MANSTON AIRPORT: A NATIONAL AND REGIONAL AVIATION ASSET

VOLUME II
A qualitative study of potential demand

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This report has been produced by Dr Sally Dixon, an independent aviation and business research consultant. The author wishes to thank all those who contributed to the research. However, the views expressed herein are those of the author only and are based upon independent research by her.

Executive Summary

The research detailed in this report seeks to examine the demand for Manston Airport as a freight hub for the South East of the UK with additional passenger and general aviation services. There is clear demand for additional airport capacity in the South East of England, with evidence that existing airports are increasingly focusing on the passenger market as they near capacity.

Manston Airport is located in the South East where aviation industry demand is highest and most constrained. The airport has an ideal airspace location; benefits from easy surface access to London and the rest of the UK; and can provide rapid handling and turnaround times for air freight. The airport would provide almost immediate relief to the pressing situation that is causing £2bn in potential trade to be lost to the South East each year we remain without additional runway capacity (Centre for Business Research, 2016). Indeed, examples of unconstrained freight-focused airports in Europe, such as Frankfurt Main, show the difference between a true market, where capacity is available to attract freighter flights, and a constrained market such as that in London.

Assessing demand for freight is no easy matter, with forecasts usually calculated by extrapolating past trends for a region or country before allocating a proportion to individual airports. This approach may miss any currently unmet demand, which for the South East of the UK is calculated to be around 80,000 movements without new capacity and 45,000 with a third runway at Heathrow by 2050 (York Aviation, 2015, p. 19). TfL concur that there will be considerable unmet demand in the South East by 2050. Their calculation is more conservative at 54,000 freighter movements without new capacity and 33,000 with two additional runways (in this case at Gatwick and Stansted) (TfL, 2013).

Evidence collected for this report suggests that vast amounts of freight are already trucked to and from northern European airports, losing revenue for UK airports and increasing costs for all those in the supply chain. Indeed, findings from the literature review suggest a lack of datasets for freight forecasting, the unreliability of using historic data to predict the future, the inability to infer forecasts for individual airports from national figures, and the volatility in the freight sector. Academic and industry experts contacted through this research process confirmed these findings, validating the qualitative approach taken.

The work detailed in this report therefore applies a qualitative method to identify demand for potential sectoral and geographic freight, passenger and other aviation markets. As such, the report provides qualitative demand data, derived from 24 interviews, that underpins the proposal to retain Manston as an airport and redevelop the site as a nationally significant infrastructure project.

A number of issues have been identified through this research, which present opportunities for Manston Airport including:

- The lack of available slots at South East airports
- Bumping of freight from passenger aircraft
- Security issues particularly with outsized cargo
- Speed of turnaround and bottlenecks for air freight

Interviewees have provided insight into the potential markets for Manston Airport, which include:

- Perishables including fruit, vegetables, flowers, fish, and shellfish
- Outsized freight
- Express freight
- Formula One and luxury cars
- Live animals (for breeding or racing)
- Time sensitive items such as aircraft and the oil and gas industry
- Humanitarian and military flights

The research has also identified opportunities for aircraft recycling, an on-site MRO, a FBO, and a flying school. Additionally, there is the potential to attract an integrator to Manston Airport, which would dramatically increase the profitability of the airport.

In terms of passenger services, this research has identified opportunities including providing a base for a number of low cost carrier aircraft (LCCs), for charter and scheduled flights, and for a tie up with Dover Harbour Board to receive passengers destined for cruise ships. The Paramount theme park and Ebbsfleet Garden City development are expected to increase demand for both in- and outbound flights. The Lower Thames Crossing will improve accessibility by road to Manston and the Thames Estuary 2050 regeneration project benefit from the presence of a freight-focused airport and will, in turn, stimulate demand for the airport.

This report concludes that Manston Airport is of strategic importance to the UK, having the ability to attract significant air traffic to meet the criteria of a national significant airport. In light of the findings described in this report, there can be little doubt that, in an increasingly competitive economic climate, the UK cannot afford to lose one of its long-serving airports. This report shows that Manston Airport is a valuable regional and national asset, capable of providing infrastructure badly needed by the UK and playing a role in helping Britain's connectedness and trade with the rest of the world.

Definitions and abbreviations

ACI	Airports Council International
Air freight	The carriage of goods by aircraft
ATM	Air Transport Movement and/or Air Traffic Movement
BAA	Formally the British Airports Authority
Backload	The transportation of cargo on a return trip to the originating airport
Belly-freight	Cargo stowed under the main deck of a passenger aircraft
BTO	Build-to-Order
CAA	Civil Aviation Authority
Cargo	The term cargo and freight are used interchangeably in this report and refer to goods carried by road, sea or air
Consolidator	A person or company who combines small volumes of commodities from different originators so they can be shipped together and who usually owns the aircraft used for transport
CPO	Compulsory Purchase Order
DCO	Development Consent Order
Dedicated carrier	An aircraft that transports only freight (not passengers)
DfT	Department for Transport
EASA	European Aviation Safety Agency
EIA	Environmental Impact Assessment
EU	European Union
EUROCONTROL	European Organisation for the Safety of Air Navigation
FAA	Federal Aviation Administration
FBO	Fixed Base Operation
Freight	The term freight and cargo are used interchangeably in this report and refer to goods carried by road, sea or air
Freight forwarder	A person or company that organises the shipment of commodities from an originator (manufacturer, producer, etc.) to a destination (customer, etc.) but generally does not own the aircraft used in the transport
GVA	Gross Value Added
ICAO	International Civil Aviation Organisation
ICT	Information and communications technology
JIT	Just-in-time, a manufacturing system that allows materials or components to be delivered just as they are required in the manufacturing process, thereby minimising storage costs
LCC	Low cost carrier
LCY	London City Airport
LGW	London Gatwick Airport
LHR	London Heathrow Airport
Long haul	No generally agreed definition as 'long' or 'short' is subjective. In Europe, a flight taking more than four hours to complete and/or originating/destined outside Europe is considered long haul
MRO	Maintenance, repair and overhaul facility
Short haul	As above. Short haul in Europe generally indicates a flight within Europe so taking around four hours or less to complete
STN	Stansted Airport
TfL	Transport for London
UK	United Kingdom
USA	United States of America
WTO	World Trade Organization

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1 Introduction

1.1 Background and rationale

1.1.1 There is an urgent need for airport capacity in the south east of the UK as outlined in the first report in this series, *Manston Airport: A regional and national asset*: Volume I: Demand in the south east of the UK Whilst the Government have now decided to support the construction of a third runway at Heathrow, it will take many years before the political, legal, environmental and development issues are resolved and the runway is operational. In these intervening years, likely to be until at least 2030[1], the UK will suffer continued airport congestion and lose the economic benefits associated with meeting demand for air travel. Even with a third runway in place there will still be a need to accommodate additional freight.

1.1.2 Having noted the opportunity to reopen Manston Airport in 2014, RiverOak Strategic Partners, a UK-registered investment company, began the process of negotiating with the owner of the airport, Ann Gloag, co-founder of the Stagecoach organisation. However, approaches to Ms Gloag have been unsuccessful and the airport was closed in May 2014. The re-opening of Manston is now subject to a Development Consent Order (DCO) that entails the compulsory purchase the site.

1.1.3 The intention of the current owner is to secure a change of use from airport operations to a property development called Stone Hill Park. This development would include 2,500 homes in the first instance, a business park, and sports facilities. Such change of use would lose the opportunity to increase airport capacity in the South East in the short term. This report describes the research carried out to understand the potential for Manston Airport.

1.2 Aim and objectives

1.2.1 The aim of this report is to investigate the demand for Manston as an operational airport. This investigation includes freight and passenger demand as well as other potential revenue generating activities the airport can support. The results of the investigation will be used to support the development of a 20-year demand forecast for Manston Airport. This forecast will include the number of aircraft movements per year, an indication of the type and tonnage of freight moved, the number of passengers, the airlines' origin and destination, and the type of aircraft predicted to use Manston. A review of the extant literature will be used to ensure a robust methodology is followed, particularly with regard to air freight demand forecasting.

1.2.2 There are a number of objectives set out for this work and in particular the results will:

- Provide the information required to support the DCO application
- Inform the Manston Airport business case and master plans
- Inform Manston's marketing strategy
- Initiate stakeholder consultation
- Continue to inform key stakeholders
- Open dialogue with academic institutions from Higher and Further Education

[1] 8th February 2016, The Transport Committee hears evidence from the Secretary of State for Transport on the Government's plans for airport expansion in the South East. http://www.parliament.uk/business/committees/committees-a-z/commons-select/transport-committee/news-parliament-2015/airport-expansion-ev-session-15-16/ at 15.07.35

- Stimulate innovation and the future business direction for the airport
- Provide a platform for lobbying Government and industry organisations
- Play a role in forming Government policy for air freight in the UK

1.3 Delimitations and limitations

1.3.1 The delimitations of a study are the boundaries the sponsor imposes during the selection of their research questions. This contrasts the limitations of the study, which refer to conditions or influences that cannot be controlled by the researcher. For this paper, the delimitation is the focus on Manston Airport and in particular its potential for air freight operations. An unconstrained approach, looking beyond Manston to develop a forecast for the UK or Europe, is outside the scope and resources of this project.

1.3.2 Research of this nature has its limitations. Indeed, transport models generally are at best "*imperfect representations of reality*" (DfT, 2014, p. 3). The limitations of this study, including the particulars of the research design and methodology, are not intended to be generalizable beyond Manston Airport. However, since there are no current UK government guidelines for assessing air freight demand at an airport level, it is hoped this study will provide a valuable resource to DfT policy makers.

1.3.3 Every effort has been made to ensure the robustness of this study. Decisions on the selection of the method used to assess demand, its design, and inputs are transparent and straightforward to audit. Key stakeholders have been invited to influence all aspects of the research and will continue to be able to monitor, assess and challenge the validity of the information produced. Air freight is subject to a wide range of external influences. These influences make the process of assessing demand for air freight complex. In mitigation, this study incorporates a process of triangulation, checking and re-checking with industry specialists to ensure the best assessment of quality possible in the circumstances.

1.4 Report structure

1.4.1 The report is structured such that an overview of the air freight market is first presented to provide a clear understanding of the sector and its key elements. This is followed by a review of air freight forecasting literature, which guides the choice of methodological approach for this study. Next, the method used is outlined. The following section describes the findings from the research, structuring them so that freight, passenger, and other potential revenue streams are reported separately. A discussion of the information gathered follows the findings section. The report concludes with recommendations for government and RiverOak Strategic Partners.

2 The air freight market

2.0.1 Air freight, goods carried between one point and another in an aircraft, is only one of the various means of transporting goods. However, air freight has played an important role in enabling the rapid delivery of goods between countries. Table 1 shows the characteristics of different modes of transport. Due to air freight's particular qualities, it is generally used to transport commodities with high value, high business impairment value or time critical (not having the item would incur considerable cost to business), low demand predictability, or that are perishable (Gourdin, 2006).

Table 1 Characteristics of different transportation modes

	Rail	Road	Pipeline	Air	Water
Door-to-door	Sometimes	Yes	Sometimes	No	Sometimes
Price	Low	High	Very Low	Very high	Very low
Speed	Slow	Fast	Slow	Very fast	Very slow
Reliability	Medium	Medium	Very high	Very high	Low
Packaging needs	High	Medium	Nil	Low	High
Risk of loss and damage	High	Medium	Very low	Low	Medium
Flexibility	Low	High	Very low	Very low	Low
Environmental impact	Low[i]	High[ii]	Low[iii]	Medium[iv]	Low[v]

[i] Minimal air and noise pollution, low energy consumption per ton-kilometre travelled
[ii] Air and noise pollution, traffic congestion, high energy consumption per ton-kilometre travelled
[iii] Pipeline rupture could result in catastrophic environmental damage
[iv] Air and noise pollution, very high energy consumption per ton-kilometre travelled
[v] Minimal air and noise pollution, low energy consumption per ton-kilometre travelled

Source: Gourdin, 2006, p. 88

2.0.2 Compared to passenger transport, air freight is more complex, "*because the former [air freight] involves more players, more sophisticated processes, a combination of weight and volume, varied priority services, integration and consolidation strategies, and multiple itineraries of a network than the latter [passenger transport*]." (Feng et al, 2015, p. 265)

2.1 Types of air freight

2.1.1 Boeing (2014) segment air freight into three main service sectors:

- **Scheduled freight**
  - Including general and express freight
  - Accounts for 88% of the world air freight market
  - Express freight continues to grow faster than the average world air cargo growth rate
- **Charter freight**
  - Made up of urgent and/or special handling requirements
  - 8% of the market
  - Almost entirely carried on dedicated cargo aircraft rather than as belly-freight
- **Mail**
  - Forecast to grow at 1% per year
  - Risks to growth include express operators moving to mail, increasing Internet communication, a move to express services by mail air freight operators, and more stringent security requirements

2.1.2 Gardiner and Ison (2007, p. 5) segment the air freight industry rather differently:

- **Belly-hold freight**
  - Percentages vary by airport, from almost all at Heathrow to very little at East Midlands
- **Express freight**
  - Carriers operate dedicated freighter aircraft on a time-definite basis
  - Worldwide almost 50% of airport movements in this sector take place at night
- **Heavy freight**
  - Dedicated cargo either on a scheduled or charter basis

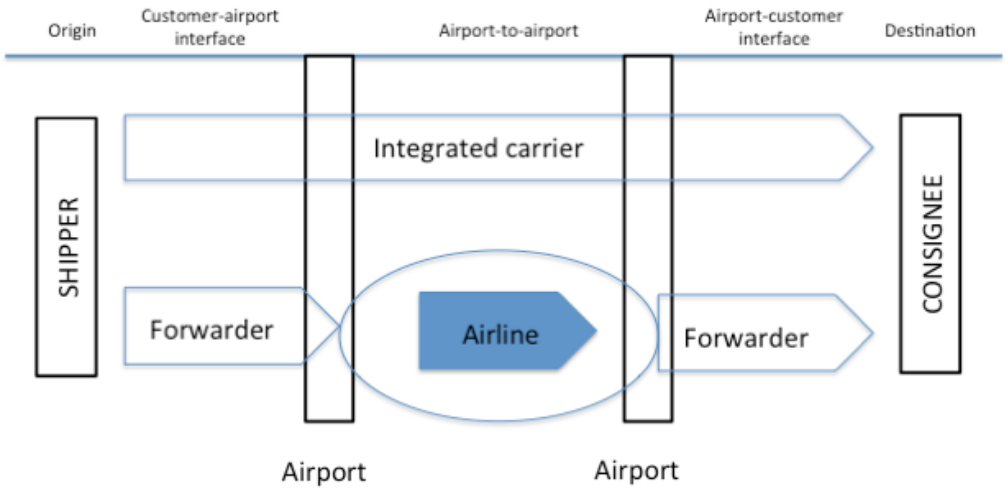
2.1.3 Other industry segmentations of the air freight market include:

- **General air cargo**
  - Includes individually planned and time-defined services suited to price-sensitive cargo with non-urgent transit times that are not hazardous or dangerous
- **Express freight/perishables**
  - The fastest growing market, including all urgent and time critical cargo
- **Specialist or niche cargo**
  - Including dangerous goods and live animals
- **Mail**

2.2 Air freight models

2.2.1 There are two models of air freight: the air freight forwarding model and the integrated air freight model. Figure 1 shows the door-to-door air freight value chain from its origin with the shipper to its destination with the consignee. The customer contracts with either an integrated carrier (such as FedEx, UPS, DHL, etc.) or a freight forwarder.

Figure 1 The door-to-door value chain



Source: Clancy *et al*, 2008 in Khan, 2010, p. 10

2.2.2 **Air freight forwarders**: These organisations provide a service to shippers and importers that has evolved over the last few decades. Originally freight forwarders received a consignment of freight from a shipper and arranged its routing, transportation handling and documentation to either the final receiver or to a foreign airport without owning the vehicles (trucks or aircraft) involved. In more recent years, the role of the forwarders has developed with the largest companies now describing themselves as logistics providers. Most air freight forwarders use belly-freight on scheduled passenger services using wide bodied aircraft although there are a number of dedicated all-cargo freighter aircraft.

2.2.3 **Integrators**: These companies provide a door-to-door service, usually using their own road transport, handling, transit warehousing facilities and aircraft. Normally integrators contract directly with the shipper. Originally branded as express operators, they now compete more directly with freight forwarders and airlines. Integrators mainly use dedicated freighter aircraft although they may buy capacity on passenger aircraft.

2.2.4 The types of commodities transported by air include high value and generally low weight items; perishable goods such as fruit, vegetables, and flowers; and process critical items such as medical items (pharmaceuticals, etc.), and machinery parts where outages would be costly (such as for aircraft and telecommunications equipment). A significant proportion of the UK's total air freight flow consists of transhipments (DfT, 2009).

2.2.5 This section has defined and outlined the air freight market. However, one of the key issues for airports is how to derive an understanding of demand for this market. The following section describes the complexities of air freight when compared to passenger demand forecasting and reviews literature to identify the most suitable method to use for Manston Airport.

3 Review of air freight forecasting literature

3.0.1 There is a distinct lack of academic literature in the field of air cargo (Gardiner and Ison, 2007, p. 15). Forecasting air freight is quite different from forecasting passenger movements for a number of reasons. Firstly, passengers tend to make round trips whereas air freight moves in one direction only. Origin-destination (O-D) information is much harder to collect because passengers generally prefer direct routings whereas shippers are concerned only with ensuring cargo arrives within the agreed timescale. This may mean belly-hold freight makes any number of aircraft changes (Khan, 2010). Secondly, air freight forecasting is complicated by the relative lack of statistics available and by the range of alternative options available to shippers. It is perhaps for these reasons the literature on air cargo volume forecasting has always been secondary to passenger forecasting (Khan, 2010, p. 70).

3.0.2 This section sets out the way in which the literature was interrogated to define a means by which to assess the demand for air freight movements at Manston Airport. Secondary research involves the collation and examination of existing information. A review of the extant literature helps build a robust case and make clear the premises on which subsequent work is based. The literature review method comprised three stages. The first stage was to clearly define the problem under investigation. In this case, the aim was to identify any useful and credible methods that had been used for forecasting air freight. These methods could originate in academia, government departments, or industry.

3.0.3 The second stage was to undertake a preliminary review of literature through Google and academic database searches. Known sources of credible information were accessed first. These included:

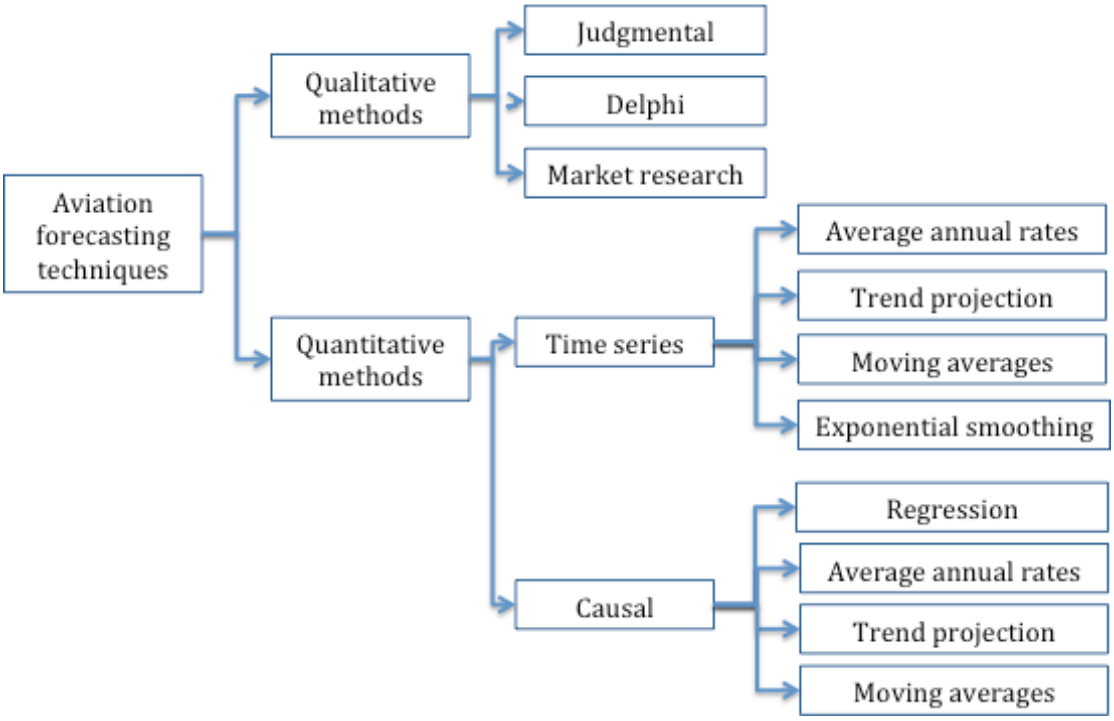
- The EU's Transport Research and Innovation Portal, an online database of research documents
- The EU's website, particularly the transport pages
- The UK Government's Department for Transport website
- The Airports Commission publications

3.0.4 The final stage was to follow citations found in the preliminary review. Information from these documents was then incorporated in the review. All literature has been referenced using the Harvard system, in text and in the list of references at the end of the report. Footnotes have been used where citations refer to opinions quoted in the press or on websites and do not form part of the literature review.

3.0.5 Broadly, aviation forecasting techniques can be divided into three main categories: qualitative methods; quantitative time series methods; and quantitative causal methods. Figure 2 shows the range of forecasting techniques available in aviation modelling.

3.0.6 Forecasts for freight are carried out on a 'demand pull' basis, where the importing country/region causes the demand for the commodity. This contrasts the LCC passenger model, where low prices cause 'demand push' to airports that may not usually 'pull' passenger traffic. However, there is evidence to suggest that an important driver in freight transport demand is the location of logistics centres with efficient service quality (Gardiner, 2006).

Figure 2 Range of aviation forecasting techniques



Source: Silva, 1994

3.0.7 The review of literature uncovered a number of forecasting techniques, which are described in the following sections.

3.1 Four-step models

3.1.1 The history of demand modelling for passenger travel has been dominated by an approach referred to as the 'four-step model' (FSM) (McNally, 2007). De Jong *et al* (2004, pp. 105-6) describe the four steps in freight forecasting as:

1. Production and attraction: Marginals of the origin-destination (OD) matrix (quantities of goods to be transported)
2. Distribution: Cells of the OD matrix (flows between origins and destinations)
3. Modal split: Allocation to modes of transport
4. Assignment: Convert tonnes of freight to transportation mode units (i.e. number of aircraft)

3.1.2 De jong *et al* review models for each of these steps:

1. Production and attraction

- Trend and time series models that extrapolate historical data to provide a forecast into the future.
- System dynamics models where growth in GDP is fed back into the model (for example the ASTRA - Assessment of Transport Strategies - system dynamics model). These models may not provide sufficient detail to show point-to-point flows.
- Zonal trip rate models predict the number of trips originating in or destined for a particular traffic analysis zone. However, a 2012 paper produced for the

Association of European Transport by Holgiun-Veras and colleagues calls into question the accuracy of freight trip generation (FTG).

- Input-output and related models are macro-economic models that start from input-output tables. These tables describe the movement of goods (in units of currency), import and export, between sectors and consumers. These statistical tables are produced nationally.

2. Distribution

- Gravity models
- Input-output models

3. Modal split

- Elasticity-based models
- Aggregate modal split models
- Neoclassical economic models
- Econometric direct demand models
- Disaggregate modal split models (including inventory-based models and models on SP data)
- Micro-simulation approach
- Multi-modal network models

4. Assignment

- Separate assignment stage model
- Multi-modal network model

3.1.3 Issues associated with freight modelling include the conversion between the value of goods being transported and their weight. Value/weight ratios need to be calculated by commodity groups to get an accurate as possible forecast. De Jong and colleagues also point out that shipment frequency, shipment size, return loads, and vehicle utilisation rates influence transport decisions.

3.2 Airports Council International (ACI)

3.2.1 Two documents have been reviewed in this section: The first is the 2011 ACI Airport Traffic Forecasting Manual; and the second is Chapter 3: Demand Forecasting Techniques from the ACI North America Air Cargo Compendium 2013.

3.2.2 ACI Airport Traffic Forecasts (ACI, 2011) use a blend of methods including data from a sample of around 250 airports, econometric variables, and estimates based on airline capacity considerations. Forecasts take account of capacity constraints as well as demand data. The 20-year timeframe includes short and medium-term forecasts. ACI data includes:

- Development of worldwide passenger traffic
- Traffic projections by region
- Individual forecasts for over 140 countries
- Forecast traffic growth between world regions
- Freight and aircraft movements

3.2.3 The ACI North America Air Cargo Compendium provides more specific information on forecasting techniques for air freight at individual airports. They recommend deriving customised inputs from a detailed market assessment informed by

carriers, their business partners and other supporting entities in the air freight community (ACI-NA, 2013, p. 3). Unlike their sister body, the ACI-NA propose forecasting unconstrained market-driven demand.

3.2.4 The ACI-NA also discusses how airports might stimulate local air freight activity. They suggest that in the US, airports have developed truck drop centres near major highways, "*to efficiently pull air traffic away from gateway airports*" (ACI-NA, 2013, p. 5). They also suggest that airport users find certain infrastructure and facilities desirable, including, "*newly built air cargo facilities, easier airport access, warehousing sorting and storage space, smoother customs policies, secure airside access, and shorter taxi-time*" (ACI-NA, 2013, p. 6).

3.2.5 The ACI-NA's forecasting model separates air cargo demand from supply in the stages as described below (ACI-NA, 2013, pp. 7-13):

Air cargo demand

- Origin/destination
- Commodity (perishability, value, weight, and physical dimensions)
- Level of service (desired transit times)
- Shipment size
- Regional/local economic indicators (demographics, employment, production, industrial location)
- Demand side indicators (economic, industrial and demographic factors affecting destination/origin markets)

Air cargo services and other supply factors

- Integrated air cargo carriers
- Combined passenger/freight carriers
- Freight forwarders
- Customs brokers
- Trucking firms
- Warehousing, ground handling, and 3PL firms
- Current and future fleet trends
- Time through the airport (including security screening)
- Cost of using the airport
- Restrictions at the airport (night flying, noise, emissions, etc.)

3.2.6 In terms of supply considerations, ACI-NA believe the most important consideration is assessing whether existing patterns and trends are set or whether change can be expected and should be incorporated into air freight forecasts (ACI-NA, 2013, p. 12).

3.2.7 The activity measures the ACI-NA advise incorporating into forecasts are shipment weight and value; the number and capacity of aircraft operations by category, type and aircraft size; truck activity to and from the airport; and infrastructure at and near the airport (ACI-NA, 2013, pp. 12-13).

3.2.8 In terms of a specific forecasting method, ACI-NA recommends the following activities (ACI-NA, 2013, pp. 16-20):

- Collect and analyse data
  - Current aviation industry and cargo trends

- Catchment area socio-economic data
- Historical air service and cargo traffic trends
- Benchmarking against similar airport
- Competitor analysis

- Employ modelling technique
- Use a market share forecast (if using data for a region or country)

3.2.9 The ACI-NA recommend using both near-term and long-term forecasts, where the method for each can differ. Whilst the long-term forecast can be based on statistical regression analysis linked to projections for GPD, the near-term forecast should take account of judgements by industry specialists.

3.2.10 The ACI manual (2011) also provides information on constructing ultra short-term forecasts to optimise operational performance (used to produce resource plans, avoid departure delays, etc.).

3.3 Airports Commission demand forecasting model

3.3.1 The Airports Commission based their forecasting model on the DfT's aviation forecasts. However, they also analysed how demand for air travel is likely to change in the future in response to national and global economic development, policy changes, and fuel price changes. Additionally, the Commission took account of national and international competition, particularly the effect of UK airport capacity constraints. However, the Airports Commission says they did not follow a mechanistic 'predict and provide' approach. Instead they developed new assessment methodologies including noise impacts, surface access, cost and deliverability.

3.3.2 The main details of the Airports Commission demand forecasting model is contained within their standalone report (Airports Commission, 2013). Very generally, the Airports Commission classify forecasts into one of three main categories (Airports Commission, 2013, pp. 6-7):

- Naïve – where tomorrow is forecast to be like today
- Causal – where dynamic links to economic, fiscal, and demographic drivers are modelled into demand forecasts
- Judgement based – where data is limited or simply not available, the Airports Commission recommend using expert witnesses to predict how demand might look in the future. Several methods are useful including executive judgement, the Delphi Method, and market research. Use of these methods requires transparency of assumptions and testing on different scenarios (see Section 13 of this report for a discussion of various scenarios).

3.3.3 The Commission's forecasts focus heavily on passengers, with little description of how air freight was handled. The uncertainties and scenario testing carried out all involved passenger transport. Since the Commission declare their base forecast was provided by the DfT, it can be assumed, since no mention of a change to the air freight forecasts took place, that these stand.

3.4 ASTRA

3.4.1 ASTRA (Assessment of Transport Strategies) is a system dynamics model developed for the European Commission (ASTRA, 2000). With this type of system, changes to freight transported over time are fed back as an impact on the economy and GDP. This in turn affects freight figures. ASTRA has a macro-economic module that

allows regional growth in GDP to be predicted. However, system dynamics models do not usually contain sufficient detail to allow zone-to-zone forecast flows and link loadings to be made (de Jong *et al*, 2004).

3.5 Boeing

3.5.1 The Boeing (and Airbus etc.) forecasts are good references for macro-level information. These sources consider international volume growth but do not provide micro-level, airport-specific forecasts nor the methodology to do so. The next update to the World Air Cargo Forecast (WACF) is due in the fourth quarter of 2018.

3.5.2 Boeing (2014, p. 10) says four approaches provide useful forecasts. These are:

- Econometric modelling - useful for medium- and long-range forecasts in regional markets
- Evaluation based on judgment – used to account for predictable changes in non-econometric growth factors
- Trend analysis - useful in evaluating general changes in the market attributable to the combined effects of numerous factors
- Potential analysis - useful for forecasting markets in their early stages of development. This approach projects air freight from total freight using the value of the goods (Boeing suggest more than $16 per kilogram) to estimate which will be moved by air.

3.5.3 The most recent forecast shows 5.2% growth annually (world) and 4.6% Europe in air cargo. Boeing report world air cargo traffic began to grow, from a period of stagnation, in the second quarter 2013. By July 2014, traffic grew by 4.4% compared with the same period in 2013. 2014 showed growth of 4.8%. 2015 showed accelerated growth in the early months but a flattening for the rest of the year before strengthening in 2016. A return to trend growth is predicted by 2018.

3.5.4 The major growth was between the Middle East and Europe, with air cargo growing by 13.6% in 2013 and 11.1% in 2015. Indeed, Boeing say that, "*The number of airplanes in the worldwide freighter fleet will increase by more than half during the next 20 years as demand for air cargo services more than doubles*." (Boeing, 2013, p. 3)

3.6 Department for Transport national level forecasts

3.6.1 Despite an in depth literature search, the air freight forecasting method used by the DfT seems sparse when compared to the passenger information they provide. Their 2013 publication, UK Aviation Forecasts, says this:

> "*This forecast assumes that demand for air freight, the share of freight carried on dedicated cargo flights and the average payload of these flights will follow the average trend over the period 1990 – 2011. This results in a future projection for air freight ATMs that grows from 2011 outturn at an average rate of 0.4% a year*." (DfT, 2013, p. 55)

3.6.2 Later in the same report, the DfT refer to the 2000 MDS Transmodal, used by Halcrow in the earlier version of the freight model 97. This model links freight demand to GDP in the long-term, providing a much higher demand than the final DfT output. This is due to the DfT taking the view that the downturn in freighter ATMs from 2001 will continue. They therefore reduce their freight ATM forecasts between 2011 and 2050

from growth of around 2% to only around 0.5%. By 2030, this reduces their forecast ATMs from an unconstrained 120,000 to 60,000 (DfT, 2013, p. 103).

3.6.3 The 2001 report by MDS and others for the DfT, forecasts air freight between 2000 and 2010. Instead of GDP, MDS linked air cargo to international trade, applying an increasing share to UK trade projections (Morrell, 2011). Their assumptions of stimulated competition between airports resulted in an increased forecast for freighter cargo from 30% in 1998 to 57% by 2030. Indeed, under an alternative scenario, this move towards cargo being carried on dedicated freighters resulted in an increase to 74%.

3.6.4 To be complete, the methodology used by the DfT for forecasting passenger traffic has been included here. The model has two stages: The first is the National Air Passenger Demand Model (NAPDM), which forecasts national demand. This demand is disaggregated into sub-markets including origin-destination, country of residence, business/leisure, and final destination/transit. The second stage is to allocate demand to individual airports. This is carried out through the National Air Passenger Allocation Model (NAPAM). No such models exist for air freight traffic.

3.6.5 Time series regression analysis follows to identify the drivers for passenger air travel and to model these relationships. These drivers can be categorised as those that affect economic activity (such as consumer expenditure, GDP, and trade) and those that influence airfares (oil prices, carbon prices, and airline costs). Drivers are allocated elasticity of demand factors for each of the passenger segments (business/leisure, etc.). Following the two-stage process, ATMs (Air Traffic Movements) can be forecast for each airport. This data can then be used to produce forecasts for the aircraft fleet mix at each airport and by route.

3.7 DG-TREN projects

3.7.1 DG-TREN is the European Directorate General for Mobility and Transport. According to DG-TREN, the aviation sector is strategically important, making a vital contribution to the EU's overall economy and employment. Aviation supports almost five million jobs and contributes €300 billion, or 2.1%, to European GDP.

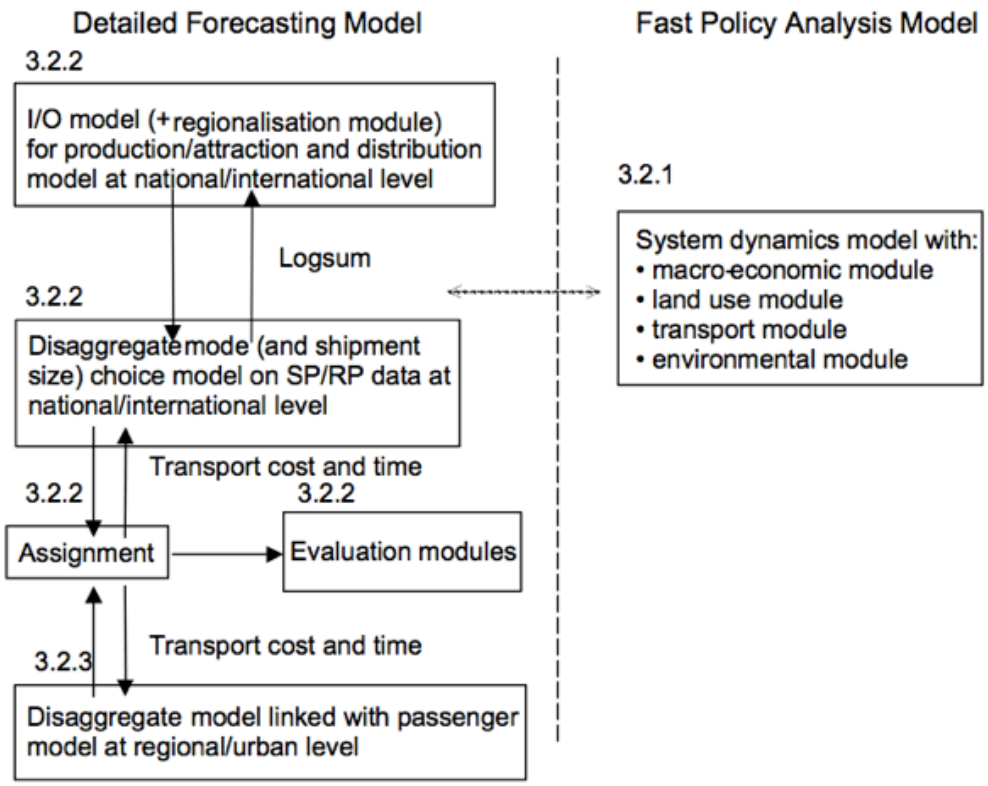
3.7.2 As part of their remit, DTREN has funded the development of a number of advanced tools for transport policy decision-making. Included in these are MDir, SCENES and STEMM, brief descriptions of which follow.

3.8 MDir

3.8.1 The European Commission, as part of a project for DGTREN, established a European Transport Model Directory (MDir). This directory contains information on freight transport models and also on joint passenger and freight transport models (De Jong *et al*, 2004). The project does not include air freight specifically. The project lists a number of national freight models. For the UK, MDir lists the STEMM national freight transport forecast system (see below).

3.8.2 The project recommends development of a model with high and low-resolution levels for detailed and policy analysis respectively. Figure 3 shows the steps involved in the proposed model structure, which is based on a four steps process.

Figure 3 MDir proposed freight forecasting model



Source: De Jong *et al*, 2004, p. 12

3.9 SCENES

3.9.1 The SCENES Internet database is a databank of variables including 33 sectors and more than 200 European zones, covering passengers and freight. The objective of SCENES is to allow the production of transport demand scenarios for the EU. These scenarios are made up of external, socio economic scenarios, and sets of policy scenarios (ME&P (UK) *et al*, 2002).

3.10 STEMM

3.10.1 DG-TREN's STEMM project (Strategic European Multimodal Modelling) is a sophisticated passenger, multi-country passenger and freight transport model. Again, this project failed to incorporate air freight, focusing on road, rail and sea. However, the project developed a methodology for modelling intermodal chains for passenger and freight transport. The project aimed to assist policy makers to reduce barriers to intermodality arising from institutional and regulatory measures[7].

3.10.2 The researchers had problems with data collection for the freight transport aspect of the model, with the voluntary survey resulting in an inadequate sample size. The model was completed using data from other sources. A number of policy scenarios were built into the model including a strongly anti-road orientated strategy[8].

3.11 Eurocontrol

3.11.1 The latest edition of the European Commission's Eurocontrol Network Manager seven-year forecast was published in February 2016. Eurocontrol is the European

[7] http://cordis.europa.eu/result/rcn/22642_en.html
[8] http://cordis.europa.eu/transport/src/stemmrep.htm

Organisation for the Safety of Air Navigation. It provides Europe-wide impartial air traffic forecasts, market analysis, and statistics to the aviation community. Due to its focus on air navigation, only IFR (Instrument Flight Rules) flights are included.

3.11.2 Eurocontrol/STATFOR takes an econometric forecasting approach to provide impartial Europe-wide air traffic forecasts. Other Eurocontrol units use this high level forecast, shown in Table 2 for the UK, to provide forecasts at the level of individual airports. The forecast uses the most up-to-date input forecasts of economic growth, population, low-cost market share growth, load factors, future events, future high-speed rail network, and future airport capacities. It uses scenario-based inputs to describe the future combined with data-driven models (such as the development of high-speed rail).

Table 2 STATFOR IFR movement forecast for the UK

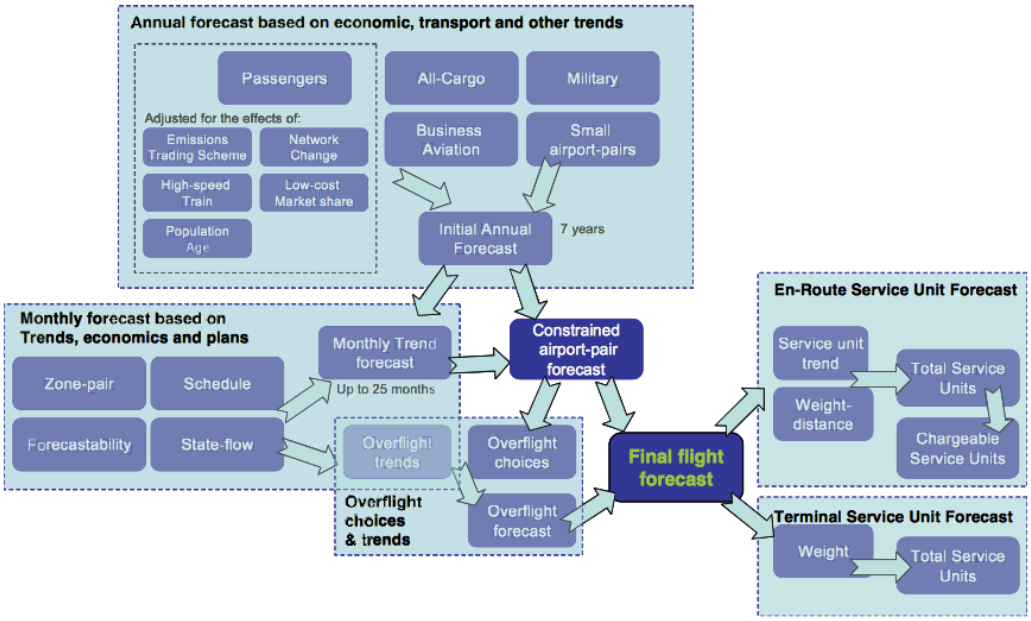
	All IFR traffic			Cargo traffic @ 3.4% of total		
IFR Flight movements ('000s)	High	Base	Low	High	Base	Low
2012		2,211			75.2	
2013		2,225			75.7	
2014		2,269			77.1	
2015		2,322			78.9	
2016	2,410	2,384	2,358	81.9	81.1	80.2
2017	2,480	2,435	2,382	84.3	82.8	81.0
2018	2,570	2,484	2,395	87.4	84.5	81.4
2019	2,641	2,531	2,416	89.8	86.1	82.1
2020	2,732	2,585	2,439	92.9	87.9	82.9
2021	2,799	2,622	2,445	95.2	89.1	83.1
2022	2,869	2,655	2,457	97.5	90.3	83.5

Source: European Commission, 2016, p. 70 (cargo traffic calculated by author)

3.11.3 The Eurocontrol forecast is based on the interaction between supply and demand. They find the three most influential inputs to be economic growth, regulation, and overflight patterns. The 2016 forecast has been revised upward for the UK, to 2.7%. The Spanish forecast was also revised upwards to 6.7% whilst Germany remains stable at 2.7% and France and Italy have been revised downwards to 2.2% and 1.8% respectively. In terms of air freight, the all-cargo segment grew by just below 1% for the second year running and makes up 3.4% of the total IFR traffic in Europe.

3.11.4 Figure 4 shows the components of the Eurocontrol/STATFOR seven-year forecast.

Figure 4 Components of the STATFOR seven-year forecast



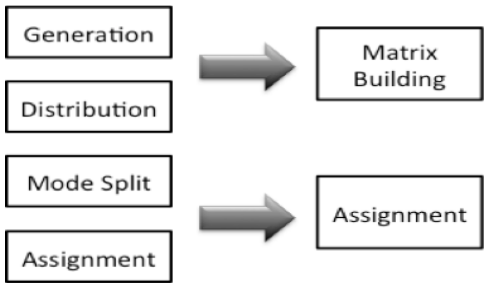
Source: Eurocontrol, 2016, p. 14

3.12 GB Freight Model

3.12.1 The DfT's GB Freight Model (GBFM) evolved from Kent County Council's ferry models of the early 1990s to an international and domestic multimodal national transport model. MDS-Transmodal documented the methodology used to forecast freight in 2004. In 2013, the DfT used external consultants to audit the model to assess its suitability and recommend improvements whilst a more refined freight modelling system is being developed[9]. The Institute for Transport Studies at Leeds University led the freight modelling methodology.

3.12.2 One of the outcomes of the work on the GB Freight Model was the STEMM Freight Model. The model uses the four-step transport forecasting model as a basis. However, the GB model combines the first two steps and the last two steps as shown in Figure 5 The two resulting steps are then used to allocate traffic to freight services – international, domestic multimodal, and domestic road.

Figure 5 GBFM compared to the four-step model

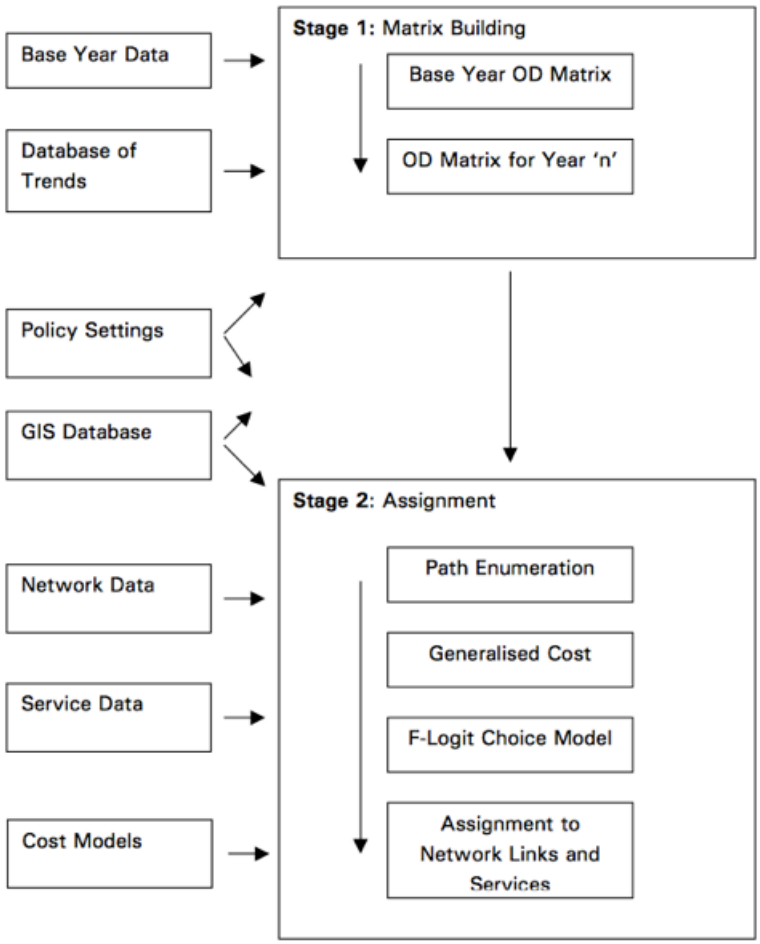


Source: MDS-Transmodal, 2004, p. 18

[9] http://www.dft.gov.uk/rmd/project.asp?intProjectID=11780

3.12.3 The two stages within the GBFM contain a number of processes as shown in Figure 5. The F-Logit specification, as shown in Figure 6, came from the STEMM project. The F-Logit calculates the probability that an alternative route will be chosen. The model contains a number of criteria that can be defined to show choices between pairs of alternatives. The assignment stage focuses on how multimodal systems are used. The model does not, however, forecast air freight traffic.

Figure 6 GBFM processes



Source: MDS-Transmodal, 2004, p. 30

3.13 IATA

3.13.1 The IATA January 2016 Air Freight Market Analysis shows a global recovery in freight volumes with forecast growth predicted to be solid but modest (IATA, 2016a, p. 1). IATA sells their Airline Industry Forecast for around US$1,500. The report provides detailed five-year traffic forecasts for more than 3,000 individual country-pairs, plus aggregate results at regional and global levels.

3.13.2 The forecast derives from the results of a survey of the industry's major airlines, civil aviation and airport authorities. 2013 freight tonnes and five-year forecasts for inbound and outbound freight are provided for over 1,000 international country pairs,

including aggregated values for six world regions, 17 world sub regions, and more than 900 country to sub region forecasts[10].

3.14 ICAO

3.14.1 ICAO produces short to medium-term forecasts for total world air cargo traffic (Morrell, 2011). These forecasts are available at global, regional and route-group levels. ICAO uses a judgement-based consensus approach to forecasting, which combines forecasts from a range of other organisations and discussion with experts. The objective of their forecasts is to support commercial aviation development. In particular, ICAO aim to support airports with their planning issues.

3.15 NEAC

3.15.1 NEAC, the European model for freight transport, is a tool for analysing and forecasting national and international transport flows. As a forecasting model, NEAC uses a database of information on transport flows between regions, based on the specialisation of countries or regions. In addition to the supply and demand elements (gravity model based on supply factors of the exporting country/region and the demand factors of the importing country/region), barriers to trade such as transport costs, tariffs (or conversely free-trade zones) and cultural differences are taken into account. More specific NEAC models can be coupled with the database including:

- A trade model for forecasting of future trade flows
- A modal-split model (estimation and forecasting of modal-split)
- An assignment model (assignment of traffic flows on transport networks)
- A container forecasting model (estimation of containerised transport)
- An environment model (calculation of emissions resulting from transport
- The EcoNEAC model (estimation of the effect of transport and infrastructure on the economy)

3.16 OAG

3.16.1 OAG produce medium-term air freight forecasts with a 10-year horizon. Their customised cargo flight data can be used to plan shipments, manage supply chain activities and monitor trends[11]. Prices available on application.

3.17 TRANSTOOLS

3.17.1 TRANSTOOLS, tools for transport forecasting and scenario testing, provides a European transport network model for passengers, freight, and intermodal transport. The TRANSTOOLS team say they have developed the most comprehensive European transport model available. The model is free although requires ARC-GIS and TRAFFIC ANALYST to run. The TRIP website[12] says the TRANSTOOLS Freight Demand Module consists of the following sub-modules:

- *The TRANSTOOLS Trade Module, which uses the ETIS O/D freight transport matrix. Its output is a forecast O/D matrix for freight including origin region, in-between trans-shipments and destination region, as well as transport mode at origin, in-between trans-shipments and at destination, commodity group and tonnes.*

[10] http://www.iata.org/publications/Pages/airline-industry-forecast.aspx
[11] http://www.oag.com/markets/cargo
[12] http://www.transport-research.info/project/tools-transport-forecasting-and-scenario-testing

- *The TRANSTOOLS Modal Split Module for freight transport based on the model in NEAC. It adjusts the stable modal split resulting from the Trade Model. Its output is the ETIS freight matrix (a forecast O/D matrix including forecast modal split.*
- *The TRANSTOOLS Logistics Module. Based on SLAM, which is a module appended to the SCENES model, it evaluates the impacts of changes in the logistic and transport systems within Europe on the spatial patterns of freight transport flows, through changes in the number and location of warehouses for the distribution of goods. Its outputs are unimodal transport matrices used by the Assignment Module, and generalised and monetary costs per origin, destination and commodity type used by the Economic Module.*

3.17.2 The contact for this model is Dr. Chen, at The Netherlands Organisation for Applied Scientific Research (TNO), who was emailed on 17th March 2016. The email was forwarded to Dr Mandel of MKmetric. His response to a request for further information was that, in principle the tool does not allow forecasts for a single airport. It is also unlikely that TRANSSTOOLS includes Manston although this was not specifically requested and would need to be checked. However, the air freight forecasting element of TRANSTOOLS is rudimentary, using fixed air networks, which, it seems, does not provide a realistic forecast.

3.18 WebTAG

3.18.1 The WebTAG modelling and forecasting guidance enables practitioners to produce adequate evidence to support the business case for major transport schemes (DfT, 2014, p. 1). The DfT propose a standard model structure for transport forecasting, consisting of a three step process:

1. Data collection
2. Modelling
3. Forecasting

3.18.2 This model is aimed at road traffic forecasting but has been included here for its standardisation and application in the UK by the DfT. The DfT prefer incremental models (2014, p. 7), where there is a more heavy reliance on observed data than on the mathematical specification of an absolute model. In the case of Manston Airport, it is impossible to base forecasts on current observable traffic since the airport closed in 2014. However, data is available for the years prior to it closure and this could be used as a proxy for observable data.

3.19 Game theory

3.19.1 Game theory aims to predict equilibrium outcomes, which lie at the intersection of the various players' strategies for winning the game. Essentially, a negotiated equilibrium is reached when there is no incentive, given the choices of the other parties, for any of the parties to change their strategy (Sebenius, 1992). Lenoir (1998) describes the air transportation system as chaotic, rendered so by the strategic behaviour of the actors in this oligopolistic sector. She says that game theory can be applied to try to make sense of what drives actors' decisions. Since the industry has a limited number of actors, the behaviour of one has consequences, in terms of pricing and total capacity, on the entire market. (Lenoir, 1998, p. 15)

3.19.2 In support of this premise, Balakrishnan (2008) describes the air transportation system as having multiple stakeholders with competing interests. Using game theory, she says, makes it, "*possible to develop algorithms for the scheduling (and rescheduling) of*

air transportation resources that address issues of equity and incentives for gaming among airlines." (Balakrishanan, 2008, p. 3)

3.19.3 A few academics have considered the use of game theory in air transportation. In 2009, the California Management Review considered whether airports would expand or delay depending upon their competitor's actions. D'Alfonso and Nastasi (2012) investigated contracts between airports and airlines. They looked at two competing facilities and three types of agreements, developing a multistage game showing whether competing airports and their dominant airlines decide would enter a contractual arrangement.

3.19.4 Saraswati and Hanaoka (2014) also looked at airport–airline cooperation using game theory. These authors considered a contract where an airport shares a percentage of its commercial revenue with an airline for a fixed payment. The objective was to observe how the revenue share allocation maximised profit for the airport but was also acceptable to the airline. Saraswati and Hanaoka, drawing on Starkie (2008), Fu *et al*. (2011) and Hihara (2012), note that cooperation between airports and airlines takes a number of forms:

- Long-term terminal leases
- Long-term negotiated charges for the use of airport facilities
- Signatory airline status in airports (where airlines have certain rights over airport use and capital improvement projects)
- Concession revenue sharing
- Airline ownership of airports
- An airport making a contingent payment to/from the airline, "*based on the difference between the realized load factor and the target load factor set at the start of the contract period*." (Saraswati and Hanaoka, 2014 p. 17)

3.19.5 Aside from the airport-airline 'game', Ordonez and Stier-Moses (2010) used network games to model the interaction between agents who select routes to go from their origins to their destinations. Saeed (2012) and Krajewska and Kopfer (2009) look at game theory in the context of vertical and horizontal cooperation between independent freight forwarders. Ting (2009) uses game theory to consider competitive pricing in logistics services and Theys *et al* (2008) use this method to analyse cooperative networks in intermodal transportation.

3.20 Gravity models

3.20.1 Gravity models derive from the literature on international trade and the transport economics literature. They take the concept of gravity as an attractor and apply it to the transport sector. Gravity models assume links between origin and destination nodes (such as cities) and use this gravity to calculate traffic volumes. A friction factor is calibrated to show any impedance in the route[13]. The 'pull' between the two nodes (the origin and destination) is proportional to the size of the nodes (cities) and inversely proportional to a function of the distance between them.

3.20.2 York Aviation (2015) used a gravity model to forecast the airport destination of the excess air freight demand from the London system. Their premise is that if demand cannot be met in London, freight will be trucked to other airports. York forecast that a total excess tonnage of freight of 2.1 million that would have to go elsewhere by 2050 without airport expansion in the UK. This amounts to some 80,000 freighter movements

[13] http://www.princeton.edu/~alaink/Orf467F08/The%20Gravity%20Model.pdf

(York Aviation, 2015, p. 15). They found that 34% would be trucked to Paris Charles de Gaulle, 19% to Amsterdam, and 18% to Frankfurt. The remainder would go to Birmingham (13%), East Midlands (8%) and Manchester (7%).

3.21 Conclusions from the literature review

3.21.1 Most modern transport planning is carried out by modelling demand and supply. Holguin-Veras and colleagues (2012) describe how poor understanding of freight transportation behaviours and a lack of data has ensured that few freight demand models are available to planners. A thorough understanding of how a freight system functions is necessary if a good model of that system is to be developed. Such an understanding comes from in depth discussions with both the users and providers of the system. As such, qualitative investigations with industry experts must form a key part of the development and population of a demand model.

3.21.2 Indeed, whilst focusing on airline traffic forecasting, Table 3 on page 21 provides a good summary of the advantage and disadvantages of the qualitative and quantitative methods available. According to Khan (2010, p. 73) only econometric modelling, trend analysis, and the three qualitative methods have been used to forecast air freight demand. However, as Table 3 shows, none perform well in the short, medium and long-terms.

3.21.3 Therefore, instead of providing a mathematical forecasting model, this review of the literature suggests a qualitative approach that aims to predict human and organisational behaviour. Indeed, the DfT (2014, p. 3) place a heavy reliance on an understanding of human behaviour in achieving realistic outputs. A qualitative approach that gathers the opinions of industry experts would allow areas of potential demand for Manston Airport to be identified. It is this type of approach that has been selected in the case of Manston Airport.

3.21.4 Whilst econometric models have been the forecasting method of choice by the DfT, Airports Commission and the EU, these are generally used to forecast passenger air traffic for a country or region. As the ACI (Airports Council International) says, "*Any airport wishing to apply an econometric forecasting approach is advised to begin by examining its historic traffic and survey data"* (ACI, 2011, p. 25). This suffices at country level or for established airports where the past can be used to predict behaviour in the future. However, in the case of Manston Airport, closed for several years and lacking investment for many more, this approach is **not** appropriate. Any attempt to build an econometric model would have to establish criteria whereby a proportion of the total predicted UK air freight traffic was 'diverted' to Manston. However, deciding upon the proportion to divert to Manston raises significant problems.

3.21.5 Therefore, instead of providing a mathematical forecasting model, this review of the literature suggests a qualitative approach that aims to predict human and organisational behaviour. Indeed, the DfT (2014, p. 3) place a heavy reliance on an understanding of human behaviour in achieving realistic outputs. A qualitative approach that gathers the opinions of industry experts would allow areas of potential demand for Manston Airport to be identified. It is this type of approach that has been selected in the case of Manston Airport.

Table 3 Attributes of aviation forecasting techniques

	Qualitative methods			Time-series				Causal
	Exec. Judg' ment	**Market research**	**Delphi**	**Annual Ave. Growth**	**Expo. Smooth-ing**	**Linear Trends**	**Moving Ave**	**Regre-ssion**
Accuracy:								
0-6 months	Good	Good	Fair/ good	Fair	Good	Fair	Fair	Good
6-24 months	Fair	Fair	Fair/ good	Fair	Fair	Poor	Fair	Fair/ good
5 years	Poor	Fair/ poor	Fair	Poor	Poor	Poor	Poor	Fair
Suitability for forecasting:								
Traffic growth	Good	Good	Good	Good	Good	Good	Good	Good
Traffic reaction	Poor	Fair	Poor	n/a	n/a	n/a	n/a	Good
New routes	Poor	Poor	Poor	n/a	n/a	n/a	n/a	Poor/ fair
Ability to identify turning points	Poor/ fair	Fair/ good	Fair/ good	Poor	Fair/ poor	Poor	Poor/ fair	Good
Ready availability of input data	Good	Fair/ poor	Poor	Good	Good	Good	Good	Poor/ fair
Days required to forecast	1-2	90+	30-180	1-2	1-2	1-2	1-2	30-90
Cost	Very low	Very high	Mod.	Low	Low	Low	Low	High

Source: Adapted from Doganis, 2002, p. 234

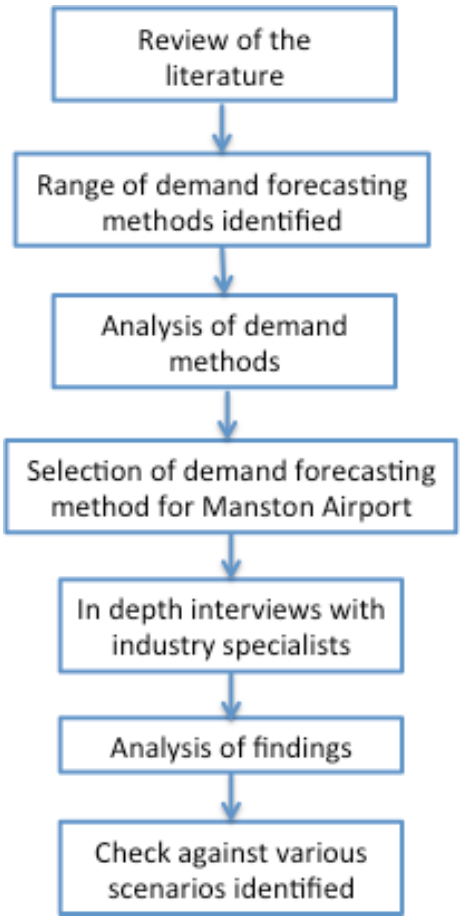
4 Research methodology

4.0.1 Forecasts are our best assessment of how the future will unfold. Whilst no forecast can guarantee to be fully accurate, we can make certain that our assumptions are unbiased, robust and clearly described so that interested parties can assess the resulting output. This section therefore describes the methodological approach taken to complete this research project so that the reader can understand the processes involved in compiling an assessment of demand for Manston Airport.

4.1 Research design

4.1.1 The aims of this research project were firstly to identify a suitable method by which to assess air freight demand for Manston Airport. This work is described in the review of literature shown in the previous section. The second aim was to use the qualitative approach identified through the review of the literature to demonstrate the potential demand for Manston Airport. As such, research was designed to meet these aims and was carried out using both primary and secondary data. Figure 7 shows the design of the research project. It should be noted that a comparative case study approach was not deemed possible, as no airports in sufficiently similar circumstances were identified.

Figure 7 Research design



4.2 Interviewee identification

4.2.1 This qualitative study necessitated discussion with experts in the field. This was essential if an overview of the potential demand for Manston Airport could be collated.

4.2.2 The first step at this stage of the research process was therefore to identify potential interviewees. To this end a list of organisations was compiled, including:

- Kent transport infrastructure
- Government and public sector
- Industry associations
- Freight forwarders and consolidators/integrators
- Local import/export businesses
- Cargo airlines

4.2.3 A full list of interviewees is shown in Section 4.4. These prospective interviewees were contacted by email in the first instance to arrange face-to-face interviews wherever possible. If not, telephone or email communication was used. The objectives for the primary data collection phases of this work were to:

- Understand the processes and issues associated with air freight
- Investigate the likely trends in air freight in the future
- Identify what might motivate airlines and other organisations to use Manston Airport
- Provide information to use in preparing the forecast for Manston Airport

4.3 Semi-structured interview schedule design

4.3.1 A semi-structured approach was used to collect rich data from the informants whilst keeping the interviews on track to ensure all objectives were met. Questions were devised under each of the objective headings shown above as detailed in Figure 8. The interview schedule was used as a guide and depending on their expertise, not all questions were asked of all categories of interviewees.

Figure 8 Categories of interview questions

Questions designed to understand the process and issues associated with air freight	Q1: What type of commodities do you send by air freight? Q2: Are these for import or export? Q3: Can you describe the process you go through to air freight goods? Q4: What are the bottlenecks or main frustrations for you in this process? Q5: Do you think the air freight market likely to expand or contract over the next 20 years? Q6: Why do you say this? Q7: What are the trigger points for this contraction/expansion?
Questions that investigate the likely trends in air freight in the future	Q8: Are e-freight and security the main issues for air freight at the moment? Q9: Are there any other current issues or trends in the sector? Q10: What do you think will be the likely issues and trends in air freight in the future? Q11: Thinking about why you use a belly-freight service, why do you do this rather than use a dedicated freighter

(e.g. convenience, price, habit, etc.)?

Questions that identify the motivations for organisations to use Manston Airport

Q12: How are capacity constraints at UK airports affecting you?
Q13: How do you think these constraints will affect you over the next 20 years?
Q14: What drives your business decisions about which air freight route to use (cost, speed, etc.)?
Q15: Can you rank these issues by their importance to your business?
Reduced flying time
Congestion in London airspace leading to delays in take off/landing
Speed from aircraft to road haulage
Access to road networks including Northern Europe
Landing costs
Refueling
Availability of land for development of storage/processing facilities
Q16: Is it essential for you to be located at LHR.STN,EMA, etc.?
Q17: Have you ever considered using Manston Airport?
Q18: What could the airport offer that would encourage you to seriously consider using Manston?

Questions that help define the demand forecasting model for Manston Airport

Q19: Do you forecast air freight traffic?
Q20: If so, how do you do that (use of a model, etc)?
Q21: Do you think the government/Airports Commission model is accurate?
Q22: How do you think they could have improved the air freight element of their forecasts?

Questions that elicit information for the Manston demand model

Q23: What volume of freight are you currently having to truck or ship by sea that you would prefer to air freight?
Q24: Where is this freight coming from/going to?
Q25: What are the main markets for imports/exports handled as air freight?
Q26: What are the main types of commodities that are being imported/exported that you would prefer to air freight?
Q27: If you were to use Manston Airport, how would you get freight to and from the airport?

4.4 Interview data collection

4.4.1 The data collection phase of this work commenced in mid April 2016. Both primary and secondary data were collected using a variety of methods. Primary data involved interviewing key industry experts by means of face-to-face, telephone or email interviews. In line with the qualitative method chosen, the collation of primary data was the focus of the research. Some 93 primary contacts from an in-house database were initially emailed and interview appointments were made with the 24 participants who responded, as shown in Table 4. On some occasions, interviewees were contacted more than once. In these instances, the date of the first discussion is shown in the table.

4.4.2 Transcripts have not been made available as part of this report due to the confidentiality of the interviews and the commercial sensitivity of the data collected. Responses have been incorporated into the findings presented in Section 5.

Table 4 List of interviewees

Name of Organisation	Contact	Date	Method
ACC Shipping Ltd	Managing Director	27 April 2016	Telephone
Active Transport Ltd	Managing Director	26 April 2016	Telephone
Aeroconsult	Axel Grossmann	13 October 2016	Email
AvMan Engineering (Modern Jet Support)	Chairman	20 May 2016	F2F
Baltic Air Charter Association	Past member	13 May 2016	F2F
British International Freight Association (BIFA)	Policy & Compliance Advisor	26 April 2016	Email
Chartered Institute of Logistics and Transport (CILT)	Chairman, Aviation Policy Forum	28 April 2016	Telephone
Coyne Airways	Sales & Development Project Manager	28 April 2016	Telephone
Department for Transport, Department for Aviation Statistics	Aviation and Ports Analyst	27 April 2016	Email
DHL	Director DHL Air Ltd	23 May 2016	Telephone
Equinus Transport Consultancy	Bob Parsons	7 October 2016	Email
Eurotunnel	Public Affairs Director	21 April 2016	Telephone
FedEx Express	Senior International Legal Advisor	3 June 2016	Telephone
Freight Transport Association	Head of Global Policy	22 April 2016	Telephone
Infratil Airports Europe	Former Chief Executive	27 April 2016	F2F
Locate in Kent	Chief Executive	20 April 2016	F2F
Polar Helicopters	Operations Manager	27 October 2016	F2F
Securitas	Operations Manager - Aviation	8 June 2016	F2F
SmartLynx	Vice President - Technical	27 November 2016	Telephone
Taft International	Owner	6 October 2016	F2F
TG Aviation	Manager	23 October 2016	F2F
Transport for London	Principal Transport Planner - Aviation	8 June 2016	F2F
Visit Kent	Chief Executive	26 April 2016	Telephone
White's Transport Ltd	Operations Director	28 April 2016	F2F

5 Findings

5.0.1 The following sections outline the key findings from the research undertaken. The section commences with a summary of the categories of questions posed to interviewees as shown in Figure 8 on page 23. A section that details the freight findings that will help define the demand for Manston Airport follows this initial summary. The findings relating to freight commence with a section on trucking issues before detailing the findings relating to perishable goods, fish and live animals, other import and export markets, integrator demand, and military and humanitarian flights. The freight findings conclude with an analysis of freight at Frankfurt Main Airport.

5.0.2 The freight findings section is followed by findings relating to demand for passenger travel, with sub-sections presenting specific types of passenger airline covering KLM, low cost carriers, resident carriers, charter flights, and Dover cruise terminal related findings. The section concludes with more general findings relating to other potential income streams for Manston Airport.

5.1 Findings by category of interview question

5.1.1 This section provides a summary of the responses to each of the interview schedule questions by the category allocated to these questions. These categories cover the process and issues associated with air freight, likely trends in the sector, motivations to use Manston Airport, and demand data for Manston.

The process and issues associated with air freight

Q1: What type of commodities do you send by air freight?

5.1.2 Interviewees were involved with a range of commodities including oil and gas equipment, hazardous goods, commercial goods such as clothing and electronics, urgent aircraft parts, pharmaceuticals, and electronics. In terms of markets, one interviewee said, "*The USA is our strongest market with the main hubs in Atlanta, New York, Chicago and Houston. We fly from Heathrow and Manchester*" (ACC Shipping). Another interviewee said, "*Most aircraft parts come from the US, Asia, and Russia. They currently come into Heathrow, Stansted, Luton and also East Midlands. For example, the Iron Maiden plane went tech at Stansted and required a new engine*." (Active Transport) Another interviewee said their main markets, "*are Afghanistan, Azerbaijan, Iraq, and Georgia. Services to Baku in Azerbaijan are growing*. *Iraq is the next big market but already rates look very cheap*. *Africa is the place to look at with limitless opportunities. People will start ordering phones and electronics, etc*." (Coyne Airways) Another interviewee said, "*Nigeria is a growing market*." (White Transport)

5.1.3 For the integrators, their main market is high value, low weight cargo. In terms of pricing, one interviewee said, "*Charges are around 80 pence per kilo from Amsterdam or £1.20 from Heathrow so it works out the same if you have to truck to Amsterdam*" (ACC Shipping). In terms of tonnage, there was a wide range between 90 tonnes and 20,000 tonnes per year for the smaller shippers to vast amounts for the integrators.

Q2: Are these for import or export?

5.1.4 Answers to this question varied from 99.9% export (Coyne Airways) to almost all import (White Transport).

Q3: Can you describe the process you go through to air freight goods?

5.1.5 The process used to air freight goods varied depending on the type of shipper. For airlines, they tend to pick up bookings from a freight forwarder. One respondent said, "*freight is tendered through a handling agent who trucks to Amsterdam*" (Coyne Airways).

Q4: What are the bottlenecks or main frustrations for you in this process?

5.1.6 Most of the interviewees who answered this question talked about problems at Heathrow and at the Channel crossings. Many also discussed getting bumped from belly cargo. This means that freight booked onto a passenger flight to be carried in the hold is left at the departure airport without uploading onto the aircraft and has to wait for a later flight. Of Heathrow, some examples of interviewee comments include:

"*Delays happen at Heathrow where trucks are queuing for at least three hours. Drivers get very frustrated. It is not going to get better – I just can't see how it will.*" (Coyne Airways)

"*Heathrow is the worst as it is the busiest. There is at least a two or three hour wait at all airports.*" (Active Transport)

"*It is nigh on impossible to get a dedicated freighter into Heathrow and you would have to go to Prestwick or Stansted*" (Active Transport)

"*The biggest problem is congestion and the impact in terms of delays with customs and getting equipment/cargo in and out of airports and moving the schedule. It can take more than four hours with BA, with drivers sitting around for that time. It is expected to get worse in the next 20 years as there will still be growth before any new infrastructure comes on line.*" (ACC Shipping)

5.1.7 Compounding the delays at Heathrow is the issue of security clearing huge amounts of outsized freight. One interviewee (Securitas) reported that at present there are no UK facilities for clearing outsized air freight so items arriving in the UK are loaded onto trucks and transported by road to northern Europe, including Brussels, Liege, Amsterdam and Rotterdam, for security clearing. In Europe, sniffer dogs and air samples from containers are used to check for a variety of illegal goods including explosives, drugs and money. There are currently no canine units in the UK but Securitas is in negotiation with the UK Government to approve the use of dogs in security checking outsized freight.

5.1.8 Talking about the channel crossings, interviewees said:

"*We were trucking freight to Amsterdam but have been experiencing increasing delays using the Channel crossings. We now use Harwich to ship freight to Holland. Bottlenecks and main frustrations are that there is a lot of trucking to the continent and getting out of the UK through Calais is a nightmare. We have lost a lot of cargo stuck in Dover.*" (Coyne Airways)

"*Calais is a nightmare. We won't go near after dark, which often means parking up early in Belgium, losing three hours as the driver has to park up early and wait until morning.*" (Active Transport)

5.1.9 Discussing getting bumped from belly cargo, interviewees said:

"*As there are no slots in the UK, flights are often bumped for two or three flights. If this is likely then parts for aircraft gone tech will be airfreighted to Europe [mostly Luxembourg, Amsterdam, Frankfurt, Frankfurt Hahn, Brussels and Leipzig] and trucked to wherever the aircraft is in the UK*." (Active Transport)

"*We want the best service for the cheapest price and you have to go with what your customer wants even though we get bumped from belly-freight and the customer moans*." "*Insuring that traffic does not get bumped off is a big problem, particularly to Dubai. Dubai is not really an export country – purely import. It is really a price priority so anyone who pays a higher price gets on the flight. Sometimes cargo will get changed from London to Amsterdam, which will go by rail or truck*." (ACC Shipping)

Q5: Do you think the air freight market likely to expand or contract over the next 20 years? Q6: Why do you say this? Q7: What are the trigger points for this contraction/expansion?

5.1.10 Most of the interviewees who answered this question thought the market would expand although there is considerable pressure on price for air freight carriers. Interviewees mentioned the potential effect of Brexit and also change in fuel price as trigger points for contraction/expansion. One interviewee said, "*We expect general growth in movement of freight. There is the referendum but most of our work is from outside the EU*." (Active Transport) Another said, "*The market is likely to expand but it doesn't feel like that at the moment. There was a respite with the fuel price being lower but people will go out of business and start parking freighters if the price goes back up. This is except for the Middle East. They are ordering planes and flying to more and more places*." (Coyne Airways)

Likely trends in air freight

Q8: Are e-freight and security the main issues for air freight at the moment?

5.1.11 Most interviewees agreed that security was an issue for the sector. One said, " *It all comes down to security – preventing smuggling and terrorism*." (Active Transport) Another said, "*The main issues are around physical load security, particularly around the issues with Calais*" (White Transport). The interviewee from Securitas explained that having a dedicated canine detection unit at a UK freight specialist airport would make a considerable difference to the security issues that are currently being experienced. At the moment, it is estimated that between 30 and 120 trucks are dispatched from Swissport Manchester and Heathrow each day for security checking outsized freight. If this situation is repeated at other airports, the number of truck movements per year involved is substantial, potentially in the region of 50,000 per year.

5.1.12 Whilst e-freight was considered an issue, it did not seem to be a major problem for interviewees although one interviewee said, "*E-freight is a topic. There are difficult deadlines for implementation and they get missed. IATA e-freight makes it difficult to get documentation up to standard. However, it will cut down paperwork eventually*." (Coyne Airways)

Q9: Are there any other current issues or trends in the sector?

5.1.13 Some interviewees reiterated the problems with getting bumped from belly-freight (as shown in Q4). Other issues mentioned were safety, particularly with the carriage of lithium batteries, and reducing yields. One interviewee said, "*They* [lithium batteries] *need to be transported but there are moves to ban them from passenger flights.*

The US is pushing ahead with this. Cargo airlines are not too keen either. There are more and more things palletised with batteries included. (Coyne Airways)

Q10: What do you think will be the likely issues and trends in air freight in the future?

5.1.14 Interviewees generally think there will be a continuation of the current situation; not imagining improvements or major changes in the way the sector operates. Some interviewees mentioned the reduced capacity for freight on the A380 passenger aircraft. One interviewee was concerned that the industry would concentrate in the hands of fewer operators, particularly those from the Middle East (Coyne Airways).

Q11: Thinking about why you use a belly-freight service, why do you do this rather than use a dedicated freighter (e.g. convenience, price, habit, etc.)?

5.1.15 The feeling was generally that the use of belly-freight was due to availability. One interviewee said, "*Not many freighter routes operate now apart from FedEx and UPS. There are less and less - maybe only a handful per week to and from the US to UK whereas there are hundreds of passenger flights*." (Coyne Airways) This interviewee also said that, "*Most intra-Europe passenger flights are narrow bodied so can't take much weight. The market has sprung up flying around Europe. Few routes are flown by wide-bodied aircraft so there are freighter hops around Europe every night*."

Motivation to use Manston Airport

Q12: How are capacity constraints at UK airports affecting you?

5.1.16 The issues with Heathrow and a general lack of slots in the South East for freighters were affecting interviewees, as shown in Q4.

Q13: How do you think these constraints will affect you over the next 20 years?

5.1.17 Interviewees found it difficult to respond to this question apart from to express a concern that the situation was unlikely to improve for some decades.

Q14: What drives your business decisions about which air freight route to use (cost, speed, etc.)?

5.1.18 For those freight airlines, business decisions are driven by where they can make money. One said, "*If we can fill an aircraft at a good enough rate to make money we will fly*" (Coyne Airways).

Q15: Can you rank these issues by their importance to your business?

- **Reduced flying time**
- **Congestion in London airspace leading to delays in take-off/landing**
- **Speed from aircraft to road haulage**
- **Access to road networks including Northern Europe**
- **Landing costs**
- **Refueling**
- **Availability of land for development of storage/processing facilities**

5.1.19 Generally cost, speed and access to road networks were considered important. One interviewee said, "*Speed is very important to business. The speed at which we get*

cargo from LHR onto a plane and to a destination is a combination of a number of things including queuing times." (Coyne Airways) Another said, "*Cost is always the most important*." (ACC Shipping) One interviewee talked about the potential cost saving of using Manston Airport, saying, "*If heading south, there is a saving to be made on time and fuel. The saving on fuel burn from Manston is likely to be, depending on aircraft type, compared to EMA headed south-east, 45 minutes to one hour and therefore USD 2,000 to 3,000 per flight and more as fuel prices increase. Total cost of a flight is generally 75% fuel*." (Coyne Airways)

Q16: Is it essential for you to be located at Heathrow, Stansted, East Midlands, etc.?

5.1.20 Most interviewees felt that it was not too important for sales departments particularly to be located at these airports. Some interviewees have their offices in Central London.

Q17: Have you ever considered using Manston Airport?

5.1.21 Some interviewees had previously used Manston and their experiences had been good. These people generally expressed the opinion that it would be a benefit to reopen Manston. One interviewee said, "*I speak to people all this time who say it would be useful to have Manston operating*." (White Transport) Another said, "*we miss Manston Airport and hope it will return*" (Active Transport). Others had not previously considered using the airport, with one interviewee saying, "*we have never seen any publicity advertising the airport*." (ACC Shipping)

5.1.22 An email received from the Manager of Charter Sales at National Airlines based in Orlando, Florida, dated 26th January 2017 reads:

> "*Having worked for the Manston regulars such as Das Air, African International (Intavia) and MK Airlines along with many other carriers while I worked for Chapman Freeborn in the UK, MSE was always our first choice for freighter charters.*
> *When it closed it was a great loss*!"
> *I'm sure you could also reach out to the likes of Magma, Cargo Logic Air and ANA as they would be keen to bring the African flowers back in to MSE*."

Q18: What could the airport offer that would encourage you to seriously consider using Manston?

5.1.23 Some interviewees said that the road links were excellent and could not be improved. Others talked about airport operating hours with one interviewee saying, "*it's not going to work if you can only fly between 10.00 and 21.00*" (Active Transport). Others talked about competitive landing fees. Some talked about the airport needing to be easy to use and well equipped with the latest technology including scanning equipment. Some mentioned having warehousing of all sizes available. One airline felt that Manston should find a niche such as becoming well-known perishables centre (Coyne Airways).

Demand model and data for Manston Airport

5.1.24 Generally, interviewees were either unaware of airport demand forecasting models for air freight or felt that they were too difficult to construct. The findings gathered from the interviewees and other research that help to define the demand for Manston are detailed in the following sections.

5.2 Freight-focused findings

5.2.1 Many interviewees talked about the potential effect of Brexit on the freight market with a general feeling that with a decline in the value of sterling, export markets will be stimulated. At present, Eurotunnel, for example, carry more imports than exports and 45% of trade is with Europe where goods include those destined for the automotive and high tech sectors (Eurotunnel). However, continued uncertainty after the referendum over the terms of the UK's exit from the UK may negatively affect trade.

5.2.2 The main issues for interviewees were security, smuggling and terrorism (Active Transport, ACC Shipping). Several interviewees mentioned escalating problems with the carriage of lithium batteries. Scanning outsized items was also cited as a problem for all airports. Locating a canine detection unit at Manston would alleviate many of the delays associated with security clearing air freight (Securitas). Indeed, in term of Manston, one interviewee believed the airport must have, "*all the mod cons and equipment including warehousing of all shapes and sizes, and security screening for all sizes of cargo*" (Coyne Airways).

5.2.3 One interviewee (Coyne Airways) felt that success at Manston depended upon identifying a niche market and becoming known for excellence. In particular, suggestions included a perishables centre, handling of live animals, easy access for charter flights, and handling cargo that is not necessarily straightforward (Coyne Airways).

5.2.4 Several interviewees said that it is almost impossible to get a dedicated freighter into Heathrow due to slot restrictions. Delays and queuing to off load and upload freight at Heathrow was reported by many interviewees to be considerable. One interviewee said, "*It is not going to get any better. I can't see how it will*" (Coyne Airways). It is perhaps because of these frustrations that one interviewee reported feeling that life will continue to be difficult for air freighters, with Air France, for example, ceasing to use freighters (Coyne Airways).

5.2.5 However, freight is frequently bumped from passenger aircraft, often up to three times, before goods are uploaded onto a flight. If it is impossible to wait, if items are needed urgently such as parts for aircraft, then they are loaded onto a flight to Europe and trucked back to the UK (Active Transport, ACC Shipping). One interviewee (ACC Shipping) found that bumping from passenger aircraft was particularly problematic on flights from Dubai. He felt this was because Dubai is not generally an export market and so anyone who is prepared to pay a premium price would get priority.

5.2.6 One interviewee felt there had been a respite due to lower fuel prices making operations more cost effective (Coyne Airways). He also felt that Middle Eastern carriers would gain advantage over European based operators because of the difference in fuel price. Operators from the Middle East, "*are ordering planes and flying to more and more places*" (Coyne Airways). The interviewee felt that the industry is worried about the expansion of Middle Eastern carriers but that, since it is a free market, nothing can be done. He felt that, "*full liberalisation of flying rights would be good but would benefit those with the money*" (Coyne Airways).

5.2.7 If freight was banned from Heathrow or conditions for freight operators was made more difficult, then other airports that could handle freight would benefit (Coyne Airways). Manston Airport could benefit. Transport links to Manston are considered to be good with one interviewee (Active Transport) saying that even with road diversions

access was "*brilliant*". One key issue reported by an air freight operator is easy airport access for cargo. He said, "that would be a big thing" (Coyne Airways). Another interviewee talked about Manston's location close to mainland Europe as an advantage (DHL). One interviewee (Taft) who has been in road haulage in Thanet for thirty years, stated that his view has always been that Manston is perfectly located to become northern Europe's premier hub for air freight.

5.2.8 The interviewee from Transport for London (TfL) discussed the expected increasing pressure on Stansted Airport for passenger flights. TfL are working hard to provide surface links for passengers from London to Stansted, which is predicted to increase demand. In this case, freight may be squeezed out of the airport as slots and handling become more focused on the passenger market. TfL undertook an extensive exercise as part of the work to define the need for the proposed Estuary Airport. This work shows that almost 54,000 additional freight movements per year would be required in the South East by 2050 with current infrastructure operating at maximum capacity.

5.2.9 It should be noted that these figures were prepared before the announcement of the Government's preference for an additional runway at Heathrow. However, even with additional runways at Gatwick and Stansted (shown in the column headed 2x2x2 – two runways each at Heathrow, Gatwick and Stansted), the additional freight requirement is in the region of 33,000 movements per year by 2050.

5.2.10 TfL specifically mention Manston in their 2013 report, stating that, "***around 14,000 freighters a year could still be accommodated in the vicinity of London by using capacity at airports such as Manston, which already handles some long haul freighters***" (2013, p. 7). Without sufficient air freight capacity in the South East, cargo is trucked to and from northern European airports, putting pressure on the Channel crossings and on the surrounding road network, particularly when delays occur and trucks have to be parked in Operation Stack. The following section discusses the trucking activity and the implications for Manston Airport.

Trucking activity

5.2.11 Manston is ideally located for airport-to-truck and truck-to-airport consolidation for cargo destined for or originating from continental Europe. Due to its location if heading south and quick turnaround times, the location of Manston is considered to save time and money by many interviewees. Fuel savings compared to East Midlands were likely to be in the region of $2,000 to $3,000 and more as fuel prices increase (Coyne Airways). Total costs are generally around 75% fuel so this is a considerable saving. As well as fuel savings, there are savings to be made in terms of crew flight time limitations (Baltic Exchange). Indeed, one interviewee believes that, "*Manston could be one of the best cargo airports in Europe if not further afield*" (Taft).

5.2.12 Almost all interviewees talked about the delays at the Channel Crossings and the frustrations this causes. The interviewee from Eurotunnel felt there had been a move towards air freight during 2016 due to the migrant crisis in Calais. During the crisis, it was impossible to enter Calais after dark because of attempts to board trucks. Drivers were forced to park overnight in Belgium, losing around three hours at night and several in the morning (Active Transport). The frustration experienced by hauliers struggling with border controls and transport security is likely to drive them to consider air transport but pricing is key to remodelling the freight market (Eurotunnel and Active Transport). Nonetheless, Eurotunnel have three shuttle trains on order that will all be in service by 2018.

5.2.13 There are significantly marked seasons within the Channel crossing freight market with the end of the year being substantially busier to meet the Christmas demand (Eurotunnel). Conversely, the summer period, especially August, is much quieter as factories shut down production. Generally Eurotunnel find freight traffic busier mid week; weekends are busier for passenger traffic. However, one of the hauliers (White's Transport) stated that there were no large seasonal variations since organisations are now mainly using JIT.

5.2.14 One interviewee (Baltic Exchange) felt that the UK trucking industry would benefit from the reopening of Manston Airport. The sector would see a reduction in costs, less congestion at the Channel crossings and also fewer security risks, uplift of freight would be in the UK, and the ability to offer livestock delivery from the airport as was the case in the 1980s, rather than on long pan-European road transport. Indeed, one of the haulier interviewees (Taft) observed that capacity issues at Heathrow have resulted in the Lufthansa Cargo operation shrinking over the years to a fraction of its former size.

5.2.15 There is a considerable volume of business for road hauliers willing to take goods from the UK to Europe for air freighting, mainly from Frankfurt (Taft). There is also a large amount of return business. However, according to this interviewee, there is very little business for hauliers picking up large loads from freighters landing in the UK for delivery within the UK. There is also very little business for hauliers transporting goods within the UK from a manufacturer to an airport (Taft).

5.2.16 Turnaround times and delay at airports are crucial for airlines and hauliers. The journey by road from Manston to Heathrow takes two hours on average. The time taken to load can vary from two hours to 10 hours, depending on what else is going on at the airport. The journey from Manston to Frankfurt takes eight hours, which is just within a driver's permitted 10 hours. However, because of historic problems at Calais, the return journey can often be subject to delays due to border and police controls. This means drivers who have exceeded their permitted driving hours have to wait around until they are legally able to drive again. One interviewee said that, "*the advantage of Manston is that it might well remove quite a lot of HGVs carrying air cargo from getting caught up in French industrial action or perhaps in the future by UK/EEA customs checks after Brexit, and would bring quite a lot of cargo into a single UK airport from which domestic distribution can take place – whether that is by smaller cargo flights, rail freight or continuing movement by HGVs*." (Equinos)

5.2.17 Taft International provided the three-hour trucking times from Manston. As Figure 9 shows, trucks can reach Basingstoke to the west, Northampton to the northwest, and Ipswich to the northeast within three hours. The Lower Thames Crossing, when it opens, will increase this area, particularly to the northeast.

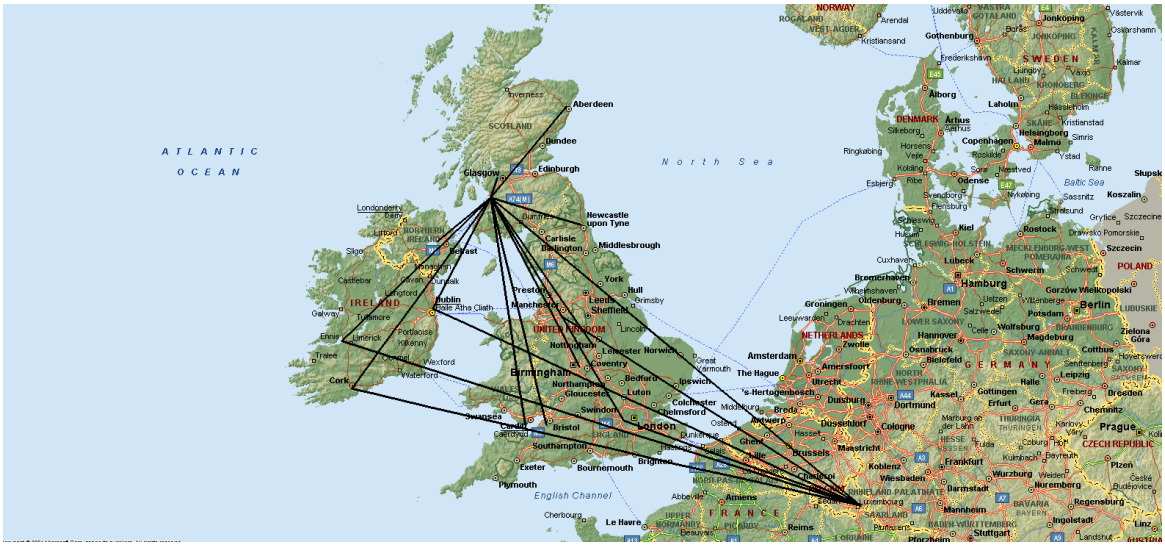
Figure 9 Three hour trucking times from Manston

Source: Taft International

5.2.18 One interviewee provided details of the trucking activities of Cargolux, Cathay Pacific and Lufthansa. The following maps show the origins/destinations of freight. These origins and destinations are shown as a direct line on the maps although, of course, all truck movements involve either a ferry or tunnel crossing thus passing very close to the Manston site. About two-thirds of the HGVs use ferries rather than Eurotunnel (Equinos). He also said, "*I suggest that because of Manston's position with sea on three sides that any use of rail might benefit by considering how marine intermodal freight is distributed*." (Equinos)

5.2.19 Cargolux has hubs at Prestwick and Luxembourg and Figure 10 shows the destinations to where this freight is trucked.

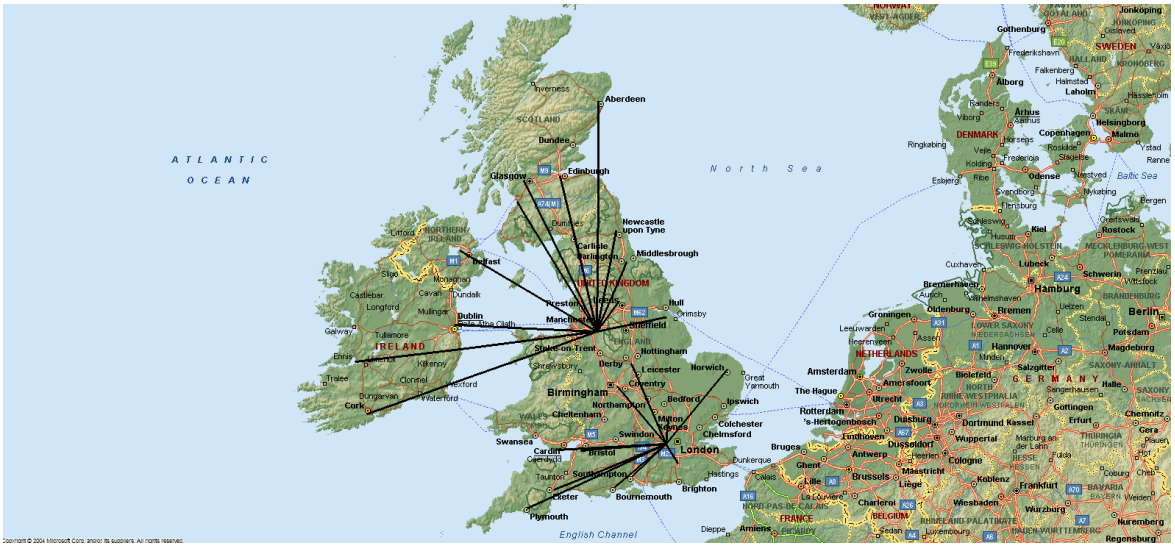
Figure 10 Cargolux trucking



Source: Bob Parsons

5.2.20 Cathay Pacific has hubs at Heathrow and Manchester and Figure 11 shows the trucking movements from these two hubs.

Figure 11 Cathay Pacific trucking



Source: Bob Parsons

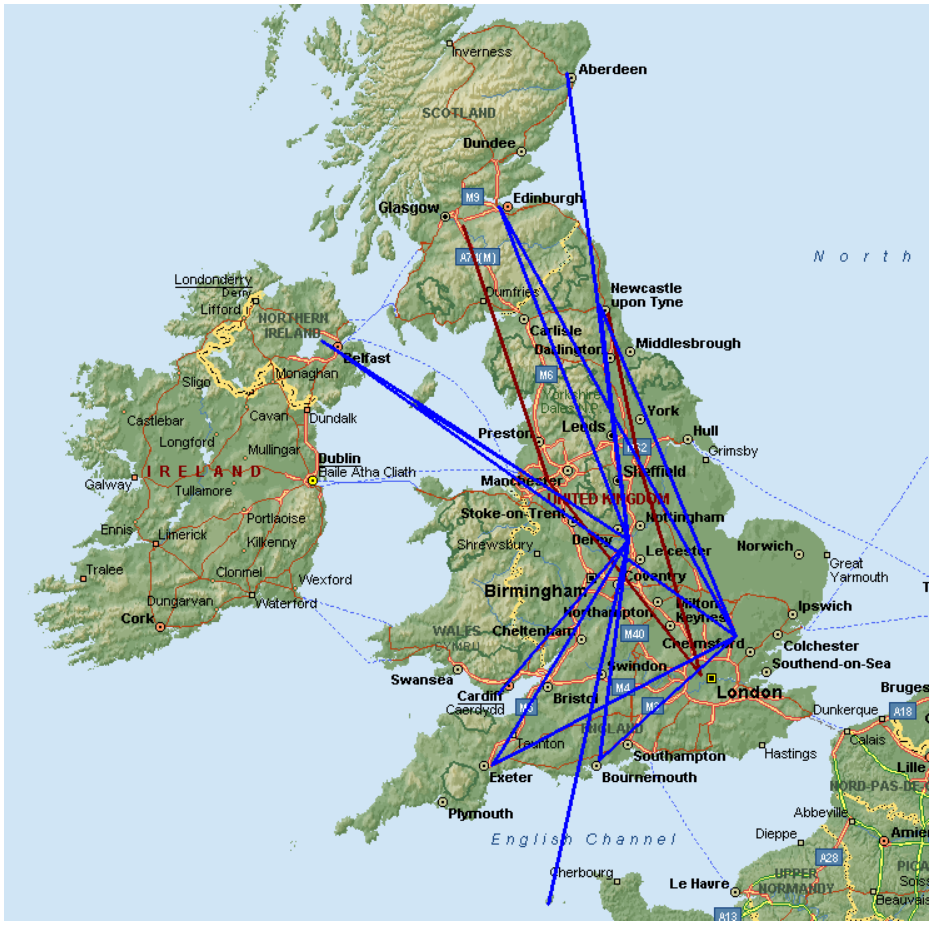
5.2.21 Figure 12 shows Lufthansa's trucking from its hub in Frankfurt.

Figure 12 Lufthansa trucking

Source: Bob Parsons

5.2.22 In terms of mail, Figure 13 shows rail movements between mail centres in dark red and air movements in blue.

Figure 13 Royal mail air and rail



Source: Bob Parsons

Perishable goods

5.2.23 East Kent is served by the port at Dover and by the Channel Tunnel. The Channel Tunnel does not publish or generally collect data on the type of goods being carried in the 1.5 million trucks per annum who currently use their services. They predict the number of truck movements through the tunnel will rise to two million by 2020. However, the company believes that goods transported through the tunnel include food and other perishable goods. The Port of Dover carry larger numbers of trucks that also carry perishables.

5.2.24 In the short and medium-term, there is clear demand for perishable goods particularly fruit, vegetables, and flowers with many respondents mentioned this category of air freight. The perishable market was a staple for Manston, and the airport, with reduced flying time compared with other airports, has a reputation for the speed at which cargo can be offloaded and on the road. One interviewee, who had operated successfully from Manston hauling mainly perishables, confirmed that the unloading operation was the quickest he knew (Taft). However, underinvestment by previous owners had caused constant problems because equipment was old and unreliable.

5.2.25 Whilst the current UK air freight model is for shippers to preference belly-hold cargo, this can take up to a week to arrive and dispatch from some of the Country's airports. This research shows how the frustrations associated with this model are impacting all levels of the supply chain. It seems likely, therefore, that the model is set to change, much as the model for passenger flights changed some decades ago. The low cost carriers now dominate many airports, operating point-to-point to offer competitive prices to their customers. As Sales says:

> "*In today's aviation world, airports have become the economic drivers of business and industry and the service on the ground for both passengers and freight has become very competitive, especially when customers have alternative choices.*
>
> *For air cargo, it is the minimum time spent on the ground before and after the flight that can make a particular airport attractive and will play a role in the ultimate selection by the forwarders and consolidators, who will mostly determine how much cargo is directed to and from a particular airport.*" (Sales, 2013, p.43)

5.2.26 In terms of business support, written evidence submitted by David Brown, Group Supply Chain Director Finlays Horticulture, part of Finlays Horticulture Investments Ltd dated 16 January 2015 says the following:

> "*As a previous large customer to the services of Manston airport, we felt it important that Finlays wrote to explain their previous business and ongoing support for Manston as an infrastructure hub for UK airfreight importation.*
>
> *Finlays had been a customer of Manston airport through its various ownerships for a period of approx 17 years up to it closure a few months ago. Finlays brought in a large quantity of freight (approx 400t) on various carriers weekly through the airport, as they had become specialists in handling perishable cargo. Since Manston's closure this Finlays cargo (and other importers cargo) has been transferred to other London airports increasing their traffic, and placing strain on their resources to deal with an*

additional 1000 tonnes each week. Cargo capacity constraints continue to mount at airports in the south east of England, which has adversely affected our business. The main factors we see specific to Manston are as follows:

- *Manston were unique in being able to offer such a quick turnaround of getting airfreight onto lorries, with suitable perishable handling facilitates, and flexibility in dealing with freight day or night. The freight that we now have arriving at Stansted (approx 2 hours closer to Finlays sites by lorry than Manston) is regularly arriving 6 hours later than the equivalent Manston vehicles.*
- *Manston is one of only 5 UK airports to have a BIP (EU Border Inspection Post) facility. Trade has moved and is still moving to Europe as a consequence of the shutdown.*
- *The overall limits of air freight capacity and restricted handling services in the South East continue to increase, and for the perishable air freight business, other airports are struggling to match the quality and speed of service for which Manston was renowned.*
- *Manston's location to major roads and ports meant that the development of more trade was a distinct possibility and its unique air freight handling service makes it very desirable to the cargo business. In addition Customs, Port Health, FERA and other agencies were all in place to facilitate the airport's operation.*

In our dealings with Manston over the last decade or more we have been very satisfied and actively supportive by putting our cargo business there. It was with deep regret that Manston management took the decision to close the airport. It is noted that other interested airport operators have shown serious interest about taking on Manston as an airport, we strongly hope that a future for Manston can be found. "

5.2.27 As with past operations at Manston Airport, the main target markets for imports will include Africa, particularly East Africa. East Africa has a population of some 125 million and, since the 1980s, has undergone considerable economic reforms to stimulate growth in the private sector. Agriculture is the leading sector and the area exports flowers, fruit, and vegetables. East Africa has eight international airports:

- Bujumbura International Airport (BJM) in Burundi
- Jomo Kenyatta International Airport (JKIA), Mombasa International Airport (MIA) and Eldoret International Airport in Kenya
- Dar es Salaam International Airport (DIA), Kilimanjaro International Airport (KIA) and Zanzibar International Airport (ZIA) in Tanzania
- Entebbe International Airport in Uganda

5.2.28 Discussions by one interviewee (Securitas) with the Algerian Embassy indicate the intention of the Country to export perishable items including fruit and vegetables to the UK. Whilst Algerian airlines are currently experiencing issues with air freight, these problems are expected to be resolved soon.

5.2.29 Fresh flowers also originate in South America with Colombia being the second largest flower exporter in the world after the Netherlands. Other South American countries exporting flowers include Ecuador, Chile and Peru. This area also exports berry and stone fruits as well as salmon, particularly from Chile, and asparagus from

Peru. Additionally, pineapples are imported from Ghana, with green beans and flowers originating in Kenya.

Fish and live animals

5.2.30 By weight, fresh salmon is the top export from Heathrow. During Operation Stack, a considerable amount of Scottish salmon was transported through the Channel Tunnel, a situation that is not ideal for the quality and therefore the price that can be achieved for this fresh fish. According to a number of interviewees, Manston is expected to pick up a proportion of this air freight, particularly perishable goods such as fish and shellfish. One interviewee reported that, in the season, 14 pallets of fish are air freighted to Dubai per fortnight as well as twice-daily flights for spider crabs (Securitas).

There is a considerable market in live animal transportation by air, particularly for racehorses and breeding stock. According to an interviewee, around 260 Arab racehorses flights take place between Dubai and the UK per year (Securitas). One of the interviewees reported problems flying pet animals into Heathrow, as they tend to cause delays to operations (Securitas).

Other imports and exports

5.2.31 In the UK, imports exceed exports (in June 2016 the difference was £48,928 million compared with £43,844 respectively[14]). However, the research undertaken to compile the demand forecast for Manston identified a considerable export market for airlines that operate in developing markets. For example, Kent has a substantial biotech sector, with a hub located at Discovery Park in Sandwich, very close to Manston Airport. One interviewee mentioned the advantage for the pharmaceutical and biotechnology companies in East Kent using a local airport (Locate in Kent). Another interviewee talked about transporting medicines for clinical trials (DHL). As such, particularly in the early years, exports are expected to exceed imports, facilitating the opportunities for UK businesses (see Section entitled 'Onshoring of manufacturing in the UK' at paragraph 6.3.9 onwards for more details).

5.2.32 Exports from the UK are increasing and reached an all time high of £44,902 million in April 2016[15]. The top five export commodities from London's Heathrow include precious metals (£26 billion), aircraft turbojets (£3.3 billion), jewellery (£3 billion), pharmaceuticals and medicines (£2.8 billion), and art (£2.4 billion)[16]. By weight, next to fresh salmon, the top exports from Heathrow are books and other printed material. The continued growth of the British fashion industry is also a notable export market for the UK. One interviewee mentioned that increasing volumes of high-end fashion items are being air freighted by companies such as Jimmy Choo (DHL).

5.2.33 Several interviewees discussed the large Russian market, which comprises over 140 million consumers with an emerging middle class with a taste for luxury goods. Russia has huge infrastructure needs and exports from the EU to Russia include machinery and transport equipment, chemicals, medicines and agricultural products. The UK exports more products to Russia than it imports and the majority of imports include non-air freightable items such as oil and gas.

[14] http://www.tradingeconomics.com/united-kingdom/exports
[15] http://www.tradingeconomics.com/united-kingdom/exports
[16] http://www.lloydsloadinglist.com/freight-directory/news/UK-exports-via-Heathrow-rise-9.7/64745.htm#.V7nmwWXmugQ

5.2.34 One of the freight airlines interviewed (Coyne Airways) said they carried mostly oil and gas extraction equipment and commercial consumer goods including clothing and electronics. They carry almost entirely exports from the UK and fly to places where demand for passenger flights is low including Baku in Azerbaijan, Iraq, Georgia, etc. Iraq is likely to be the next big market but rates to the Country are already quite low (Coyne Airways). Africa is also the continent to consider as the opportunities are limitless – "*people will start ordering mobile phones and electronics*" (Coyne Airways).

5.2.35 The Middle East is a growing market to and from Europe and imports include live animals, particularly race horses, breeding stock, and luxury cars during the summer months. Exports include a variety of products including high value cargo such as electronics and machine parts as well as fresh fish and seafood.

5.2.36 The Indian subcontinent is also a potential exporter and importer of goods to the UK. One interviewee mentioned the potential for airlines from Pakistan to use Manston (Securitas). Pakistan mainly exports clothing and imports consumer goods.

5.2.37 Trade with the US is mature and includes electronics and machine parts including spares for aircraft and oilrigs and Manston is in an ideal location to act as a hub between the USA and the rest of Europe, Russia, Africa and the Middle East. One of the interviewees, a shipper (ACC), said that the US is their strongest market with main hubs in Atlanta, New York, Chicago and Houston. Their air freight includes commercial and hazardous goods. Shipping problems for ACC include delays at Customs and getting goods out of the airport, usually Heathrow or Manchester, which can take many hours and is a situation that is worsening over the years.

5.2.38 Aircraft parts are frequently carried by air (Active Transport). Formula One cars (DHL) are also shipped by air, as are luxury cars from Arab countries. August is known as Supercar Season with around 300 vehicles per year being flown into London, (Securitas). The press report that fleets of gold covered vehicles including Bentley, Rolls Royce and Lamborghinis frequent the streets of West London. This niche market could potentially be attracted to Manston Airport.

5.2.39 Other types of air freight mentioned included specialist one-off and rather unpredictable opportunities such as transporting the equipment for bands playing at concerts all over the world. Indeed, the Rolling Stones used Manston on a number of occasions. Outsized items (i.e. more than 1.6 metres high) will not generally fit into the belly of a passenger aircraft so air freighters are used to fly these goods.

5.2.40 One interviewee mentioned specialist freight carriers such as Harrods Aviation, which has fixed based operations (FBOs) at Luton and Stansted with an engine shop at Farnborough.

5.2.41 Since most intra European passenger flights use narrow-bodied aircraft that cannot hold much freight, a market has sprung up for freighters flying around Europe (Coyne Airways). Indeed, wide-bodied freighters fly a few routes around Europe every night (Coyne Airways). At present, most of the UK freight is trucked to Amsterdam, Frankfurt or Milan to join these intra European flights (Coyne Airways).

Integrator services

5.2.42 Increasingly, success in business depends on getting the right goods to the right place at the right time and without holding expensive stocks of either inbound parts and materials or stock ready for distribution but as yet unsold. The use of Just-in-Time (JIT)

and Build-to-Order (BTO) approaches aim to eliminate both inbound and outbound inventories. However, these means of controlling inventory places increasing reliance on rapidly response and reliable transportation from suppliers, distributors and customers around the world. Indeed, around 10% of manufacturers' costs are associated with organising the supply of incoming parts and materials and the distribution of outgoing products[17]. Parcel delivery is therefore a hotly contested business with UPS, FedEx, DHL and TNT vying for position as market leaders.

5.2.43 One interviewee noted how e-commerce has greatly helped SMEs (small and medium sized enterprises), driving the trend for their increasing use of the services of integrators (FedEx). Whilst most integrator business has been business-to-business, the business-to-consumer market, probably linked to the growth in e-commerce, is growing and integrators are trying to adapt (Fedex). It would seem that the industry generally is migrating to express cargo with increasing demand for rapid delivery of freight (DHL). One interviewee talked about the high operational costs of 'last mile' delivery, which are key to ensuring profitability for the company (FedEx).

5.2.44 Integrators monopolise the freight-friendly airports such as East Midlands (DHL) and are reluctant to change their operations, preferring to cope with slot restrictions at Heathrow rather than moving to other more cost effective airports (DHL, FedEx). The explanation for this is the focus on associated fixed costs and the resources involved to make a move to another airport (FedEx). This reluctance has perhaps been exacerbated because the large integrators do not tend to get bumped from belly-hold on passenger flights and are given preference over smaller organisations (DHL).

5.2.45 The benefits integrators (FedEx) look for from an airport include:

- Excellent transport links by road and rail with connections to London and the rest of the UK
- A location close to London, particularly to the east of London and the Canary Wharf commercial and business districts and with the ability to access the whole of London quickly so companies can compete globally
- Sufficient runway length for larger cargo-only aircraft with available slots
- Situated at the centre of a key UK regional economy

5.2.46 The big issue for integrators at Heathrow is the lack of storage and land availability generally (DHL). Many leases come up for renewal in 2019 (DHL). Slot availability is also a problem and one interviewee mentioned that Chinese freight airlines would like to fly direct to the south east of the UK but cannot get slots (DHL). Security is a big issue for freight integrators and shippers and one of the interviewees said his company was so concerned that they had written to both the French and UK governments on the subject (FedEx). This interviewee also mentioned inconsistencies across Europe, which leads to administrative burdens for the integrators.

5.2.47 One of the integrators (FedEx) discussed the growth markets around the world. His analysis was that:

- India is not growing at the moment. The big difficulty is infrastructure on the ground and that many people are without an address.
- Africa could be a growing market if the infrastructure problems could be resolved. As with India, many consumers do not have an address. For both India

[17] http://www.economist.com/node/1477544

and Africa, 'last mile' delivery is expensive as there are few domestic players in the market and the countries are plagued by road accidents.
- The Middle East, Far East, and the US are growing markets
- China and Europe have reached saturation
- Russia and the Balkans are big importers of luxury goods although changes to regulations can impact this market (such as restrictions on imports per person per month, which the carrier has a responsibility to report)

Military and humanitarian operations

5.2.48 Outbound flights from Manston are likely to include military movements and humanitarian operations. With the absence of any information to the contrary, it is reasonable to predict both military and humanitarian operations will be similar in terms of numbers to those previously handled at Manston Airport. According to previous Air Traffic Controllers, these numbers are in the region of 30 movements per year for military operations and 20 per year for humanitarian and medevac flights. One interviewee also talked about the need for slots for deportation flights (Securitas).

Comparison to Frankfurt Main Airport

5.2.49 An analysis of freight movements at Frankfurt Main Airport (FRA) provides an interesting example of a successful European freight operation. Frankfurt has restricted operating hours, which do not permit night flights. All services, including night airmail, now operate between 0500 and 2300. The airport handled more than two million tonnes of cargo in 2015, a reduction from 2010, due mainly to night-time restrictions, of around 193,000 tonnes, some 8%. Whilst there was no doubt a downturn in tonnes handled, these figures contradict the generally held assumption that successful cargo operations need to operate with 24-hour licenses.

5.2.50 In contrast to the operation at Leipzig, Frankfurt has little integrator traffic with the exception of FedEx movements. Leipzig Airport is only able to function as an almost 100% integrator operation because it does not have a curfew. Leipzig handles around one million tonnes of freight per year, a huge increase from 101,000 tonnes in 2007[18] when DHL moved its European hub to the airport.

5.2.51 The Frankfurt and Leipzig figures show the difference between a true market, where capacity is available to attract any number of freighter flights, and a constrained market such as that in London. This example underpins the findings outlined in previous sections, providing support for the rationale behind the forecasting method chosen. Projections based on the constrained London markets do not provide an accurate picture of the potential in the South East. The unconstrained operations at Leipzig and Frankfurt provide a much more accurate estimation of the feasibility of Manston Airport. Another point of interest from the data from Frankfurt Main is the limited types of freight aircraft that use the airport.

5.2.52 The Frankfurt Main data shows that cargo-only airlines seem content to operate during the day, if suitable slots are available and off load and turnaround times are expedient. Frankfurt handles a large number of freighters. Examples of those arriving and departing the airport on the 9th and 10th October 2016 are shown in Table 5. For Manston, focusing on the freighter market, and providing slots without the need to preference large numbers of passenger flights, can be key to a successful UK operation.

[18] https://www.leipzig-halle-airport.de/en/company/about-us/facts-and-figures/traffic-statistics-158.html

Table 5 Frankfurt freighter schedule

Airline		Example origin-destination
Aerologic	Worldwide	Bangkok, Chicago, Delhi, East Midlands, Hong Kong, Leipzig, Los Angeles, Mumbai, Taschkent
Air Algerie	North Africa	Algiers
Air Bridge Cargo	Europe	Helsinki, Leipzig, Moscow (multiple times per day)
Air China	Far East/US	Beijing, Chicago, Shanghai
Asiana Airlines	Far East	Seoul
Cargo Logic Air	Eurasia	Moscow
Cathay Pacific	Far East	Hong Kong
China Airlines	Far East	Taipei
China Southern	Far East	Guangzhou and Shanghai (multiple times per day)
European Air Transport (EAT)	Europe	East Midlands, Heathrow, Leipzig
Egypt Air	North Africa	Cairo
Emirates	Worldwide	Amsterdam, Atlanta, Dubai (multiple times per day), Mexico City
Etihad	Middle East	Abu Dhabi
Fedex	Worldwide	Cologne, Memphis, Milan, Paris
Korean Airlines	Eurasia, Far East	Navoi (Uzb.), Seoul
LAN Cargo	US	Miami
Lufthansa Cargo	Worldwide	Almaty (Kaz.), Atlanta, Bangalore, Cairo, Chicago, Curitiba (Brazil), Dakar, Guangzhou, Hong Kong, Istanbul, Johannesburg, Mexico City, Miami, Moscow, Mumbai, Nairobi, New York, Riyadh, Sao Paolo, Shanghai, Tokyo
MNG Airlines	Eurasia	Tekirdag (Turkey)
Night Express	Europe	Birmingham
Qatar Airways	Middle East	Doha
Saudia	Middle East	Dammam, Riyadh
Turkish Airlines	Eurasia	Istanbul
United Airlines	Europe	Frankfurt Hahn
Uzbekistan Airways	Eurasia	Navoi (Uzb)

Source: Fraport website http://www.frankfurt-airport.com/en/b2b/cargo-hub.overview.flights.html#flightschedules/type=departure/page=1/time=2016-10-19T17%3A00%3A00

5.2.53 With Manston envisioned as primarily an air freighter hub, the Frankfurt Main data leads to two powerful implications. The first is that dedicated cargo carriers do not require night movements. Frankfurt averages over 60 movements per day of dedicated cargo carriers with a full night time restriction between 23:00 and 05:00. With its dedicated runway for cargo and the ability to service its customers quickly, cargo carriers are clearly able and willing to carry out their business within an 18-hour daily window. The second implication is that the high level of activity at Frankfurt can only mean that a significant amount of cargo landing at Frankfurt is destined for locations other than Germany. With London being a major economy and with scant landing slots

available for cargo, a portion of Frankfurt cargo is likely being transported from Frankfurt to London by truck. Manston could readily handle this business in a more cost effective and timely manner, with less environmental impact than trucking from Frankfurt to the UK.

5.3 Channel Crossings market share

5.3.1 One interviewee (Equinus) provided historic data that details the passenger, tourist vehicle, coach, and HGV traffic using the Port of Dover and Eurotunnel between 1995 and 2014. This data is shown in Table 6 and Table 7 providing the number of movements and a percentage change, year-on-year. Colour coding is used to show where movements have increased (green cells) or decreased (red cells), and indicate the peak years for traffic volumes. Table 6 shows an increase in HGV traffic to almost 2.6 million movements per year in 2016. This represents an increase in HGV movements over the past five years of some 33%.

Table 6 Port of Dover historic traffic figures

Year	Passengers		Tourist Cars		Coaches		HGV	
1995	17,872,712		2,893,835		158,167		1,075,965	
1996	18,979,719	6%	3,054,781	6%	153,642	-3%	1,071,602	0%
1997	**21,463,570**	**13%**	**3,558,355**	**16%**	**165,002**	**7%**	1,602,863	50%
1998	19,441,608	-9%	3,300,283	-7%	153,700	-7%	1,522,948	-5%
1999	18,276,988	-6%	3,003,364	-9%	156,725	2%	1,667,942	10%
2000	16,232,191	-11%	2,594,824	-14%	148,285	-5%	1,618,184	-3%
2001	16,002,464	-1%	2,554,931	-2%	136,702	-8%	1,771,826	9%
2002	16,442,680	3%	2,632,182	3%	147,549	8%	1,854,234	5%
2003	14,681,003	-11%	2,581,573	-2%	125,224	-15%	1,782,857	-4%
2004	14,333,663	-2%	2,506,667	-3%	128,464	3%	1,980,662	11%
2005	13,348,829	-7%	2,554,772	2%	107,541	-16%	2,045,867	3%
2006	13,797,874	3%	2,647,060	4%	105,774	-2%	2,324,598	14%
2007	14,287,318	4%	2,837,559	7%	105,336	0%	2,363,583	2%
2008	13,893,118	-3%	2,830,238	0%	97,851	-7%	2,307,821	-2%
2009	13,090,309	-6%	2,775,174	-2%	81,209	-17%	2,300,468	0%
2010	13,154,638	0%	2,818,380	2%	86,035	6%	2,091,516	-9%
2011	12,764,699	-3%	2,653,127	-6%	84,938	-1%	2,069,945	-1%
2012	11,921,671	-7%	2,400,471	-10%	84,246	-1%	1,952,138	-6%
2013	12,753,343	7%	2,471,193	3%	90,478	7%	2,206,728	13%
2014	13,295,492	4%	2,456,817	-1%	96,576	7%	2,421,537	10%
2015	13,008,400	-2%	2,335,531	-5%	96,592	0%	2,539,918	5%
2016	12,059,538	-7%	2,179,331	-7%	87,023	-10%	**2,591,286**	**2%**
Last 10 Years		-16%		-23%		-17%		10%
Last 5 Years		1%		-9%		3%		33%

Source: Compiled from Port of Dover reports

5.3.2 The Eurotunnel figures shown in Table 7 highlight the transfer of passengers and tourist cars from the sea crossings. However, Eurotunnel also shows huge growth in HGV movements of around 32% in the five years to 2014. Total HGV movements Channel crossings from Dover and using Eurotunnel are more than 4 million per year.

Table 7 Eurotunnel historic traffic figures

Year	Passengers		Tourist Cars		Coaches		HGV	
1995	4,081,000		1,246,000				391,000	
1996	7,909,000	94%	2,136,000				519,000	33%
1997	8,653,000	9%	2,383,000				268,000	-48%
1998	12,901,000	49%	3,448,000				705,000	163%
1999	11,898,000	-8%	3,342,000				839,000	19%
2000	11,198,000	-6%	2,865,000				1,133,000	35%
2001	10,717,000	-4%	2,605,000				1,198,000	6%
2002	10,043,000	-6%	2,335,625		71,911		1,231,100	3%
2003	9,857,205	-2%	2,278,999	-2%	71,942	0%	1,284,822	4%
2004	9,266,325	-6%	2,101,323	-8%	63,467	-12%	1,281,207	0%
2005	9,550,503	3%	2,047,166	-3%	77,267	22%	1,308,786	2%
2006	9,109,663	-5%	2,021,543	-1%	67,202	-13%	1,296,269	-1%
2007	9,411,020	3%	2,141,573	6%	65,331	-3%	1,414,709	9%
2008	8,624,629	-8%	1,907,484	-11%	55,751	-15%	1,254,282	-11%
2009	7,770,767	-10%	1,916,647	0%	54,547	-2%	769,261	-39%
2010	8,774,442	13%	2,125,259	11%	56,507	4%	1,089,051	42%
2011	9,313,236	6%	2,262,811	6%	56,095	-1%	1,263,327	16%
2012	10,039,351	8%	2,424,342	7%	58,966	5%	1,464,880	16%
2013	9,818,309	-2%	2,481,167	2%	64,907	10%	1,362,849	-7%
2014	10,600,000	8%	2,572,263	4%	63,059	-3%	1,440,214	6%
2015			2,556,585	-1%	58,387	-7%	1,483,741	3%
Last 10 Years		11%		26%		-13%		14%
Last 5 Years		21%		13%		4%		17%

Source: Bob Parsons. Eurotunnel car, coach and HGV statistics compiled from annual results report with additional material provided by the University of Reading to 2000. Eurotunnel do not report shuttle passengers and these figures have been compiled using ONS statistics and deducting Eurostar figures. NB – figures for 2016 not released at time of compilation

5.3.3 With the UK's exit from the EU, more stringent border control procedures can be expected. The Eurotunnel and Dover figures highlight the potential impact of delays and increased transit times on the more than four million annual HGV movements across the Channel. The figures shown above are consistent with the accounts of other interviewees that attest to freight being trucked to airports in northern Europe. Given increased friction at the border crossings, this market is more likely to consider moving to airfreight.

5.4 Passenger-focused findings

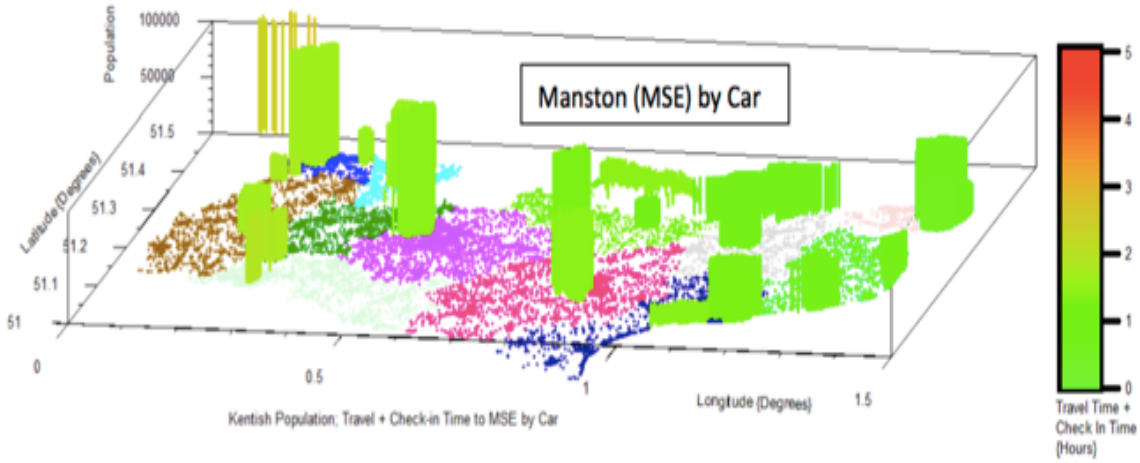
5.4.1 This section outlines the main findings related to passenger flights. There are currently estimated to be just in excess of 1.5 million people living in Kent[19]. In 2008, 11,000 local residents completed a survey run by Kent International Airport and KOS Media[20]. 86% of respondents said they were very likely to use scheduled commercial passenger flights from Manston. A further 11% said they were somewhat likely to use flights from the airport. Time saving and locational benefits were given by the majority of respondents as their reasons for wanting to use Manston.

5.4.2 It seems that Manston Airport, with its easy access to both the passenger terminal and from the terminal to the aircraft, may be a huge attraction to older travellers. The Association of British Travel Agents (ABTA) recently found that elderly people are missing flights because of the long walk they face at airports. If assistance is not pre-booked, these less able people are required to walk up to a mile between the check-in desk and the departure gate[21].

5.4.3 In terms of time taken for travel and check-in, research shows that many people should find it quicker to access Manston Airport than either Gatwick or Heathrow. Indeed, the opening of the Lower Thames Crossing widens Manston's catchment area to include Essex and North London. The drive and rail times from the main towns in Kent to Manston Airport are shown in Figure 14 and Figure 15.

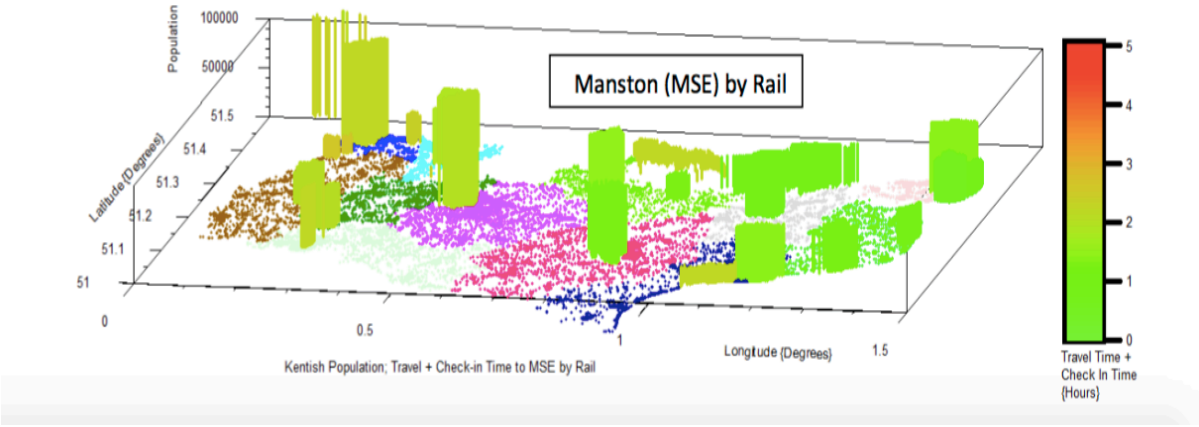
[19] http://www.kent.gov.uk/about-the-council/information-and-data/Facts-and-figures-about-Kent/population-and-census
[20] http://www.uk-airport-news.info/kent-airport-news-310708.htm
[21] Daily Telegraph, 27 September 2016, "*Older travellers miss flights due to airport walks of almost a mile*"

Figure 14 Drive times to Manston Airport



Source: Lab-Tools Ltd.

Figure 15 Rail travel times to Manston Airport



Source: Lab-Tools Ltd.

5.4.4 These figures were compiled from population-postcode data for the 12 Kent districts derived from the 2011 census. Travel times for both road and rail were measured at the middle of the day[22] and include all aspects of the journey to the queue for the check-in or bag-drop desk. The times assume a 30-minute check-in at Manston, two hours at Gatwick for European flights and three hours at Heathrow for long haul. Even with shorter check-in times at Gatwick and Heathrow for passengers who use online services, travel times remain competitive.

[22]http://www.lab-tools.com/SMA/Manton%20Airport%20Kent%20has%20major%20travel%20advantages%20-%20v2b.pdf

5.4.5 Manston's location means that flights to and from 'sunshine' destinations such as Alicante and Malaga have a reduced flying time compared to other UK airports. For airports in the north of England and Scotland, this can be as much as one hour less in the air for each sector. Less flying time means less fuel and crew time, reducing the cost of each flight for the operator and allowing more rotations per day.

KLM

5.4.6 Between 2013 and 2014, KLM operated twice daily flights (four movements per day) between Manston and Schiphol in Holland. This operation connected passengers from East Kent and from the wider Kent and South East area. In 2013, KLM handled over 40,000 passengers. Tourism in both directions (inbound and outbound) was "*just getting going and had a huge amount of support from all the tourism agencies*" (Visit Kent).

5.4.7 Unfortunately, the company was forced to pull out of the airport before the more lucrative summer season. As such, it is difficult to estimate what passenger numbers would have been if KLM had been able to continue operating from Manston. Emails from between the Managing Director of KLM Cityhopper, Boet Kreiken and one of Manston Airport's former Air Traffic Controllers, Andy Wilby, show how KLM felt about their operation from Manston Airport:

> "*Every time we hear about Manston we feel the lost opportunity for the UK, the Kent region, local employment and our lost venture which did not get the time to materialise with a full summer season. . . . The UK has to come to grips soon with her policy for regional airports and these airports (and e.g. amongst others our Klc operations) and airline connections are a vital lifeline for a modern economy and society as yours is. . . . we are convinced that definitively destructing such a runway and location as Manston is in the long run not such a wise decision as understatement in the greater and continuously expanding London area as well as of a relatively booming South East England. Many regional airports now vie for our connections to Europe and the world."*

5.4.8 Given the current capacity issues at other South East airports, RiverOak have a reasonable expectation that a carrier such as KLM will operate a twice-daily schedule from Manston. Indeed, KLM have reiterated their desire to recommence operations from Manston. Their schedule is likely to resume as before, with a twice-daily service from Manston to Schipol Airport, Amsterdam. KLM previously used Fokker 70 aircraft, which have a capacity of 80 passengers. Four movements per day, seven days per week equates to around 1,460 movements per year. This type of service provides local people with access to a major hub from where they can fly to destinations around the world.

Low cost carriers

5.4.9 In addition to the KLM flights, RiverOak expect at least one low cost carrier to operate from Manston, basing two aircraft at the airport. Indeed, in 2005, when EUJet, a low cost carrier, was operating from the airport, Manston handled around 207,000 passengers. A new theme park is planned for construction in Kent on the Swanscombe peninsular between Dartford and Gravesend. The proposed 872-acre Paramount entertainment complex includes a large indoor water park, theatres, live music venues, cinemas, rides, restaurants, and 5,000 hotel rooms. The park is expecting 50,000 visitors per day. Visit Kent, the County's tourism organisation, believes Manston would provide a gateway for visitors to the theme park. Accessing Kent from the east would encourage visitors to see more of the County rather than venturing no further than London. It is

expected that this attraction will help drive demand for the services of KLM and low cost carriers.

5.4.10 Ryanair have given RiverOak an indication that they will base two aircraft at Manston in the first three years of operation. These aircraft would be likely to operate a timetable serving 12 to 14 destinations throughout the year, including domestic and leisure routes, offering five rotations in the summer months and four in winter. From the fourth year of operation, Ryanair would consider basing three aircraft at the airport.

5.4.11 With the arrival of EasyJet, Southend Airport has developed a successful passenger operation, increasing from around 4,000 passengers per year prior to 2012 to 900,000 in 2015. However, the 2015 figure is 18% down on 2014 traffic. The short runway and restricted land available for development may mean that some airlines could look to Manston to expand their operations. In particular, should EasyJet, who operates to 16 destinations from Southend, around 10,000 movements per year, consider entering the long haul market, Manston would make an ideal choice, given its location. However, this service has yet to be announced and so no low cost carrier long haul flights can be included in the demand forecast for Manston Airport.

Resident passenger carriers

5.4.12 The CAA calculates that 1.9 million passengers are carried by marginal airlines at Heathrow (CAA, 2013, p. 22). Marginal airlines are defined as, "*those most likely to switch away from the airport in light of a 10 per cent price increase*" (*ibid*, p. 20). These airlines are shown in Table 8. Whilst the CAA describe these airlines as marginal, they note their analysis may be an overestimation since airlines may incur significant switching costs or they may consider their operations at Heathrow to be of strategic significance and would therefore be prepared to bear any increase in costs. This is particularly pertinent if the carrier is part of a strategic alliance or has an interlining agreement in place. For example, Vueling is an unaligned LCC airline, with only 5% connecting passengers. However, it has signed an interlining agreement with BA whereby passengers landing in Barcelona with BA will be able to connect directly to Vueling's 74 destinations offered from its hub in Barcelona's El Prat Airport[23].

[23] http://www.vueling.com/en/we-are-vueling/press-room/press-releases/corporate/vueling-flights-from-el-prat-barcelona-to-connect-with-british-airways-broad-network

Table 8 Marginal airlines at Heathrow Airport

Airline	Surface passengers	Connecting passengers	Total passengers	% connecting passengers	Unaligned
Biman Bangladesh Airlines	73,920	8,101	82,021	9.9	X
Air France	608,646	66,361	675,007	9.8	
Arik Air	109,537	11,723	121,260	9.7	X
Turkish Airlines	509,287	49,815	559,102	8.9	
KLM	701,117	66,320	767,437	8.6	
Etihad Airways	462,823	43,234	506,057	8.5	X
Aegean Airlines	381,479	33,993	415,472	8.2	
Delta	1,101,098	97,573	1,198,671	8.1	
Air Astana	17,438	1,491	18,929	7.9	X
Alitalia	773,475	58,643	832,118	7.0	
Contact Air	91,928	6,749	98,677	6.8	
Vueling	246,477	14,036	260,513	5.4	X
Royal Brunei Airlines	164,500	8,243	172,743	4.8	X
Air Botnia (Blue 1)	91,085	4,288	95,373	4.5	X
Air Seychelles	13,135	545	13,680	4.0	X
Aeroflot	237,340	7,788	245,128	3.2	
Tunis Air	43,523	1,267	44,790	2.8	X
Pakistan International Airlines	287,051	8,220	295,271	2.8	X
Uzbekistan Airways	22,743	501	23,244	2.2	X
All charters	53,800	747	54,547	1.4	X
Air China	144,653	-	144,653	0.0	
Azerbaijan Airlines	16,673	-	16,673	0.0	X
EVA Airways	188,837	-	188,837	0.0	X
Syrian Arab Airlines	14,757	-	14,757	0.0	X
Total (Italics)			1,908,695		

Source: CAA Passenger survey 2011
Note: EVA Airways to join Star Alliance in 2013.

Source: CAA, 2013, p. 21

5.4.13 However, the CAA says that:

> "*24 out of 85 airlines at Heathrow (in 2011) carried less than 10 per cent connecting passengers on their services. For these airlines, it is unlikely that the loss of connecting passengers would be a significant switching cost. These airlines accounted for approximately 6.8 million (10 per cent) of the passengers at Heathrow. Of these, airlines accounting for approximately 1.9 million passengers do not belong to an alliance.*" (CAA, 2013, p. 35)

5.4.14 Since there is no indication that Heathrow will exercise its market power, no demand for the movement of any of these airlines to Manston has been made as part of the outcome of this research.

5.4.15 However, since capacity at Heathrow and Gatwick is constrained, with Luton and Stansted set to follow, RiverOak would expect to attract other carriers in the medium term. It is also expected that Manston will become the base for one or more regional

carriers with three 30 to 50-seater aircraft. These aircraft will serve six to eight business-orientated and niche leisure routes.

5.4.16 In October 2016, the UK and China signed an agreement that increases the current limit of 40 direct flights per week between the countries to 100 in both directions. The new agreement also lifts the restriction on the number of airports that were covered by the previous deal. Previously only six airports in each country could offer direct flights between the UK and China. This means that not only can flights take off and land from other UK airports but will provide direct access to destinations throughout China. One of the interviewees (Visit Kent) in particular felt the Chinese market into Kent is a particular opportunity. Indeed, this interviewee mentioned the announcement of two services into Gatwick and two into Birmingham from China with operators looking for additional slots. This, coupled with the government's strategy to move tourism to the regions, means, "*there is lots of energy to spread the benefit of inbound tourism*" with funding available (Visit Kent).

Charter flights

5.4.17 As well as daily scheduled flights and regular low cost carrier flights, Manston was previously served by a number of holiday companies including Newmarket Holidays and a Saturday service operated to Jersey. It is expected that Manston would attract at least one holiday company offering flights as part of a package during the season.

5.4.18 According to one interviewee, prior to its closure, the airport was approached by a Romanian airline that wanted to operate two flights per day during the season. The target market for these flights would be agricultural and other workers from Romania and Poland, many of whom come to work within 50 miles of Manston Airport. Therefore, due to the capacity available and constraints at other South East airports, demand at Manson is likely to include a number of charter passenger services, expected to operate at peak times across the year.

5.4.19 There are a number of infrastructure projects that, once complete, will reduce even further the travel times to Manston Airport and widen its catchment area (Visit Kent). These include the Lower Thames Crossing and improved rail travel times to a London terminus. Additionally, the construction of Paramount Studios and Ebbsfleet Garden City will provide additional passengers for Manston Airport.

5.4.20 An email of support for Manston Airport from the Manager of Passenger Sales at National Airlines based in Orlando, Florida dated 23rd January 2017 reads:

> *"Just as a follow up to our conversation on the Manston Airport. Having used it as an alternative to LGW, LHR and STN when we did the State Farm incentive flying from 12 U.S Cities, I can say with experience, that our customers were absolutely blown away with the service offered by the Manston Airport staff, and were equally impressed with the ease of getting into downtown London. We even tested and timed coaches to and from LGW and STN to downtown and Manston always came out as a shorter total commute both coming and going.*
>
> *National has looked at, and continues to evaluate niche scheduled service city pairs, and should Manston decide to reopen, it would probably enter into our overall evaluation as an alternative to the congested airports that presently serve the greater London area."*

5.4.21 As such, a forecast for charter flights has been included in the Manston demand for passenger flights.

Cruise passengers

5.4.22 In the past, Manston Airport has worked with The Port of Dover, bringing cruise passengers from the USA to join ships departing from Kent. Indeed, "*Renaissance Cruises were very successful with overwhelmingly positive passenger feedback*" (Visit Kent). The Port of Dover has huge expansion plans for cruise ships (Visit Kent) and "nowadays cruise passengers are looking for faster transit from the US" (Visit Kent). Indeed, on their website[24], the Port say that:

> "*Joint initiatives between airports and ports have become more important in recent years. The inter-operability and inter-connections between the two has led to an increase in visitor numbers to countries and regions, and can be a very attractive element in, for example, developing cruise services, linking air and sea in ways that cruise ship operators demand when looking to new services from certain countries and ports.*"

5.4.23 Manson Airport is located only 17 miles from the cruise terminal at Dover Harbour, the second busiest in the UK. In previous years, a well-received service operated between the US and Dover via Manston Airport. Passengers left the aircraft at Manston on bonded coaches, which allowed them to use the immigration services at Dover and porterage, which reconciled them with their luggage when they reached their cabin on the cruise ship. This service saved passengers the time and inconvenience of travelling through a more distant London airport, and handling luggage between the airport and the coach transfer. Therefore, demand for one return flight per week during peak cruise times is predicted. These services are expected to originate in the US.

5.5 Other potential revenue streams

5.5.1 In addition to the air freight and passenger operations, interviewees mentioned a range of other potential revenue streams for Manston Airport. These include a maintenance, repair and overhaul facility (MRO), aircraft recycling, establishing an Enterprise Zone, re-establishing a flying school, and a business jet fixed base operation. Interviewees were also keen to mention Manston's role in the resilience of the UK's airport network.

Maintenance, Repair and Overhaul (MRO) facility

5.5.2 Aircraft maintenance, repair and overhaul (MRO) includes scheduled maintenance to aircraft and unscheduled maintenance due to damage, component and engine failure, mandatory modifications, and upgrades to the cabin interiors, systems or other components.

5.5.3 Several interviewees mentioned the importance of a maintenance base at Manston Airport and indeed it seemed almost taken-for-granted that the airport operator would ensure an MRO facility was available. Not only does an MRO encourage airlines to use an airport but also generates revenue for the operator and creates employment in the region. A study undertaken by the Department for Business, Innovation and Skills (BIS) in 2016 shows the impact of the MRO sector on the UK economy:

[24] http://www.doverport.co.uk/consultancy/airport-port-connectivity/

"*The UK has a 17 percent global market share in aerospace industry revenues, which is the largest in Europe and second only to the US in worldwide terms. In terms of MROL we find that there are over 1,300 companies supporting the UK Maintenance, Repair, Overhaul and Logistics (MROL) sector. Together these companies have a turnover of around £15 billion, and they employ around 57,000 people in the UK.*" (Department for Business, Innovation and Skills, 2016, p. 7)

5.5.4 The report by BIS concludes that:

- *There is some consensus that the UK MROL sector is highly regarded throughout the world for: the quality of its work; its aerospace heritage; having a highly skilled, knowledgeable and flexible work force; and the presence of an effective regulator with good excellent regulatory compliance.*
- *The majority of the larger MROs endorse the need for on-going training through apprenticeship schemes*
- *In an international market place, the UK MROL sector is thought to have a particular strength in the provision of high value, sophisticated and advanced MROL services. Building on this capability, the UK MROL industry has the potential to make a significant contribution to the UK Government's intention to double UK exports to £1 trillion by 2020.*

5.5.5 AvMan Engineering has been operating a facility from the Hangar One at the airport since 2009. The company focus on the maintenance of BAE 146/RJ aircraft, as well as the repair and maintenance of Honeywell ALF 502/LF 507 Series engines. The interviewee from AvMan mentioned advances in MRO practices including the use of drones for inspection of aircraft, currently being used by EasyJet.

Aircraft recycling facility

5.5.6 There are an estimated 12,000 aircraft due for retirement in the next two decades[25]. With a focus on environmentally sound practices, the aircraft recycling industry offers many opportunities for jobs creation and training opportunities. A key part of the RiverOak strategy and discussed by interviewees, movements are likely to be in the region of 10 per year. It should be noted that these are inbound-only movements.

5.5.7 One interviewee was particularly keen to return to Manston Airport as his company see huge potential from operating in Thanet (SmartLynx). When asked why they prefer Manston as a location, they report that the location, close to Heathrow and Gatwick but without slot restrictions, is the main reason. The company previously employed around 80 people onsite, most of who were from Thanet. He said that the location of Manston Airport for aircraft recycling is, "*absolutely ideal*". The following is a letter of support from Thorir Kristinsson of SmartLynx Airlines.

[25] https://afraassociation.org

"***To:*** ***The Managing Director, Manston Airport***

From: ***Thorir Kristinsson, SmartLynx Airlines***

Date: 28 November 2016

I am writing to support retaining Manston as an operational airport. I have over forty years' experience of working in aircraft engineering and my accreditation details are as follows:

Aircraft Technician Licence: ICAA, FAA A&P, Licence number: 3566

From 2001 to 2004 I was the Accountable Manager for Aviaservices Ltd and the five JAR 145 workshops owned and operated by the company in the Manston area. I was also the responsible manager for Air Atlanta Icelandic's stores depot and the line maintenance station at Manston in several buildings occupying a total of 70,000 sq.ft. Then from 2004 to 2006 I was Senior Director Maintenance at Air Atlanta Icelandic.

As far as I remember we had 70-80 permanent staff but I might be able to connect you with our former HR manager Mrs. Dianne Potter who would have this in much better details as she did an excellent job of pushing for training and hiring the locals with an apprentice program for the workshops.

Most of the work performed was related to a fleet of B747's B767's B757's and in the beginning L1011's aircraft which flew in to Manston for all kind of maintenance works, limited of course as in those days we never had access to a hangar. In busy seasons, usually between contracts of the aircraft, we employed with contractors and mechanics coming with the aircraft - often 100 + people. We maintained around 50 aircraft per year and also salvaged around 5 or 6 aircraft each year. We handled wheels and brakes, battery equipment, catering and cargo equipment, safety equipment, and avionics such as communication and lighting. Our company had CAA approval.

The operation was gradually scaled down because the people who bought the airport in 2005 never really understood the potential of the aircraft maintenance and re-cycling business and without a hangar we were facing all sorts of operational and environmental challenges. Looking back I see it as a lost opportunity because, for a time, the operation was successful and profitable, as well as offering employment opportunities to local people.

In recent weeks I have had conversations with colleagues with many years' experience in aircraft engineering and re-cycling and I can say that there is a real interest in setting up a new business when Manston re-opens.

It's also clear to anyone who understands the air freight business that Manston has huge potential as a cargo hub. It can free up slots in LHR and STN, it's close to the Channel Tunnel and it now has much better rail connections with London. Actually the location is absolutely ideal and I look forward to being able to use Manston Airport again soon."

Enterprise Zone

5.5.8 The Manston Airport site provides the opportunity to derive income from activities other than freight and passenger flights. For example, in the 2011 Budget, the Government announced the creation of a number of Enterprise Zones across England.

Enterprise Zones define a geographical area where fiscal incentives and simplified planning controls encourage businesses to flourish by reducing the barriers to growth. Enterprise Zones have been established to include or be based around a number of airports including Manchester, Luton, Newquay and Cardiff.

5.5.9 The Government's Draft Aviation Policy Framework (DfT, 2012, pp. 28-9) outlines the effect of Enterprise Zone Status on airports including transforming airports into international business destinations, creating jobs, and attracting investment to boost air connectivity and maximise economic impact. Should Manston Airport re-open, it may be possible to apply to the Government for Enterprise Zone status, providing incentives for businesses to locate to the area, bringing additional employment and economic benefits to Thanet.

Flying School

5.5.10 Manston was home to TG Aviation flying school for over 30 years. When Manston closed, the school moved to Lydd Airport. For many years prior to Manston's closure, TG Aviation operated a popular and highly regarded flying school founded by the late Ted Girdler. The company has since temporarily re-located to Lydd Airport and has expressed a strong desire to return to Manston when the airport re-opens for business.

5.5.11 TG Aviation's former premises comprise a hangar, offices, and a reception area. In discussions with the TG Directors, RiverOak have agreed that, with suitable investment in the buildings, the business should be re-opened but this time as a fixed base operation (FBO) for executive jets as well as a flying school.

Business jet operation

5.5.12 In addition to the planned FBO, Polar Helicopters operate a fleet of three helicopters, which is due to increase to four. Their core business is in training and helicopter charter and a helicopter connection to Battersea for a client landing at Manston in an executive jet would take around 35 minutes. The interviewee from Polar Helicopters reported that she would be very interested in working in tandem with an FBO operation on the site.

5.5.13 Polar have been at Manston for 10 years, and in Hangar 10 for seven years. Although a well-established business at Manston, Polar Helicopters have not found it easy to operate from a non-operational airport. Indeed, this interviewee expressed the opinion that very little investment was made to improve the cargo operation or any other aspect of Manston as an operational airport except for the equestrian centre.

Diversion airport

5.5.14 Several interviewees mentioned the importance of Manston to the resilience of the UK's airport network (AvMan, Baltic Exchange, Securitas). Manston had previously provided a diversion airport for aircraft either in difficulties or because of conditions (such as fog, snow or problems on the runway) at the original destination airport. According to one interviewee, Manston was the diversion airport for BA, KLM and Virgin Airways (AvMan). Since the closure of the airport, airlines have great difficulty providing an en-route diversion airport in their flight plan and this impacts on them commercially. In particular it was reported that BA has a problem on the A380 transatlantic routes.

6 Discussion

6.0.1 The aim of this section is to consider the findings from the research, as detailed in the previous section, and to discuss their influence on the likely demand for Manston Airport. The sections first consider the air freight findings, looking at the reasons why Manston will prove attractive to freight operators, before looking at the market opportunities and demand sectorally and geographically. The potential freight demand is then considered against a range of potential scenarios that may impact the sector. Next, the likely demand for passenger flights is discussed before summarising the discussion section.

6.1 Attracting air freight to Manston Airport

6.1.1 The findings have provided a rich variety of information about what might attract air freight to Manston Airport. These include both 'push' and 'pull' factors. 'Push' factors cover those that may lead customers away from other airports or change current transport models and include the issues at Heathrow and the Channel crossings, increasing problems with security, and potential changes to the current dominance of belly-freight in the UK. 'Pull' factors work to attract customers due to the offering made by the airport and include speed of turnaround achieved by Manston, cutting edge security clearing, and the location of the airport.

6.1.2 The analysis of Frankfurt Main Airport demonstrates how an unconstrained airport can attract considerable air freight movements. This airport handled more than two million tonnes of cargo in 2015 without operating at night. Contrary to the view that cargo-only airlines prefer to operate at night, Frankfurt shows that if suitable slots are available during the day and turnaround times are expedient, a daytime operation can be successful.

Issues at London Heathrow Airport

6.1.3 Many interviewees discussed the problems they face using Heathrow Airport. These problems include being bumped from belly-freight, sometimes up to four times before freight is transported. This causes uncertainty and considerable stress when the items are required urgently, such as parts for aircraft, oil rigs, or valuable machinery. Delays in delivery cause lost revenue for the parties involved. Indeed, delays are common at the airport, with trucks queuing to on- and off-load their cargo. These problems are likely to get worse once work on upgrading and realigning the M25 motorway to meet the demands of the new runway commences.

6.1.4 There seems to be a considerable problem with security screening outsized air freight in the UK. This results in the trucking goods to northern Europe for screening. Securitas, one of the larger organisations involved in security clearing air freight, estimates substantial numbers of truck loads per year are having to undertake this journey. For example, Swissport sends a minimum of 11 trucks daily from all over England and Scotland. This figure can rise as high as 40 in peak seasons, with an estimate of an average of 16 daily over a year, seven days a week from just one handler (Securitas). Together with the bottlenecks at Heathrow, these issues are having a substantial impact on the air freight market. Overcoming these problems provides Manston Airport with an opportunity to attract a considerable market, particularly perishable and time-sensitive items.

6.1.5 There seem to be very limited slots for freighters available at Heathrow. Many interviewees pressed this point, which is a considerable advantage for Manston until

capacity is increased at Heathrow. By the time the third runway becomes available, not likely to be before 2025, Manston is likely to be well established. It is also possible that demand for passenger traffic will be sufficient to fill the third runway at Heathrow, continuing to create a push effect for Manston.

6.1.6 The situation at Stansted seems set to continue to preference passenger traffic, particularly in the period before the third runway at Heathrow is open for business. This is a concern for organisations such as TfL, who are working to improve surface transit to Stansted for passengers.

Channel crossings and trucking

6.1.7 There are more than four million truck movements across the Channel every year. Haulage companies and freight airlines report severe delays, mainly associated with the situation in Calais, now largely resolved. These delays impact profitability and particularly affect the carriage of perishable items that lose their value the longer they remain in transit. Post Brexit, it may be that delays are inevitable as increased customs and immigration checks have to take place at border crossings. Many interviewees talked about the security issues they face when trucking through the Channel crossings.

6.1.8 Any increase in delays may precipitate a move away from trucking to the continent, particularly for high-value time-sensitive goods. Indeed, if trade restrictions are such that the UK has increasingly to look to markets outside the EU, trucking will not be an option. Air freight would then be in competition with shipping, a much slower albeit cheaper form of transit. Even without the impact of Brexit negotiations, York Aviation are forecasting a shortfall equivalent to 2.1 million tonnes of air freight capacity in the UK by 2050 (York Aviation, 2015, p. 19). TfL predict that the South East will be short of capacity for around 54,000 air freight movements (TfL, 2013). The implications for Manston therefore look very positive, with considerable demand potential for air freight movements.

Security issues

6.1.9 Security was a key issue for many interviewees with concerns that the problems currently being experienced will worsen in the future. The carriage of lithium batteries is becoming increasingly problematic, with moves to impose a ban on passenger aircraft. This would affect the ability to use belly-hold space and may have implication for Manston as a specialist freight airport.

6.1.10 Aside from the impact on security from threats of terrorism, other issues included problems with outsized cargo screening. Some airport's inability to screen outsized items can cause delays and frustration. If Manston were equipped to handle and screen these niche items that are often high-value and time-sensitive, the airport would be able to attract specialist freight carriers.

6.1.11 RiverOak are in negotiations with Securitas to operate a canine freight screening operation from the site. Securitas currently truck in the region of 50,000 HGV loads of air freight from UK airports to Rotterdam or a European airport equipped with screening for freight. Given the volume of air freight involved and the considerable advantages of using a UK airport with the specialist equipment required to security clear freight, Manson is likely attract a considerable amount of these movements.

Changes to preference for belly-freight

6.1.12 Whilst the UK air freight market is currently dominated by belly-hold rather than dedicated freighters, this is the reverse of the situation in the rest of Europe. Several factors may contribute to a change to this dominant model. These include reduced capacity on aircraft such as the A380, the LCC model, which generally focuses on rapid turnarounds, which preclude the carriage of freight. In addition, many interviewees talked of freight being bumped from passenger aircraft and the negative impact this has on their business. If the market was to move away from belly-freight and towards the use of more dedicated freighters, Manston would be well placed to attract this growing market.

Speed of turnaround

6.1.13 Speed of turnaround was mentioned as a key attraction for a freight airport. Manston has a history of rapid turnarounds, often cited as the best in the industry. There can be little doubt that the future operators of Manston would want to focus on providing this excellence of service, which, if well publicised, should attract those involved in time-sensitive markets.

6.1.14 Manston's location means that aircraft heading south make a saving in time and fuel. This saving is in the region of 45 minutes to one hour in terms of time and between $2,000 and $3,000 per flight. There are also savings to be made in crew time. These savings increase the benefits of using Manston and may act as a powerful marketing opportunity for the airport.

6.2 Market opportunities for Manston Airport

6.2.1 Many of the interviewees mentioned the markets they believe exist for Manston Airport. These include both sectoral and geographical markets.

Sectoral markets

6.2.2 The niche market opportunities that interviewees identified for Manston include perishables such as fruit, vegetables and flowers, the traditional focus for the airport and fish and shellfish. Timely delivery of fresh produce is vital to supermarkets, which require the maximum shelf life to reduce wastage and increase profit margins. Imports are likely to originate particularly from Africa and South America. The export markets for fish and shellfish, including oysters, and spider crabs that are plentiful in the waters around the south of the UK, include Spain, France, and the Middle East.

6.2.3 It seems Manston would be well placed to dominate niche markets such as Formula One cars, luxury cars from the Middle East, live animals such as breeding stock and racehorses, oil and gas equipment, and outsized cargo. These markets should provide considerable business for the airport. Additionally, Manston Airport has a history of handling military and humanitarian operations and these can be expected to return to Manston when the airport is operational.

6.2.4 There seems to be strong interest in aircraft recycling market and, although this would provide only a limited number of movements per year, would provide Manston with many opportunities to increase revenue and to create jobs and increase skills in the region.

Geographic markets

6.2.5 Interviewees identified a number of geographic markets they believe have growth potential. These include both import and export markets with a focus on the sectoral markets identified and described in the section entitled 'Sectoral markets' at paragraph 6.2.2 onwards above. These markets include:

- Africa particularly for the import of flowers, fruit and vegetables
- Algeria for the import of fruit and vegetables
- China for the import of consumer goods and export of luxury items
- Middle East particularly for export markets
- Pakistan including the export of clothing and the import of consumer goods
- Russia for gas and oil equipment and the export of luxury items
- US for a range of import and exports

Attracting integrators and freight forwarders

6.2.6 Whilst integrators, like many businesses, are generally averse to change, there are a number of potential benefits that may make Manston Airport attractive to this market. In addition to the benefits described previously such as rapid turnaround of aircraft and the availability of slots at Manston, the airport offers other attractions. These include the availability of warehousing and office space either onsite or close to the airport. The connectivity of the airport is also excellent, with a number of interviewees talking about this benefit. The presence of an integrator at Manston would dramatically increase the number of freighter movements from the airport. This scenario is discussed further in the section entitled 'Integrator/forwarder base' at paragraph 6.3.21 onwards.

6.3 External environment scenarios

6.3.1 The external environment in which any airport operates is dynamic and change inevitable. These changes may affect the behaviour of potential users and therefore, in order to enhance the assessment of demand, a range of alternative scenarios has been considered. These scenarios detail key triggers that may impact the air freight industry and Manston's ability to attract air freight. Research from both secondary sources and from the interviews undertaken has been used to identify these triggers. Nine potential scenarios specific to the air freight market for Manston Airport have been identified. These scenarios are:

1. The UK's position in Europe
2. Changes to fuel prices
3. The availability of more efficient aircraft
4. Onshoring of manufacturing in the UK
5. Changes to logistics and transport systems in Kent
6. Dramatic changes to economic performance
7. Manston becomes a major integrator/forwarder base
8. Manston becomes an Amazon base
9. Manston becomes a hub for drone activity

6.3.2 The following sections discuss the potential impact of these scenarios on the demand for air freight at Manston Airport identified through the research undertaken for this report.

The UK's position in Europe

6.3.3 The UK has made one of the most momentous decisions in its history – to exit the EU. It now seems that a swift exit from the EU is unlikely and that negotiations will take the maximum two years permitted to conclude. Until these negotiations are complete, it is difficult to predict the impact on air freight to and from the UK. The British Government has identified three potential options for relationships between the UK and the EU post Brexit. These are:

- Membership of the European Economic Area (EEA). This model is used by Norway and ensures full access to the Single Market. In terms of aviation, membership of the EEA would provide membership of the European Common Aviation Area (ECAA) and continued access to the Single Aviation Market.
- Bespoke bilateral arrangements, such as those between the EU and Switzerland. For aviation, a UK-EU comprehensive agreement would entail a bespoke arrangement such as the EU-US and EU-Canada agreements.
- A World Trade Organization (WTO) relationship, which would mean no special arrangement with the EU is negotiated. For aviation, whilst this would provide the UK with maximum policy freedom with only ICAO's Chicago Convention framework in place, it would exclude the UK from European initiatives such as the Single European Sky.

6.3.4 Table 9 highlights the characteristics of these various options. It is highly likely the airline industry will lobby the Government to retain the Single Aviation Market. Without the freedoms of the air currently in place, air freight operators are likely to experience added costs, more restrictions and increased bureaucracy.

Table 9 Key characteristics of post-Brexit UK-EU models

	Access to Single Aviation Market	Validity of EU horizontal agreements	Influence on EU policy	Policy freedom
Continued EU membership	Full access	Full validity	High	Very limited
ECAA membership	Full access	Would likely remain valid	Very limited	Limited
UK-EU comprehensive	Access	May need to be renegotiated	None	Potentially limited
No formal agreement	Would need to be negotiated	Would need to be renegotiated	None	High

Source: IATA, 2016b, p. 6

6.3.5 A complete exit from the EU would force the UK to negotiate aviation and trade accords with many countries that have to date been covered by EU treaties. However, a "hard" Brexit solution for other policy areas may make a "soft" Brexit for aviation more difficult to negotiate. All commentators have in common the opinion that it is far too early to predict what the outcome of Brexit will be. In terms of Manston Airport and the demand for freight and passengers, no changes to the current findings are proposed until the result of negotiations is clearer. The current demand picture does not contain any intra-EU traffic, although, most cargo airlines do not fly point-to-point, picking up and dropping off on non-direct routes to their final destination. Without this ability, if no formal agreement is reached, freight forecasts may well have to be adjusted, not just for Manston but also for the whole UK and European airport network.

Changes to fuel prices

6.3.6 Fuel costs are one of the largest expenses for the airline industry, around one third of operating costs. Oil prices have been relatively low since mid 2014 but have not necessarily helped air freight carriers because of the effect of hedging[26]. This effect should start to drop away and both freight and passenger carriers may tend to be more aggressive with their pricing. Lower fuel costs have allowed some operators to open up new routes, particularly long haul, that were previously unaffordable. However, since fuel is priced in US Dollars, the value of Sterling against the US Dollar is critical.

6.3.7 Since airlines use hedging to protect them from fuel price fluctuations, price hikes are unlikely in the short-term. Indeed, the general trend has been for prices to reduce over time and more efficient aircraft and operating practices seem set to ensure this trend continues. As such, an increase in the choice of air freight over other means of transportation may arise. However, given the uncertainty around the value of Sterling against the US Dollar, the demand identified for Manston has not been changed.

Availability of more efficient aircraft

6.3.8 Aircraft continue to become more efficient, improving fuel consumption and reducing emissions through new engine, aerodynamic devices and aircraft design, and through lighter weight on-board equipment. The Boeing 787 Dreamliner and the forthcoming Airbus A350 are much more efficient than previous generation aircraft. Instead of metal, these aircraft are constructed almost entirely from composite materials, reducing their weight considerably. Whilst these economies should be passed on to the customer, reducing the cost of air freighting, no increases to the demand identified for Manston have been included over the period of the study.

Onshoring of manufacturing in the UK

6.3.9 One of the effects of the referendum vote to leave the EU has been a weakening of Sterling. This makes British goods cheaper for overseas customers relative to foreign competitors. Since the end of the 1970s, the number of jobs in manufacturing has declined from 25% of the UK workforce to around 8%. Less than three million people now work in UK manufacturing compared with more than three times that number 40 years ago.

6.3.10 However, technological changes such as robotics are eroding the comparative advantage of low labour cost countries such as China. Aside from cost issues, many companies are concerned with the cost-quality balance of their production and the challenge of protecting intellectual property. Manufacturing overseas makes it easier for ideas to be stolen and products to be copied, crowding the market and diluting brand names.

6.3.11 Onshoring is therefore predicted to bring manufacturing back to the UK in industries such as vehicles, clothing, and high tech products. Agility is key to competitive advantage, with speed to market and more flexibility required from suppliers. Locating production so far from the market does not allow for agile responses. Whilst the UK looks set to return to some manufacturing, not the mass production of the past but as part of a more lean, efficient value chain.

[26] Hedging is a risk-management strategy that is used to reduce possible loss incurred due to adverse price movements, in this case in fuel prices

6.3.12 Since Just-in-Time practices are likely to be required in these manufacturing processes, the use of air freight may well increase. However, the impact on the manufacturing sector from the UK's exit from the EU is uncertain and therefore it is too early to precisely predict the potential increase to the demand for Manston at this time. However, demand seems to show that exports will exceed imports and this is, in part, a reflection of this expected increase in the UK's manufacturing and exporting ability.

Changes to logistics and transport systems in Kent

6.3.13 Whilst it is too soon to predict the impact of the UK's withdrawal from the EU and its effect on Foreign Direct Investment (FDI), recent FDI figures for 2015 to 2016 show the UK had a record number of inward investment projects, created the second highest number of jobs ever, and is the top European destination for investment from emerging markets[27]. Given that property costs in Kent are around 60% cheaper than in London[28] and that Kent benefits from good transport links including the Channel Tunnel and the Port of Dover, the County makes a good location for logistics and transportation companies. Indeed, plans for a Lower Thames Crossing will make Kent even more accessible to the east of the Country.

6.3.14 The presence of a vibrant freight-focused airport is likely to stimulate demand for warehousing and office space in the East Kent area, creating a transport and logistics hub around the airport. Under the direction of RiverOak, Manston will play a key role in the supply chain at local, regional and national levels. This objective is in line with the vision IATA has for the air cargo industry. They say:

> "*To address the competitive pressures facing air cargo, the industry challenged itself in 2014 to meet an important objective by 2020: seeking to optimize the air cargo supply chain for every commodity type transported by air to provide shippers with greater transparency, reliability and predictability. Such industry optimization will help to not just protect the value proposition of air cargo, but will enhance it.*
>
> *One goal of supply chain optimization could be the reduction of the average end-to-end shipping time by 48 hours, where the customer so demands. To meet this goal, air cargo must modernize its processes, improving quality and reliability, and widen the range of services offered. Key factors of success are data integration, process integration and supply chain partnerships based on common and mutually beneficial scenarios.*" (IATA, 2015, p. 8)

6.3.15 Figures are difficult to predict but in the medium- to long-term increased demand due to improvements to transportation and logistics in Kent should been taken into account in forecasting demand for Manston Airport.

6.3.16 Recent issues at Calais have highlighted the pressures on Kent's current infrastructure. Kent Channel crossings have suffered on-going delays over the past few years. These have centred on ferry worker strikes on the French side and the situation with migrants and refugees trying to enter the UK through the Channel Tunnel. These delays have had a huge impact on industry and local people. Operation Stack parks freight traffic on the M20, causing chaos on local roads as traffic attempts to use other ways to navigate the area.

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[27] https://www.gov.uk/government/news/uk-remains-number-one-investment-destination-in-europe

[28] Locate in Kent

6.3.17 Last year, the Fresh Produce Consortium estimated that, due to Operation Stack, £10m of fresh fruit and vegetables was thrown away during the first six months of 2015[29]. Eurotunnel has estimated their costs and lost revenue of the refugee crisis at Calais in 2015 at €29m (£23m), sending a bill for this amount to the British and French Governments[30]. Exact estimates of the impact on UK industry are hard to find but commentators generally talk of costs to the UK economy in millions of pounds.

6.3.18 These delays may well prompt shippers to switch to air freight, particularly if a local freight-focused airport was available. In terms of an increase to the demand for Manston, this may well represent an increase in the short to medium-term if capacity allowed. These movements would be in addition to the previously discussed (see section entitled 'Channel crossings and trucking' at paragraph 6.1.7 onwards) estimates for the FTA and TfL that show around 2.1 million tonnes of freight would be diverted from UK airports due to lack of capacity by 2050 (York Aviation, 2015, p. 19).

Dramatic changes to economic performance

6.3.19 One of the most important influences on air freight is economic performance at global, European and national levels. Whilst air traffic tends to fall faster than world trade at the start of an economic downturn and increase quicker on the up-cycle, it seems that each 1% increase in world economy gives rise to a 2% increase in air traffic activity (Morrell, 2011). Since air transportation usage and economic activity are interdependent, any dramatic change would impact both passengers and freight flights.

6.3.20 Regulatory frameworks, such as changes to taxation and environmental mitigation strategies, also affect air transportation. However, it is always difficult to predict changes to economic performance but the UK's situation is particularly uncertain following the decision to exit the EU. How the UK decides to conduct its future relationship with Europe will affect how much freedom the UK has to decide its own policies. For example, the ICAO Assembly has agreed to develop and apply a global market-based mechanism to address international aviation emissions by 2020. The EU's Emissions Trading Scheme (ETS) application and its impact are currently reduced and carbon prices are low. It is therefore expected that impact on flight demand will be relatively small in the short to medium-term[31]. No changes from this scenario to the demand identified for Manston are therefore proposed.

Integrator/forwarder base

6.3.21 An analysis of the origin-destination airport choice of freight operators shows that the presence of forwarding facilities at an airport is the primary deciding factor (Kupfer *et al*, 2016). Freight forwarders act as third party agents to arrange the carriage of goods often without owning or managing transportation assets. By contrast, integrators such as FedEx, DHL and TNT, arrange cargo movements like a forwarder but also own the transportation assets.

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[29] C. Johnston, The Guardian, 4th July 2015 available from http://www.theguardian.com/world/2015/jul/04/migrants-try-to-storm-channel-tunnel-sparking-further-delays

[30] http://www.independent.co.uk/news/business/news/refugee-crisis-eurotunnel-sends-29m-claim-to-british-and-french-governments-to-cover-calais-costs-a6882801.html

[31] https://www.eurocontrol.int/sites/default/files/content/documents/official-documents/forecasts/seven-year-flights-service-units-forecast-2014-2020-feb2014.pdf

6.3.22 Manston Airport and the Thanet area offer a range of opportunities for the development of warehousing and office space[32]. It therefore seems feasible that forwarders and particularly integrators, who would be able to base aircraft at the airport, may choose to locate to Manston. The demand for the airport could therefore include the presence of one integrator basing two aircraft at Manston from the second year of operation and four from the fourth year. If this scenario is correct, integrator movements would be likely to increase from year 10 of operation due to the pressure predicted to be on Stansted for passenger flights by this time.

6.3.23 However, if Manston became an integrator base for more than one airline or if one integrator based a larger number of aircraft at the airport, this would rapidly increase the number of movements at the airport. This, of course, would have to be in line with capacity available at the airport and acquisition and development permissions for nearby land. Subject to these arrangements, demand could potentially increase considerably from year five or six of operation.

Amazon base

6.3.24 Amazon, the online retailer, now has a fleet of some 40 freighters. The Air Transport Services Group began operating ten 767 freighters for Amazon around the middle of 2015, initially as a test network. It has now leased twenty aircraft to Amazon for a period of five to seven years. Atlas Air is also phasing in twenty 767-300s, which they will operate for Amazon. On the 4th August 2016, Amazon unveiled their first liveried freighter, a 767-300ER, which bears the Prime Air logo and is operated by Atlas. Most of the 40 767 freighters in the Amazon Prime Air fleet will operate on a hub-and-spoke basis from Ohio's Wilmington Airport. Given the support for Manston Airport Atlas Air has put on record (see email from Rob Buda, Senior Director at Atlas Air dated 7th March 2017 at 5.1.23, which says, "*I can certainly say with confidence that Atlas Air would consider recommending MSE to our customers as a viable regional option should the airport ever reopen for business.*").

6.3.25 Whilst there is still no news about Prime Air's operation in Europe, Amazon is tailoring its route network to meet the needs of the company and to improve delivery times for customers. The company states that it is creating an air transportation network, as evidenced by the $1.4 billion investment in Cincinnati Airport, and it seems likely this will include Europe. Amazon began posting vacancies for roles with Prime Air based in Cambridge in mid 2016. Cambridge is the UK home of Amazon's drone development (see Section entitled 'Drone hub' at paragraph 6.3.26 onwards for further detail). Whilst Amazon has not taken part in this research, this scenario suggests consideration of Amazon basing for one aircraft from the second year of operation, increasing to two aircraft from year 4. If Amazon based more aircraft in the UK at Manston, the number of movements could increase considerably if capacity allowed.

Drone hub

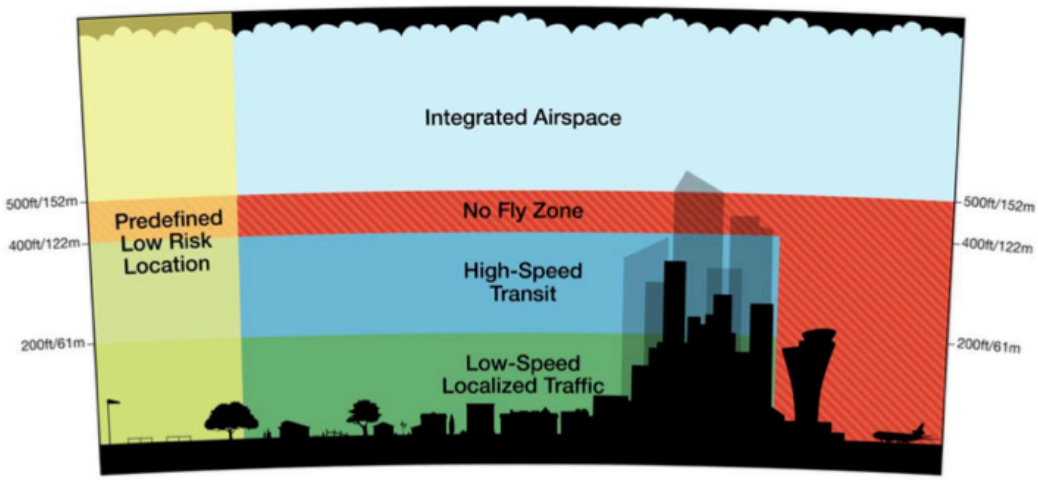
6.3.26 Amazon Prime Air is the company's vision of its future delivery system, using small, unmanned aerial vehicles or drones to get packages to customers. The Amazon drones will carry packages up to five pounds in weight using "sense and avoid" technology to operate beyond the line of sight up to distances of around 10 miles. Amazon proposes the development of an air traffic system that allows drones to operate in civil airspace without interference with other aircraft. They have put forward a design, as shown in Figure 16, that segregates civil airspace below 500 feet. Airspace up

[32] Locate in Kent provides a database of opportunities

to 200 feet would be designated for low-speed traffic, between 200 and 400 feet for high-speed transit, with a no fly zone between 400 and 500 feet.

6.3.27 The CAA has granted Amazon permission to test its drones in the UK. The company's UK operation is currently based in Cambridge with testing reported to be at a location outside the City. An integrated drone/airport operation, whilst fraught with safety problems and many years from CAA certification, could potentially reduce the number of trucks on the UK's roads. Using Manston Airport and its location close to the Thames Estuary may provide an exciting future for Thanet, putting the Island at the heart of the UK's distribution network. However, because the use of this technology is some way from implementation, no change to the demand for Manston has been made to reflect this possibility.

Figure 16 Airspace design for small drone operation



Source: Amazon, Revising the Airspace Model for the Safe Integration of Small Unmanned Aircraft Systems. Available from https://images-na.ssl-images-amazon.com/images/G/01/112715/download/Amazon_Revising_the_Airspace_Model_for_the_Safe_Integration_of_sUAS.pdf, page 2.

Summary of scenario impacts

6.3.28 Table 10 summarises the impact of each of the identified scenarios on the Manston air traffic forecast.

Table 10 Impact of scenarios on the Manston forecast

Scenario	Impact
The UK's position in Europe	Unknown therefore demand unchanged
Changes to fuel prices	Unchanged demand
The availability of more efficient aircraft	No increase over period of investigation made
Onshoring of manufacturing in the UK	Taken into account where possible
Changes to logistics and transport systems in Kent	Taken into account where possible
Dramatic changes to economic performance	No change proposed
Manston becomes a major integrator/forwarder base	Part incorporated but demand likely to increase further
Manston becomes an Amazon base	Considered a possibility for Manston
Manston becomes a hub for drone activity	No change proposed

6.4 Manston Airport passenger demand

6.4.1 Whilst RiverOak will be focusing on the development of Manston as an air freight airport, passenger services will be encouraged to provide an amenity for the local area. The airport could provide landing slots at convenient times that are not available at other airports in the South East. Infrastructure is planned to handle both passenger and air freight traffic.

6.4.2 This research highlighted what the CAA considers to be the marginal airlines at Heathrow (see Table 8 on page 50). However, since there is no particular intelligence that suggests these airlines might move to Manston if the airport was operational, no demand from these airlines has been taken into account. Issues concerning passenger flights that have been considered include:

- Reduced sector length making operations more cost effective
- Access to a major passenger hub through KLM
- Base for a number of low cost carrier aircraft
- Seasonal flights to and from Eastern Europe
- The forecast doubling of flights between the UK and China
- Cruise ship flights
- Paramount theme park and Ebbsfleet Garden City development

6.4.3 Specific demand refers directly to the findings shown in section 5.4 on page 46. This demand includes:

- KLM resuming operations twice daily to Amsterdam
- A LCC base two aircraft at Manston
- The charter market resuming with services to European and potentially US destinations
- A scheduled service by an airline struggling to find slots at other airports
- Flights from the US that tie up with cruise ships leaving from Dover

7 Conclusions

7.0.1 This report demonstrates the potential demand for Manston Airport, indicating its viability and clearly showing that Manston Airport is a valuable local, regional and national asset, providing airport infrastructure badly needed by the UK. Without additional runway capacity, the UK is missing out on potential trade, particularly with non-EU countries. More than four million HGV movements are currently made on Eurotunnel and through the Port of Dover. The advent of Brexit and potential restrictions and delays at the Channel Crossings will be a cause of concern for those freight shippers reliant on this form of transport. As such, and with Manston Airport reopened, there may be a change in the model used, away from trucking to Europe and onto aircraft.

7.0.2 Manston Airport, operational for 100 years until its closure in May 2014, has the potential to attract and accommodate considerable cargo movements and to handle a number of passenger flights, connecting Kent to the rest of the world. Indeed, due to its size, location and lack of airspace constraints, Manston is the only viable option in the South East.

7.1 Recommendations

7.1.1 A number of issues have been identified through this research. These provide opportunities for Manston Airport to attract aircraft movements and include:

- Lack of available slots at other South East airports
- Bumping of freight from passenger aircraft
- Security issues particularly with outsized cargo
- Speed of turnaround

7.1.2 A number of markets for Manston Airport have been identified through this research. These include:

- Parcels and packages through an integrator
- Perishables including fruit, vegetables, flowers, fish, and shellfish
- Outsized freight
- Formula One and luxury cars
- Live animals
- Time sensitive items such as aircraft and the oil and gas industry
- Humanitarian and military flights

7.1.3 Additionally, there are opportunities in aircraft recycling and other revenue generating operations including MRO, a FBO, and a flying school. If warehousing and office space can be made available locally, there is potential to attract an integrator to the airport. Manston is well located to play a vital role in the supply chain activity that will be stimulated by initiatives such as the Lower Thames Crossing and the Thames Estuary 2050 Growth Commission. It is therefore recommended that the airport operator incorporate these opportunities into their future development and marketing plans.

7.2 Implications for policy

7.2.1 The UK needs a robust policy for aviation with more attention paid to air freight than has been the case in the past. Whilst UK governments no longer operate airports or build runways, they play a key role in ensuring capacity is built or retained where it

most benefits the national interest. Government must therefore use its powers to make sure a framework for aviation is always in place, seamlessly migrating between changes of administration. This will, as Philip Hammond said (Department for Transport, 2011, p. 5), rely on moving beyond the sterile debate of many years and working towards a broad consensus on the UK's long-term view of the significance of aviation to the Country.

7.2.2 Issues of global environmental impact, such as aircraft emissions, cannot be dealt with by airport managers alone but must be the province of national government in partnership with other world leaders. These issues are frequently raised during public consultations but it seems unrealistic to expect airport managers to provide innovative solutions. Noise is a ubiquitous concern around airports, particularly from night flights, and the government must make clear their policy and the mitigations they deem appropriate and achievable so that airport managers can implement best practice across the UK. Repeating the same debate time after time does nothing to improve dynamism in the airport sector.

7.2.3 There can be no doubt that the UK needs a National Air Freight Demand Model just as it has a passenger equivalent in the NAPDM (National Air Passenger Demand Model). It is hoped this document will support the development of such a national model, which, as with the passenger version, would have a sister allocation model to allow forecasts to be made at airport level. Indeed, one of the recurrent questions raised during this research was around freight traffic forecasting and there seems to be wide confusion about demand in the UK. Some stakeholders quote a stagnation of air freight in the UK, failing to grasp the correlation between demand and a lack of capacity. Improved demand models would help all parties understand the true air freight picture in the UK.

7.3 Implications for RiverOak

7.3.1 The extensive research that informed this report have been a costly and time-consuming exercise and are only a part of the work being undertaken to secure the future of Manston as an operational airport. This report confirms RiverOak's faith in Manston, providing evidence that the airport has the location, airspace, capacity potential and demand required to persuade the Secretary of State to make the decision to grant a DCO that would allow the redevelopment and reopening of the airport.

7.3.2 The findings from this research can play a key role in informing government policy on air freight in the UK. It also provides a platform for lobbying government and industry organisations and RiverOak will no doubt continue to press for a political environment that is conducive to the vitality of the aviation sector. Such an environment will allow airport management to focus on resolving local concerns and harnessing opportunities for innovation.

7.3.3 One of the most gratifying aspects of carrying out this research was the widespread support, and often passion, for Manston Airport encountered from people in all types of organisation. Manston Airport is in a unique position in the UK, having vocal support from the local community and from a number of airlines and other organisations. It is essential for RiverOak to continue to harness the interest of the local community and to work with them to ensure the area gains the maximum benefit from a vibrant operational airport. In a time of cynicism towards participation, RiverOak is blessed with a local community that is willing and able to engage on all sides of the multiple debates that surround airport operations. Providing rewarding business and employment opportunities, and working with local providers to ensure high quality

education and training for local people will be a fitting acknowledgment of their continued commitment to Manston Airport.

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