TRANSPORTEAST

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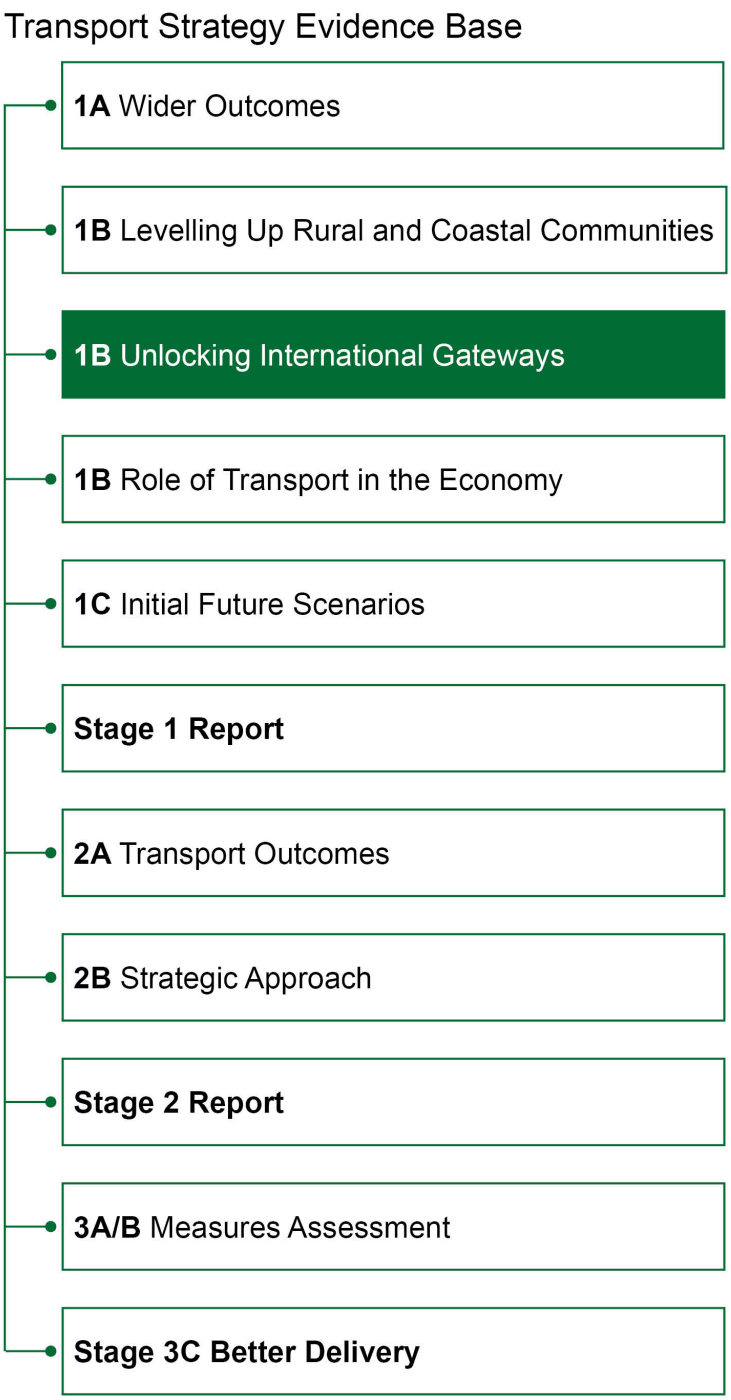
Transport East
Transport Strategy

Unlocking International Gateways
November 2021

Transport Strategy Evidence Base



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Executive Summary

Transport East has a vision for a thriving economy for the East, with fast, reliable, and resilient transport infrastructure driving forward a future of inclusive and sustainable growth for decades to come. Over the next 30 years Transport East wants to transform the region's transport connections to help drive long term economic growth. A Transport Strategy for the region will be developed to take the region to 2050. This Deep Dive topic will address an understanding of the key elements of international gateways, focusing specifically upon the economic significance of global gateways in the region, their current function, vision for expansion and challenges for the future. A review of each gateway was undertaken to understand their function, output, connectivity and input to the national and regional economy. Evidence and data gathering focused on gathering detail based upon port statistics, air freight and passenger statistics, as well as anecdotal evidence on port connectivity, opportunities and challenges.

In developing this evidence base, engagement with each airport (London Stansted, London Southend and Norwich Airports) as well as the ports and representatives at a Ports Roundtable session or one-to-one meetings held in February 2021 have been undertaken to obtain views on what 'unlocking' means to each gateway. Information gained through these sessions has informed this report.

National significance of gateways

Nationally international gateways are of huge significance, responsible for the handling of all goods crossing borders, 95% of which are via ports and 1% via the air. They are also integral to the facilitation of tourism, transferring passengers into and out of the country, boosting the economy.

The UK port sector is one of the largest in Europe, handling 98% of the UK trade tonnage in 2018, connecting people and markets, and a key driver in attracting inward investment. Ports support in excess of 101,000 jobs and in 2015 directly contributed £7.6 billion in GVA to the economy (i.e. GVA directly attributed to ports).

Felixstowe alone carried £44.5 billion of imports in 2014, 20% of the UK total.

For airports, nationally, air freight carried £181 billion of imports and exports in 2017, and air freight services directly contributed £7.2 billion to the economy (i.e. air freight services whether in airports or elsewhere).

Passengers travelling through airports bought £19.6 billion in benefits to the UK economy, with aviation sector directly contributing £22 billion according to Oxford Economics in 2014, supporting 353,000 jobs directly.

Regional significance of gateways

The East of England is a key region for international trade, with ports located close to the main shipping lanes, access to the largest concentration of offshore wind farms globally as well as access to offshore oil and gas, as well as long-standing connections with London and the Midlands.

There are three international airports, five major ports, six regional ports and up to nine wharves across the region, with strong trading links with the EU. The exports generated by these trading links particularly in Norfolk and Suffolk are higher than average compared with the average for other regions. Despite this the region has lower than average export value per job based upon smaller business headcount and lower value exports dominated by agri-products.

The region has the largest share of employment in shipping in the England, directly supporting 6,300 jobs in 2015, with operations contributing £540 million in GVA. The East of England in 2018 had the third largest number of exporters of goods and services, exporting the third highest value of services compared to all other regions in the England, generated by professional services, finance and information communication. Import value is generated by travel and professional services across the region.

Airports drive tourism, increasing the connectivity and attractiveness of the region. They also employ in excess of 20,000 people directly, with a value added per worker of £56,000. Air freight handled through the airports in the region contributes £8.1billion to the region, particularly supporting pharmaceuticals, computer/electronics and transport equipment sectors.

Port gateway reviews

There are twelve ports in the Transport East region, five of which are classed as major ports by the Department for Transport. The tonnage handled at each of these major ports in 2019 is shown in the following table (in millions of tonnes).

Table ES 1: major port freight tonnage in 2019 (in millions of tonnes)

Port	Container freight (LoLo)	Roll-on Roll-off freight (RoRo)	Dry Bulk freight	Liquid Bulk freight
London Ports*	14.93	7.3	15.1	14.6
Felixstowe	21.74	3.58		
Harwich	0.1	3.66	0.06	0.3
Ipswich			2.0	0.1

** It should be noted that for this analysis London ports of London Gateway, Tilbury, Purfleet and Dartford & Dagenham are combined These ports combined are ranked as 17th in the EUs top 20 ports handling containers in 2018 and processes an estimated 18% of the total tonnage handled at England's ports.*

The Port of London was Britain's busiest port during pandemic handling 47.4m tonnes in 2020.

Each port has been reviewed for its operational capability, current freight handling and visions for growth:

- London Gateway is the most globally connected port in the UK with connections to 66 countries and 130 ports globally. The port is the fastest growing deep-sea container port in the UK. It has a dedicated 775m long rail terminal handling over 40 trains per week. The adjacent logistics park is a 9.25 million square foot site ready for the development of warehouses and distribution facilities. It is currently over 30% contracted with construction underway for customers like DHL.
- London Gateway currently has three berths and is considering a fourth berth as a result of increasing volumes. This would mean the port having a capacity of over 2 million TEU and in long term once fully built over 3.5 million TEU.
- Tilbury is the largest multipurpose port in the South East of England and the UK's fastest growing port. It acts as a national export hub with high-value industrial clusters in its vicinity. It is the only UK port with facilities for deep-sea, European and short-sea shipping, with lifting capacity for various sectors. There is an onsite rail terminal with three rail heads offering connections directly with London. The port handles passenger movements with a dedicated cruise terminal, the closest to London utilised the River Thames for passenger ferry and freight barging. Tilbury2 satellite port has recently been completed with a dedicated aggregate depot, accommodation of RoRo freight, and access to the rail terminal.
- The Port of London Wharves in Thurrock between Purfleet and Tilbury handle a diverse array of cargoes, supporting logistics and manufacturing. Containerised cargo is processed at Purfleet, with many other wharves facilitating the delivery of aggregates and petroleum. Purfleet freight terminal is the closest RoRo port to London handling lorry trailers, containers and automotive and commercial vehicles. There are four railway sidings at the port connecting with the line to Tilbury.
- Felixstowe is the largest and busiest container port in the UK, one of the largest in Europe (9th in top 20) and ranked 32nd globally based upon cargo throughput. Felixstowe also includes an important ferry RoRo operation. The port has benefitted from various expansion projects, developing the port to 9 deep-sea berths. The port has advantage over other UK container terminals given vessels do not need to deviate far from the main global and European shipping lanes to access the port. Felixstowe has the country's largest intermodal rail freight terminal, with 28% of UK container freight transported by rail, with future growth intending to increase freight trains from the port. The port has an associated logistics park with direct access to the port and the A14 strategic road route.
- Harwich handles freight and passenger movements with the focus being the ferry service to the Hook of Holland, split approximately 50/50 between accompanied and unaccompanied trailers, making it one of the UK's most important ferry terminals. The port has four berths with operational land and parking for in excess of 1,000 trailers. The port has acted as the construction base for Gunfleet Sands, Great Gabbard and

London Array offshore wind projects and has supported the mobilisation and demobilisation operations for offshore oil and gas in the Southern North Sea. The port has unveiled plans to increase the depth of Harwich Harbour, to accommodate larger freight and passenger vessels, with an intention to develop an international freight terminal to accommodate future growth.

- Ipswich is also an important regional Port in supporting the agriculture, construction, food sector and industrial minerals. Expansion focuses on warehousing, storage and increasing the range of value added services as well as support to NSIP projects such as for the Sizewell C proposal and helping to achieve the government target of delivering 40GW of installed offshore wind capacity by 2030.
- King's Lynn is the preferred Norfolk port for forest products, Agri bulk, manufacturing and recyclable sectors, with one dedicated and one agribulk common user silo complex. Future investment includes the purchase of a further crane and additional equipment to optimise and further increase capacity.
- Lowestoft has close links with the offshore energy sector, having the capability and skill to handle a wide range of cargo. The port also handles dry bulk goods with storage and warehousing space. The port has a masterplan to 2050 including development of quay space, new storage and infrastructure, and development of facilities to support the renewables sector.
- Great Yarmouth handles dry bulk cargo and automotive products, as well as serving the offshore energy industry. The port has the shortest North Sea crossing between Great Britain and continental Europe. Land is available for future expansion or the development of integrated port logistics/ storage.
- Mistley port handles dry bulk goods, specialising in coastal and short sea shipping supporting the brewing, farming and construction sectors. It has off-dock storage and silo storage. There are three hectares of land to the east of the quay safeguarded for port expansion.
- Brightlingsea is a mixed leisure and commercial port handling dry bulk grain, Agri bulk and livestock. It is also well placed to support the development of the Gunfleet Sands wind farm.
- Baltic Wharf port processes general cargo, forest and steel products, processing only inwards freight. The port has storage facility and a dedicated timber treatment plant.

The nature of international freight

Freight is broken down by type based upon how it is transported, including lift-on-lift-off cargo (LoLo) (broadly containerised goods), roll-on-roll-off cargo (RoRo) (accompanied and unaccompanied HGV freight), and bulk goods. Collectively across all the major ports in the region, most cargo types are handled, showcasing the range of skills and operations in the East of England.

Trade generally is forecast to continue to grow and so the continued expansion of capacity is essential, as well as an opportunity to grow integrated port-side logistics. This will increase capability at the ports, increase capacity and drive inwards investment to the region. Freeports tie into this with the potential to expand storage and manufacturing, with a greater emphasis on port-side logistics. The East of England region is the only part of the UK to have secured two of the eight Freeports awarded by HMG: Freeport East and Thames Freeport.

RoRo traffic through the region's ports is mainly unaccompanied trailers (where the trailer is pulled on to the ferry by a tug unit which then stays at the port). There is a clear trend nationally of growing market share of unaccompanied RoRo with a fall in share of accompanied RoRo on the Dover Strait / Channel Tunnel. An example of this is offshore wind materials which are often transported by RoRo and processed at regional ports, as a result regional ports are potentially well placed for any prospect of future expansion of this important and growing sector for the region and the UK.

Liquid bulk goods are dominated by petroleum products through terminals on the Thames Estuary.

Dry bulk is dominated by aggregates, steel, agricultural goods and forestry products. Inland transportation of these goods is generally over shorter distances than container and RoRo, having a significant impact providing materials for local and regional economies.

Each port handling dry bulk goods has a different focus in the region, with Tilbury having a dedicated aggregate terminal, and handling 16% of the UKs forestry products, Mistley supporting the brewing industry with barley, King's Lynn the preferred Norfolk port for forestry products & Agri bulk, Lowestoft handling grain and cement, and Brightlingsea handling Agri bulk and livestock.

The regional ports complement the larger ports, with the ability to handle smaller vessels that are less economically viable for larger ports, they have fewer overheads allowing for competitive pricing. They are also well located to serve their end users such as the agriculture sector or construction industry.

Across all dry bulk ports in the region, there is a strong reliance upon trade with the European Union, opening them up to trade vulnerability. This vulnerability is also driven by a forecast short-term decline in dry bulk goods to 2022. Dry bulk goods are also vulnerable to economic fluctuations, with strong links with major construction and government investment.

Port passenger movements

Cruises operate from Tilbury and Harwich, with direct water ferry services transferring passengers/tourists to the city. There is the opportunity to leverage waterways for passenger movements around the region to boost tourism and reduce vehicle miles/hours.

Harwich port has the only international passenger ferry in the region, with a daily direct connection to the Hook of Holland. This route is in the top five of international short sea routes in the UK. Domestic foot ferry services for leisure and access to ports operate at Felixstowe/Harwich and Brightlingsea.

Access to ports

The reliability of the road network is essential for ports and freight movements, with most of the freight being transported by road.

For major ports access to the strategic road network with the need to connect with key goods and manufacturing hubs across the country. On the other hand, regional ports are more reliant upon the local road network, with freight moving shorter distances.

One of the greatest constraints for freight on the road network is congestion, affecting journey time reliability and route resiliency, with most routes having no viable alternative for HGVs during periods of serious congestion such as road closures. This has a knock-on effect on the local road network which is often not suitable for large volumes of diverted HGVs

Rail transport of freight plays a particularly important role for longer distance transport, particularly of containers. For construction materials rail freight often operates over shorter distances, for example from London wharves to terminals in Central London.

London Gateway, Tilbury, Purfleet, Felixstowe, and Ipswich ports have rail terminals, Harwich has a rail freight terminal which is not currently operational.

Rail has the potential to remove HGVs from the road network, making it a serious option for accommodating growth and supporting the national decarbonisation initiatives. Despite this most rail routes from ports in the region are at or nearing capacity. There have been some improvements along these lines to increase capacity in recent years, although additional improvements and electrification of these are much needed to improve capacity and efficiency, most particularly from Felixstowe, and London Gateway.

Coastal shipping (i.e. movement between UK mainland ports) and inland waterways are viable, saving lorry miles, but underused in the UK. The River Thames dominates inland waterway freight movements in the UK, which is utilised by the ports of Tilbury, Purfleet and the Port of London Wharves.

Felixstowe and London Gateway have already established coastal shipping routes to the Tyne and Scotland. Inland waterways movement of freight is likely to increase, with viable opportunities in the region, due to the increasingly attractive environmental benefits and reduced restriction from congestion on the roads.

Airport gateway reviews

London Stansted Airport is the fastest growing airport in the UK and one of the top five growing in the European Union. The airport has established expansion plans, including a new terminal building and cargo facilities.

London Southend Airport has been ranked London's best airport every year since 2013, with established links with Europe.

Norwich Airport has direct links with international airport hubs in Europe, drawing from a local catchment area, using the airport as an alternative to accessing larger hub airports in the UK, and furthermore serves the North Sea energy industry.

All these airports have been negatively affected due to the COVID-19 pandemic and mass grounding of aircraft. This has likely had a short-term effect on expansion plans with uncertainty over timing of projected growth estimates.

Air freight context

Despite the region handing over £8bn of air freight and with potential to expand (subject to the right conditions) London Heathrow dominates air freight in the UK due to the vast array of destinations served by 'belly hold' services (i.e. on passenger services).

Regional airports still play an important role, particularly for transport of packages and mail by operators such as DPD and UPS. The benefits of uncongested airspace and surrounding developable land make the region's airports potentially attractive.

London Stansted and Norwich airports both handle air freight, with London Stansted the third largest airport in the UK for air freight tonnage handled, making it a significant component in the airports' business operations. Southend Airport does not handle freight, except small volumes from passenger aircraft belly hold, but does have future capability.

Air freight generally handles expensive cargoes and is vulnerable to price fluctuations particularly with fuel costs. There are expected changes in customs procedures and agreements to air services post-Brexit, leaving the South East vulnerable to air freight reallocation to other regions of the UK.

Airport passenger movements

Passenger movement is the predominant focus for all airports in the East of England. All these airports are experiencing growth year on year, with ambitions to continue growing into the future.

Each of these airports have a dominance of low-cost airlines, with a focus on short-haul services. The highest proportion of passenger trips at all airports are to Western European – EU countries. Although, with the dominance of EU destinations these airports could be left vulnerable post- Brexit, if there are changes in passenger behaviours and destination choice. This could also be induced by the COVID-19 pandemic. Stansted Airport would be well placed to capitalise on this change in passenger behaviours with the expansion of long-haul operations, due to 50% of all UK searches for flight destinations in China, USA, Japan and India originating within the Stansted catchment area. It is likely that this catchment would overlap with Southend also offering expansion opportunities.

London Stansted and Southend airports both draw from a broadly London centric catchment, with London Southend drawing a greater proportion of passengers from the East of England compared with Stansted and Norwich Airports, drawing from its local catchment, and are often used as an international access or transit hubs to larger international airport hubs in Western Europe, to access the rest of the world. This is as an alternative to travelling to one of the UKs larger hub airports, offering more efficient journey time. Norwich Airport also benefits from serving offshore oil rigs, although potentially vulnerable to oil decline. There are opportunities to serve wind farm operations and access to hub connection which provides access to over 500 world wide destinations as well as a number of European leisure destinations

Access to airports

Catchment area for London Southend and Stansted Airports are predominantly from London and South East, whilst Norwich Airport has a more local catchment within 60 minutes' drive. Connectivity is reliant upon rail line coverage and access to the strategic road network.

There are significant highway network pinch points and weaknesses identified for accesses to all airports. While there are some schemes in development or complete these will need reviewing due to the projected increasing passenger numbers. The rail network is broadly London centric, with limited coverage from airports across the East region, connectivity east-west almost non-existent and limited heading north.

With this in mind, there is a need to improve the reliability and connectivity across the region, to support airport demand, but also drive tourism within the region rather than passengers heading straight into London.

There is also an issue with staff accessibility for early morning shifts with no access to public transport during the early hours and limited public transport connectivity within the locality of the airport throughout the day.

This connectivity needs to be improved to take pressure off the road network and drive the decarbonisation agenda.

Opportunities and challenges for international gateways

Brexit will have a fundamental impact on how freight moves through international gateways, most notably through more stringent customs checks. There are more complex interactions with supply chain and storage which show fragility to any changes in freight movements.

This increases the importance of having resilient road routes and adequate rail freight capacity, as well as providing an opportunity to develop logistics services closer to the ports.

- Accompanied RoRo freight affected by border checks, long wait times, missed ferry slots and unreliability of deliveries – potentially making unaccompanied freight less attractive in the UK
  - Combined effects with COVID-19 and additional testing and isolation (as seen in Dover in 2020)
  - Need for investment in facilities and HGV parking to provide for driver wellbeing
- Uncertainty in the funding for major projects post-Brexit inducing vulnerability for dry bulk goods.
- Passenger movements likely to be broadly unaffected following Brexit withdrawal deal in 2020 allowing broadly visa free tourism between the UK and EU.

The COVID-19 pandemic has posed one of the most significant challenges to freight and passenger movements in recent history with unknown long-term effects:

- Dramatic decline in airport passenger movements with mass aircraft grounding, international border closures and cruise cancellations
- Backlog of container cargoes disrupting major shipping routes resulting in larger volumes, lack of storage or container shortages
  - Large volumes acting as a stress test for future growth.

The national decarbonisation agenda is a key consideration for ports and airports, with a progression towards NetZero. Shipping has lower emissions than air freight, although the supply chain is reliant upon HGV road movements. Strong emphasis needs to be put upon decarbonising the supply chain, with ports and airports in the region leading the way.

- Integrated port logistics could reduce vehicle road miles
- Increase percentage of freight moved by rail could reduce road miles
- Reducing the number of surface access movements made by road & decarbonise airport operations to reduce the volume of emissions
- Leveraging aircraft technology and utilising future fuels to reduce emissions.
- Ensuring that ports are prepared to receive and possibly refuel battery or hydrogen powered HGVs

Recommendations to be taken forward to the next stage of Transport Strategy development

- Increase rail capacity across the region, specifically for links between Felixstowe and the Midlands, and London Gateway/Tilbury through London to the Midlands, to support forecast modal shift from road to rail and future port growth.
- Set standards for journey time, resilience, and diversionary routes for road and rail serving ports on a corridor basis. Monitor achievement of these standards and plan investments and mitigations on the Major Road Network, Strategic Road Network and Rail Network.
- Improve capacity for rail services from Stansted to London and identify and support options to improve connectivity by rail to airports from across the region;
- Improve the availability of high-quality parking for trucks along port access routes.
- Continued discussion with National Rail for the electrification of the rail line between Felixstowe and Ely junction and the short connection to London Gateway.
- Explore options for increased coastal shipping and use of the Thames to remove pressures on road and rail caused by freight
- Explore the improvement in inter-regional passenger connectivity of public transport to airports for example East/West Rail provision. It is also important to ensure existing routes are strengthened for example the

West Anglia Main Line improvements for example four track provision between Broxbourne and Tottenham Hale enabling the extension of Crossrail 2 (if developed) to Stansted.

- Support opportunities to develop land around ports for logistics, particularly for sites which are served by rail.
- Consider how ports are likely to grow in line with projections, the associated logistics, manufacturing infrastructure and how this will impact upon the transport network.
- Explore mode shift opportunities for both freight and passenger movements, reducing car/HGV reliance, in line with national NetZero targets.
- Continue to build on sustainable surface access improvements for Stansted
- Explore opportunities with airport operators to decarbonise not only surface access to airports but also the air side operations of the airports such as service vehicles. For example, London Stansted has a target to achieve net zero carbon by no later than 2038 with a transition to a fleet of ultra-low emission vehicles by 2030.
- With respect to airport travel planning and sustainable surface access the airports in the region all have sustainable travel plans of note is London Stansted which has a current Airport Travel Plan[1] with several targets as follows:
  - increase the number of companies signed up to the ATP to 90% by 2015;
  - undertake employee travel surveys in 2015, 2017 and 2019;
  - grow car sharing by 10% a year over the next 5 years; and
  - increase the awareness to over 90% of Airport Travelcard and Car Share Schemes over the
  - next 5 years.
- It is important to continue for Local Authorities and Transport East at a high level to monitor the performance of these travel plans and to build on and enhance the opportunities for sustainable mode access

[1] https://www.stanstedairport.com/about-us/development-plan/

1 Introduction

1.1 Introduction to the Transport Strategy

Transport East has a vision of a thriving economy for the East, with fast, reliable and resilient transport infrastructure driving forward a future of inclusive and sustainable growth for decades to come. Over the next 30 years Transport East wants to transform the region's transport connections to help drive long term economic growth.

The Transport East region is formed of three counties (Norfolk, Suffolk and Essex) and two unitary authorities (Southend-on-Sea and Thurrock). Norfolk Suffolk and Essex have two tiers of local governance and each county is divided into several districts and boroughs. Essex has the largest number of districts (12), followed by Norfolk (7) and Suffolk (5). Southend-on-Sea and Thurrock are unitary authorities with single tiers of local governance responsible for all local government functions within their administrative areas.

The development of the Transport Strategy to 2050 will comprise the following elements:

- **Stage 1** – understanding the role of transport and the potential for change
- **Stage 2** – developing an evidence driven strategic approach
- **Stage 3** – define a package of strategic measures and better ways to deliver

This will ultimately be accumulated into a single Transport Strategy for the Transport East Region to 2050.

1.2 Introduction to the Deep Dives

Transport East produced an evidence base in 2019[2], and published the Transport East Decarbonisation Report in November 2020[3]. There is a need to strengthen and complete this evidence base, to align with new and emerging policies and the post COVID-19 context. Investors in the region (e.g. government, private sector) will need to understand why future proposals will deliver the region's unique outcomes, and to do this there is a need to put forward a compelling case to seek the necessary funds to deliver the outcomes.

Transport East has highlighted three specific topics where more detail or deep dives (both generally and specifically) are required. These are:

- Our understanding of the role of transport in 'levelling up', particularly in re-energising our coast and supporting rural communities
- The role and opportunities for the transport system to support future economic growth, including COVID-19 recovery and longer-term economic goals
- Unlocking the potential of our international gateways to support the national economy (including the shift of freight from road to rail and other opportunities).

Each deep dive review sets out an evidenced baseline, identifying the opportunities and challenges, and the case for transport investment. These not only review the Transport East area, but also neighbouring areas in which policies, strategies or projects will impact on our area. These technical notes are supplemented with short infographic summary collateral material, for use on Transport East's website and in any future presentations.

This Deep Dive topic will address the third topic of unlocking the potential of international gateways. The review will explore the economic significance of the global gateways in the region, their current function, vision for expansion, and challenges or opportunities for future growth.

This study used a two-tier approach to review gateway function, output, connectivity and input to the regional/national economy:

[2] WSP (2019). Transport East – Regional Evidence Base. Available at: https://www.transporteast.org.uk/wp-content/uploads/Transport-East-Regional-Evidence-Base-3.pdf [accessed 2 February 2021]

[3] Transport East, 2020. Decarbonisation Evidence Base and Strategic Recommendations Report. Available at: https://www.transporteast.org.uk/wp-content/uploads/Transport-East-Decarbonisation-Evidence-Base-and-Strategic-Recommendations-Report_WEB.pdf [accessed 2 February 2021]

1 Evidence and Data Gathering: Focused on gathering detail based on port statistics, air freight and passenger statistics, as well as anecdotal evidence on port connectivity, key corridors and impact of Brexit/COVID-19.

2 Industry & Stakeholder Engagement: Detailed interviews with ports and airports, to understand industry's views on port, airport freight and passenger connectivity.

1.3 Wider Outcomes

As part of the development of its Transport Strategy, Transport East set out a series of wider outcomes that it was looking to achieve through the delivery of its Transport Strategy. These wider outcomes will be used to inform the 'WHY' of the transport strategy and aid in the testing of future transport scenarios. They will be used to set clear agreed outcomes supporting the planning and implementation of a successful transport strategy. The wider outcomes were derived through the collation of existing economic, social and environmental goals and outcomes that partners have already set out in Local Plans, Local Industrial Strategies and other documents. This exercise produced key words, phrases and challenges which enabled the creation of word clouds to provide a visual representation of distilled themes. These initial themes were discussed with key stakeholders through workshops. The following wider outcomes were agreed upon through an iterative process where emerging outcomes were shared, reviewed and updated.

The shortlisted themes were then moulded into a clear and actionable list of intended outcomes for the Transport Strategy:

- Addressing the causes and impacts of **climatic change** (decarbonisation, net zero, zero emissions, flooding, coastal erosion).
- Protecting and enhancing the **built and natural environment** – ensuring the region retains and enhances its varied and important landscape, heritage and biodiversity features.
- Promoting and supporting a **productive and diverse economy** - highlighting the sub region's role as a place to work, do business and transport goods efficiently to drive up regional productivity contribute to the wider UK economy (urban, rural and coastal centres, London, and International gateways).
- Supporting the **energy** sector, in particular, offshore wind, renewables, nuclear, alternative fuels and electrification.
- Focussing on **locally important growth areas** (rural, urban, and coastal) ensuring they grow sustainably and provide high quality, distinctive places to live, work and visit (heritage, culture, place, tourism, resilient high streets).
- Supporting **skills retention** and **inclusion** across the region with accessibility to education, training and employment opportunities e.g. through 'travel to learn' facilities.
- Promoting **active, healthy and safe** lifestyles (improved air quality, active travel and healthier populations).
- Seeing **digital connectivity** as a key enabler supporting all outcomes.

More information regarding the methodology and evidence behind the wider outcomes can be found in the Module 1a Wider Outcomes technical note.

1.4 Content of the Technical Note

The remainder of this Technical Note discusses the following sections in turn:

- **Section 2** – What is the significance of international gateways: focusing on the national and regional contribution of ports and airports.
- **Section 3** – Ports: a breakdown of each port in the region, their function, operating capability, growth potential and constraints, supported by a breakdown of freight and passenger movements. Accessibility of ports in the region is explored, reviewing opportunities and constraints for road, rail and water movement.
- **Section 4** – Airports: a breakdown of each airport in the region, their function, operating capability, growth potential and constraints, supported by a breakdown of passenger and freight movements. Accessibility of airports in the region is explored, reviewing opportunities and constraints for road, rail and water movement.
- **Section 5** - Engaging with our Partners
- **Section 6** - Summary & Concluding comments and what does this mean for the Transport Strategy?

2 What is the significance of international gateways?

2.1 National Significance of International Gateways

International gateways have a huge national significance, with the UK relying upon them to handle all goods which cross borders - 95% of annual tonnage handled by ports and 1% by air (40% of UK imports and exports by value[4]). With this reliance upon goods imports and exports, the connection of international gateways to the rest of the UK is essential to ensure fast, reliable and seamless distribution of goods. As well as having an importance for international trade, the Gateways also facilitate the tourism industry and business travel, transporting passengers into and out of the country.

The UK freight industry has been identified as 'one of the most efficient in the world, providing seamless transportation of goods into, out of and across the country'[5]. This in part is reflected in the value that the industry contributes to the UK economy.

HM Revenue and Customs (2019)[6] stated that overall, in 2019 the overall value of UK trade in goods exports and imports increased by 2.4% and 3.3% respectively compared to the previous year. Data from the DfT showed that in 2019 the total value of goods exported from the UK amounted to £254.7 billion (73% from England). Compared with the previous year there had been a decrease in the annual export value for all regions of England, with the exception of the East of England, East Midlands, London and North East.[7]

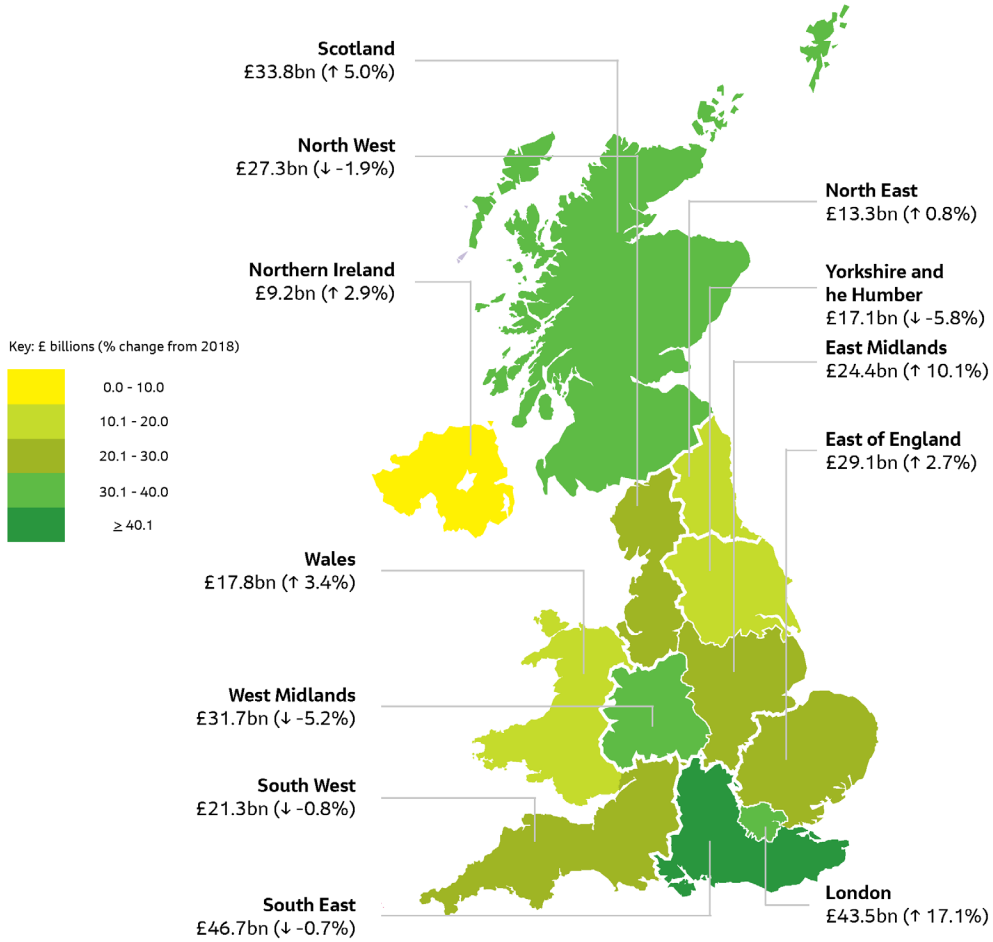

Figure 2.1: Value of goods exported by region of the UK, 2019 (% change on 2018)

[4] *https://logistics.org.uk/air*
[5] *Better Delivery: The challenge for freight*
[6] HM Revenue and customs 2019
[7] UK Trade in Numbers Pocketbook February 2021(publishing.service.gov.uk)

2.1.1 Ports

The UK port sector is one of the largest in Europe, handing 60 million international sea passenger journeys and 500 million tonnes of freight[8].. Major ports handled 98% of the total freight tonnage into the UK in 2018[9], being key in connecting people and markets, and attracting inward investment and keeping the UK globally competitive.

International freight tonnage has remained relatively stable across the past couple of decades, with an exception in 2008 where tonnage dipped[10]. Since 2009 there has been a reduction in the volume of bulk products (-15% bulk product, -27% liquid bulk), counterbalanced by an increase in containerised freight (+32%)[11]. This is in tonnage terms. Because containers are increasingly used to carry relatively light weight goods, Twenty-Foot Equivalent Units (TEU) for containers increased by 43%.

Container traffic is projected to increase by 32% (in TEU terms) by 2030 which is equivalent to an annual increase of 2%. This is driven by an increase in imports from the Far East, and likely to increase once the impact of Brexit is felt[12]. This growth is expected to remain dominant at the key ports of Felixstowe, London and Southampton.

In 2015 the ports industry directly contributed £22.6 billion in business turnover, £7.6 billion in GVA and supported 101,000 jobs. In the same year the industry contributed £1.5 billion in tax revenues to the economy and is estimated to have exported £9.1 billion of goods and services.

With the combination of port activities with industry supply chains and induced effects on expenditures, CEBR estimates that in 2015 the port industry helped to support a total of £23.8 billion of GVA, generating £2.15 in GVA in the wider UK economy from every £1 of directly contributed GVA by the ports industry.[13]

UK logistics sector has undergone rapid change with increased demand for online shopping and next day delivery. Includes a move towards port centric logistics which represents an alternative to inland depots and centrally located national distribution centres, allowing companies to streamline their supply chains and reducing their impact on the environment.

2.1.2 Airports

Based upon 2012 data more than 197 million passengers and two million tonnes of freight travelled to, from and within the UK via the air. There were more than 770,000 scheduled international flights departing the UK to over 500 different airports in 131 countries, and over 420,000 domestic flights between UK airports. The value of the benefit of these passengers from flying, in excess of their expenditure was worth £35.6 billion to the UK economy.[14]

Aviation contributes in excess of £22 billion directly to the UK economy (from air transport and aerospace manufacturing)[15],with indirect and wage-financed contribution to the economy can be further broken down to £16.7 billion and £12.9 billion respectively.[16] The sector directly supports 353,000 in manufacturing, aircraft maintenance and air freight, with indirect support of 419,000 jobs in goods services and logistics, and a further 294,000 jobs through wages it pays employees.[17] Tourism contributes £106 billion to the national economy and supports 2.6 million jobs, which is strongly supported by airport gateways[18].

[8] https://www.britishports.org.uk/about-us/the-uk-ports-industry
[9] *British Ports Association 2019*
[10] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/908558/port-freight-statistics-2019.pdf
[11] Midlands Connect Freight & Trade (2020)
[12] *Maritime UK, n.d*
[13] *CEBR Ports Report, 2017*
[14] *https://www.aoa.org.uk/wp-content/uploads/2014/11/Economic-Benefits-from-Air-Transport-in-the-UK.pdf.pdf*
[15] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/769696/aviation-2050-print.pdf
[16] https://www.aoa.org.uk/wp-content/uploads/2014/11/Economic-Benefits-from-Air-Transport-in-the-UK.pdf.pdf
[17] https://www.iata.org/en/iata-repository/publications/economic-reports/united-kingdom--value-of-aviation/
[18] https://www.visitbritain.org/sites/default/files/vb-corporate/Documents-Library/documents/England-documents/ve_key_facts_and_trends_2019_csv.pdf

On top of this the economy benefits from passenger Air Passenger Duty tax which contributed £3,641 million in 2019-20 (April-March), 0.1% increase on the year before[19]. There is an additional estimated £6.3 billion generated by the aviation sector's supply chain and £4.9 billion through taxation of activities supported by the spending of employees from within aviation and the supply chain (wage-financed spending)[20]

Air freight contributes significantly to the UK economy, with imports and exports in 2017 being worth £181 billion, air freight services contributing £7.2 billion and the sector supporting 151,000 jobs[21]. Key industries dependent upon air freight exports include pharmaceuticals, computer/electronics and creative arts/ entertainment, contributing £13.9 billion, £8.3 billion, and £5.3 billion in GVA respectively[22].

Shippers pay airlines to transport high value weight products, generally within the belly hold of passenger aircrafts. They pay airlines up to £3.1 billion annually to carry 2.3 million tonnes to freight, providing in excess of £1.3 billion in benefit to the shipping companies.[23]

The aviation manufacturing sector contributes significantly to the UK economy, making £9 billion in direct GVA, £6.7 billion indirect and £4.1 billion induced contribution to UK GDP. These manufacturers support 327,000 jobs directly and indirectly, contributing almost £20 billion to UK GDP.[24]

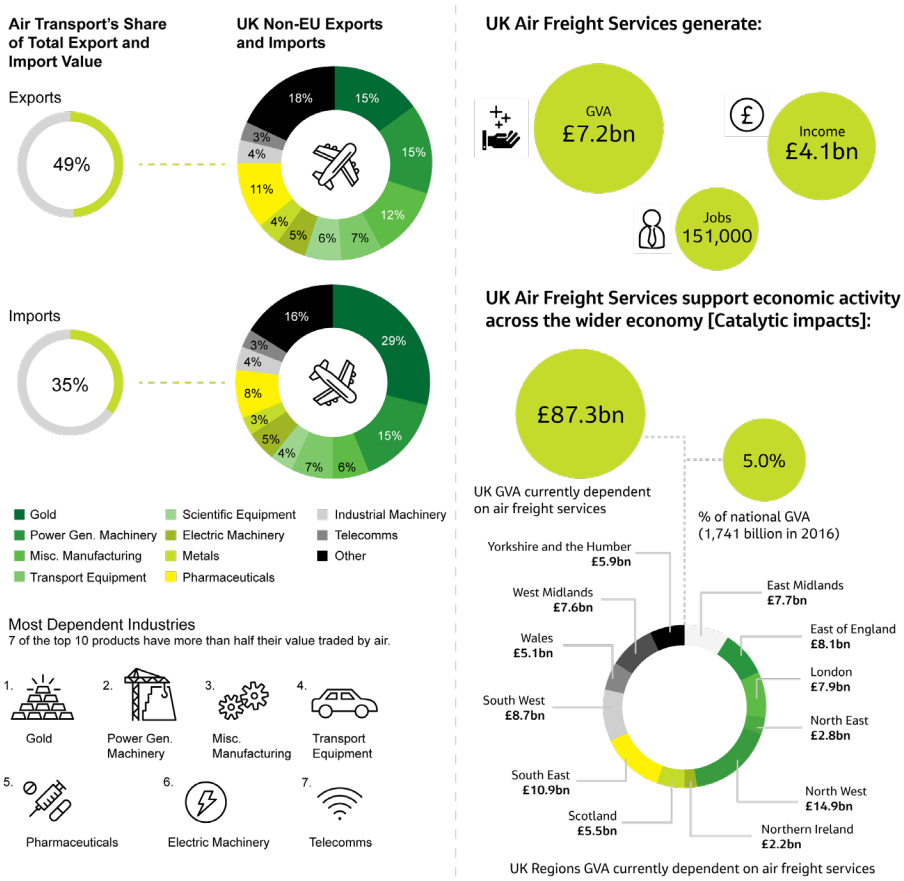

Figure 2.2: Value of air freight services to the UK economy[25]

19 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/881784/2020_Mar_APD_Commentary.pdf

20 *https://www.aoa.org.uk/wp -content/uplo ads/2014/11/Economic -Benefits-from-Air-Transport-in-the-UK.pdf.pdf*

21 *Airlines UK, 2018*

22 *https://www.caasint.com/report -claims-uk-depends-more-on-air-freight-services-than-most-eu-competitors/*

23 *https://www.aoa.org.uk/wp -content/uploads/2014/11/Economic -Benefits-from-Air-Transport-in-the-UK.pdf.pdf*

24 *https://www.aoa.org.uk/wp -content/uploads/2014/11/Economic -Benefits-from-Air-Transport-in-the-UK.pdf.pdf*

25 *Airlines UK, 2018*

Summary

- UK relies upon ports for 95% of all goods crossing borders (tonnage) and 40% of all goods (value)
- Gateways facilitate trade and tourism – having significant impact on national economy
- East of England one of four English regions to show year on year increase in annual export value (2018)
- UK port sector one of largest in Europe – handling 98% of UK freight tonnage (2018), connects people & markets, and attracts inwards investment. Supported 101,000 jobs and directly £7.6 billion in GVA (2015)
- Passengers travelling through airports brought £35.6 billion in benefits to the UK economy, with aviation as a whole directly contributing £22 billion, supporting 353,000 jobs, and tourism contributing £106 million to the economy, with 2.6 million jobs.
- Air freight in 2017 contributed £181 billion through imports & exports and £7.2 billion in air freight services

2.2 Regional Significance of International Gateways

The East is a key location for international trade, with ports located close to the main shipping lanes, close access to offshore oil and wind farms, as well as historic connections with London and the 'Golden Triangle' in the Midlands Figure 2.3).

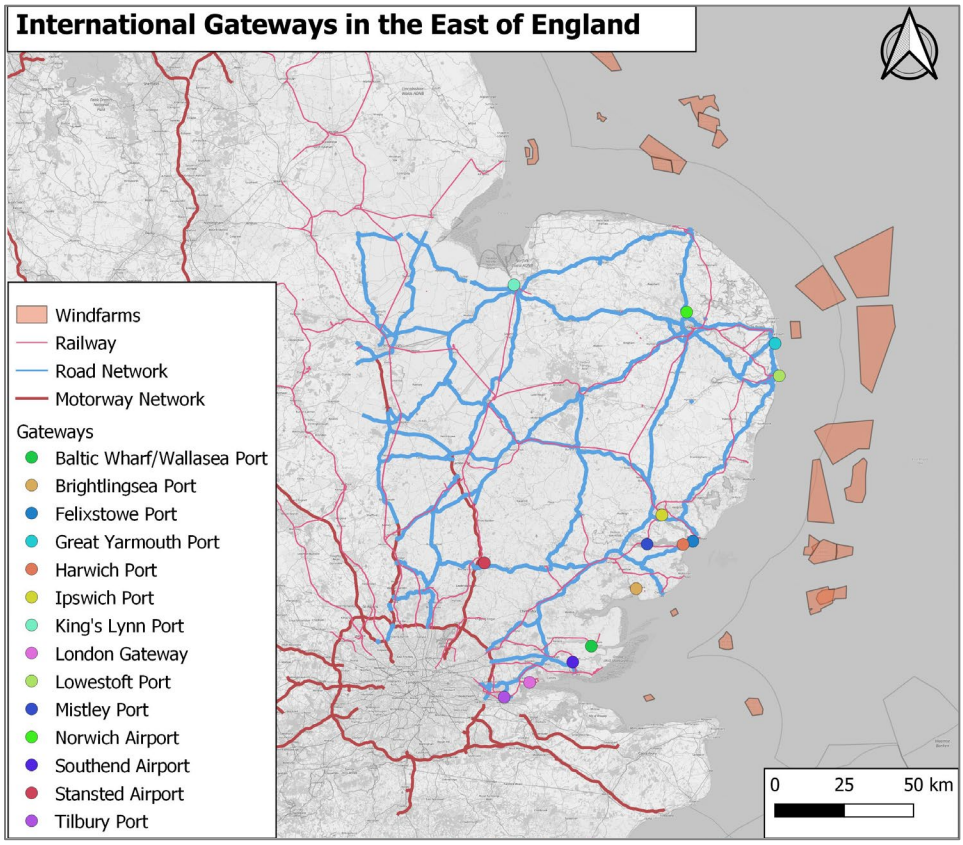

Figure 2.3: East of England map showing international gateways and access

The key international gateways identified in the Transport East region are:

Table 2.1: International gateways in the Transport East region

Major Ports	Regional Ports	Airports
Felixstowe	King's Lynn	Stansted Airport
London Gateway	Lowestoft	Southend Airport
Tilbury / Tilbury2	Great Yarmouth	Norwich Airport
Harwich	Brightlingsea	
Ipswich	Mistley	
	Baltic Wharf/Wallasea	
	Port of London Wharves (North bank of River Thames)	

The region has strong trading links with the European Union with 55.6% of Norfolk & Suffolk's exports going to the EU, higher than the national average of 42%[26]. This exporting performance attracts increasing levels of Foreign Direct Investment (FDI). When looking at Norfolk and Suffolk's total number of jobs created and safeguarded by FDI projects, the New Anglia LEP was the 5th most successful out of 38 in the county.

Despite the region operating on a global platform of imports and exports, Norfolk and Suffolk have comparatively low export value per job compared with other Local Enterprise Partnership areas, with the overall export per job figure 46% of the LEP average (£4,300 compared with £9,200 LEP average), ranking New Anglia 30th out of 38[27]. The most likely reason for this is that exporting firms from Norfolk and Suffolk are small in employment terms though global in their operations, as well as a higher share in lower value exports compared with other LEPs, with the export of advanced Agri bulk, and dominance of the food and drink sector.

2.2.1 Ports

The Transport East region is home to five key freight handling ports, which each handle in excess of two million tonnes of freight annually (Figure 2.4).[28] It is also particularly driven by high quantities of inwards freight, key to keeping the UK economy running.

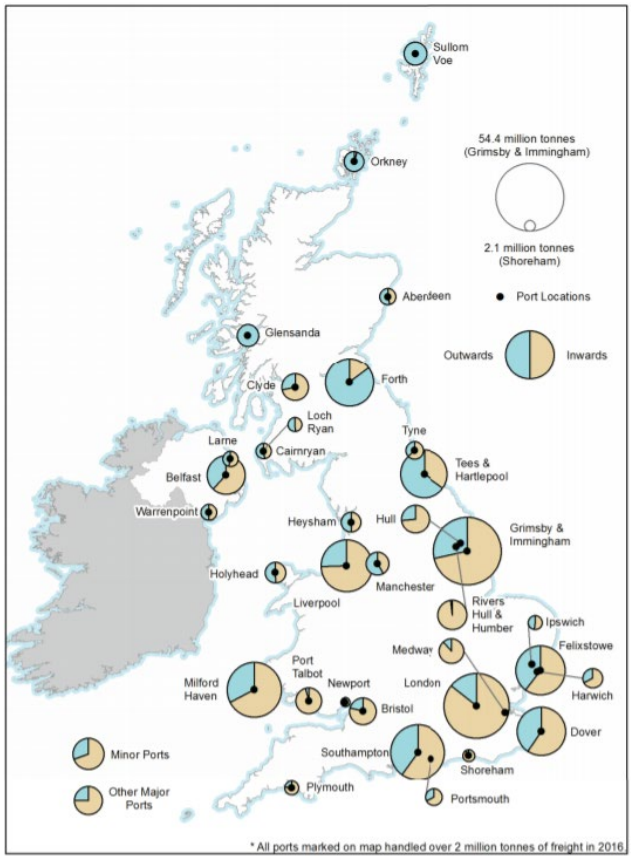

Figure 2.4: Freight handling ports handling in excess of 2 million tonnes, 2016

[26] https://newanglia.co.uk/wp-content/uploads/2020/03/2017-12-05-FINAL-Economic-Evidence-Report-single-pages-HighRes.pdf
[27] https://newanglia.co.uk/wp-content/uploads/2020/03/2017-12-05-FINAL-Economic-Evidence-Report-single-pages-HighRes.pdf
[28] DfT Port Freight Statistics 2016

The East of England has the largest share of employment in shipping (27.5% in 2015) as implied through the Business Register and Employment Survey[29] directly supporting 6,300 jobs.[30]

Port operations in the region achieved £540 million GVA in 2015[31], although it was the only region in 2018 to show a decrease in annual import value.[32]

In 2017 the East of England exported the third highest value of services (£17.4 billion), and in 2018 was the region with the third largest number of exporters of goods/services (26,600) with London and the South East the top two on both accounts.[33]

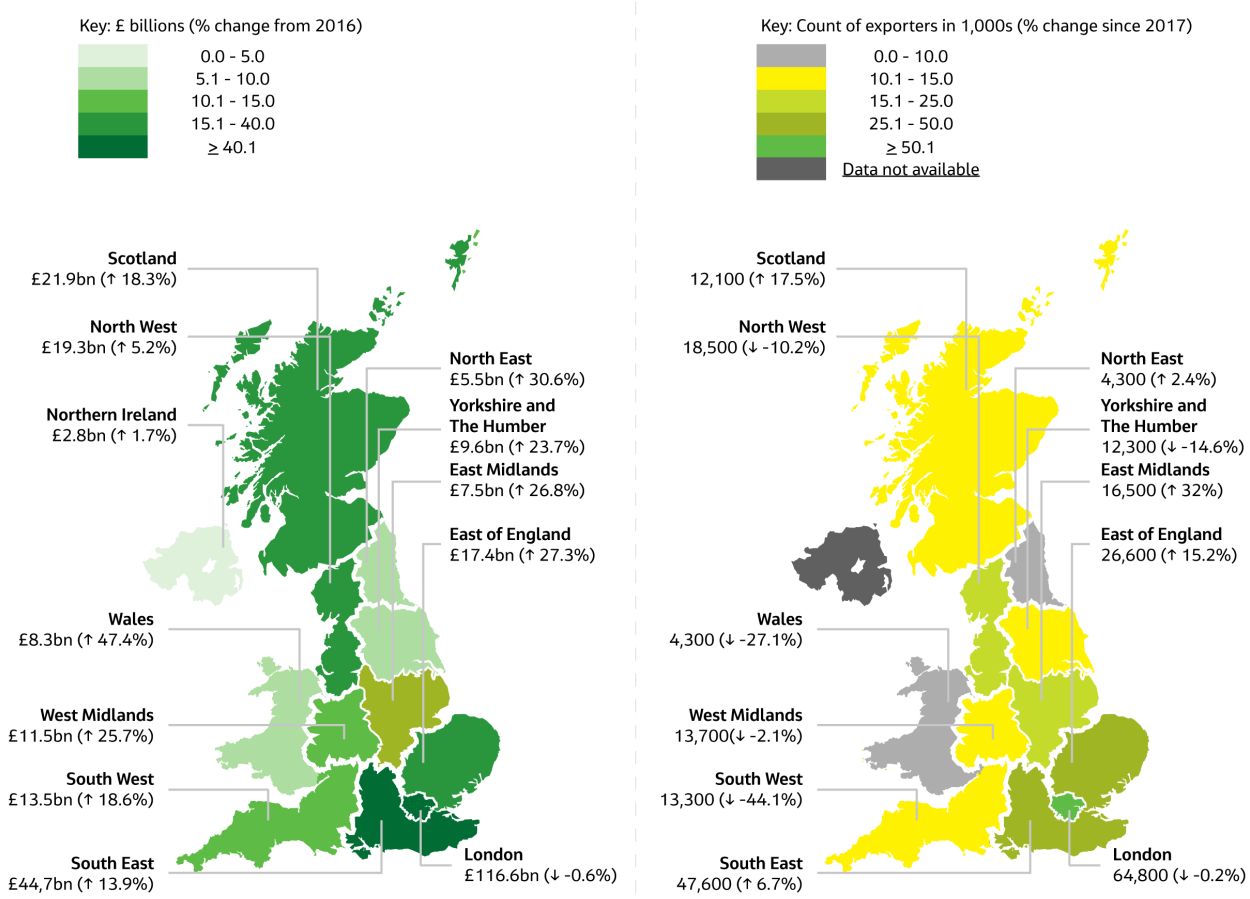

Figure 2.5: Value of exports & number of exporters by region of the UK[34]

2.2.2 Airports

The regional impact from airports is derived directly from employment (both direct and indirect), investment in education as well as the economic benefit brought by tourism. With airports acting as hub employers and generators for the economy, they act as an attractor for future inward investment.

[29] *CEBR Ports Report, 2017*
[30] *Maritime UK, n.d*
[31] *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_dat a/file/701352/england -port-connectivity-the-current-picture.pdf*
[32] *DfT Trade in Numbers*
[33] *DfT Trade in Numbers*
[34] DfT Trade in Numbers

In 2006, Oxford Economics estimated that the value added per worker in the aviation industry was around £56,000, for airline worker £65,800, air transport support worker £84,700, and aerospace worker as £67,500[35].

Data (latest of circa 2017) provided by Unite Union[36] indicates that Stansted Airport directly employs 1,765 with an additional 10,200 people working for nearly 200 on-airport companies. This makes Stansted Airport the biggest single site employer in the East of England. Norwich Airport employs 1,590 both directly and indirectly across 24 employers. In Norwich for every 100 jobs at the airport a further 29 are supported in the local economy, in total contributing around £70 million to the regional economy.

Stansted Airport benefits the region by supporting education and training, directly supporting 13,391 young people's education since 2014/15, supporting 3,497 local people into work and 964 placed into employment on site.[37]

Tourism is driven by airport connectivity in the region, increasing the attractiveness of the region for the development of service and manufacturing sectors[38]. In 2019 there were 2.3 million visits made to the region. These visitors generated £1 billion, with an average spend of £452 per visit, staying for an average 7 nights with a nightly spend of £63. A total of 27% of the trips made to the region were for holidays, 19% business and 47% to visit friends and relatives.[39]

In the East of England in 2019, visitor numbers were up by 36% compared to 2018. Figure 2.6 shows the seasonal variation in the number of trips to the region, spend and nights stayed between 2010 and early 2020.

The East of England benefits from £8.1 bn GVA from air freight, based on the origin of the air freight (where it was manufactured), with majority of that GVA being concentrated in machinery & equipment, pharmaceuticals, computer & electronics, and other transport equipment.[40]

[35] *https://www.folkestone-hythe.gov.uk/webapp/lydd-airport/CORE%20DOCS/CD11/CD11.12_Impact_of_Airports.pdf*
[36] *https://unitet heunion.org/media/3098/regional -airports-data.pdf*).
[37] *https://live -webadmin-media.s3.amazonaws.com/media/8358/mag -stansted-csr-report-2019-web-2110.pdf*
[38] *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/767231 /wider-economic-impacts-of-regional-connectivity.pdf*
[39] https://www.visitbritain.org/sites/default/files/vb -corporate/Documents-Library/documents/foresight_174_regional_spread_of_inbound_tourism.pdf

[40] *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*

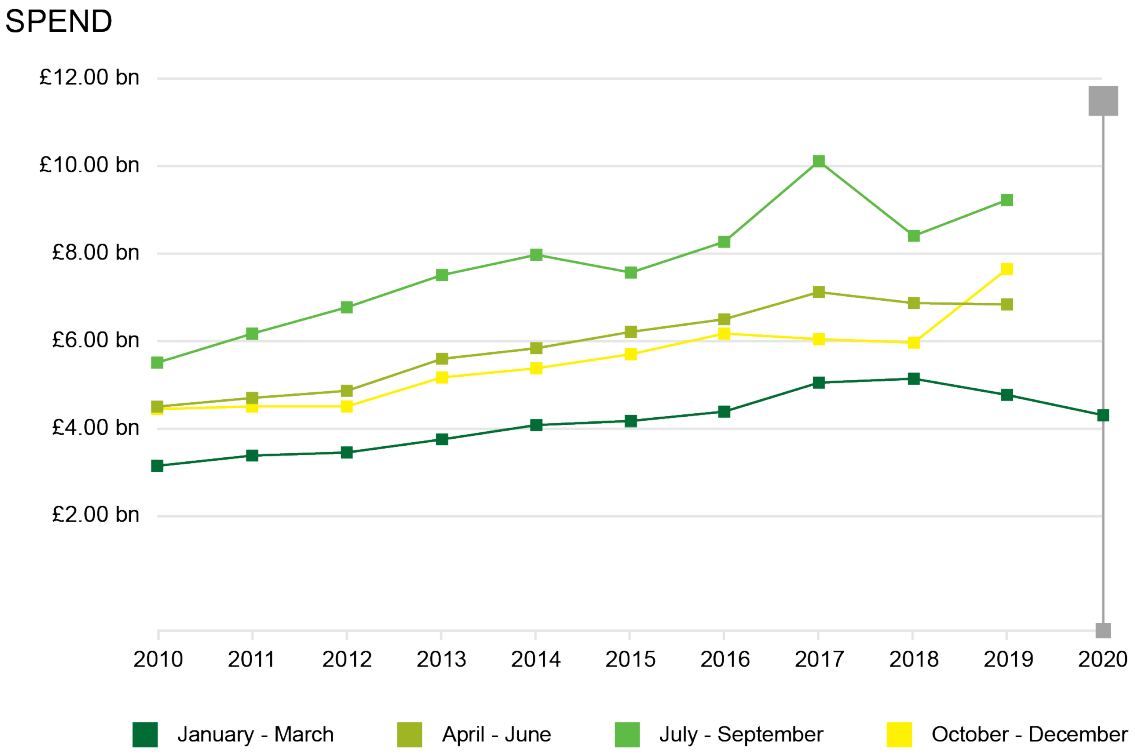

Figure 2.6a: Seasonality of spend, visits & nights stayed in East of England (2010-2020)[41]

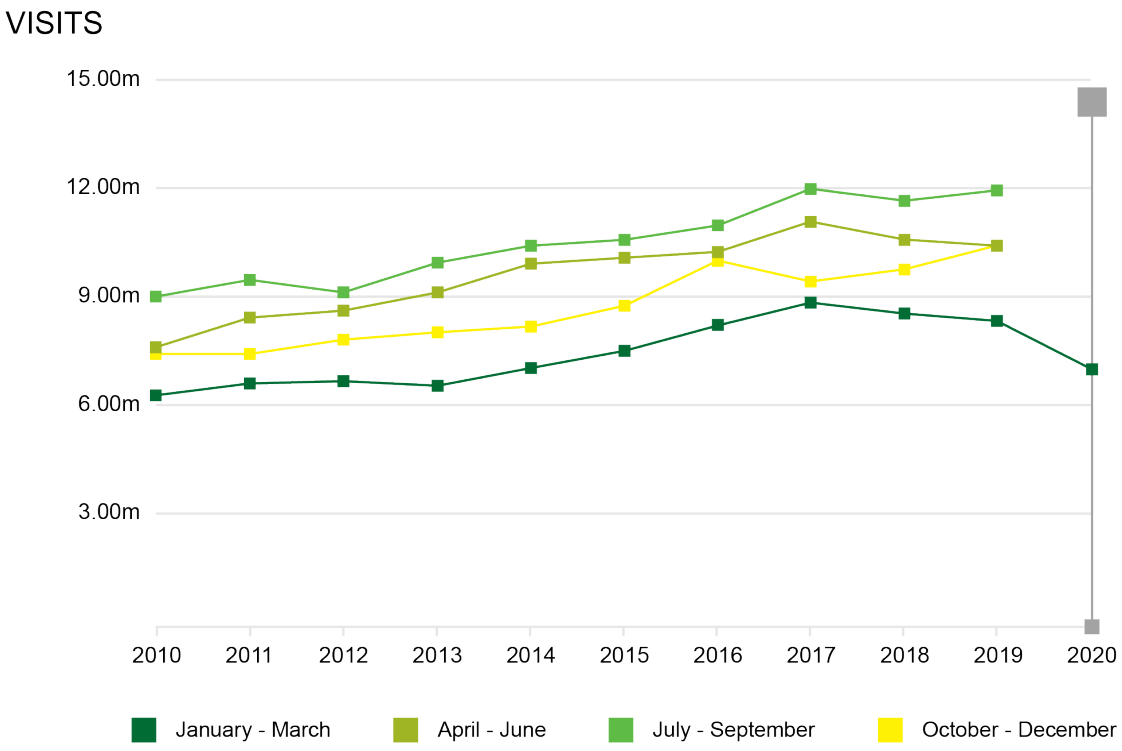

Figure 2.7b: Seasonality of spend, visits & nights stayed in East of England (2010-2020)[42]

[41] https://www.visitbritain.org /latest -quarterly-data-area
[42] https://www.visitbritain.org/latest -quarterly-data-area

NIGHTS

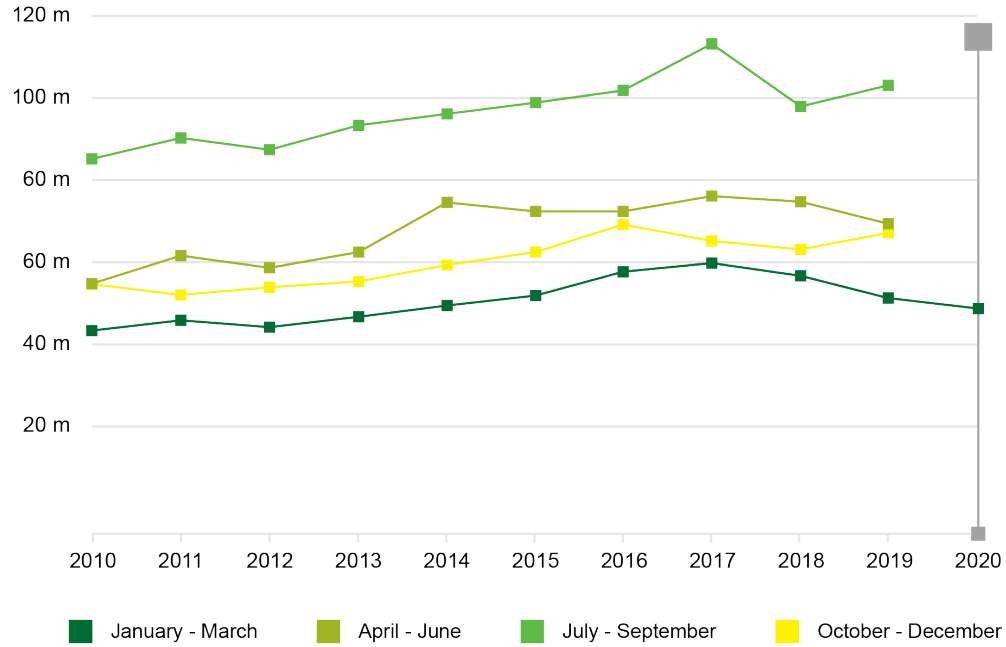

Figure 2.8c: Seasonality of spend, visits & nights stayed in East of England (2010-2020)[43]

Summary

- East is a key region for international trade close to global shipping lanes, links to offshore wind/oil, and historic connection with the London and Midlands
- Region has three airports, five major ports and 6 regional ports and up to nine wharves
- Region has strong trade links with the EU with higher than average exports from Norfolk & Suffolk compared with the average for other regions
- Region has lower than average export value per jobs based upon smaller business headcount and lower value exports dominated by agri exports.
- Region has largest share of employment in shipping directly supporting 6,300 jobs (2015), with operations contributing £540 million GVA (2015), and exporting the third highest value of services in 2017 and third had the third largest number of exporters of goods/services (2018)
- Airports in the region employ 20,000 people directly, with a value added per worker of £56,000 (2006)
- Airports drive tourism by increasing connectivity and attractiveness of the region
  Air freight contributes £8.1 billion to the region, supporting pharmaceuticals, computer/electronics and transport equipment sectors.

[43] https://www.visitbrita in.org/latest -quarterly-data-area

3 Ports

3.1 Gateway Summary

This section provides insight into the function of each of the ports in the Transport East region (Figure 3.1), the freight they handle, international markets, growth & expansion plans, alongside current and future opportunities and constraints.

3.1.1 London Ports

The Port of London (PoL) refers to the ports and wharves covered by the Port of London Authority (PLA), which covers 95 miles of the River Thames, from Teddington to the North Sea. As such the Port of London includes ports and wharves in Essex, London, and Kent. The ports and wharves themselves are independently operated, with the PLA providing statutory services such as pilotage and working to keep commercial and leisure users safe, protect and enhance the environment, and promote the use of the river for trade and travel. This report focuses on the PoL locations in Essex, including Southend and Thurrock.

London Gateway and Tilbury are the key London ports, processing the greatest volume of tonnage and acting as key ports to distribute cargo to major freight processing hubs across the country. There are additional wharves along the River Thames, inland of London Gateway and Tilbury which range in size from small wharves to Purfleet, which is an important RoRo port in its own right.

The Port of London as a whole is ranked as 17th in the European Union's top 20 ports handling containers in 2018 with a growth of 22.2% compared to the previous year[44] and processes an estimated 18% of total tonnage handled by English ports[45]. The ports play a key role in supply chains serving London, the southeast and UK markets beyond[46].

There are over 40,000 jobs dependent upon the London ports, generating more than £2,100 million in GVA (accounting to 34% of total contributions made by all ports in England in 2015)[47]

[44] Eurostat datacode: mar_mg_am_pvh
[45] https://www.maritimeuk.org/value/
[46] PLA Annual Report and Accounts 2019
[47] https://www.maritimeuk.org/value/

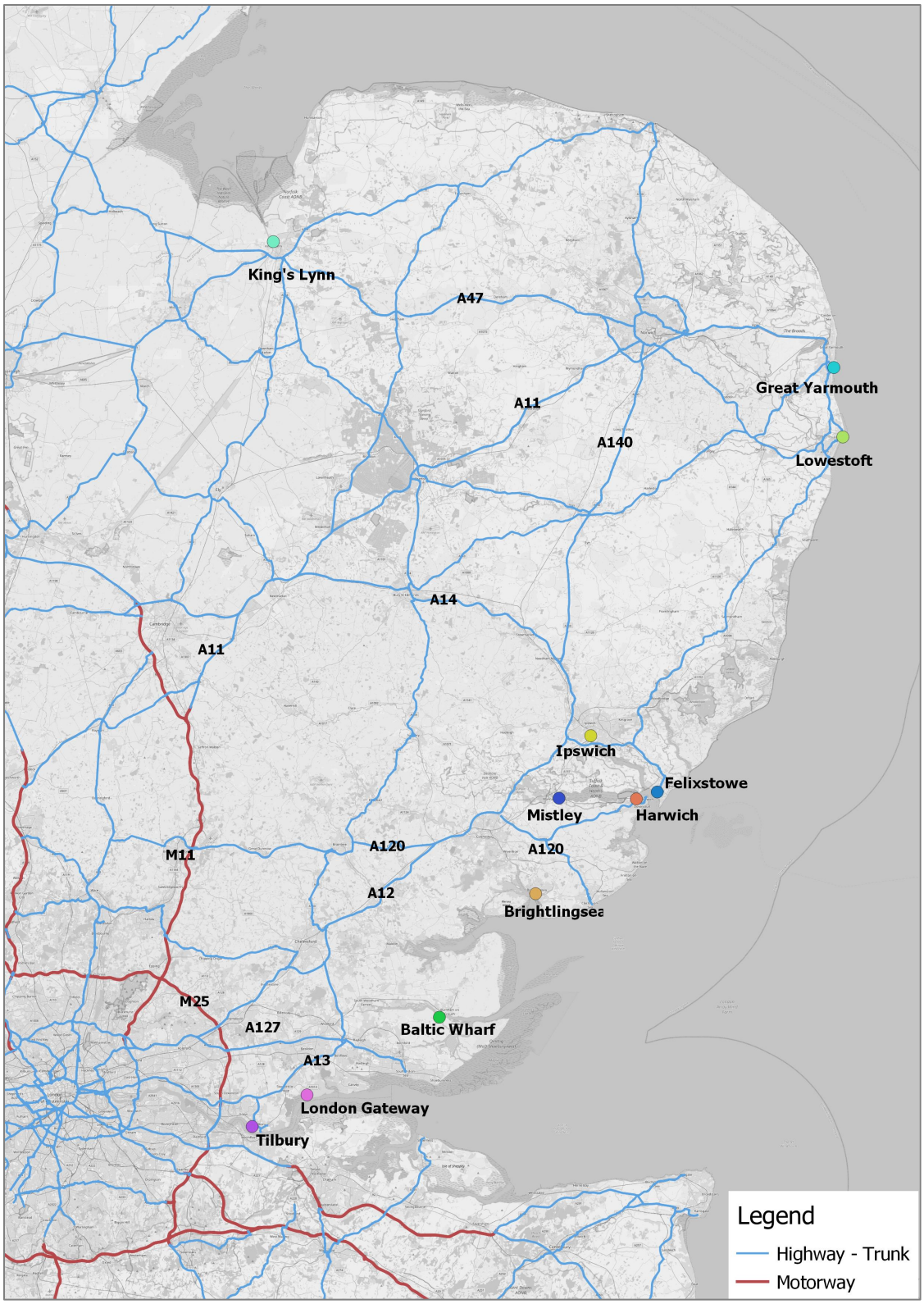

Figure 3.1: Ports in the East of England

3.1.1.1 Thames Vision

The Port of London Authority is consulting on a new Thames Vision covering the period to 2050. The proposed new vision has important goals including:

- Double underlying intra-port freight to over 4 million tonnes
- Champion the Thames as a default choice for moving spoil and materials from infrastructure projects close to the river
- Maintain or reactivate viable cargo handling facilities, with at least five additional facilities brought into operation by 2025
- Extend the River Concordat to promote freight movements by water
- Innovate to achieve more passenger journeys at current low peak times
- Improve rail and road access to port operations/terminals, including:
  - Lower Thames Crossing downstream of Tilbury, by 2025
  - At least three further Thames crossings to the east of Tower Bridge, that allow continuation of river trade; the first by 2022
  - Widening of the A13, by the end of 2018
  - Closure of level crossings affecting operational terminals, by 2020
  - Deliver efficient, effective and sustainable PLA harbour and pilotage services to support growth

3.1.1.2 Marine Management Organisation

Among a suite of policies supportive of the region's ports, the South East Inshore Marine Plan, adopted by the Marine Management Organisation, includes a policy supportive of short sea and coastal shipping.

Policy SE-PS-4 States: "Proposals promoting or facilitating sustainable coastal and/or short sea shipping as an alternative to road, rail or air transport will be supported where appropriate."

3.1.1.3 London Gateway

London Gateway commenced operations in 2013 and is now the most globally connected port in the UK[48], with freight moving between 40 different countries globally, connected to 110 ports around the world including in: China; Thailand; Vietnam; Australia; Sri Lanka; Singapore; North, Central and South America; the Mediterranean; South Africa; India and the Sub-Continent.

The port has three berths with a total quay length of 1,250m. There is enough water frontage at the port to double the number of berths should the demand require it[49]. The port predominantly handles containerised goods, with a presence in handling ro-ro freight and dry bulk.

London Gateway is the UK's fastest growing deep-sea container terminal[50].

The port has its own rail terminal, which is the longest in the UK and amongst the longest in Europe, with the ability to accommodate six trains at a time, with three rail mounted gantry cranes[51]. London Gateway operates up to 45 weekly train services to major freight destinations around the UK, with 2015 rail freight data processed by Westminster University[52] to show the spatial distribution of rail freight through London Gateway per week. Much of the freight is destined for the North West of England, most notably Crewe, with connections also with London Tilbury, and interim destinations such as Birmingham, which have not been captured as it is not a final destination. Any growth of this rail freight capability will be dependent upon the capacity of already congested rail routes through London (discussed further in Section 3.4.2).

[48] uk-ports.org
[49] https://www.eastsuffolk.gov.uk/assets/Planning/Suffolk -Coastal-Local-Plan/First-Draft-Local-Plan/Port-of-Felixstowe-Growth-and-Development-Needs-Study-July-2018.pdf
[50] https://www.londongateway.com/port/the -port
[51] https://www.londongateway.com/logisticspark/connectivity
[52] A G WoodburnWestminster.ac.uk

The rail terminal also has the capability to handle international trains and has been given international status. It has the capability to serve trains from the continent and as far afield as China[53]. Rail volumes account 20% of land side movements, with an aspiration for 30% modal shift in the next 5 years.[54]

The Shanghai to London freight train first operated in 2017, being the 15th European city to have a rail connection with China. The route takes 18 days to complete compared with the 30-45 days for shipping. Utilising this route in the longer term could support trading internationally post Brexit. This was conducted as a trial, outlining the capability of this international terminal.

London Gateway was developed with consent for a Logistics Park as part of an integrated port facility to support the processing of freight and to 'enable smarter trade' and 'optimise supply chain operations'.[55] The logistics park has consent to develop up to over 8 million square feet for warehousing and light industrial usage. The park is currently only 18% developed with an accelerating number of tenants acting as a demand driver for the port.[56].

There is a Local Development Order (LDO) in place at the Logistics Park, removing the need to obtain planning permission for certain kinds of development within a specified area.[57]

Expansion of London Gateway

DP World who own the port has invested over £1.6 billion in developing London Gateway and is investing an additional £300 million in a fourth berth.[58]

The port is expected to expand from three berth to six berths along the 2,700 metres of quayside. This would increase the capacity of the port to 3.5 million TEUs[59]. There is also the intention to develop the rail terminal, offering two terminals facilitating extra port capacity.

These developments would increase direct employment at the port to 15,300 and indirect employment to 24,000.

3.1.1.4 Tilbury

Tilbury is the largest multi-purpose port serving the South East and is the UKs fastest growing port, handling in excess of 16 million tonnes per annum as at estimated value of £8.7 billion[60].The port is a national export hub, surrounded by high-value industrial clusters. It is the only UK port with facilities to serve both deep sea and European and short sea customers, with heavy lifting capacity to support a range of sectors, such as wind turbines and tunnel boring machinery.

The port has 47 impounded dock berths and 7 river berths[61], with a total quay length of 1,720 metres and five million square foot of undercover warehousing.

Tilbury has the ability to handle almost all cargo types in addition to containers, with ro-ro, general cargoes such as fruits, vegetables and heavy lift project cargo, and dry bulk goods such as aggregates and grains.

Tilbury has three onsite rail heads which allow for connection to the mainline directly into London or onto anywhere in the UK: the London Container Terminal railhead for intermodal services, the Bulk Rail Terminal and new rail connections into Tilbury2 including for the new Construction Materials and Aggregate Terminal.

[53] LondonGateway.com
[54] DPD World – Development of London Gateway v2.1 (November 2020)
[55] https://www.londongateway.com/logisticspark/the-logistics-park
[56] DPD World – Development of London Gateway v2.1 (November 2020)
[57] https://www.thurrock.gov.uk/london-gateway-development/overview
[58] https://www.dpworld.com/london-gateway/news/latest-news/dp-world-to-invest-in-new-fourth-berth (September 2021)
[59] uk-ports.org

[60] https://www.forthports.co.uk/our-ports/tilbury-london/
[61] https://www.forthports.co.uk/marine/tilbury-tilbury2-port-authority/

2015 rail freight data obtained by Westminster University[62] to show the spatial distribution of rail freight through Tilbury showed significant intermodal services destined for Bristol, Lawley Street (Birmingham) and Leeds, with further weekly operations to Garston (Cheshire).

Since 2015 Tilbury has expanded its intermodal rail services including a new daily train to Daventry.

The port also benefits from the ability to barge straight into the heart of London, removing road vehicles and providing access to other Port of London Wharves. This is also beneficial with aiding the movement of cruise passengers into the centre of London.

In addition to the port's freight capability cruise ships also dock at the port, being the closest deep-sea cruise terminal to London. The port has a passenger cruise terminal and benefits from being close to the capital, being able to efficiently transport passengers into the city via the clipper ferry and accessing nearby airport hubs such as Southend.

Tilbury port is a key employer in the local area and is projected to increase direct employment in 3,500 to 12,000 jobs.

Expansion of Tilbury

Since 2012 the port has invested £1billion which has seen it double in size and is projected to double the volume of cargo across the quay[63].

In 2019 the port gained approval under a development consent order (DCO) to build a new terminal adjacent to the current port, acting as a satellite to the main port with a strategic rail and road connection – this is now beginning to come into services and is known as Tilbury2[64].

This terminal accommodates ro-ro freight as well as importing construction material and aggregate[65].

There has also been expansion to the grain stores with the inclusion of a flat store with capacity for a further 15,000 tonnes of dry bulk. Tilbury2 accommodates a further three river berths, two ro-ro link span berths and one deep water aggregate berth[66].

The port is developing plans to expand beyond Tilbury2.

Tilbury2 will have a rail link connecting with the mainline to transfer a large proportion of roll-on roll-off (RoRo) freight and construction materials & aggregate. There are plans to re-route the exiting Tilbury trains via this site ensuring full rail capability across the port[67].

3.1.1.5 Port of London Wharves

The Port of London has 70 dedicated, specialised terminals and wharf operations along the Thames between Teddington and the Sea[68]. The focus within the Transport East region are the port wharves between Purfleet and Tilbury, located within Thurrock. These ports handle a diverse array of cargoes, supporting logistics and manufacturing. Containerised cargo is processed at Purfleet, with many other wharves facilitating the delivery of aggregates and petroleum.

Purfleet Freight Terminal is the closest Roll-on-Roll-off port to London, with a combined freight terminal handling lorry trailers and containers, as well as automotive and commercial vehicles[69]. The port has four railway sidings which are accessed via the line connecting with Tilbury. There are daily ferry services with the Port of Rotterdam in Netherlands, as well as connections with the Port of Zeebrugge in Belgium.

The remaining wharves along this stretch handle aggregates and dry bulk material to produce tarmac and cement, as well as oil and chemicals, as well as being home to Proctor and Gamble. These are all surrounded by manufacturing plants, warehousing and logistics.

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[62] A G Woodburn Westminster.ac.uk
[63] https://www.forthports.co.uk/our-ports/tilbury-london/
[64] https://www.forthports.co.uk/our-ports/tilbury-london/
[65] Port of London Authority Handbook – Tilbury2020.21 - https://issuu.com/andybullen1/docs/final_port_of_tilbury_24p_7_oct/2
[66] https://www.forthports.co.uk/marine/tilbury-tilbury2-port-authority/
[67] www.Tilbury2.co.uk
[68] http://www.pla.co.uk/Port-Trade/Why-London
[69] http://www.croports.com/index.htm

There are opportunities to move a new range of goods upstream from these wharves, or even from the major ports. Such goods might include supermarket goods, food, or parcels. Several studies and pilot projects are underway looking at such opportunities.

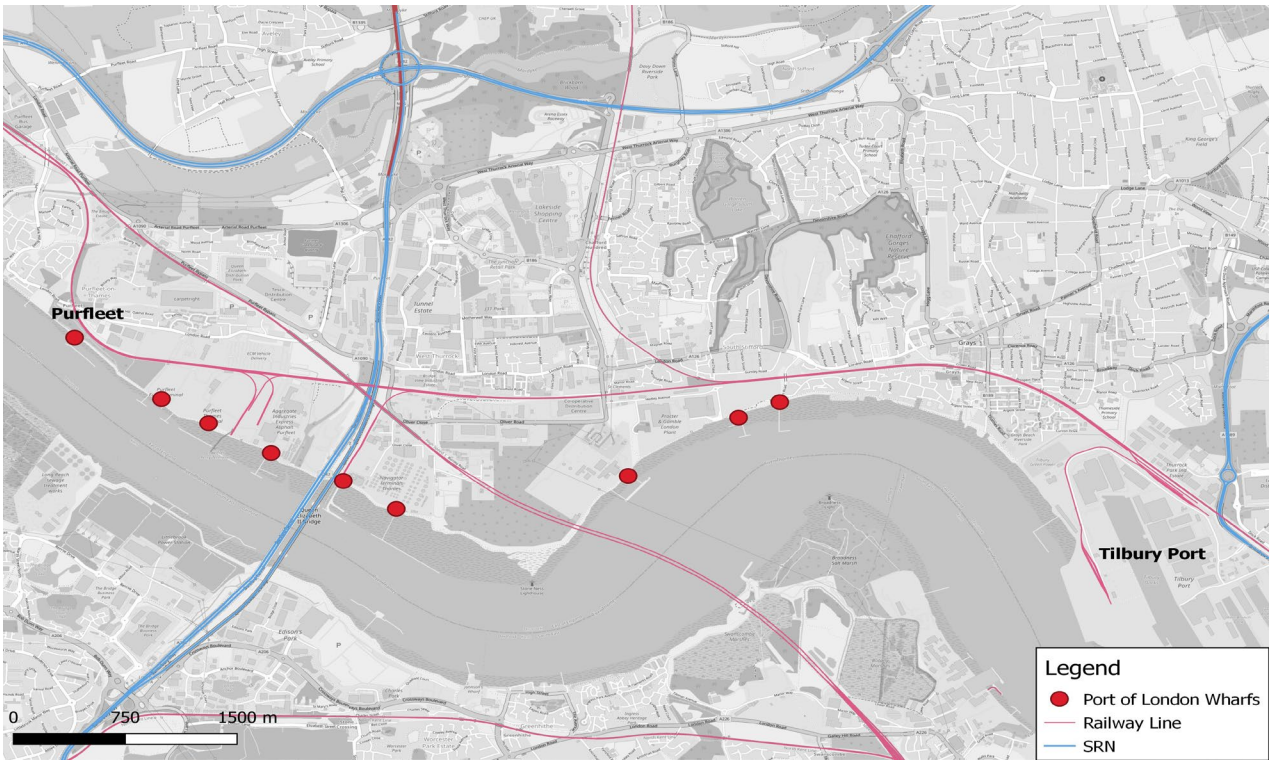


Figure 3.2: Location of wharves between Purfleet and Tilbury

3.1.2 Felixstowe

Felixstowe is the Britain's largest and busiest container port in the UK, handling more than 4 million Twenty-foot Equivalent Units (TEU) and welcoming 3,000 ships per year, also making it one of the largest in Europe (9th in top 20) and ranked 32nd globally based upon cargo throughput.

Felixstowe also has two RoRo berths which are focussed on serving 16 unaccompanied RoRo services per week to Rotterdam operated by DFDS which carry approximately 250,000 units per annum.

The port has a high utilisation which has been spurred by various expansion projects, developing the port to 9 deep-sea berths along a 3,274-metre quay length. Felixstowe is able to accommodate the largest container vessels of over 21,000 TEU, with the port having the largest average container vessel size of all the UK container terminals [70]. Capability to accommodate the largest vessels is also at London Gateway and Southampton.

The port has geographic strengths given vessels do not need to deviate far from the main global and European shipping lanes to access the port (Figure 3.3)[71].

[70] Port of Felixstowe Growth and Development Needs Study – July 2018
[71] https://www.portoffelixstowe.co.uk/#/about

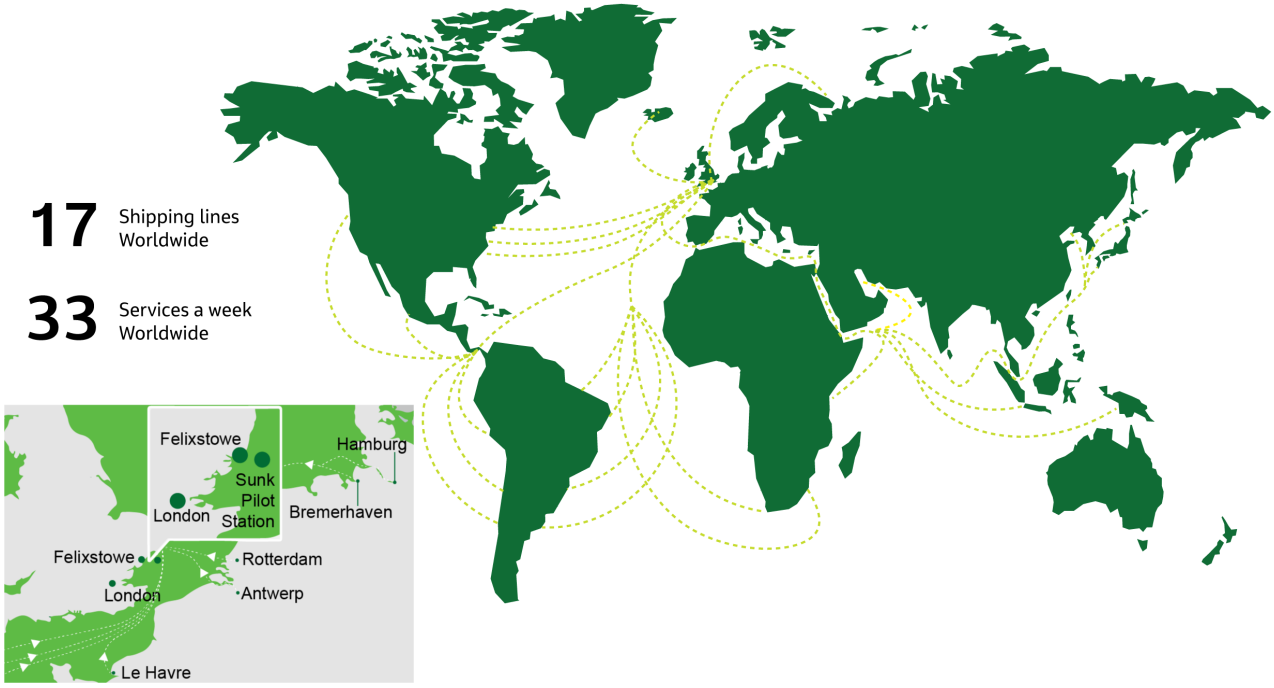


Figure 3.3: Global shipping lanes & access to Felixstowe[72]

Much of the cargo processed through Felixstowe (70%) is destined for the 'Golden Triangle' in the midlands, the North of England and Scotland. Access to this area is facilitated by the A14 road link and freight railway. Felixstowe has the country's largest intermodal rail freight terminal, with 41% of the UK container freight transported from the port[73]. The rail data from 2015 was processed by Westminster University[74] to show the spatial distribution of rail freight through Felixstowe (Figure 3.4). The greatest number of trains route to Hams Hall and Lawley Street in Birmingham, Trafford Park and Ditton in the North West and Doncaster all within the Golden Triangle area.

Future growth intends an increase in freight trains from Felixstowe along the Ipswich to Peterborough line (dependant on electrification & line upgrades), which would deliver £49 million to the country and the expansion of the port will deliver £44 million to the local economy[75].

The port has an associated logistics park covering 68 acres, with a total of 1,400,000 square foot of build-to-suit distribution warehouses. The park is in a strategic location adjacent to the port and rail facility, with direct access to the A14 on the strategic road network (SRN)[76]. There is also planning consent in place for more than six million square feet of warehousing on ten sites in Suffolk and Norfolk within 40 miles of Felixstowe, with 350,000 sq. ft already completed.

In the vicinity of the port, most of the employment is connected to shipping and port activities. This represents a strategic employment site of both national and international significance, acting as a main driver for and user of industrial land in both Suffolk Coastal District and the wider sub-region.

In 2013 there was substantial investment in the port's rail freight capacity and ability for the port to accommodate 'mega vessels'.

[72] https://www.portoffelixstowe.co.uk/#/about
[73] Suffolk rail prospectus
[74] A G Woodburn Westminster.ac.uk
[75] Suffolk Rail Prospectus
[76] https://www.portoffelixstowe.co.uk/logistics-park/

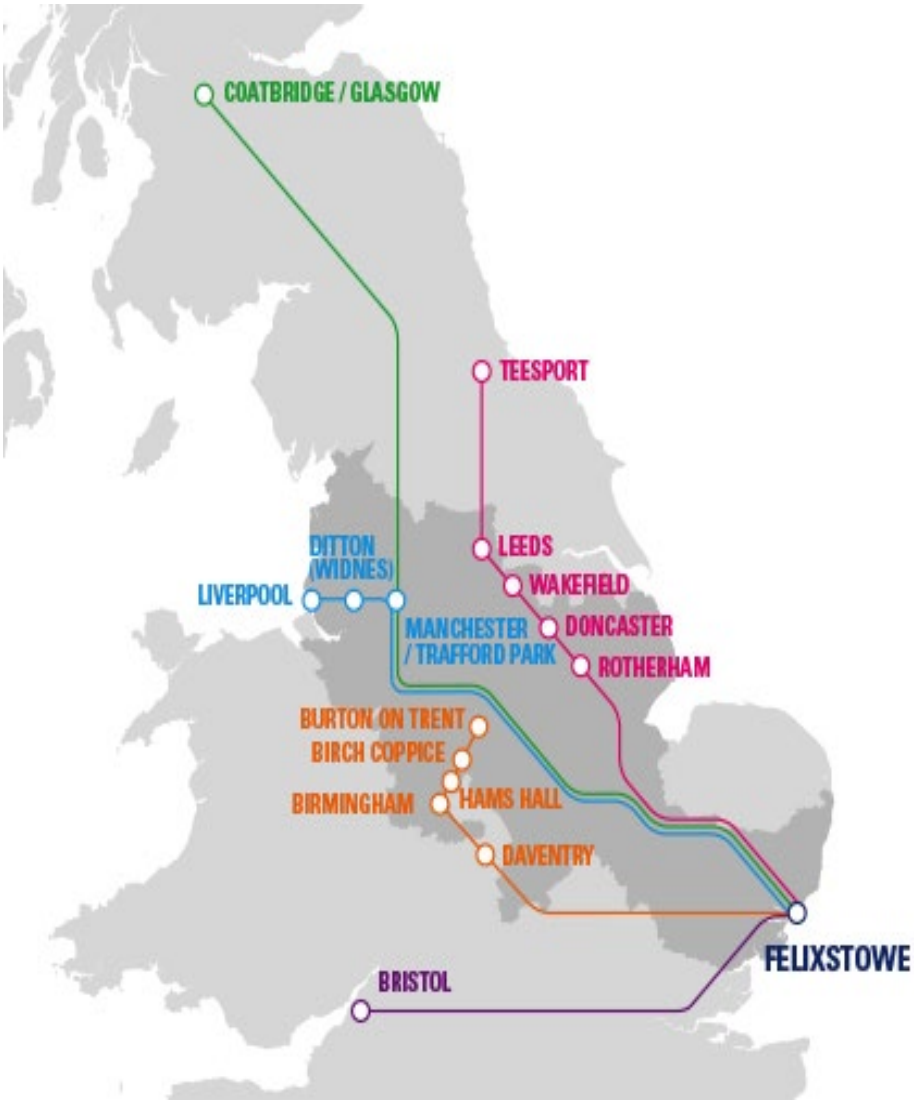


Figure 3.4: Rail freight corridors from Felixstowe[77]

In 2015 the port announced a £200 million investment to upgrade capacity and berthing facilities, improving the access channel through Harwich Harbour. In addition, in 2016 further proposals were released for the development of the Felixstowe Logistics Park. A breakdown of all expansion proposals approaching 2018 is shown in the table below[78].

It has been identified that in order to compete with ports such as Tilbury and London Gateway in the future, there is the need to develop land for operators to expand and relocate, improving warehousing and storage. The port is running out of quay space for expansion, so reliance will be upon integrated logistics and processing to support capacity development. To support this there is an identified need for 15.7ha-62.0ha of land for warehousing, 7.1ha-28.2ha for open storage, and 3.4ha-13.5ha of land for ancillary uses to accommodate future growth[79].

[77] https://www.portoffelixstowe.co.uk/#/about
[78] https://www.eastsuffolk.gov.uk/assets/Planning/Suffolk-Coastal-Local-Plan/First-Draft-Local-Plan/Port-of-Felixstowe-Growth-and-Development-Needs-Study-July-2018.pdf
[79] https://www.eastsuffolk.gov.uk/assets/Planning/Suffolk-Coastal-Local-Plan/First-Draft-Local-Plan/Port-of-Felixstowe-Growth-and-Development-Needs-Study-July-2018.pdf

Table 3.1: Port of Felixstowe improvements to 2018

Port	Terminal	Cargoes	Description	Capacity
Felixstowe	Felixstowe Rail Improvements	Increased rail capacity and hinterland throughput	Allowing >47 freight trains/day between Ipswich & Felixstowe Port (currently 33 trains/ day)	-
	Felixstowe	Containers	13ha of new container yard behind Berth 9. 3.2. ha reclamation + 18,500 TEU capacity (200,000 TEU)	Port plans to increase container handling to 6.0m TEU by 2020
	Felixstowe	Containers	New Berth 10 - scheduled for 2019 (680,000 TEU)	
	Logistics Centre	Logistics park and distribution centre	68-acre site 1.4 million m^2 for warehousing units	Permission granted 2014 - but no construction work has commenced

Source: Royal HaskoningDHV review of various sources

3.1.3 Harwich

Harwich port is located opposite to Felixstowe, handling freight and passenger movements. The focus of the port is the ferry service to the Hook of Holland, supporting the port as a key player in the dominance of Ro-Ro fright from Europe. The port has four Ro-Ro berths as well as a significant area of operational land with parking for in excess of 1,000 trailers.

The port processes Ro-Ro dry and liquid bulk services as well as handling containers. It was the first port in the UK to combine Automatic Licence Plate Recognition with line scanning technology to expedite throughput at the port[80].

Harwich has a rail freight terminal which is not in use, there is the opportunity in the future to utilise this for containerised RoRo freight.

The ferry service transports approximately one million passengers to and from the Hook of Holland, cementing the port as one of the UK's most important ferry terminals[81].

The port has acted as the construction base for Gunfleet Sands, Great Gabbard and London Array offshore wind projects, offering turbine and foundation storage, dive support, cable transfer, and accommodation vessel operations. Harwich has also supported the mobilisation and demobilisation operations for offshore oil and gas in the Southern North Sea, with the ability to also support the decommissioning of operations in the North Sea[82].

Cruise ships regularly call at the port, particularly during the summer months, with connections with mainland Europe, the Baltics, Scandinavia and domestically around the UK. The port has a purpose-built cruise terminal to process passengers and luggage.

The port has unveiled plans to increase the depth of Harwich Harbour, as mentioned in section 2.1.2, to allow greater access and capacity to both Harwich and Felixstowe. This will help to accommodate larger freight and

[80] https://www.harwich.co.uk/our-service/ro-ro
[81] https://www.harwich.co.uk/our-service/ferry-and-cruise-passengers
[82] https://www.harwich.co.uk/our-service/offshore

passenger vessels. There is also the intention to develop an international freight terminal to accommodate future growth in freight.

There are plans to develop the cruise terminal, modifying the gangway to the ships and adding additional handling areas for baggage. This will match the requirements of the larger modern cruise ships, maintaining demand in the future[83].

3.1.4 Ipswich

Ipswich port is the UK's largest grain export hub, as well as having a presence in timber, cement, aggregates and general cargo. With the prevalence of agriculture in the East of England, this contributes to the high levels of grain manufacturing and export. The port is situated 12 miles from the open sea and handles 2 million tonnes of cargo per year, amounting to over £600 million in trade every year[84].

The port operates two terminals (West Bank and Cliff Quay) which has a total of 73,960 square metres of storage both open and covered, with Cliff Quay also offering a container terminal equipped with a 40-tonne capacity crane and rail mounted gantries. There are three aggregate terminals as well as Coldock Terminal which offers 16,000 square metres of covered warehousing.

Combined with Lowestoft and King's Lynn the port contributes £360 million to the economy every year and supports 5,200 jobs nationally[85].

Ipswich has an active rail link onto the West Bank terminal and this is used to support aggregate trains moved by DBSR on behalf of ABP Ipswich's largest volume aggregate business.

Expansion at the port focuses on warehousing and storage. In 2019 the port constructed a new, de-mountable warehouse. Further to this, in excess of £3 million was invested in two new bulk storage terminals, adding an area of 7,000 square metres of storage space, as well as developing a new fertiliser bagging and packaging plant at the port[86].

3.1.5 King's Lynn

King's Lynn is the preferred Norfolk port for forest products, Agri bulk, manufacturing and recyclable sectors, handling over 400,000 tonnes of cargo each year. The port has a total quay length of 1,370 metres, with dedicated equipment to handle specialist industrial cargo which is used to support major UK construction projects[87].

The port has a dedicated grain silo complex which offers 25,000 tonnes of capacity alongside drying and screening facilities. There are also specialised bulk storage facilities offering up to 23,000 tonnes of capacity for cereals and Agri bulks. For cargo, the port also offers 7,000 square metres of transit stores, 'pick-a-pack' services and on-dock machining; and for steel imports the port has a purpose-built dedicated steel transit shed with storage capacity and handling equipment.

Combined with Lowestoft and Ipswich, the port contributes £360 million to the economy every year and supports 5,200 jobs nationally[88].

Associated British Ports have invested £2.2 million into developing the Hanse Bulk Terminal as part of a £3.3 million investment into the port, including the purchase of a new crane[89], partially due to an increase in volumes through the port following bumper harvests.

3.1.6 Lowestoft

Lowestoft port is the most eastern of the UKs ports, handling around 30,000 tonnes of cargo per year. The port has established itself as a 'thriving centre' for energy companies specialising in offshore energy, linked

[83] https://www.harwich.co.uk/our-service/ferry-and-cruise-passengers
[84] https://www.abports.co.uk/locations/ipswich/
[85] https://www.abports.co.uk/locations/ipswich/
[86] https://www.abports.co.uk/locations/ipswich/
[87] https://www.abports.co.uk/locations/king-s-lynn/
[88] https://www.abports.co.uk/media/ovuljosm/ssp-port-of-king-s-lynn.pdf
[89] https://www.abports.co.uk/locations/king-s-lynn/

closely with the area emerging as the East of England's Renewable Energy Hub. It has the capability and skills to safely and efficiently handle a wide range of cargo.

The port has a long-term collaboration with SSE which positively contributes to the local economy and is the maintenance base for the Greater Gabbard Offshore Wind Farm and was a support to the construction of the Galloper Offshore Wind Farm.

The port also handles bulk materials, including grain and cement. Lowestoft has silo storage facilities with a capacity of 14,000 tonnes. With additional 16,000 square metres of storage for forest products, steel and general cargo, and 10,000 square metres of covered storage space.

Combined with Ipswich and King's Lynn the port contributes £360 million to the economy every year and supports 5,200 jobs nationally.

The Port of Lowestoft Master Plan 2018-2036 outlines the future vision for growth and development, with key investments identified as:

- £300,000 demolition project to clear a 13-acre development at the port's Shell Quay
- £2 million in general improvements including new warehousing, new fendering, new internet fibre optic and security facilities
- £670,000 purchase of an ORC pilot boat
- £10 million investment by Scottish Power Renewables in a new Operations and Maintenance facility.

3.1.7 Great Yarmouth

Great Yarmouth handles supplies for the offshore energy, automotive, decommissioning, agri-bulk, timber, steel, project cargoes and aggregates markets. The ports facilities and close proximity to the southern North Sea make Great Yarmouth the ideal location for offshore energy developments and maintenance vessels to base and operate themselves from. The port has approximately 40 acres of land available for development and offers the shortest North Sea crossing to the northern continental European ports. There is also potential to create a new Southern Terminal in the Outer Harbour which would create an additional 350m long berth, 10ha of development land, an additional RoRo ramp, and further heavy lift capacity.

3.1.8 Mistley

Mistley port is a short seaport with links to Northern Europe, the Baltics, Scandinavia, the Mediterranean, and UK manufacturing centres. Most imports into the port are delivered from the near continent (Netherlands, Germany, Northern Spain and the Baltics), with regular shipments from Northern Ireland, the Tees, Belfast and Scotland (principally wheat and barley exports).

The port handles smaller coaster size vessels in comparison with local ports such as Felixstowe, Tilbury and London Gateway. Mistley handles 150-200,000 tonnes of cargo per annum, predominantly made up of dry bulks supporting the brewing, farming and construction sectors. By importing these types of cargo, Mistley is well placed to offer bulk haul opportunities for lorries returning to the Midlands after delivering goods for export from Felixstowe and Harwich[90].

The port offers storage quayside in transit sheds, as well as off-dock storage and open storage. Mistley has three 500 tonne grain silos to support the storage of grain for import or export.

Transfer time between Mistley and Northern Europe is 14 hours, offering the port an advantageous position for competitive and efficient movement of goods. Data from 2008 also shows that 75% of goods sourced or delivered to Mistley was within a radius of 50 miles from the port. Three hectares of land to the east of Mistley Quayside is allocated and safeguarded as land for port expansion, with any plans for expansion balanced against potential harm to the adjacent special protection area and estuarine landscape.

90 https://www.tendringdc.gov.uk/sites/default/files/documents/planning/Planning_Policy/TDC_018%20Assessment%20of%20Mistley%20Port.pdf

3.1.9 Brightlingsea

Brightlingsea is a mixed leisure and commercial port[91], handling an approximate average tonnage of 50,000. The port principally handles dry bulk, grain, feedstuffs, forest products, livestock, fish and general bulk[92]. The port has 835 metres cubed of covered storage and 2.60 hectares of open storage.

Given the location of the port it is also involved in the development of Gunfleet Sands wind farm in the southern North Sea.

3.1.10 Wallasey/Baltic Wharf

Baltic Wharf port processes general cargo, forest and steel products, handling approximately 110,000 tonnes per year[93] all of which is inward freight. The port comprises 46 acres of storage facilities, including a timber treatment plant[94].

There are regular services between Baltic Wharf and ports in Latvia, Estonia and Sweden.

3.2 Key Challenges and Opportunities Summary

3.2.1 Impact of COVID-19 & Brexit

The ports have been affected by the COVID-19 pandemic, much like other ports around the world. For example, Felixstowe was a key gateway for the import of personal protective equipment (PPE) during the peak of the pandemic and towards the end of 2020 was storing 11,000 containers of PPE. This blocked 30% of the inbound container space at the port[95].

Compounding this, towards the end of 2020, container backlog from the pandemic earlier in the year accelerated shipping globally creating a surge in freight volumes. In addition, with the Brexit transition period expiring at the end of 2020, there was a surge in freight volumes to beat any customs changes imposed in 2021. This created congestion at ports.

This is expected to be a short-term situation however, Brexit has the ability to cause more prolonged issue with the storage of containers due to more complex customs requirements.

The impact of COVID-19 on ports was seen in the UK on the 21st December, with a surge in COVID-19 cases in the South East of England causing France to close the border, stopping all accompanied freight travelling from the UK to France via the port of Dover. This caused a backup of in excess of 1,500 lorries parked along the M20 and at a designated lorry park commissioned to alleviate any issues associated with Brexit[96]. This raised serious concerns in the UK regards the availability of fresh food products as well as other cargos transported by ro-ro fleets., highlighting the fragility of the UKs supply chains. Parking is a key issue for drivers accessing ports and has been identified by the Government as a factor which deters recruitment during the driver shortage. Demand for parking may be higher during and post pandemic. The parking requirement extends beyond ports to include key locations on trunk routes into ports. This situation also highlights the reliance upon foreign drivers, who currently are making fewer trips into the UK.

The East of England needs to consider how to remain an attractive area to trade in, encouraging drivers to travel. In this instance ro-ro freight was affected however consideration should be taken to whether other freight trades could be equally as affected in the future, with a plan in place to deal with emergencies. In the past container movements were seen to have more resilience due to the availability of a stock of empty containers providing some slack in the system. However, in 2021 this has not been the case, with a combination of large numbers of containers being used to store PPE and international shipping shortages having major impacts on inland supply chains (for example storing large volumes of containers inland).

[91] https://www.britishports.org.uk/our-members/brightlingsea-harbour-commissioners#:~:text=Brightlingsea%20Harbour%20is%20a%20small,conservation%20area%20of%20international%20importance.
[92] https://uk-ports.org/brightlingsea/
[93] https://uk-ports.org/baltic-wharf/
[94] http://www.ports.org.uk/port.asp?id=90
[95] https://www.cips.org/supply-management/news/2020/november/port-disruption-threatens-christmas-supply-chains/
[96] https://www.bbc.co.uk/news/uk-55405299

3.2.2 Free Port Update

Freeports are areas designated by the Government as areas with little or no tax in order to encourage economic activity. The benefits include the deferral of taxes until goods are moved elsewhere within the country, or avoidance of tax if goods are stored or manufactured on site before exporting them again. Freeports also benefit from streamlined planning processes to aid brownfield redevelopment and simplified customs procedures. Businesses located within the freeports will benefit from tax breaks including no stamp duty, full rebates for construction and machinery investment, five years of zero business rates, and lower tariffs and customs obligations.

Tilbury held freeport status until 2012 when the Government stopped renewing freeport licences. In 2020, the Government announced new plans for the development of freeports, seeing them as important as a post-Brexit tool to attract domestic and international investment.

In order to take up the opportunities that Brexit have provided, the UK Government's announced a programme to reintroduce UK Freeports. The Freeport objectives were published highlighting the desire to use Freeports to boost inward investment by creating global trade hubs, driving innovation, and tackling deprivation.

At the time of writing this report, the February 2021 Budget had revealed that 8 locations had been awarded Freeport status, including Freeport East – Felixstowe and Harwich and Thames – London Gateway and Tilbury.

Both Freeport's see their status as being a significant tool in helping the sub-regional and regional economy recover from the pandemic and drive regeneration in the area. The Freeport status for both areas is seen as a catalyst to providing high skilled, high paying jobs and will be key to levelling up the coastal areas.

Freeport East

The Freeport partnership includes Hutchison Ports UK, Harwich Haven Authority, Trinity House, Haven Gateway Partnership, New Anglia and South East Local Enterprise Partnerships, Suffolk and Essex County Councils, East Suffolk Council, Mid Suffolk Council, and Tendring District Council.

Specifically, Freeport East will bring

- 13,500 jobs (including 150 apprenticeships)
- Over the next five years the Freeport will attract more than £500 million of investment
- Total gross value added to the UK economy is £5.5 billion over 10 years
- Boost the trading capacity at Felixstowe by an additional 1.3 million tonnes – the equivalent of over four million containers
- Hydrogen hub; as well as offshore wind, new nuclear projects at Sizewell and Bradwell creating green solutions as well as the creation of a centre of technical excellence for the wider energy industry and support technological innovation that can be exported around the world
- Beyond the energy sector, Freeport East will also contribute to wider innovation in the technology sector. Hutchison Ports is already working with Cambridge University and Three UK to develop innovative 5G applications

The total Freeport area extends out from the twin ports, with a total diameter of 45km, with tax and/or customs sites earmarked for development inland. These are at Horsley Cross, Bathside Bay, Great Blakenham, Gateway 14, the Parker and Anzani Avenue areas of Felixstowe and the Port of Felixstowe Logistics Park.

Figure 3.5: Free Port East area

Thames Freeport

The partnership of DP World and Forth Ports successfully won Freeport status for Thames Freeport, which includes London Gateway and the Port of Tilbury and includes Ford's Dagenham engine plant as being strategically important.

Specifically, Thames Freeport will bring

- 25,000+ new jobs, with significant investment in training and skills
- £400 million in port investment
- 1,700 acres of development land
- Industrial clusters: regional aerospace, automotive and many complex manufacturing and processing clusters centred around the two ports
- A low-carbon highway – The Freeport will link sites along the estuary by river into London via operational wharves helping to reshape urban logistics, alleviating road congestion and reducing pollution along the A13 corridor
- £5.1 billion additional GVA
- Over £4.5 billion in new public and private investment

Figure 3.6: Thames Freeport area

The Thames Freeport bid includes a package of works to enhance connectivity to Tilbury and London Gateway which is being worked up to Outline Business Case stage.

Implications for Transport East

At the time of preparing this report the full implications of the announcement for Freeport East and Thames Freeport are still being fully understood. However, there are significant opportunities for the region to ensure for economic competitiveness for the international gateways, the following opportunities and implications are listed below but this is not an exhaustive list and will evolve over time:

- Positive benefits in the levelling up agenda and to assist in unlocking international gateways across the region
- Opportunities to capitalise on the benefits of the “centres of excellence for technology, innovation and green energy”
- Growth in volume through the areas – whilst this presents an opportunity for the areas there are implications for land use and potentially availability of land
- Sustainable Surface access and connectivity to freeport areas – especially Gateway 14 which is not rail connected and could add to congestion on the local road networks but also those areas within the Freeport boundaries which do have rail access should be electrified for example on approach to the major sea ports.
- Existing constraints could be exacerbated by strong growth derived from the freeport status for example the single carriageway (8 miles) from Hare Green to Harwich with strong calls for this link to be dualled.
- Green agenda is featured high on both the Freeport bids, but this doesn’t really negate the dependence on road HGV (see point above about Freeport connectivity.

3.2.3 Opportunities & constraints

Port	Opportunities	Constraints
London Gateway	▪ Land availability and consent at the Logistics Park as a demand driver ▪ Quay space to double capacity ▪ Handling container freight providing resilience to Brexit & COVID-19 trade fluctuations ▪ Benefiting from future growth in container freight ▪ Rail terminal potential to act as a standalone import and export hub (terminal has international status) ▪ Freeport bid with Tilbury to drive demand post Brexit (faster customs & expansion of manufacturing / logistics)	▪ Rail freight dependent on already congested rail routes through London.
Tilbury	▪ Capacity for increasing demand in the future ▪ Direct links with London to support major infrastructure projects & other markets ▪ Inland waterway shipping capability to Port of London Wharves ▪ Freeport bid with London Gateway to drive demand post Brexit (faster customs & expansion of manufacturing / logistics)	▪
Port of London Wharves	▪ Hubs for inland waterway shipping, particularly ▪ Hubs for manufacturing, warehousing and logistics ▪ Easy access to rail and Strategic Road Network ▪ Opportunity to move lighter weight freight upstream into central London – retail goods and parcels	▪ Wharves between Purfleet and Tilbury do not fall within the protected status area of London, which may have an impact on their future utilisation
Felixstowe	▪ Potential to expand to 8m TEU capacity ▪ Port is close to main global shipping lanes, meaning vessels do not have to deviate too far to access Felixstowe ▪ The UK's largest and busiest container port ▪ Deepening of Harwich Harbour, has the potential to support larger vessels ▪ Freeport bid with Harwich to drive demand post Brexit (faster customs & expansion of manufacturing / logistics)	▪ Rail access at capacity. While there are proposals to address this constraint there is a requirement for a comprehensive route-based plan ▪
Harwich	▪ Post Brexit potential to increase roll-on-roll-off services re-distributed from the English Channel ▪ Strong historical business relationship with the Hook of Holland ▪ Freeport bid with Felixstowe to drive demand post Brexit (faster customs & expansion of manufacturing / logistics)	▪ Reliance upon connections with Europe
Ipswich	▪ Leading UK grain export ▪ Large areas of warehousing for bulk storage and ability to increase capacity ▪ Opportunity for coastal sea shipping distribution of goods in the future ▪ Rail freight terminal	▪ Reliance upon connections with Europe ▪ Reliance on the road network for freight distribution
King's Lynn	▪ Preferred port in Norfolk for forest and bulk products ▪ Port focuses on local/regional import/export catchment ▪ Ability of smaller port to handle smaller volumes of freight less attractive to larger ports	▪

Port	Opportunities	Constraints
Lowestoft	▪ Long term relationship with energy companies developing offshore wind farms ▪ Key location serving offshore wind development ▪ East of England's Renewable Energy Hub attracting investment and manufacturing activities to the local economy ▪ Ability of smaller port to handle smaller volumes of freight less attractive to larger ports	▪
Great Yarmouth	▪ Shortest North Sea crossing between GB and Europe ▪ Land available for development ▪ Ability of smaller port to handle smaller volumes of freight less attractive to larger ports ▪ Strategically positioned to serve offshore wind and oil	▪ Tide dependent port limiting vessels ability to dock at the port
Mistley	▪ Smaller vessels able to access so could benefit from increased coastal sea shipping ▪ Bulk haul opportunities utilising empty HGVs from Felixstowe and Harwich heading back to the Midlands ▪ Ability of smaller port to handle smaller volumes of freight less attractive to larger ports	▪
Brightlingsea	▪ Located close to offshore wind farms with the opportunity to service their construction & maintenance ▪ Close to the Thames Estuary for coastal shipping opportunities ▪ Ability of smaller port to handle smaller volumes of freight less attractive to larger ports	▪
Wallasea / Baltic Wharf	▪ Ability of smaller port to handle smaller volumes of freight less attractive to larger ports	▪ Only processing inwards freight

3.3 Regional Port Volumes

This section builds upon the detail outlined in section 2.1, focusing on types of freight handled at ports in the East of England. Details of each port's contribution to the handling of each freight type is considered, alongside potential capacity for future growth.

3.3.1 Categories of international freight

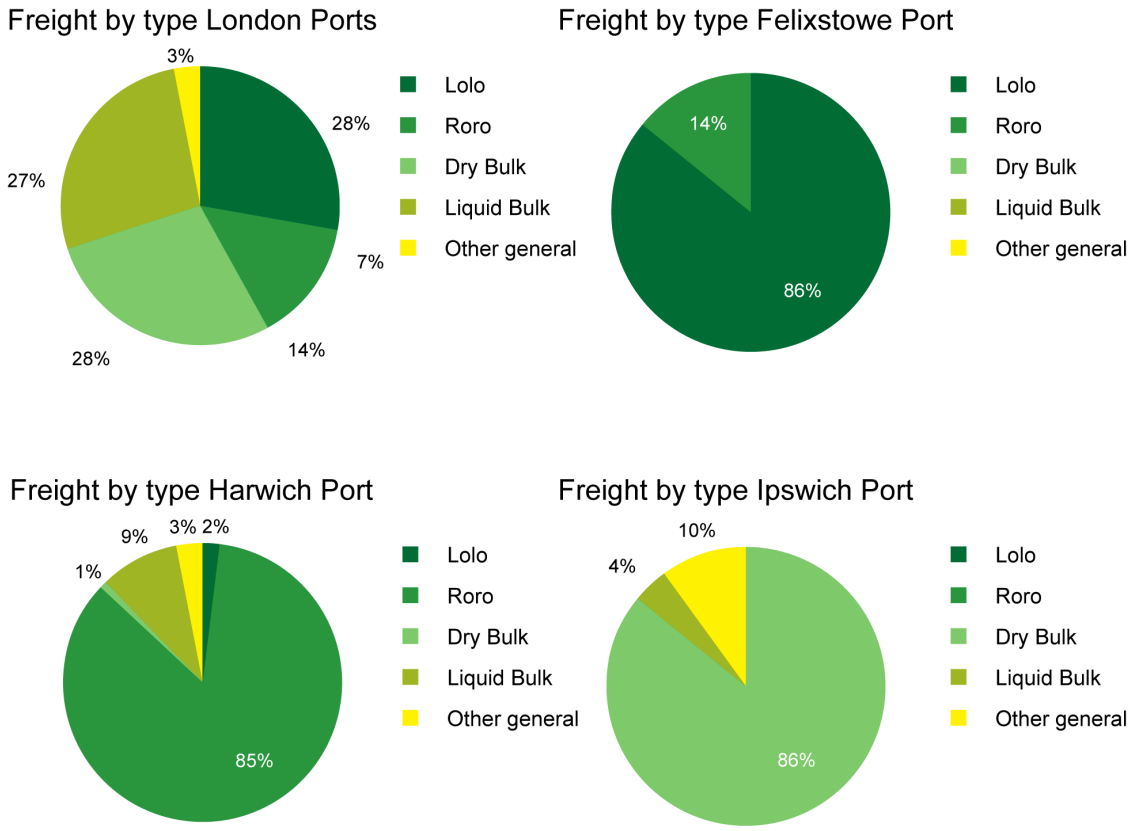
Freight is broken down by type based on how it is transported. Categories include, lift on-lift off (Lo-Lo), roll on-roll off (Ro-Ro), Dry Bulk, Liquid Bulk and other general cargo.

- **Lo-Lo** freight describes freight carried aboard ships with on-board cranes to load and unload cargo. This is often carried in shipping containers which have the advantage of being space efficient allowing ships to carry higher capacities than Ro-Ro equivalents.
- **Ro-Ro** freight describes ships which carry wheeled cargo which can drive on and off the ship on their own wheels. This type of freight can be loaded and unloaded from vessels faster than Lo-Lo freight and can be classified as accompanied or unaccompanied, depending upon whether the driver of the vehicle travels with the freight or not.
- **Dry Bulk** freight refers to granular material which is transported unpackaged such as grain, coal or aggregate, which can be carried in the ship's hold, tanker or railway wagon.
- **Liquid Bulk** freight refers to liquids or gases which are transported such as oil/petroleum.

The Department for Transport provides a breakdown of freight type being handled through major and key regional ports in the UK[97]. A breakdown of these is shown in Figure 3.7, showing collectively across the major

[97] DfT Port Freight Statistics Dashboard

ports in the region, most cargo types are handled, showcasing the range of skills and operations across the region.



***London port figures represent the combined freight for Tilbury, London Gateway, Purfleet, Dartford and Dagenham.*

Figure 3.7: Major ports freight handling by type (2019)

For the regional ports in the region, a detailed breakdown of the proportion of freight was not available through the DfT. Table 3.2 identifies which freight types are handled at each port.

Table 3.2: Regional ports freight handling by type

Ports	Lo-Lo	Ro-Ro	Bulk
King's Lynn		√	√
Lowestoft	√	√	√
Great Yarmouth			√
Mistley			√
Brightlingsea			√
Baltic Wharf		√	√

3.3.2 LO-LO Freight

The key ports in the region handling Lo-Lo freight are London Gateway, Tilbury, Felixstowe, Harwich and Lowestoft. Of the top five container ports in the UK, three are located in the East – Felixstowe, Tilbury & London Gateway, which represents 50% of the UKs container volume. The major ports have the facility to lift

cargo on and off the ships, with the appropriate storage space for containers while not in use. For this reason, regional ports do not handle Lo-Lo freight.

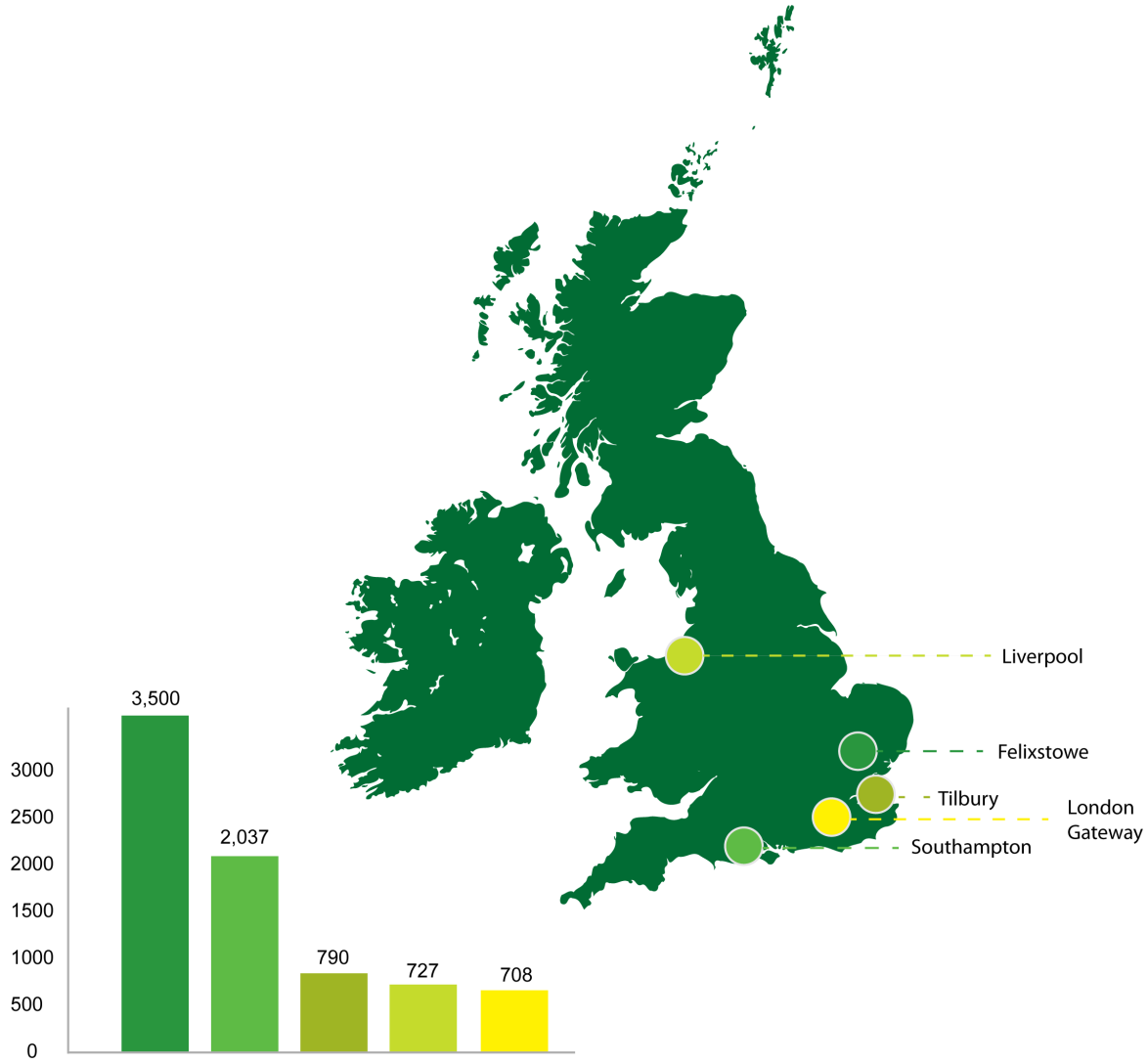


Figure 3.8: Main container port throughput, 2017 ('000 TEU)[98]

Figure 3.8 refers to 2017, which was soon after the opening of London Gateway. Port volume at LG was significantly higher in 2020

Despite the high number of containers handled in the UK and particularly by ports in the East, a high proportion of them leave the UK empty. Overall, 49% of containers loaded onto vessels in the UK are empty (this includes domestic traffic), this was a 6% increase in 2019[99]. The average figure for empty containers leaving Felixstowe is 51%, rising to 80% for services to many deep-sea destinations such as China[100].

Once processed, containers are destined across the UK, but with focus on the midlands 'Golden Triangle' and the Northwest of England (Figure 3.9[101]).

[98] Port of Felixstowe Growth and Development Needs Study – July 2018
[99] DfT Port Freight Statistics 2019
[100] Felixstowe Port Logistics Study – Final Report 2008
[101] DfT Transport Infrastructure for our Global Future: a study of England's port connectivity

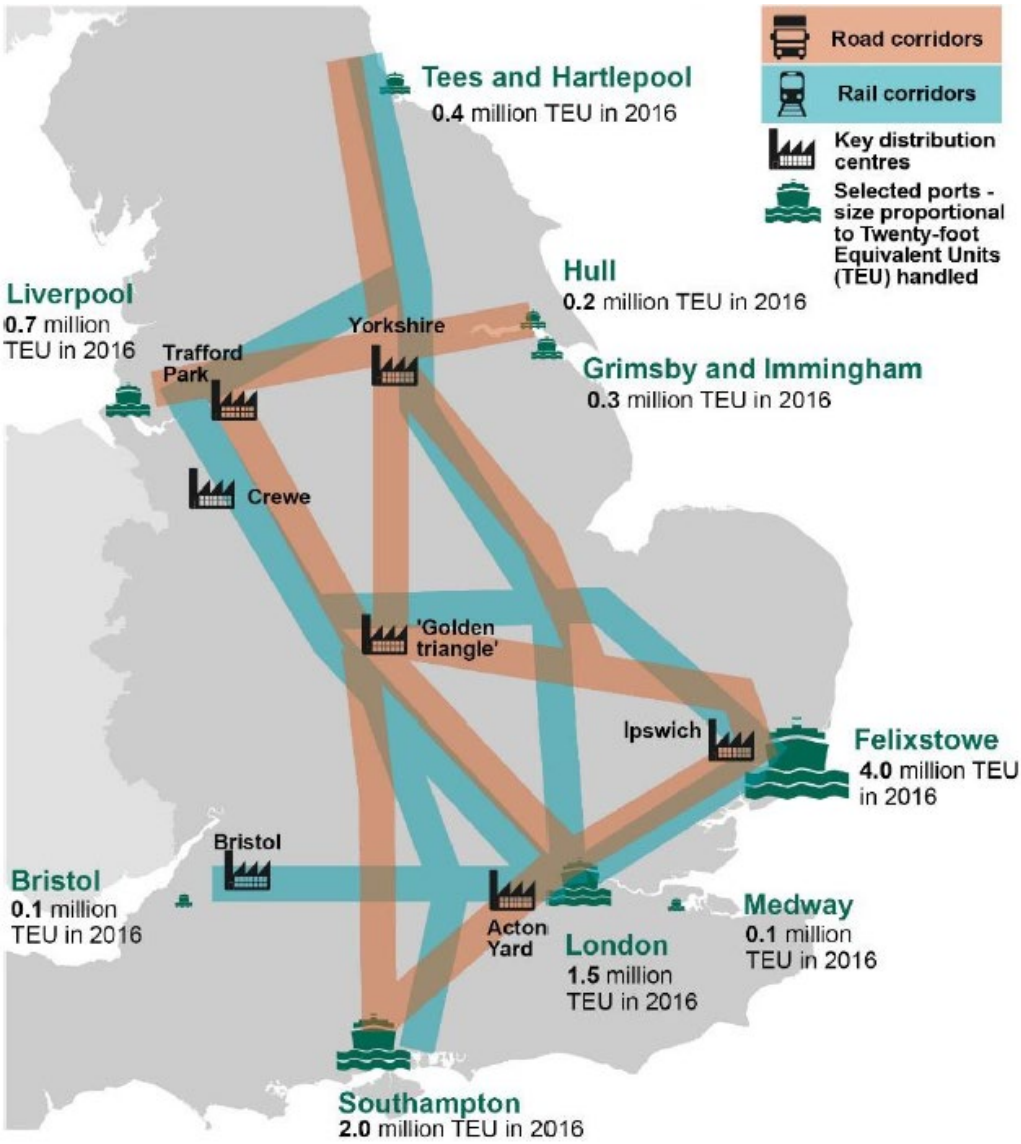


Figure 3.9: Illustrative freight corridors: Lo-Lo

- Felixstowe has a consistently maintained market share and position as the UKs largest and busiest container port. Most of the inward freight comes from Asia, with smaller proportions also originating from the European Union, Other European & Mediterranean, American and UK ports. Outward freight volumes are significantly smaller, shipping a large proportion of empty containers[102].
- Data for Lo-Lo handled at London ports is combined representing Tilbury, London Gateway, Purfleet, Dartford and Dagenham. Inward freight is predominantly from America and the European Union, with a cumulative 2.78 million tonnes of freight from Africa, Asia, Australasia and Other European & Mediterranean ports.

[102] DfT Port Freight Statistics 2019

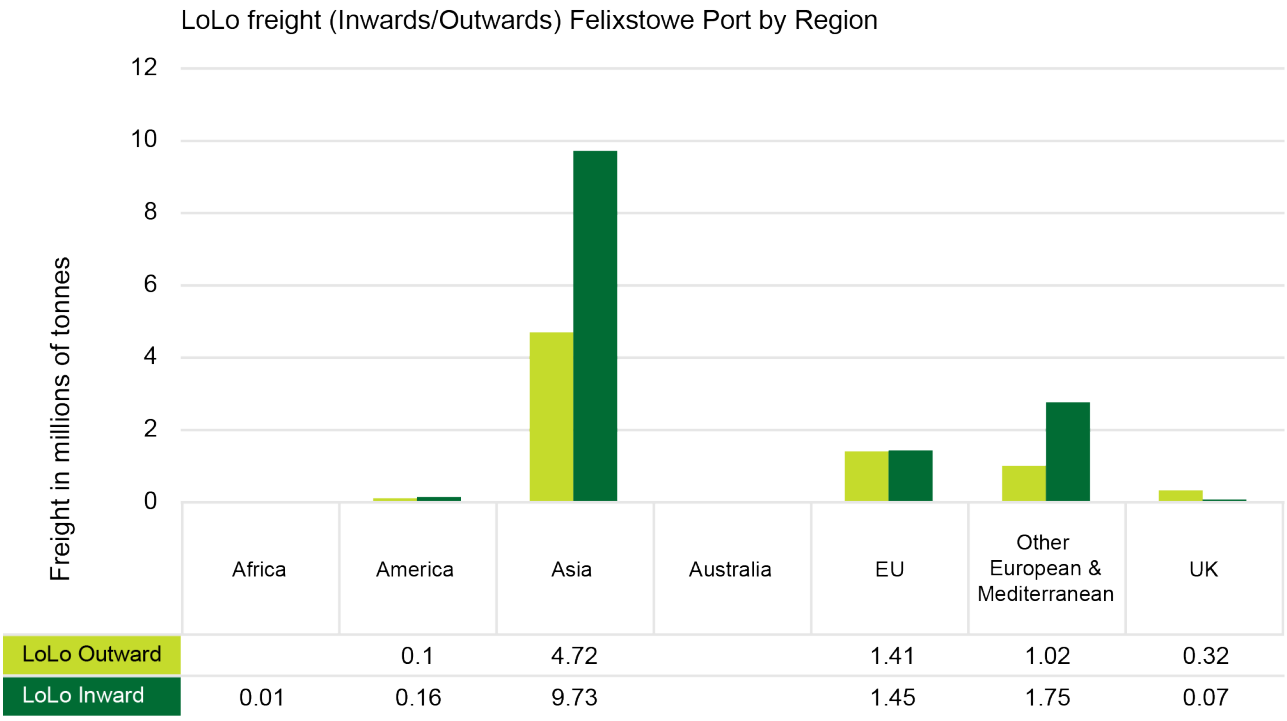
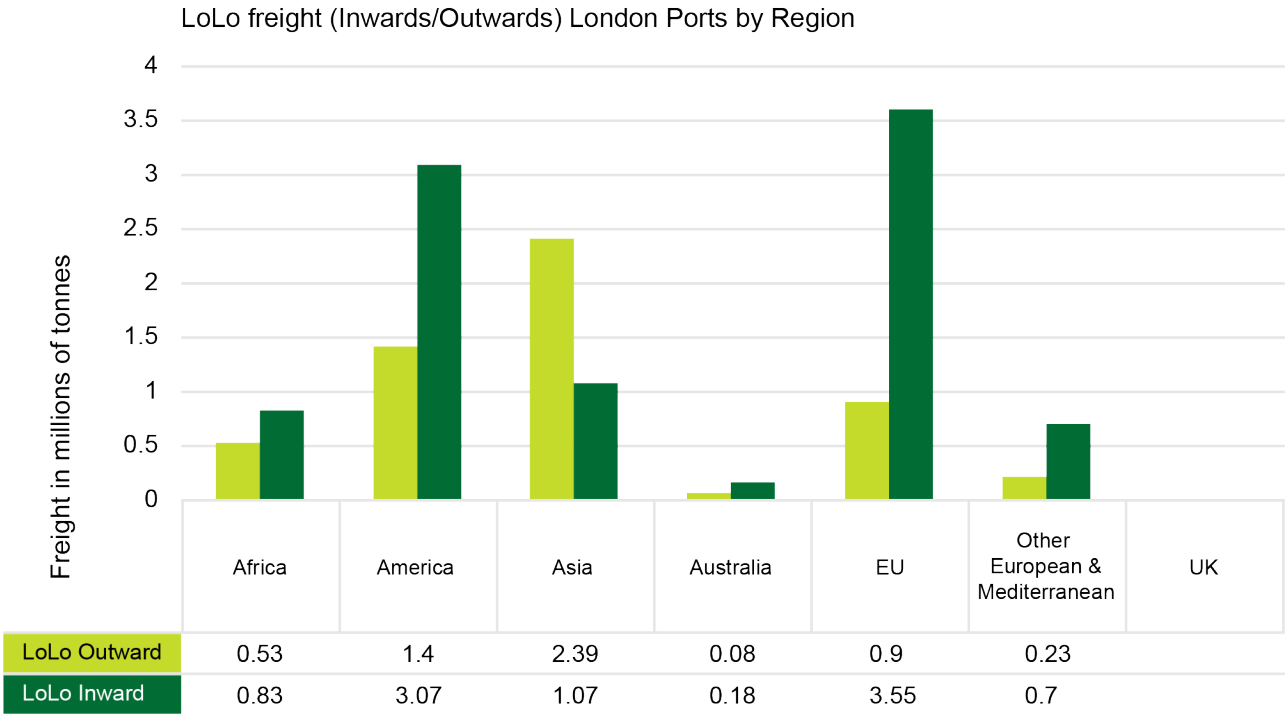


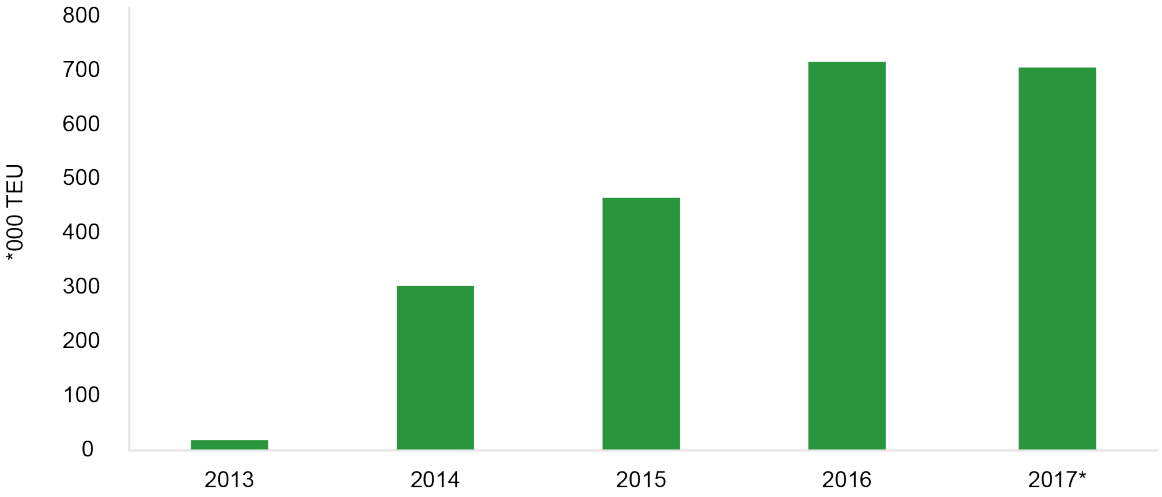
Figure 3.10: Lo-Lo freight handled by Felixstowe by region globally, 2019



*** London port figures represent the combined freight for Tilbury, London Gateway, Purfleet, Dartford and Dagenham.*

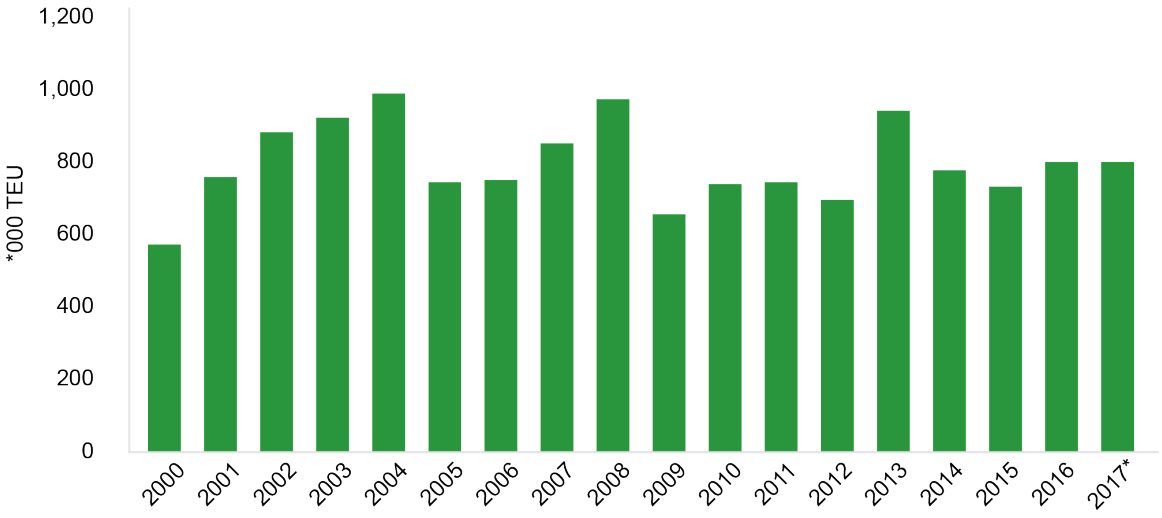
Figure 3.11: Lo-Lo freight handled by London ports by region globally, 2019

- The port handles some of the largest vessels in the world with the capability to carry vast numbers of containers. Since 2013, throughput at the port had steadily increased to 2017[103] (Figure 3.12), with London Gateway continuing to grow beyond 2017 to handle 1.48 million Twenty-foot Equivalent Units (TEUs) per year with 24 vessels arriving per week in 2020. This throughput reflects an increase of 9.4% growth since 2019, despite the impact of COVID-19[104]
- Tilbury port handles 14 container ship calls per week. With significant land availability, Tilbury can expand its operations to accommodate increased container traffic. In 2016, Tilbury handled a throughput of 790,000 TEUs (Figure 3.13), showing underutilisation of the port. There have been minor fluctuations in throughput since the year 2000, with a clear decline in container traffic since 2013[105].



Source: Royal HaskoningDHV / Department for Transport Statistics *Note: forecast

Figure 3.12: London Gateway throughput 2013-2017 (TEUs)



Source: Royal HaskoningDHV / Department for Transport Statistics *Note: forecast

Figure 3.13: Tilbury throughput 2000-2017 (TEUs)

[103] https://www.eastsuffolk.gov.uk/assets/Planning/Suffolk-Coastal-Local-Plan/First-Draft-Local-Plan/Port-of-Felixstowe-Growth-and-Development-Needs-Study-July-2018.pdf
[104] DPD World – Development of London Gateway v2.1 (November 2020)
[105] https://www.eastsuffolk.gov.uk/assets/Planning/Suffolk-Coastal-Local-Plan/First-Draft-Local-Plan/Port-of-Felixstowe-Growth-and-Development-Needs-Study-July-2018.pdf

- Harwich as a much smaller Lo-Lo freight operation when compared with London Gateway, Tilbury and Felixstowe. It relies heavily upon European Union ports to ship containers, with 90% of container freight inwards from EU ports[106].
- Lowestoft handles container and heavy lift project cargo. The volumes are so small that they are not reported by the Department for Transport.

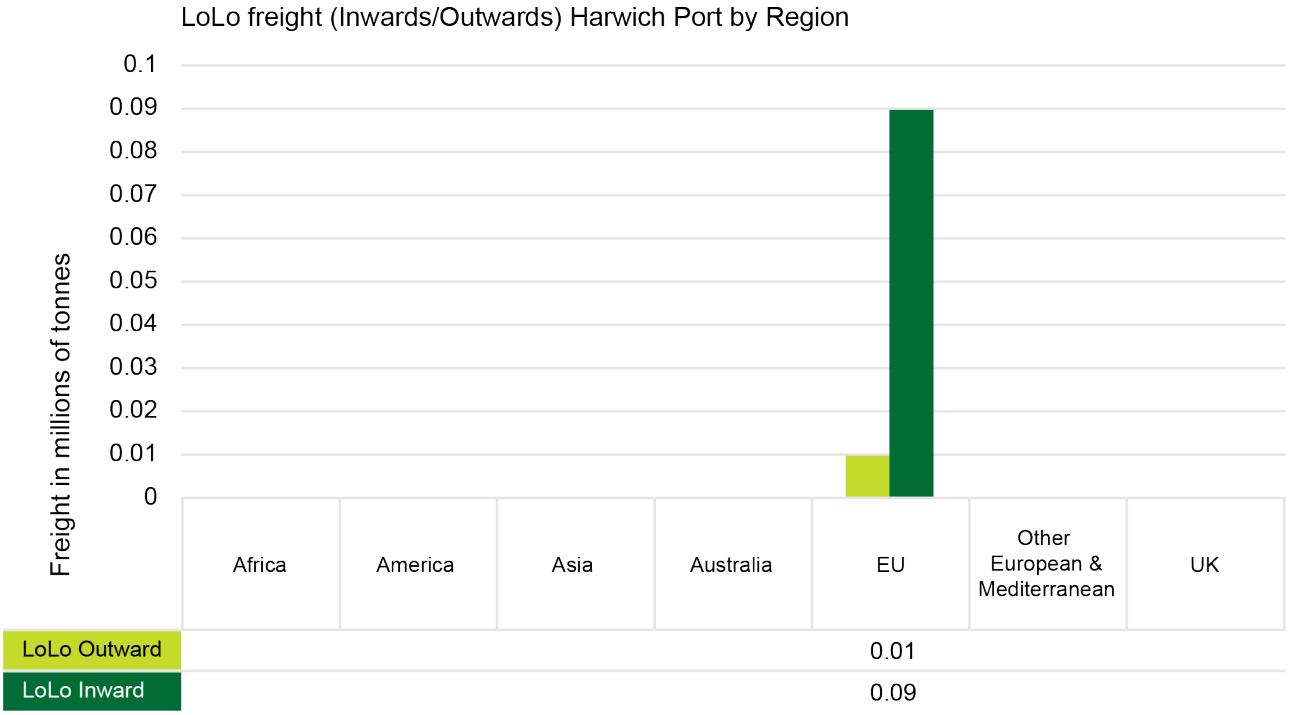


Figure 3.14: Lo-Lo freight handled by Harwich by region globally, 2019

Challenges to Lo-lo freight

In the long-term container tonnage is expected to increase between the UK and the Far East / China, although between 2018-2019 there was a decrease in container tonnage from China. This trade is relied upon to supplement container traffic slump post Brexit and so notes potential for vulnerability if this reduction remains in the short term[107].With the behavioural change in the UK towards e-commerce, it is expected that much of this demand will be met by increased container volumes.

Despite this, the COVID-19 pandemic has spiked container volumes at container ports globally. To deal with demand, Felixstowe has recruited and trained 104 additional equipment drivers to deal with the high volumes.

3.3.3 Ro-Ro Freight

The key ports in the region handling Ro-Ro freight are Purfleet, Tilbury, Felixstowe, Harwich, Lowestoft, King's Lynn and Baltic Wharf.

Ro-Ro freight can be categorised by accompanied and unaccompanied, reflecting whether the tractor stays with the trailer, or whether the freight is dropped off and picked up at the port. Dover dominates accompanied freight, with 57% of the volume entering the UK, however, has seen a decline in Ro-Ro market share by 3.3% into 2019.

Ro-Ro freight is mostly transported via the road, with no unaccompanied ro-ro trailers transported by rail. However, some shipping containers are carried on RoRo ships and these ae transported by rail from Purfleet and Tilbury.

[106] DfT Port Freight Statistics 2019
[107] DfT Port Freight Statistics 2019

The key road corridors utilised for Ro-Ro freight are shown in Figure 3.15[108]. Much of this freight travels to the major distribution centres in the Midlands.

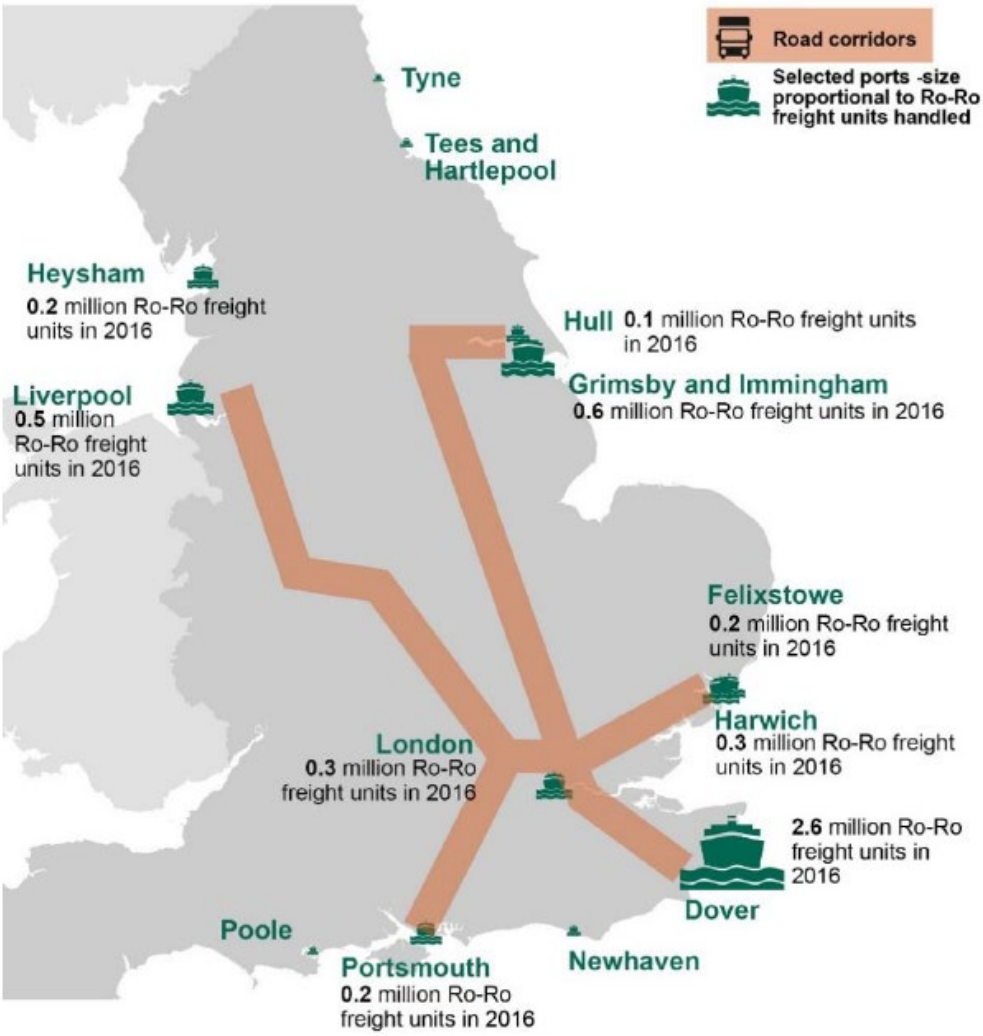


Figure 3.15: Illustrative freight corridors: Ro-Ro

- Harwich is a key connection with the Hook of Holland with 25 weekly services. The port commands 4% of the UK's total accompanied Ro-Ro and 5.5% of the unaccompanied Ro-Ro. Harwich is reliant wholly on the import and export of goods to EU ports[109] (Netherlands) increasing its vulnerability following Brexit. Despite this, the port is well placed to benefit from reallocation of Ro-Ro freight from English Channel ports in the wake of Brexit, with an established business relationship and ability to accommodate unaccompanied freight compared with Dover, with capacity to handle increasing volumes of accompanied freight. It should be acknowledged that although Ro-Ro is travelling through EU ports, the EU is not necessarily the origin or destination of the freight and therefore the impact of Brexit is likely to be short term.

[108] DfT Transport Infrastructure for our Global Future: a study of England's port connectivity
[109] DfT Port Freight Statistics 2019

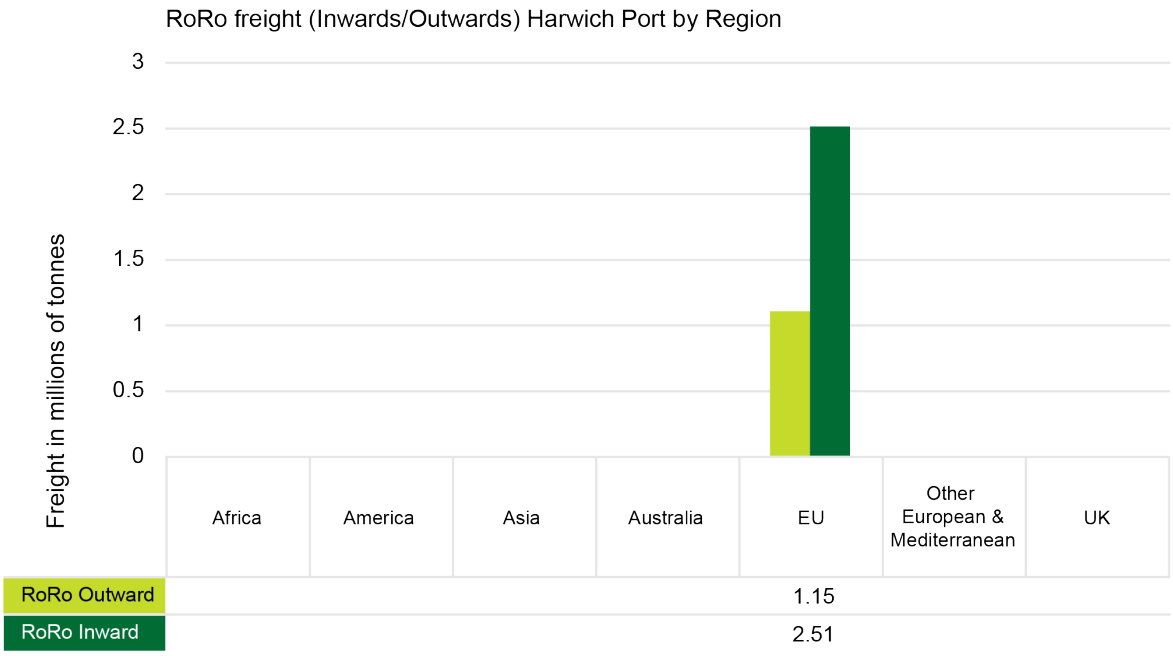
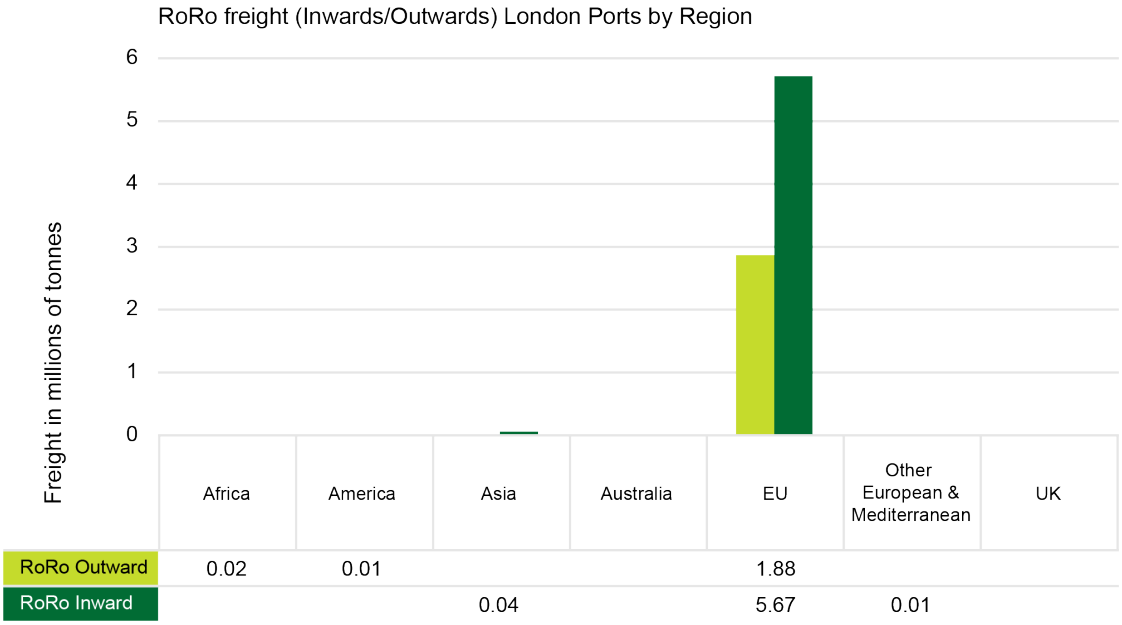


Figure 3.16: Ro-Ro freight handled by Harwich by region globally, 2019

- London ports also rely upon freight to and from the European Union[110], mainly serving Tilbury and Purfleet, accounting for 10% of UK unaccompanied freight trade. Purfleet benefits from trade of new vehicles, with London Ports accounting for 9% share of UK trade in new vehicles.
- Felixstowe handles inward Ro-Ro freight from the European Union only[111], with exports predominantly to Other European & Mediterranean ports. This accounts for 7.5% of the UK's unaccompanied freight[112].



*** London port figures represent the combined freight for Tilbury, London Gateway, Purfleet, Dartford and Dagenham.*

Figure 3.17: Ro-Ro freight handled by London Ports by region globally, 2019

[110] DfT Port Freight Statistics 2019
[111] DfT Port Freight Statistics 2019
[112] DfT Port Freight Statistics 2019

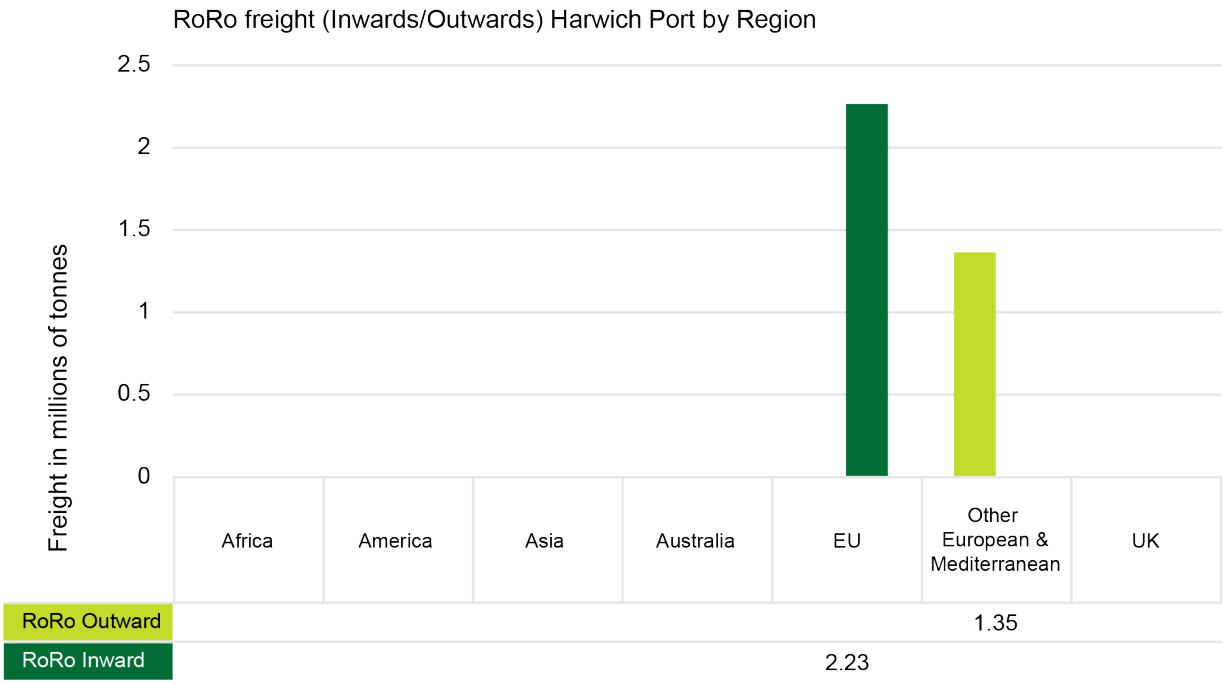


Figure 3.18: Ro-Ro freight handled by Felixstowe by region globally, 2019

- King's Lynn handles project cargoes which are all transported by Ro-Ro. The port links with Europe, Scandinavia and UK coastal shipping destinations.
- Lowestoft & Great Yarmouth ports handle offshore wind materials and general cargo which are transported by Ro-Ro. These ports broadly deal with coastal shipping and some links with Europe.

Challenge to Ro-Ro freight

Accompanied freight is most likely to be impacted by Brexit, with wait times for customs checks, and the need for parking up of freight vehicles due to expiration of driving hours and delays at the ports. It is likely to accelerate the recent trend away from accompanied to unaccompanied freight. COVID-19 has also had an impact on accompanied freight with isolation requirements for drivers when traveling across country borders (as discussed in Section 2.1.12).

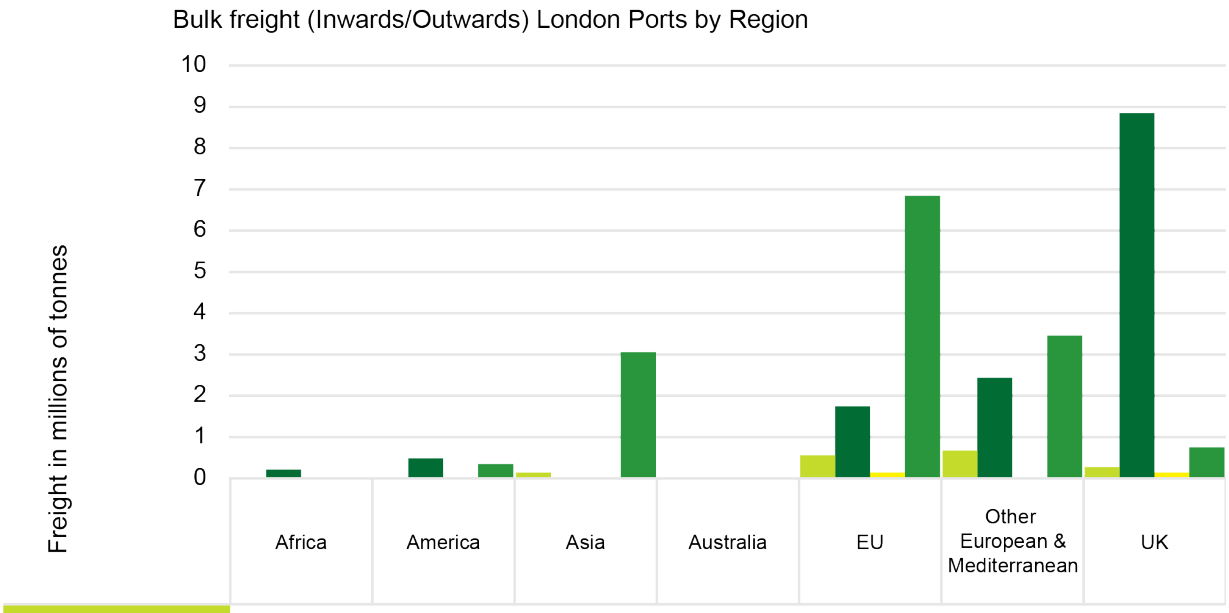
With Ro-Ro mostly being transported by road, any growth will have a direct impact on the road network. This will be especially prevalent along SRN accesses.

3.3.4 Bulk Freight

Bulk freight comes in the form of both liquid and dry bulk. Much liquid bulk enters complex supply chains in processing plants close to the port of landing. Large volumes of fuel are then transported by pipeline inland. Petrochemical products enter the transport system from the various plants and generally aren't considered as materials associated with international gateways.

The dominant non liquid bulk commodity handled in the region is aggregates, supporting the development of construction projects and road building. Combined with steel, agricultural and forestry products, dry bulk generally moves shorter distances inland than Lo-Lo and Ro-Ro, meaning it has more of an impact at a local level. London Ports handle the highest volumes of bulk freight compared with other ports in the East of England (16%), also carrying 16% of the UK's forestry products. Inward bulk is most dominant, with significantly lower volumes of bulk exported[113]. Ports and wharves on the Lower Thames receive bulk aggregates and then redistribute them by road, rail, and using the River Thames largely into the London area. Tilbury has recently invested in enhanced facilities for aggregates.

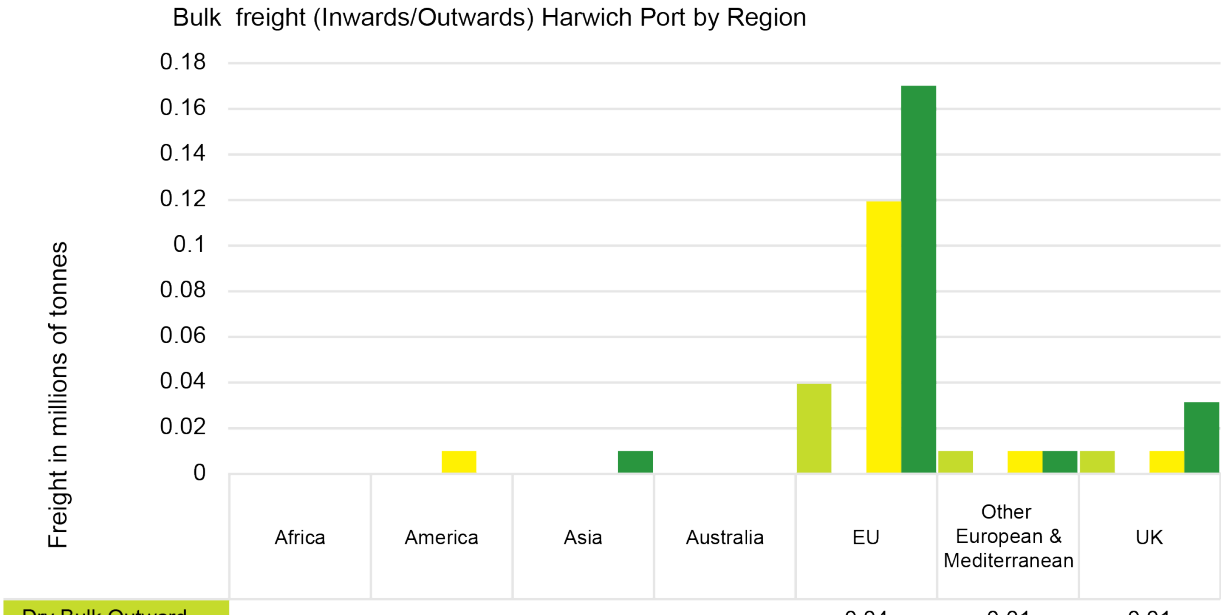
[113] DfT Port Freight Statistics 2019



	Africa	America	Asia	Australia	EU	Other European & Mediterranean	UK
Dry Bulk Outward		0.05	0.11		0.49	0.69	0.21
Dry Bulk Inward	0.19	0.46		0.06	1.7	2.41	8.76
Liquid Bulk Outward					0.09		0.07
Liquid Bulk Inward		0.32	3		6.87	3.46	0.76

***London port figures represent the combined freight for Tilbury, London Gateway, Purfleet, Dartford and Dagenham.*

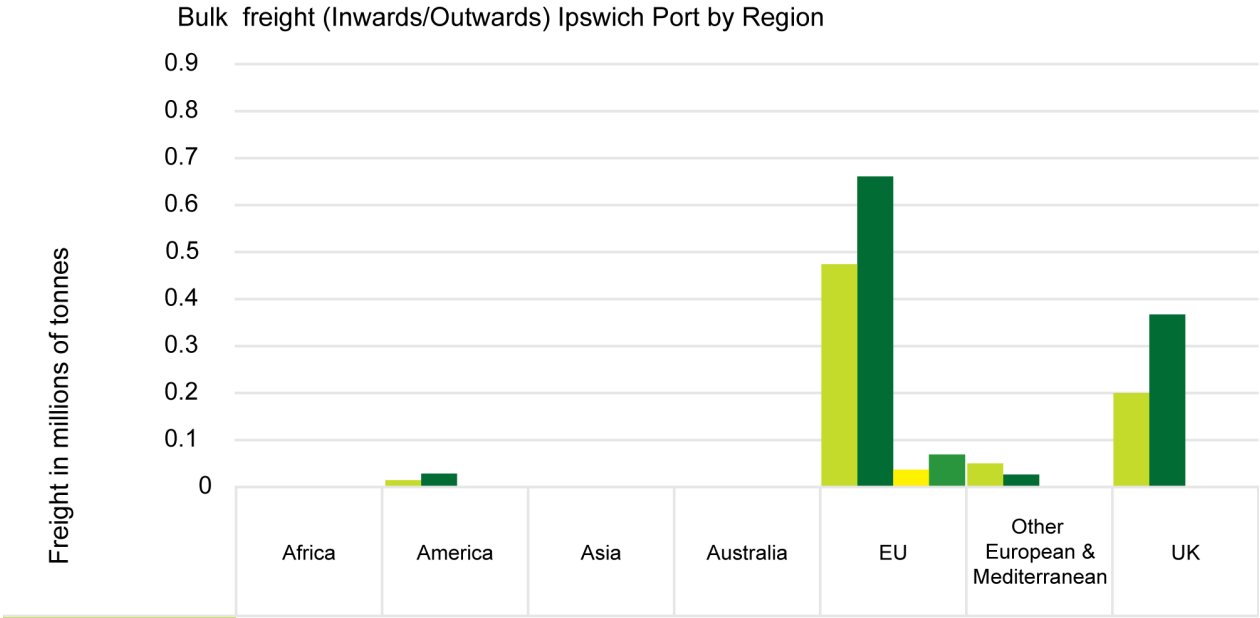
Figure 3.19: Bulk freight handled by London Ports by region globally, 2019



	Africa	America	Asia	Australia	EU	Other European & Mediterranean	UK
Dry Bulk Outward					0.04	0.01	0.01
Dry Bulk Inward							
Liquid Bulk Outward		0.01			0.12	0.01	0.01
Liquid Bulk Inward			0.01		0.17	0.01	0.03

Figure 3.20: Bulk freight handled by Harwich by region globally, 2019

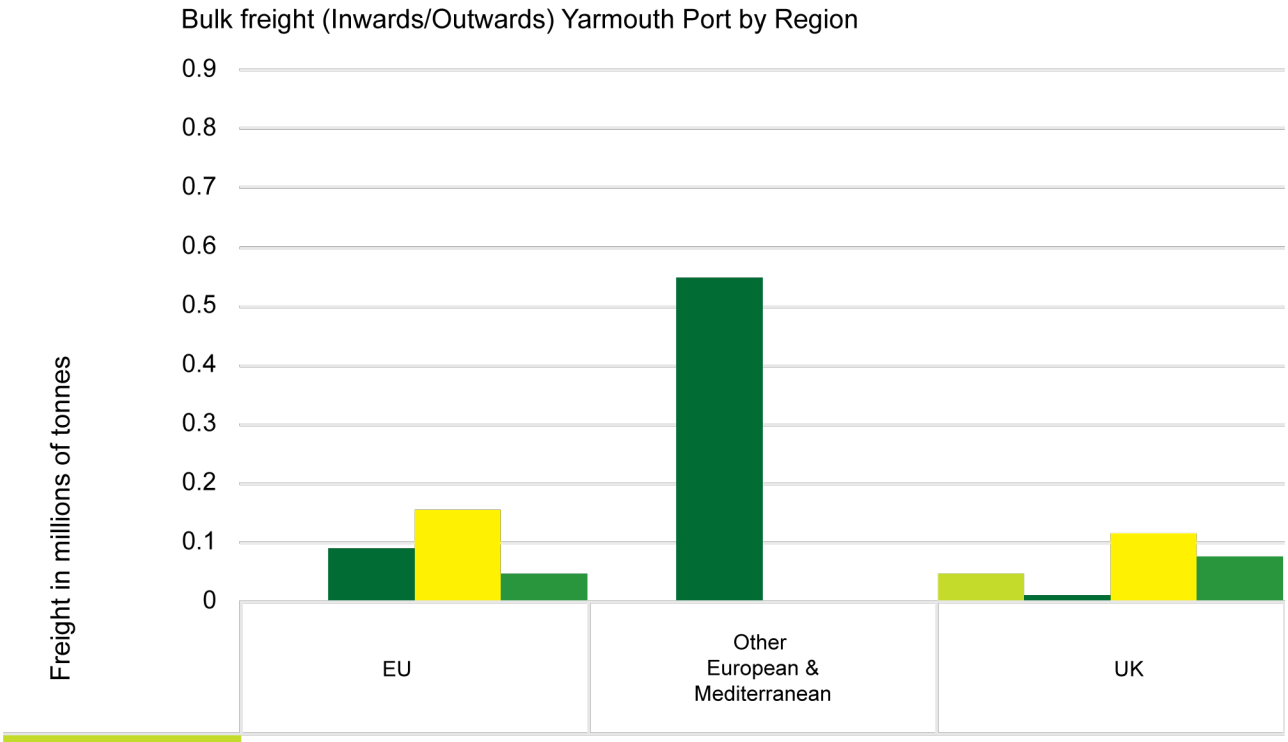
- Felixstowe does not handle any dry bulk freight and only handles small volumes of liquid bulk. products from the European Union.
- Harwich handles some dry bulk and liquid bulk, mainly to and from the EU.[114].
- Ipswich handles 2% of bulk freight in the UK. The greatest proportion of freight is between EU ports and the UK, as well as domestic coastal shipping within the UK. Smaller volumes of dry bulk are transported between Other European & Mediterranean and American markets[115]
- Great Yarmouth handles less than 1% of the UK's bulk freight, predominately handling inward dry bulk. Dry bulk originates from Other European & Mediterranean and EU countries as well as importing and exporting domestically within the UK. Liquid bulk is also exported to EU countries and transported domestically, with some imported predominantly from the UK.



	Africa	America	Asia	Australia	EU	Other European & Mediterranean	UK
Dry Bulk Outward		0.01			0.58	0.04	0.21
Dry Bulk Inward		0.02			0.64	0.02	0.36
Liquid Bulk Outward					0.04		
Liquid Bulk Inward					0.06		

Figure 3.21: Bulk freight handled by Ipswich by region globally, 2019

[114] DfT Port Freight Statistics 2019
[115] DfT Port Freight Statistics 2019



	EU	Other European & Mediterranean	UK
Dry Bulk Outward			0.04
Dry Bulk Inward	0.09	0.54	0.01
Liquid Bulk Outward	0.15		0.12
Liquid Bulk Inward	0.04		0.07

Figure 3.22: Bulk freight handled by Great Yarmouth by region globally, 2019

- King's Lynn focuses on handling Agri bulk, bulk energy, grain/feedstuffs, forest products, steel and other metals.
- Lowestoft services Agri bulks, grain/feedstuffs and liquid bulks and forest products.
- Mistley predominantly handles dry bulk goods serving the brewing, farming and construction sectors. Grain & malt for brewing, fertilisers, stone & aggregates, industrial minerals, glass & other recyclables, bricks & blocks, biomass, light steel products, metals and various other break bulk and general cargoes.

Challenge to Bulk freight

Bulk freight can be more susceptible to economic fluctuations given the link with construction. With construction being driven by economic growth, and government investment, during times of lower investment the demand for bulk products are less.

The London ports rely on using the River Thames to ship aggregates closer to the main construction projects. This requires use of wharves within London. While such wharves are protected against alternative development, they are under pressure from new housing being developed around the wharves, leading to pressures to restrict activities.

Regional ports can be at a disadvantage directly competing with larger ports such as Ipswich and Harwich. This in mind, they can also be well placed to capture the smaller bulk and semi-bulk products and general cargoes, given these are often less attractive to the larger ports. Much of this trade is intra-European, which opens these smaller ports to vulnerabilities post-Brexit.

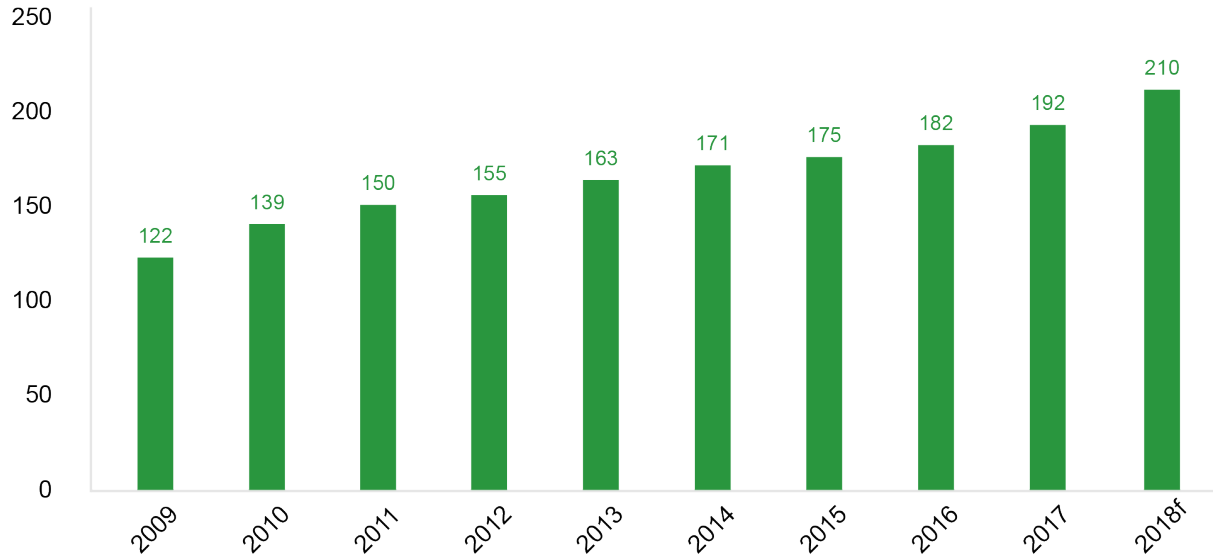
Smaller ports have lower overheads compared with larger ports and so can often offer competitive pricing to handle bulk goods. In instances where there is limited space on the quay for storage, the additional handling costs are passed on to the cargo owner, which can be an obstacle to upscaling and handling larger volumes.

3.3.5 Future growth of freight

Future growth at UK ports are uncertain, particularly with the impact of Brexit and the potential customs and bureaucratic checks at borders[116]. These delays particularly affect accompanied RoRo, which may accelerate the trend of growth of unaccompanied services through ports such as Felixstowe.

Lo-Lo

Between 2009-2018 UK container trade saw steady growth with trade increasing by 72% (Figure 3.23) and is projected to grow up until 2040[117]. This growth is mainly due to the increase in exports to/from the Far East, with China a main hub for container traffic.



Source: Royal HaskoningDHV / Clarrksons

* Note: 'e' denotes estimate and 'f' denotes forecast

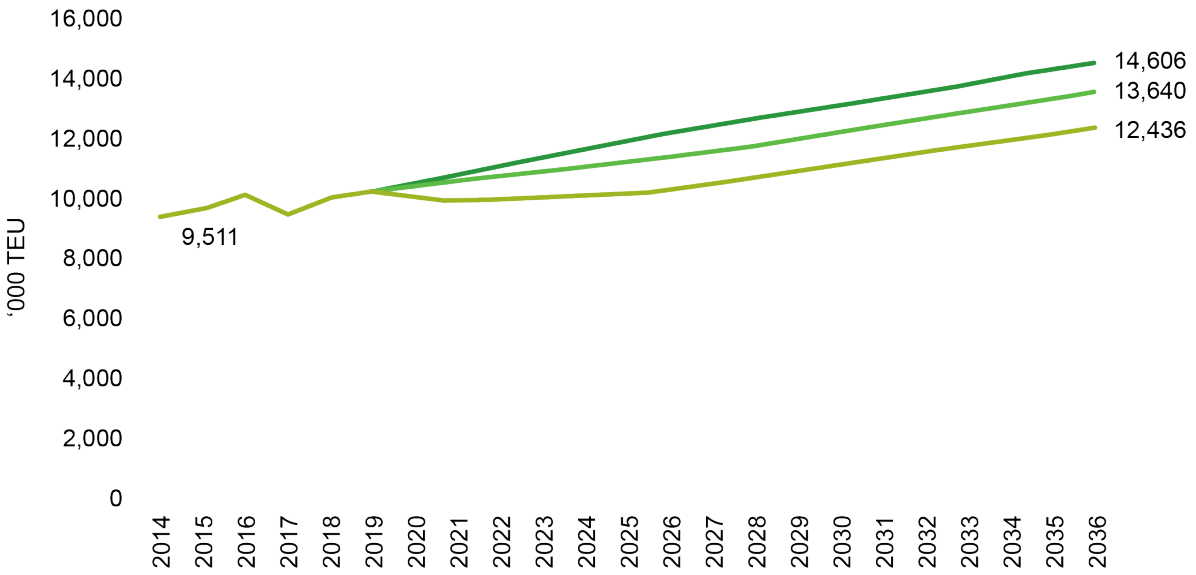
Figure 3.23: Seaborne container trade, 2009-2018 (million TEUs)

Further to this, the DfT have forecast that in the short-term port traffic growth will remain relatively flat but grow in the longer term with tonnage 39% higher in 2050 than in 2016. This is expected to be driven by increases in unitised freight traffic, offsetting a short-term decrease in other freight types (due to Brexit impact)[118]. DfT forecasts estimate an average Lo-Lo growth of 2.5% per year for tonnage and 2.4% per year for TEUs[119].

There is a real challenge to forecast which ports will accommodate growth, as there is strong competition between ports. All the ports in the region have capability to expand, and it is expected that each port will grow its volume over the longer term, fluctuating around 2.5% per annum depending on market share gains or losses.

With container traffic expected to increase in the future, all of the LoLo ports in the region have potential to increase capacity appropriately.

[116] Port of Felixstowe Growth and Development Needs Study – July 2018
[117] Port of Felixstowe Growth and Development Needs Study – July 2018
[118] DfT UK Port Freight Traffic 2019
[119] DfT Port Freight Statistics 2019



Source: Royal HaskoningDHV

Figure 3.24: UK forecast freight traffic growth (TEUs)[120]

Other UK ports have plans to expand their container throughput– In addition to Felixstowe, this includes London Gateway and Tilbury, benefiting from considerable land availability for logistics related development.

The Thames ports are well positioned to handle additional container capacity, with availability of quay space, storage and logistics, all of which currently underutilised. Throughput at London Gateway is projected to continue growing steadily to at least 2030[121], with the port having capacity and the ability to expand to support this growth. This growth is supported by the port's semi-automated systems offering resilience to weather, increasing productivity, transport connections and a rail terminal, as well as integrated logistics park.

Table 3.3: Forecast throughput at London Gateway, 2019-2030[121]

	(Actual)											
	2019	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
In / Out Volumes (TEU'000s)	1,205	1,242	1,245	1,276	1,339	1,585	1,817	1,849	1,881	1,914	1,948	1,982
Transhipment Volumes (TEU'000s)	239	245	284	288	297	352	404	411	418	425	433	440
Total Throughput (TEU'000s)	1,444	1,486	1,529	1,564	1,636	1,937	2,221	2,260	2,299	2,339	2,380	2,422
TEU Ratio	1.69	1.69	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68
In / Out Volumes (Moves '000s)	713	734	742	760	798	945	1,083	1,102	1,121	1,141	1,161	1,181
T/S Volumes (Moves '000s)	141	145	169	171	177	210	241	245	249	253	258	262
Total Throughput (Moves '000s)	854	879	911	932	975	1,155	1,324	1,347	1,370	1,394	1,419	1,444

Ro-Ro

Growth is expected through all the ports in the East (particularly Tilbury), with growth already seen at Felixstowe and Harwich into 2019. Overall growth rates for Ro-Ro traffic into the UK are anticipated to grow at 2.5% per year but could fluctuate between 1.7% and 3.2% depending on GDP growth[122].

[120] Port of Felixstowe Growth and Development Needs Study – July 2018
[121] DPD World – Development of London Gateway v2.1 (November 2020)
[122] DfT UK Port Freight Traffic, 2019 Forecasts

Although all ports in the East are expected to benefit from growth in Ro-Ro in the future, it is particularly anticipated that Tilbury. Felixstowe and Harwich could see growth from the reallocation of Ro-Ro from the English Channel ports and ability to handle greater volumes of unaccompanied freight.

Light Freight

While the Thames is busy carrying aggregates and other bulk materials from ports into London, there is also potential to use the river to carry other types of freight such as parcels or food and drink products. Such services would take pressure off roads in the Transport East area.

Dry bulk

The DfT port freight forecast for dry bulk shows a declining trend between 2018 to 2022 (-4% of total tonnage), only returning to 2017 levels projected in 2027, with a steady increase of 0.6% annually until 2050[123].

The forecast for 'other dry bulk', agricultural products and general cargo sectors indicate steady state, where neither spectacular growth nor decline is anticipated, as is the case at all ports in the East of England[124].

Port of London Authority Future Trade Report

This report was published by the PLA in May 2021[125] as a support document to its consultation on Thames Vision 2050. Broadly the PLA trade report supports the general trends identified above. Notable in the report is a reduction in the volume of petroleum products but continued growth in most other commodities, notably LoLo container traffic. This leads to forecast growth from around 50 million tonnes per annum in 2019 to over 75 million tonnes per annum in 2050.

In the report unitised freight is forecast to grow by 87% over 2019 and "other" freight by 93%. The unitised growth rate equates to around 1.4% per annum, which is lower than the forecast for the UK as a whole, possibly reflecting assumptions on market share.

3.3.6 Opportunities & constraints

Freight type	Opportunity	Constraint
Lo-Lo	▪ Growth of container freight from Far East/China relied upon to supplement container traffic slump post Brexit – longer term reliance on these markets ▪ Behavioural change in UK towards E-commerce, demand met by increased container volumes ▪ Three of the top five container ports located in the East of England ▪ Two of the three UK ports able to accommodate the largest container vessels are in the East of England	▪ High proportion of empty containers leaving the port – possibly through lack of manufacturing close to the port ▪ COVID-19 pandemic spiking volumes in container ports globally to re-distribute backlog – shortage in containers in Asia to continue shipping as containers held up in ports around the world ▪ Some risk of businesses "reshoring" manufacturing (returning production/manufacturing back to the company's original country) to improve resilience, but this has not yet impacted forecasts. ▪ Road transport significantly impacted by major delays and road closures, disrupting port operations and supply chains ▪ Rail access capacity is constrained

[123] DfT UK Port Freight Traffic, 2019 Forecasts: https://www.gov.uk/government/publications/uk-port-freight-traffic-2019-forecasts

[124] https://www.tendringdc.gov.uk/sites/default/files/documents/planning/Planning_Policy/TDC_018%20Assessment%20of%20Mistley%20Port.pdf

[125] https://www.pla.co.uk/assets/oeportoflondonreportfinal.pdf

Freight type	Opportunity	Constraint
Ro-Ro	▪ The reliance upon EU ports does not mean the reliance on EU freight ▪ Opportunity to develop rail transport offering for ISO containers and EU standard swap bodies ▪ Brexit impact could shift ro-ro from Channel ports to the East – particularly Harwich/Tilbury ▪ All the ports have capacity and plans to increase unaccompanied and accompanied ro-ro in the future	▪ Dover and Eurotunnel dominate accompanied Ro-Ro, and so access to Kent gateways is important for businesses in the region, despite congested access via the M25 / Dartford Crossing ▪ Ro-Ro not transported by rail meaning reliance upon strategic road network ▪ Road transport significantly impacted by major delays and road closures, disrupting port operations and supply chains. ▪ Impact of border disruption to supply chain (post Brexit/COVID-19) – need to consider how the region remains attractive for trading (particularly for accompanied freight)
Dry Bulk	▪ Regional ports can capture smaller and semi-bulk markets which are less attractive to major ports ▪ Smaller ports have low overheads and can offer competitive pricing ▪ Bulk freight travels shorter distances – impact the local economy with smaller ports being located to serve local markets ▪ High proportion of bulk freight exports are domestic	▪ More susceptible to economic fluctuations – link with major construction/government investment ▪ Regional ports at disadvantage directly competing with larger ports ▪ Trade broadly intra-European leaving post Brexit vulnerability ▪ Small port area of regional ports an obstacle to upscaling ▪ Bulk freight travels shorter distances – greater impact on local road network (local connectivity essential to avoid disruption to towns/cities)

3.4 Passenger movement

Tilbury is the closest deep-sea passenger terminal to London. In 2019 170,000 passengers travelled through the port, an increase from 140,000 the year before[126]. Cruises depart from Tilbury to Iceland, the Nordics, the Baltics, the Caribbean, Australasia, Asia and domestically to Liverpool, Scilly, Skye and Invergordon[127]. There are also ferry movements between Tilbury and Gravesend across the River Thames for foot passengers, service operating six days a week [128]. Various proposals are seeking to introduce more river services from Tilbury and into London.

Harwich is one of the top five international short sea routes in the UK, and the only port registering an increase in the number of passengers year on year to 2019. In 2019 there was a 2%) increase in the number of passengers travelling between Harwich and the Hook of Holland, compared with the year before, equivalent to 0.7million passengers[129]. Harwich also handles cruise ships, with 5,000 passengers travelling through the port in 2018, showing a year on year increase of 92%. Despite this since 2016 (EU referendum) there is an overall decrease in cruise passenger numbers[130]. There is also a harbour ferry which links with Shotley Gate and Felixstowe for foot passengers [131].

In 2019, there were 9,000 passenger movements through Felixstowe, accounting for a year on year decrease of 3%[132].

[126] forthports.co.uk
[127] Planetcruise.com
[128] https://www.thurrock.gov.uk/ferry-services/tilbury-to-gravesend-ferry-service
[129] DfT Sea Passenger Statistics 2019
[130] DfT spas0101 dataset
[131] https://www.harwichharbourferry.com/
[132] DfT spas0101 dataset

Brightlingsea runs a daily foot ferry to Mersea Island, with is a leisure trip between Brightlingsea and Point Clear reducing road miles along the Colne Estuary[133].

Passenger Summary

- Cruises operate from Tilbury and Harwich
- Harwich Ferry to Hook of Holland in top five of international short sea routes in the UK
- Harwich & Brightlingsea offering foot passenger ferry services for leisure and access to ports
- Opportunity to further leverage water as a passenger movement around the region to boost tourism and reduce vehicle miles/hours including on the Thames

3.5 Access to Ports

The economic success of ports is closely tied to the infrastructure around ports to transport goods efficiently around the country delivering economic growth. With the ports investing in increasing capacity and accommodating larger vessels, it is vital that the rail and road networks have appropriate capacity and adequate service quality to meet demand[134].

For the freight industry reliability of the transport network is a key and important feature for businesses. For HGVs transporting goods, delays on the transport network mean missed delivery slots, expiry of driving hours and potential for goods to perish. This unreliability therefore induces cost on the business. Small delays, such as slower journeys in peak periods, are not a big issue for freight, it is significant disruption that impacts supply chains, such as carriageway closures.

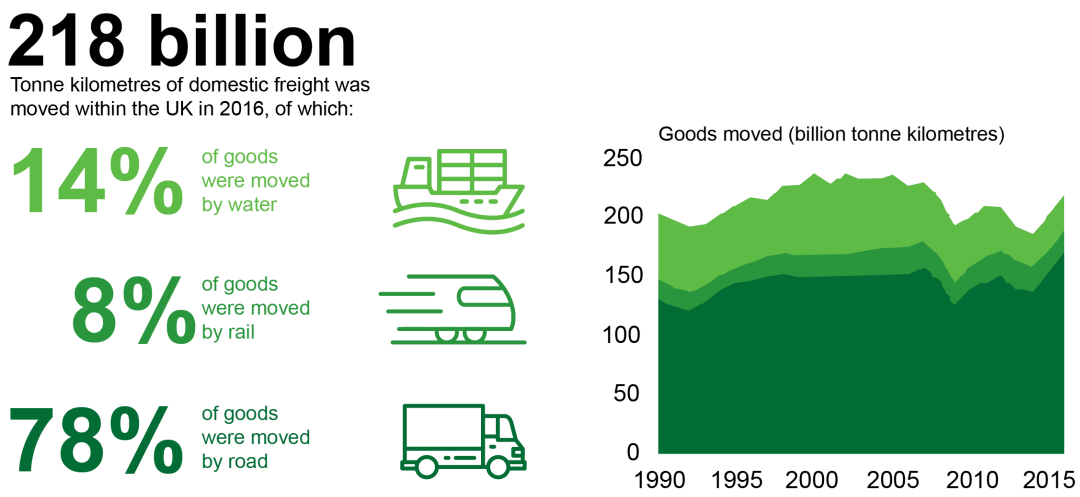


Figure 3.25: Freight moved around the country by volume, 2016[135]

3.5.1 Road access

Road is the most dominant mode of freight transport accounting for 78% of all domestic freight movements in the UK in 2016. The road network serves high frequency, food, consumer and manufactured good markets, serving retail, logistics and industrial markets as well as construction and primary materials[136].

[133] https://www.visitessex.com/information/product -catch-all/brightlingsea -boat-trips-and-foot-ferry-p1270941
[134] DfT Transport Infrastructure for our Global Future: a study of England's port connectivity
[135] DfT Transport Infrastructure for our Global Future: a study of England's port connectivity
[136] DfT Transport Infrastructure for our Global Future: a study of England's port connectivity

In general, the average road journey for HGV freight is 90 km, and this will also apply to bulk freight through local ports. However, for RoRo and LoLo average trips are much longer, having to reach all major regions of the UK.

While significant volumes of LoLo and RoRo are destined for London and the South East including much of the East of England, a large volume of containers and RoRo trailers move from the ports to distribution centres in the Golden Triangle of the Midlands, broadly around Lutterworth / Northampton which is 220 km from Felixstowe and 180 km from the Thames ports. Figure 3.26 highlights the main strategic road network (SRN) access to the main ports in the UK. It shows the relative distance the Eastern ports are from the motorway arteries of the country when compared against other ports around the UK.

Highways England have several priorities for the road network to address connectivity and resiliency issues. Examples being[137]:

- Last mile improvements - assessment of priorities for investment and ownership options in order to create improved end-to-end journeys between key economic destinations, especially international gateways
- Integration hubs - investigation of potential to improve multi-modal integration by creating opportunities for between multi-modal journeys

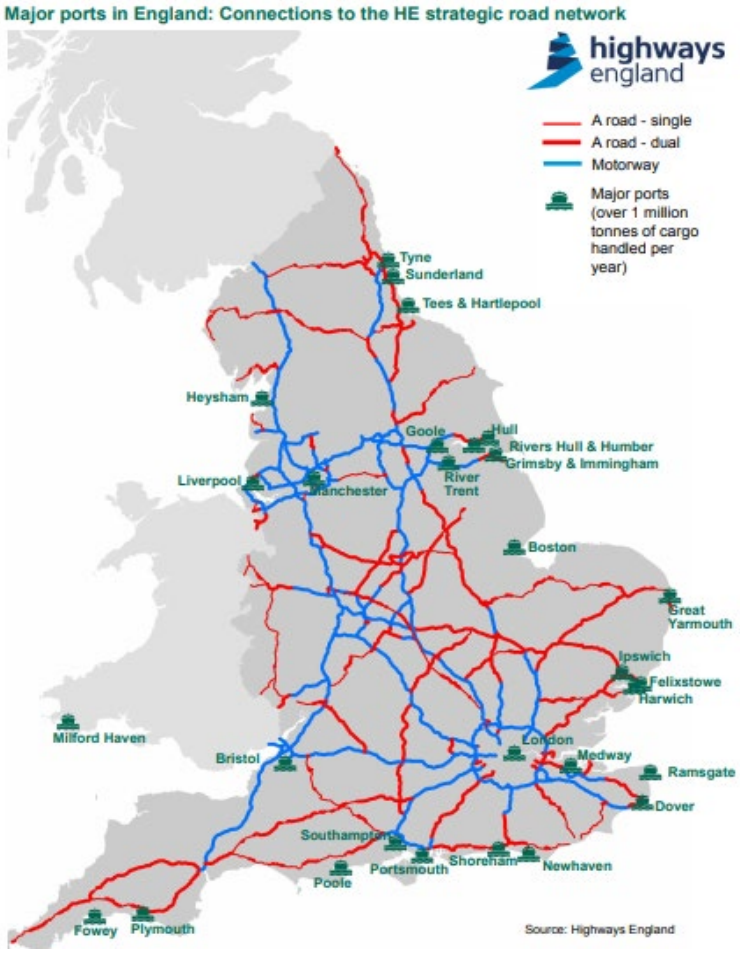


Figure 3.26: Road network accessing major ports in the UK[138]

North East Anglia and the Wash ports

[137] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attach ment_data/file/710030/transport -infrastructure-global-future-a-study-england-port-connectivity.pdf

[138] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/701352/england -port-connectivity-the-current-picture.pdf

A key issue for the ports in the region is the relative distance from the core strategic road network, this is particularly the case for King's Lynn and Great Yarmouth. North-south connections to these ports are limited, with the DfT noting that the A47 to Yarmouth is a key east-west connection for accessing the A1, M1 and M6 heading north-south[139]. The A47 infrastructure varies along its length between dual and single carriageway, creating pinch points for up to 2,500 HGVs per day. There are proposals to dual the A47 between Burlingham and Biofield[140], as well as between Norwich and Dereham[141], with the longer-term intention to dual the whole route improving capacity and journey reliability.

The main access route to King's Lynn port is single carriageway which offers little resilience to incidents and provides capacity challenges for accommodation of future growth.

At Great Yarmouth, access to the port is inhibited by town centre traffic. Funding was announced in 2017 for a third crossing of the Yare which would provide a more direct access route to the port for freight traffic. Total government funding for this scheme amounted to £98.9 million[142].

Haven ports

The ports of Felixstowe, Ipswich and Harwich have better connections with the strategic road network with the A12, A14 and A120 highlighted as key connections with the wider network. All these routes handling in excess of 5,000 HGVs per day means the resiliency of the road network is critical in ensuring efficient and reliable freight movement.

The A12 suffers congestion during peak periods, where the lack of hard shoulder inhibits its resiliency. This is shown by the average delay along the route being 7-13 seconds per vehicle mile[143].

The A14 is the main route for 70% of freight moving through Felixstowe port, with the route suffering similar issues to the A12 affecting the routes resiliency to accidents and weather. This is shown by the average delay along the route being up to 4 seconds per vehicle mile[144].

- A14 has a role as a strategic transport corridor linking Felixstowe with the Golden Triangle logistics hub, meaning much of the sub-region's logistics space developed along this route.
- Orwell Bridge can be a major bottleneck on the A14 access into the port, being at capacity during peak periods – weather related closures have the greatest impact on freight movements to and from the Port of Felixstowe. NH has implemented strategies for effective management of weather-related closures of the bridge.
- Felixstowe procedure 'Operation Stack' for when the port is closed for high winds means lorries cannot enter of exit the port while there are high winds. Lorries entering the port leave the A14 at the Seven Hills junction and park along the old A45 at Levington to relieve the traffic on the A14.
- Copdock roundabout confluence of the A12 and A14 roads causes a bottleneck with delays for A12 joining the A14 towards Felixstowe
- Much of the commercial land space identified to support he expansion of Felixstowe is located along the A14, which adds additional pressure (Figure 3.27).

There has been rapid recent growth of major distribution buildings along the A14 which are particularly a response to growing e commerce, these developments add to road pressures and may reduce potential for rail freight.

[139] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/701352/england-port-connectivity-the-current-picture.pdf
[140] https://infrastructure.planninginspectorate.gov.uk/projects/eastern/a47-blofield-to-north-burlingham/
[141] https://infrastructure.planninginspectorate.gov.uk/projects/eastern/a47-north-tuddenham-to-easton/?ipcsection=overview
[142] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/710030/transport-infrastructure-global-future-a-study-england-port-connectivity.pdf
[143] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/701352/england-port-connectivity-the-current-picture.pdf
[144] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/701352/england-port-connectivity-the-current-picture.pdf

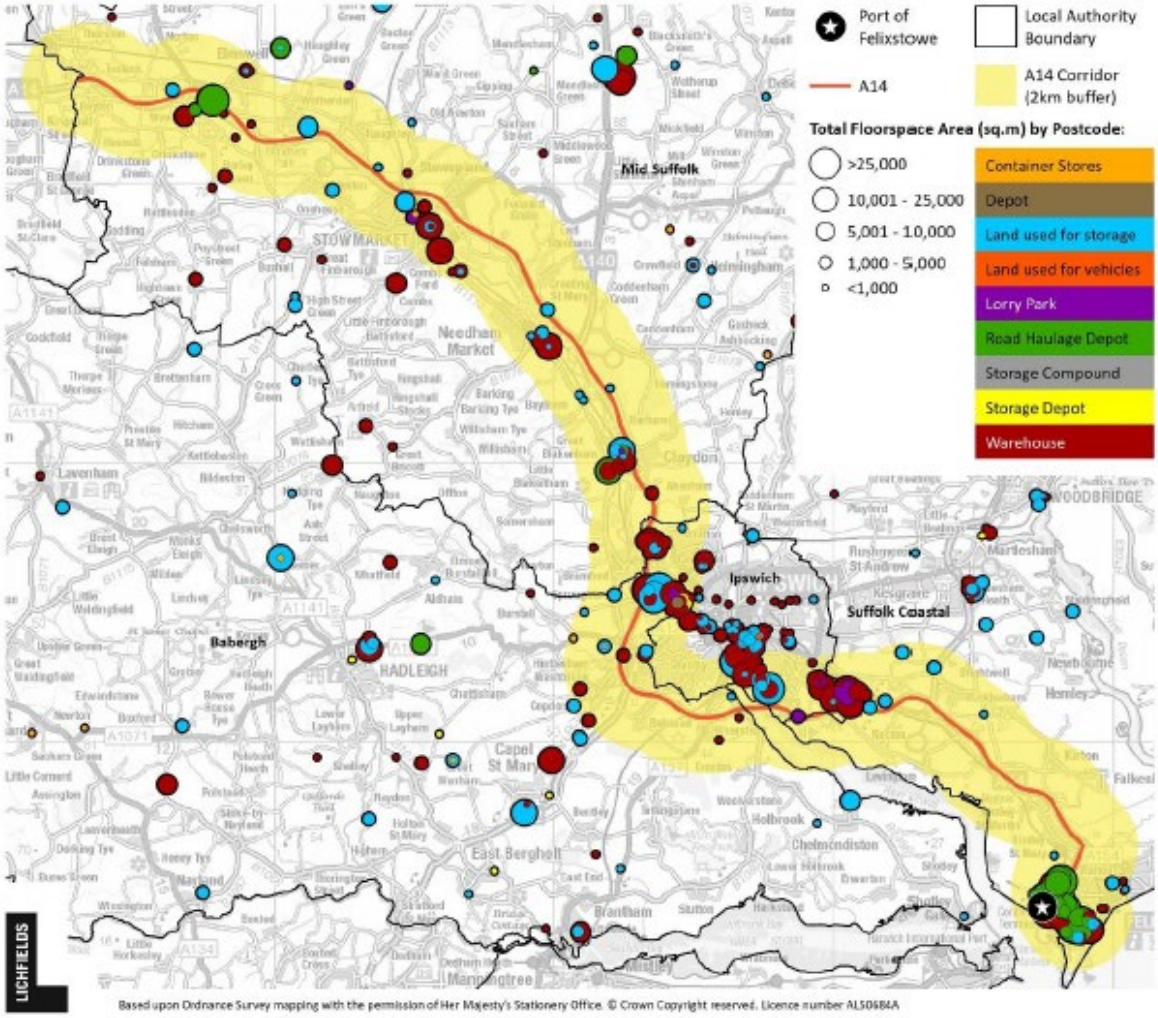


Figure 3.27: Logistics related floor space along the A14[145]

The Road Investment Strategy 1 (RIS1) included the A14 between Cambridge to Huntingdon and A12 Chelmsford to Colchester, acknowledging the need to improve capacity and reliability for connection with Felixstowe[146]. The A14 scheme began in 2017 and opened to traffic in 2020 costing between £1200-£1800 million. The A12 scheme designs are being discussed with Highways England, with an estimated cost of circa £1 billion.

Accessing Harwich port via the A120 is along 8 miles of single carriageway which leads to significant congestion, lacking route alternatives for HGV traffic. There are calls for the route to be dualled to take the pressure off surrounding villages which suffer from the re-routing of HGV vehicles when the A120 is at capacity. This also forms part of the planning permission requirement for the Bathside Bay development.

Access to Ipswich port is via the A1156 local road network, which is congested during peak periods. In the Ipswich Strategic Planning Area Local Plan, there is a potential scheme identified to increase capacity along the Felixstowe Road and Bixley Road arms of the A1156 roundabout at Bucklesham Road, as well as increasing the capacity at the Bixley Road/Ashdown Way junction, which will remove the pressure on local residential roads[147].

[145] https://www.eastsuffolk.gov.uk/assets/Planning/Suffolk-Coastal-Local-Plan/First-Draft-Local-Plan/Port-of-Felixstowe-Growth-and-Development-Needs-Study-July-2018.pdf
[146] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/382808/dft-ris-overview.pdf
[147] https://www.ipswich.gov.uk/sites/default/files/final_ispa_mr7_scc_hwy_results_report.pdf

London ports

London Gateway and Tilbury ports rely upon the A13 and M25 for connection with London. The M25 offers connection with the M1, which is identified as a key route serving the many distribution centres in the midlands, as well as offering connection to the rest of the country.

The connection to Tilbury via the A13 is often congested, lacking resilience and reliability, while the M25 offers further unreliability with the Dartford Crossing which is congested, has a high accident rate and suffers repeated closures. It is considered that the development of the Lower Thames Crossing to the east of Tilbury would potentially offer an uncongested route across the river, improving the reliability of the M25, despite not having direct access to the ports.

The Road Investment Strategy 1 (RIS1) included the M25 Junction 30, which directly links with the A13 and accesses London Gateway and Tilbury. The scheme began in 2015 and was completed in 2016 costing £79.3 million.

The Tilbury Link Road is a RIS3 candidate scheme and funding is allocated in RIS2 to work up the business case, alongside financial support allocated in Thames Freeport package (see above).

The A13 access to London Gateway is highly congested but widening to three lanes and trunking the Manorway interchange towards the port gates is due to be completed in 2021/22.

Road Access Summary

- Reliability of the road network essential for freight movements
- Congested SRN a major constraint for main ports
- Access to SRN essential for the major ports
- Regional ports reliant upon the local road network
- Serious delays are a major constraint
- There is no national standard to measure the impact of serious delays on freight
- There is a lack of HGV parking on all corridors
- There are some proposals for road improvements in the RIS process.

3.5.2 Rail access

Large volumes of containers and aggregates move by rail, with some liquid bulk also being transported on the railway. Containers are the prominent freight type utilising rail (39% of goods moved by rail[148]). The key freight corridors are shown in Figure 3.28[149], also showing those corridors which would benefit from enhancement to improve operational efficiency.

[148] https://dataportal.orr.gov.uk/media/1257/freight-rail-usage-2018-19-quarter-4.pdf
[149] DfT Transport Infrastructure for our Global Future: a study of England's port connectivity, 2018.

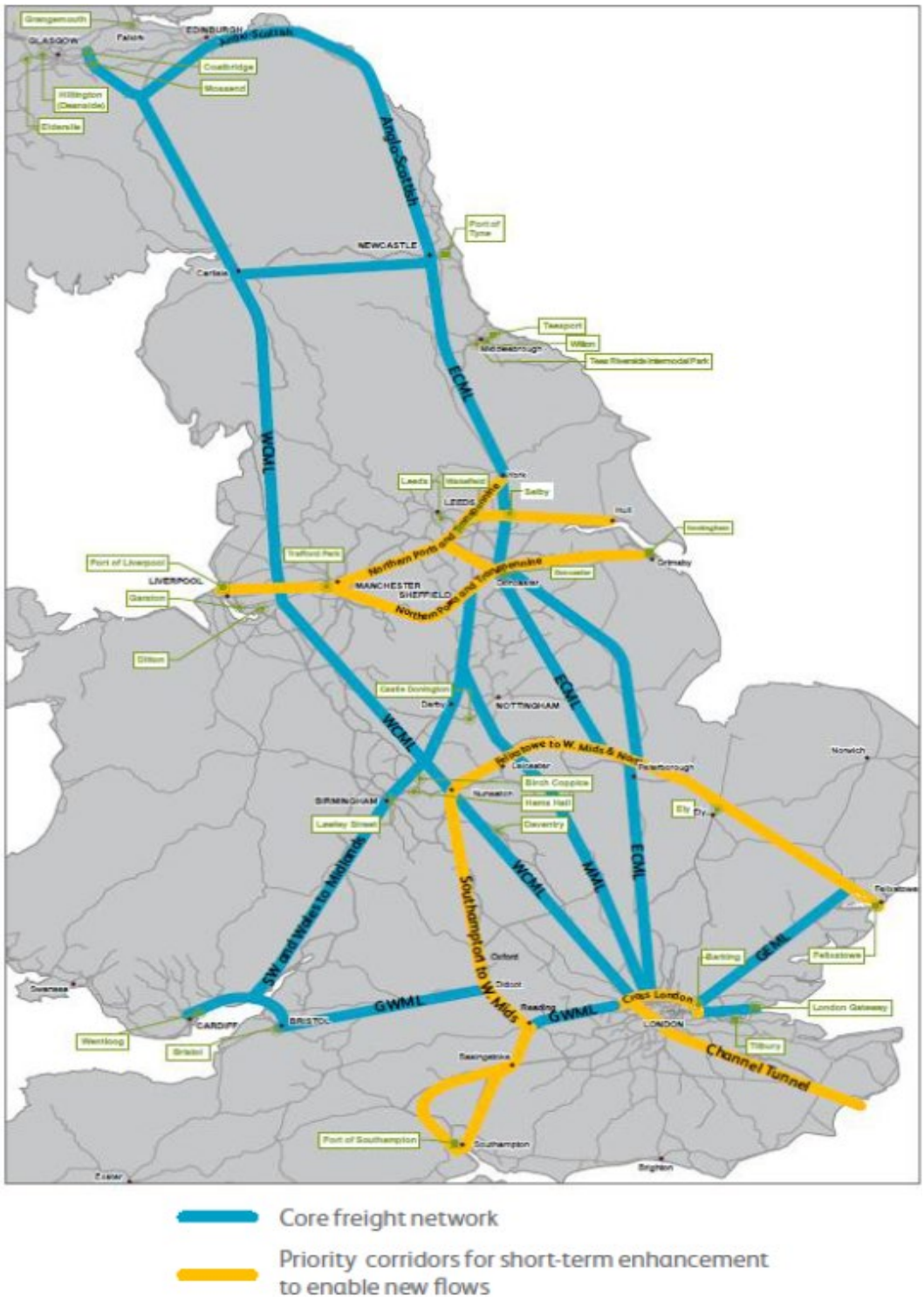


Figure 3.28: Illustrative rail freight corridors

Rail freight connectivity around the country is significant in supporting port operations. Figure 3.29 shows the ports with operational rail connectivity and those with the potential. Of the operational lines, there are generally in excess of 20 freight trains per day, with minor connections to smaller hubs, particularly in the East of England with between 1 and 5 trains per day, sharing the rails with passenger trains.

Port connectivity is a critical factor in considering future rail investment. Network Rail and the DfT are using port plans as an evidence base to factor into future improvements. These will feed into the new rail freight strategy which is currently in development.

Most recently, £235 million has been invested in rail freight infrastructure between 2014-2019, through the Strategic Freight Network Fund. This fund had an overarching aim to increase capacity and capability of the rail network to facilitate more freight being transported by rail.

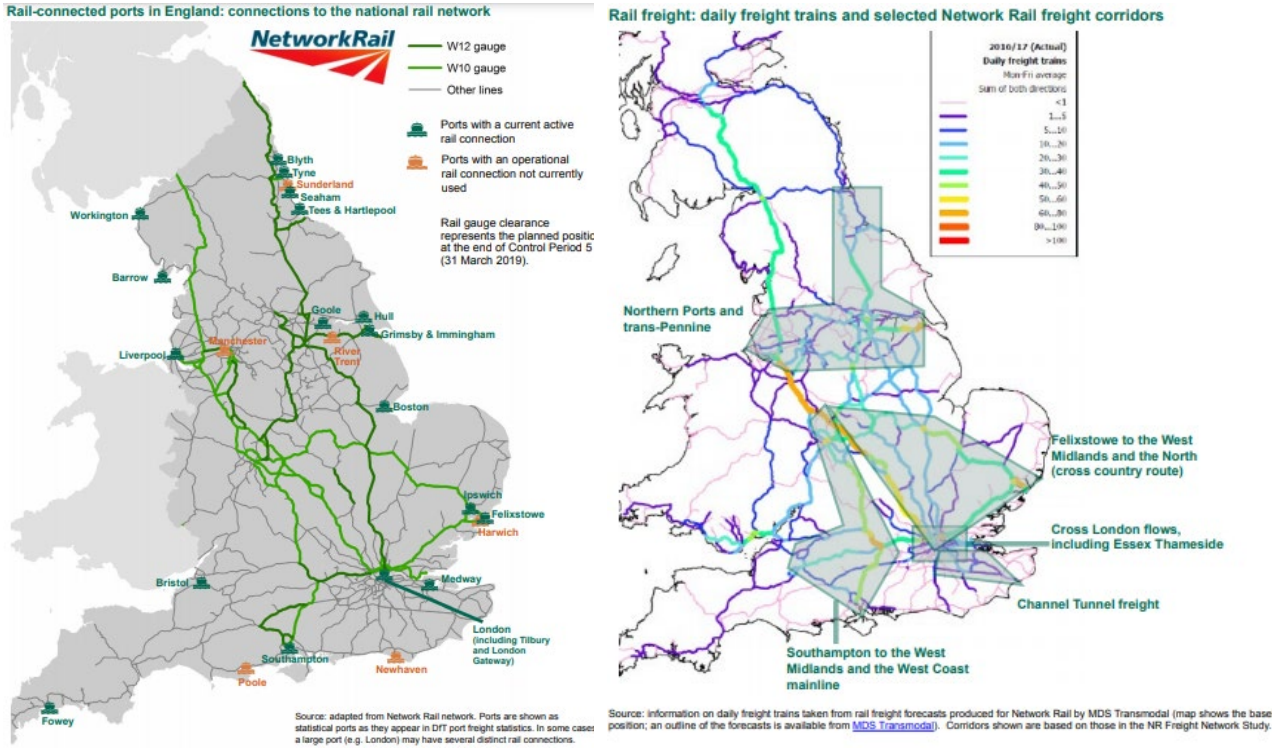


Figure 3.29: Road network accessing major ports in the UK; daily freight trains per route[150]

North East Anglia and the Wash ports

There is no direct rail access to King's Lynn or Great Yarmouth ports meaning all freight is required to move by road to either a rail freight connection or destination. Road remains the cheaper option to move freight, however it is acknowledged that better inland distribution hubs are needed.

Haven ports

Felixstowe, Ipswich and Harwich ports all have direct rail connections, although Harwich has no active rail traffic for freight. Key routes for freight movement are to the midlands, North West England and Yorkshire, utilising the Great Eastern Mainline, North London Line and the East & West Coast mainlines.

Felixstowe is a key port for rail freight movement, with 28% of freight passing through the port being moved inland by rail, with volumes 20% higher than before the opening of the Northern Rail terminal l 2013. Felixstowe is the largest generator of intermodal freight in the country, has the largest intermodal rail freight terminal and 50% of traffic between Felixstowe and the West Midlands/North goes by rail

This has been achieved despite rail access being restricted by a single-track branch line between the port and Westerfield, Ipswich at the junction with the East Suffolk Line, which is operating at capacity[151]. As part of the Strategic Freight Network Funded port related schemes, the Felixstowe Branch Line is a key area of

[150] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/701352/england-port-connectivity-the-current-picture.pdf
[151] Suffolk Rail Prospectus

improvement. Work was completed on this line improvement in 2019 which included the installation of new track between Trimley and Grimston Lane crossing, plus additional improvements amounting to £60.4 million. Following this improvement, the line has the potential capacity for 47 freight trains per day in each direction[152].

There are significant capacity constraints on the Felixstowe to Nuneaton (F2N) route, including at Ely, Leicester, Haughley Junction and Ely to Soham. Addressing these would allow more trains to serve Felixstowe and enable timely rail services for effective competition with road[153]. Feasibility work associated with the Ely area has secured funding form LEPs to provide options for increasing capacity[154]. Similar to the Felixstowe Branch Line, the F2N route secured funding from the Strategic Freight Network Fund to improve Ipswich Yard and Ipswich Chord:

- Ipswich Yard – revised layout of year (£33.8m) December 2014 – Increased capacity to handle container trains to and from the Felixstowe Branch, optimised operations and capability for trains up to 746 meters long155
- Ipswich chord – New chord allowing direct access from the Felixstowe branch to the 'cross-country' route via Ely (£59m) March 2014 – Increased capacity and reduced journey times for Felixstowe container trains re-routed via Ely. This is enabled by eliminating the need to reverse at Ipswich[156].

Both the Felixstowe Branch line and F2N line lack electrification, which affects the acceleration of trains, minimising the train impact on the rails as well as reducing capital cost of transporting rail freight. Electrified rails allow for faster more efficient services, with a reduction in CO_2 and regeneration of braking energy feeding back into the grid[157]. With these lines being diesel powered, trains from Felixstowe route through London on the electrified route and back up to the midlands, bypassing the Felixstowe Branch & F2N routes. This routing of trains is also driven by the overcapacity of the F2N line, which without capacity growth trains will continue to utilise this route through London regardless of electrification.

London ports

London Gateway and Tilbury both have rail terminals for the movement of freight.

Tilbury utilises the Essex Thameside rail route to move intermodal and bulk freight to the Midlands and North. London Gateway utilised the North London Line to access both the East and West Coast mainlines for the movement of containers to the midlands, Yorkshire and the North West. It is acknowledged that there is a need to grow the capacity of the North London Line in line with port growth to enable the continued efficient movement of freight from London Gateway. This is a significant constraint to the further development of rail freight from London Ports, with many authorities involved in reaching agreement for future capacity plans (DfT, Transport for London, London Mayor etc.)

National Rail identified bottle necks along routes from London Ports, with the Thames Haven Level Crossing benefiting from improvements funded by the Strategic Freight Network Fund. This improvement was completed in 2019 costing £0.5 million, increasing capacity.[158]

Despite this improvement, National Rail has forecast a significant increase in freight train demand along the Thames Haven Line and Essex Thameside Corridor in 2033/34 and 2043/44. Table 3.4 and Figure 3.30 show the projected increase in trains and potential capacity constraints along the corridor.

[152] Port expansion plan_7
[153] Suffolk Rail Prospectus
[154] Suffolk Rail Prospectus
[155] https://www.networkrail.co.uk/wp-content/uploads/2017/04/Freight-Network-Study-April-2017.pdf
[156] https://www.networkrailmediacentre.co.uk/news/ipswich-rail-upgrade-looks-to-strike-a-chord
[157] https://www.railengineer.co.uk/electrification-benefits/
[158] https://www.networkrail.co.uk/wp-content/uploads/2017/04/Freight-Network-Study-April-2017.pdf

Table 3.4: Freight trains per day forecast[159]

	2016/17	2033/34	2043/44
Essex Thameside Corridor	30-40	60-120	80-150
Thames Haven Line	12	43-66	62-80

Figure 3.30: Demand forecast 2043/44 along Essex Thameside Corridor & Thames Haven Line (trains per day, both directions combined)[160]

This in mind, there are ongoing assessments looking at the potential improvements to the rail network across North London which may allow additional freight to pass and facilitating greater use of rail by London Gateway and Essex Thameside inland freight movements. There is a proposed scheme which recommends a nodal hub at Ripple Lane in Barking, which offers significant benefit to allowing freight trains to be regulated before being released onto the North London network. This will allow potential freight paths to be exploited. This scheme has received planning consent but is awaiting funding.

Additional initiatives which would benefit freight flows from London Gateway and the Essex Thameside rail link across North London are:

- Digital signalling
- Gospel Oak to Barking enhancement
- Pitsea to Ingatestone link (proposed as a long-term scheme in the Network Rail strategy)

A key issue is that the short link between the main line and London Gateway port is not electrified. Bridging this gap would allow more freight to benefit from electric haulage.

A further issue is related to rail journey times to and from ports which are extended by the trains having to wait at key locations for freight pathways. Average speeds end to end are well under 30mph despite container trains being able to operate at up to 75mph. While shippers have grown to accept these constraints, it has a significant impact on rail costs, because the round trip from port to terminal and back can rarely be achieved in a day. In contrast, a new service from Tees Port to Doncaster achieves 2 round trips per day. The cost saving was critical in winning this traffic to rail. Network Rail has long term plans to address this issue including new approaches to planning long distance paths. The potential cut back of passenger services due to COVID-19 can be seen as a major opportunity to improve freight paths.

[159] Development of LondonGateway
[160] Development of LondonGateway

Rail Access Summary

- Rail transport viable for long distance transport of containers
- Construction materials use rail for shorter distances, notably into London
- Rail routes from ports in the East at or nearing capacity
- Some improvements made to the Felixstowe Branch Line, Felixstowe to Nuneaton Line, and the Thames Haven Level Crossing, but additional improvements and electrification required to further improve capacity and efficiency – particularly along Felixstowe lines, as well as the North London Line
- Harwich has a rail terminal which is not currently operational, has the potential to be made operational in the future.
- Rail has the potential to remove HGVs from the road network

3.5.3 Water access

Using water to facilitate the movement of goods is a viable alternative to road and rail for large bulk loads, project cargo and abnormal loads. Coastal shipping can transfer freight between larger and smaller ports, the Felixstowe to Tyne, and Felixstowe/London Gateway to Scotland routes are already being utilised successfully in the East of England.

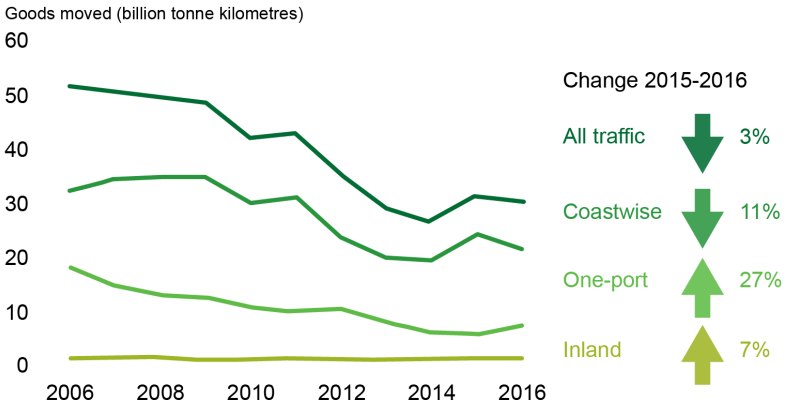
The use of inland waterways offers efficient transport of bulk goods. An example of this is the barging from Tilbury down the River Thames to Port of London Wharves, carrying aggregate loads to support major construction projects. The River Thames accounts for 60% of all goods moved on inland waterways in the UK and given the Port of London aims to grow the underlying river freight figure to 4 million tonnes per annum, this share of goods moved is likely to increase[161].

In 2015 31.4 billion tonne kilometres of goods movements were made domestically in the UK, this accounted for 15% of total domestic freight movements. This was a year on year increase of 16%. Since 2006 there has been a general declining trend in waterborne freight movements, however since 2014 there has been a steady and slight increase[162].

The UK does not have the same capability for inland water way utilisation as the continent, but there are ambitions for the current utilisation to increase. Both coastwise and inland waterway shipping are viable alternatives to other freight modes, likely to show a resurgence with increasingly attractive environmental benefits (shipping producing the lowest CO_2 emissions compared with rail, road and air – Figure 3.32) and congestion-free freight.

Domestics Waterborne Freight in the UK (2006-2016)

While total goods moved declined 3% to 30.4 billion tonne kilometres in 2016, good lifted continued to increase, by 4% to 102.0 million tonnes.



[161] http://www.pla.co.uk/Port-Trade/Moving-freight-by-water-on-the-River-Thames
[162] DfT Transport Infrastructure for our Global Future: a study of England's port connectivity

Figure 3.31: Domestic waterborne freight in the UK (2006-2016)[163]

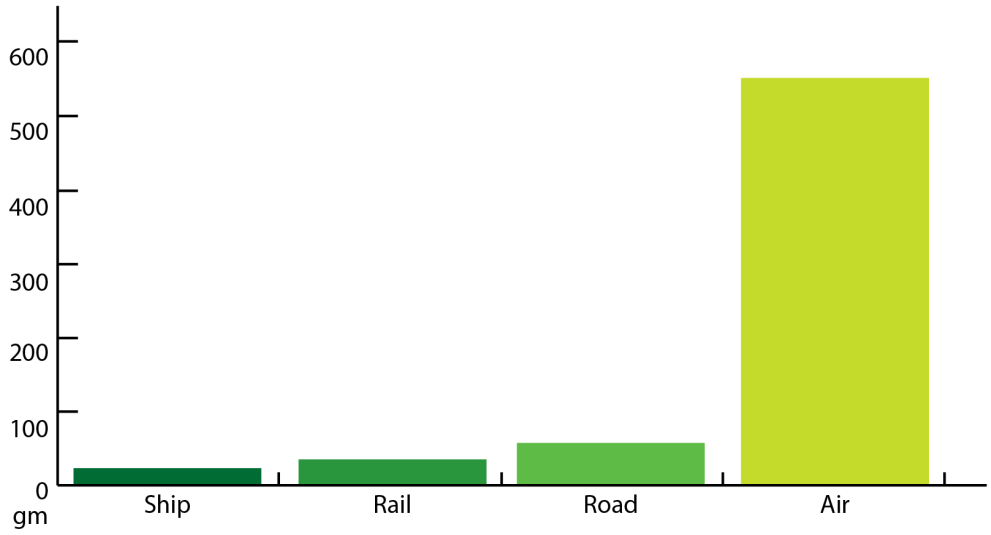


Figure 3.32: CO_2 emissions (grammes per tonne kilometre) produced by the main methods of freight movement[164]

Water Access Summary

- Viable for transporting bulk goods
- River Thames dominated inland waterway freight movements – ambitions to grow this
- Felixstowe & London Gateway have already established coastal shipping routes to the Tyne & Scotland
- Waterborne movement of freight likely to increase with attractive environmental benefits & reduced restriction from congestion

[163] DfT Transport Infrastructure for our Global Future: a study of England's port connectivity
[164] http://www.pla.co.uk/Port -Trade/Moving-freight-by-water-on-the-River-Thames

4 Airports

4.1 Gateway Summary

This section provides insight into the function of each of the airports in the East of England, passenger and freight capability, international markets, growth & expansion plans, alongside current and future opportunities and constraints.

4.1.1 London Stansted Airport

London Stansted Airport is located in Uttlesford District, Essex, nearby to the Hertfordshire border and 56 km north of London[165]. It is the key aviation gateway in the region, being the fastest growing airport in the UK and one of the top five fastest growing in Europe. The airport serves 200 destinations across 40 different countries and offers more scheduled connections to Europe than any other airport in the world, with exception to Milan[166].

The airport comprises one terminal building with three satellite buildings where the passenger gates are located for plane boarding. Stansted also has various hangar sites for plane maintenance and 41,000 metres squared of cargo storage.

Various scheduled, charter and private airlines use Stansted as a hub, such as: Ryanair, Harrods Aviation, Titan Airways and XJet.

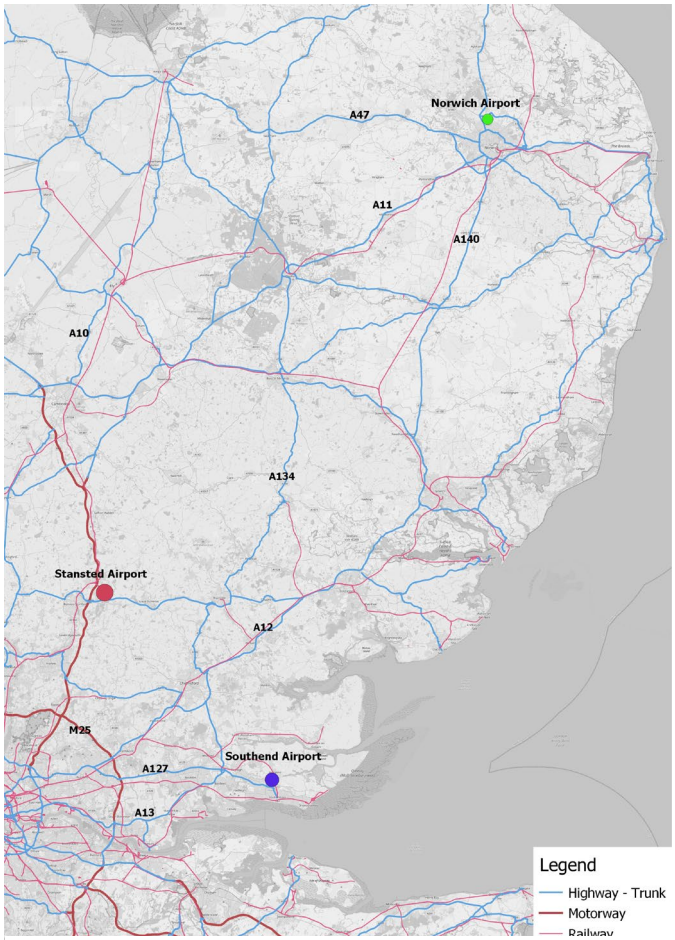


Figure 4.1: Location of Airports in the East of England

Expansion of London Stansted Airport

The airport does have established expansion plans for the next five years, which will create demand for 5,000 new jobs[167]. Investment totals £600 million to upgrade the existing terminal, development of a new terminal, upgrade to baggage and security systems and development of new check-in areas[168].

Stansted Airport has ample land availability to continue expanding cargo facilities. To compliment this, there are calls for the development of a second runway, however this is strongly opposed on environmental grounds, with the destruction of 800 hectares of countryside and the removal of homes and business buildings in the local area[169].

4.1.2 London Southend Airport

London Southend Airport is also considered one of the fastest growing airports in the UK, with 40% passenger growth in 2019, offering connections to 40 short haul destinations[170]. The airport has been ranked the best

[165] airport-stansted.com
[166] bishopsstortfordindependent.co.uk
[167] stanstedairport.com
[168] https://www.stanstedairport.com/transformation/
[169] https://www.airportwatch.org.uk/uk-airports/stansted-airport/
[170] eraa.org

London airport every year since 2013, attracting investment, operators and passengers[171]. Southend has a leisure trip focus.

The airport is a key regional and European transport hub which aids in the generation of economic investment in the local area and wider Thames Gateway[172] through airport led growth[173]. In 2018 the airport facilitated 16.8 thousand air traffic movements to and from the airport, which was a year on year increase of 50%[174].

Expansion of London Southend Airport

London Southend Airport have plans to invest in a new terminal building to capitalise upon its current growth trajectory. Plans include upgrading the runway (extension of 300m) to allow for larger planes to land and may lead to a greater number of cargo flights in the future[175]. There are also plans to upgrade the terminal building to provide a better customer experience. There are aspirations to growth the airport to accommodate seven million passengers annually[176].

4.1.3 Norwich Airport

Norwich Airport also offers key connections with Europe, the Baltics and Scandinavia, and so offering economic benefit to the region. The airport acts as a link to the key international hub at Amsterdam. This is often a quicker option than driving to one of the UK's international hub airports. The airport is working towards level 3+ accreditation in carbon neutrality.

Expansion of Norwich Airport

It is projected that by 2050 passenger traffic at Norwich airport would reach 1 million[177], meaning investment in airport infrastructure is imperative to facilitate this growth. There are plans to expand the current terminal building to the east of the existing building, repositioning the Regional Freight Provision building, adding additional capacity[178].

There are also investments in the maintenance area of the airport, with the development of a new hangar and workshop facility for KLM UK Engineering, to meet with the increased industry need for aircraft maintenance[179].

4.1.4 Airport challenges

The greatest challenges posed to airports are Brexit and the effects of the COVID-19 pandemic, alongside concerns over carbon emissions and the drive to NetZero potentially restricting airport growth.

During the pandemic, at the peak daily flights from Stansted dropped from 600 per day to 100 per day[180]. While passenger numbers declined, cargo increased in volume by 43% in June 2020[181] supporting the transporting of Personal Protective Equipment and other essential goods.

Brexit has already had an impact on the airports, with an expected change in passenger movements and freight handling beyond January 2021 at the end of the withdrawal period. Stansted Airport has noted an increase in passenger movements since the referendum in 2016, with a diversification of international destinations served, although business travel has decreased. Southend Airport also saw a growth in passenger of 67% since 2006 and Norwich a small increase of 6%, driven by the investment of short-haul low cost carriers into the airport[182].

[171] southendairport.com
[172] Southend.gov.uk
[173] rochford.gov.uk jaap
[174] DfT avi0102a dataset
[175] http://www.aef.org.uk/downloads/AW_Air-Freight_AirportbyAirport_Nov2009.pdf
[176] https://simpleflying.com/london-southend-growth/
[177] norwich airport masterplan
[178] norwich airport masterplan
[179] Rigbygroupplc
[180] Stansted Airport Consultative Committee
[181] airport.nridigital.com
[182] DfT avi0108 dataset

Freight volumes since the Brexit referendum have decreased by 46% at Norwich Airport, showing potential vulnerability post-Brexit. Despite this, Stansted noted an overall 1% increase in freight handled[183]. In the long term, growth is likely to be lower for freight cargo given the UK will be outside of the common market[184].

There is also the potential for a reduction in revenue generation at the airports with the halt on duty-free shopping. It is anticipated that this would result in an £80 million cost to Stansted Airport in 2021[185].

The UK aviation industry accounts for 7% of the UK's total Greenhouse Gas (GHG) emissions. Its share likely to increase through expansion, and the rapid decarbonisation of other sectors; meaning aviation could account for 25% of the UK's share in GHG emission by 2050[186]. In early 2020, the UK aviation industry committed to making flying NetZero by 2050. It is expected that this will be achievable with the utilisation of future fuels, aircraft technology and the offsetting of emissions (Figure 4.2).

London Stansted Airport achieved level 3+ accreditation in carbon neutrality in 2017[187], while London Southend Airport recorded a 36% reduction in emissions per unit revenue in 2019 by investing in renewable energy, reducing waste and improving efficiency of energy & airport operations[188]. Norwich Airport is also using similar methods to reduce their emissions and impact on the environment.

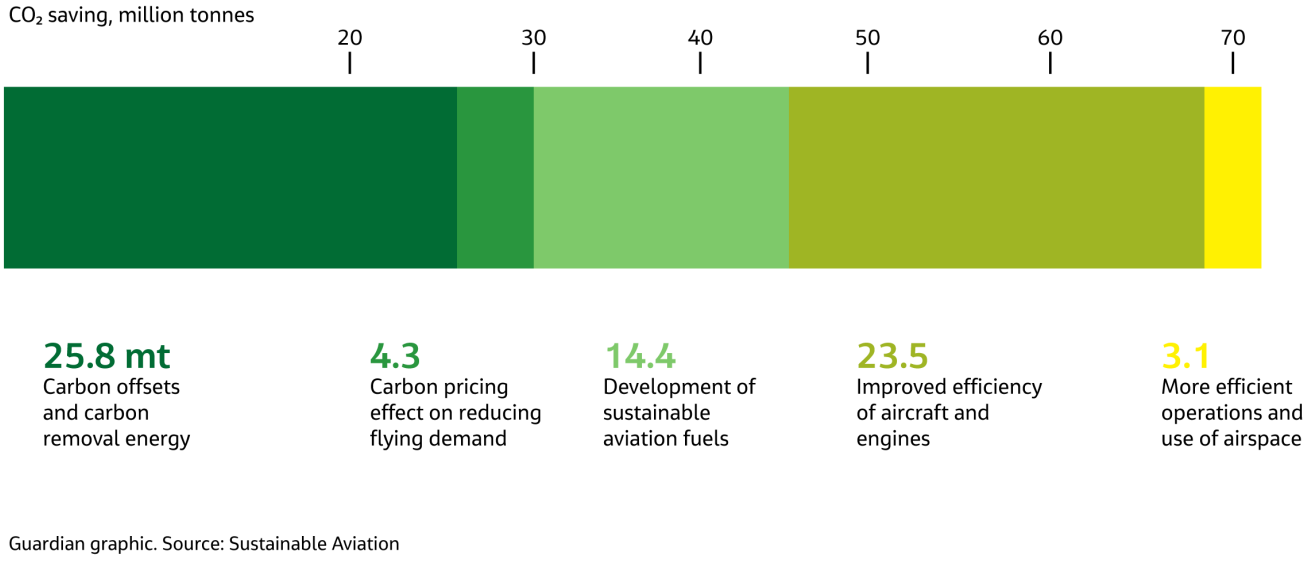


Figure 4.2: UK aims for reducing net carbon emissions[189]

Despite this intention, all airports particularly Stansted and Southend are looking to expand and increase the number of passengers travelling per year. It is not just the aircraft themselves which cause CO_2 emissions, airport surface access movements, airside ground movements and airport operations also contribute. This conflict in ambition is likely to prevent widespread airport expansion, and with the progression of the Heathrow third runway is likely to restrict further expansion in the South East of England.

[183] DfT avi0102c dataset
[184] Bishopsstortfordindependent.co.uk
[185] esdt.co.uk
[186] HM Government, Aviation 2050
[187] Stansted CSR Report (https://live -webadmin-media.s3.amazonaws.com/media/7951/mag -stansted-csr-report-2019 -web-2110.pdf)
[188] Southend Airport Annual Report 2019/20 (https://d1z15 fh6odiy9s.cloudfront.net/files/lsaannualreport2019 -2020web-7f3468d8.pdf)
[189] https://www.theguardian.com/business/2020/feb/07/can -the-aviation-industry-really-go-carbon-neutral-by-2050

Summary

- London Stansted Airport fastest growing in the UK and top five growing in the EU
- Established expansion plans at Stansted including new terminal building and cargo facilities
- London Southend Airport ranked London's best airport since 2013
- Norwich Airport link to international airport hubs in Europe – drawing a catchment from the local area
- Short term impact of Brexit for all airports with a string reliance upon European destinations

4.2 Air freight context

Air freight is utilised for higher value and time critical cargoes due to the higher cost of shipping. This high cost of shipping in part is driven by the high and fluctuating cost of fuel. Air freight for this reason accounts for less than 1% of volumes entering and leaving the UK[190].

London Stansted Airport is one of the UKs major air freight airports, coming in third to London Heathrow and East Midlands airports, in terms of tonnes of cargo handled. Norwich Airport also handles air freight, accounting for below 1% of the UKs overall air freight total. Up to October 2019, there were no freight movements through Southend Airport, despite Amazon having a cargo centre in Southend, air freight sends goods to Milton Keynes. Beyond October 2019, freight services began operation from the airport with one night-time departure and two-night time arrivals, seven days per week, with an existing hangar being converted for logistics operations[191].

Impact of Heathrow Air Freight on Airports in the East of England

London Heathrow Airport has dominance over air freight, in 2017 handling 60% of the UKs total air freight volume[192]. A large proportion of fright handled at Heathrow is deli hold on chartered flights, while at Stansted cargo was freighter and integrator cargo handled by FedEx and UPS.

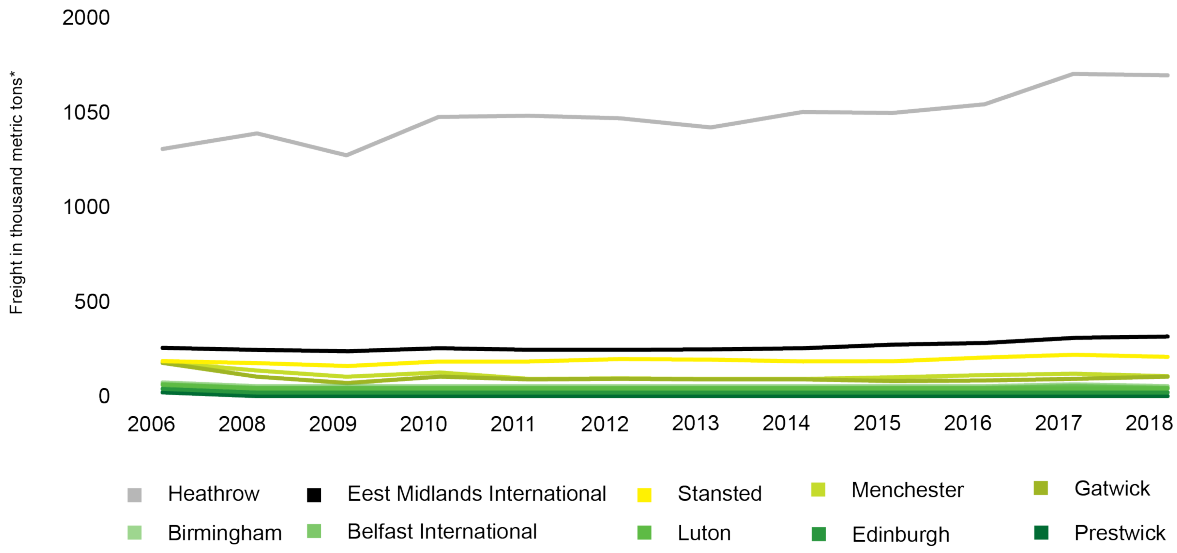


Figure 4.3: Air freight volumes by airport in the UK[193]

[190] Assessment of the value of air freight services to the UK economy, Steer 2018
[191] https://southendairport.com/frequently-asked-questions/logistics-operation
[192] Assessment of the value of air freight services to the UK economy, Steer 2018
[193] https://www.statista.com/statistics/303659/air-freight-at-selected-airports-in-the-uk/

Heathrow hold monopoly on air freight with its positioning of surrounding freight facilities, with most freight forwarders having major consolidation centres close to the airport. Large volumes of air freight are trucked to these facilities and then processed before being trucked onwards to other airports or destinations[194]. The UK air freight infrastructure at many airports is a major issue, often being decades old, suffering under investment and not being fit for purpose, hence Heathrow being in a monopoly position.

As shown in Figure 4.4, Stansted is a key player in air freight operations in the UK, however for Stansted and Norwich airports to grow and compete with their air freight services, significant investment would be required into their onsite infrastructure, surrounding freight facilities and road/rail connections. These airports have the benefit of having a relatively uncongested airspace compared with Heathrow and have the potential to attract future air freight growth.

- Most of the Stansted's cargo is transported in dedicated freighters. Given the increase in the diversity of passenger aircrafts accessing the airport, there is an increasing opportunity to transport cargo in the belly hold of aircrafts, equally should passenger numbers decrease, and fewer charter planes access the airport, belly hold freight would decrease.
  - In 2018 Stansted handled 226,100 tonnes of freight which was a year on year decrease, compared with 2017, of 5%195. 90% of freight was handled by overseas operators, 9% by European operators, and 1% set down by UK operators196. 62% of the cargo was international, 34% EU cargo and 0.5% domestic freight197.
  - A total of 17,094 tonnes of mail was also processed through Stansted in 2019[198]
- In 2018 Norwich handled 200 tonnes of freight which was a year on year decrease, compared with 2017, of 34%[199]. 100% of freight was handled by UK operators in 2019, 48% of which was set down and 52% picked up[200]

4.2.1 Challenges to Air Freight

The withdrawal from the EU has the potential to affect air freight in the UK, most notably through the changes in customs procedures and agreements to air services. There is a very real possibility for air freight growth outside of the South East of England, rather than Heathrow air freight, being re-distributed to other South East region airports such as Norwich.

Despite this, between 2002 and 2017 the total volume of air freight remained relatively flat, with the exception of 2009 in the financial crisis[201].

Variations in fuel cost can have a noticeable impact upon air freight with the cost of fuel price increases being passed onto the courier/customer. As fossil fuels become scarcer and less attractive prices are likely to increase, and so making air freight more expensive.

[194] 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
[195] DfT avi0102c dataset (https://www.gov.uk/government/collections/aviation-statistics)
[196] CAA dataset Table 13- Freight by type and nationality (https://www.caa.co.uk/data-and-analysis/uk-aviation-market/airports/datasets/uk-airport-data/)
[197] CAA dataset Table 14 – International & Domestic freight (https://www.caa.co.uk/data-and-analysis/uk-aviation-market/airports/datasets/uk-airport-data/)
[198] CAA dataset Tablet 16.2 – Mail by type & nationality (https://www.caa.co.uk/data-and-analysis/uk-aviation-market/airports/datasets/uk-airport-data/)
[199] DfT avi0102c dataset (https://www.gov.uk/government/collections/aviation-statistics)
[200] CAA dataset Table 14 – International & Domestic freight (https://www.caa.co.uk/data-and-analysis/uk-aviation-market/airports/datasets/uk-airport-data/)
[201] 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

Air Freight Summary

- Heathrow Airport has the monopoly on air freight in the UK
- Significant investment (surrounding freight & logistics operations) would be needed at airports in the East to compete with Heathrow – but benefits of an uncongested airspace could make these airports attractive propositions
- Southend doesn't handle air freight, but has the future capability
- Changes in customs procedures and agreement of air services post-Brexit could impact air freight – potential for air freight to me moved away from South East

4.3 Passenger movements

Passenger movement is the predominant focus for all airports in the East of England. All these airports are experiencing growth year on year, with ambitions to continue growing into the future.

Each of these airports have a dominance of low-cost airlines, with a focus on short-haul services.

4.3.1 London Stansted Airport passengers

In 2018 27,995,000 passengers arrived or departed Stansted, which was an increase of 8% compared with 2017 [202]. In 2019 91% of international passenger traffic was to the EU and 9% to other international destinations, while 1,551,083 passengers travelled domestically which was a year on year reduction of 20% [203]. A breakdown of international passenger destinations by region of the world is shown in the figure below:

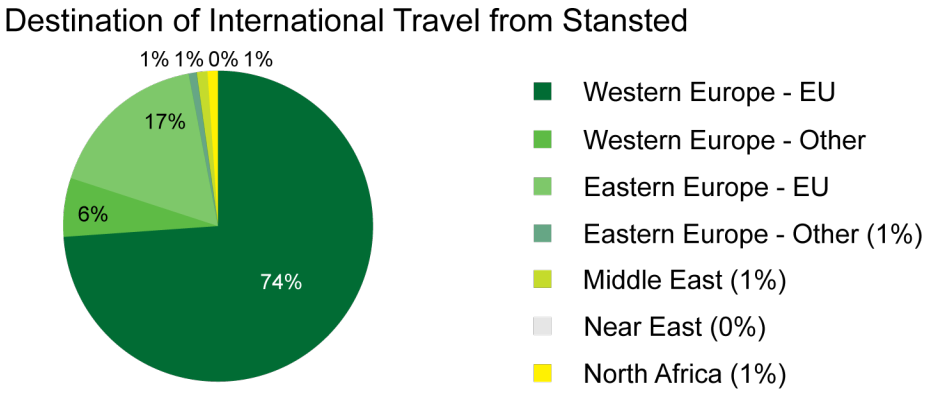


Figure 4.4: Destination of international travellers – Stansted

Despite the dominance of EU destinations currently at Stansted, research conducted by Skyscanner indicates that 50% of all UK searches for flight destinations in China, USA, Japan and India originated from within the Stansted Airport catchment area[204]. Many of these locations are not served by airlines operating from Stansted (Beijing, Boston, Delhi, Hong Kong, New York, Mumbai, Shanghai, Singapore, Tokyo, Washington, etc.). This gives to opportunity for Stansted to expand long haul growth, in the knowledge that there is demand within the catchment area.

The Civil Aviation Authority provide catchment data for terminating passengers travelling through key airports around the UK. Stansted airport has a wide catchment, predominantly in the South East and East of England, with reach as far as Yorkshire & Humber, Wales and the South West. A breakdown of Stansted Airport catchment is shown in the figure below:

[202] DfT avi0108 dataset (https://www.gov.uk/government/collections/aviation-statistics)
[203] CAA dataset Table 10_1/10_2 – EU and other International Pax traffic/Domestic terminal passenger traffic (https://www.caa.co.uk/data-and-analysis/uk-aviation-market/airports/datasets/uk-airport-data/)
[204] https://mediacentre.stanstedairport.com/long-haul-demand/#:~:text=Entitled%20'Gateway%20to%20Growth'%2C,passengers%20across%20its%20catchment%20area

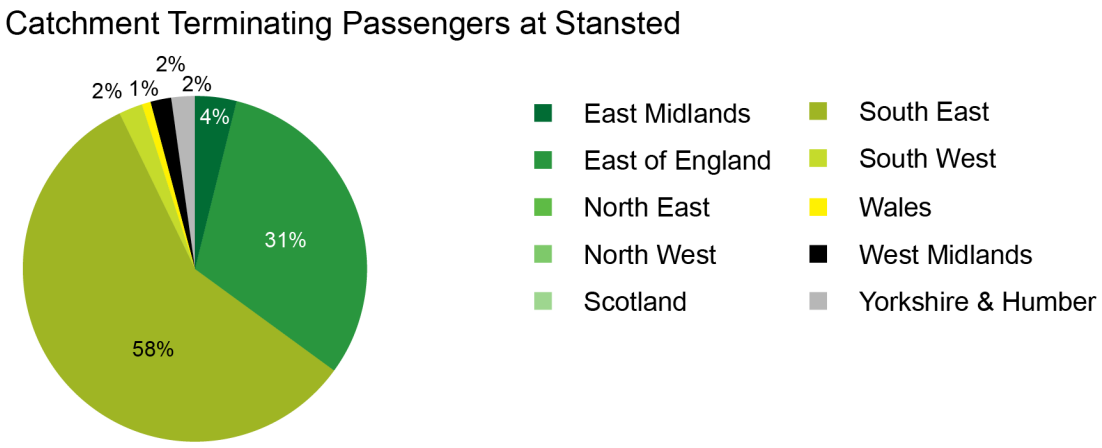


Figure 4.5: Catchment of terminating passengers - Stansted

Breaking down the South East passenger share, 85% originate in Greater London, Kent also draws in 5% catchment share, followed by Buckinghamshire and Berkshire with 1.7% and 1.5% respectively.

4.3.2 Norwich Airport passengers

In 2018 537,000 passengers arrived or departed Norwich, which was a year on year increase of 2%[205]. In 2019 76% of international passenger traffic was to the EU and 24% to other international destinations, while 129,640 passengers travelled domestically[206]. A breakdown of international passenger destinations by region of the world is shown in the figure below:

There is no Civil Aviation data showing the catchment area for Norwich Airport. As mentioned in section 3.1.3, the airport has a local focus, drawing on a catchment within 60 minutes' drive of the airport, predominantly to access international hub airports in Europe[207].

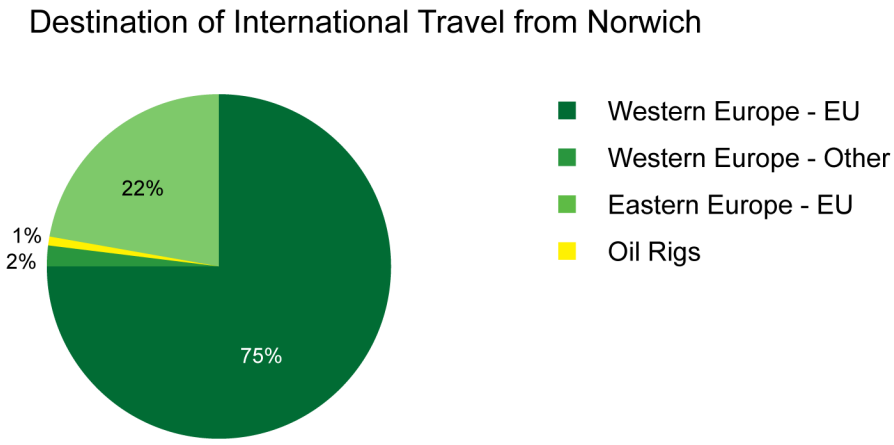


Figure 4.6: Destination of international travellers - Norwich

[205] DfT avi0108 dataset (https://www.gov.uk/government/collections/aviation-statistics)
[206] CAA dataset Table 10_1/10_2 – EU and other International Pax traffic/Domestic terminal passenger traffic (https://www.caa.co.uk/data-and-analysis/uk-aviation-market/airports/datasets/uk-airport-data/)
[207] norwich airport masterplan

4.3.3 London Southend Airport passengers

In 2018 1,280,000 passengers arrived or departed Southend, which was a year on year increase of 36%[208], with ambitions to grow to five million passengers by 2023[209]. In 2019 98% of international passenger traffic was to the EU and 2% to other international destinations, while 129,384 passengers travelled domestically which was a year on year increase of 3%[210]. A breakdown of international passenger destinations by region of the world is shown in the figure below:

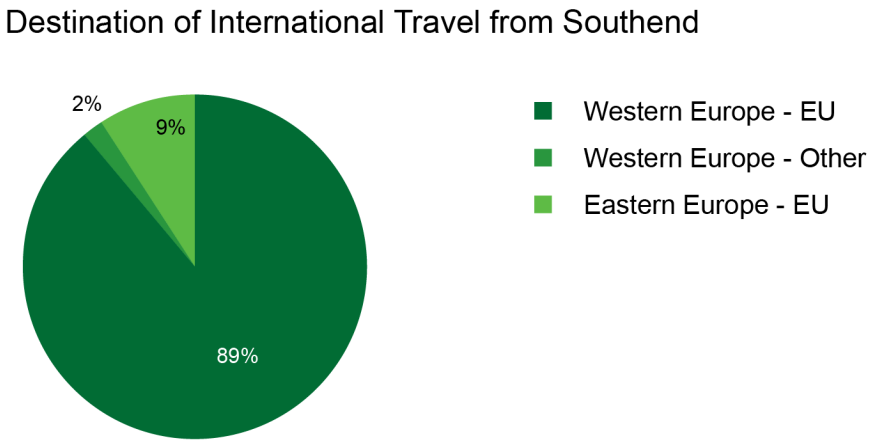


Figure 4.7: Destination of international travellers - Southend

Southend Airport has a catchment of 8.2 million passengers, according to their website. Utilising Civil Aviation terminating passenger catchment data, it is clear that the vast majority of passengers travelling through Southend Airport are from within the South East and East of England, with the next highest catchment area being East Midlands with 1.2% catchment share.

Breaking down the South East passenger share, 88% originate in Greater London, Kent also draws in 7% catchment share.

Figure 4.8: Catchment of terminating passengers - Southend

[208] DfT avi0108 dataset (https://www.gov.uk/government/collections/aviation-statistics)
[209] https://www.travelweekly.co.uk/articles/349692/southend-airport-owner-makes-investment-pledge-despite-deeper-losses
[210] CAA dataset Table 10_1/10_2 – EU and other International Pax traffic/Domestic terminal passenger traffic (https://www.caa.co.uk/data-and-analysis/uk-aviation-market/airports/datasets/uk-airport-data/)

4.3.4 Challenges to passenger movement

As discussed in Section 3.1.4, the COVID-19 pandemic has had a significant effect on passenger movements through all airports. Passenger numbers dropped significantly during the peak of the pandemic, increasing in the summer of 2020, but challenged again with the second Winter lockdown in 2020.

Norwich Airport continued to serve the offshore gas industry, air ambulance, and flights to Aberdeen. EasyJet permanently closed its base at Southend Airport, with flights beyond September 2020 being cancelled[211]. This means that Ryanair are the only airline based out of Southend following COVID-19[212]. At the time of writing this report, it is unknown what the longer-term effects of this are on the airports in the region. Some estimates anticipate four years to recover[213], with EasyJet hoping that they can expand into these regional airports again within this time period, although this is not guaranteed.

With the high reliance on all airports in the region accessing European Union destinations, there is a risk in that passenger behaviours will be altered focusing on non-EU destinations. Diversification of international destinations will be key in reducing post-Brexit vulnerability, although it is expected that this will only be a short-term effect.

Norwich Airport serves the oil rigs and energy industry in the North Sea. With the focus on reducing fossil fuel consumption, and the decline of North Sea oil, there is a vulnerability with a reduction in services to and from the rigs. This in mind, there is also an increase in wind generation and development of wind farms in the southern North Sea, which could be equally serviced by Norwich Airport to compliment port activity.

Passenger Summary

- Highest proportion of passenger trips at all airports to Western European – EU countries
- Stansted & Southend main catchment being Greater London, Norwich draws a local catchment of passengers
- Dominance of low-cost carriers
- COVID-19 resulting in airlines pulling out of Southend – potentially affecting longer term operations
- Brexit could change passenger behaviours & destination choice leaving all airports vulnerable due to reliance on EU destinations – likely to be only short-term
- Norwich Airport serving oil rigs, vulnerable to oil decline, but opportunity to serve wind farm operations and access to hub connection which provides access to over 500 world wide destinations as well as a number of European leisure destinations
- London Stansted has the opportunity to expand destinations on offer, particularly for long-haul with 50% of all UK searches for flight destinations in China, USA, Japan and India originated from within the Stansted Airport catchment area

4.4 Surface Access to Airports

4.4.1 Access to London Stansted Airport

London Stansted Airport catchment as discussed above in Section 3.3.1, is broadly from the South East of England and London. This is greatly dictated by road and rail access to the airport. Catchment from the Transport East region is more limited with varying degrees of road and rail connections. An assessment of the road and rail isochrone within 90 minutes of the airport was analysed (Figure 4.9), indicating a rail corridor south towards London, limited connection north and almost no connectivity east-west. Road connections follow the strategic road network, accessing as far north as Peterborough, but limited connection with Norfolk, as well as only serving the western fringes of Suffolk. Road connection with central London is more limited within 90 minutes, however access to Kent, Surrey, Berkshire, Buckinghamshire, Hertfordshire and Cambridgeshire is achievable – encompassing the international hub of Heathrow Airport.

[211] Www.Easyjet.com
[212] https://www.echo-news.co.uk/news/18856046.southend-airport-sets-coronavirus-recovery-plan/
[213] https://www.echo-news.co.uk/news/18856046.southend-airport-sets-coronavirus-recovery-plan/

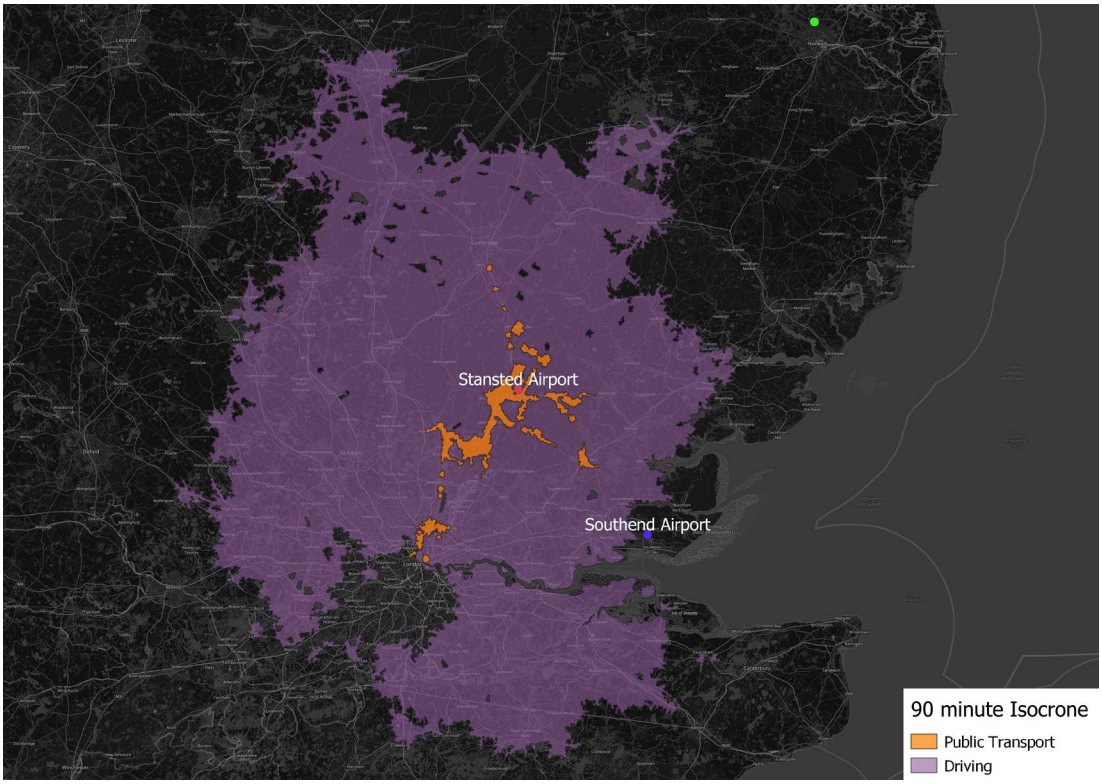


Figure 4.9: 90-minute isochrone – Stansted Airport

The DfT provide data up until 2018 from a sample of passengers travelling through London Stansted Airport to understand their mode of transport for accessing the airport. A breakdown of the proportion of passengers using each mode is shown in the figure below:

The highest proportion of passengers access the airport through private car and rail. It should be noted that staff access to the airport should also be considered. With limited public transport connection within the locality within east Essex and Suffolk, there is not much scope for staff to utilise sustainable modes to access the airport, relying upon the road network.

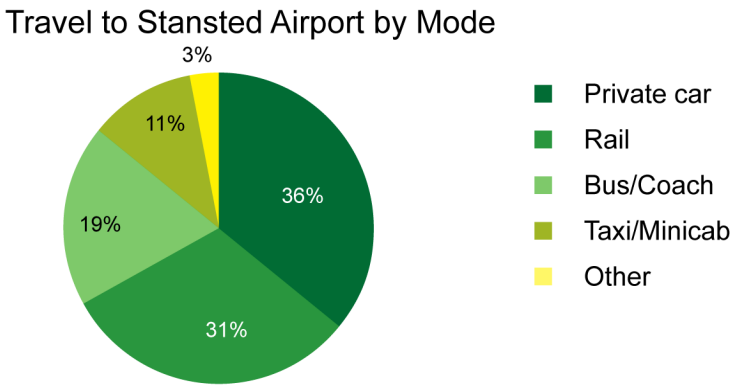


Figure 4.10: Travel to Stansted Airport by mode (2018)

Road network access

The airport is located just off the M11 motorway at junction 8, with direct access to London and Cambridge, with the highest proportion of passengers accessing the airport through private car or rail, ensuring sufficient infrastructure to support reliable journey times is essential.

The Stansted Airport Consultative Committee have questioned the adequacy of the road network accessing the airport especially with projected growth, identifying the need to address the link on the M11 between junctions eight and nine, as well as the link on the A120 from the A10 to the A12.

With the largest proportion of passengers originating in London and a fair proportion originating/terminating in Kent, the M11 and M25 motorways are key access routes.

The M11 junction 8 access to the airport is increasingly congested at peak times, with planned development nearby likely to exacerbate this. In 2018 work began on improving the junction, to increase capacity at peak times. It is expected that with the improvement works there will be improved access between the A120 and M11 for the short to medium term[214].

Challenges on the M25 mimic those set out in Section 2.3.1, with unreliability surrounding the Dartford Crossing for travellers to and from Kent/South London. Delays are often recorded around the junction with the A12 and A127, with large numbers of traffic and HGVs converging onto the motorway.

Rail network access

Rail access to Stansted offers better connectivity to and from London, with the Stansted Express offering direct rail links to London Liverpool Street, departing every 15 minutes with a travel time of 47 minutes (Source: stanstedairport.com).

It has been identified by the Stansted Airport Consultative Committee that there are some pinch points on the railway line with a high number of railway crossings along the route from London. They recommend that significant investment would be required along the railway line to remove pinch points and making journey times more consistent, with particular provision of additional track. They go on to mention that rail services through London Liverpool Street should be extended through the night to ensure a greater passenger experience for those in the first wave of flights in the mornings. These issues are currently being assessed by the West Anglia Taskforce, communicating with Network Rail and the Department for Transport to establish options for short- and medium-term capacity for the West Anglia Main Line. There is ongoing engagement to resolve the issues of capacity and provision of services to accommodate airport operations for example pursuing 4 track provision between Broxbourne and Tottenham Hale enabling the extension of Crossrail to Stansted (Crossrail II).

There is also a direct rail link offered by Cross Country Trains to Birmingham, giving the opportunity for onward connections to the South West, South, North West, and North East of England, as well as destinations in Scotland (Figure 4.10). The Stansted Airport Consultative Committee have identified several rail improvements required to the north of the airport linking with Cambridge, Ipswich, Norwich, Peterborough and beyond, to improve journey time reliability and passenger experience. At a high level the Stansted Airport Sustainable Development Plan cites the following requirements for rail access:

- Extended operating hours on London services;
- Capacity, performance and journey time improvements on the WAML;
- Improved links to Cambridge and beyond; and
- Passenger service improvements.

The development of East-West Rail will aid in the lateral connectivity across the country, with interchanges at Cambridge, Milton Keynes and Oxford[215].

[214] https://www.essexhighways.org/highway-schemes-and-developments/highway-schemes/m11-junction-8-improvement-scheme.aspx
[215] https://eastwestrail.co.uk/

Figure 4.11: Cross Country trains network accessing Stansted Airport

Bus and Coach access

There is an airport bus operating between the airport and London Liverpool Street as well as to Victoria Coach Station. In addition, National Express run four services from Portman Square, Victoria Bus and Coach Station, Kings Cross and London Stratford. Coach services are also available to other UK larger cities as well as most bigger towns and popular places of interest - many destinations have direct access, while other may involve a change. There are 12 National Express destinations within the Transport East region (Figure 4.12), nine of which offer services to Stansted Airport, and also serve as destinations from Stansted Airport.

First Essex run two local bus services between Basildon and Southend to the airport, the later service offering a direct connection between Southend and Stansted airports. Bus and coach services are also available to other UK larger cities as well as most bigger towns and popular places of interest - many destinations have direct access, while other may involve a change.

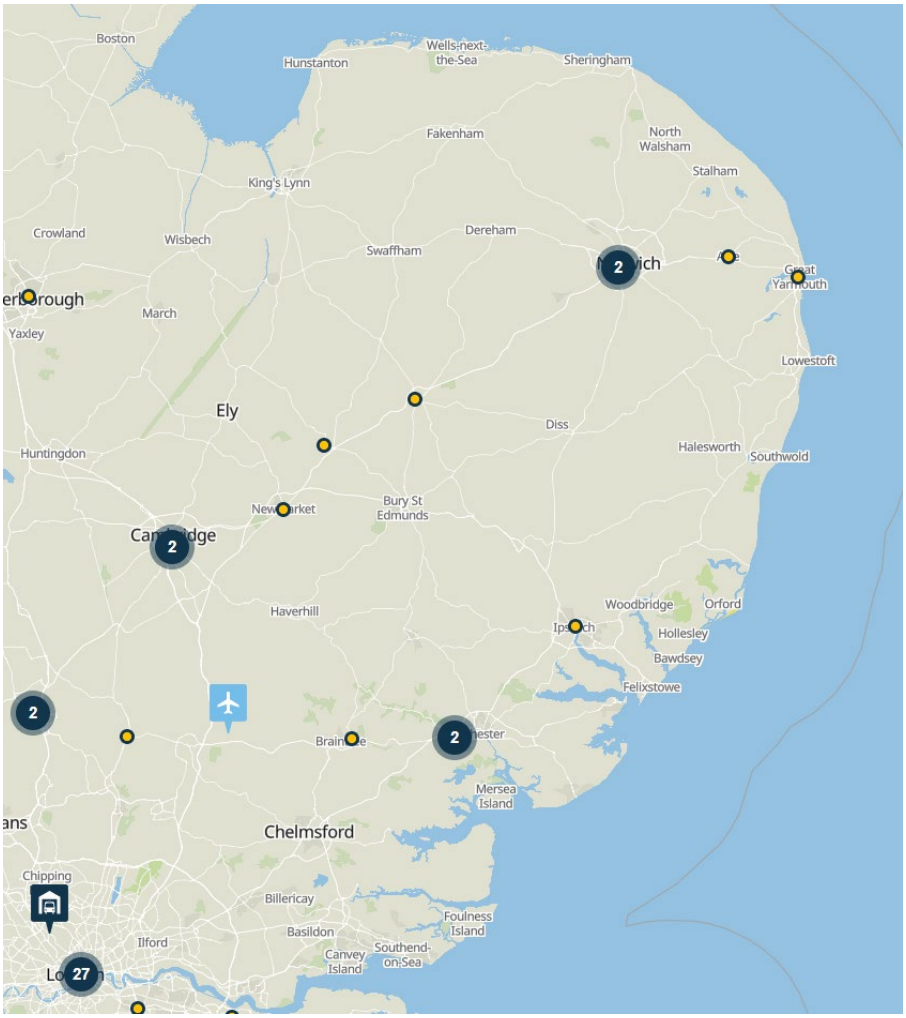


Figure 4.12: National Express destinations within the Transport East Region[216]

4.4.2 Access to Norwich Airport

An assessment of the road and rail isochrone within 90 minutes of Norwich airport was analysed (Figure 4.13), given the lack of DfT catchment and mode share data. Rail connectivity is limited within the timeframe offering radial links from Norwich to Lodden, Wymondham, Dereham and Sheringham. Connections along the road network cover the majority of Norfolk and the northern fringes of Suffolk. Limitations with road connectivity are associated with extent of the SRN across Norfolk.

[216] https://routemap.nationalex press.com/

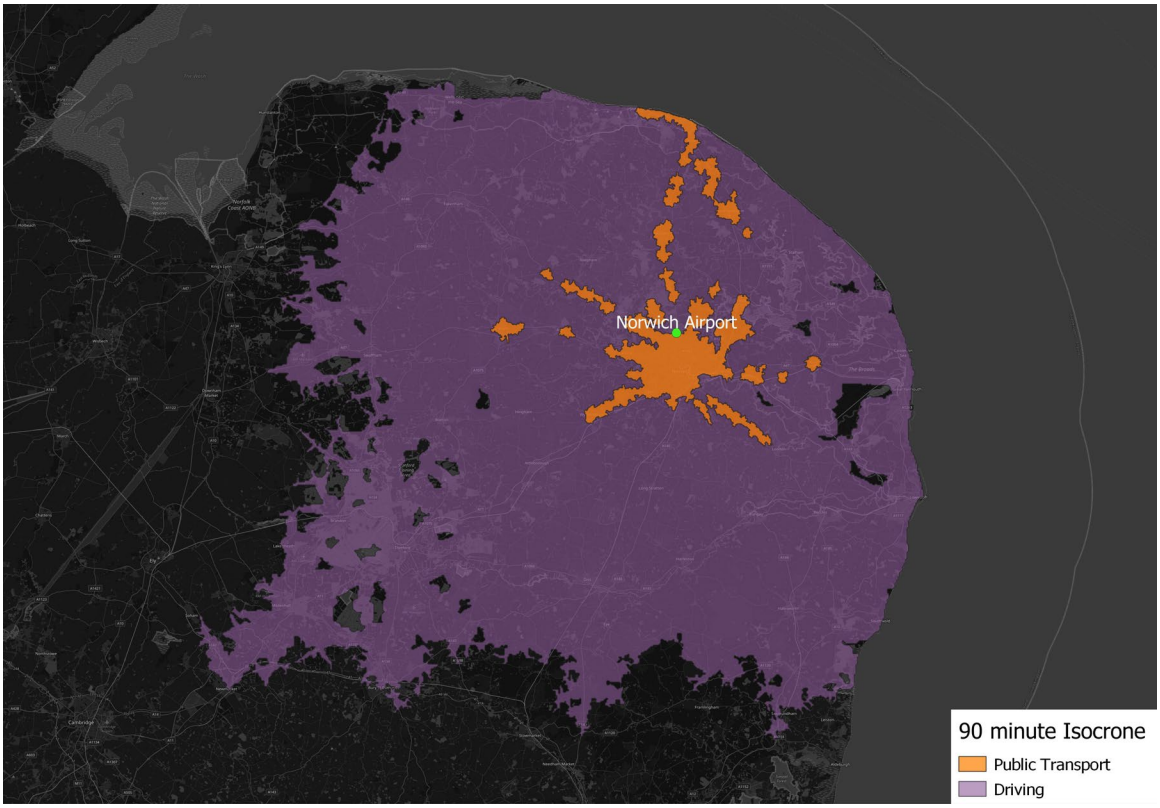


Figure 4.13:90-minute isochrone – Norwich Airport

The airport is located adjacent to the A140 running from Ipswich through Norwich and onto Cromer. This route circumnavigates Norwich Town Centre, which is likely the key route for passengers traveling from the rest of the East and South East of England. Routing around the town centre, this route can lack resiliency during peak periods with local traffic combined with airport passenger and freight movements. The intersection of the A140 with the A47, due south of the town centre offering direct connection with Great Yarmouth handles high levels of freight, as mentioned in Section 2.3.1 having varying levels of infrastructure.

The closest train line to the airport is in Norwich Town Centre, which is a 20-minute drive from the airport or accessed via the Park and Ride which operates from the terminal building from the centre of Norwich six days per week. There are also three local bus routes serving the airport accessing other towns in the local region.

The Wherry train line between Lowestoft and Norwich is a key route connecting the transient workforce for the offshore energy sector travelling through Norwich Airport to Lowestoft and Great Yarmouth. This route is not electrified and is designated as a community rail service as part of the Community Rail Development Strategy to increase community involvement, patronage and income[217]. There are a greater number of services along the line during the summer months to support the tourism industry of the seaside towns.

In summary the Norwich Airport Masterplan has the following high-level objectives for improving surface access:

- To increase the ease of access to the Airport by public transport;
- To ensure that there is adequate, reasonably priced car parking to minimise the number of ‘dropped off’ at the terminal to reduce trip generation;
- To work with local agencies to support the development of a sustainable integrated transport plan; and
- To develop a Travel Plan for airport staff and passengers

[217] http://www.gnn.gov.uk/environment/fullDetail.asp?ReleaseID=261104&NewsAreaID=2&NavigatedFromDepartment=False

Figure 4.14: Wherry Train Line[218]

4.4.3 Access to London Southend Airport

Southend Airport has a catchment of 8.2 million people (Source: southendairport.com), with the highest proportions originating/terminating in the South East and East of England, 88% of those from the south east are from London. This is clearly shown in the 90-minute isochrone from Southend Airport (Figure 4.15), showing a clear rail corridor to London, as well as extending to Chelmsford and as far north as Kelvedon. The road network also only covers the Essex area, with a small area of Kent also within the catchment, facilitated by the Dartford Crossing. The rail and road network do not connect into Suffolk or Norfolk within 90 minutes.

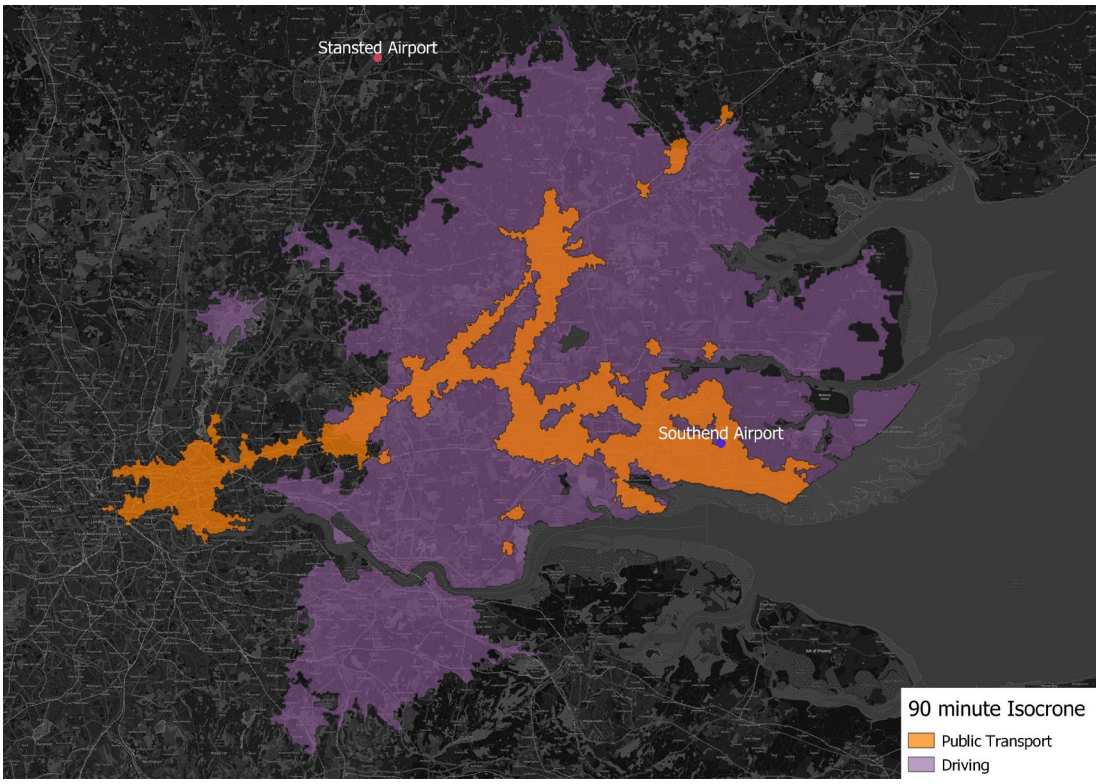


Figure 4.15: 90-minute isochrone – London Southend Airport

[218] https://wherrylines.com/

Road network access

With the largest proportion of passengers originating in London and a fair proportion originating/terminating in Kent, much like Stansted Airport, the M25 motorway is a key access route to the A13 and onwards to the A127.

As previously discussed, the M25 suffers congestion and journey time reliability issues caused by the Dartford Crossing. It is expected that with the development of the Lower Thames Crossing (LTC), this issue will be somewhat resolved offering greater resiliency. This will also increase the road demand along the A13, with the LTC direct access.

The A13 struggles with pinch point congestion along its length with works underway to relieve pinch points, particularly at the A128 Orsett Cock Roundabout, and the A1014 Manorway, Stanford-le-Hope, widening to three lanes. This would provide a continuous three lane section from the M25 and Stanford-le-Hope[219].

The A127 provides an alternative route from the M25 to the airport but is also a key connection from the A13/A130 (at the Fairglen Interchange). The following constraints/improvements along the corridor have been identified/schemes undertaken in recent years:

- Improvements to the Bell interchange junction to compliment junction upgrade work at Cuckoo Corner (2010/11), Kent Elms (2018), Tesco Roundabout (2014/15). This junction upgrade will improve traffic management and performance, particularly at peak time[220], work to be completed in 2020/21.
- Business case put forward in 2015 for funding for capacity improvements along the A127 corridor to improve network resilience. This included improvements to the Nevendon interchange (A127/A132), Rayleigh Weir Interchange (A127/A129), Warley Interchange (A127/B186), and overall signage improvements[221].
- The Fairglen Interchange at the confluence of the A127, A130, A13 and A1245, with high levels of congestion and volumes of traffic. In 2018 proposals for a short term (15 years) and long-term scheme solution were consulted upon. The long-term solution currently has no funding, but design work is in its early stages – being fully compatible with the short-term option[222].

Rail network access

The airport has an on-site train station, with direct access to London. The Liverpool Street Line connects London Liverpool Street with Southend Victoria station, operated by Abellio Greater Anglia with a journey time of 59 minutes[223]: the route from London to Shenfield is on the Great Eastern Mainline, with a junction onto the Shenfield to Southend line, which is electrified and double track throughout its length.

Tilbury Town Rail station to Southend Airport to transfer cruise passenger (25-mile journey) and with a shuttlebus between the port and rail station[224]. The journey takes 45-50 minutes, with one change at Southend Victoria, with an additional 2-minute road transfer from Tilbury Dock to Tilbury Town station.

Bus and Coach access

A network of bus and coaches also access the airport from London and the local area. Connections are offered to Southend, Chelmsford, Stansted and towns across the south of Essex. First group offer a service connecting directly with Stansted airport via Chelmsford, Jetlink connects to London Victoria via Lakeside, Canning Town and Embankment. Arriva bus operate three routes between Landwick & Ashingdon via the airport, Landwick & Hawkwell via the airport, and Shoeburyness & Eastwood via the airport.

[219] https://www.thurrock.gov.uk/a13-roadworks/widening-a13
[220] https://www.southend.gov.uk/downloads/file/5657/a127-the-bell-junction-improvement-options-for-consultation
[221] https://www.southeastlep.com/app/uploads/2019/07/A127-Network-Resilience-Business-Case-.pdf
[222] https://www.essexhighways.org/highway-schemes-and-developments/highway-schemes/a127-a130-fairglen-interchange.aspx
[223] https://www.southend.gov.uk/visiting-southend/travelling-southend-sea
[224] https://www.southend.gov.uk/visiting-southend/travelling-southend-sea

Airport Surface Access Summary

- Catchment area for Southend & Stansted Airports predominantly from London and South East, Norwich Airport has a more local catchment within 60 minutes' drive.
- Connectivity reliant upon rail line coverage and access to the strategic road network
- Issue with staff accessibility for early morning shifts & access to public transport throughout the day/night
- Road network pinch points identified for access to all airports, scheme development underway or complete for many of these. Some schemes only offering a short-term solution and will need review with increasing passenger numbers
- Rail network London centric, with limited coverage across the East region, connectivity east-west almost non-existent and limited heading north
- Need to improve the reliability and connectivity across the region, to support airport demand, but also drive tourism within the region rather than passengers heading straight into London

5 Engaging with our Partners

A key part of the development of the strategy and its associated evidence base is the engagement process throughout each stage. This is vital to ensure that partners are kept informed of progress being made at key stages and to ensure their views are feed into the process, but ultimately that the partners across the region buy into the strategy and can use it to help inform, support and justify measures and initiatives.

During December 2020 Transport East held a series of deep dive workshops and one-to-one sessions to help develop the first stages of the strategy. These workshops involved Transport East engaging with its partners and organisations within the region to develop the following topic areas:

- The role of transport in economic growth and recovery
- Levelling up rural and coastal communities
- Unlocking international gateways

Regarding unlocking international gateways, a series of one to one session's were held with operators of ports and airports. Given the pressures facing the sector linked to the Covid-19 pandemic and the end of the transition period for the UK leaving the European Union, further regional operators and representative bodies were invited to a Ports Roundtable session held in late January 2021 which was facilitated by Transport East.

5.1 One to One Engagement

During December 2020 and February 2021, a series of one to one engagement sessions took place with airport operators, as well as a Roundtable and/or one-to-one meetings with major port operators. This section provides a brief synopsis of the sessions and the broad tenor of discussions which took place:

5.1.1 Questions driving discussion

The question which guided discussion in these one-to-ones were:

1 How do you see the wider economic impact of your airport/ port on the local area, Transport East region and UK economy?

2 What do you see as key constraints to your growth?

3 What does 'unlocking' mean in relation to your gateway?

4 What are the main challenges/ opportunities in unlocking your gateway?

5 What do you think the role of transport is in unlocking your gateway?

6 What are your priorities for freight/passenger movements?

7 How do your staff access the gateway? Are there any barriers/opportunities for modal change?

5.1.2 Airport discussions

The key points taken from the discussion with the airports:

- The three airports in the region have very different markets and operating models.
  - Stansted – major international airport. Some freight but core is passenger including a substantial amount of business travel
  - Southend – mainly European and holiday destinations. Partnership with retail distributor so more freight
  - Norwich – Hub to Amsterdam Schiphol, so some business and international connector. Notable support for off-shore energy industry and domestic routes support this.
- COVID-19 has affected airports to a much greater extent than ports and set growth back at least 3-4 years for most of the airports. If summer 2021 is also highly restricted, then this window increases.
- All operators were confident of long-term growth but need to win back airlines and routes quickly.
- Surface access is crucial to all airports from a passenger, supplier and employee perspective.
  - Stansted benefits from a direct rail and motorway connection.

  - Southend and Norwich are both closer to urban conurbations, leading to challenges with congestion and reliability of journeys - but also makes them a much more 'local' employer.
  - Norwich keen to see improvements to A47 especially.

- Role of public transport in passenger connectivity depends greatly on location.
  - Stansted is very keen to see rail improvements to speed the journey time to London – WAML upgrades and Crossrail 2 in the longer term.
  - Norwich access is very car dependant. Keen to see bus service improvements – quicker link to rail station.
  - Southend is mixed, rail plays a part (approx. 30% of passengers) but they are keen to see a fast service to London to bring connection time down to 30mins.

- All have been making efforts to reduce private vehicles, although do get income from parking – but building extra is very expensive and other uses for land are more valuable.
- Staff travel is one area all had been attempting to reduce vehicle miles – although in the case of Stansted this was partly done by attracting more staff from north London who travel by rail, rather than more local to the airport.
- High-value freight comes in belly hold of passenger planes. The drop in passenger flights through COVID-19 had an impact on the flow. Drop in passenger numbers has seen reduction space and increase in price.
- Role of freight in all the airports was relatively minor. None have the associated distribution hubs that support mass freight, are unlikely to grow freight substantially and are part of airport groups with other freight hubs.
- COVID-19 is likely to delay ambitions around decarbonisation, possibly for a couple of years. Stansted are an industry leader in the area so are planning to maintain commitments. Southend and Norwich planning to do what they can but improving airport operations emissions will have a small impact in comparison to aviation fuel.

5.1.3 Ports and Logistics discussions

Role of Transport:

- Road reliability is crucial to ports operations and investment in the network has not kept pace with increase in freight movements. Bigger ships need more surface vehicles to move the resulting tonnage.
- Specific locations create frequent issues – M25 junctions, Orwell Bridge, A12/A14 Copdock interchange, A13.
- Reliability is most important as it allows for predictable journey times and driver management, but if we can consistently speed average journeys it will have a large impact.
- Improvements for rail freight are a really important area to focus on. Biggest opportunity for decarbonising goods transport – especially with cleaner fuels. Capacity issues East-West for east coast ports and around London for Thames.
- Competition between freight and with passenger services on rail. What is the long-term balance with freight? No long-term safeguarding for rail freight paths.
- Coastal shipping is slower but could be a real opportunity for non-time sensitive materials.
- Thames ports especially concerned about the current design of the Lower Thames Crossing and the impact of additional traffic on local network ports rely on.
- Last mile is a challenge for ports as generally they are surrounded by urban areas.

Growth and Operations:

- Connections between land use development, port locations and road network. Growing logistics and distribution services along major road network across the region. Likely to be increased with any successful Freeport bids. What are the long-term implications for freight vehicle movements? Have the cumulative effects been modelled? How could this shift with Freeports or closer distribution centres? Teletrac can help us understand this.
- Linked to above is the existing planning freedoms of the ports - expansion/ operational hours etc, without need for planning consents. Potential for increase with any successful Freeport bid. Need greater flexibility within/ around ports to help handle.
- Vehicle booking systems can help give a bit of buffer but leads to long wait times within the port. Booking systems do tend to flatten out peaks and troughs across the day.

- Ports tend to have their core customers and niche area of operations, which balances across an area. It takes a lot for a customer to shift because the requires a whole supporting supply chain and logistics operation to adjust too.
- The east and south-east ports are essential for global deep-water trading due to proximity to large European ports i.e. Rotterdam. Creates a golden triangle which is established and self-perpetuating.
- COVID-19 has made little impact on port freight movements. Rail freight bounced back rapidly once the impact in east Asia was managed. However, large impact on numbers of smaller deliveries and LGVs (5 years of growth in a week). Likely a lot of this will stick. It is currently not well co-ordinated; how can it be planned better and be made more sustainable?
- International Brexit issues are likely to be short-term.

Staff Access:

- Ports tend to have a very local supply chain for own operations. Staff tend not to travel more than 15-20 miles for average staffer.
- Skilled staff is a struggle for ports. More of a challenge for Tilbury/ Purfleet due to competition.
- Skills shortage both for ports but esp. in logistics – at height of pandemic industry was short of 76,000 HGV drivers, due to Brexit and pandemic.

Other Issues:

- Managing the resulting unscheduled rest breaks (when there are delays) is difficult. There is not much rest space for drivers along A14. Little safe and secure lorry parking risking load theft and fuel theft.
- Alternative fuels for HGVs are a real challenge. Potential for hydrogen and some emerging electric technology. Fleet operators are unclear which technology to back/invest in. Likely to be different solutions for different journeys i.e. those going port distribution centre and those going distribution centre urban area.
- To make a real shift in decarbonising port operations and logistics chain there needs to be the financial, policy and regulatory incentives to drive change. It's cheaper to go by road than coastal shipping (unlike Europe) and need levers to change that – same with alternative fuels.
- Growth in population drives LGV demand (services and deliveries) and must think about the logistics needs as a key part of infrastructure as part of that planning process. What is the upstream impact on the wider network? London Plan tried to do this but was overruled by the Secretary of State.

5.2 Ports Roundtable Session

Transport East held a Ports Roundtable with senior leaders from port operators, business groups and local authorities with ports within their jurisdiction, to provide valuable insight on the needs of the region's ports to help shape the regional Transport Strategy. Transport East engaged with its partners and organisations within the region to further understand their views on three key themes for international gateways:

- Decarbonisation
- Growth trajectories and aspirations
- Future investment priorities

Transport East approached regional ports specific experts to input into each of the topic areas. For 'decarbonisation', Transport East shared the need for the strategy to support the national decarbonisation agenda and progression towards NetZero. Key themes discussed included the main challenges for reaching this in relation to transport, how the attending partners are looking to support the wider supply chain and freight network in achieving NetZero and the potential for short-sea shipping and how we can promote it.

'Growth trajectories and aspirations' outlined the important role of the region's ports for the wider nation. Statistics show that Norfolk and Suffolk's exports to the EU are higher than the national average and is home to five of the nation's key ports each handling in excess of 2 million tonnes pa of freight. Key themes discussed included the potential impact of Freeports to wider transport networks and how the regions port can work effectively together.

The regional strategy will identify the key transport corridors serving each port and the priorities for investment. Each corridor will have its own challenges and issues which the strategy aims to address. Key themes discussed for 'investment priorities' included what priority corridors/schemes do the attendees feel the strategy should be supporting and what are the main pain-points/blockers to progress from their perspective.

5.2.1 Workshop detail

The workshop was held on Tuesday 2nd February 2021 Representation was spread across the region's ports representatives and further interviews were held with port representatives from across the region.

The roundtable session started with an introduction to Transport East and details of the work undertaken to develop the Transport Strategy to date, followed by a more in-depth review of the international gateways deep dive analysis which has informed the key themes for this session. In the second half of the workshop, details of the three key themes were highlighted. For each theme attendees were asked to share their own views and thoughts on the topic area, guided by series of focused questions.

5.2.2 Key feedback themes per topic question

The following notes down the key questions for the discussion and the resulting outcomes

Areas highlighted in opening discussion

Do you agree with what has been shown so far?

Is there anything you would like to add?

- There is a growing need for ports to be accessible for gaining skills and retention, as well as freight. The London centric public transport system results in poor connectivity within the region, for example Chelmsford to Thames side areas are completely unviable by public transport.
- With net zero being a priority for the East of England, emphasis needs to be placed on the opportunities in the energy sector surrounding freight and offshore energy.
- Conversations need to be had to ensure Brexit is thoroughly comprehended by all parties, with a particular focus on how ports can support businesses and transport links.
- The continuous pursuit of a green economy is a priority, therefore the work of the six strategic pillars to deliver this will continue to increase overtime.
- The pandemic has restricted airport passenger movement and will continue to do so for the foreseeable future. A study needs to be carried out in order to understand the true repercussions of this. It would also be worthwhile to carry out the same study on rail movements to compare and contrast the findings.
- The increased activity is encouraging and will provide the delivering of transported goods at a relatively quick place. However, a concern would be the thought of growing congestion on the road as a result of the freight traffic.
- A question was raised regarding how the strategy is factoring in the opportunities that Freeports bring and developing distribution parks on the main routes to and from ports.
- Two substantial bids are in the works in relation to the Freeports in the region, which will bring an influx of job opportunities through increasing imports.
- In support of ports, the rail freight delivery of construction materials across the region is important and should be considered within the strategy.

Decarbonisation

How do you see your role in the national decarbonisation agenda?

What are the main challenges?

How can you support the decarbonisation of the wider supply chain and freight network?

What are the priorities in this space?

What is the potential for short-sea shipping and how would we promote it?

- The rail route out of Felixstowe continues to see a reduction in CO2 emissions in comparison to the amount of transport emissions coming from roads. This presents a great opportunity to reduce emissions in the future.
- Future strategy should revolve around the need to look for alternative fuels with a particular emphasis on hydrogen power.
- Increased focus on the indirect routes of ports as they are the key driver behind the achievement of the NetZero agenda.

- The generation of power produced by nuclear and offshore wind is related to demand. This provides an opportunity to push ahead with the correct utilisation of off-peak power that can contribute to hydrogen production and other modes of transport.
- Consent has been granted for largest battery storage in the United Kingdom at London Gateway.
- Local electric power should be utilised for vessels to reduce running engines while stationary in the ports.
- The reduction of emissions is at the forefront of operations, which has resulted in the approval of an electric shuttle carrier at London Gateway.
- Nodal hub at Ripple Lane is a similar scheme that would be beneficial in the long term, although there are issues surrounding delivery and funding.
- The use of diesel has been required to combat the lack of the electrified rail line that stretches for one mile out of London Gateway port. Network rail are aware of this, with conversations taking place to implement a solution.
- Capacity on the rail network needs to be increased to lower emissions by reducing fuel which will ensure trains operate as efficiently as possible.
- There is a need to establish longer trains even before electrification as this too reduces carbon emissions.
- Congestion continues to be an issue of importance, with time needing to be spent scrutinising logistical models with a view of lowering both LGV and HGV road movements.
- Consideration should also be sought into the impacts of passenger rail on freight rail and how more emissions are released when a freight service must be pulled over to allow passenger rail to pass.
- Lack of funding from the government for the port of Felixstowe, with investment now being their responsibility.
- Attendees felt there is further work to be carried out by Transport East in relation to government investment for the decarbonisation agenda.
- Short sea shipping and coastal shipping is currently in action. There is a need to define carefully what short sea shipping is (to Europe) and coastal (around UK). How much more can we expose of this to relieve road networks. It was suggested that work is carried out separately on this.
- There is an element of a lack of funding to support the roll out of short sea shipping which is hoped to be available soon.
- The capacity of ports to load and unload the smaller ships needs to be considered when rolling out short sea shipping. The noise pollution would also need to be considered as part of this.
- The modal shift revenue scheme is already available for rail and there is scope to lobby for this to be extended to shipping too.
- Although it would only result in a marginable changed to taking volumes of freight off the road, there is a huge benefit to such changes, “every little helps”.

Growth Trajectories and Aspirations

Potential impact of Freeport to wider transport networks?

High-level growth trajectories

How to work effectively together?

How to make the case to government?

- Need to work with government on the Energy White Paper to seek clarity on example offshore wind and nuclear.
- Transport East can help to set the agenda for policy around this.
- Policy around other areas of the nation impact Transport East. Transport decisions taken in (e.g. Manchester) have impacts on Felixstowe, London Gateway etc.
- The narrative for working together should include the key messaging that investment in the east will support other areas to level up as well.

Investment Priorities

What does ‘unlocking’ mean for your operations?

What are the priority corridors/ schemes needed to support regional ports?

What are the pain-points/ blockers to progress from your perspective?

- There are currently some good schemes being proposed for the region including Lower Thames Crossing, London Resort and the third exit off Canvey Island, however the impact of all of these projects as a collective potentially poses an adverse effect on the region. The impact of one on the other should be considered as a collective and not as individual proposals.
- Improving transport links to the south east that will aid national infrastructure projects such as Lower Thames Crossing. The accessibility of transport will also support employment by widening individuals job search area.
- Economic activity and general efficiency will be bolstered around the surrounding port centric locations by making the appropriate connections.
- Transport connectivity will be beneficial in ensuring the east is viewed as a gateway to the north. This will have positive implications for the supply chain by allowing it to operate as smoothly as possible.
- Persistent issues surrounding the ports in Thurrock which have required significant infrastructure requirements for a while. Investment would be supportive in their efforts to bring forward the Tilbury road link.
- Sustained efforts need to be undertaken to aid the UK wide perspective with local communities in the east often forgotten about in comparison to the north.

6 Summary/Concluding comments

International gateways play a significant role in the national and regional economy. They are facilitators of trade, attractors for inward investment, major employers and facilitate tourism both in the region and more widely across the UK.

6.1 Ports

The Transport East region is home to three of the largest ports in the country, handling half of the UK's total containerised freight. The ports have historical links with the EU for Ro-Ro unaccompanied freight, undertake specialised handling of offshore wind cargo, and are a significant player in bulk freight including grain export and aggregate handling.

Container freight is concentrated at Felixstowe and the London ports of London Gateway and Tilbury. Growth of container cargo is expected to be steady until at least 2040 with the dominance of trade with China/Far East and the emergence of new demand generators for containerised goods. There is capacity at Felixstowe to accommodate increased container demand, with potential expansion to Bathside Bay if required in the future. London Gateway and Tilbury are both showing steady year on year growth, with the ability to increase capacity and accommodate integrated port side logistics.

Ro-Ro freight is also projected to see growth, particularly through the ports in the East of England (Tilbury, Felixstowe, and Harwich), offering the capacity to grow both from increased freight from established connections with the EU but also through the potential reallocation of freight from English Channel ports driven by a general move back to unaccompanied Ro-Ro, accelerated by Brexit challenges.

Many of the materials for the development of offshore wind and gas are carried as general cargo, most often transported by Ro-Ro, and processed by regional ports in the region (Lowestoft, King's Lynn and Great Yarmouth), given their strategic location, lower overheads and capacity.

Bulk imports/exports reviewed within this report focus on dry bulk, dominated by aggregates, agricultural goods and forestry products. These commodities are important for the regional economy, with goods travelling shorter distances to/from the ports than containerised or Ro-Ro goods. London ports, most notably Tilbury, handle the highest volumes of bulk freight in the region, handling 16% of the UKs forestry products and supporting major infrastructure projects. Ipswich handles 2% of the UKs overall bulk freight and Great Yarmouth less than 1%; the regional port of King's Lynn, Lowestoft and Mistley rely upon dry bulk, competing directly with larger ports (Harwich & Ipswich) but with the ability to handle smaller quantities which are less economical for the larger ports, with fewer overheads to allow for competitive pricing. Across all these ports there is a greater reliance upon trade with ports within the EU, opening them up to trading vulnerability. This is further driven in the short term by a projected decline in dry bulk goods up to 2022 before showing a steady annual increase to 2050, reaching 2017 levels by 2027. Despite this projection, it should be considered dry bulk goods are susceptible to economic fluctuation, with strong links with major construction and government investment, so this projection could alter in the future given the current economic instability in the UK.

Passenger movements, although modest in quantity are well established and well placed for ongoing growth. Tilbury accommodates cruise ships, being the closest deep sea cruise terminal to London, with a water ferry to transfer passengers via the River Thames. Harwich also handles cruise ships, however in smaller numbers. Harwich's primary passenger handling is to the Hook of Holland via daily ferry services. Across the other ports in the region, Felixstowe handles a small number of annual passengers, as does Brightlingsea offering short domestic ferry services for leisure or commuting purposes.

6.2 Airports

All three airports in the region have a predominant focus on passenger movements, with a dominance of low-cost airlines and a focus on short-haul services. London Stansted is the key aviation gateway in the region, being the fastest growing airport in the UK and fifth fastest in Europe. It handles the greatest number of passengers, with a catchment in the UK predominantly from the South East, London and East of England. Growth has been seen at all airports in the region over the last few years, with ambitious plans for expansion being planned to accommodate greater numbers of passengers, larger planes and expansion of international

destinations served. In order to accommodate continued growth in the future all airports in the region require investment in their infrastructure as well as improve access.

Of the three airports in the region, only two handle freight, with London Stansted handling the third highest quantity of air cargo in the UK, while Norwich Airport handles less than 1% of the UK's air freight. London Heathrow is dominant due to the vast number of belly hold destinations served. This does leave opportunities for more specialised services in the East of England, with processing in the vicinity of the airports and capitalising upon the relative uncongested airspace to attract future air freight growth (both dedicated cargo carriers and belly hold cargo).

A challenge specific to Norwich airport is the decline of gas/oil fields in the North Sea, as the airport is the gateway facilitating movement of off-shore staff, although opportunities could be developed to serve off-shore wind farms.

6.3 Access to gateways

Connectivity to international gateways is integral to support the efficient movement of freight and passengers both within the region and onwards across the UK. With ambitions for growth at all international gateways in the region it is vital that the transport networks have appropriate capacity and receive appropriate investment to meet demand and maintain economic growth.

More important for the ports and their customers is reliability of services and overall journey time to key destinations, notably the "golden triangle" in the East Midlands. Freight to and from ports is particularly vulnerable to major delays and incidents which result in temporary road or rail closures. These can lead to missed slots inland or missed sailings at the ports, and hence to significant costs for hauliers and shippers. This challenge is exacerbated when there is a lack of suitable alternative routes.

Rail access is vitally important for the container ports, and can play an increasing role for Ro-Ro ports, particularly for unitised cargos. Keys to the growth of rail are capacity and end to end journey times, as well as addressing similar issues of reliability and diversionary routes as for road access. Currently there are significant gaps in the electrification of routes to the ports, particularly the Felixstowe to the Midlands route and the spur serving London Gateway.

All the major ports are located with direct access to the Strategic Road Network, particularly with connections to the Midlands and London. For the regional ports there is a need for better local connectivity to the immediate hinterland. Key routes and their limitations are outlined below:

- A47 – Varying levels of infrastructure, switching between dual and single carriageway along its length
- A12 – Congestion during peak periods, with a lack of hard shoulder limiting resilience
- A14 – Route has limited resilience with few diversion options (carries 70% of Felixstowe's freight)
- A120 – Route has limited resilience, 8 miles of single carriageway, congestion and lack of alternative routes for HGV's
- A13 – Access to ports often congested with a need for widening
- M25 Dartford Crossing – Limited resilience to weather events, inducing unreliability

A key issue along most of these corridors is lack of high-quality truck parking. This leads to trucks parking in inappropriate locations or driving extra miles to find suitable parking.

There is currently a significant increase in the development of large distribution centres and distribution parks across the region, often on trunk roads such as the A14. This will add to pressure for truck capacity and parking.

The proposed Lower Thames Crossing will relieve congestion and improve resilience for crossing the Thames, improving access to the Channel and Kent ports. However, the proposed crossing does not provide direct access to Tilbury nor easy access to London Gateway, and risks increasing congestion on routes serving those ports.

Felixstowe, Ipswich, Harwich, London Gateway and Tilbury all have rail connections, with Felixstowe, Ipswich, London Gateway and Tilbury having specific port rail infrastructure. The following constraints to these routes have been identified, with some work initiated to date to relieve these constraints:

- Single track branch line between Felixstowe and Westerfield, Ipswich and junction with the East Suffolk Line is operating at capacity
- Capacity constraints on the Felixstowe to Nuneaton route including at Ely, Leicester, Haughley Junction and Ely to Soham
- Felixstowe Branch Line, the Felixstowe to Nuneaton route and the rail spur serving London Gateway lack electrification, affecting acceleration of trains and increasing capital costs for transporting freight. Trains often routing through London and back to midlands along an electrified route.
- Need to grow capacity along the North London Line to support continued efficient movement of freight, especially with growth expected.
- Bottlenecks and capacity constraints along the route from London ports along the Thames Haven Line and Essex Thameside Corridor
- Long journey times on all routes due to freight trains waiting for passenger services to pass
- Regional ports tend not to have rail connections due to their local nature of distribution.

Water is also an opportunity for moving freight from ports, with the potential to increase coastal shipping and inland movements. There are already established routes operating between Felixstowe to Tyne, Felixstowe/London Gateway to Scotland and Tilbury to Port of London Wharves. The River Thames carries the largest percentage of goods on inland waterways in the UK, with an intention to increase this share and act as an exemplar for sustainable freight movement, which could be replicated across the region's ports.

The airports in the region are also all located along the Strategic/Major Road Network with London Stansted accessed directly from the M11 junction 8, Norwich via the A47, A11 and A140, and Southend via the A127, A13. These routes are all vulnerable to reliability issues particularly at peak times, with navigation through city centres (Norwich), capacity junctions and the interrelationship with high levels of HGV traffic routing to/from ports in the region.

Rail routes to the airports are sparser with connections benefiting links to and from London rather than within the East region itself, creating a London centric vision. London Stansted and Southend Airports both have direct rail connections to London Liverpool Street and Stratford, while Norwich Airport's closest rail link is Norwich City Centre. The following constraints have been identified along these routes:

- Pinch points along the line to London Stansted caused by the high number of railway crossings and operational interactions between airport express and fast services to Essex and Cambridge, as well as stopper services within London.
- Rail services do not serve the airport operation (early morning in particular)
- Need for improvements in connecting London Stansted to locations such as Cambridge, Ipswich, Norwich, Peterborough and beyond and leverage connectivity opportunities unlocked by East-West rail.
- Great Eastern Mainline access to Norwich at maximum capacity at peak times

6.4 General Challenges & Opportunities

Brexit will have a fundamental impact on how freight moves through international gateways, most notably through more stringent customs checks. Containerised goods generally travel to and from non-EU countries and so won't be directly impacted. Accompanied Ro-Ro will have the biggest impacts, as delays incur costs for the driver and tractor as well as the load. This opens opportunities for short sea Lo-Lo and unaccompanied ferry services, which have lower cost impacts from extended journey times.

The closure of the border crossing at Dover in December 2020, highlighted the vulnerability for fresh food supplies, the potential for accompanied freight to become unattractive in the UK and the need for facility investment around ports for HGV parking and driver wellbeing. The ports in the East of England have the potential to benefit from this scenario by investing in HGV and driver facilities and developing a larger port area for handling unaccompanied freight. Dry bulk is likely to be more resilient to Brexit however, with economic fluctuations comes uncertainty around the funding of major projects which could induce vulnerability to construction material imports. Airports are likely to be more resilient to this following the Brexit withdrawal deal allowing broadly visa free tourism between the European Union and the UK.

The COVID-19 pandemic has posed on of the most significant challenges to freight and passenger movements in recent history, with unknown long-term effects. The pandemic poses ongoing challenge to ports in the region, as highlighted by the closure of the border crossing at Dover in December 2020. There is likely ongoing

hold up of particularly Ro-Ro traffic and cruise passengers awaiting negative COVID-19 tests before being allowed to board vessels. In the short-term worldwide cruises are no longer in operation due to the transmission of the virus, offering vulnerability to Tilbury and Harwich operations. There is a backlog of container cargoes, with major shipping routes being disrupted during lockdowns and the flow of containers being affected resulting in large volumes, lack of storage or container shortages. These effects are expected to be short term and for ports in the region offer the opportunity to 'stress test' infrastructure, through handling larger numbers of containers due to the backlog and allowing the identification of areas which would benefit from being strengthened to accommodate future growth. There is also the opportunity following Covid-19, with the potential reduction in passenger services, to re-allocate some paths to freight, this may provoke the longer-term reorganisation of rail services from which freight could benefit.

All airports in the region have suffered a dramatic decline in passenger numbers with the mass grounding of aircraft and international border closures and lockdowns. Norwich and Southend airports have been particularly affected with the permanent withdrawal of airlines operating from the airports. Economic and airport recovery from the pandemic is largely unknown, but is hoped to be short-term, with international travel and reinvestment of airlines nearing pre-pandemic levels within four years.

One of the key considerations for both ports and airports is the national decarbonisation agenda and progression towards NetZero. Although shipping shows comparatively lower levels of emissions compared with other freight modes, the supply chain within the UK is predominantly focused on road and HGV movements. Strong emphasis needs to be put on the decarbonisation of the supply chain and the consideration of mode choice in moving goods. With the advent of more widely used integrated port logistics, it is hoped that vehicle miles could be reduced and potential for rail to redistribute freight where appropriate. Airfreight on the other hand is one of the greatest emission generators through aircraft movement, surface access movements, and airport operations. Despite this, airports are committed to reaching NetZero by 2050 by utilising future fuels, leveraging aircraft technology and offsetting emissions. Airports do also have the responsibility to encourage the decarbonisation of the supply chain (for freight) and sustainable mode choice for surface access (for passengers/staff), with the opportunity for airports in the region to lead the way in this endeavour.

6.5 What does this mean for Transport East's Strategy?

This deep dive follows on from the work completed to derive the wider outcomes for the resultant transport strategy and helps enrich the findings already identified through the Regional Evidence Base and area based non-transport documents such as Local Plans and Local Industrial Strategies. The deep dive itself is one of three in depth investigations which will inform the overall evidence base for the strategy but will also assist in the development of the transport specific outcomes which Transport East as a region needs to achieve in order to address the issues and challenges highlighted in this technical note.

The following table (Table 6.1) shows the key issues flowing from this technical deep dive and the key actions for the Transport Strategy to address but also potentially for other wider policies and strategies to address. Potentially some of these issues can be more fully explored through the consultation on the Strategy:

Table 6.1

Key Insights and Issues	Key Actions for the Transport Strategy and Surface Assess Strategies
SRN & MRN routes are vulnerable to resilience and reliability issues particularly at peak times, with varying levels of infrastructure, lack of hard shoulders, rest facilities and diversion options, with navigation options limited through city centres and at capacity junctions	The strategy needs to address issues with journey time reliability and infrastructure consistently across the road network (SRN and MRN) in the region for example: ▪ Setting standards for journey time, resilience, and diversionary routes for road and rail serving ports on a corridor basis. Monitor achievement of these standards and plan investments and mitigations.

Key Insights and Issues	Key Actions for the Transport Strategy and Surface Assess Strategies
	▪ Improve the availability of high-quality parking for trucks along port access routes. ▪ Explore options for increased short-sea shipping to remove pressures on road and rail caused by freight
There is potential for rail freight to play a bigger role serving Ro-Ro ports where much of the throughput is containers on road trailers. Rail routes connecting to ports and airports are close to or at operational capacity, lack electrification, lack resiliency and suffer bottlenecks	▪ Continued consideration to the opportunity to increase rail capacity across the region, specifically for links between Felixstowe and the Midlands, as well as London Gateway/Tilbury through London, to support modal shift from road to rail and support future port growth. ▪ Continued discussion with National Rail for the electrification of the rail line between Felixstowe and Ely junction.
Supply chain for ports and airports heavily reliant on HGV road movements, impacting the decarbonisation agenda> This dependence on road freight is likely to increase in the medium term due to the development of large distribution parks along key corridors such as the A14.	▪ The strategy needs to encourage HGV modal shift and uptake of new low carbon freight technology, to lead the way in freight decarbonisation. ▪ Explore mode shift opportunities for both freight and passenger movements, reducing car/HGV reliance, in line with national NetZero targets.
Ports and airports can be the driving force for the drive to NetZero, with the promotion of decarbonising supply chain and distribution, reducing vehicle miles, promoting rail and water transport for freight and passengers.	▪ Explore options for increased short-sea shipping to remove pressures on road and rail caused by freight ▪ The strategy needs to consider how to support alternative fuel uptake and modal shift of airport operations particularly on site and air side vehicles, to lead the way in aviation decarbonisation and support future explorations with Airport Operators into lower carbon air travel.
Passenger movements are the primary function of airports in the region and a lesser although still important function for some ports in the region. Much of passenger movement is London centric tourism/catchment area, with a need to boost accessibility catchment within the region, and so boosting tourism.	▪ Explore the improvement in inter-regional passenger connectivity of public transport to airports. ▪ Encourage robust travel planning for sustainable surface access improvements
Brexit will have a fundamental impact on how freight moves through international gateways – stringent customs checks and complex interactions with supply chain & storage Lack of high-quality trunk parking along SRN corridors leading to trucks parking in inappropriate locations or driving extra miles to find suitable parking	▪ Following the departure from the European Union the strategy needs to consider the impact of port custom delays on the road in network the Strategic Road Network, and looking to increase parking, storage and rest facilities. ▪ There is a need for the development of integrated logistics and manufacturing in the region to support growth at ports and airport,

Key Insights and Issues	Key Actions for the Transport Strategy and Surface Assess Strategies
	attracting inwards investment and boosting jobs and regional exports.
COVID-19 has had a significant effect upon freight and particularly passenger movements, leaving airports particularly vulnerable. It is expected to be a short-term effect, but longer-term resiliency is unknown	▪ The strategy together with its partners input needs to consider what gateways require to support COVID-19 recovery. ▪ Consider how ports are likely to grow in line with projections, the associated logistics, manufacturing infrastructure and how this will impact upon the transport network

The next steps for the overall strategy development are to complete the evidence-based documents and identify a series of different scenarios testing different approaches to spatial distribution and economic conditions both of which will have an impact on the transport networks. In parallel with this a draft set of transport outcomes will be developed in order to deliver the necessary policies and procedures to address the challenges and issues identified.

Once the transport outcomes have been developed engaged on and agreed the development of the transport approach can begin to identify precisely how to deliver the strategy, e.g. thematically, spatially or a combination of the two. This will then ultimately inform the strategy document itself.