultural products (grain) and fish. It offers a handling and loading/offloading service and has a modern tracking stock control system. Shoreham is seeking to diversify its cargo base to support the renewable energy sector. The port is actively involved in commercial and residential property services. In 2017 the port of Shoreham had a turnover of £13.3m and an EBITDA of £2.3m, an increase of 0.7% and 9.7% respectively.

Shoreham volumes 2010 vs 2017 & CAGR vs CAGR DFT forecast



Network access and connectivity



### Airport connections

Southampton: 96 km  
LHR: 110 km  
LGW 50 km

Distance to central London  
94 km

### Rail freight connections

None

### Road connections





A27  
A23 / M23

### HGV movements

Two million tonnes of goods per annum move through the port, with an average of 300 trucks per day.

### Key destinations for goods

Likely to be short distance – mainly <50km

Recent investments Suitable	<div>2014 to 2017 - £6m spent on up-keep</div> <div>2017 - £579k on capital investment projects</div> <p>Investments primarily aimed at; Marine/ operations streams; expansion of property base through strategic acquisition of key sites; and the development of new units in the East Arm. Shoreham's investment policy is limited in shipping and more focussed in realising opportunities in property and commercial real estate. Investment required for maintenance is expected to continue however no significant growth in volumes are catered for if they were to arise.</p>		
Relevant points	Summary of growth to maximise potential / competitor challenges		Opportunity to develop the port further
	<ul style="list-style-type: none"><li>Overall growth possible if the port continues with pursuing a wide range of initiatives</li><li>Renewable energy market niche</li></ul>		<ul style="list-style-type: none"><li>Market port as efficient, diverse, high level service with proximity to Brighton hinterland</li><li>Opportunity to develop commercial activities for Brighton market remain possible</li></ul>
 Strengths	<ul style="list-style-type: none"><li>Established local port</li><li>Position on English Channel</li></ul>		 Opportunities <ul style="list-style-type: none"><li>Diversification</li><li>Collaboration</li></ul>
 Weaknesses	<ul style="list-style-type: none"><li>Expansion limited</li><li>Road access</li></ul>		 Threats <ul style="list-style-type: none"><li>Limited quay-side infrastructure</li><li>Inability to compete – without scale</li></ul>
Conclusion	Shoreham is limited in upscaling operations, however, as an alternative to the typical infrastructure expansion growth model, the port is seeking to diversify its operations and maintain its levels of service.		<div>Importance</div> <div>Local: 4</div> <div>Regional: 7</div> <div>National: 5</div> <div>Total Score: 16/30</div>

## NEWHAVEN

## NEWHAVEN PORT & PROPERTIES LTD

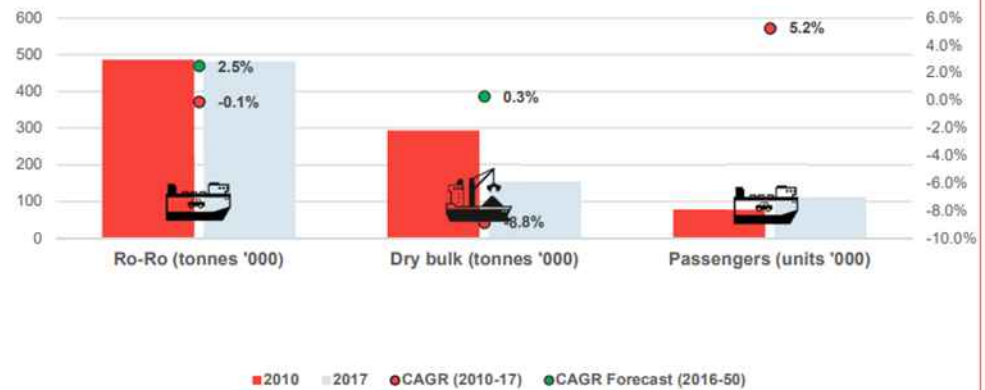


6TH IN TFSE | 44TH IN UK  
(TOTAL ALL CARGO VOLUMES, 2017)

>500 jobs

The direct ferry to Dieppe in France is a stable element of the port's operations. The Ferry operator receives 26 million euros of funding from the Normandy region. This is set to be reviewed in 2021/22. Dry bulk volumes through Newhaven have been on a steady decline and are limited by the opening times of a swing bridge through its narrow river channel. Newhaven is home to the operational base for the Rampion windfarm. NB DfT 2016-2050 forecast does not include passenger figures'

Newhaven volumes 2010 vs 2017 & CAGR vs CAGR DfT Forecast



Network access and connectivity



### Airport connections

Southampton: 128 km  
LHR: 128 km  
LGW 66 km

Distance to central London  
108 km

### Rail freight connections

Rail freight facilities suitable for bulk

### Road connections

A26  
A27






### HGV movements

Two million tonnes of goods per annum move through the port, with an average of 300 trucks per day

### Key destinations for goods

Likely to be mainly within South East



Recent investments Limited	<p style="text-align: center;"><b>2012</b> £3m in improvements; Marine leisure boating facilities - £0.4 million; Fishing industry investments - £1.3 million; Maintenance and improvement of waterways/seabed levelling - £1m</p>  <p style="text-align: right;"><b>2019</b> Access road improvements £23.2 m</p> <p>Newhaven maintenance policy is essential for the ferry terminal and fishing industry which drive revenue.</p>		
Relevant points	<p><b>Summary of growth to maximise potential / competitor challenges</b></p> <ul style="list-style-type: none"> <li>Expansion of services to offer niche products – like Shoreham</li> <li>Increase competition with Dover for London to Paris route</li> </ul>	<p><b>Opportunity to develop the port further</b></p> <ul style="list-style-type: none"> <li>Establishment of multiple ferry crossings</li> <li>Develop infrastructure in small town – establish as a key crossing point, a new access road is currently under construction</li> </ul>	
 Strengths	<ul style="list-style-type: none"> <li>Established Ferry Route</li> <li>Geographical location</li> <li>Access road under construction</li> </ul>	 Opportunities	<ul style="list-style-type: none"> <li>Additional ferry route</li> <li>Take market from Dover – Calais route (London to Paris route)</li> <li>Rail freight opportunities</li> </ul>
 Weaknesses	<ul style="list-style-type: none"> <li>Access to cargo berths</li> <li>Expansion costly</li> </ul>	 Threats	<ul style="list-style-type: none"> <li>Reliant on subsidised ferry line</li> <li>Limited captive market</li> </ul>
Conclusion	<p>Newhaven has specialised its service offering to its ferry link to France. The French subsidy which ensures the ferry operations prove a lifeline to the continuation of the service, and consequently, continuation of the port. Increasing business viability of the ferry to run without subsidies should be of paramount importance. If achieved, this could encourage investment and expansion. There is a case for Newhaven to realise its past potential as a viable alternative route from London to Paris.</p>		<p style="text-align: right;"><b>Importance</b></p> <p style="text-align: right;">Local: 2 Regional: 3 National: 5</p> <p style="text-align: right;"><b>Total Score: 10/30</b></p>

## RAMSGATE

## THANET DISTRICT COUNCIL

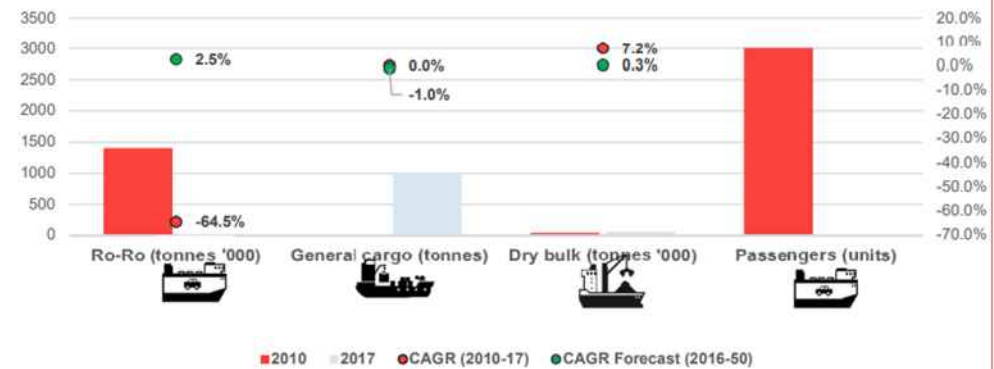


7TH IN TFSE | 51ST IN UK  
(TOTAL ALL CARGO VOLUMES, 2017)

£1.8m loss 2017

Ramsgate was a commercial port and, until recently, operated a ferry services to both Dunkirk and Ostend. It is now primarily a construction/operation/maintenance base for three nearby offshore wind farms. Financial reporting from Thanet Council indicates Ramsgate port generating a deficit of £1.8m in 2017-2018.

Ramsgate volumes 2010 vs 2017 & CAGR vs CAGR DfT forecast



Network access and connectivity



### Airport connections

Southampton: 252 km  
LHR: 175 km  
LGW: 136 km

Distance to central London  
133 km





Rail freight connections  
No rail connections

### Road connections

A229  
M2





HGV movements  
Unknown

Key destinations for goods  
Unknown





Recent investments <b>Insufficient</b>	Recent plans to dredge and re-open a short sea ferry service to Belgium have been cancelled. Proposal ongoing for an extension to the existing and operational Thanet Offshore Wind Farm in Kent. The project will involve the addition of up to 34 turbines on the edges of the existing wind farm and require continued use of Ramsgate for the construction process and ongoing operations. As a council run port, National and regional political issues have impacted Ramsgate investment potential. The commodity breakdown of Ramsgate does not provide confidence in future freight trends.		
Relevant points	<b>Summary of growth to maximise potential / competitor challenges</b>		<b>Opportunity to develop the port further</b>
	<ul style="list-style-type: none"> <li>Stable demand outlook is not reliable.</li> <li>Currently does not pose a competitive threat</li> </ul>		<ul style="list-style-type: none"> <li>Infrastructure upgrades could help to increase presence of the port and allow it to compete with, or indeed work with, neighbouring ports – specifically Dover</li> </ul>
 <b>Strengths</b>	<ul style="list-style-type: none"> <li>Established Ferry Route</li> <li>Geographical location</li> </ul>	 <b>Opportunities</b>	<ul style="list-style-type: none"> <li>Collaboration with Dover</li> <li>Capacity available</li> </ul>
 <b>Weaknesses</b>	<ul style="list-style-type: none"> <li>Political/Council leadership</li> <li>Ageing Infrastructure</li> </ul>	 <b>Threats</b>	<ul style="list-style-type: none"> <li>Failure to maintain business</li> <li>Reputation damage</li> </ul>
Conclusion	Ramsgate is a well-established port with a good location and a history of handling volumes. It appears to be in decline based on recent throughput and requires stimulus. Interactions between the council, government, and local lobby groups have not reached agreement on the future of the port.		<b>Importance</b> Local: 4 Regional: 2 National: 1  <b>Total Score: 7/30</b>



<p>Supports 77,000 jobs + £3.6bn GVA</p>	<p>Heathrow airport is the largest UK airport market in both annual passenger numbers and freight volume. Branded as the UK's hub airport, Heathrow ranks highly against other European hub airports.</p> <p><i>*Heathrow is owned by FGP Topco Limited, a consortium owned and co-ordinated by multiple infrastructure specialists.</i></p> <div>  +11%            +16%            </div>		
<p>Network access and connectivity</p>		<p><b>Airport connections</b></p> <p>Southampton: 100 km LGW 63 km</p>	<p><b>Rail freight connections</b></p> <p>None for freight, but well connected by rail for passengers</p>
		<p><b>Road connections</b></p> <p>M4 M25 M40 M3</p>	<p><b>HGV movements</b></p> <p>Airline Servicing: 15.7% Airport Servicing: 7.8% Retail: 1.8% Waste: 0.7% Cargo and Mail: 74.0%</p>
			<p><b>Key destinations for goods</b></p> <p>Unknown but likely to be consolidated at centres within a 5-mile radius of the airport</p>
<p>Recent investments <b>Substantial</b></p>	<p>Heathrow has had a third runway project approved by the UK Government in June 2018. The estimated cost of the project will be £14bn. Construction is anticipated to begin in 2021/2022. Heathrow has stated that debt will be raised to [part] fund the project and landing charges to airlines will be maintained at existing levels.</p>		
	<p><b>Summary of growth to maximise potential / competitor challenges</b></p>		<p><b>Opportunity to develop the port further</b></p>

Relevant points	<ul style="list-style-type: none"> <li>▪ Growth in volumes expected to continue as Heathrow's role as the largest UK hub airport relatively unchallenged.</li> <li>▪ Third runway to further UK hub status – disruptions during construction likely to lose volumes to rivals (including Gatwick)</li> <li>▪ Rail connectivity – large opportunity as volumes set to rise with third runway. New access route planned including to West and South</li> <li>▪ Crossrail project to expand passenger market from London</li> </ul>	
 <b>Strengths</b>	<ul style="list-style-type: none"> <li>▪ UK and international hub</li> <li>▪ Proximity to London</li> <li>▪ Proven demand</li> <li>▪ Huge variety of destinations</li> </ul>	 <b>Opportunities</b> <ul style="list-style-type: none"> <li>▪ Attract continued growth in passenger volumes</li> <li>▪ Expansion/improvement of rail</li> <li>▪ Freight tonnage continued growth</li> </ul>
 <b>Weaknesses</b>	<ul style="list-style-type: none"> <li>▪ Expansion costly and time consuming</li> <li>▪ Lack of rail freight access</li> <li>▪ Drop in market share as capacity is reached</li> </ul>	 <b>Threats</b> <ul style="list-style-type: none"> <li>▪ Opposition to expansion plans</li> <li>▪ Delay in realising expansion plans</li> </ul>
Conclusion	<p>With any expansion plans implemented there will be a need review the supporting infrastructure to ensure that access and network development can help realise any expansion that comes forward.</p> <div> <b>Importance</b>  Local: 9  Regional: 10  National: 10  <b>Total Score: 29/30</b> </div>	

<p>Supports 12,000 FTE + GVA £1.6bn</p>	<p>Gatwick Airport is the world's busiest single runway airport and the 2nd largest airport in the UK for passenger volumes. Gatwick contributes £5.3bn to the UK economy and supports over 85,000 jobs. Gatwick strives to be an environmentally leading airport. It is first London airport to hold the Airport Carbon Accreditation at "Neutral" level (level 3+) for its ground operations as well as the Carbon Trust's Zero Waste to Landfill standard.</p> <p><i>*Vinci Airports, a French construction and infrastructure operating company, recently acquired a 50.1% stake of Gatwick airport (to be completed mid 2019) for £2.9bn.</i></p>		
<p>Network access and connectivity</p>		<p><b>Airport connections</b></p> <p>Southampton: 143 km</p> <p>LHR: 63 km</p>	<p><b>Distance to Central London</b></p> <p>46 km</p>
		<p><b>Road connections</b></p> <p>M23</p> <p>M25</p>	<p><b>Rail freight connections</b></p> <p>No rail freight connections, however, well connected for passengers.</p>
			<p><b>HGV movements</b></p> <p>Unknown</p> <p><b>Key destinations for goods</b></p> <p>Unknown but likely to be consolidated at centres within a 5-mile radius of the airport. Freight volume is relatively low.</p>

Recent investments <b>Substantial</b>	Provisional: Utilising shorter taxiway into a runway for domestic flights (previously refused by local council in 1979) – estimated at £500m. 5-year plan (2018-2023) of £1.11bn committed spending by Gatwick Leadership; expansion of airplane handling/docking facilities underway. A new second runway has been proposed, Gatwick state at this stage they are simply safeguarding the land for a run way rather than actively developing it at this stage.		
Relevant points	<b>Summary of growth to maximise potential / competitor challenges</b>		<b>Opportunity to develop the port further</b>
	<ul style="list-style-type: none"> <li>As Gatwick steadily increases market share of the UK passenger volumes, it is also able to increase its capacity</li> <li>Political opposition to airport expansion is significant and represents challenges to its growth potential</li> </ul>		<ul style="list-style-type: none"> <li>Opportunity to continue sustainability initiatives</li> <li>Efficiencies and internal improvements</li> </ul>
 <b>Strengths</b>	<ul style="list-style-type: none"> <li>Location</li> <li>Carbon neutral ground operations</li> <li>Rail access for passengers</li> </ul>	 <b>Opportunities</b>	<ul style="list-style-type: none"> <li>Improve facilities / greater efficiencies</li> <li>Passenger rail opportunities</li> <li>Increase market share</li> </ul>
 <b>Weaknesses</b>	<ul style="list-style-type: none"> <li>Motorway connectivity</li> <li>Freight market</li> </ul>	 <b>Threats</b>	<ul style="list-style-type: none"> <li>Expansion permission</li> <li>Heathrow third runway</li> <li>Southampton competition</li> </ul>
Conclusion	Gatwick has strong operational credentials and shows a desire to grow through continued investment and improvement of efficiency. A lack of variety of destinations though for bellyhold puts Gatwick in a less competitive position for freight. Passenger traffic through Gatwick is likely to remain strong and there may be some uplift with potential disruption at Heathrow during any construction at the airport. Gatwick foresees freight becoming more prevalent at the airport and they will be developing a Freight Strategy which will look at opportunities for freight growth and the associated implications of this on the airport and surrounding network / environment.		<b>Importance</b> Local: 7 Regional: 9 National: 8  <b>Total Score: 24/30</b>







## SOUTHAMPTON

AGS AIRPORTS LIMITED  
(FERROVIAL AND MACQUARIE)



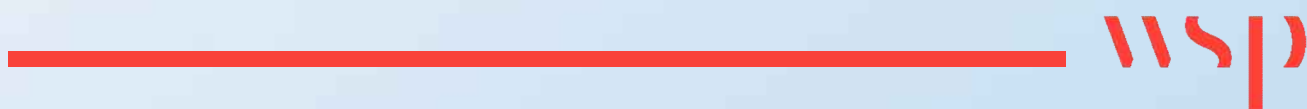
3RD IN TFSE | 18TH IN UK  
(TOTAL ALL PASSENGERS, 2017)

<div>Supports 950 jobs and £161m GVA</div> <div>✈️</div> <div>Network access and connectivity</div>	<div>Southampton airport predominately serves domestic and European destinations with low freight volumes handled. Passenger volumes continue to grow; however, the airport has lost a small percentage of UK total market. The freight market has fluctuated from 350 to 115 tonnes per year between 2007 to 2017.</div> <div>AGS Airports Limited, which owns Southampton, Glasgow, and Aberdeen airports bought the group in 2014 for £1.05bn (including debt).</div>		<div><div><div>✈️</div><div>+22%</div></div><div><div>Passenger Aircraft</div><div>+51%</div><div>Change 2012-2017</div></div></div>	
	<div><div>Airport connections</div><div>LHR: 100 km</div><div>LGW 143 km</div></div>		<div><div>Distance to Central London</div><div>130 km</div></div>	
	<div><div>Road connections</div><div>M27</div><div>M3</div></div>		<div><div>Rail freight connections</div><div>No rail freight, but passenger connections at Southampton Parkway</div></div>	
			<div><div>HGV movements</div><div>Unknown</div></div>	
		<div><div>Key destinations for goods</div><div>Unknown, but as with other airports is likely to be consolidated near to the airport</div></div>		
<div>Recent investments</div> <div>Substantial</div>	<div>Current proposal for an elongation of runway (within owned land) - allowing it to more than double passenger numbers from two million to five million a year by 2037. Costs are not yet estimated.</div>			

Relevant points	Summary of growth to maximise potential / competitor challenges	Opportunity to develop the airport further	
 <b>Strengths</b>	<ul style="list-style-type: none"> <li>Southampton's local population growth may increase demand for flights</li> <li>The opportunity to increase flights beyond the EU to compete with Gatwick</li> <li>A diversification of airline carriers should be sought as a matter of priority</li> </ul>	 <b>Opportunities</b>	<ul style="list-style-type: none"> <li>An increase in runway length to attract larger airplanes, not necessarily more planes, should bring cost benefits to passengers, which in turn could increase volumes through the airport</li> <li>Gatwick becoming oversized</li> <li>Connectivity to Southampton's cruise operations</li> </ul>
 <b>Weaknesses</b>	<ul style="list-style-type: none"> <li>Limited airline routes</li> <li>Single runway</li> </ul>	 <b>Threats</b>	<ul style="list-style-type: none"> <li>Few airlines</li> <li>Dependency on single operator - Flybe</li> </ul>
Conclusion	<p>As Southampton's airport operates few different airline carriers, it is vulnerable to revenue shock of its airlines collapsing. Plans for increasing runway length would hopefully bring larger (and more profitable) planes in, and allow for further improvements of infrastructure. The captive market of Southampton does not appear to need increased supporting infrastructure as the passenger throughput remains manageable by pre-existing rail and road networks.</p>		<p><b>Importance</b></p> <p>Local: 6 Regional: 6 National: 2</p> <p><b>Total Score: 14/30</b></p>

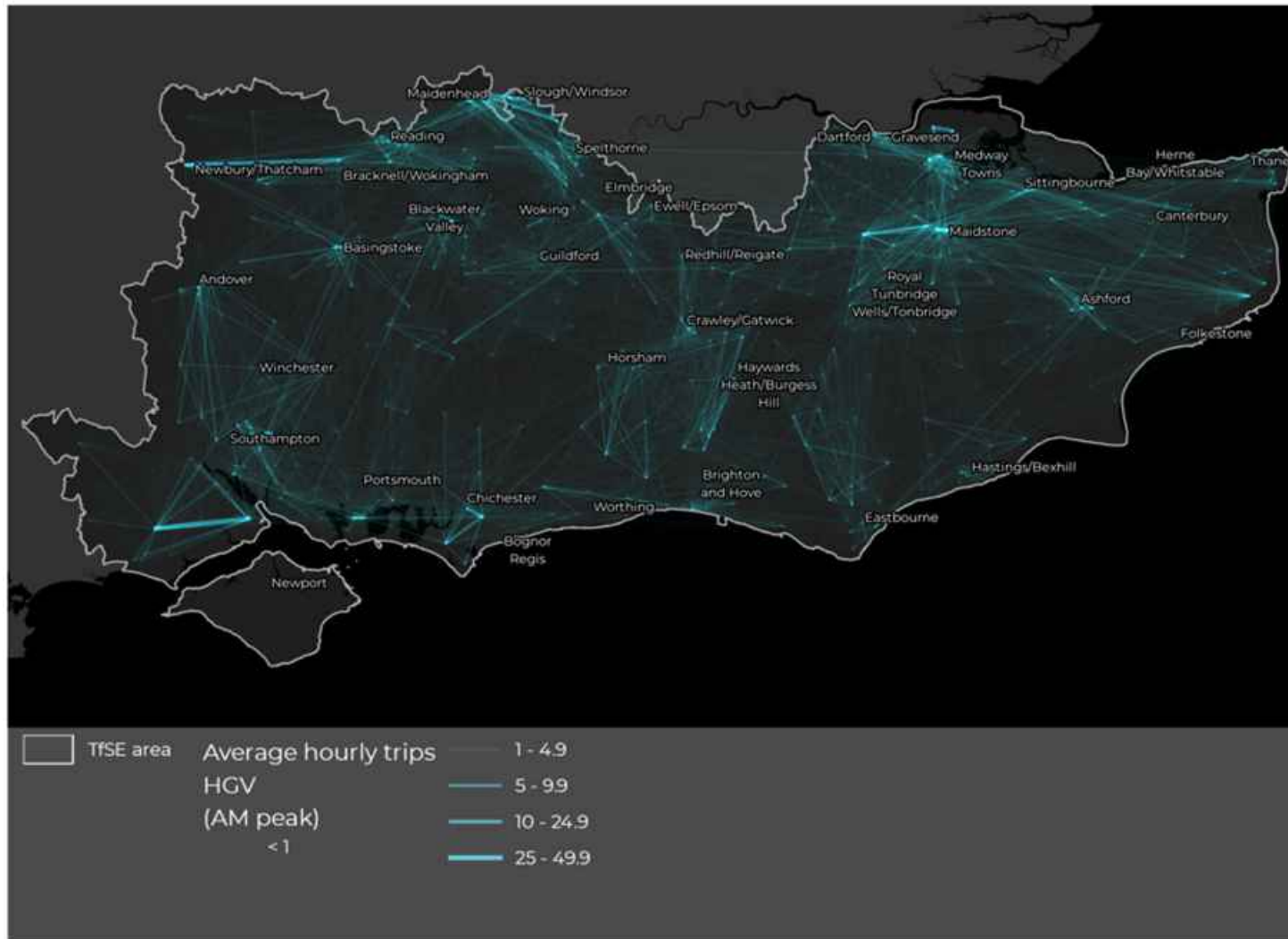
# Appendix B

## DFT ROAD FREIGHT DATASETS

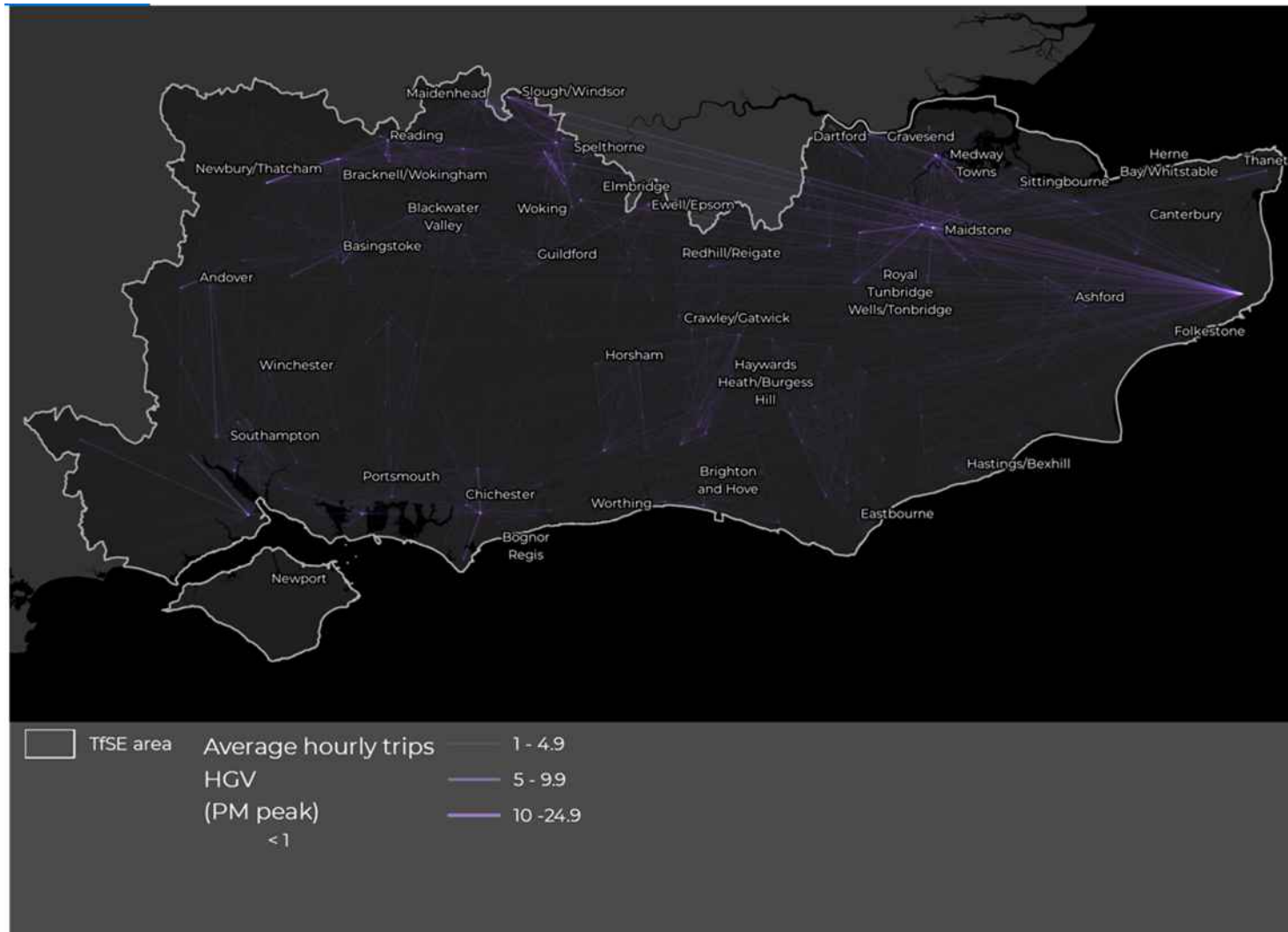




## MSOA HGV AM Peak

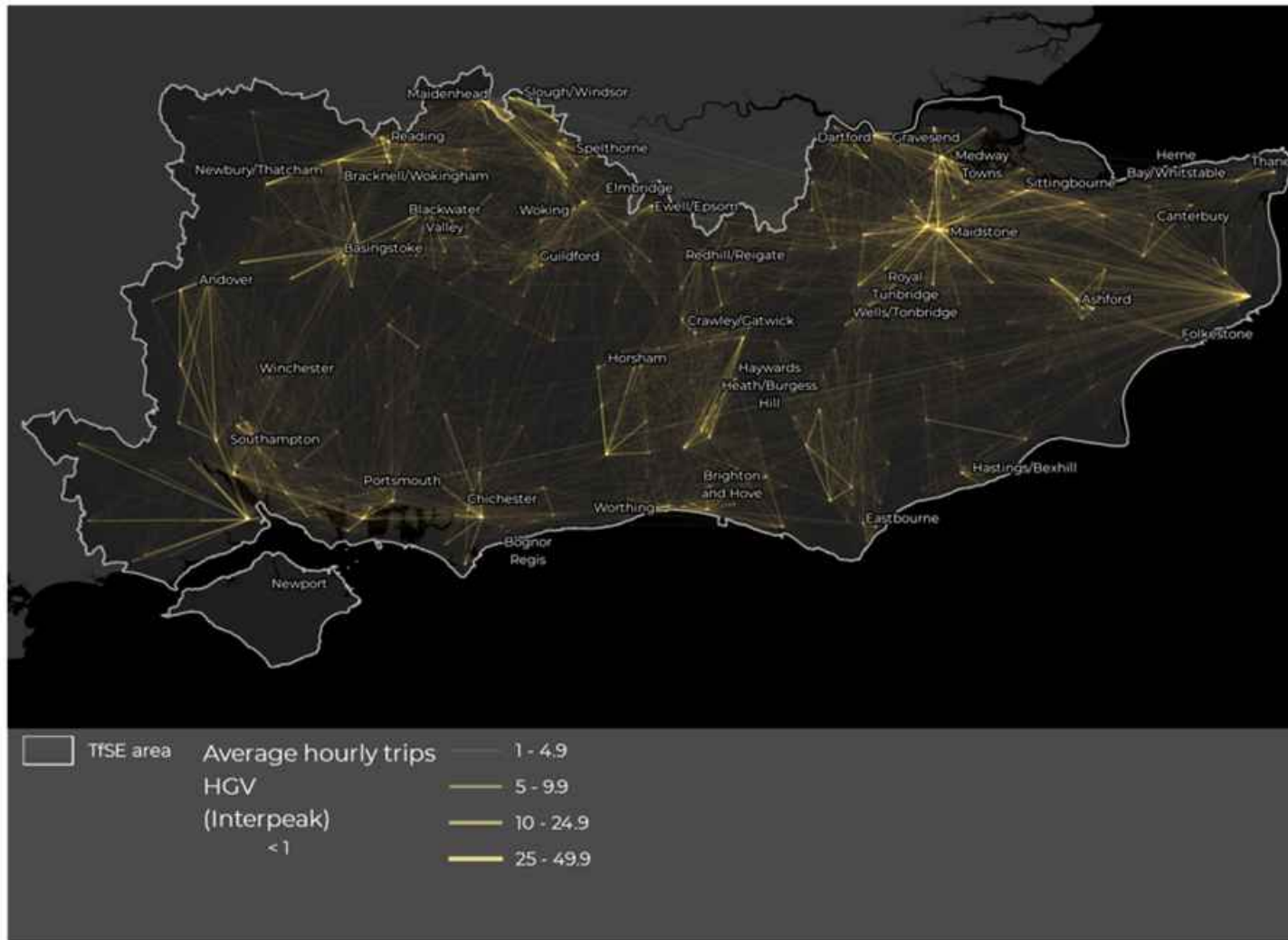


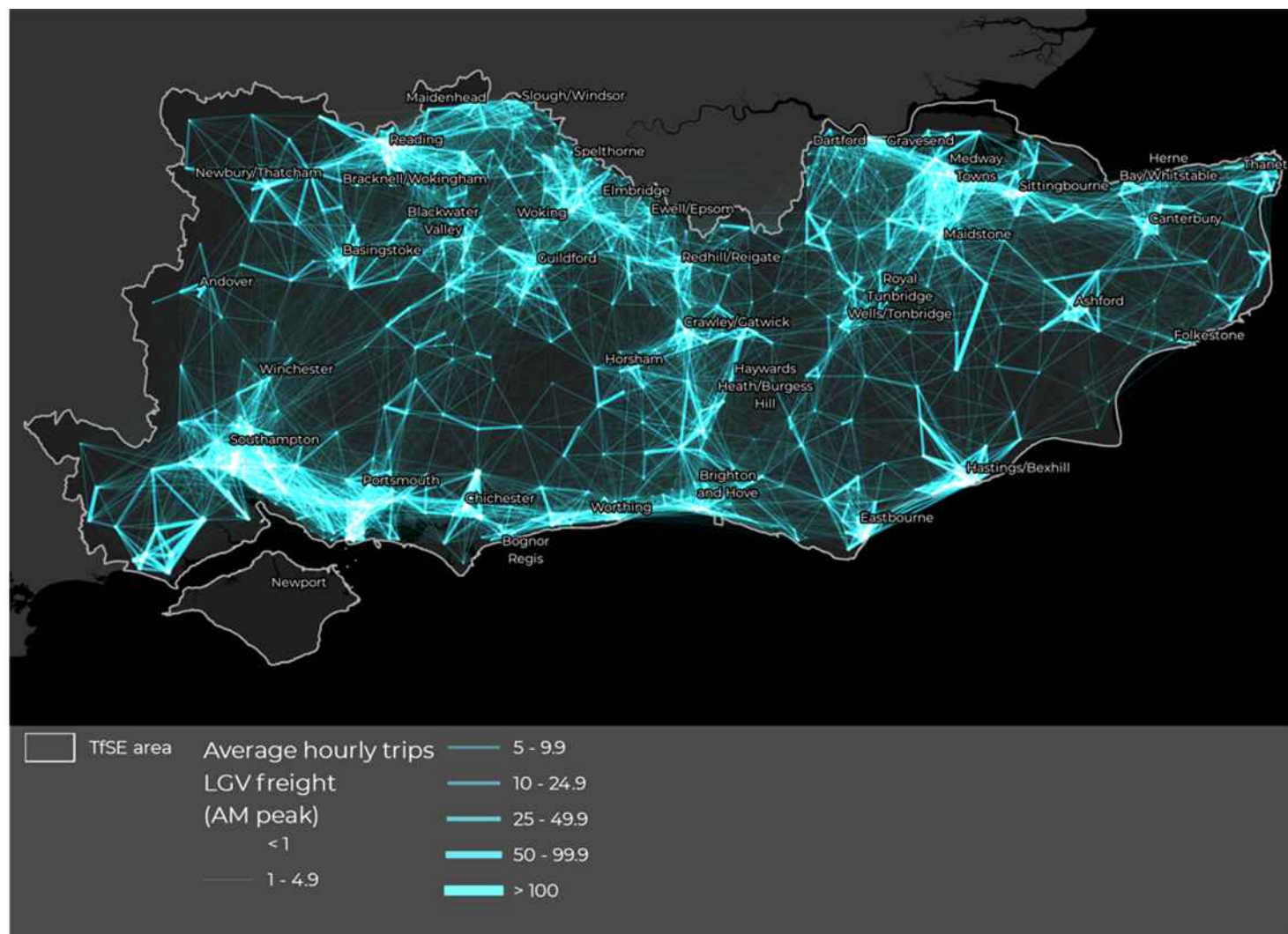
## MSOA HGV PM Peak



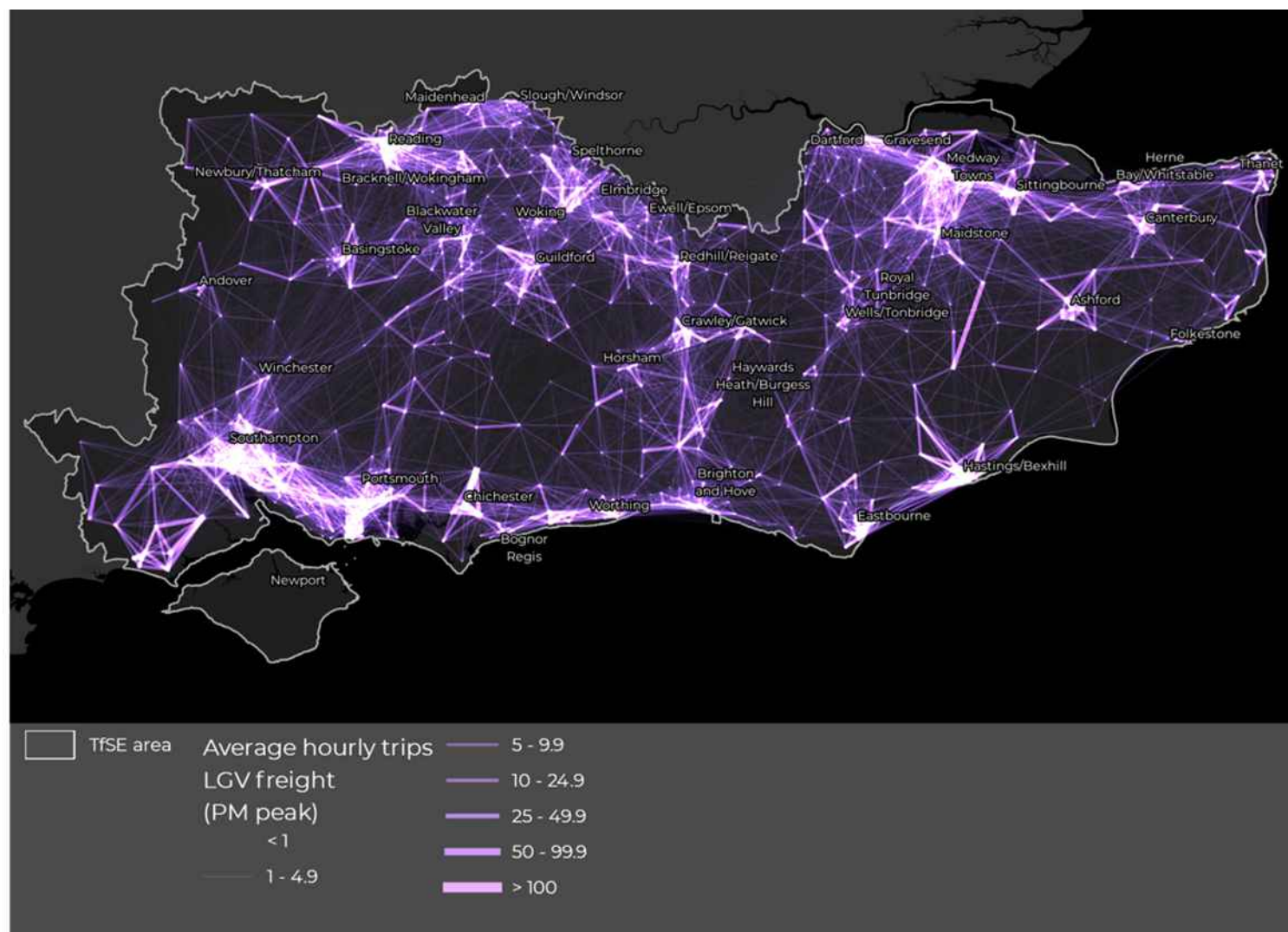


## MSOA HGV Inter Peak

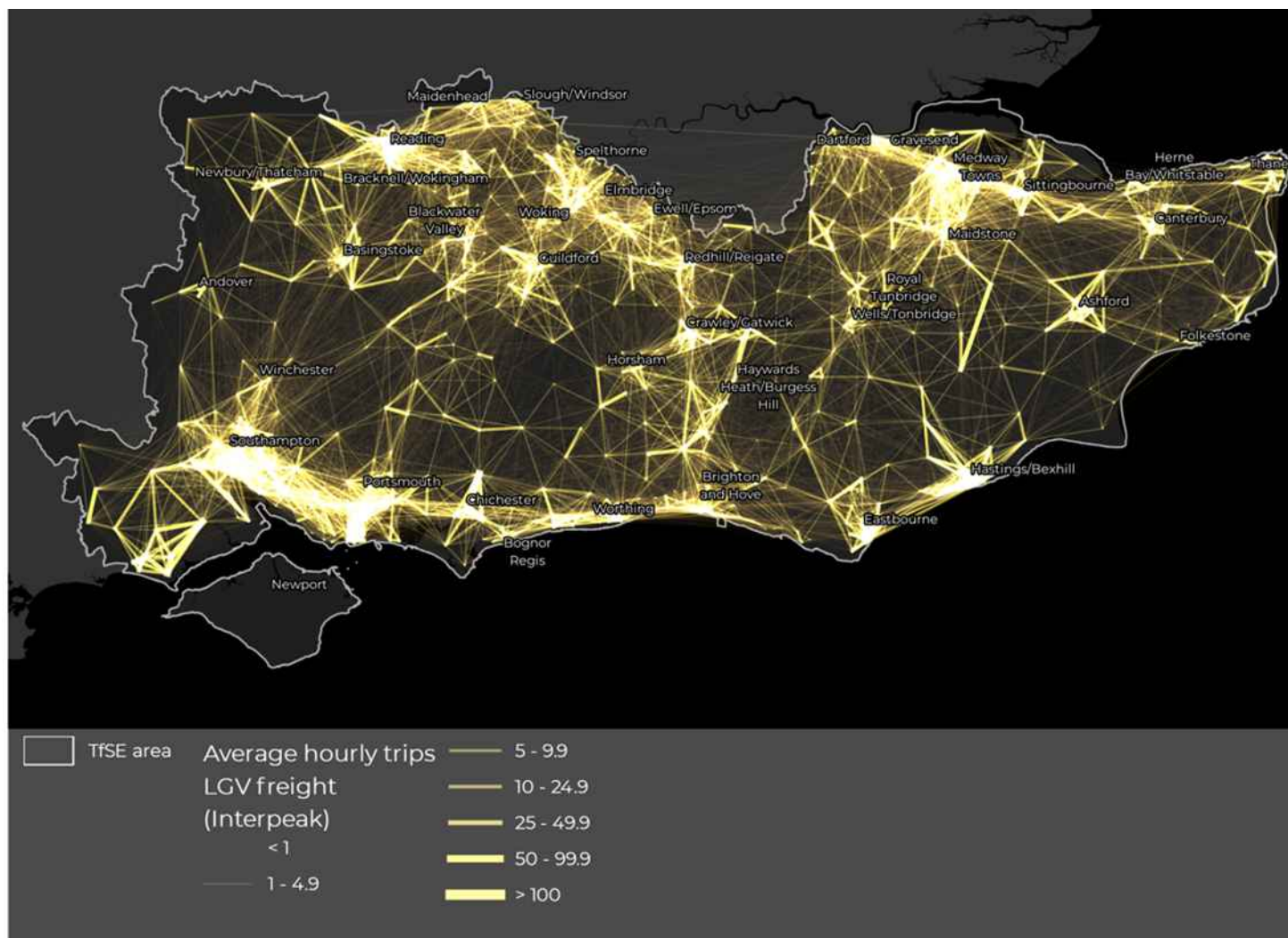






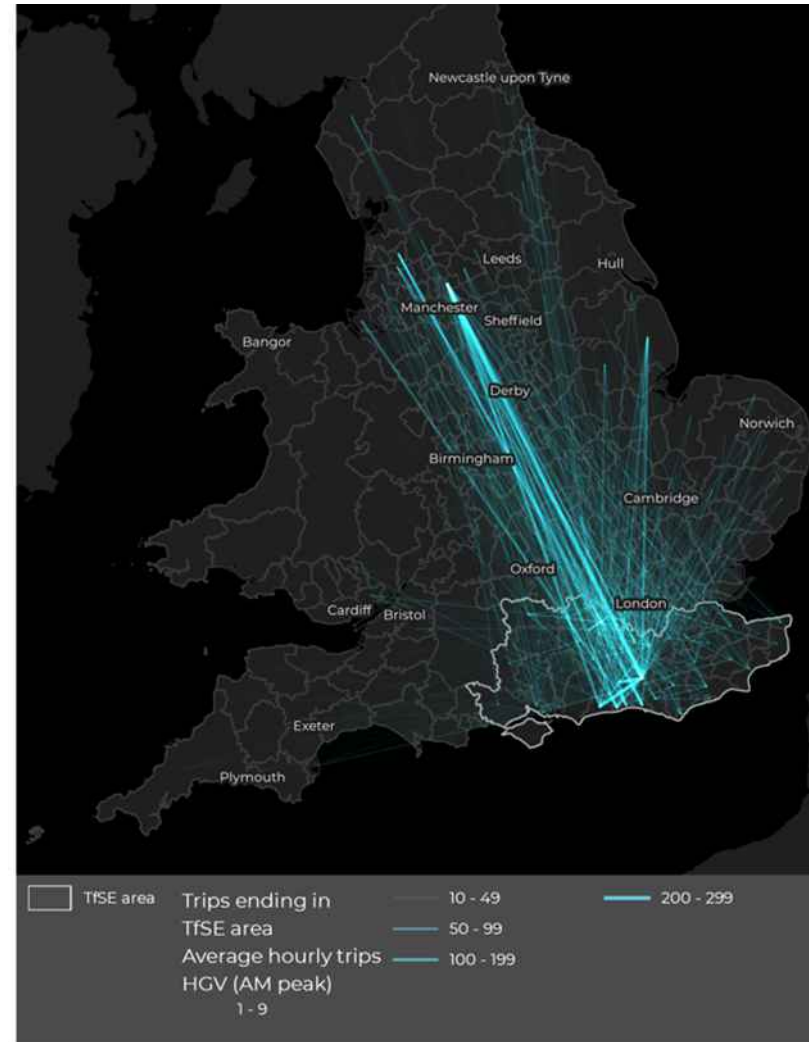
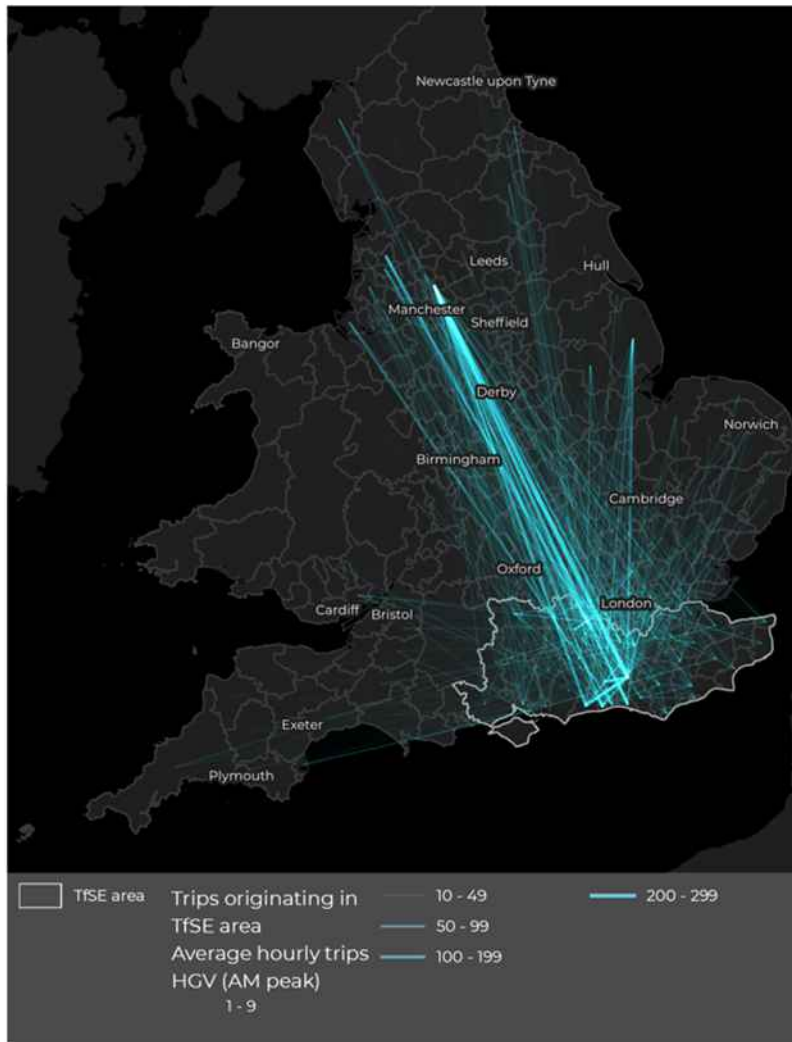


## MSOA LGV Inter Peak

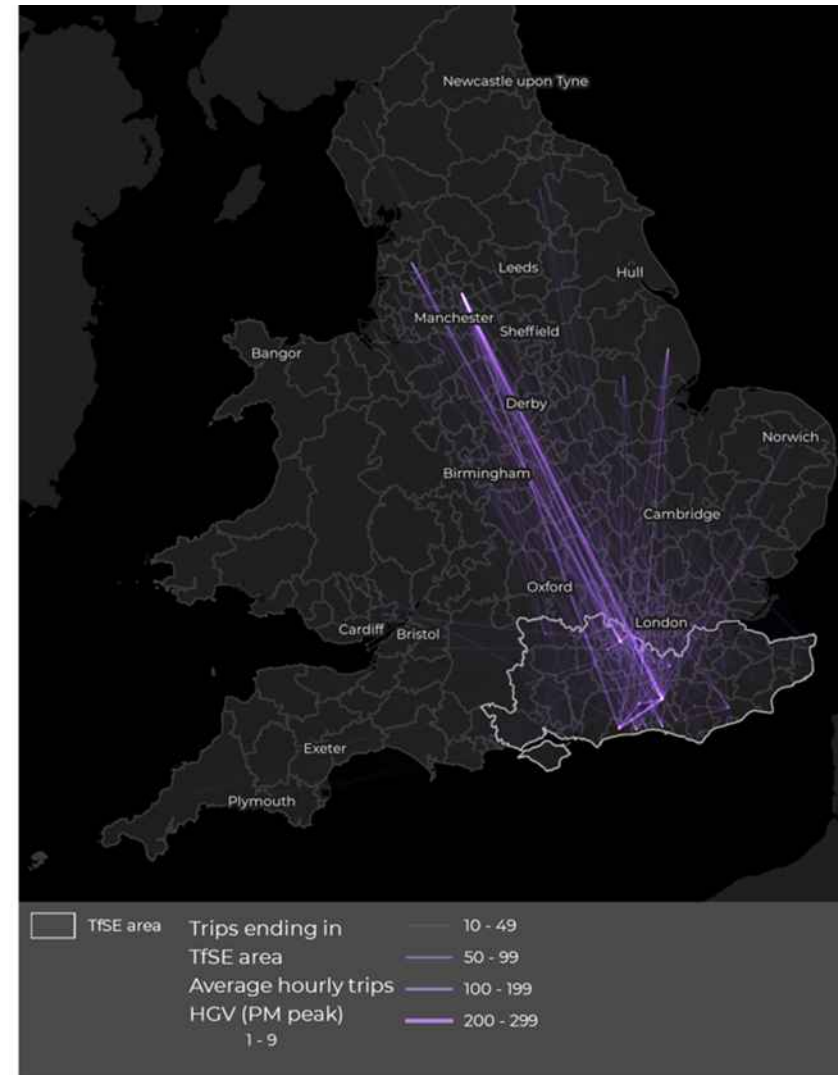
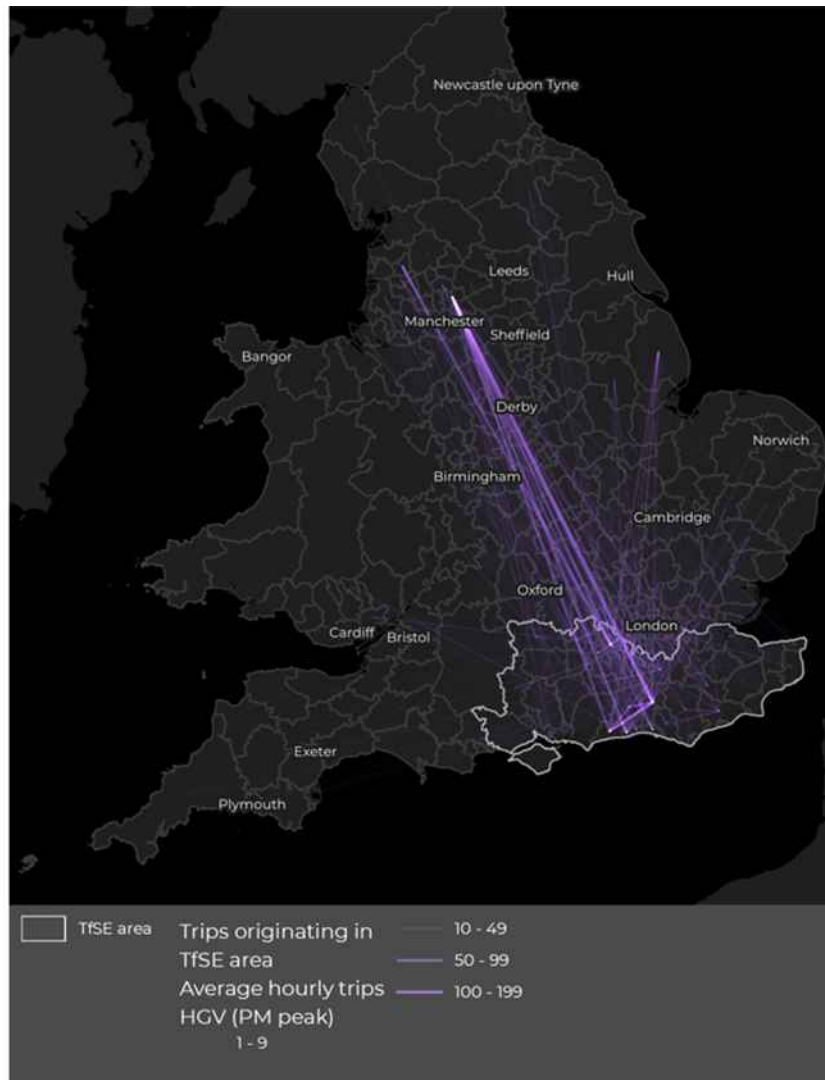




## LAD HGV AM Peak Origin Flows (Left) and AM Peak Destination Flows (Right)



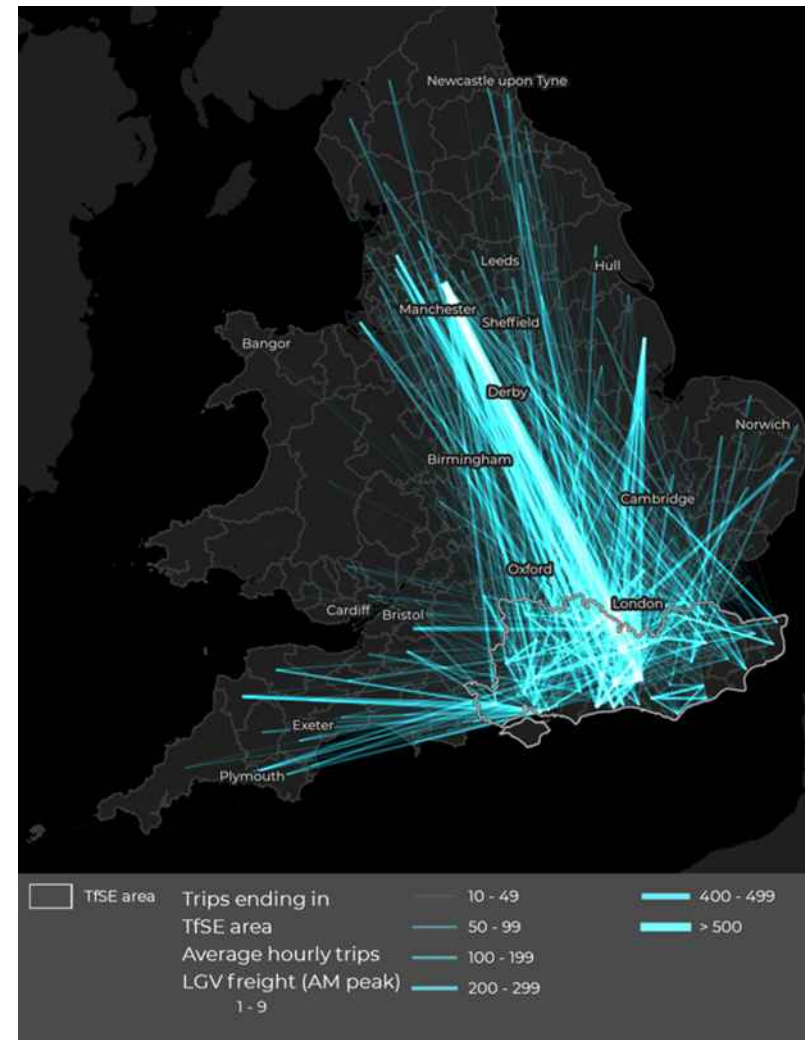
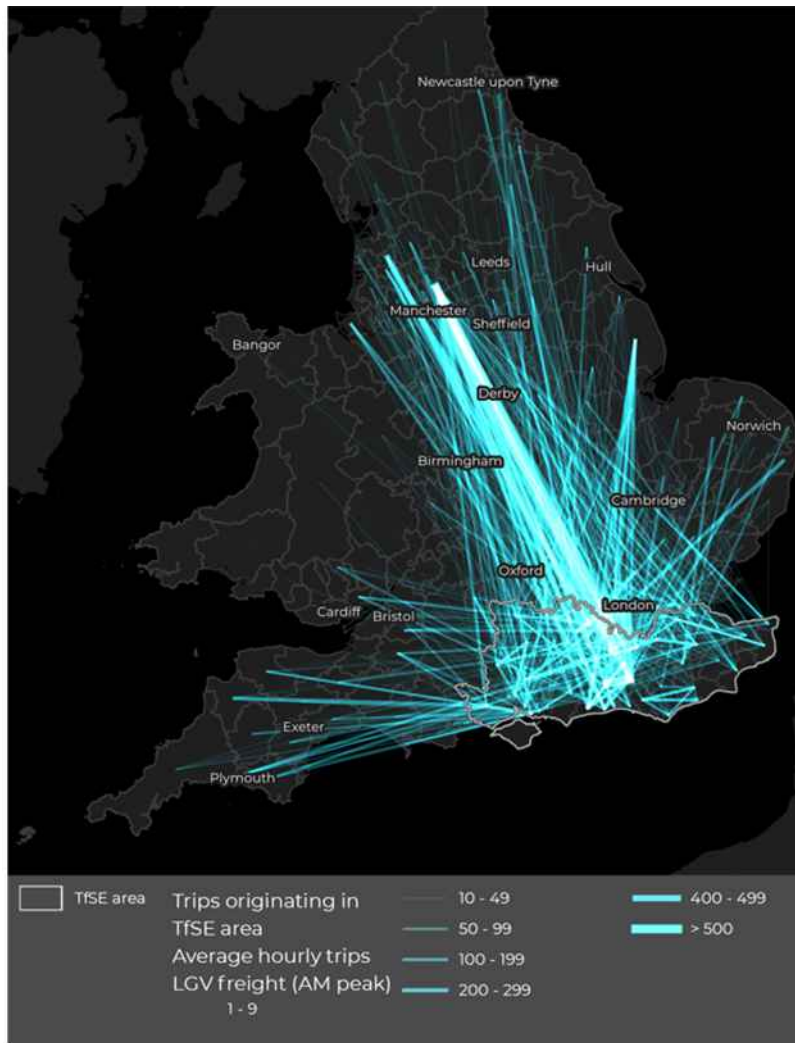
## LAD HGV PM Peak Origin Flows (Left) and PM Peak Destination Flows (Right)



## LAD HGV Inter Peak Origin Flows (Left) and Inter Peak Destination Flows (Right)

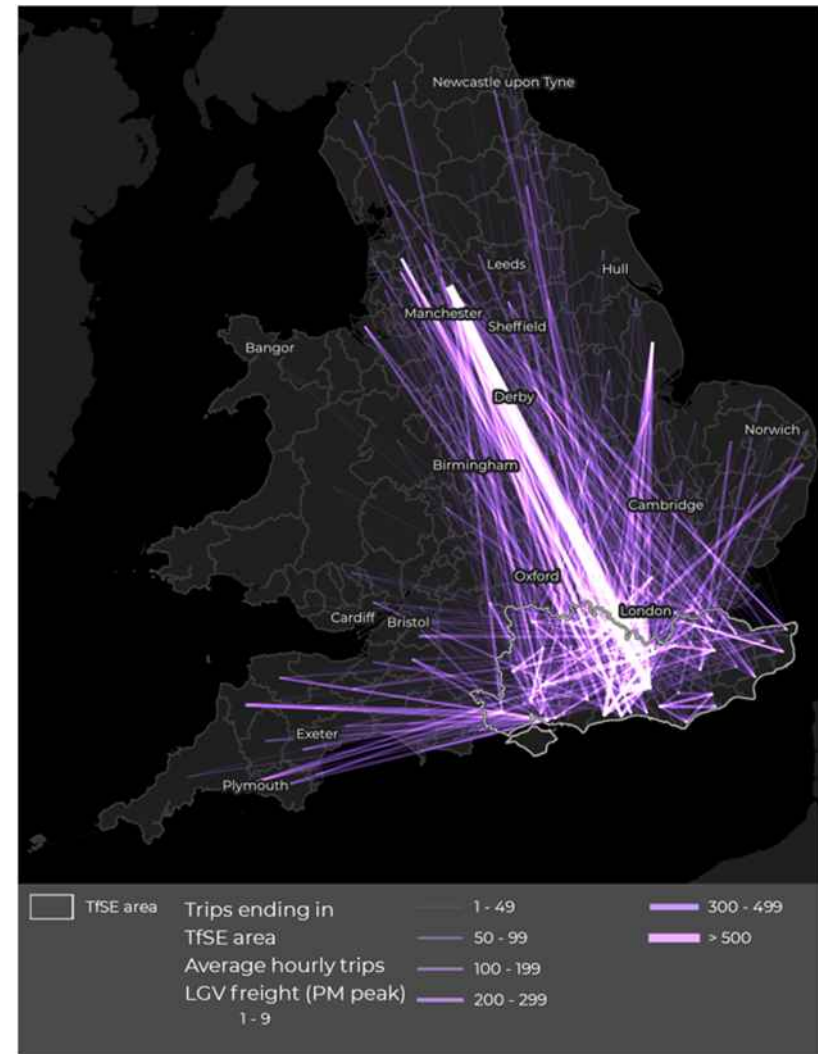
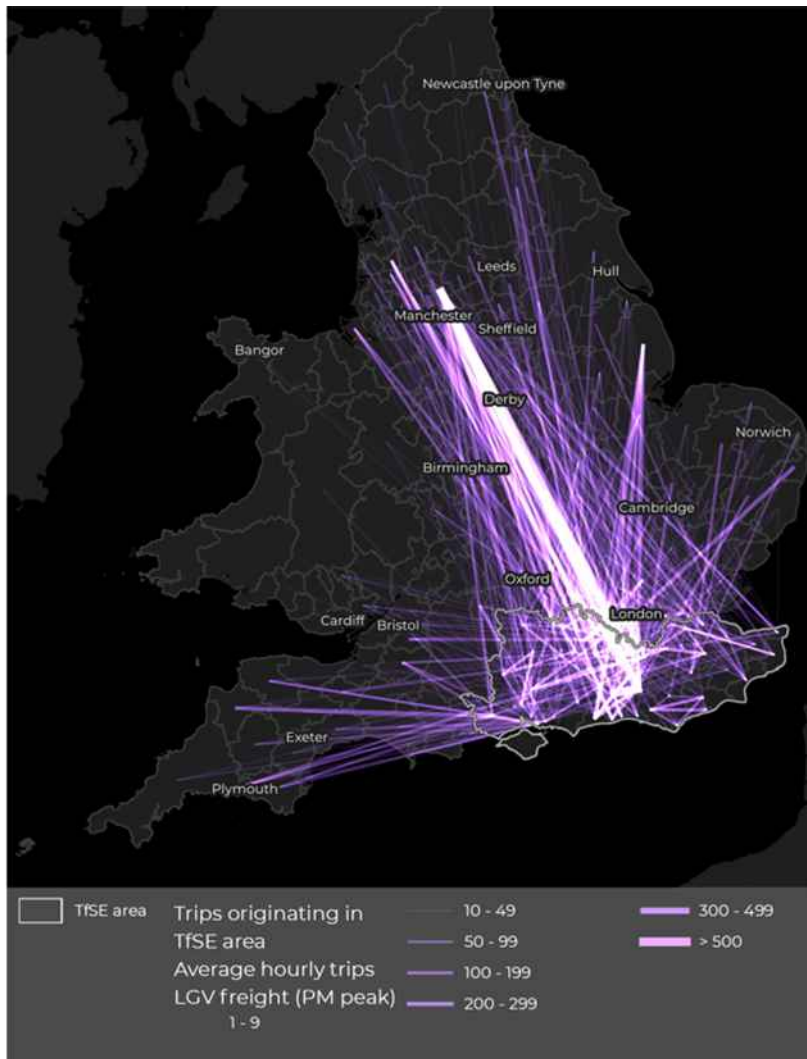


## LAD LGV AM Peak Origin Flows (Left) and AM Peak Destination Flows (Right)

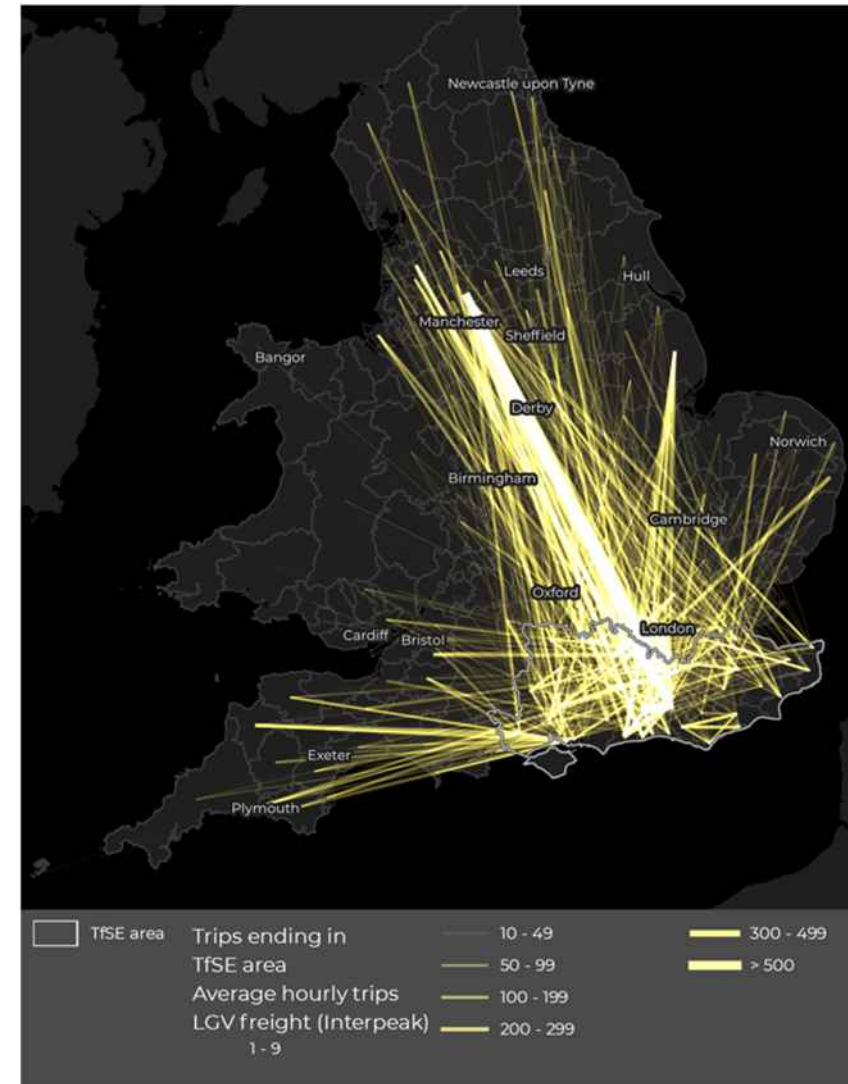




## LAD LGV PM Peak Origin Flows (Left) and PM Peak Destination Flows (Right)



## LAD LGV Inter Peak Origin Flows (Left) and Inter Peak Destination Flows (Right)







Kings Orchard  
1 Queen Street  
Bristol  
BS2 0HQ

**wsp.com**

PUBLIC