York Aviation

TRANSPORT FOR THE NORTH

STUDY INTO INTERNATIONAL CONNECTIVITY

EVIDENCE REPORT

FINAL

JULY 2016

In partnership with

MDS Transmodal Ltd

York Aviation

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Dated: 16.6.16

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Dated: 20.6.16
Revised: 29.7.16

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EXECUTIVE SUMMARY

Background

1. York Aviation, in conjunction with MDS Transmodal and Regeneris, were commissioned in February 2016 to undertake a review of International Connectivity for the North. The aim of this review is to provide a shared evidence base for partners across the North, as a contribution to the Northern Transport Strategy that aims to develop a multi modal programme of transport interventions to support the economic growth objectives as set out in **'The Northern Powerhouse: one agenda, one economy, one north'**. This study sits alongside other workstreams dealing with road, rail, freight and logistics and strategic local connectivity. Hence, our focus was on passenger connectivity rather than freight, except in relation to the role of air freight in supporting the viability of long haul air services.

2. We have drawn particularly on the outputs from the Independent Economic Review (IER), the identified Capabilities and considered how international connectivity could support the delivery of the Transformational Economic Scenario.

3. The specific questions addressed in this report are:

   - An assessment of the north's current international connectivity, - *where is the north currently connected to?*
   - An assessment of and understanding of emerging markets, - *where does the north need to be connected to?*
   - An assessment of the infrastructure improvements likely to be required to allow the north to be adequately globally connected as a single economy in order to promote growth – *what is needed to enable the north to be better connected?*

4. In so doing, we have considered the barriers to success of the North's international gateways, the most critical routes both now and in the future, the economic value provided by international connectivity and identified how the future position might be strengthened.

5. It is important to note that our research was largely completed prior to the BREXIT vote and we recognise that this may have implications for some of the conclusions drawn, particularly in terms of the relative balance between trading with Europe and trading globally.

Role of International Connectivity in Economic Development

6. There is a strong evidence base on the role of international aviation in supporting economic development. There is, however, limited evidence regarding the role of passenger shipping. Aviation is an essential part of what makes modern developed economies work. Economies are ultimately becoming more globalised. Flows of trade, investment, people and knowledge are growing as the world's economies become more entwined and reliant upon one another. This generates a need for travel and air services which offer by far the most efficient means of travelling long distances, particularly internationally, to meet these needs. This introduces the concept of connectivity as a measure of an airport or an area's ability to meet this need for travel.

7. International connectivity can impact on the economy through its effect on:

   - Foreign Direct Investment;
   - Trade;
   - Tourism;
   - Labour Market;
   - Agglomeration effects.

   In combination, all of these factors contribute to improving productivity and delivering improved economic performance. A number of metrics have been developed to estimate the economic value of connectivity and we draw on these in assessing the economic value of international connectivity to the North today and in the future.

8. We have concentrated in this report on the economic role of international connectivity, i.e. the wider catalytic impact of improved connectivity, rather than the more direct economic contribution made locally and regionally by the North's ports and airports through the jobs and GVA created by their operations and supply chains and associated with the development of on-site clusters of related business activity. These impacts are, nonetheless, highly valued and make the region's ports and airports make a significant contribution to the North's economy through their operational activities over and above the value of connectivity that they offer.

Current International Connectivity

Aviation

9. Across all the key airports within the Northern Powerhouse region in 2015, a total of 31.6 million passengers were carried on international flights. However, the region's airports drew in some passengers from outside the North. When passengers travelling to/from international destinations using domestic air connections mainly to London or travelling by surface means to airports outside the region are taken into account, the total international air travel market to/from the North was 28.6 million passengers, approximately one third the number of international air passengers travelling to/from the South East of England. Overall, there is relatively little leakage of international air travel to the London airports, with 86% carried on international services from the North's airports, including via foreign hubs, and a further 4% using air connections via London.

10. There are currently 7 airports serving the North (8 when Carlisle becomes operational) and there is substantial overlap in their catchment along the M62 corridor. Few parts of the North are further than 1 hour from an airport, the exception currently being Cumbria. Manchester is by far the largest airport, handling over 23 million passengers in 2015. It is the only airport with a substantial long haul offering, although Newcastle sustains routes to Dubai and New York.

11. Across the North, some 13.6% of passengers were travelling for business purposes and some 14.6% were foreign leisure visitors[1]. These percentages are materially lower than for the London airports and vary across the North's airports, with the highest proportion of business passengers seen at the smallest airports of Durham Tees Valley and Humberside, which are dominated by the hub connections to Amsterdam. Otherwise, Manchester shows the highest business usage at 16% of international passengers; Newcastle at 12% and the others substantially lower.

12. Whilst the largest air travel markets to/from the North are unsurprisingly to outbound leisure destinations, routes to the following business destinations figure in the list of Top 20 destinations served:

- Amsterdam
- Dublin
- Dubai
- Paris
- Barcelona
- Abu Dhabi
- Geneva
- Frankfurt
- New York

Other important destinations for business passengers today include Dusseldorf, Copenhagen, Munich, Brussels, Hamburg, Zurich, Oslo, Madrid, Hong Kong and Los Angeles. However, given the dispersed pattern of business travel demand and the lower volumes to any individual destination, much of the international business related connectivity is provided via hubs.

13. Demand is not evenly spread across the parts of the North, with 60% of demand having surface origins and destinations west of the Pennines, with a clear concentration accounting for 40% of all international air travel demand to or from the North in Greater Manchester and Cheshire and Warrington. The largest single air travel market by LEP area is Greater Manchester followed by the Leeds City Region then the North East and the Liverpool City Region. Cheshire and Warrington also has the highest propensity to fly in terms of overall air trips per head of population and in terms of business related trips. Greater Manchester and the Liverpool City Region also exhibit high propensities to fly but are overtaken by York, North Yorkshire and the East Riding in terms of the business related propensity to fly. It is less clear whether the higher levels of international demand and propensity to fly in the vicinity of Manchester Airport reflect the stronger air service offer there or whether the air service offer has developed to support an economy that was already more international.

14. In terms of inbound visitor demand, the majority were international leisure visitors. Generally, the cities of Manchester and Liverpool, followed by Leeds and Newcastle show the greatest concentration of inbound visitors for both business and leisure purposes, although this may not reflect entirely the nature of inbound tourist stays in each area where visitors tour around the UK as the data used reflects the immediate point of stay before or after a flight. The principle inbound markets are from Europe and the USA.

[1] This does not include those foreign visitors who may visit the North as part of a wider tour starting and ending in London today.

15. It is notable that whereas Financial and Professional services typically make up the largest proportion of business travel demand for the UK as a whole and for the London airports in particular, over 25% of business related air travel demand to/from the North is related to Manufacturing. This may go some way to explaining the relatively lower levels of business related air travel to/from the North as the manufacturing sector uses passenger related air transport less intensively than financial and professional services, i.e. relatively fewer air trips are required to deliver the same value of economic activity.

Sea Travel

16. The overall international passenger market for ferries is around 10% the size of the air travel market. Ferries play a much more significant role in freight transport, which is outside the scope of this study. The majority of use is for leisure trips, including inbound visitors, particularly across the North Sea. The markets are generally fairly static or declining.

17. The cruise ship market is growing at the Northern ports, with both turnaround and port of call activity. The turnaround activity can generate local economic impacts with passengers staying locally before or after a cruise. The port of call market does generate some local spending but the number of ships making such calls are relatively small currently.

The Economic Value of Baseline Connectivity

18. We have assessed the economic value of baseline international connectivity using metrics outlined above. These relate the GVA impact of connectivity to changes in the number of business related passenger, air freight and tourism. In the absence of specific measures for shipping, we have assumed that the impact of a business passenger or inbound tourist travelling by sea is the same as on travelling by air.

19. Our approach has been to examine the impact that the existence of the North's airports and ports have on the level of demand for international travel by considering a hypothetical counterfactual scenario in which the North's airports and ports do not exist and users are forced to use airports and ports outside of the Northern Powerhouse as a 'next best' option and that, as a result, some will choose to no longer travel. This approach has been driven by the fact that many of the econometric relationships linking connectivity to GVA require a change in the market to affect a measurement of value. We adjusted demand taking into account changes in generalised cost, including:

- Surface access time and costs to the UK airport or port;
- Wait times associated with levels of service frequency;
- Flight or sea travel times;
- Hub interchange times;
- Travel times to ultimate land destination (sea travel only);
- Fares.

20. The economic value of the level of international connectivity provided today is shown in the table below. This equates to around 1.5% of GVA today.

The Economic Benefits of International Connectivity in 2015 (GVA £billion at 2016 Prices)			
	Airports	**Ports**	**Total**
Business Productivity Effects	**£4.64**	**£0.01**	**£4.65**
Tourism Effects	**£0.47**	**£0.01**	**£0.49**
Total	**£5.11**	**£0.02**	**£5.14**
Source: York Aviation, MDS Transmodal, Regeneris.			

International Connectivity Benchmarking

21. We benchmarked the North's international connectivity against that in the IER's three benchmark economic regions; Rhine/Ruhr, Randstad and Lombardy. Randstad is not a particularly relevant comparator for aviation due to the presence of the longstanding global hub airport of Amsterdam Schiphol, although it is more relevant for shipping. What is notable is that the North has more airports than any of the benchmark regions, which may reflect in part the geographic spread of population across the North.

22. Generally, in terms of connecting to economically important global cities, the North performs similarly to Rhine/Ruhr and Lombardy, although there may be some gaps in second tier global cities. However, overall connectivity to global economic centres lags behind the other regions relative to the scale of the North's GVA. This may be a reflection of the lower GVA per capita in the North.

23. At the individual city/airport level, Manchester Airport 'punches above its weight' relative to the City Region economy, which is unsurprising given its broader role across much of the North. However, the other airports appear to be underperforming in relative terms compared to the scale of the local economy that they serve. This may, to a large extent, be a function of the number of airports and their overlapping catchment areas.

Stakeholder Views

24. We consulted with a wide range of stakeholders across the North to gain views both on the adequacy of international connectivity today and how this might change in the future as the economy develops, as well as to understand the impediments to improving international connectivity. We also held a workshop in Leeds part way through the study to feedback our baseline findings and to ensure that all issues and opportunities had been identified.

25. Generally, there were no strongly held views that a lack of international connectivity was holding back the North's economy today but it was noted that people tended to trade where there are better connections and the lack of connectivity could make companies and individuals more risk averse. This appeared to be a particular issue for Yorkshire, where the economy appears relatively more focussed on the domestic and near European market. Most stakeholders believed that Europe and the US would remain the most important trading and investment partners, with only a slow shift to emerging global markets. However, we recognise that our interviews were conducted prior to the BREXIT vote and prior to the publication of the IER and so may not fully reflect the scale of transformational change required.

26. All of the airports are keen to expand their route networks and wanted recognition of the important local economic role of airports and their related clusters of activity. The principal impediment to improving the range of services was seen as the increasingly risk averse nature of airlines. Even where a market exists, airlines are looking for support to open up new routes. This is a particular issue for the smaller regional airports. The high cost of Air Passenger Duty (APD) is another further factor which makes airlines less willing to develop new routes to the North's airports where markets are smaller and may be lower yielding (in terms of fares) than those in the South of England.

27. The airlines generally said that the scale of the market overall in the North was the principal impediment to opening up new routes. It was felt that, in the main, only Manchester Airport had a strong enough market to support services to completely new destinations not otherwise served in the region and that this was also a factor in it being able to sustain higher frequency of service on key business routes in Europe. Extending Manchester's catchment area through improved surface transport links could contribute to making more routes viable. Nonetheless, the airlines were positive about the market prospects for and commercial approach of the region's other airports in being able to develop their range of services over time to meet the needs of more local markets.

28. The shipping sector generally felt that the market had stabilised, after a period of decline, and that the prospects for growth would be enhanced with improved riverside berths to attract new cruise ship calls and improved 'last mile' surface access connections.

Potential Intervention Mechanisms

29. Government policy towards airports and ports is that they should be operated and developed by the private sector. The ability to support their development and the development of services from them is highly constrained by State Aid rules, which are unlikely to change significantly even following BREXIT. These rules limit support to all but the smallest airports and preclude direct financial support to the development of air services, other than in very specific circumstances, at all airports handling more than 3 million passengers a year, i.e. the 4 major airports serving the North are not eligible for direct support for route development. Even at smaller airports, support is time limited.

30. Hence, we identified a number of potential intervention mechanisms falling short of direct payments to airlines or airports to develop routes or infrastructure:

    - ✈ Improved surface access to ports and airports;

- A coordinated approach Air Route Development, including Regional Connectivity Funds providing support at airports handling less than 3 mppa and more coordinated regional marketing support at all airports;
- Changes to Air Passenger Duty;

In addition, support could be given to airport and port infrastructure development but this would not include funding support.

Future International Connectivity Requirements

31. The economic context for considering the future connectivity requirements of the Northern Powerhouse is the 'Transformational Scenario' set out in the IER. This scenario requires an improvement in all the identified drivers of productivity, including improvements in connectivity in the broadest sense. This Transformational Scenario sees GVA growth improving by 0.4% per annum compared to the 'Business as Usual' scenario (and employment growth improving by 0.2% per annum) with an implied improvement in productivity. At present, this projection is at a pan-North level so we have not been able to consider whether there are variations across the region.

32. Delivering this uplift to economic performance will require all of the levers to productivity, including international connectivity, to be worked on. Improved connectivity will reduce journey times and lower transactional costs so delivering a part of the required uplift to economic performance.

33. We have translated this to an estimate of how many international business related air trips would be required to support this economic uplift and hence, the reduction in generalised cost of air travel required to deliver this uplift.

34. We have then considered how the global geographic spread of connectivity requirements might change based on global growth projections and changes expected to patterns of trade and FDI overall. We recognise that working from existing evidence of these changes may not fully reflect the scale of change required to support the transformational economic agenda and further work on refining this may be required as detailed requirements to deliver the 'Transformational Scenario' are refined.

35. Overall, achieving the transformational economic scenario would imply 12 million additional air passengers travelling to/from the North in 2050 compared to the baseline position, as represented by the Department for Transports UK Aviation Forecasts 2013 (an increase of 150% over 2015). Within this, there would be 1.5 million more business related air passengers than in the baseline scenario and a total of 10 million business related air passengers, making up a higher share of the overall air travel market than today.

36. Our initial analysis would suggest that around 80% of passengers, or 74% of business passengers, would still be travelling to/from Europe but this may understate the changes required to global trading patterns to deliver transformational economic change.

37. Nonetheless, delivering this uplift will require a substantial reduction in the generalised cost of air travel to/from the North as set out in the table below:

Change in Generalised Cost Required to Support Growth in Business Travellers at 2050						
	Average Current Generalised Cost	Required Increase in Demand	Generalised Cost Elasticity	% Change in Generalised Cost Required	Generalised Cost Change Required	Equivalent in Time (mins)
Short Haul	£296	18%	-1.1	-16%	-£47	-30
Long Haul	£1,283	13%	-0.4	-31%	-£393	-248
Total	£517	17%	-1.0	-17%	-£89	-56
Source: York Aviation						

38. Whilst increased frequencies of service and lower, competitive air fares can deliver some of this improvement and reductions in APD could make a contribution, it would appear that much of the reduction will need to come from improvements to surface access enabling more routes to be viable, which in turn will reduce the need to make lengthier journeys via hubs.

39. We looked more specifically at what target routes might be required airport by airport by 2050 to deliver this uplift, accepting that much of the improvement may come through improvements to the frequency of service on existing routes. In undertaking this analysis, we took into account the potential for HS3 and a Transpennine Tunnel to wider Manchester Airport's long haul catchment area. Our analysis showed the potential requirement for Manchester to add substantially to its long haul route network and for Newcastle Airport to add services to support the growth of the more self-contained market in the North East. There is also some scope for other airports to develop some long haul connectivity in the longer term, similar to the pattern seen at Newcastle today. All airports have the scope to improve their short haul connectivity.

40. In terms of shipping, it is more a matter of taking steps to preserve existing services, although there may be some scope to increase North Sea connections on the margin.

Delivering Improved International Connectivity

41. The two principal barriers to improving international connectivity were identified as:

- **The Size of the Market**, which can be overcome in part by extending the catchment area of individual airports through improved surface access although, given the overlapping catchment areas, this only really applies to extending the long haul catchment area of Manchester to enable it to attract passengers who would otherwise opt for the higher frequency services at London or hub connections. Clearly the market will grow over time making more services viable from all airports.
- **The Risk to the Airlines**, which will be lessened as the market grows. However, delivering the uplift in connectivity required may still requires some intervention to reduce the risk of starting new routes as far as allowed under State Aid rules.

42. A key consideration is also the competition between airports to attract new services. There are clear benefits from competition in terms of the quality of service offered by the North's airports and through price competition. However, the number of airports across the North is reflected in the relative underperformance of some of the airports. A balance needs to be struck between encouraging competitive airport provision and the benefits from a degree of concentration to allow larger airports to avail of network synergies and deliver routes which would not otherwise be served at all.

43. Reducing surface access times is key to helping the North's airports to deliver more direct air connections, in particular new long haul services from Manchester. If the journey times to Manchester Airport can be improved, it would bring more of the North within 60, 90 and 120 minutes of the Airport, so making it more attractive for airlines to initiate new services which would only otherwise be available at airports outside of the North. As a consequence, to the extent that the international connectivity offered from Manchester has been a factor in supporting the stronger growth and internationalisation of the economy in the immediately surrounding area, reducing the surface journey would allow this benefit to be spread further, as Manchester would be perceived as 'local' in terms of businesses located in Sheffield and Leeds for example.

44. Whilst there are clear benefits to the North from enabling Manchester to support a broader portfolio of long haul services, the effect of improving surface access to Manchester in isolation has the potential to denude the catchment areas of other neighbouring airports making it more difficult for them to develop and sustain a broader portfolio of short haul services to meet local catchment area needs and deliver local connectivity. Furthermore, these benefits may not extend as far as Newcastle, which will also need to improve its long haul offer. For these reasons, improvements to surface access will also be required across a number of the North's airports in order to ensure that the benefits of competition can be maintained.

45. We have recommended a number of potential interventions which would, prima facie, be required to support the delivery of the required uplift to international connectivity. These have not yet been subject to specific value for money assessment and some may be for local delivery rather than TfN interventions.

46. The potential aviation related interventions are set out in the table below:

High Level Assessment of Aviation Related Potential Public Sector Interventions					
Category of intervention	**Intervention**	**Impact**	**Policy fit**	**Timescale**	**Conclusion**
Planning	TfN support for strategic airport planning applications aimed at ensuring sufficient airport capacity to support the required improvement in international connectivity, including schemes for ancillary development which can be demonstrated as critical to the ability of airports to deliver improved connectivity.	Ensure that there are no impediments to airports delivering improved connectivity.	Generally compliant with Aviation Policy, subject to specific consideration of environmental effects.	Ongoing	Recommended intervention.
Strategic Surface Access to Manchester Airport	Ensure that Manchester Airport is fully connected to HS2, HS3 and the TransPennine Tunnel.	Expand Manchester Airport's catchment area to support increased global air connections.	Good.	Medium to Long term.	Recommended intervention.
Surface Access – Manchester Airport General Improvements	Ensure that congestion bottlenecks on the immediate road network are overcome.	Maintain existing local surface access journey times and improve resilience.	Good.	Ongoing.	Recommended intervention.
Surface Access – Newcastle Airport A1 Link Roads	Provision of a Link road between the Airport and the A1.	Improves connections between the Airport and the sub-region.	Good.	Short term.	Recommended intervention.
Surface Access – Newcastle Airport Metro	Upgraded Metro rolling stock and network extensions,	Improved image and public transport access to the Airport.	Good.	Medium term.	Recommended intervention.

Surface Access – Newcastle Airport Wider improvements	Other road and rail schemes in the North East which would contribute to improving access to the Airport.	Improved accessibility within the North East.	Good	Long term.	Recommended intervention.
Surface Access – Liverpool Airport Eastern Link Road	Direct road connection into the Airport from the East to provide direct access to the M62.	Improve access to the Airport from North and East of the city centre. Reduce congestion on Speke Boulevard.	Good.	Medium term.	Recommended intervention.
Surface Access – Liverpool Airport Rail	Provision of a direct rail link from Parkway station connection to the Merseyrail network.	Improved public transport access from the City Centre.	Good.	Long term.	Recommended intervention.
	Ensuring that Liverpool South Parkway is recognised as a gateway to the Airport in franchise renewal.	Better connections across the North	Good.	Short term.	Recommended intervention.
Surface Access – Leeds Bradford Parkway Station	Provision of a Parkway Station serving Leeds Bradford Airport	Improved public transport access between Leeds Station and the Airport and to the North, with onward connections	Good.	Medium term	Recommended intervention.
Surface Access – Leeds Bradford Link Road	Link road connecting Leeds Bradford Airport to the A65 and A658.	Provides improved road connections to the North and to the Leeds Outer Ring Road.	Good.	Long term.	Recommended intervention.
Surface Access – Other Airports	Local action to improve public transport access to airports.	Local benefits to accessibility and sustainability.	Good.	Ongoing.	Local level intervention to be supported.

Coordinated Route Development and Tourism Marketing	Establishment of a 'Team North' to work with the airports to deliver more strategically important air routes to the North.	Improved air connectivity.	Good.	Ongoing.	Recommended intervention.
Air Passenger Duty	Facilitate the development of a scheme to reduce the burden of APD on airports and air services in the North.	Create the conditions where the perceived risk to the airlines of initiating new air services is reduced and ameliorating the risk of detrimental effects from the proposed reduction in APD at the Scottish airports.	Possible conflict with Treasury.	Short term.	Recommended intervention.
Source: York Aviation					

47. The potential shipping related interventions are set out in the table below:

High Level Assessment of Shipping Related Potential Public Sector Interventions					
Category of intervention	**Intervention**	**Impact**	**Policy fit**	**Timescale**	**Conclusion**
Surface access schemes – road	A63 Castle Street Stage 2: Programme entry being - 1.5km improvement at A63 Castle Street, including a new split level junction.	Reduce journey times for car passengers to/from Port of Hull's ferry terminals.	Good.	Medium term	Recommended intervention.

Surface access schemes – road	A5036 Princess Way - Port of Liverpool Access Stage 0: Committed Scheme (ground investigations/surveys conducted Summer 2015) - Comprehensive upgrade to improve access to the Port of Liverpool from the A5036	Reduce journey times for car passengers to/from Port of Liverpool's ferry terminal in Gladstone Dock.	Good.	Medium term	Recommended intervention.
Surface access schemes – road	Improvements to the capacity and resilience of the strategic network across the North e.g. M60 Quadrant, North, on-going management schemes for the M60/M62	Reduce journey times for car passengers to/from northern ferry and cruise ports.	Good.	Medium term	Recommended intervention.
Surface access schemes – rail	Improvements to the capacity and frequency of rail services across the North, particularly east-west across the Pennines.	Reduce journey times for, in particular, cruise passengers embarking and disembarking cruise ships in the North.	Good.	Medium term	Recommended intervention.
Surface access schemes – rail	Review of public transport connections between railway stations and cruise/ferry terminals.	Increase convenience of using public transport for, in particular, cruise passengers embarking or disembarking cruise ships in the North.	Good.	Short term	Recommended intervention.

Port infrastructure schemes	Develop second in-river terminal at Hull for the Hull-Zeebrugge service	Enhances economics of the ferry service by allowing a faster crossing time and greater utilisation of the vessels; reduces congestion through locks for the port operator.	May not be in line with UK ports policy.	Medium term	May need to be funded by the private sector, but public sector should investigate potential for using Local Growth Fund
Port infrastructure schemes	Develop in-river ferry terminal at Liverpool for Liverpool-Dublin service	Enhances economics of the ferry service by allowing a faster crossing time and greater utilisation of the vessels; reduces congestion through locks for the port operator.	May not be in line with UK ports policy.	Medium term	May need to be funded by the private sector, but public sector should investigate potential for using Local Growth Fund
Port infrastructure schemes	Public sector support for Liquid Natural Gas (LNG) bunkering and cold ironing infrastructure at ports.	Provides bunkering infrastructure for low sulphur and lower cost fuel; also. allows ships to have a power supply in port without damaging air quality	Good. In line with EU policy to assist the shipping industry to adapt to the SECA regulatory environment.	Medium term	Recommended intervention
Shipping service support	Operating subsidy to support existing and new passenger ferry services.	Increases the profitability of the services, supporting their long term future.	Likely to be illegal under state aid rules as the shipping industry is fully liberalised.	-	Not recommended.

Shipping service support	EU support via Motorways of the Sea for the retrofit of alternative fuel technology on ferries or for part-funding of new technology to reduce sulphur emissions.	Reduces the impact of introducing new technology to meet new regulations on the economics of North Sea ferry services.	Good. In line with EU policy to assist the shipping industry to adapt to the SECA regulatory environment.	Short term	Recommended intervention
Shipping service support	Public sector funding of feasibility work to assess the economic viability of a mixed passenger and freight ferry service form Newcastle to Norway.	Would establish the likely economic feasibility of a re-started service.	Good.	Short term	Recommended intervention
Marketing Support	Co-ordinated marketing initiative to promote the North of England as a whole as a tourist destination, linked to accessibility via a northern port.	Would encourage overseas tourists both to take cruises involving calls at northern ports but also to access the North directly via the North's ferry ports.	Good.	Short term	Recommended intervention
Source: MDS Transmodal					

48. We estimate that if the improvements to international connectivity can be delivered, this could contribute around 4% of the required uplift in economic performance to deliver the 'Transformational Scenario' compared to baseline economic growth.

49. Further work will be required as a next step to refine the analysis for each specific intervention and to make or contribute to the overall business case for each individual scheme as well as to identify the specific contribution to the required improvement in international connectivity, having regard to the scale of economic transformation required overall.

1 INTRODUCTION AND BACKGROUND

1.1 In February 2016, York Aviation was appointed by Transport for the North (TfN) to undertake a review of International Connectivity for the North. This review is being conducted in conjunction with MDS Transmodal, supported by Regeneris, in relation to ports and international shipping. The Northern city regions are acting collectively as TfN, working with the Local Enterprise Partnerships, Government, Highways England, HS2 Ltd and Network Rail through the TfN Partnership Board to develop a Northern Transport Strategy.

1.2 The aim of this review is to provide a shared evidence base for partners across the North, as a contribution to the Northern Transport Strategy that aims to develop a multi modal programme of transport interventions to support the economic growth objectives as set out in **'The Northern Powerhouse: one agenda, one economy, one north'**[2]. The report outlines a vision for the North of England's economy as envisaging *"a network of modern city regions"*, in which increasing productivity and national/international competitiveness is achieved through greater integration of the existing city region economies towards a single Northern Powerhouse economy. Improved transport connectivity is expected to underpin delivery of this vision.

1.3 The Spring 2016 update report on the **Northern Transport Strategy**[3] sets out the objectives for the international connectivity review:

"In a global economy, high levels of international connectivity are crucial for the North's economic success. The North has many successful exporting businesses, exporting £55 billion a year internationally. There is significant scope to expand into new international markets, and with particular export growth potential amongst small and medium enterprises. The North also benefits from around £1.9 billion in revenue from in-bound tourism, with huge potential to attract more international tourists to the many world-class attractions on offer. The Independent Economic Review has demonstrated the need for the North's key prime capabilities to be able to compete internationally, including enhanced connectivity to international hubs and markets.

TfN is, therefore, identifying the trade links that best secure competitive advantage and export growth potential for the North. Existing and future barriers to growth will be identified, along with ways in which the competitiveness of the North's airport, port and inland waterway facilities can be enhanced. This will then lead to an assessment of the infrastructure improvements likely to be required to allow the North to be adequately globally connected as a single economy."

1.4 This study sits alongside other strategic workstreams, in particular:

- Independent Economic Review
- Roads
- Rail

[2] Published by the TfN Partnership Board in March 2015.
[3] Department for Transport, Transport for the North, March 2016

- Strategic Local Connectivity
- Freight and Logistics

In addition, there are workstreams dealing with SMART ticketing, Governance and Communications. We have endeavoured to coordinate our activity with these workstreams, through the TfN workstream leads, and sought to take on board synergies with the outputs of the other workstreams as far as possible at this stage of the TfN work programme.

1.5 The International Connectivity review is intended to be used to support the underpinning evidence developed by the Independent Economic Review, and to inform transport interventions identified by the strategic local connectivity, road, rail and freight workstreams. The evidence base will also inform the work of the International Connectivity Commission being formed to guide this element of TfN's activity. We envisage that further work will be required, building on the analysis presented in this report, to refine the business case for particular interventions as a follow on stage.

1.6 The terms of reference for the review call for a focus on how to ensure the best possible connectivity through the North's airports for air passengers and air-borne freight as well as examining the use of the North's major ports for passenger markets. A key objective is to ensure that appropriate infrastructure is in place. Specifically, the review is required to:

- identify any existing or future barriers to the success of our primary international gateways;
- identify the most critical existing routes, and those which would best support the future growth of the North;
- define a strategy that supports the best use of the existing collective airport capacity in the North and maximises the potential for the development of new capacity;
- identify the policy levers and ways to work more effectively together in order to strengthen the viability of Northern airports;
- identify surface access improvements to increase the attractiveness of Northern airports to both passengers and airlines;
- identify the impact that the introduction of new passenger routes would have on supporting the use of Northern airports for freight;
- identify the actions needed to support the attractiveness of Northern ports for international passenger services.

1.7 Specific questions to be addressed are:

- An assessment of the north's current international connectivity, - *where is the north currently connected to?*
- An assessment of and understanding of emerging markets, - *where does the north need to be connected to?*

- An assessment of the infrastructure improvements likely to be required to allow the north to be adequately globally connected as a single economy in order to promote growth – *what is needed to enable the north to be better connected?*

These requirements are to be addressed by reference to the baseline position and the gaps in the context of international comparators.

1.8 The required outputs were defined in the project specification as to:

- Establish an understanding of the value of increasing international connectivity, including its potential contribution to sectoral growth and areas such as the visitor economy;
- Define the North's current primary international gateways and routes in the context of the March 2015 Northern Powerhouse Report, establishing a suitable scale and significance of infrastructure assets for investigation. The work should review their contribution to the North's economy and their potential for further growth;
- Identify any existing or future barriers to the success of these international gateways and routes;
- Identify the most critical existing routes and, aligned to the Independent Economic Review, those which would best support the future growth of the North and allow it to act as a single economy;
- Based on an understanding of international trade and passenger movements, identify new routes that the North needs to exploit;
- Define a policy and investment strategy that supports the best use of the existing collective airport and port capacity in the North and maximises the potential for the development of new capacity and connectivity;
- Identify suitable policy levers and ways to work more effectively together which can strengthen the viability of Northern airports and ports;
- Identify (with the road, freight and rail work streams) surface access improvements most likely to increase the attractiveness of primary Northern airports to both passengers and airlines with a view to improving their international connectivity;
- Assess the impact that the introduction of new passenger routes would have on supporting the use of Northern airports for freight.
- Identify (in parallel with the road, freight and rail work streams) the actions or interventions needed to support the attractiveness of Northern ports for international passenger services.

The Independent Economic Review

1.9 We have taken the Independent Economic Review (IER), conducted by SQW and Cambridge Econometrics[4], as a key start point for our review of international connectivity. Our overall approach to considering future international connectivity needs is by reference to what will be required to support the delivery of the 'Transformational Scenario' for the Northern economy, with a particular focus on international connectivity which will deliver economic growth. It is based on the outcome of the first stage of the IER work and the level of detail contained therein in terms of the requirements to deliver the transformational agenda and the spatial patterns of future trade and investment.

1.10 The IER identifies the current performance gap for the economy of the North and links this to underperformance in relation to skills, agglomeration and innovation, to which shortcomings in transport linkages and investment are a contributory factor[5]. These are identified as resulting in a deficit in GVA per capita of 25% compared to the rest of the England or 15% if London is excluded[6]. The overarching target of the Northern Powerhouse is to close that gap. A shortfall in productivity has been identified as the largest single contributor to the economic underperformance[7]. Hence, there is a focus on identifying sectors and, more importantly, 'capabilities' in the North which can contribute to narrowing the productivity gap.

1.11 The key pan-Northern Prime Capabilities identified in the IER[8] are:

- **Advanced Manufacturing**, with a particular focus on materials and processes. This capability is identified as having broad and deep sectoral specialisation across the North, based on historic strengths, with very strong pure and applied knowledge assets and facilities in business and higher education;

- **Energy,** in particular expertise around generation, storage, and low carbon technologies and processes. With a long-standing track record in Nuclear Energy, proven record in Offshore Wind Energy, and a growing expertise in battery technologies, the North is expected to be well-placed to seize the opportunity for Low/Zero Carbon energy, and Energy portability;

- **Health Innovation**, given the North's long-established strengths in Life Sciences, Medical Technologies and Devices, and a growing competence in new and efficient service delivery models brought about by e-health and, crucially, the growing devolution of responsibilities for Health and Social Care;

- **Digital**, focusing in particular on high performance computing, cognitive computation, data analytics, simulation/modelling, and machine leaning but also including sector strengths, such as Media, which will provide a strong base from which the other 'prime' economic capabilities may build.

[4] As at 20th April 2016
[5] Workstream 1 Report: paragraph 1.6.
[6] Ibid, paragraph 2.1.
[7] Ibid, paragraph 3.1.
[8] Workstream 3 Report, paragraph 3.14.

1.12 A number of Enabling Capabilities are also identified[9]:

- **Financial and Professional Services**, which provide essential services to the 'prime' economic capabilities, while also possessing the potential to generate employment via 're-shoring' activities currently out-sourced abroad, and 'north-shoring' where services move to the North from London and the South East;
- **Logistics**, based around major port developments in the Liverpool and Hull and Humber City Regions, plus developments at Manchester and Robin Hood Airports, logistics will be vital in allowing the proposed prime capabilities to realise their potentials in overseas markets;
- **Education** (primarily Higher Education), which not only provides the research capability and knowledge excellence that underpins the 'prime' capabilities above, but also by virtue of its intrinsic quality offers serious potential for the internationalisation of activity, both through students, university-university links, and collaborations with global businesses.

1.13 The identification of the key sectors which will drive economic growth in the North is potentially important for this study as different sectors of the economy have a varying degree of dependence on international connectivity and, even within a single sector, there will be variances dependent on the precise activity undertaken and the relative internationalisation of markets.

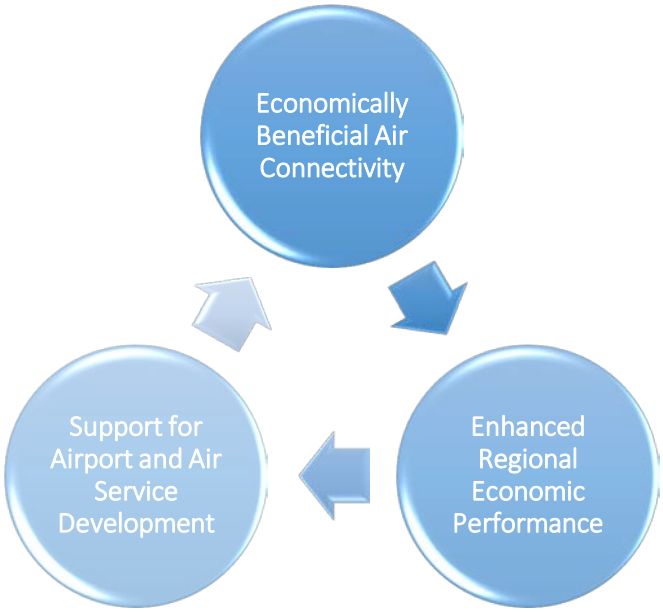
1.14 A further factor identified in the IER[10] is the North's Quality of Life, as an underpinning asset that supports its economic capabilities. This encompasses a number of factors not directly relevant to our review but links closely to the strength of the tourism offer in terms of landscape and attractions. A key part of the quality of life dimension is that air accessibility for outbound trips is a critical factor in attracting and retaining skilled workers and inward investment to the North. A part of this offer is the effect of international connectivity in facilitating outbound leisure activities as well as inbound tourism.

1.15 Whilst we are focusing on these Prime and Enabling Capabilities as being those with greatest economic potential for the future, we are aware that the identified capabilities account for only 35% of GVA, and 30% of jobs, and that there is broad spectrum of other activities which contribute to the economy as a whole and that the representation of these varies to some degree across the individual LEP areas. We have taken the broader economy into account in exploring whether there are specific sub-regional requirements for international connectivity.

1.16 Our initial approach has been to build on this analysis of the key drivers of the Northern economy in future, as set out in the IER, and to examine the extent to which international connectivity will need to improve to support this growth, noting that successful regions have a higher dependence on transport[11]. In essence, there is a virtuous circle of growth as illustrated in **Figure 1.1**.

[9] Workstream 3 Report, paragraph 3.16.
[10] Workstream 3 Report, paragraphs 3.17/3.18.
[11] Workstream 1 Report, paragraph 5.1.

Figure 1.1: The Virtuous Circle of International Connectivity



Source: York Aviation

1.17 A strong economy leads to more demand for international travel, which in turn enables the airlines to offer a stronger range of air services, so enhancing the business prospects for the area through better access to markets and to increased tourist visits. There are also quality of life benefits through facilitating outbound leisure trips[12] which contribute to the attractiveness of an area as a place to live and work, so aiding the retention of skilled labour. This study aims to identify the links which are likely to contribute to achieving this virtuous circle of growth and the mechanisms which TfN may have to support such beneficial developments including, but not limited to, improved surface access to the North's airports.

1.18 The 'Transformational Scenario' set out in the IER envisages productivity improving by 6% overall, and 8% in some key sectors, by 2040. This will require improved transport connectivity:

"Improved public transport connections between the North's cities are a key part of the required transformation, facilitating 'agglomeration' effects in the cities. Improved connectivity for freight, particularly by road to the supply chains and to global markets by sea and air, and for international business travel, are also critical to support the exporting sectors and to strengthen the North's attractiveness for inward investment."[13]

1.19 We expand on our approach and the link to the IER in Section 8.

[12] It is outside the scope of this study to consider the environmental consequences of such growth or the implications of the UK's overall tourism deficit.
[13] Workstream 4 Report, Key Findings.

Structure of the Report

1.20 We have structured the rest of our Report as follows:

- in **Section 2** - we review the literature and existing evidence on the **Role of International Connectivity in Economic Development**;
- in **Section 3** - we set out the baseline **Current International Connectivity** provided by the North's airports and ports;
- in **Section 4 –** we assess the current **Economic Value of Baseline Connectivity**;
- in **Section 5 –** we **Benchmark** the connectivity provided by the North's airports and ports against international comparators;
- in **Section 6 –** we set out the **Views of Stakeholders**;
- in **Section 7 –** we outline potential **Intervention Mechanisms**
- in **Section 8 –** we set out the **International Connectivity Requirements** to support economic growth;
- in **Section 9 –** we make **Recommendations** as to the **Interventions** necessary to support the growth agenda for the North.

1.21 It should be noted that our research was completed prior to the BREXIT vote and the implications for this on the potential future requirements for international connectivity are not yet clear.

2 ROLE OF INTERNATIONAL CONNECTIVITY IN ECONOMIC DEVELOPMENT

2.1 In this section, we set out the evidence on the role of international connectivity in economic development. This comprises principally a review of existing documentary evidence on the role of aviation in support of economic development, drawing on our own experience as well as that of MDS Transmodal in the port sector.

2.2 We should highlight that the focus here is on the role of connectivity in driving wider economic growth and less on the operational/GVA impacts of airports and ports, although this should be noted as an additional GVA benefit within the Logistics sector (an Enabling Capability) of the Northern economy. In the next section, we give some indication of the scale of GVA contribution made by the airports and ports today and give an indication of how this may grow in future in Section 8. These employment and GVA benefits can be significant sub-regionally and make a direct contribution to economic growth but this is distinct from the core question being addressed in this study, namely the contribution of international connectivity to economic growth more generally.

Aviation

2.3 Aviation is an essential part of what makes modern developed economies work. Economies are ultimately becoming more globalised. Flows of trade, investment, people and knowledge are growing as the world's economies become more entwined and reliant upon one another. This generates a need for travel and air services which offer by far the most efficient means of travelling long distances, particularly internationally, to meet these needs. This introduces the concept of connectivity as a measure of an airport or an area's ability to meet this need for travel.

2.4 Before considering how connectivity is linked to economic development, it is helpful to define further what we mean by the term. Ultimately, it should be recognised that connectivity means different things to different people. It is not definable in absolute terms. It is an amorphous concept relating to the ease with which people or goods can be moved between desired origins and destinations.

2.5 In terms of air transport, this concept of connectivity and ease of movement relates to a wide range of potential factors:

- whether the desired destination is served from a convenient airport or whether an indirect routing is required or, potentially, whether any routing at all is available. This links clearly to an airport's - or airports' - ability to deliver breadth in network connections and connections to the desired location;
- the time it takes to travel to the airport, transit through that airport, fly to the destination and transit at the other end;
- the frequency of service, which links to whether connections are likely to be convenient to passengers' desired travel patterns and to flexibility in requirements and resilience;
- the quality of service both in terms the choice of products on offer and in terms of the overall experience of travel;

- the reliability and resilience of services, which links to user considerations around waiting times and ultimately choice of destination;
- the costs of travel both in relation to surface access to the airport and in relation to air fares.

2.6 It should also be recognised that connectivity is not just about what an individual or group of individuals needs at any given moment or for a particular journey but also about what potentially they might need in the future. This latter point is crucial in terms of considering the economic value of connectivity in relation to air services and how it can support future export growth. Decisions, such as business location, that may have implications in terms of prosperity or growth are made in one time period, based on an impression of the availability of connectivity at that point or in the future. To some extent, connectivity is about creating conditions of confidence to invest, which may require a level of connectedness over and above that which is strictly essential. In the context of the Northern Powerhouse, this means that it is not enough that the North's airports can satisfy travel needs now, it needs to be seen to developing its connectivity for future to give comfort to economic actors making decisions now that their needs will be met in the future. Sometimes, the mere presence of an airport can increase investor confidence over and above the actual connectivity which it offers.

2.7 A further complication is that, in many ways, connectivity can be considered as being relative rather than absolute. At a most basic level, connectivity could be absolute - a destination can either be reached or not. More often, the connectivity offered by one location becomes defined by the connectivity offered by the others. Again, this concept is potentially important in the context of considering the value of connectivity to the Northern Powerhouse. Any consideration of the current status of the region's international connectivity cannot simply be considered in terms of what is available from the North's airports, it needs to also consider how this offer compares to other areas that the region competes with and will compete with in the future.

2.8 Notwithstanding these issues around the definition of air service connectivity, we have examined below how, in theory, connectivity supports enhanced economic growth and specifically how these channels of effect link to the key issues for the Northern Powerhouse identified via the IER, namely skills, investment, agglomeration and innovation. Ultimately, it should be recognised that many of the benefits of air service connectivity build towards greater productivity within the economy. The productivity gap evident within the Northern Powerhouse region is currently the primary driver of the gap in economic performance.

2.9 Our analysis explains how connectivity influences decisions and behaviours in the wider economy that ultimately impact on GDP and growth. It uses information from a range of existing research to evidence these impacts and consider potential orders of magnitude.

2.10 We have considered the following impacts through this process:

- Foreign Direct Investment;
- Trade;
- Tourism;

- Labour Market;
- Agglomeration effects.

2.11 While we have examined these impacts separately in terms of their link to connectivity, it should be recognised that many of these are in themselves interrelated and, as such, there is potential for double counting in some areas and underestimation in other areas if effects are considered in isolation. Indeed the existence of these interlinkages has been cited by commentators as a potential source of double counting. In their view, the direct effects cited above are simply all forms of trade.

Foreign Direct Investment (FDI)

2.12 We focus initially on air service connectivity and inward investment. Research undertaken by NERA for the Department for Transport[14] in relation to international business impacts concluded that, in circumstances in which the investment results in higher technology/more productive approaches being brought to the host country (as opposed to multinationals seeking to exploit cheap labour in the host country or access more advanced technologies held in the host country), there will be a boost to long run productivity. Hence, it is relevant to consider the role which air connectivity plays in supporting inward investment.

2.13 The link between air transport and the attraction or retention of inward FDI has long been suggested and there is a significant amount of evidence to support the existence of this effect. A range of surveys identify connectivity proxies or the availability of air services as being important to investment and location decisions:

- PWC *Econometric Analysis to Develop Evidence on the Links Between Aviation and the Economy on behalf of the Airports Commission* (2013) – this detailed econometric study identified that a 1% increase in international seat capacity was associated with a 0.47% increase in FDI inflows and a 0.19% increase in FDI outflows. It should be noted, however, that this finding was not ultimately used in the Airports Commission analysis given concerns over potential partial double counting with trade effects. Equally, it was recognised that this may have resulted in wider benefits being underestimated;
- Cushman & Wakefield *European Cities Monitor* - this recurrent survey of 500 European corporate decision makers provides significant evidence of the importance of international connectivity in influencing company location decisions. It is one of the most commonly cited pieces of survey evidence in this area. The survey consistently identifies factors such as transport links with other cities and internationally, and ease of access to markets, clients and customers as amongst the most important factors in company location decisions. There are clear linkages here to the availability of air service connectivity. It is also noticeable that the cities served by Europe's major hub airports commonly feature towards the top of the list in terms of the best places to locate in Europe. In 2011, London was first, followed by Paris, Frankfurt and Amsterdam in order;

[14] NERA (2010) *Representing International Business Impacts in Transport Appraisal.*

- Oxford Economic Forecasting *The Economic Contribution of the Aviation Industry to the UK Economy* (2006) - research by Oxford Economics into the contribution of the air transport industry to the UK economy in 2006 identified that a quarter of companies surveyed as part of the research reported that access to air services is important in determining where they locate their operations in the UK. Research undertaken by Oxford Economics for IATA, also in 2006, sought to quantify the link between air connectivity and business investment. The results of this research imply that a 10% increase in connectivity is associated with a 3.5% increase in the level of fixed investment in the long run;
- York Aviation for the City of London Corporation *City Aviation Study* (2008) - identified that 27% of survey respondents believed they would be very badly or quite badly affected by a failure to expand airport capacity. Significant numbers cited impacts around investment decisions as being potential effects of this failure, such as downgrading of the London office status, movement of corporate functions away from London, less investment in UK operations or relocation of operations to another country;
- Deloitte *The Heathrow Phenomenon* (2007) - this research focused on the economic impact of Heathrow on the economy of London, with a particular focus on West London and the M4 Corridor. It cites research by Think London that identifies that around 50% of foreign owned companies chose London because of its status as an entry point to the UK and to Europe. The report goes on to suggest that the connectivity offered by Heathrow is critical to this effect;
- York Aviation *The Social and Economic Impact of Airports in Europe* (2004) for ACI Europe - this report examined a wide range research from a range of different sources. This included highlighting studies by Ernst & Young on location decisions in Europe, research by VNO-NCW on the influence of Amsterdam Schiphol Airport on location decisions and by the University of Cologne on the significance of airports for firms. This analysis identified the importance of access to major airports in terms of investment decisions across a range of economic sectors;
- Bel & Fageda[15] in 2008 considered the influence of intercontinental flights on head office location. They found that the supply of direct intercontinental flights is effectively a major determinant in the location choices of large firms' headquarters. Indeed, a 10% increase in the supply of intercontinental flights involves around a 4% increase in the number of headquarters of large firms located in the corresponding urban area;
- Strauss-Kahn, Vanessa and Xavier Vives[16] *Why and where do headquarters move?* (2005) identified that headquarters relocate to metropolitan areas with good airport facilities, low corporate taxes, low average wages, high levels of business services and an agglomeration of headquarters in the same sector of activity;
- a London Chamber of Commerce and Industry *Survey of London Business Leaders* (2008) identified that 94% of respondents believed that Heathrow was very important or important for attracting FDI and tourism to London;

[15] Bel, G. & X. Fageda (2008) Getting there fast: Globalization, intercontinental flights and location of headquarters, Journal of Economic Geography, 8 (4).
[16] CEPR Discussion Paper No. 5070

- ✈ Institute of Directors *Flying into the Future* (2012) identified that almost six in ten (59%) members agree that a lack of spare capacity at Heathrow has a damaging effect on inward investment to the UK, compared to just 17% who disagree. In all regions of the UK, more IoD members agree than disagree with this statement.

2.14 Similarly, previous research from a wide range of commentators helps to explain how air services influence FDI decisions and why, in this context, connectivity is important. Essentially, this research establishes a logic chain around the need for travel between corporate head offices and branch locations. This travel facilitates effective management and operation of central administrative functions, allows the transfer of knowledge and technology, enables specialists within the organisation to operate across the full range of locations and allows the local or central delivery of training and development activities. At a most basic level, this establishes the requirement for connectivity between the head office and the branch location.

2.15 However, increasingly relationships are more complex than that. Major multinational companies now often organise themselves in a form of hub and spoke model. For instance, a US based multinational may have its headquarters in New York. However, its operations around the world may well then be divided in to world regions, such as Europe, Asia or Latin America. Operations in these individual regions may then be run from a regional headquarters, which in turn require not only the key long haul connection but a wide range of connections across Europe. This helps to explain the need for breadth in connectivity and also the need for a balance between long and short haul services. Ultimately, it should also be recognised that the availability of connectivity may also influence the location of an organisation's global headquarters. If the connectivity from the 'home' city is not sufficient to enable effective management of the business, the headquarters itself may well need to move so it can better serve the needs of the organisation over the long term.

2.16 The influence of air services on location of the branch site in terms of external functions also needs to be considered. This relates to the function that the site plays. Branch locations that are, for instance, regional sales offices, providing customer service or support may in themselves require air service connectivity for them to reach regional markets for which they are responsible. Again, this suggests the need for breadth in connectivity from a given location to support this type of function.

2.17 It is in the context of FDI decisions that the concept of potential connectivity is perhaps most important. In making location or investment decisions, organisations must consider not just the present but also the future. What will they need to be able to operate effectively from a given location over the coming years? In terms of connectivity, this means having knowledge of what their network of locations will look like in the future, where their markets will be and where key partners and suppliers will be. These are clearly subject to uncertainty, especially in the longer term. Location decisions often mean significant investment both in cost and time. Therefore, good general connectivity now and the potential for competitive connectivity in the future is important in providing comfort that their needs can and will be met. This also highlights the importance of flexibility to adapt to changing connectivity requirements over time.

2.18 The importance of air services in relation to outward FDI and the potential economic benefits associated with this investment is sometimes forgotten. This perhaps reflects the perception that capital outflow from the UK must be a bad thing. However, just as inward investment is only beneficial in certain circumstances, outward investment is only negative in certain circumstances. If investing outside of the UK represents a more efficient use of an organisation's capital, either by allowing it to access cheaper labour or more advanced technologies or more productive approaches, the impact on the host country or region's long run productivity will be beneficial.

2.19 Equally, in relation to air connectivity and outward FDI, the importance of connectivity remains. It is simply the direction of flow that is reversed. Outward investors need to be able to manage their investments effectively and air travel can be an important part of this process. If they cannot, the investments will not be made and associated productivity gains not achieved. It should also be remembered that an 'outward' investor could also be globally mobile and become an inward investor elsewhere. Therefore, outward investors require locations for their 'home' bases that enable this travel and, again, potential connectivity is a key factor. Investors will not have perfect knowledge of where they are going to have interests in the future. A strong and developing connectivity offer is therefore important in giving comfort that their needs can and will be met.

Trade

2.20 The importance of air travel and air connectivity in increasing levels of trade is again well established. In relation to trade in goods, air cargo is a quick and efficient means of transporting goods around the world, which makes economic sense in relation to the transport of some goods, primarily those that are high-value, low weight or time critical. In this sense, air connectivity enables UK firms to enter overseas export markets effectively. Equally, air cargo enables UK firms to access suppliers overseas that may offer lower priced or better alternative inputs to production processes and it enables UK consumers to import goods from overseas that may again be cheaper or of better quality than those available from domestic suppliers. In essence, trade allows countries to use their comparative advantage to maximise efficiency.

2.21 However, passenger connectivity is also important in terms of trade. In relation to the trade in goods, companies need staff to travel to meet potential customers, to secure deals and to provide after sales care. This relates to both exports and imports. Trade in services is also heavily reliant on air passenger connectivity. Again, companies need staff to travel to meet potential customers and secure deals but, in contrast to the trade in goods, they may also need individuals to travel to actually deliver the services being sold.

2.22 The existing evidence on the importance of air connectivity to international trade is again extensive:

- PWC (2013): analysis by PWC in the context of the recent Airports Commission process examined the relationship between the UK's international air seat capacity and international trade. Controlling for other factors affecting trade, the analysis found that increases in seat capacity were associated with increases in both the export and import of goods and of services. A 10% increase in seat capacity increased the UK's goods exports by 3.3% and its goods imports by 1.7%; the same seat capacity increase was associated with a 6.6% increase in service imports and a 2.5% increase in service exports;
- CBI *Trading Places* (2013) established a strong link between the level of air service connectivity and trade between the UK and the World's eight largest high growth economies. It also found similar patterns for the six largest EU economies. The report went on to estimate that an additional daily service to each of the World's largest high growth economies would result in £1 billion in additional trade;
- Frontier Economics *Connecting for Growth: the role of Britain's hub airport in economic recovery* (2011) also established a clear correlation between the level of trade and air connectivity in the UK, albeit causality was not established. Furthermore, the report identified that UK businesses traded 20 times as much with countries where there are at least daily flights compared to those with less frequent or no direct connections. Frontier Economics moved on to estimate that UK trade could be increased by around £1.2 billion per annum if there were sufficient capacity at Heathrow to accommodate viable routes to emerging markets;
- In 2012, Oxford Economics[17] estimated that the manufacture of goods for export by air accounted for around £28 billion to UK GDP. Further, Oxford Economics estimated that, while making up less than 1% of the volume of UK trade, air transport accounted for 22% of the value;
- Survey work undertaken by Oxford Economic Forecasting[18] (2006) identified that nearly two-thirds of companies (65%) reported that passenger services were either vital or very important for sales and marketing and a very similar proportion (64%) report that passenger services were either vital or very important for servicing or meeting customers. Of the companies surveyed, around 13% of sales were believed to be reliant on air service connectivity. The survey also highlighted the importance of air services in distant, high growth markets and in supporting UK supply chains;
- The 2008 survey by the London Chamber of Commerce and Industry identified that 42% of responding businesses earned at least 51% of their revenues from overseas trade and that access to an airport was very important or important for 81% of respondents.

2.23 Evidence from broader research on the impact of transport connectivity generally on trade is also helpful in understanding the importance of air connectivity. NERA's research for the DfT on transport and international business impacts summed up the findings of a wide range of research on the link between the sensitivity of trade to transport costs as follows:

- distance matters – the almost universal conclusion across the research is that the further away and more costly markets are to reach the less bilateral trade will occur;

[17] Oxford Economics (2012) *The value of aviation connectivity to the UK – A report for BAA.*
[18] *The Contribution of the Aviation Industry to the UK Economy*; Oxford Economic Forecasting (2006).

- distance matters even for digitally-traded goods – even where there is no physical cost to transferring the good or service, it is harder to trade with more distant countries. NERA cites the impact on trade from unfamiliarity bred by distance;
- distance matters more than it used to – NERA cited research by Berthelon and Freund (2008) which suggested that it was becoming easier to source homogenous and high trade cost goods from nearby countries, so relative trade costs are becoming more important.

2.24 There are a number of key messages here in terms of the importance of air connectivity to trade. Air connectivity is exceptionally effective at reducing the perceived distance between markets. Good connectivity can dramatically reduce the time it takes to reach some markets, reducing perceived distances and offsetting the impacts of unfamiliarity. There is also the potential for air connectivity to enable firms to spread competition beyond simply price by improving customer service and support, potentially counteracting the final factor in some markets.

2.25 If, on this basis, it seems reasonable to suggest that air service connectivity is important in facilitating trade in both goods and services, the question then becomes whether increased trade is likely to bring about greater economic growth and prosperity. Some commentators have suggested that while increased connectivity will be beneficial in terms of UK exports there will be at least an equal impact on UK imports, which will have negative implications in terms of the UK balance of payments. This, however, ignores the fact that enabling bi-directional international trade will ultimately facilitate economic growth through enabling countries or regions to develop comparative advantage. Exporters will be able to widen the market for their goods and services, enabling them to benefit from economies of scale and increase productivity, while more broadly potentially growing to meet wider market demand and drawing in more labour and capital from economic sectors where the North does not hold a comparative advantage. This will contribute to the sort of structural change envisaged by the IER, with a focus on more productive sectors of the economy. Ultimately, this process will result in a more efficient global allocation of resources and increased productivity, which will be reflected ultimately in total factor productivity and economic growth.

Tourism

2.26 The value of air connectivity in terms of tourism is in some ways self evident. In the UK, particularly, inbound tourism is heavily reliant on air transport to enable visitors to reach the country. The Davies Commission discussion paper on aviation connectivity and its contribution to the UK economy highlights that, in 2011, 75% of the 31 million visits made to the UK by overseas residents started at an airport and that 84% of the £18 billion spent by overseas visitors was spent by those arriving by air. The International Passenger Survey demonstrates that it is only in relation to the UK's closest neighbours that other modes offer any significant competition to air travel (France, Belgium, Germany, Ireland and the Netherlands), which highlights the importance of ferry traffic in these tourism markets.

2.27 Air services make a region easier and faster to get to for potential visitors travelling either for business or leisure purposes. However, it should be recognised that, whilst they influence the decisions that visitors make in terms of where to visit, they are not in the great majority of cases why somebody visits an area which is driven more by the quality of the offer as identified in the Quality of Life dimension of the IER. Air connectivity is what might be termed a necessary but not a sufficient condition in attracting tourism to the North. However, the absence of direct and competitively priced connections could be a substantial impediment to tourist visits. Expanding connectivity has the potential to increase the number of visitors to the North as it will open up new markets from which new visitors might come if the tourism product is of interest to them or make it easier or cheaper to visit from existing markets.

2.28 Perhaps because of the clarity of the link, the evidence base around the influence of air connectivity on tourism is less extensive:

- the London Chamber of Commerce and Industry survey of London Business Leaders (2008) identified that 94% of respondents believed that Heathrow was very important or important for attracting FDI and tourism to London;
- research by Ishutkina and Hansman[19] (2008) highlights the vital role that air connectivity plays in relation to tourism in island economies with the extreme example of Jamaica. Tourism activities account for around 20% of the country's GDP. The Jamaican government considers tourism so important to the national interest that it until recently maintained the national carrier, Air Jamaica. It still retains a substantial share;
- a range of studies by Oxford Economics have highlighted the value of air services to the tourism economy, noting particularly the role played by Heathrow as the UK's primary international gateway;
- research undertaken by GLA[20] has identified the important role that inbound tourism plays in supporting export revenues. It notes particularly London's role as a generator of inbound trips;
- York Aviation's research for ACI EUROPE highlighted that, even for major European cities, where other transport modes are more effective competition, air connectivity can account for a third or more of foreign visitors.

2.29 It is, however, important to recognise that air connectivity works both ways. While it clearly enables inbound visitors, it also enables outbound travel, which will have a negative impact in balance of payment terms. For the UK, this is particularly pertinent as outbound travel exceeds inbound travel but the importance of easy access to holidays is an important dimension of quality of life which is relevant to the attraction and retention of skilled labour.

[19] GLA (2011) *A new airport for London: Part 2 – the economic benefits of a new hub airport*
[20] Ishutkina and Hansman (2008) *Analysis of the interaction between Air Transportation and Economic Activity.*

2.30 The net balance of tourism clearly impacts on the level of consumption in the domestic economy. Inbound tourists clearly increase the level of this expenditure, while outbound tourists reduce it. This impacts on GDP. However, again, this is a relatively unsophisticated view of the world, which fails to take account of a number of issues around outbound tourism in particular:

- ✈ it implicitly assumes that outbound passengers would spend the money they spend abroad at home. This is not necessarily true. That money could in fact be spent on another form of import or simply be saved;
- ✈ it misses the fact that there is a significant industry in the domestic economy that supports outbound tourism, which would be damaged by reduced demand for outbound travel. This includes the travel trade and indeed a proportion of the economic footprint of the air transport industry;
- ✈ the revenues generated by outbound travel are essential in making air service viable, thereby enabling the other beneficial effects from air connectivity we describe;
- ✈ it assumes that there is no economic value to outbound tourism. This is patently untrue. It has an important social function in terms of enabling travel for personal business or for visiting friends and relatives and increases our understanding of other cultures. This in turn has knock-on effects in terms of making the home country an attractive place to live and work, with implications in the modern global labour market, and in terms of counteracting unfamiliarity effects that make trade more difficult;
- ✈ in effect, tourism is simply another form of trade. Increased trade will ultimately lead to improved exploitation of comparative advantage, resulting in a more efficient allocation of resources globally with, ultimately, benefits for all in the long run.

2.31 Ultimately, the balance of these different effects on long run economic prosperity and growth is difficult to untangle. Increasing connectivity will lead to more inbound tourism and more outbound tourism. What is important is whether the combined effect, along with the other impacts described, results in an increase in productivity and economic growth.

Labour Market Effects

2.32 An area that is increasingly being identified as one of the channels of impact through which air connectivity operates is its influence on the labour market through its ability to influence individuals' decisions around where and how much labour to supply. This effect can, in broad terms, be divided in to two parts.

2.33 At one level, air connectivity is important for the North in being able to attract talented individuals to live and work in the region on a permanent basis. Research undertaken in 2009 for the British Chamber of Commerce by Colin Buchanan and Partners on the economic impacts of hub airports identified that there were around 3.8 million overseas born workers in the UK, of which around 2.6 million were from outside the EU, albeit we do not have visibility as to how many of these are resident in the North. The report emphasised that for this latter group, while modern communication technologies were extremely important for day to day contact with friends and family overseas, it was not ultimately a substitute for the physical access that air services provide. Hence, air connectivity is important to the ability to recruit skilled people from abroad where this is necessary to support economic growth.

2.34 Air connectivity is also essential in supporting the life style choice of an increasing number of high value added individuals who use air services to commute for short periods or even weekly while living overseas. These individuals often provide specialist or high value services that are part of what enables competitive advantage.

2.35 In both cases, the availability of air service connectivity has implications for the long term labour supply for the home economy. The ability to attract skilled migrants to live and work in an area both increases the total amount of labour available to support output and has potential implications for long run productivity in the economy as those with new or higher level skills are attracted to work.

Agglomeration Effects

2.36 The final area we have considered is the way that air service connectivity can impact on the economy through so called agglomeration effects. These effects are productivity benefits that can be achieved by firms located close to each other, perhaps through knowledge spillovers between firms, improved access to suppliers or to larger labour markets. They relate to the concentration of economic activity in an area. In other words, the more firms located within an area the greater the likely agglomeration effects. We recognise that there are agglomeration effects through the development of operational and support activities in and around airports as part of the Logistics sector. However, our focus here is on the effect of international connectivity on business agglomeration more generally.

2.37 NERA, in their work on international business impacts for the DfT, identified that transport generally can change the level of firm concentration or the effective density experienced by firms by reducing travel times. This can then lead to increased agglomeration benefits.

2.38 This concept is well established in terms of the impact of transport schemes within a domestic setting, perhaps because it is easier to see how this might be relevant in relation to a ground transport scheme that improves connectivity across a city. However, the impact in terms of air services is perhaps less well understood. Nevertheless, the theoretical reasoning behind the idea that air connectivity could provide agglomeration benefits is the same.

2.39 In the context of air connectivity it is perhaps helpful to consider potential agglomeration impacts in two ways:

- ✈ as a direct impact from the way in which air services can increase effective density across large areas by reducing travel times and increasing the ease with which agglomeration effects may occur across national borders. This is essentially the boost in productivity within firms as air services make the world smaller. By facilitating travel, air services increase interaction between customers and clients, between different offices of the same firms and at conferences and training events. They enable the development of specialist goods and services by increasing the size of the potential market and they assist in widening the labour market from which firms can draw;
- ✈ as an indirect impact relating to the potential impact of air services in terms of influencing FDI decisions, which in turn result in clustering of firms in locations around major airports, again resulting in an increase in effective density and greater agglomeration.

Clearly, there are linkages between these types of effect and some of the other channels of impact that we have described, notably FDI and labour market impacts.

2.40 The evidence base around aviation connectivity and agglomeration effects is currently limited and there is some doubt about agglomeration in the context of air travel given declining impacts with increasing distance. Nonetheless, it is possible to conceive of air travel as offering agglomeration benefits in much the same way as surface travel does through promoting interactions and the exchange of ideas and knowledge, which facilitate knowledge spillovers as workers from different regions/countries learn from each other. It may also potentially augment labour market density and encourage specialisation – particularly when work is undertaken on a more regular basis (fly in/fly out) or in the context of major projects. Accordingly, any spillover benefits from such activity arising from business and/or labour market interactions must be positive at least to some degree.

2.41 The potential for agglomeration effects to be a significant factor in analysing the economic effects of air connectivity was recognised by the Airports Commission, which included these effects in its assessment of wider economic impacts (2015), using an approach adapted from WebTAG guidance. This focused on estimating the change in effective employment density in the catchment area around an airport using outputs from the DfT Aviation Model.

Overall Impact on Productivity

2.42 As we have described above, the effects and channels of impact described in many cases ultimately build towards increasing productivity in the economy which, in turn, leads to increased economic performance. Rather than consider the building blocks described above individually, some research has sought to more directly model the link between air service connectivity and GDP impacts.

2.43 Recent work by Intervistas Consulting for ACI EUROPE on *The Economic Impact of Europe's Airports* (2015) examined the link between GDP per capita and a measure of connectivity developed by IATA. It concluded that a 10% increase in connectivity (relative to GDP) increases GDP per capita by 0.5%. Associated work by SEO Economics for ACI Europe (*Regional Economic Impact of Airports*) also identified a positive relationship between growth in passengers using an airport and GDP per capita and in employment in knowledge intensive sectors, although this did vary with the scale of the Airport – growth at larger airports contributing more than growth at smaller airports – and with the composition of traffic using the Airport.

2.44 PWC, in their work for the Airports Commission in 2013, undertook a similar analysis, the analysis found a significant relationship between GDP and seat capacity, such that a 10% change in the growth rate of seat capacity leads to approximately a 1% change in the growth rate of GDP. The analysis also found evidence of a two-way relationship between the variables – GDP growth causes seat capacity and seat growth causes GDP growth.

2.45 Oxford Economics have undertaken a significant amount of research in to the link between air transport and productivity, dating back to 1999. The basic premise of their modelling in the UK context has been to examine the link between Total Factor Productivity and air service connectivity (defined as a combined measure of business passengers and freight relative to GDP). The latest iteration of this research was undertaken for Transport for London[21], again as part of the Airports Commission process, in 2013. The research identified that a 10% increase in air connectivity results in an increase in long run UK GDP of 0.5%.

2.46 While clearly each modelling approach is different and results vary to some degree, the evidence base clearly suggests a long run link between increased air service connectivity and productivity and ultimately GDP.

The Influence of Connectivity on Different Economic Sectors

2.47 The use of air services by different economic sectors and the importance of air connectivity to them is not uniform across the economy. Essentially, air services are most beneficial to sectors that have strong international links, either as a result of trading relationships or FDI or supply chain links.

2.48 Identifying the sectors for which air services are important is not a precise science. However, analysis of the UK Input Output tables can provide some insight in to sectors are either:

- ✈ significant volume purchasers of air transport services, either in terms of total purchases or purchases per employee; or
- ✈ spend a significant proportion of their transport budgets on air services.

[21] Oxford Economics, Impacts on the UK Economy through the Provision of International Connectivity.

2.49 **Figures 2.1** and **Figure 2.2** show the total air transport spend and spend per employee by sectors in the Cambridge Econometrics model used for the IER and the Prime and Enabling Capabilities[22] identified within the IER for the UK[23]. **Figure 2.3** shows the percentage of the total transport spend made up by air transport from the same sectors. The Prime and Enabling Capabilities are marked in Orange and the Median value in each case in Green.

2.50 There are a number of key points to take from this analysis:

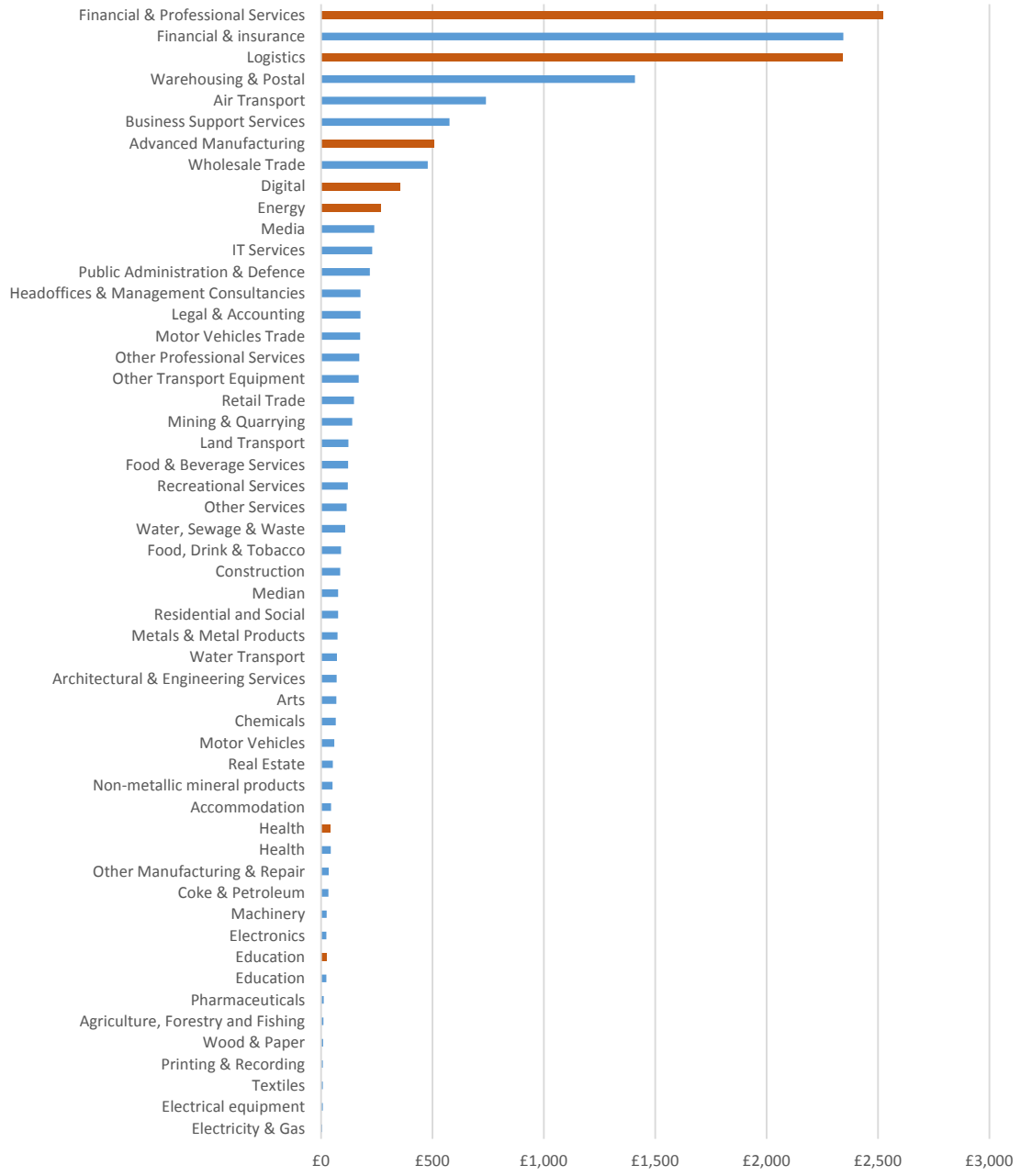
- Expenditure on air services by whichever measure is used varies significantly across different economic sectors. It is, therefore, reasonable to assume that they are of greater value to some sectors than others;
- The upper parts of the scale on all three measures are populated primarily with what are generally high value added sectors, many of which have distinct international focus;
- Five of the seven Prime and Enabling capabilities spend above the median average for a sector both in totality and in terms of spend per worker. These are Financial & Professional Services, Logistics, Advanced Manufacturing, Digital and Energy. Four of these sectors also spend above the median average percentage of their transport spend on air transport; the exception being Energy. This means that they are likely to be strong drivers of air transport demand but also they are likely to be sensitive to the availability of air connectivity to enable ongoing prosperity and growth;
- The results for the other two Prime and Enabling Capabilities, Health and Education, need to be viewed with some caution as disaggregating these sectors effectively within the Input Output tables is very difficult. The SIC definitions of these sectors are relatively precise compared to the data available and, hence, measures of sensitivity to air services (spend per worker and the % of transport spend on air transport) may be skewed.

2.51 In terms of the applicability of this analysis to the Northern Powerhouse region and its situation, an important caveat needs to be applied. As described above, this analysis is based on data for the whole of the UK because of the lack of regional input-output tables. Some caution therefore needs to be applied as the spending habits of the parts of these sectors based in the North of England may not be reflective of patterns across the UK as a whole. However, overall, we believe the analysis does provide a useful guide as to the extent of potential influence of air services on individual economic sectors which is relevant to our consideration of the relationship between nature of activity in the North and the need for international travel.

[22] The Prime and Enabling Capabilities cannot be perfectly mapped using SIC codes and in some areas Input-Output data is only available at a relatively aggregated level. Within this framework, we have mapped the sectors as closely as possible but there are gaps and simplifications within the analysis.

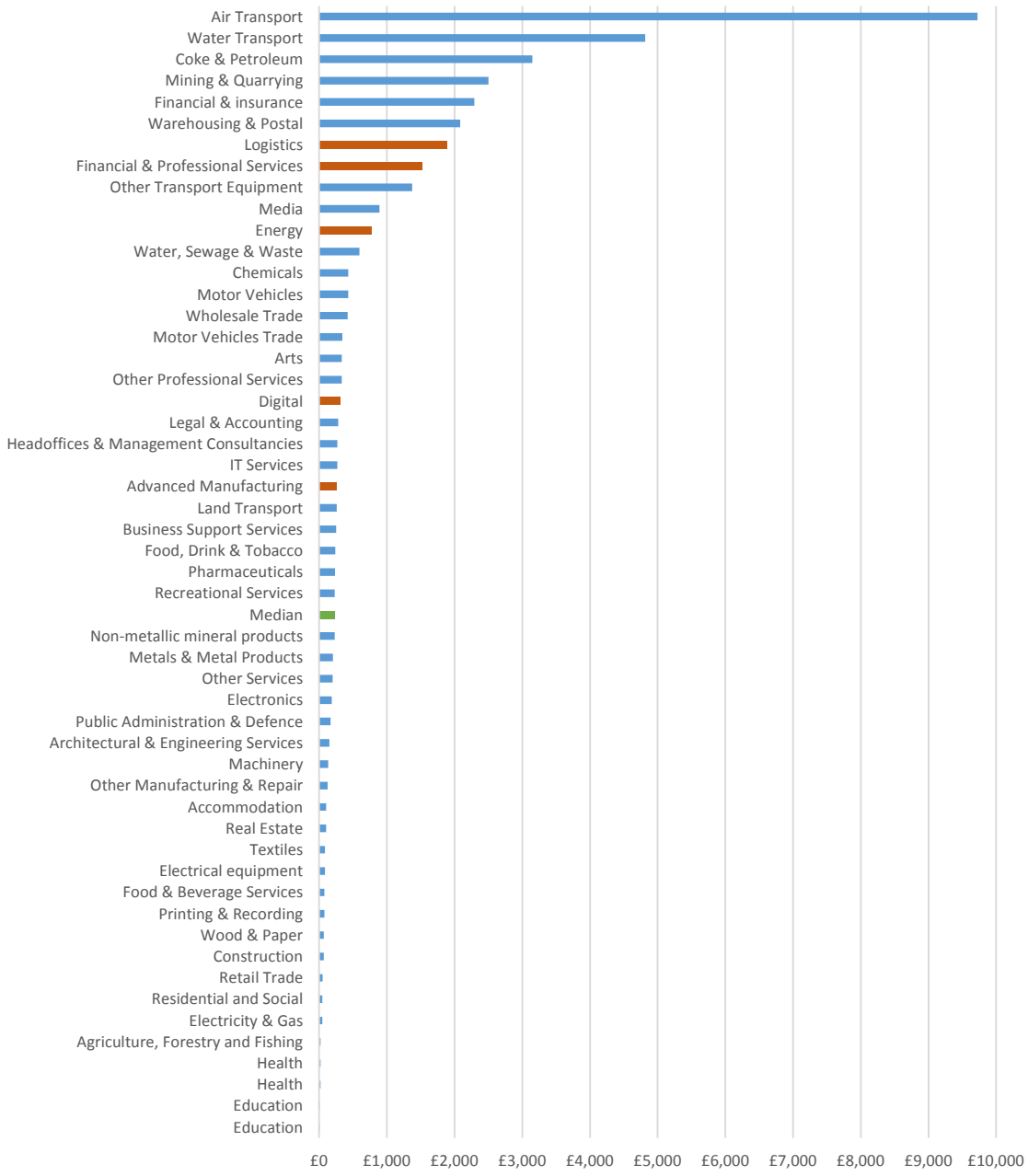
[23] The Prime and Enabling Capabilities are shown in addition to the Cambridge Econometrics sectors. Hence, the total spend does not sum.

Figure 2.1: Total Spend on Air Transport Services in the UK by Economic Sector in 2013 (£m)



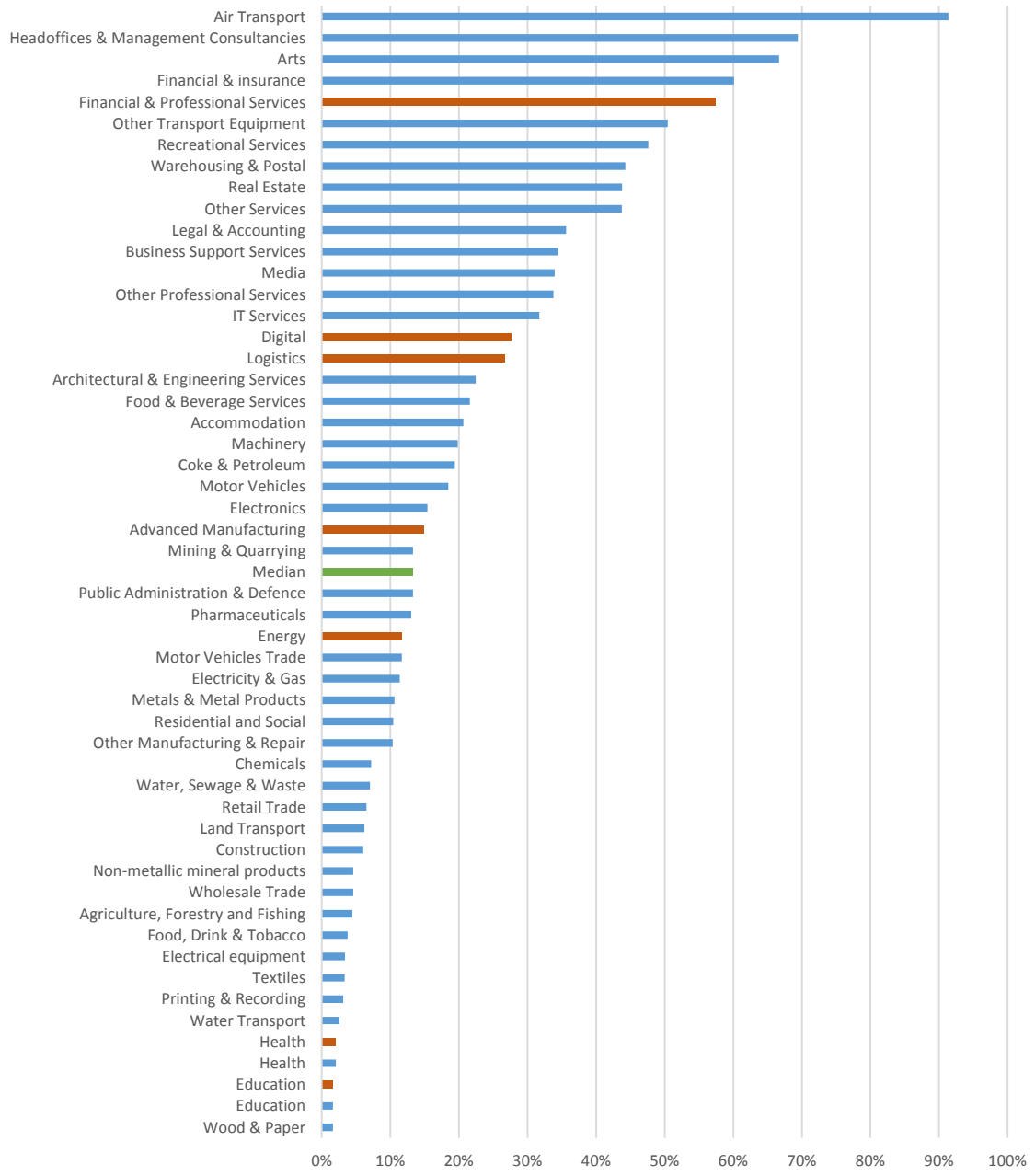
Source: York Aviation analysis of UK Input-Output Tables

Figure 2.2: Average Spend per Employee on Air Transport Services in the UK by Economic Sector in 2013



Source: York Aviation analysis of UK Input-Output Tables and Business Register and Employment Survey

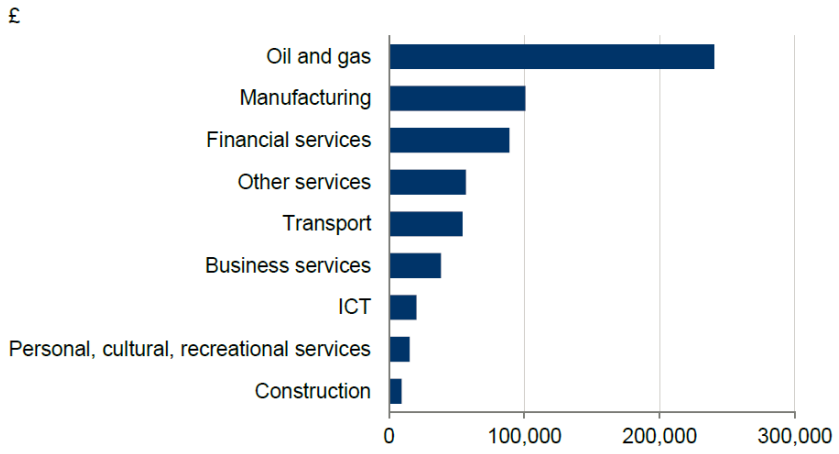
Figure 2.3: Air Transport Spend as % of Transport Spend in the UK by Economic Sector in 2013



Source: York Aviation analysis of UK Input-Output Tables

2.52 The differing value of air services to different sectors within the economy has also been considered recently by Oxford Economics in research for London City Airport[24] (2016). This analysis considered the value in terms of exports of a typical UK resident business sales trip to key European destinations. The results of the analysis are shown in **Figure 2.4** below.

Figure 2.4: Average Value of Exports Associated with a UK-resident Business Sales Trip from London City Airport in 2014



Source: CAA Passenger Survey 12-14, ONS IPS, Oxford Economics

2.53 This shows that the value of air connectivity to individual sectors in terms of export market sales can be very high. Oil & Gas sales trips can result in exports in excess of £200,000, manufacturing of around £100,000 and financial services of around £89,000. Other sectors are generally lower in terms of their value per trip but the values are still significant. Conversely, this indicates the extent to which different sectors of the economy may be dependent on air connectivity to support their export activity, with manufacturing relatively less dependent than service type businesses.

2.54 It should be noted that, in the main, the methodologies we have described are designed to estimate the economic impact from the growth of an airport or airports, rather than to assess the level of connectivity required to support economic growth more broadly. This presents us with some methodological challenges, which we return to in Sections 4 and 8.

Shipping

2.55 There is substantially less research into the role of seaborne passenger connectivity on the wider economy, although there are clearly wider benefits to be gained from freight activity which has been examined separately in the Freight and Logistics workstream and work has been carried out on the operational economic impacts of port-related activity.

[24] The Role of London City Airport in Facilitating Business Travel and Trade.

2.56 To a large extent, the benefits of passenger ferry connections from the North will relate to the characteristics of the passengers using them, discussed further in the next section. To the extent that there is business use of passenger ferries, this can be assumed to make a contribution to productivity and some impact in relation to the factors identified above in relation to air travel. Similarly, ferries facilitate both inbound and outbound tourism and the tourists are able to obtain access to their final destinations without the need for a longer drive to the Channel ports. However, the major impact is likely to be in relation to freight usage which is outside the scope of this study.

Cruise Ships

2.57 There is also limited information on the connectivity value of the cruise industry, albeit the industry itself makes a substantial contribution through its operations and helps to support the visitor economy. For example, Liverpool has estimated that its current cruise terminal generates £7 million for the city's visitor economy.

3 CURRENT INTERNATIONAL CONNECTIVITY

3.1 In this section, we provide a detailed overview of the international travel markets for both air and sea from the Northern Powerhouse Region. For air travel, this focuses on 2014 and 2015, which are the latest years for which fully validated CAA Survey and Statistical data was available respectively in time to inform our analysis. We also consider the available air service network from 2015 and into 2016. Data for the seaports also relates 2014 based on IPS data.

3.2 Detailed statistics and market analysis is set out for each of the airports within the Northern Powerhouse Region in **Appendix A** of this report.

Air Travel Market

Total Market Size

3.3 Across all the key airports within the Northern Powerhouse region in 2015[25], a total of 31.6 million passengers were carried on international flights, an increase of 5.6% over 2014 when 29.9 million passengers were carried. In general terms, the North is well served by airports as illustrated in **Figures 3.1** and **3.2**. Figure 3.1 shows how much of the UK lies within 60 minutes of one of the 15 busiest airports. Figure 3.2 illustrates the 60 minute journey time isochrones by road to the all of the North's airports, which is commonly taken as the typical journey time threshold for access to short haul flights to near European and/or domestic destinations. The catchment areas for longer haul flights are typically wider. For illustrative purposes, we have also shown, at **Figure 3.3,** a 2 hour catchment area for Manchester Airport and a 1½ catchment area for Newcastle Airport[26], reflecting the strength of their long haul networks, which is discussed further below. What is notable is the limited catchment area overlap at that level between the two airports currently offering long haul connectivity in the North. We will consider further the effect of implementing potential road and rail improvements on these catchment areas in Sections 8 and 9.

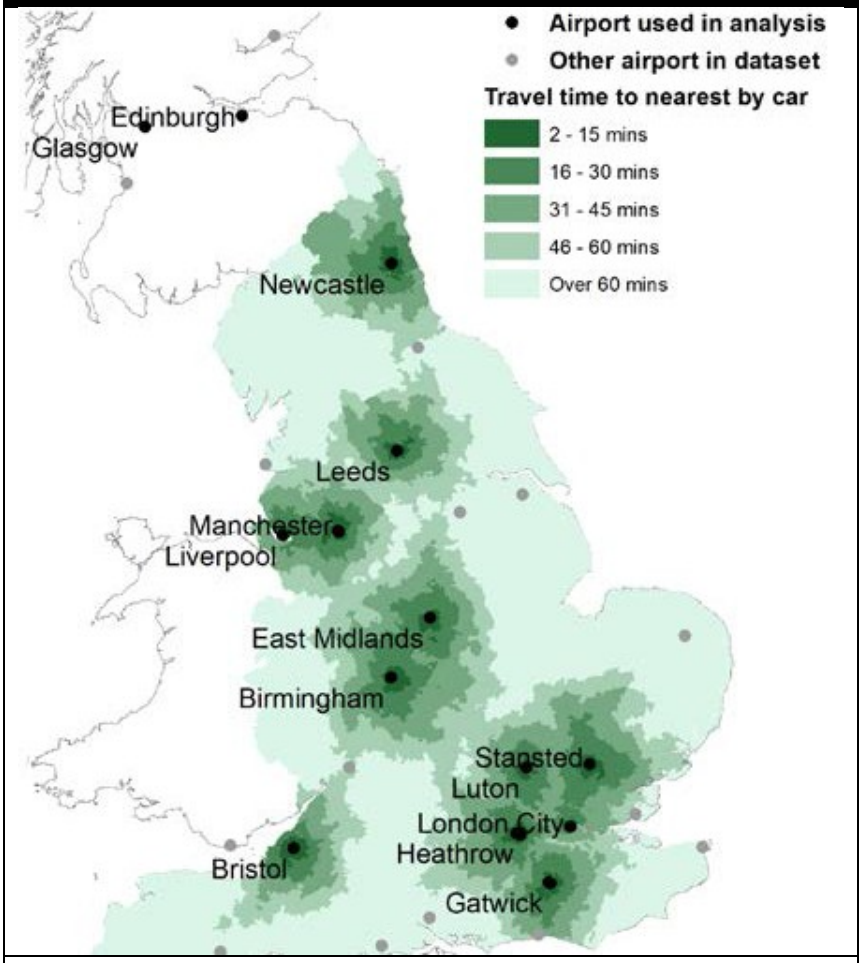
3.4 In **Table 3.1**, we set out the population within drive time bands of the North's airports[27]. The populations within 30 minutes are broadly illustrative of the relative size of the airports in terms of passenger throughput. Care needs to be exercised in interpreting the numbers of people within the larger drive time zones due to the catchment area overlaps illustrated. The relative scale of the more local (arguably captive) catchment area gives a stronger indication of the likelihood of airlines finding it viable to operate a service even if that service may eventually draw from a wider area.

[25] Manchester International, Newcastle International, Liverpool John Lennon, Leeds/Bradford International, Durham Tees Valley, Humberside and Doncaster/Sheffield Robin Hood. Excludes Blackpool which closed to most commercial traffic in October 2014 and Carlisle Airport which is not yet open to commercial traffic.

[26] 60 minute isochrones to these airports, Leeds Bradford and Liverpool are also shown for comparative purposes.

[27] Data is not available for Carlisle.

Figure 3.1: Illustrative Time to the nearest Major Airport



Source: Department for Transport

Table 3.1: Population with Drive Time Zones to the North's Airports 2013[28]

	30 mins	60 mins	120 mins
Doncaster Sheffield	0.4	3.7	16.5
Durham Tees Valley	0.7	2.5	9.0
Humberside	0.5	2.3	11.8
Leeds	1.0	2.9	16.2
Liverpool	1.2	5.1	15.5
Manchester	1.7	6.5	18.7
Newcastle	1.1	2.3	4.5

Source: Department for Transport

[28] Morning peak period.

Figure 3.2: Approximate 60 minute by Road Isochrones to the North's Airports

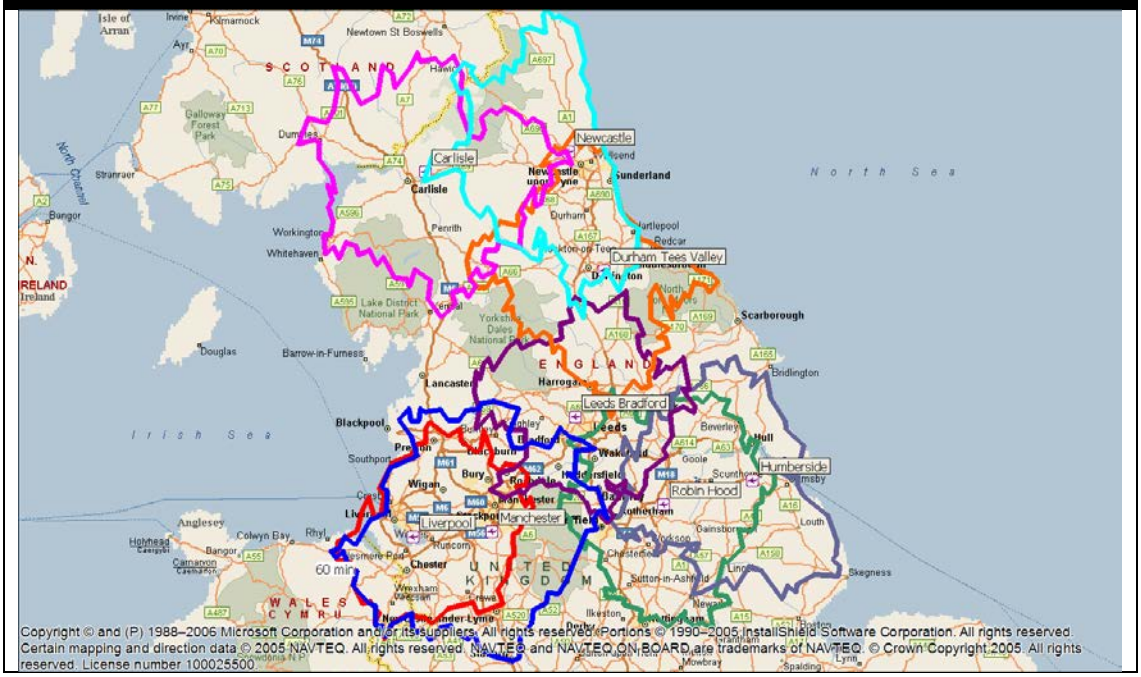
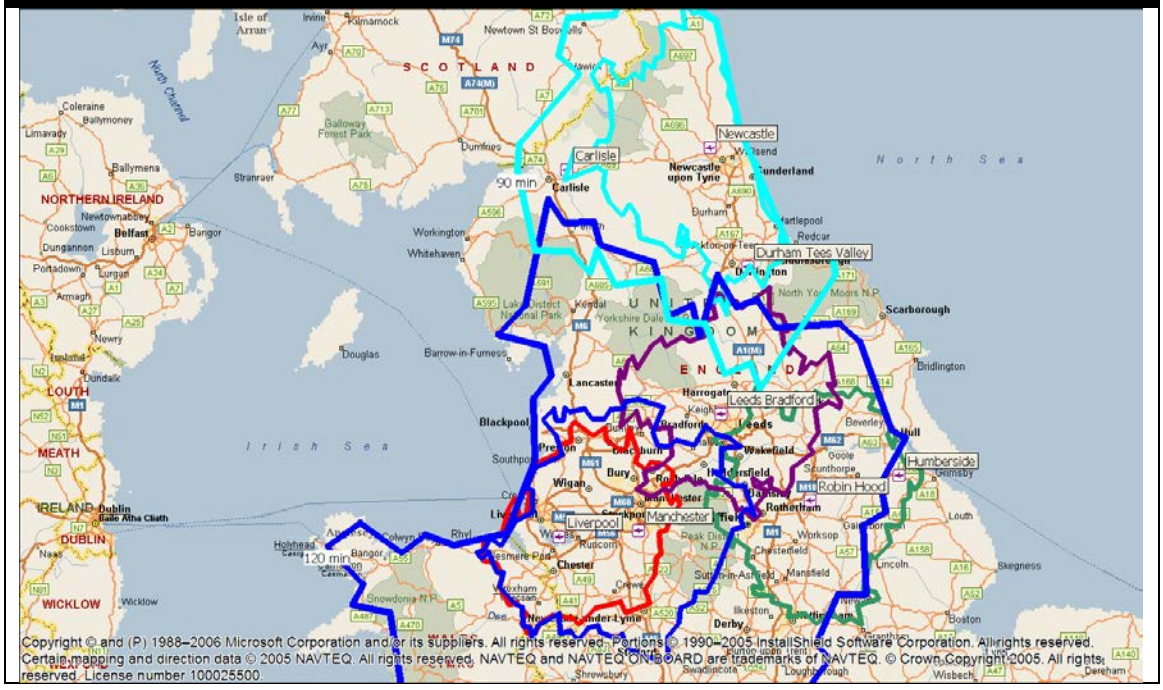


Figure 3.3: Approximate Long Haul Catchment Areas at Newcastle and Manchester Airports



3.5 However, it is important to note that the total number of international passengers carried from each of the airports is not the same as the underlying international travel market from the Northern Powerhouse region for three key reasons:

- ✈ They include passengers using these airports but not starting or ending their journeys in the Northern Powerhouse Region (inward leakage to the airports);
- ✈ They do not include passengers taking domestic flights to a hub airport and then connecting on to an international flight, particularly London Heathrow; and
- ✈ They do not take account of those from the region that travel by surface mode (road or rail) to other airports outside the region to take flights (for example those travelling by train to the London airports).

3.6 In order to take account of these factors, we have reviewed CAA Survey data for 2014 and made adjustments to historic survey data for airports not included in the 2014 survey to bring these up to the equivalent base year. It should be noted that our current analysis deals with the North of England as defined by the three regions of the North East, the North West and Yorkshire and the Humber, although we recognise that Hull and the Humber CR and Sheffield CR include areas which fall outside of this definition. As identified in the detailed airport profiles in Appendix A, all airports attract passengers from outside the boundaries of the North to a greater or lesser extent and this impacts on their ability to sustain a wider range of services. This has the greatest impact on Humberside, Doncaster Sheffield and Manchester Airports, all of which attract more than 20% of their passengers from outside of the North[29]. This is a feature which needs to be taken into account in considering the scope for the airports to improve the range and frequency of services which they offer.

3.7 The survey data indicates that in 2014, there were actually 28.6 million international air passengers flying to and from the Northern Powerhouse region when all factors are taken into account. This includes those passengers using domestic flights to hub in London. Despite this, the Northern airports were net beneficiaries of passengers from other regions using them. As can be seen in **Table 3.2**, over two thirds of these passengers were outbound leisure travellers, whilst only 13.6% of all passengers were travelling on business. By comparison, in the same year, there were nearly three times as many (78.3 million) international passengers travelling to and from the South East of England (including London). Outbound leisure travellers accounted for less than half of all passengers to/from the South East and business passengers were higher at 21.8% and the region has a significant inbound leisure component, reflecting London's significant draw for tourists.

[29] Liverpool and Newcastle Airports also draw passengers from outside the Northern Region but to a lesser extent.

Table 3.2: International Passengers 2014						
Northern Powerhouse region						
Passengers by Type (millions)				**% Split**		
	UK Outbound	Foreign Inbound	Grand Total	UK Outbound	Foreign Inbound	**Grand Total**
Business	2.42	1.48	3.90	8.5%	5.2%	**13.6%**
Leisure	20.53	4.19	24.71	71.8%	14.6%	**86.4%**
Total	**22.95**	**5.67**	**28.61**	**80.2%**	**19.8%**	
South East of England						
Passengers by Type (millions)				**% Split**		
	UK Outbound	Foreign Inbound	Grand Total	UK Outbound	Foreign Inbound	**Grand Total**
Business	7.43	9.64	17.06	9.5%	12.3%	**21.8%**
Leisure	35.65	25.55	61.20	45.6%	32.6%	**78.2%**
Total	**43.08**	**35.19**	**78.26**	**55.0%**	**45.0%**	
Source: CAA Survey/York Aviation						

3.8 The dominance of outbound leisure passengers from the Northern Powerhouse region is reflected in the CAA's Statistics for 2015 and summarised in **Table 3.3**, illustrating the Top 20 international destinations from airports within the Region (and including passenger from outside the Region using those airports but not passengers leaking out by surface modes or flying via a UK hub). The majority of these (11) could be summarised as being almost exclusively outbound leisure orientated, whilst others have large levels of leisure travel in them.

Geographic Nature of Demand

3.9 In considering the spatial distribution of passengers, we have adopted the same local areas considered within the Independent Economic Review (IER) based on the LEP boundaries, albeit where districts have been allocated across more than one city region within the IER, they are allocated solely to a single area within our analysis. The definitions of these areas can be seen in Appendix A. As noted above, this analysis excludes some passengers within the Hull and Humber and Sheffield City Regions travelling to/from districts which are more usually considered to be part of the East Midlands. We set out details of these passengers in these overlap areas in **Appendix B**.

Table 3.3: Top 20 International Destinations 2015 from Northern Powerhouse Region Airports

Rank	Destinations	2015 Scheduled Passengers	2015 Charter Passengers	2015 Total Passengers
1	Amsterdam	1,938,000	1,000	1,939,000
2	Dublin	1,686,000	2,000	1,688,000
3	Alicante	1,249,000	142,000	1,391,000
4	Palma	947,000	419,000	1,366,000
5	Malaga	1,065,000	126,000	1,191,000
6	Tenerife (TFS)	886,000	258,000	1,144,000
7	Dubai	1,095,000	0	1,095,000
8	Faro	836,000	74,000	910,000
9	Paris (CDG)	769,000	1,000	770,000
10	Lanzarote	566,000	132,000	698,000
11	Barcelona	657,000	3,000	660,000
12	Dalaman	254,000	391,000	645,000
13	Orlando (MCO)	451,000	0	451,000
14	Ibiza	280,000	160,000	440,000
15	Abu Dhabi	431,000	0	431,000
16	Geneva	400,000	16,000	416,000
17	Frankfurt	390,000	0	390,000
18	New York (JFK+EWR)	363,000	0	363,000
19	Paphos	201,000	161,000	362,000
20	Fuerteventura	304,000	55,000	359,000
	Top 20 Total	**14,768,000**	**1,941,000**	**16,709,000**
	All International Routes	**26,173,000**	**5,424,000**	**31,597,000**
Source: CAA Statistics				

3.10 As may be expected in terms of the surface origins and destinations of passengers, **Table 3.4** shows that Greater Manchester generates the greatest number of passengers of any part of the Northern Powerhouse region, accounting for over 23% of all passengers. Leeds City Region, the North East City Region and Liverpool City region are next and, in total, these four areas generate 61% of all passengers to and from the wider region. The distribution of passenger demand across the North is illustrated in **Figure 3.4**.

Table 3.4: International Passenger Demand by LEP Area (millions)

		UK Outbound			Foreign Inbound			
	LEP Local Area	Business	Leisure	Total	Business	Leisure	Total	Grand Total
1	Greater Manchester	0.59	4.35	4.94	0.47	1.20	1.67	**6.61**
2	Leeds CR	0.33	3.01	3.34	0.19	0.59	0.77	**4.12**
3	North East CR	0.23	2.51	2.75	0.17	0.39	0.56	**3.31**
4	Liverpool CR	0.21	2.16	2.38	0.19	0.73	0.92	**3.29**
5	Lancashire	0.21	1.75	1.96	0.08	0.27	0.35	**2.31**
6	Sheffield CR	0.14	1.86	2.00	0.08	0.23	0.31	**2.31**
7	Cheshire & W'ton	0.29	1.53	1.82	0.13	0.26	0.40	**2.22**
8	North Yorkshire	0.23	1.56	1.79	0.10	0.30	0.40	**2.18**
9	Tees Valley CR	0.10	0.83	0.93	0.04	0.08	0.13	**1.06**
10	Cumbria	0.06	0.66	0.72	0.03	0.08	0.11	**0.82**
11	Hull & Humber CR	0.03	0.30	0.33	0.01	0.05	0.06	**0.39**
	Grand Total	**2.42**	**20.53**	**22.95**	**1.48**	**4.19**	**5.67**	**28.62**

Source: CAA Survey/York Aviation

Figure 3.4: International Demand by District

Source: CAA Survey

3.11 The Hull and Humber City Region appears to contribute only a small proportion of passengers, although the districts contained within this analysis are limited and, in reality, Humberside Airport draws from a much wider area to the south into Lincolnshire. Equally, Doncaster Sheffield Airport also serves those parts of Derbyshire, which lie within the Sheffield City Region, and beyond into the East Midlands, albeit parts of the Sheffield City Region lie closer to either Manchester or East Midlands Airports.

3.12 Based on the overall volumes set out above, it is perhaps unsurprising to see a higher international propensity to fly (flights per head of population per year) in the main economic centres of the North, as can be seen in **Table 3.5**. Cheshire & Warrington and Greater Manchester generate the greatest number of international trips per head of population, closely followed by Liverpool City Region. Perhaps most surprising is the low rank achieved by the Leeds City Region, having the second lowest level of international travel of any LEP area in the North, equating to only 57% of the rate achieved from Manchester and 64% of the rate seen from Liverpool City Region. This may, in part, reflect that some journeys starting in the York, North Yorkshire and East Riding LEP Area may be associated with those who work in Leeds CR, but live (and start their journeys therefore) in the former.

Table 3.5: Ranked International Propensity to Fly by LEP Area

Rank	LEP Area	Flights/ Head of Population
1	Cheshire and Warrington	2.44
2	Greater Manchester	2.43
3	Liverpool City Region	2.17
4	York, North Yorkshire and East Riding	1.91
5	North Eastern	1.70
6	Cumbria	1.65
7	Sheffield City Region*	1.61
8	Tees Valley	1.59
9	Lancashire	1.57
10	Leeds City Region	1.38
11	Humber*	0.88
Notes: *Includes districts outside of the Northern Powerhouse region for consistency with population data covering the LEPs.		
Source: CAA Survey/ONS/York Aviation		

3.13 At a local level, the demand varies across different end destinations, as can be seen in **Table 3.6** overleaf. As with the overall demand pattern from the region's airports, leisure orientated routes dominate for each of the 11 areas. However, there are some key city destinations and, whilst these have a high proportion of leisure usage, at least a part of the underpinning demand is business usage. In the short haul market, this includes key destinations such as Paris, Amsterdam, Munich and Dublin, many of which also act as key hubs. New York and Dubai dominate the long haul demand but there are a few notable others, including Hong Kong, a significant global business destination.

Table 3.6: Top 20 Passenger Demand by LEP Area by End Destination

Rank	Cheshire & Warrington	Cumbria	Greater Manchester	Hull & Humber CR	Lancashire	Leeds CR	Liverpool CR	North East CR	North Yorkshire	Sheffield CR	Tees Valley CR
1	Palma	Alicante	Dublin	Malaga	Malaga	Dublin	Dublin	Palma	Tenerife	Tenerife	Palma
2	Dublin	Tenerife	Alicante	Alicante	Alicante	Alicante	Alicante	Alicante	Palma	Alicante	Alicante
3	Alicante	Palma	Palma	Tenerife	Palma	Malaga	Palma	Malaga	Amsterdam	Palma	Tenerife
4	Malaga	Malaga	Malaga	Venice	Faro	Tenerife	Amsterdam	Dublin	Malaga	Lanzarote	Amsterdam
5	Tenerife	Geneva	Amsterdam	Palma	Dublin	Palma	Malaga	Tenerife	Alicante	Malaga	Faro
6	Amsterdam	Dublin	Tenerife	Lanzarote	Tenerife	Faro	Faro	Amsterdam	Dublin	Faro	Malaga
7	Faro	Amsterdam	Lanzarote	New York (EWR)	Amsterdam	Amsterdam	Tenerife	Dalaman	Faro	Dublin	Barcelona
8	Paris (CDG)	Faro	Paris (CDG)	Dalaman	Dalaman	Lanzarote	Barcelona	Faro	Geneva	Dalaman	Reus
9	Barcelona	Zurich	Faro	Faro	Barcelona	Islamabad	Lanzarote	Rome (FCO)	Lanzarote	Sharm El Sheikh	Dalaman
10	Dalaman	Lanzarote	Barcelona	Paphos	Lanzarote	Dalaman	Dalaman	Paris (CDG)	Prague	Dubai	Dublin
11	Lanzarote	Cancun	Dalaman	Rhodes	Las Palmas	Paris (CDG)	Paris (CDG)	Lanzarote	Dalaman	Paphos	Zakinthos
12	Geneva	Orlando	Hong Kong	Athens	Paphos	Barcelona	Cork	Ibiza	Paris (CDG)	Nice	Lanzarote
13	Orlando	Las Palmas	New York (JFK)	Copenhagen	Sharm El Sheikh	Sharm El Sheikh	Geneva	Barcelona	New York (JFK)	Amsterdam	Dusseldorf
14	Nice	Dalaman	Geneva	Enfidha	Dubai	Paphos	Sharm El Sheikh	Geneva	Orlando	Orlando	Paphos
15	Munich	Antalya	Copenhagen	Beijing	Munich	Geneva	Orlando	Sharm El Sheikh	Paphos	Las Palmas	Toronto
16	Fuerteventura	Paris (CDG)	Paphos	Amsterdam	Paris (CDG)	Murcia	Copenhagen	Paphos	Naples	Ibiza	Orlando
17	Hamburg	Barcelona	Sharm El Sheikh	Corfu	Orlando	Munich	Madrid	Enfidha	Luanda	Mahon	Sharm El Sheikh
18	Dubai	Mahon	Dubai	Sharm El Sheikh	Fuerteventura	Larnaca	Malta	Dubai	Enfidha	Barcelona	Larnaca
19	Malta	Verona	Orlando	Murcia	Bangkok	Las Palmas	Frankfurt	Las Palmas	Las Palmas	Fuerteventura	Ibiza
20	Antalya	Barbados	Ibiza	Fuerteventura	Mahon	Ibiza	Berlin (SXF)	Corfu	Fuerteventura	Cancun	Enfidha

Source: CAA Survey/York Aviation

Leakage

3.14 **Table 3.7** illustrates the way in which the demand was handled, including the extent of leakage away from the region's airports and importance of UK hub connections to international travellers to/from the Northern Powerhouse Region in 2014. A high proportion of all international passengers, 86%, were carried on international services to and from the North's airports, increasing to nearly 90% of international passengers started or ended their journey at one of the region's airports when those travelling on a domestic flight to access a UK hub are taken into account.

3.15 Just over 10% of all international passengers made a surface journey to an airport outside of the region[30] and, whilst London Heathrow handled the single largest proportion of these, it is interesting to note that the remaining London airports also played an important part and, in combination, actually handled more passengers using surface means to access them from the North than did Heathrow. However, the number using Heathrow is supplemented by those using domestic air connections from some of the region's airports. The Scottish Airports play an important role for those counties to the north of the Powerhouse Region, particularly Cumbria and the Northumberland, although the overall number is small due to the low levels of demand generated in these counties. Airports in the Midlands, Birmingham and East Midlands, handle a significant number of the region's passengers, primarily led by counties in the southern part of the region.

3.16 The relatively low level of leakage suggests that the airports in the region are providing comprehensive networks which largely meet the requirements of the North today[31], or at least that the availability of hub connections from them is satisfying much of the demand from the Region. We will consider hub connections later in this section. However, what is not clear from this analysis is the extent to which there may be opportunities foregone or demand suppressed because of inherent weakness in the direct network of services. This is something we have set out to explore through this study.

[30] A small number (2%) of passengers with homes in the North are recorded by the CAA as starting their journey to catch their flight from outside the North. This will reflect people who stay the night or undertake another activity or meeting away from home prior to flying. There will be business visitors to the North who arrive in the UK by air but who, similarly, spend time elsewhere before or after their flights which will be excluded but there is no way of identifying such passengers.

[31] Subject to the footnote above.

Table 3.7: Northern Powerhouse International Passengers 2014

	Passengers on International Flights							Passengers Connecting to International Flights at other UK Airports*							Surface Leakage to Airports out of Region				
	Doncaster/ Sheffield Airport	Humberside Airport	Leeds/ Bradford Airport	Liverpool Airport	Manchester Airport	Durham Tees Valley Airport	Newcastle Airport	Doncaster/ Sheffield Airport	Humberside Airport	Leeds/ Bradford Airport	Liverpool Airport	Manchester Airport	Durham Tees Valley Airport	Newcastle Airport	London Heathrow Airport	Other London Airports	Scottish Airports	Midlands Airports	Total Passengers
Total Passengers	**490,000**	**60,000**	**2,500,000**	**2,690,000**	**15,520,000**	**110,000**	**3,120,000**	**0**	**0**	**90,000**	**0**	**570,000**	**0**	**380,000**	**950,000**	**1,110,000**	**140,000**	**870,000**	**28,620,000**
Cheshire & Warrington	*0.1%*		*0.2%*	*15.5%*	*76.2%*							*2.1%*			*1.9%*	*2.5%*	*0.1%*	*1.4%*	*2,220,000*
Cumbria	*0.1%*		*1.7%*	*7.4%*	*58.3%*		*17.0%*					*1.5%*		*1.7%*	*2.6%*	*4.0%*	*5.0%*	*0.8%*	*820,000*
Greater Manchester	*0.2%*		*0.3%*	*6.2%*	*84.6%*							*3.3%*			*2.4%*	*2.6%*	*0.1%*	*0.5%*	*6,610,000*
Hull & Humber CR	*7.3%*	*7.9%*	*24.0%*	*1.6%*	*34.3%*		*0.5%*			*0.3%*		*0.4%*			*5.1%*	*8.2%*		*11.0%*	*390,000*
Lancashire			*2.6%*	*13.8%*	*76.2%*		*0.1%*					*3.3%*			*0.9%*	*2.1%*	*0.1%*	*0.8%*	*2,310,000*
Leeds CR	*2.1%*		*32.2%*	*3.2%*	*45.1%*		*0.4%*			*1.4%*		*2.0%*			*5.3%*	*4.9%*		*3.0%*	*4,120,000*
Liverpool CR			*0.1%*	*39.4%*	*53.2%*							*2.1%*			*3.0%*	*1.9%*		*0.3%*	*3,290,000*
North East CR	*0.5%*		*1.9%*	*0.4%*	*8.0%*	*0.4%*	*71.7%*							*9.6%*	*1.6%*	*3.0%*	*2.3%*	*0.3%*	*3,310,000*
North Yorkshire	*5.5%*	*0.6%*	*27.8%*	*2.6%*	*36.0%*	*0.6%*	*4.7%*			*1.2%*		*1.2%*		*0.3%*	*8.1%*	*6.7%*	*0.2%*	*4.5%*	*2,180,000*
Sheffield CR	*9.2%*	*0.5%*	*6.5%*	*1.6%*	*43.9%*		*0.2%*			*0.1%*		*1.6%*			*5.6%*	*9.6%*	*0.1%*	*21.0%*	*2,310,000*
Tees Valley CR	*0.9%*		*15.2%*	*1.4%*	*18.0%*	*8.1%*	*45.1%*			*0.1%*		*0.2%*	*0.1%*	*4.3%*	*1.5%*	*3.5%*	*0.2%*	*1.2%*	*1,060,000*

Note:
Figures may not sum due to rounding
**Primarily London Heathrow*

Source: CAA Survey/York Aviation

Business Travel Market

3.17 As seen in Table 3.3, in 2014, there were 3.9 million air passengers to and from the North travelling on business. Over 60% of these were UK residents, and just under 40% inbound foreign business travellers. This is the reverse of what is seen in the South East of England, where the strength of London, as a world business destination, sees a greater proportion of business travellers inbound.

3.18 The split of these passengers by LEP area within the North is summarised in **Table 3.8** and illustrated in **Figure 3.5**. This shows that Greater Manchester alone accounts for 27% of all business travel to and from the region (and higher than the 23% of the whole market including leisure). Leeds City Region generates the second highest level of business demand, but this is still less than 50% of that seen in Greater Manchester. We consider this further in relation to our stakeholder feedback as well as the extent to which the drivers of business air travel demand might change in the future through the Northern Powerhouse. It is not without significance that Greater Manchester and its neighbour, Cheshire & Warrington, account for almost 40% of business related air travel demand in total.

Table 3.8: Business Passengers by LEP Area 2014

LEP Area	UK Outbound Passengers	Foreign Inbound Passengers	Grand Total	% Foreign
Greater Manchester	588,900	470,100	1,059,000	44%
Leeds CR	334,400	186,800	521,200	36%
Cheshire & Warrington	290,900	133,600	424,500	31%
North East CR	234,100	174,000	408,100	43%
Liverpool CR	213,800	187,100	400,900	47%
North Yorkshire	225,800	97,100	322,900	30%
Lancashire	207,200	74,900	282,100	27%
Sheffield CR	139,000	76,800	215,800	36%
Tees Valley CR	98,600	42,400	141,000	30%
Cumbria	58,300	24,500	82,800	30%
Hull & Humber CR	31,500	11,400	42,900	27%
Grand Total	**2,422,500**	**1,478,700**	**3,901,200**	38%

Source: CAA Survey/York Aviation

Figure 3.5: International Business Demand by District

Source: CAA Survey

3.19 In terms of foreign business passengers, they make up a different proportion across the LEP areas, with the highest proportions seen in the city regions of Liverpool, Manchester and the North East. This may reflect a greater internationalisation of these economies. When considered in relation to the business propensity to fly (against total population), the pattern is similar to that seen earlier, with Cheshire & Warrington and Greater Manchester the highest ranked, with others falling well below, as can be seen in **Table 3.9**. Interestingly, on this basis, York, North Yorkshire & East Riding climbs the rankings, but this is likely to be a result of business trips starting and ending at home but in relation to business undertaken in West Yorkshire.

Table 3.9: Ranked International Business Passenger Propensity to Fly by LEP Area		
Rank	**LEP Area**	**Flights/ Head of Population**
1	Cheshire and Warrington	0.47
2	Greater Manchester	0.39
3	York, North Yorkshire and East Riding	0.28
4	Liverpool City Region	0.27
5	Tees Valley	0.21
6	North Eastern	0.21
7	Lancashire	0.19
8	Leeds City Region	0.17
9	Cumbria	0.17
10	Sheffield City Region	0.15
11	Humber	0.11
Source: CAA Survey/ONS/York Aviation		

3.20 A review of the 2014 CAA Survey data for those travelling on business (including those travelling via international and domestic hubs), shows some similarities to the key routes seen in Table 3.2, but widens the list, as seen in **Table 3.10**. European points dominate business demand, with only 4 long haul destinations in the top 20. Around 50% of all business passengers travel to these top 20 destinations, illustrating the dominance of a limited number of destinations but in the context that in total there was business related air demand to around 570 international points around the world, with many of these generating only very low volumes of travel.

Table 3.10: Top 20 End Business Destinations*

Rank	End Destination	Business Passengers On International Flights**	Business Passengers Via UK Hub	Total Business Passengers
1	Dublin	368,000	0	368,000
2	Amsterdam	251,000	3,000	254,000
3	Paris (CDG)	175,000	1,000	176,000
4	Dusseldorf	124,000	2,000	126,000
5	Frankfurt	117,000	2,000	119,000
6	Copenhagen	86,000	1,000	87,000
7	Munich	85,000	1,000	86,000
8	Brussels	82,000	4,000	86,000
9	Geneva	75,000	4,000	79,000
10	Hamburg	62,000	2,000	64,000
11	Zurich	61,000	1,000	62,000
12	Barcelona	56,000	2,000	58,000
13	Dubai	53,000	3,000	56,000
14	Malaga	55,000	0	55,000
15	Cork	51,000	1,000	52,000
16	New York (JFK+EWR)	38,000	12,000	50,000
17	Oslo	39,000	4,000	43,000
18	Madrid	35,000	5,000	40,000
19	Hong Kong	13,000	25,000	38,000
20	Los Angeles	4,000	33,000	37,000
			Grand Total	**1,936,000**

Notes:
*Based on final destination if connecting at a hub
**Including those connecting at international hubs such as Dubai, Amsterdam etc.

3.21 At a local area level, however, the nature of business demand becomes much more varied, as seen in **Table 3.11** overleaf. The business market is less dominated by key destinations than the market as a whole, where the very popular leisure destinations dominate across the whole region. There were 56 destinations represented in the top destinations across all of the LEP areas at a total market level but this increases to 74 when the business market alone is considered. It should be noted, however, that total volumes of passengers to some of these destinations appears very low according to the survey and would not be enough to sustain direct services, particularly from Cumbria and the Humber area. This highlights the challenge in ensuring appropriate business related international connectivity to meet what are quite specific requirements. To an extent, this reflects the diversity of the Northern economy.

3.22 Key points to note in relation to business demand by LEP area are:

- Dublin is the number 1 business destination from 9 of the 11 defined LEP areas;
- Amsterdam is the number 1 or number 2 destination for 7 of the 11 defined areas, and features in the top 4 for all areas;
- Brussels features in 10 of the 11 areas;
- A number of destinations more typically seen as leisure points feature in the top 20 for some areas, including Alicante, Malaga and Faro;
- Dubai is the long haul destination which features most frequently across the 11 areas (8 areas);
- Despite being in the list of top destinations across the whole of the region, Hong Kong only features in the list for one local area (Greater Manchester), Los Angeles in two local areas (Cheshire & Warrington and Manchester) and New York in four areas (Cheshire & Warrington, Greater Manchester, Liverpool CR and also Sheffield CR). This illustrates the dominance of these areas in generating business passengers.

3.23 Some relatively unusual destinations feature in list of top destinations, such as Sendai and Kota in Japan from Cumbria, but these results should be treated with some caution due to the small sample sizes in the CAA Survey which can lead to some anomalies in relatively small markets.

3.24 **Table 3.12** shows how business passengers were handled across all airports. This illustrates a similar pattern of leakage to the total market including leisure. Compared to the whole market, a marginally lower proportion of international business passengers take international flights from the region's airports at just over 80%. This is offset to some degree by a higher proportion accessing international connections via a UK hub airport (mainly London Heathrow). Overall this means that there is a slightly higher level of leakage to other airports by surface mode for business travellers at 11.8%.

Table 3.11: Top 20 Business Passenger Demand by LEP Area by End Destination

Rank	Cheshire & Warrington	Cumbria	Greater Manchester	Hull & Humber CR	Lancashire	Leeds CR	Liverpool CR	North East CR	North Yorkshire	Sheffield CR	Tees Valley CR
1	Paris (CDG)	Dublin	Dublin	Dubai	Dublin	Dublin	Dublin	Dublin	Dublin	Dublin	Amsterdam
2	Dublin	Amsterdam	Amsterdam	Turin	Amsterdam	Amsterdam	Amsterdam	Amsterdam	Luanda	Dusseldorf	Dusseldorf
3	Amsterdam	Hamburg	Paris (CDG)	Hamburg	Los Angeles	Beirut	Boston	Paris (CDG)	Amsterdam	Paris (CDG)	Tripoli
4	Frankfurt	Paris (CDG)	Frankfurt	Amsterdam	Dusseldorf	Frankfurt	Frankfurt	Dusseldorf	Munich	Amsterdam	Oslo
5	Dusseldorf	Copenhagen	Geneva	Cork	Munich	Munich	Paris (CDG)	Malaga	Paris (CDG)	Brussels	Dubai
6	Hamburg	Riyadh	Copenhagen	Faro	Zurich	Zurich	Hamburg	Brussels	Copenhagen	New York (EWR)	Copenhagen
7	Brussels	Frankfurt	Dusseldorf	Frankfurt	Copenhagen	Malaga	Geneva	Geneva	Tokyo (NRT)	Copenhagen	Billund
8	Helsinki	Kota	Hong Kong	Copenhagen	Barcelona	Cork	Helsinki	Frankfurt	Oslo	Dubai	Dublin
9	Munich	Billund	Brussels	Venice	Paris (CDG)	Paris (CDG)	Copenhagen	Dubai	Dusseldorf	Zurich	Luanda
10	Madrid	Alicante	Munich	Dusseldorf	Brussels (CRL)	Dubai	Prague	Barcelona	Frankfurt	Milan (MXP)	Munich
11	Nantes	Hanover	Cork	Zurich	Brussels	Dusseldorf	Berlin (TXL)	Stavanger	Sao Paulo	Budapest	Brussels
12	Berlin (TXL)	Shanghai	Malaga	San Francisco	Oslo	Brussels (CRL)	Cork	Delhi	Brussels	Mindik	Riyadh
13	Geneva	Los Angeles	Zurich	Dublin	Hyderabad	Milan (MXP)	Barcelona	Hamburg	Vancouver	Barcelona	Paris (CDG)
14	Dubai	Shannon	Barcelona	Paris (CDG)	Dubai	Casablanca	Brussels	Zurich	Nairobi	Munich	Zurich
15	Zurich	Cork	Bologna	Brussels	Faro	Barcelona	Dusseldorf	Copenhagen	Dubai	Madrid	Venice
16	Los Angeles	Singapore	Milan (MXP)	Prague	Lagos	Geneva	Krakow	Stuttgart	Billund	Geneva	Stavanger
17	New York (JFK)	Bahrain	Hamburg	Kaunus	Frankfurt	Copenhagen	Oslo	Munich	Abuja	Hanover	Frankfurt
18	Billund	Mexico City	New York (JFK)	Toulouse	Berlin (SXF)	Vienna	New York (JFK)	Madrid	Prague	Frankfurt	Alicante
19	Shanghai	Sendai	Brussels (CRL)	Lyon	Milan (BGY)	Istanbul	San Francisco	Hanover	Cork	Berlin (SXF)	Doha
20	Copenhagen	Basle	Delhi	Zagreb	Hamburg	Milan (BGY)	Palma	Singapore	Geneva	Katowice	Sydney

Source: CAA Survey/York Aviation

Table 3.12: Northern Powerhouse International Business Passengers 2014

	Passengers on International Flights							Passengers Connecting to International Flights at other UK Airports*							Surface Leakage to Airports out of Region				
	Doncaster/ Sheffield Airport	Humberside Airport	Leeds/ Bradford Airport	Liverpool Airport	Manchester Airport	Durham Tees Valley Airport	Newcastle Airport	Doncaster/ Sheffield Airport	Humberside Airport	Leeds/ Bradford Airport	Liverpool Airport	Manchester Airport	Durham Tees Valley Airport	Newcastle Airport	London Heathrow Airport	Other London Airports	Scottish Airports	Midlands Airports	Total Passengers
Total Passengers	**10,000**	**30,000**	**160,000**	**200,000**	**2,350,000**	**50,000**	**330,000**	**0**	**0**	**20,000**	**0**	**190,000**	**0**	**110,000**	**230,000**	**160,000**	**20,000**	**50,000**	**3,890,000**
Cheshire & Warrington	*0.1%*		*0.2%*	*5.1%*	*84.1%*							*5.3%*			*2.1%*	*3.2%*		*1.0%*	*420,000*
Cumbria			*2.0%*	*3.4%*	*57.6%*		*11.5%*					*5.7%*		*3.3%*	*6.2%*	*3.0%*	*11.0%*		*80,000*
Greater Manchester	*0.2%*		*0.1%*	*3.3%*	*83.2%*							*6.3%*			*3.2%*	*3.0%*		*0.6%*	*1,060,000*
Hull & Humber CR	*0.6%*	*36.9%*	*7.5%*		*38.6%*		*0.4%*		*0.5%*	*1.8%*		*1.3%*			*2.4%*	*9.1%*		*8.1%*	*40,000*
Lancashire			*0.6%*	*6.2%*	*78.1%*							*10.1%*			*1.6%*	*2.4%*	*0.2%*	*1.6%*	*280,000*
Leeds CR	*0.4%*	*0.4%*	*18.5%*	*1.9%*	*54.3%*		*0.1%*			*1.9%*		*3.9%*			*10.4%*	*7.2%*		*1.2%*	*520,000*
Liverpool CR				*25.6%*	*58.0%*							*8.3%*			*5.6%*	*2.1%*		*0.5%*	*400,000*
North East CR			*0.4%*		*3.3%*	*1.2%*	*65.8%*					*0.1%*		*21.2%*	*2.8%*	*2.1%*	*2.2%*	*0.2%*	*410,000*
North Yorkshire	*0.8%*	*1.9%*	*14.6%*	*2.4%*	*42.0%*	*1.9%*	*2.8%*			*1.2%*		*2.9%*		*0.4%*	*21.5%*	*7.0%*	*0.2%*	*1.2%*	*320,000*
Sheffield CR	*2.5%*	*1.4%*	*3.8%*	*1.5%*	*62.0%*		*0.5%*					*3.4%*			*7.3%*	*9.1%*		*6.6%*	*220,000*
Tees Valley CR			*1.6%*		*22.6%*	*29.2%*	*27.6%*			*0.4%*			*0.6%*	*10.1%*	*2.0%*	*5.2%*		*1.5%*	*140,000*

Note:
Figures may not sum due to rounding
**Primarily London Heathrow*

Source: CAA Survey/York Aviation

3.25 When looking at business travellers flying to short and long haul destinations, as may be expected, there is a general shift away from direct flights from local airports for those travelling to long haul points due to the limited offer of long haul services across all the airports in the region. For LEP areas without direct international long haul services, such as Leeds CR and Hull & Humber CR, this does see some increase in the use of Manchester for direct flights relative to its share of the short haul market. For short haul markets, over 87% of passengers use international flights from the North's airports, which reduces to 59% for long haul passengers. The difference is accounted for by an increase in hub connections at UK airports, from 3% for short haul passengers to 23% for long haul passengers, and an increase in surface leakage from the North from a 10% share of short haul passengers, across a range of airports outside the North, to a 17% share of long haul passengers principally to Heathrow. This reflects the previously seen dispersal of long haul passengers across a greater range of destinations, many of which are served directly from London Heathrow.

Sectoral Composition of Business Travel

3.26 We have also considered the industry sectors underpinning business travel in 2014 from the Northern Powerhouse Region and these are shown in **Table 3.13**. These are broadly aligned with the national SIC Codes, although there are some differences in the categories used by the CAA which means these do not always perfectly align. It should also be noted that this information is not collected from all those surveyed and can be prone to a degree of sampling error.

3.27 Manufacturing is individually the largest sector generating air travel demand to and from the region, accounting for nearly 26% of all business journeys in 2014. This may explain why business travel is proportionally lower from the North compared to the South East where financial and professional services account for a higher proportion of business travel and these sectors are known to be high generators of air travel demand in themselves.

Table 3.13: Business Passenger Share by Broad Sector	
Broad Business Category	**Share of Business Passengers**
Manufacturing	25.5%
Professional Scientific & Technical Activities	12.3%
Wholesale & Retail Trade	10.2%
Education	9.1%
Transportation & Storage	8.4%
Other Service Activities	7.0%
Mining & Quarrying	5.3%
Human Health & Social Work	4.1%
Construction	3.3%
Arts, Entertainment & Recreation	3.2%
Financial & Insurance Activities	2.9%
Administrative & Support Services	1.7%
Public Administration & Defence	1.6%
Information & Communication	1.3%
Electricity, Gas, Steam and Air Conditioning Supply	1.2%
Agriculture, Forestry & Fishing	1.0%
Real Estate Activities	0.8%
Accommodation & Food Service Activities	0.8%
Water Supply, Sewerage, Waste Management & Remediation	0.3%
Activities of Extraterritorial Organisations	0.2%
Activities of Households as Employers	0.0%
Grand Total	**100.0%**
Source: CAA Survey/York Aviation	

3.28 **Table 3.14** shows the volume of business travel demand by a more detailed sector breakdown, covering the top 10 business areas and using CAA categories. At this more detailed level, Education appears to be the most significant individual driver of business demand from the Northern Powerhouse region today, followed by IT services. This is a somewhat surprising result but is likely to be more of a reflection of the less concentrated nature of the Northern economy overall in terms of detailed industrial sectors.

Table 3.14: Business Passenger Demand by Top 15 Business Sectors	
Sector	**Passengers**
General Education	355,500
General Computer Consultancy & Repair Of Office Eq	265,100
General Chemicals & Other Allied Products	260,500
General Oil & Gas Extraction	198,500
General Business Management, Legal, Financial	178,300
General Industrial Machinery & Equipment	151,700
General Motor Vehicles 4 Wheels & Parts	137,700
General Engineering Activities	133,900
General Hospital, Dental Services	128,800
General Construction	128,500
General Supporting Land, Water And Air Transport	116,600
General Retail And Repair	109,500
General Food & Kindred Products	101,500
General Banking & Financial Services	85,600
General Misc. Manufacturing Industries	75,000
Source: CAA Survey/York Aviation	

3.29 However, what is interesting in this analysis is the correlation between key drivers of business demand and sectors identified within the IER as currently being strong areas in the region's economy. Notably the IER[32] identifies sectors which are defined as 'Specialised in GVA and generally high productivity' within the North and this includes sectors seen above including:

- Chemicals;
- Financial and Insurance; and
- Food, Drink and Tobacco.

3.30 The categorisation used by the CAA does not include a specific sector related to pharmaceuticals, another of the key specialisms identified presently in the IER, but it is likely that respondents to the survey may have been ascribed to some of the sectors shown in the table, including Health, Education or Misc. Manufacturing.

3.31 The IER identifies a number of sectors representing more of a 'Mixed Picture' and, once again, there is a correlation with the top 15 air business sectors, including:

- Education;

[32] Northern Powerhouse Independent Economic Review, Workstream 3: Competitive Advantage and Sector Strengths – Final Report, 29th January 2016, Section 2, SQW and Cambridge Econometrics

- IT Services;
- Health;
- Machinery and Motor Vehicles.

3.32 There remains a circularity between sectoral success and air travel demand in so far as a strong sector will increase demand, but air connectivity may also help to grow and strengthen sectors. Consequently, it is not possible to say explicitly that these strong sectors, as identified in the IER, are underpinned by air connectivity. However, it does suggest that the value of these business sectors is that they are delivering international business rather than being UK focused and this may, in part, be underpinning their relative success compared to the wider UK regions.

3.33 **Table 3.15** overleaf shows the demand by broad sector for each of the LEP areas and once again shows some correlation with the findings of the IER. For example:

- Cheshire & Warrington's strengths in Chemicals, Life Sciences, Nuclear and Advanced Manufacturing appear to be reflected by high levels of air travel in the broad manufacturing and Scientific & Technical Activities sectors of air travel;
- Greater Manchester's strengths in Health & Life Sciences, Professional & Business Services and Advanced Materials and Manufacturing all correlate to strong air travel demand in Manufacturing, Scientific & Technical Activities and Other Service activities (in part covering Digital related activities);
- Leeds City Region's strengths in Advanced Manufacturing, Health & Life Sciences and Financial and Professional services are reflected in air demand in Manufacturing, Other Service and Scientific & Technical sectors.

A similar pattern covers each TfN region as shown in the IER[33].

[33] Workstream 3 Report, Figure 2-6

Table 3.15: Business Travel From LEP Area by Sector 2014												
Business Sector	Cheshire & Warrington	Cumbria	Greater Manchester	Hull & Humber CR	Lancashire	Leeds CR	Liverpool CR	North East CR	North Yorkshire	Sheffield CR	Tees Valley CR	Grand Total
Accommodation & Food Service Activities	1,600	600	10,200	400	300	1,600	6,000	5,000	800	1,500	1,700	**29,700**
Activities of Extraterritorial Organisations	300	0	2,600	0	4,300	400	700	100	0	500	700	**9,600**
Activities of Households as Employers	0	0	0	0	0	500	0	0	0	0	0	**500**
Administrative & Support Services	7,800	1,300	19,900	2,100	2,200	8,400	6,200	5,900	6,300	1,700	2,600	**64,400**
Agriculture, Forestry & Fishing	17,000	0	4,700	1,600	1,200	1,100	4,100	100	2,600	4,900	200	**37,500**
Arts, Entertainment & Recreation	18,700	2,700	33,300	700	6,100	12,400	18,800	17,600	2,600	10,500	1,700	**125,100**
Construction	11,700	3,400	44,600	200	6,300	12,600	10,500	11,900	9,100	8,600	9,700	**128,600**
Education	24,200	6,900	84,800	1,100	33,000	40,900	34,800	53,500	46,500	24,400	5,500	**355,600**
Electricity, Gas, Steam and Air Conditioning Supply	9,600	6,500	8,800	0	2,600	1,000	2,900	8,600	2,700	2,900	2,000	**47,600**
Financial & Insurance Activities	7,000	700	40,400	0	4,700	25,600	10,600	4,800	13,500	2,600	1,400	**111,300**
Human Health & Social Work	10,800	2,500	46,000	100	5,000	21,500	26,600	13,000	13,500	17,000	2,700	**158,700**
Information & Communication	7,000	0	13,400	0	2,300	4,400	7,000	4,500	5,500	6,700	400	**51,200**
Manufacturing	128,500	17,000	289,400	13,300	58,100	150,800	101,300	84,500	58,300	46,800	46,200	**994,200**
Mining & Quarrying	15,100	8,900	16,100	1,000	13,100	14,100	13,500	45,100	40,700	8,900	32,200	**208,700**
Other Service Activities	28,400	4,400	87,500	200	15,800	42,200	16,200	26,700	23,500	23,500	2,800	**271,200**
Professional Scientific & Technical Activities	50,800	10,600	124,200	6,600	32,800	50,500	68,100	65,300	37,900	19,300	14,200	**480,300**
Public Administration & Defence	100	6,800	12,100	500	4,900	12,100	2,900	9,700	9,200	1,600	1,100	**61,000**
Real Estate Activities	4,000	100	19,600	0	1,700	2,900	1,400	2,200	400	600	200	**33,100**
Transportation & Storage	48,800	4,000	74,900	10,300	65,100	19,700	38,900	26,900	21,000	8,500	7,800	**325,900**
Water Supply, Sewerage, Waste Management & Remediation	0	0	2,600	0	300	1,400	900	1,000	0	3,300	300	**9,800**
Wholesale & Retail Trade	33,200	6,400	124,100	4,700	22,400	96,900	29,300	22,000	28,900	22,000	7,300	**397,200**
Total	**424,600**	**82,800**	**1,059,200**	**42,800**	**282,200**	**521,000**	**400,700**	**408,400**	**323,000**	**215,800**	**140,700**	**3,901,200**
Source: CAA Survey/York Aviation												

Table 3.16: Top 10 Business Destination Countries by Sector*

	Manufacturing	Professional Scientific & Technical	Wholesale & Retail Trade	Education	Transportation & Storage	Other Service Activities	Mining & Quarrying	Human Health & Social Work	Arts, Entertainment & Recreation	Construction	Financial & Insurance
Business Demand	**994,200**	**480,300**	**397,200**	**355,600**	**325,900**	**271,200**	**208,700**	**158,700**	**125,100**	**128,600**	**111,300**
Rank											
1	Germany	Germany	Germany	United States	Germany	Ireland	Angola	Ireland	Spain	Ireland	Ireland
2	Ireland	Ireland	Ireland	Germany	Ireland	Germany	Netherlands	Germany	Germany	Germany	Italy
3	France	United States	Netherlands	Ireland	United States	United States	Norway	Spain	United States	Spain	Germany
4	Netherlands	France	France	France	France	Hong Kong	Germany	Switzerland	Netherlands	Netherlands	United States
5	United States	Netherlands	Lebanon	Spain	Spain	Netherlands	United States	United States	Ireland	France	Netherlands
6	Italy	Spain	Spain	Netherlands	Netherlands	France	France	India	Denmark	Italy	France
7	Spain	Italy	United States	Switzerland	UAE	Spain	Spain	Denmark	France	Denmark	Denmark
8	Switzerland	Belgium	Italy	Belgium	Israel	Switzerland	Ireland	Netherlands	Italy	United States	Switzerland
9	Belgium	Switzerland	Belgium	Italy	Denmark	Italy	Denmark	Italy	Switzerland	Norway	Poland
10	Denmark	Denmark	Switzerland	Norway	Switzerland	Poland	Nigeria	Belgium	Australia	Saudi Arabia	Spain
Top 10 Share of All Demand	72%	70%	72%	65%	68%	72%	64%	66%	70%	69%	78%

*Note: Only includes sectors which generate more than 100,000 of business passenger demand

Source: CAA Survey/York Aviation

3.34 It is also informative to consider where the sectors are flying to. This is set out in **Table 3.16**, although we would note that there are some caveats regarding the ranking of some destination countries due to the small sample sizes involved. Generally, however, the data confirms that for all of the main sectors of the Northern economy, the US and Europe remain the most important destination countries. We return later to the extent to which this may change as the economy develops.

The Role of Hub Airports

3.35 At present, demand from the across the North or within the catchment area of individual airports may not be sufficient to support viable direct services. In these cases, hub services can provide a good alternative, with airlines funnelling demand from across their networks to provide flights to destinations which could not be served directly. As can be seen in **Table 3.17**, in 2014, nearly 17% of all international passengers from the Northern Powerhouse region reached their final destination via a hub.

Table 3.17: Direct and Hubbing Passengers 2014 (millions)

	Business	Leisure	Grand Total
Hubbing	**1.28**	**3.45**	**4.74**
Via International Hub	*0.97*	*2.72*	*3.69*
Via Domestic Hub	*0.32*	*0.74*	*1.05*
Direct	**2.62**	**21.26**	**23.88**
Direct International	*2.62*	*21.26*	*23.88*
Grand Total	**3.90**	**24.71**	**28.62**

Source: CAA Survey/York Aviation

3.36 Business users have a higher propensity to use hub connections than leisure travellers, in part due to the broader network across which demand is spread but also because hubs can offer higher frequencies of service than the more limited frequencies often provided by direct connections. Around 33% of business users flew via a hub in 2014 compared to just under 14% of leisure passengers. In absolute terms, leisure passengers still dominate this traffic, but against a backdrop of higher total demand.

3.37 Whilst London Heathrow primarily handled those connecting at domestic airports, the split across international airports was greater. In total, passengers connected at 127 airports around the world, although 91% of onward connecting passengers were handled through just the Top 25 hubs, as can be seen in **Table 3.18**.

Table 3.18: Connecting Passengers by Top 25 Hubs (millions)											
Hub Airport	Doncaster /Sheffield Airport	Humberside Airport	Leeds/ Bradford Airport	Liverpool Airport	Manchester Airport	Tees Valley Airport	Newcastle Airport	London Airports	Scottish Airports	Midlands Airports	Total
Key Domestic Hubs											
London Heathrow			0.088		0.569		0.344		0.006		**1.01**
London Gatwick							0.033		0.001		**0.03**
Key International Hubs											
Amsterdam		0.046	0.085	0.001	0.262	0.062	0.230	0.030	0.004	0.004	**0.72**
Dubai					0.496		0.166	0.043	0.001	0.006	**0.71**
Abu Dhabi					0.268			0.011			**0.28**
Paris (CDG)				0.002	0.126		0.084	0.004		0.001	**0.22**
Doha					0.162			0.030			**0.19**
Frankfurt					0.170			0.003		0.002	**0.17**
Istanbul					0.119			0.006	0.001	0.001	**0.13**
Munich					0.117					0.001	**0.12**
Philadelphia					0.085				0.000		**0.08**
Atlanta					0.077			0.006			**0.08**
Copenhagen			0.001	0.000	0.057		0.005			0.001	**0.06**
Singapore					0.047			0.015			**0.06**
Brussels					0.051		0.009			0.001	**0.06**
Sydney								0.056			**0.06**
Chicago					0.052			0.003			**0.06**
Washington					0.041			0.002			**0.04**
Zurich					0.041			0.003			**0.04**
Oslo				0.000	0.034			0.004	0.003		**0.04**
Dusseldorf			0.000		0.028		0.011				**0.04**
New York (EWR)					0.025			0.003	0.001		**0.03**
Helsinki					0.023			0.002			**0.02**
Dublin				0.003	0.014		0.006	0.001			**0.02**
New York (JFK)					0.024						**0.02**
Source: CAA Survey/York Aviation LLP											

Route Networks

3.38 **Table 3.19** shows the numbers of destinations served by world zone from each airport within the North, excluding domestic flights. In general, this shows growth in the number of destinations served for most airports from 2015 to 2016, although some individual world regions will see reductions, including North Africa where Tunisia and Egypt are presenting difficulties for airlines and tour operators at the present time.

Table 3.19: International Destinations Served, July 2015 and July 2016												
Departure Airport	Year	Central/ Western Africa	North Africa	North East Asia	South Asia	South East Asia	Eastern/ Central Europe	Western Europe	Caribbean	Central America	Middle East	North America
Doncaster/Sheffield Airport	2015	0	2	0	0	0	9	16	0	0	0	0
	2016	0	0	0	0	0	10	20	0	0	0	0
Humberside Airport	2015	0	0	0	0	0	0	2	0	0	0	0
	2016	0	0	0	0	0	0	4	0	0	0	0
Leeds/Bradford Airport	2015	0	1	0	0	0	8	42	0	0	0	0
	2016	0	0	0	0	0	8	42	0	0	0	0
Liverpool Airport	2015	0	0	0	0	0	12	37	0	0	0	0
	2016	0	0	0	0	0	15	35	0	0	0	0
Manchester Airport	2015	2	8	1	2	1	18	101	12	2	7	13
	2016	2	4	2	2	1	17	105	8	2	5	15
Durham Tees Valley Airport	2015	0	0	0	0	0	0	1	0	0	0	0
	2016	0	0	0	0	0	0	1	0	0	0	0
Newcastle Airport	2015	0	3	0	0	0	5	42	0	1	1	2
	2016	0	1	0	0	0	5	43	0	1	1	2
Total Unique Points 2016		**2**	**4**	**2**	**2**	**1**	**28**	**110**	**8**	**2**	**5**	**15**
Source: OAG/York Aviation												

3.39 By July 2016, there will be 350 routes from the region's airports, covering a total of 180 unique destinations. There is significant overlap on core leisure and European city routes across all airports, but many airports do retain some unique destinations. In particular, Manchester has key strengths in the long haul network, which will be bolstered in 2016 by the start of direct flights to China. Liverpool Airport serves a number of unique points in Central and Eastern Europe, whilst Newcastle features services related to cultural and North Sea industry links with the Nordic countries. More detail by individual airport is given in Appendix A.

3.40 A number of factors are important in considering the quality of the air services provided to the region. For business travellers, these often relate to convenience more than price, driven by the less flexible nature of business travel. To a degree, the opposite is true for leisure passengers who may be more flexible in the days and times they fly in order to secure lower prices. Business travellers are likely to consider the following:

- Days of the flights: Are these on, or adjacent to, the day a business traveller needs to be at their destination? Are day-return flights possible or will an overnight stay be required?
- Flight timings: Can the traveller reach their destination in time for a meeting, or return after a meeting finishes easily? If they are intending to do a day return trip, are the flights timed conveniently so as to allow a full working day at the destination? Will middle of the day flights reduce productivity by impacting on working time through a day?
- Frequency: Are flights at adequate frequency to allow the traveller to be flexible and catch an earlier or later flight if meetings finish early or late?
- Proximity: How good are the surface access links to the ultimate destination?

3.41 There tends to be a degree of interchangeability between these factors and price does remain an important consideration for many business passengers. In the end, the traveller will balance all of these factors. The productivity of a business can be impacted by having people out of the office for long periods of the working day to travel, or by having to fund overnight stays because day return flights are not possible from local airports. Most businesses trade these factors off against the convenience of flying from a local airport, and where flights are not at convenient times or on convenient days, it is possible that business travellers will seek to fly from other airports in the region where flight options are considered better.

3.42 The mix of airlines at an airport can impact on these factors for business travellers. In some cases, operations from regional airports are less likely to meet the needs of all local business travellers, when compared to higher frequency services at larger airports. Airline frequent flyer programmes can also be a factor as can be whether an airline offers through ticketing to another carrier. Low fares carriers may be perceived as operating lower frequency fights at times that are less convenient for business users, whereas historically it has been viewed that full service and regional airlines offer schedules which are more suited to these passengers. In practice, this is not always the case with low fares carriers often offering two flights or more per day to key destinations and regional airlines operating at lower frequencies at smaller regional airports. Furthermore, recent strategy shifts by the low fares carriers, particularly Ryanair and easyJet, has seen them adopt ticketing policies more suited to business travellers, such as flexible fares and these airlines are also exploring whether to offer through ticketing to long haul connections at some airports.

3.43 In summer 2015, there were 79 airlines offering international services from across the region's airports, although some of these were operating under contract to other airlines, thus were not all responsible for selling their own tickets. **Table 3.20** summarises the mix of airlines for each of the airports.

Table 3.20: Airline Profile for TfN Region Airports, July 2015 (International Services)

	Doncaster/ Sheffield Airport	Humberside Airport	Leeds/ Bradford Airport	Liverpool Airport	Manchester Airport	Durham Tees Valley Airport	Newcastle Airport
Total Number of Airlines	4	2	6	4	46	1	16
Of Which:							
*Charter**	2	1	2	0	6	0	3
Full Service	1	1	2	0	18	1	5
Long Haul	0	0	0	0	14	0	2
Low Fares	1	0	2	4	7	0	4
Regional	0	0	0	0	1	0	2
Unique Airlines in TfN Region	0	0	0	1	30	0	2
Largest Airline by Frequency	Thomson Airways	KLM	Jet2	easyJet	Ryanair	KLM	Jet2

Notes:
*Includes Thomson Airways, Thomas Cook and Monarch Airlines, which also offer seat-only and low fares scheduled services

Source: OAG

3.44 As can be seen from Table 3.20, the largest airlines, by weekly frequency on international flights, at most of the region's airports were low fares or leisure orientated carriers. Only the two smallest airports, Durham Tees Valley and Humberside were dominated by a full service carrier (KLM in both cases with its hub connections to Amsterdam). The relative dominance of easyJet, Ryanair and Jet2 reflect the relative strength of these airlines in short haul point to point markets, which dominate the majority of the North's airports. Jet2 also has its primary focus in serving the North of England, albeit principally in leisure markets.

Composition of Inbound Passengers

3.45 In 2014, there were just under 5.7 million foreign resident inbound passengers to the Northern Powerhouse region, with 89% of these choosing to use airports in the region[34]. Of these, 74% were travelling for leisure purposes, although this covers a broad variety of passengers rather than just inbound tourists, including those visiting friends and relatives who live in the UK. As can be seen in **Table 3.21**, Manchester Airport handled the majority of inbound passengers, covering 64% of all business users and 54% of all leisure travellers. The distribution of foreign visitors by surface destination is shown in **Figure 3.6**.

Table 3.21: Inbound International Passenger Mix*, 2014

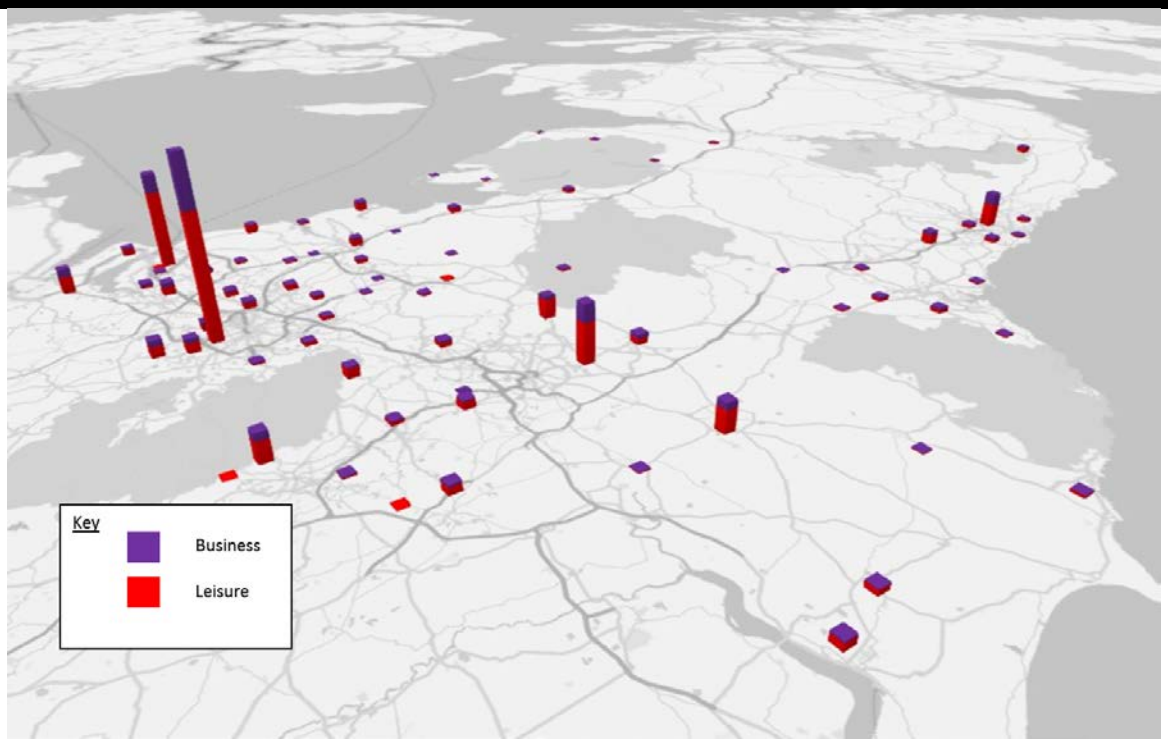
Airport	Business	Leisure	Total
Doncaster/Sheffield Airport	6,000	72,600	78,600
Durham Tees Valley Airport	16,300	9,500	25,800
Humberside Airport	2,800	5,100	7,900
Leeds/Bradford Airport	79,700	333,700	413,400
Liverpool Airport	83,000	658,500	741,500
Manchester Airport	947,700	2,244,900	3,192,600
Newcastle Airport	182,100	379,600	561,700
Other Airports	161,200	484,700	645,900
Grand Total	**1,478,800**	**4,188,600**	**5,667,400**

Notes:
*To and From the Northern Powerhouse Region

Source: CAA Survey/York Aviation

[34] This reflects passengers who spent their first or last night in the North but not all of those who visited the North for part of their trip. As such, this may understate the true tourism potential of the North and its component areas where passengers combined a visit to the North with other parts of the UK but who might use direct services if they were available. The analysis set out here may understate the potential in each of the LEP areas to some degree.

Figure 3.6: International Visitor Demand by District



Source: CAA Survey

3.46 **Table 3.22** shows that the top 10 countries for inbound leisure passengers generate around 67% of all passengers in this category, with Ireland and Spain between them generating just under 30% of all inbound leisure passengers. In total, there were 110 countries of origin for inbound leisure passengers in 2014 to the North, although some generated very few visitors.

Table 3.22: Origin Country For Inbound Leisure Passengers 2014		
Rank	**Country**	**Passengers**
1	Ireland	699,700
2	Spain	516,600
3	Australia	248,000
4	Germany	241,500
5	United States	228,400
6	Netherlands	218,400
7	Poland	207,400
8	France	189,900
9	Switzerland	136,000
10	Norway	135,700
-	Other Countries	1,367,000
Source: CAA Survey/York Aviation		

3.47 The pattern of airport usage for inbound leisure passengers is broadly in line with the overall patterns seen across the whole market, as seen in **Table 3.23** overleaf, with around 85% of passengers on international services directly into the region, 4% via a UK hub airport and 11% making a surface journey to the region from another UK airport.

3.48 However, at a regional level there are some differences. Some LEP areas see an increase in the share of inbound passengers using international flights to their local airport, such as Liverpool CR which sees an increase from 39% of all passengers using Liverpool Airport to 55% for all inbound leisure passengers. Liverpool also plays a greater role in inbound leisure to the Cheshire & Warrington LEP area. Conversely, the North East CR sees a fall in usage of international services to Newcastle Airport from 72% of all travellers down to 67% for inbound leisure, and an increasing reliance on UK hubbing services and surface access to London Heathrow. For Leeds CR, the local airport generates the same level of usage across inbound leisure on international flights as the overall market (32%), but sees a greater reliance on surface access to London Heathrow, up from 5% of the whole market to over 16% of the inbound leisure market. For Greater Manchester there is very little difference between the Inbound Leisure and overall markets.

Table 3.23: Northern Powerhouse Foreign Leisure Passengers 2014

	Passengers on International Flights							Passengers Connecting to International Flights at other UK Airports*							Surface Leakage to Airports out of Region				
	Doncaster/ Sheffield Airport	Humberside Airport	Leeds/ Bradford Airport	Liverpool Airport	Manchester Airport	Durham Tees Valley Airport	Newcastle Airport	Doncaster/ Sheffield Airport	Humberside Airport	Leeds/ Bradford Airport	Liverpool Airport	Manchester Airport	Durham Tees Valley Airport	Newcastle Airport	London Heathrow Airport	Other London Airports	Scottish Airports	Midlands Airports	Total Passengers
Total Passengers	**70,000**	**10,000**	**320,000**	**660,000**	**2,170,000**	**10,000**	**310,000**	**0**	**0**	**20,000**	**0**	**70,000**	**0**	**70,000**	**250,000**	**140,000**	**10,000**	**80,000**	**4,180,000**
Cheshire & Warrington			*0.5%*	*26.6%*	*66.2%*							*1.0%*			*3.3%*	*0.6%*		*3.0%*	*260,000*
Cumbria	*0.2%*		*1.5%*	*6.3%*	*65.7%*	*0.3%*	*6.4%*					*4.5%*		*3.6%*	*6.7%*	*2.3%*	*2.0%*	*2.7%*	*80,000*
Greater Manchester	*0.2%*		*0.4%*	*7.6%*	*82.6%*							*2.7%*			*2.7%*	*3.5%*		*0.5%*	*1,200,000*
Hull & Humber CR	*10.7%*	*8.4%*	*10.1%*	*6.3%*	*53.0%*										*2.4%*	*3.0%*		*5.8%*	*50,000*
Lancashire	*0.3%*		*1.0%*	*19.1%*	*72.8%*							*4.5%*			*1.1%*	*1.4%*		*0.8%*	*270,000*
Leeds CR	*2.4%*		*32.2%*	*3.8%*	*35.9%*		*0.1%*			*2.0%*		*0.6%*			*16.3%*	*3.9%*	*0.2%*	*1.9%*	*590,000*
Liverpool CR				*54.6%*	*37.1%*							*1.5%*			*3.7%*	*2.6%*		*0.2%*	*730,000*
North East CR	*0.7%*		*1.1%*	*0.2%*	*7.5%*	*0.4%*	*66.5%*							*15.5%*	*4.1%*	*2.1%*	*1.2%*	*0.2%*	*390,000*
North Yorkshire	*5.4%*	*0.2%*	*29.2%*	*2.9%*	*34.7%*	*0.3%*	*3.6%*			*1.2%*		*0.7%*		*0.2%*	*9.8%*	*6.9%*	*0.5%*	*3.7%*	*300,000*
Sheffield CR	*12.6%*		*6.0%*	*1.6%*	*45.1%*					*0.3%*		*1.5%*		*0.2%*	*11.5%*	*6.3%*		*15.9%*	*230,000*
Tees Valley CR	*2.7%*		*6.5%*	*4.8%*	*17.5%*	*8.4%*	*43.8%*			*0.3%*		*2.7%*		*5.9%*	*3.6%*	*7.6%*	*1.1%*		*80,000*

Note:
Figures may not sum due to rounding
**Primarily London Heathrow*

Source: CAA Survey/York Aviation

Mode of Access to Airports

3.49 Across all of the North's airports, the private car remains the dominant mode of surface access, covering over 57% of all passengers. When combined with taxis, the figure for car based travel increases to 84% of all international travellers to and from the northern airports. Although the use of the private car falls below 50% across the combined northern airports for business travellers and inbound passengers, the figure remains high at 48% and 44% respectively (including hire cars).

3.50 The pattern varies by each airport, as can be seen in **Table 3.24**, but overall road based travel dominates across all market segments. The importance of rail services can be seen for Manchester Airport, being used by 14% of all passengers, 14% of business passengers and a significant 23% of all inbound travellers.

Air Freight

3.51 Although this study is principally concerned with passenger connectivity, as freight requirements are principally dealt with in the Freight and Logistics Workstream, we have nonetheless provided some information on air freight movements to aid consideration of the extent to which air freight flows may underpin the viability of air services essential to passenger connectivity. This is set out in **Appendix C**.

Table 3.24: Surface Access Mode by Airport							
All International Passengers							
	Doncaster/ Sheffield Airport	**Humberside Airport**	**Leeds/ Bradford Airport**	**Liverpool Airport**	**Manchester Airport**	**Durham/ Tees Valley Airport**	**Newcastle Airport**
Taxi	17%	49%	24%	20%	29%	22%	30%
Bus/Coach	12%	1%	11%	19%	2%	0%	1%
Private Car	70%	51%	64%	60%	55%	54%	58%
Other	0%	0%	0%	0%	0%	0%	9%
Metro	0%	0%	0%	0%	0%	0%	0%
Rail	0%	0%	0%	0%	14%	0%	0%
Unspecified	1%	0%	1%	1%	0%	24%	1%
All International Business Passengers							
	Doncaster/ Sheffield Airport	**Humberside Airport**	**Leeds/ Bradford Airport**	**Liverpool Airport**	**Manchester Airport**	**Durham/ Tees Valley Airport**	**Newcastle Airport**
Taxi	41%	47%	35%	29%	34%	28%	48%
Bus/Coach	26%	1%	13%	18%	1%	0%	1%
Private Car	33%	52%	49%	53%	49%	47%	38%
Other	0%	0%	1%	0%	1%	1%	10%
Metro	0%	0%	0%	0%	0%	0%	0%
Rail	0%	0%	0%	0%	14%	0%	0%
Unspecified	0%	0%	2%	1%	0%	24%	3%
All Inbound International Passengers							
	Doncaster/ Sheffield Airport	**Humberside Airport**	**Leeds/ Bradford Airport**	**Liverpool Airport**	**Manchester Airport**	**Durham/ Tees Valley Airport**	**Newcastle Airport**
Taxi	7%	81%	18%	25%	27%	25%	37%
Bus/Coach	26%	1%	26%	31%	4%	0%	1%
Private Car	67%	18%	53%	42%	44%	44%	38%
Other	0%	0%	0%	1%	0%	1%	17%
Metro	0%	0%	0%	0%	0%	0%	0%
Rail	0%	0%	0%	0%	23%	0%	0%
Unspecified	1%	0%	2%	1%	1%	30%	7%
Source: CAA Survey							

Sea Travel Market

3.52 In reviewing the international sea travel market, MDS Transmodal has looked at both the Cruise market and the Passenger Ferry market. Both of these are reviewed in more detail in **Appendix D**, including time series data illustrating the strengths and weaknesses of each over time.

Ferry Services

3.53 For passenger ferries, there are two key market segments, the GB-Ireland market and the GB-Continent market, with the former served principally from Liverpool and Birkenhead in the Northern Powerhouse Region, and the latter served mainly by the Port of Tyne and Hull.

3.54 In 2014, there were approximately 390,000 passengers (including lorry drivers) on services between Ireland and ports in the North, representing around 8% of the total passenger traffic on Irish Sea routes. The dominant routes to/from Ireland remain the shorter crossings between Loch Ryan in South West Scotland and Belfast/Larne and between Holyhead and Dublin. The relevant British ports sit just outside of the Northern Powerhouse Region. A detailed breakdown can be seen in Appendix D.

3.55 For the continental Europe routings, ports in the Northern Powerhouse Region handled 1.56 million passengers in 2014, representing 5.3% of all passengers carried to the continent (including the Eurotunnel Passenger Shuttle which competes directly with the passenger ferries on the Short Straits). As with the Irish Sea routes, the dominant routings are those with the shortest crossings, with 61% of all the ferry passenger market to continental Europe being across the Short Straits via Dover and the Eurotunnel Freight Shuttle.

3.56 The proportion of international passenger trips made by sea is, therefore, significantly lower than by air. A short pen-portrait of each of the main ferry ports serving the region is included in Appendix B.

3.57 We have analysed data from the International Passenger Survey (IPS) that was available to us with detail for ports and routes (for 2014) to produce an estimate of business use and inbound tourism on ferries to/from northern ports.

3.58 The IPS data in 2014 covered the routes to/from Hull and Newcastle but not Liverpool. Data by purpose is available, but the distinction between truck drivers and other business users was only available for the Dover Straits routes. We believe this is likely to be due to freight being handled through different channels at Hull and Newcastle and, therefore, truck drivers are not included in the IPS data at these ports. The purpose of trips by ferry (excluding HGV drivers for all routes) is shown in **Table 3.25**.

Table 3.25: Trips by all passengers by purpose on Northern Ferry routes				
	Business	Leisure	Visiting friends & relatives	Other
Hull-Rotterdam	7%	72%	16%	5%
Hull-Zeebrugge	3%	87%	8%	1%
Newcastle-Amsterdam	1%	93%	4%	2%
Total UK international ferry market (excluding truck drivers)	7%	68%	20%	5%
Source: International Passenger Survey				

3.59 The routes are therefore predominantly serving the leisure market, but about 5% of the passengers travelling to and from Hull are making business trips, probably travelling with their own cars.

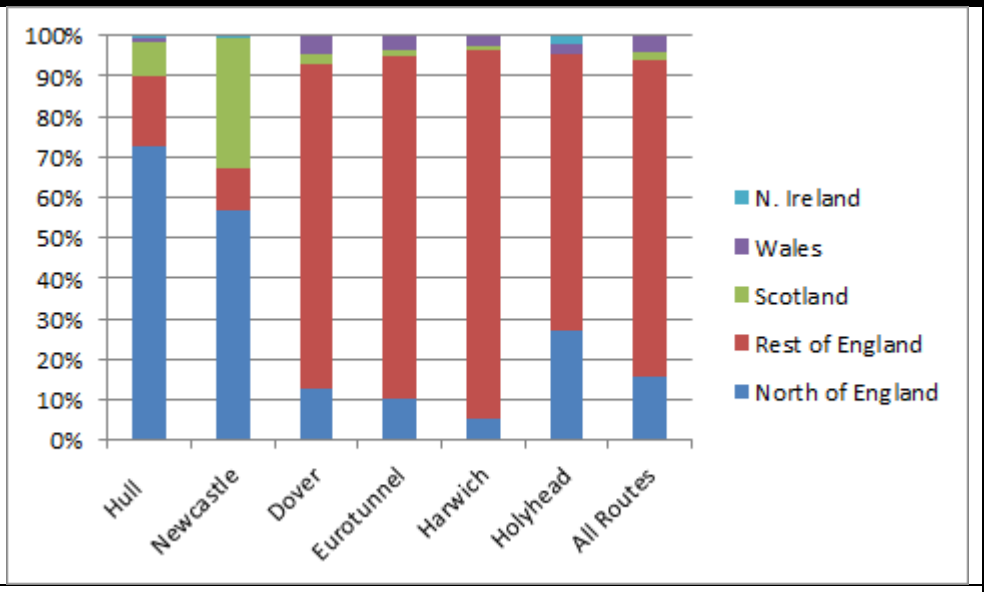
3.60 The residency of the passengers is shown in **Table 3.26** below.

Table 3.26: Residency of passengers on Northern Ferry routes		
	Overseas residents	UK residents
Hull-Rotterdam	40%	60%
Hull-Zeebrugge	21%	79%
Newcastle-Amsterdam	52%	48%
Total UK international ferry market (excluding truck drivers)	33%	67%
Source: International Passenger Survey		

3.61 In the UK ferry market as a whole, the dominant flow relates to UK residents travelling to the Continent and Ireland and the statistics for the Northern ferry routes generally reflect this position, although the Newcastle-Amsterdam service appears to be more balanced, attracting a high proportion of overseas residents.

3.62 The surface origins of ferry passengers is shown in **Figure 3.7**.

Figure 3.7: Surface Origins of UK Ferry Passengers for Selected Ports



Source: ONS International Passenger Survey

3.63 The figure above shows the origin of UK passengers using selected ports of departure and for the UK ferry market as a whole in 2014. The departure ports of Hull and Newcastle predominantly serve passengers from the North of England (and Scotland in the case of Newcastle), with 73% of all passengers via Hull and 57% via Newcastle being Northern resident. The proportion of passengers from the North of England on services from the ports of Dover, Harwich and Eurotunnel services is lower in relative terms at 16%, 5% and 10% respectively, but in absolute terms the Dover Straits routes remain the most important GB-Continent routes for residents of the North of England. This is because the ferry passengers are, as a general rule, taking their own cars on longer breaks and holidays and they are prepared to drive to the Dover Straits ports that offer the shortest, high frequency crossings with the lowest fares.

3.64 Similarly, 27% of the passengers on the Holyhead-Dublin route are resident in the North of England, showing the popularity of this shorter route for passengers from the North taking short breaks or longer holidays in Ireland.

3.65 **Table 3.27** below provides analysis from IPS of the residency of overseas passengers on the same routes in 2014. This shows that the routes via the North of England ports are mainly used by residents of Germany, Belgium and the Netherlands, offering an overnight route directly to the North of England.

Table 3.27: Passengers on selected routes, residence shares, 2014							
Country/Port	**Hull**	**Newcastle**	**Dover**	**Eurotunnel**	**Harwich**	**Holyhead**	**All Routes**
France	8%	3%	15%	31%		2%	21%
Germany	36%	37%	20%	8%	15%	4%	15%
Netherlands	33%	41%	10%	12%	52%	2%	12%
Poland	0%	1%	15%	10%	0%		11%
Belgium	14%	7%	8%	13%	0%	0%	8%
Irish Republic	1%	0%	1%	1%	1%	72%	6%
Romania	0%	1%	7%	3%		2%	4%
Czech Republic	0%	3%	3%	2%	0%	0%	3%
Hungary	0%	1%	3%	1%		0%	2%
Spain			2%	4%			2%
Bulgaria			1%	3%			2%
Lithuania			2%	1%		1%	1%
Other Europe	5%	6%	8%	5%	14%	2%	6%
Europe Total	**98%**	**99%**	**94%**	**93%**	**83%**	**85%**	**93%**
USA	0%	0%	2%	1%	5%	7%	2%
Asia	1%	0%	1%	2%	11%	2%	2%
Other Americas	0%	0%	1%	3%	1%	1%	2%
Australia & NZ	0%	0%	2%	0%	1%	4%	1%
Africa	0%		0%	0%		1%	0%
Source: ONS International Passenger Survey							

Existing ferry connectivity to/from the North of England

3.66 Existing international passenger ferry connectivity is provided to the Benelux region of the European continental mainland by three routes, namely:

- Port of Tyne –Ijmuiden (operated by DFDS Seaways);
- Hull-Rotterdam (P&O Ferries);
- Hull-Zeebrugge (P&O Ferries).

3.67 In the GB-Ireland market passenger ferry connectivity is provided by two services, namely:

- Liverpool-Dublin (P&O Ferries);
- Birkenhead-Belfast (Stena Line).

3.68 The international passenger ferry services, including the Birkenhead-Belfast service (technically a domestic service) as it operates in the GB-Ireland market, the names and construction dates of the ships and the associated terminal infrastructure are set out in **Table 3.28** below.

Table 3.28: International passenger ferry connectivity from the North of England				
Route	**Service**	**Operator**	**Vessels & build year**	**Terminal infrastructure in the North of England**
Newcastle-IJmuiden	One overnight sailing/day in each direction; c. 15.5 hour crossing	DFDS Seaways	Princess Seaways (1986) King Seaways (1987)	International Passenger Terminal: riverside terminal in North Shields
Hull-Rotterdam	One overnight sailing/day in each direction; c. 11 hour crossing	P&O Ferries	Pride of Hull (2001) Pride of Rotterdam (2001)	Ferry Terminal 1: riverside terminal
Hull-Zeebrugge	One overnight sailing/day in each direction; c. 13 hour crossing time	P&O Ferries	Pride of Bruges (1987) Pride of York (1987)	Ferry Terminal 2: in-dock terminal
Liverpool-Dublin	Three sailings/day; c 8.5 hour crossing	P&O Ferries	Norbank (1993) Norbay (1994) European Endeavour (2000)	Gladstone Dock, Seaforth: in-dock terminal
Birkenhead-Belfast	Three sailings/day; c 8 hour crossing	Stena Line	Stena Mersey (2005) Stena Lagan (2005) Stena Performer (2012)	Twelve Quays, Birkenhead: riverside terminal
Source: MDS Transmodal				

3.69 In addition, there are also purely domestic passenger ferry services between the North of England and the Isle of Man and these are relevant in terms of their contribution to the use of port facilities and the viability of improvements, including surface access. These services, provided by the Isle of Man Steam Packet Company (IOMSPC) under a user agreement with the Isle of Man Government, are as follows:

- A high speed ferry service for passengers and their cars between Liverpool (Pier Head) and Douglas;
- A 'lifeline' conventional ferry service for both passengers and freight between Heysham and Douglas;
- A less frequent conventional ferry service for both passengers and freight between the Twelve Quays terminal in Birkenhead and Douglas.

The IOMSPC has announced that it will invest in a new conventional ferry by 2021 at the latest, while retaining the existing conventional vessel. It will also replace the existing fast craft by 2023 at the latest.

3.70 The age of the ships is relevant to the future ferry connectivity of the North of England because vessels that are about 25 years of age are generally regarded to be approaching the end of their useful economic lives. Out of a total of twelve vessels deployed, four are over 25 years of age and six are over 20 years old.

3.71 If ferry terminals are in-river (rather than in-dock behind locks) the ferry operators are able to reduce the turnaround time of their services and can allow operators to utilise their vessels more intensively, thereby reducing the cost per car or per passenger.

Recent market development: ferries

3.72 The passenger ferry markets between GB and the Continental mainland and Ireland are relatively mature following the 2008-09 economic crisis when the economic downturn led to a process of industry consolidation and a reduction in the number of services in both markets. In the GB-Continent market, the Newcastle-IJmuiden route carried 6% fewer passengers in 2014 than it did in 2010; the Hull-Rotterdam and the Hull-Zeebrugge services carried 3% and 1% fewer passengers respectively over the same period. Overall, this reflects an ongoing decline in the use of ferries for passenger carriage.

3.73 On the east coast, the DFDS-operated passenger and freight ferry service between Newcastle and Stavanger/Bergen/Haugesund closed in September 2008, just as the economic recession started. The operator stated that the service was loss-making and this may have been due to competition in the passenger market from low cost airlines and the vessel coming near to the end of its useful economic life.

3.74 On the Irish Sea, the port of Fleetwood closed to commercial traffic in 2010 as its only customer, Stena Line, decided not to replace ferries operated on the Fleetwood-Larne route. This was due to the ships reaching the end of their economic lives and already being the maximum size that could be accommodated at the port in a market where vessel size was increasing. Due to the very significant economic downturn in the Irish economy in 2008-09 and a slow recovery, the overall GB-Ireland market fell by 8% between 2010 and 2014, while the Liverpool-Dublin service lost 35% of its passenger traffic. The Birkenhead-Belfast service increased its traffic by 21%, partly due to a transfer of custom following the closure of the Fleetwood-Larne service and may not be reflective of long term growth in the overall market.

3.75 The latest (provisional) DfT data on passenger ferry services shows that the Newcastle-IJmuiden route secured 4% more traffic in 2015 compared to the previous year, but the Hull-Zeebrugge route lost 6% and the Liverpool-Dublin, Liverpool-Belfast and Hull-Rotterdam routes all lost 2% of their passenger traffic volumes. Data from shipping industry sources suggest that all the passenger routes on the East Coast increased their passenger car volumes in 2015, if only marginally, and this may have been the result of a 'ripple effect' from the Dover Straits due to the severe disruption that was experienced on the Dover-Calais routes in the summer of 2014; passenger car volumes on the Irish Sea routes were effectively stable.

3.76 The existing international passenger ferry services are operated by multi-purpose ferries that also transport considerable volumes of RORO freight vehicles and therefore the economics of the services are heavily reliant on freight traffic (particularly in the winter), which has to be secured in competition with the increasingly large freight only RORO ships that are being operated across the North Sea between the Humber/Tees/Forth estuaries and Benelux. Ferries that can carry significant numbers of passengers are subject to more stringent safety regulations and the passenger accommodation makes the vessels more expensive to build, maintain and crew than freight-only RORO ships. This suggests that in the future operators are increasingly likely to operate/build vessels that have greater capacity for freight traffic.

Cruise

3.77 The UK cruise market is segmented into two markets:

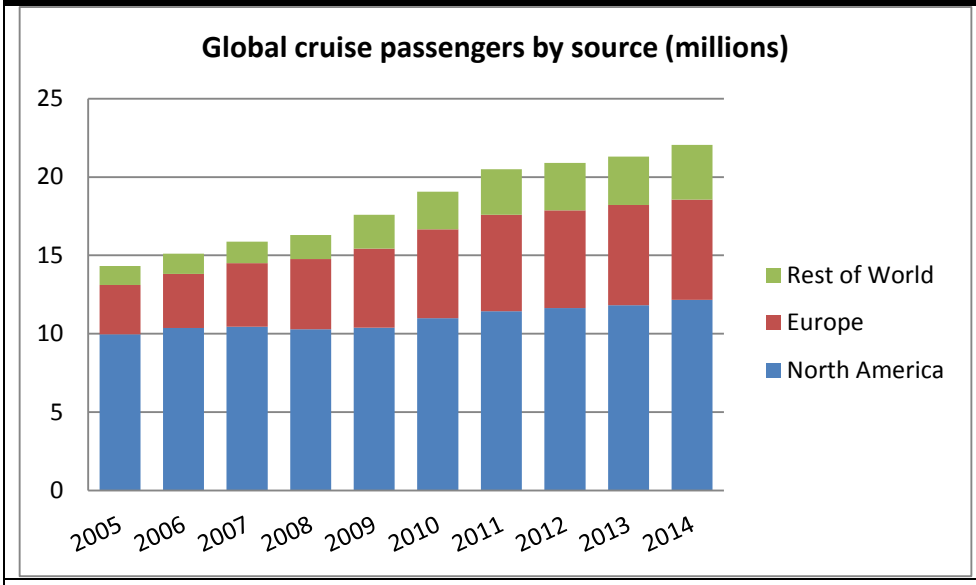
- The turnaround (T/R) market provides 'homeport' facilities for cruise lines for embarking/disembarking passengers at the beginning and end of their cruise;
- The port of call (POC) market (sometimes referred to as the transit market) includes those ports included on a cruise itinerary as 'way calls' for passenger excursions.

3.78 The two primary ports operating in this market in the Northern Powerhouse region are Liverpool and the Port of Tyne, though the ports of Barrow and Hull have also received cruise calls in recent years, with Hull expecting 4 calls in 2016. In 2014, the Port of Tyne, Liverpool and Barrow handled a total of 113,000 cruise passengers on 108 ship calls. The market at Liverpool is dominated by Port of Call visits but, in 2016, around 50% of cruise calls at Port of Tyne will be turnarounds. Those passengers joining ships in the northern ports are dominated by UK originating passengers.

3.79 Most ports do not record cruise passenger nationalities or do not openly publish those figures. Members of the Cruise Liner Industry Association (CLIA) do report this data to the trade body and this is the main source of information used in this section along with data reported by the subsidiary organisation CLIA Europe. Additional research for the UK market is conducted on behalf of Cruise UK & Ireland by IRN and summary statistics are published on an annual basis. This indicates the origins of domestic passengers by UK Government region, but information on the origin of overseas passengers is limited.

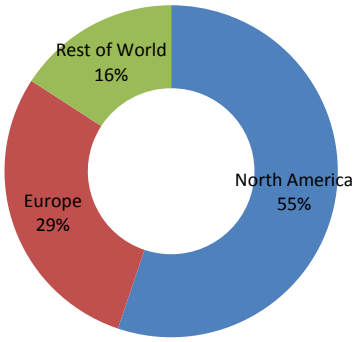
3.80 At a global level, the number of passengers taking a cruise in 2014 increased to 22.2 million passengers in 2014. As shown in **Figures 3.8** and **3.9**, the main source market is and continues to be the USA, which accounts for 55% of the global cruise passenger market. Europe accounted for 29% or 6.4 million passengers. Other regions accounted for the remaining 16% or 3.5 million passengers. Globally, the market has been increasing at a compound growth rate of 5% over the last ten years. While the US market continues to have a strong influence on the industry, its growth of 2% p.a. over the period compares with 8% in the European market and 12% in new growth markets. These primarily include Australia, China, Singapore, Japan and South America.

Figure 3.8: Origins of Cruise Passengers – Global Market



Source: CLIA

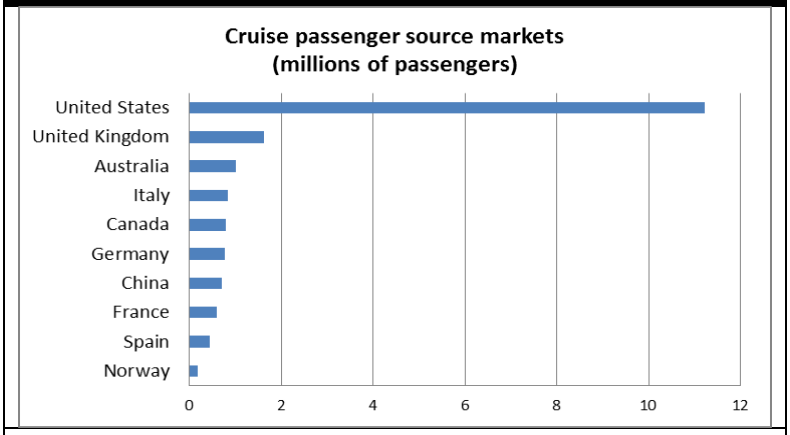
Figure 3.9: Origins of Cruise Passengers – Global Market



Source: CLIA

3.81 Data from CLIA indicates that in the global cruise market 88% of passengers are sourced from just 10 countries, as shown in **Figure 3.10** overleaf.

Figure 3.10: Cruise Source Markets



Source: CLIA

3.82 Figures released by CLIA Europe in 2014, shown in **Table 3.29,** indicate that Germany has become the principal source market for cruise passengers in the European market with 1.77 million passengers in 2014. This has been related to the increase in capacity of German cruise lines AIDA and TUI. The decrease in the number of UK passengers taking a cruise in 2014 was explained by the movement of capacity away from the UK, mainly to the Caribbean, which led to more British passengers taking fly-cruises. Italy, France and Spain are the other primary source markets.

Table 3.29: European Cruise Passenger Market

Passengers 000s	Passenger Numbers		% share	
Country of origin	**2010**	**2014**	**2010**	**2014**
Germany	1,219	1,771	21.9%	27.7%
UK & Ireland	1,622	1,644	29.1%	25.7%
Italy	889	842	16.0%	13.2%
France	387	593	7.0%	9.3%
Spain	645	454	11.6%	7.1%
Scandinavia (inc. Finland)	283	305	5.1%	4.8%
Switzerland	91	143	1.6%	2.2%
Austria	93	122	1.7%	1.9%
Netherlands	76	109	1.4%	1.7%
Belgium/Luxembourg	50	77	0.9%	1.2%
Other	212	327	3.8%	5.1%
Total	**5,567**	**6,387**	**100%**	**100%**

Source: CLIA

3.83 The figures above provide some clue as to the main origins of passengers globally and in Europe. While the US market is important, it is not dominant in Europe or in the UK market. Evidence acquired by MDS Transmodal in previous studies has indicated that the top 3 countries providing cruise passengers to UK ports of call are the UK, North America (particularly the USA) and Germany with these three countries accounting for more than 70% of the total transit call passengers as shown in **Table 3.30**. Ports remain susceptible to a downturn in passengers from the US for global security and political reasons and the economic downturn in the Eurozone has had an impact on numbers from Italy and Spain in particular in recent years.

Table 3.30: Nationalities of Passengers at UK Ports of Call (% of transit passengers)

	% Nationality Transit
UK	30.9
North American	29.9
German	13.0
Italian	11.6
French	3.7
Spanish	2.9
Dutch	2.4
Scandinavian	1.7
Other	4.0
Total	**100.0**
Source: CLIA	

3.84 Data provided by IRN Research to MDS Transmodal shown in **Table 3.31** indicates the UK regions of origin of UK cruise passengers. The South East is confirmed as the top source of passengers. It is difficult to discern real trends from this and switches in cruise ship deployment can change the position as was noted in 2014. Both the South East and South West gained ground in 2015. However, record numbers of ship calls are scheduled in both the Port of Liverpool and the Port of Tyne in 2016.

Table 3.31: Origin of UK Cruise Passengers by Region of Residence, 2006-2015 (% of passengers)							
	2006	2011	2012	2013	2014	2015	*% UK popn*
South East and London	21	23	28	27	24	25	*27*
North West	16	12	14	13	13	12	*11*
South West	10	13	11	12	12	14	*8*
Scotland	11	9	11	8	9	7	*8*
Yorks. & Humberside	8	8	8	8	8	9	*8*
West Midlands	8	9	7	8	8	9	*7*
East Midlands	7	7	5	8	8	7	*7*
East of England	5	6	4	9	6	7	*9*
North East	6	6	5	5	3	4	*4*
Wales	5	5	6	4	5	5	*5*
Northern Ireland	3	2	2	1	2	1	*3*

Recent market development: cruise

3.85 The cruise market has a been a relative success in the North of England with both Liverpool and Newcastle expecting to accommodate record numbers of ships visits during the 2016 cruise season. The Port of Tyne has 28 calls booked (including 6 turnaround calls), Liverpool has 60 calls booked (including 24 turnaround calls) and Hull 4. While cruise activity is less relevant for the North's passenger connectivity as such, it offers operational economic benefits from passengers' expenditure in the North.

4 THE ECONOMIC VALUE OF BASELINE CONNECTIVITY

Introduction

4.1 In this section, we examine the current economic value of the international connectivity offered by the Northern Powerhouse region's airports and ports. This essentially seeks to provide an estimate of the GVA impacts associated with the various links between connectivity and economic prosperity, such as the effect on FDI, trade or tourism, discussed in Section 2.

4.2 At the outset, it is important to be clear that the focus of this analysis is on the benefits associated with connectivity in the wider economy. We recognise that airports and ports can have valuable local economic impacts through their operational activities (termed direct, indirect and induced impacts) and in so far as they attract clusters of other businesses. These effects can be locally significant as part of the broader Logistics sector but are largely distinct from the role that air service connectivity brings to the wider business base in an area, albeit busier airports and ports generate greater local impacts. (See box overleaf) To the extent that clusters of business activity locate at or in the vicinity of airports, this may be a reflection of the connectivity offered and, in turn, support additional air services being provided but much will depend on the nature of the activity attracted and the extent to which the activity itself generates a need to travel. Our focus here is on the value of this connectivity rather than the operational impacts.

4.3 It should also be recognised that valuing the impact of connectivity in the wider economy is highly complex. The relationships between travel and economic benefit are not necessarily direct and decision making processes made by individuals around these issues are usually not solely about the availability or otherwise of connectivity. However, as described in Section 2, a number of useful pieces of research have been undertaken in recent years that have linked measures of connectivity to impacts in the wider economy. We have used one of these approaches here to make an assessment of economic value of international connectivity provided in the Northern Powerhouse region but ultimately this value should be viewed as broad indicator of the scale of impact rather than a precise estimate of the specific value of international connectivity.

4.4 The approach taken focuses on the provision of an economic impact assessment and as such the key output metrics is the Gross Value Added supported by international connectivity. This is distinct from transport appraisal approaches which tend to focus on assessing changes in economic welfare by assessing, for instance, changes in user journey times or costs. In our view, a focus on economic activity (GVA) fits more closely with examining the potential role of international connectivity in supporting the broader economic aims of the Northern Powerhouse[35].

Methodology

4.5 In broad terms, our approach initially examines the impact that the existence of the North's airports and ports have on the level of demand for international travel before then using techniques to consider how the incremental demand associated with the North's airports contributes to the North's economy. In other words, we have considered a hypothetical counterfactual scenario in which the North's airports and ports do not exist and users are forced to use airports and ports outside of the Northern Powerhouse as a 'next best' option and that, as a result, some will choose to no longer travel. This approach is driven by the fact that many of the econometric relationships linking connectivity to GVA require a change in the market to affect a measurement of value.

Airport 'Economic Footprints'

The North's airports are not only major drivers of the Northern Powerhouse economy through the connectivity they provide to the wider economy but they are also significant generators of employment and prosperity through their own operations. Economic impact assessments of the majority of the North's airports have been undertaken in recent years and these provide key insight in to the scale of the airports in terms of their economic footprint.

The level of published information from each airport varies but some key information is set out below.

MAG's 2014/15 Corporate Social Responsibility Report cites Manchester Airport's direct impact as being around £847 million GVA and 21,500 FTE jobs. Its overall impact in the North West was estimated to be around £1.7 billion GVA.

The Newcastle Airport Master Plan includes an estimate of its direct impact in 2012 of 3,200 jobs. It also cites a total regional impact including indirect and induced impacts of around £646 million GVA.

Liverpool John Lennon Airport's total economic impact in the Liverpool City Region in 2015 was estimated to be around £115 million GVA and around 2,500 jobs (including direct, indirect and, induced).

Leeds Bradford Airport recently published its new Master Plan, which states that the Airport supports around £336 million in GVA in the Leeds City Region each year and directly employs around 2,350 people.

Information on the economic impact of Doncaster Sheffield Airport is now substantially out of date. However, the Airport's Master Plan identifies that there were around 1,000 FTE jobs supported on site in 2007.

Durham Tees Valley Airport supports around 560-600 FTE jobs in the local area according to its 2014 Master Plan.

Smaller airports also have significant local impacts through their operations.

[35] This is not to say that transport appraisal techniques should not be used to consider the merits of individual interventions if this appropriate.

4.6 In order to identify the demand effects associated with the North's airports and ports, we have used an analysis of the impact on users' generalised costs to travel to their destination with and without the existence of the North's airports and ports. The key components of users' generalised costs are assumed to be:

- Surface access time and costs to the UK airport or port – access times have been estimated using Google Maps and access costs calculated using WebTAG guidance on vehicle operating costs;
- Wait times associated with levels of service frequency – frequencies for current and alternate routings have been extracted from schedules databases such as OAG;
- Flight or sea travel times – these have been estimated using timetabling information and estimates based on distance;
- Hub interchange times – these have been estimated on a typical hub connection time of two hours;
- Travel times to ultimate land destination (sea travel only) – these have been assessed based on travel times to a country centroid and appropriate mapping software;
- Fares – fare curves for relevant airports have been estimated using data from CAA Passenger Survey data, while ferry fares have been identified using an online survey of relevant available fares in the market.

Port 'Economic Footprints'

Economic impact assessments of the contribution of ports to the UK economy generally set out the direct, indirect and induced impacts of port operations as a whole (in terms of employment, contribution to GVA and local taxation) and there is usually little information provided by the ports themselves that relates specifically to the impact of passenger shipping.

Collectively, the Northern Ports are important generators of economic growth and employment. Oxford Economics, in a report on the economic impact of the UK ports sector published in May 2015, estimated that the ports in the three Northern regions (Yorkshire and Humberside, the North East and North West) contributed some £4.4 billion to the UK's total GVA[1], and generated employment for 75,300 people (direct, indirect and induced FTE jobs). Some indications of the overall impact of the region's ports which handle passenger operations are set out below but ports handling freight only have been omitted. It should be noted that figures are not necessarily presented on a comparable basis.

In its Annual Review for 2015, the Port of Tyne announced that the Port supported an estimated 14,491 FTE jobs and contributed an estimated GVA of £710 million in 2015, an increase of some 27% on 2014, of which 1,800 jobs and over £50 million of GVA related to passenger terminal operations.

Estimates presented by Arup, in a study carried out for ABP, suggest that the ABP Humber Ports of Hull, Goole, Grimsby and Immingham contribute £2.2 billion to the UK economy every year, including £1.5 billion to the region, and support 33,000 FTE jobs (23,000 in the region).

According to Cruise Lines International Association a report released in 2016 estimated the cruise industry's contribution to the UK economy at €3.15 billion (£2.25 billion) in 2015.

Cruise ship calls at the Port of Liverpool are estimated to have generated £7 million for the city's visitor economy in 2015, up from £1.3 million when the port was only a port of call destination. The port now handles a significant volume of turnaround business.

4.7 For the time elements of generalised cost, the value of that time in monetary terms has been calculated using appropriate guidance from the Airports Commission for air travellers[36] and WebTAG for sea travellers[37].

4.8 Users existing travel patterns using the North's airports have been ascertained from CAA Passenger Survey data for air travel and the International Passenger Survey for sea travel. Alternate patterns of travel in the event of the North's airports and ports not being available have been identified through analysis of passengers' existing next most popular preference outside of the North.

4.9 The impact on demand has been calculated for a range of passenger and market segments, for instance UK and Foreign passengers, business and leisure travellers, short haul and long haul air passengers. The base numbers of passengers and their travel patterns for each segment have again been estimated using data from the CAA Passenger Survey data for air travel and the International Passenger Survey for sea travel.

4.10 The number of passengers associated with the existence of the North's airports and ports has been calculated by estimating the percentage increase in generalised costs associated with users being forced to travel via alternates outside of the North compared to their current generalised cost. This has then been translated to an impact on demand using appropriate price elasticities for air travellers identified by the Department for Transport in its Aviation Forecasts 2013. In the absence of similar elasticity information for sea travellers, the price elasticities for short haul air travel have been used. These changes in demand have then been used to feed two streams of economic benefit analysis: an impact on productivity associated with levels of business travel and an effect on inbound tourism related GVA associated with foreign visitors coming the North. We set out the methodology for each element below.

Productivity Effects Relating to Business Travel

4.11 The first element of the impact of the North's international connectivity considered is the effect on productivity, and ultimately GVA that stems from business travel via the North's airports and ports. This estimate builds on the research undertaken by Oxford Economics on the link between Total Factor Productivity (TFP) and a connectivity index comprised of the demand for business air travel and air freight relative to an area's GDP. The latest iteration of the econometric modelling of this relationship was undertaken for Transport for London in 2013. The research identified that a 10% increase in air connectivity results in an increase in long run UK GDP of 0.5%.

4.12 Clearly, this relationship is intended to focus on the impacts of air travel. However, given the absence of similar research in relation to sea travel and the relative sizes of the business air and sea passenger markets, we have extended this analysis to include sea passengers on the basis that they are likely to have a similar value to the economy as short haul air passengers.

[36] Airports Commission Final Report – Economy: Transport Economic Efficiency Impacts (2015), Page 16.
[37] WebTAG Unit A1.3.6.

4.13 The baseline connectivity index for air travellers (i.e. the current position with the North's airports operating) has been estimated using a combination of data:

- CAA Passenger Survey data has been used to estimate the total number of business passengers travelling to/from the Northern Powerhouse region, including both those currently using the North's airports and those that are currently flying from alternates outside of the North;
- CAA Statistics have been used to provide data on the total tonnage of air freight flown from UK airports in 2015. These statistics have also been used to provide a basis for updating traffic throughput at the North's airports in the year of survey (2013 or 2014) to a 2015 base;
- analysis of the air freight market by MDS Transmodal using data from HMRC and road haulage information to estimate that around 14% of UK air freight actually originates in or is destined for the Northern Powerhouse region (see Appendix C);
- data from ONS for the Northern Powerhouse LEP areas has been used to estimate total GVA for the Northern region at around £316 billion.

4.14 The change in the connectivity index for the North from the removal of the North's airports is calculated by subtracting the estimated business passengers lost from the existing base.

4.15 The impact of a lost sea business passenger is assumed to be equal to the loss of a short haul business air passenger. The average impact for a short haul business passenger has been estimated by calculating the average per passenger loss weighted by the revenue passenger kilometres associated with domestic, short haul and long haul travel lost.

Inbound Tourism Impacts

4.16 Tourism impacts in the North from international connectivity have been analysed using a conventional expenditure injection approach. The number of trips lost to the North is taken from our analysis of the generalised cost impacts of removing the North's airports and ports. The potential expenditure associated with those trips is then estimated using average spend per trip data for international travellers published by VisitBritain and drawing on the International Passenger Survey. An average expenditure per trip for 2013, 2014 and 2015 has been used to provide larger sample of results.

4.17 This additional expenditure has then been converted to a direct impact on GVA in the North's visitor economy using a ratio of GVA to turnover for relevant sectors of the economy taken from the Annual Business Survey published by ONS. The indirect and induced impacts associated with this direct impact have been estimated using guidance on multipliers within the Homes and Communities Agency Additionality Guide 2014. This suggests a multiplier of 1.5 for sectors with average linkages at regional level. Given that the Northern Powerhouse area in reality covers the great majority of three regions, we have increased this multiplier to 2. Given the difference between a local level multiplier (1.1) and a regional multiplier (1.5) within the HCA guidance, a multiplier of 2 may be conservative.

The Economic Benefits of International Connectivity in 2015

4.18 In **Table 4.1,** we have set out the results of the economic benefits of international connectivity associated with the Northern Powerhouse airports and ports.

Table 4.1: The Economic Benefits of International Connectivity in 2015 (GVA £billion at 2016 Prices)

	Airports	Ports	Total
Business Productivity Effects	**£4.64**	**£0.01**	**£4.65**
Tourism Effects	**£0.47**	**£0.01**	**£0.49**
Total	**£5.11**	**£0.02**	**£5.14**

Source: York Aviation, MDS Transmodal, Regeneris.

4.19 The impact on business air travel from the Northern Powerhouse if passengers were not able to use the North's airports is significant (our counterfactual). Our analysis suggests that being forced to use airports further afield would result in an increase in generalised costs of around £780 million per annum and result in the loss of around 1.9 million business passengers per annum. This would reduce the Oxford Economics connectivity metric by around 30%, resulting in a 1.5% reduction in the Northern Powerhouse region's GVA. The great majority of this impact relates to international business travel, with the loss of international connectivity accounting for a GVA loss of around £4.6 billion at 2015 demand levels.

4.20 The reduced number of tourism related air trips to the region also results in a significant loss in GVA, estimated to be around £0.5 billion at 2015 demand levels[38]. When combined with the business productivity effects, this suggests a total impact from international air connectivity on GVA in the Northern Powerhouse of around £5.1 billion at 2015 demand levels[39].

4.21 Our modelling of the impact on sea passenger demand levels suggests that if the Northern ports did not exist, business passengers using ferries would face increased generalised costs of around £9 million per annum. This would result in around 5,400 fewer business passengers per annum (12% of current trips) by domestic travellers and 2,000 fewer overseas travellers (7% of current trips). Given the relative sizes of the air and sea business travel markets to/from the UK, the lower number of lost passengers is unsurprising. This is reflected in a much lower impact on productivity in the North from business trips by sea. Assuming that a ferry passenger is broadly similar to a short haul air passenger in terms of their impact on GVA, we estimate that the productivity impact in the North from business sea travel is currently around £11 million per annum.

4.22 The northern ports facilitate a significant amount of tourism in the North of England. To capture the economic value of this tourism, we have initially estimated the likely loss in tourism spend. We estimate the loss in leisure trips to the UK to be around 40,000 (21% of current trips) with an estimated spend of £19 million per annum. Based on our analysis of the link between expenditure and GVA, we estimate that this would account of around £14 million in GVA in the Northern Powerhouse region. Overall, this suggests an impact from international sea travel of around £25 million.

[38] This reflects the value of tourism using the region's ports and airports today rather than the total value of tourism to the North's economy.

[39] Caution should be applied when comparing this impact to estimates in individual airport economic impact assessments. This analysis focuses purely on the inbound visitors lost to the region through a loss in connectivity whereas airport economic impact assessments will often focus on the total number of inbound passengers handled.

5 INTERNATIONAL CONNECTIVITY BENCHMARKING

5.1 In line with the IER[40], we have adopted as benchmark regions:

- Rhine/Ruhr (Germany)
- Randstad (Netherlands)
- Lombardy (Italy)

The IER has identified that the economic performance gap between the North and these regions has been widening and, therefore, taken these as suitable aspirational regions.

5.2 It should be noted that whilst Rhine/Ruhr and Lombardy present more relevant comparators for airports, the position of Randstad is distorted by the presence of the major hub airport Amsterdam Schiphol. However, the Randstad does present a more relevant comparator in terms of the ports. Overall, none of these regions perfectly reflects the North, with its five component Core Cities and wider geographic spread of activity so using these as benchmark regions in terms of international connectivity is not a perfect comparison for the North. For this reason, we also include some city/airport benchmarking relevant to the individual airports of the North.

5.3 Some headline comparisons between the North and the benchmark regions are set out in **Table 5.1**.

Table 5.1: Comparison of Benchmark Regions

Region	GDP (€)	Population	GDP Per Capita (€)
Northern Powerhouse	379,389,000	16,589,000	22,900
Rhine-Ruhr	539,673,000	15,816,000	34,100
Lombardy	348,049,000	9,795,000	35,500
Randstad	335,957,000	7,932,000	42,400
Source: ONS, Eurostat			

5.4 We have also set out some comparisons with international connectivity to and from the Greater South East of England in Section 3 in order to understand the extent of the gap in connectivity provided by the airports and ports of the North.

5.5 In considering the benchmarks, it is important to recognise that connectivity benefits are derived not just from the number of destination served, but also from the quality of the networks, covering:

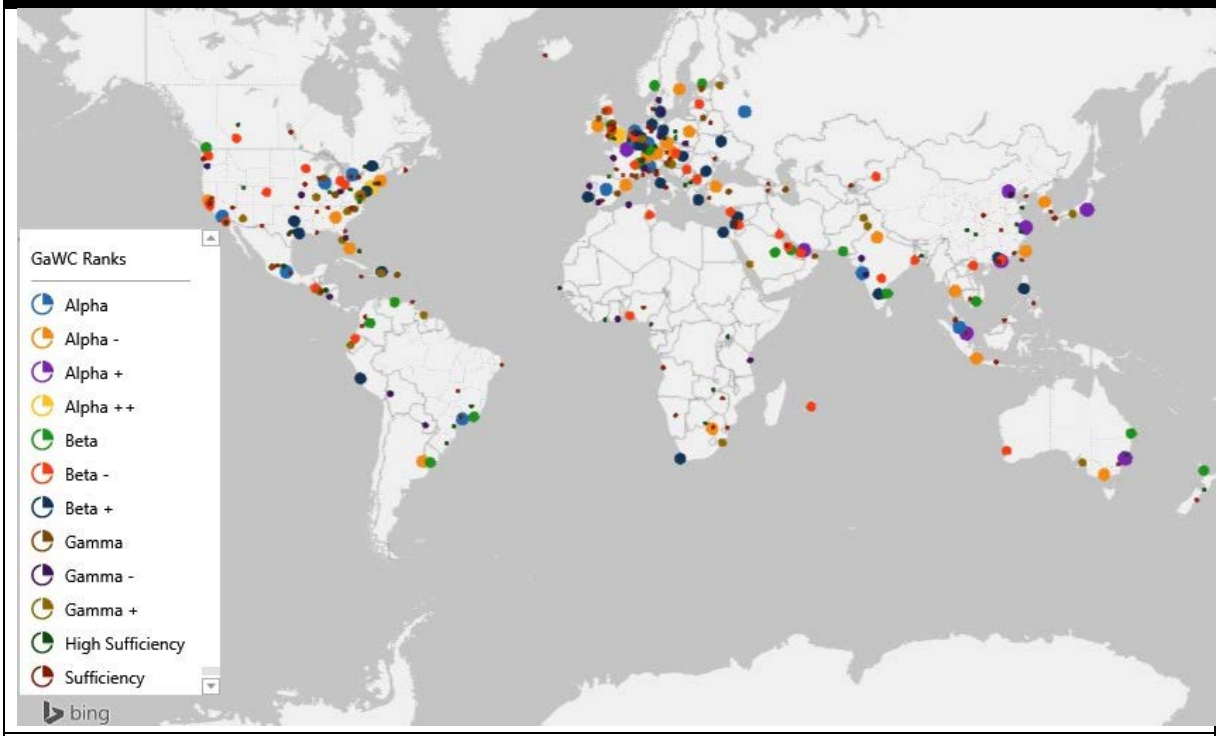
- Number of business orientated destinations served;
- Service frequency to suit business usage;
- Global spread of networks;
- Access to key hubs to provide greater connectivity.

[40] Workstream 1 Report, paragraph 5.3

5.6 Therefore, in this section, we compare the connectivity of the Northern Powerhouse against the benchmark regions using a number of techniques and comparators, including economic data. In particular, however, we run some of the analysis against research by the Globalisation and World Cities (GaWC) network to provide a ranking of the economic importance of destination cities to enable analysis of each region's coverage of these key economic centres.

5.7 The GaWC research examines the location decisions of advanced service firms across a wide range of cities around the world to produce an overall ranking. Cities are then classified into a series of bands to reflect their economic importance, and these are summarised in **Table 5.2** overleaf and shown geographically in **Figure 5.1**.

Figure 5.1: GaWC City Locations



Source: Globalisation and World Cities Network, Loughborough University/York Aviation

Table 5.2: GaWC City Rankings	
Ranking	**Cities Included**
Alpha ++	London, New York
Alpha +	Hong Kong, Paris, Singapore, Shanghai, Tokyo, Beijing, Sydney, Dubai
Alpha	Chicago, Mumbai, Milan, Moscow, Sao Paulo, Frankfurt, Toronto, Los Angeles, Madrid, Mexico City, Amsterdam, Kuala Lumpur, Brussels
Alpha -	Seoul, Johannesburg, Buenos Aires, Vienna, San Francisco, Istanbul, Jakarta, Zurich, Warsaw, Washington, Melbourne, New Delhi, Miami, Barcelona, Bangkok, Boston, Dublin, Taipei, Munich, Stockholm, Prague, Atlanta
Beta +	Bangalore, Lisbon, Copenhagen, Santiago, Guangzhou, Rome, Cairo, Dallas, Hamburg, Dusseldorf, Athens, Manila, Montreal, Philadelphia, Tel Aviv, Lima, Budapest, Berlin, Cape Town, Luxembourg, Houston, Kiev, Bucharest, Beirut
Beta	Ho Chi Minh City, Bogota, Auckland, Montevideo, Caracas, Riyadh, Vancouver, Chennai, Manchester, Oslo, Brisbane, Helsinki, Karachi, Doha, Casablanca, Stuttgart, Rio de Janeiro, Geneva
Beta -	Guatamala City, Lyon, San Jose, Bratislava, Minneapolis, Tunis, Nairobi, Cleveland, Lagos, Abu Dhabi, Seattle, Hanoi, Sofia, Riga, Port Louis, Detroit, Calgary, Denver, Perth, Calcutta, San Diego, Amman, Antwerp, Manama, Birmingham (UK), Nicosia, Quito, Rotterdam, Belgrade, Monterrey, Almaty, Shenzhen, Kuwait City, Hyderabad, Edinburgh
Gamma +	Zagreb, Lahore, St Petersburg, Jeddah, Durban, Santo Domingo, St Louis, Islamabad, Guayaquil, Baltimore, San Salvador, Cologne, Phoenix, Adelaide, Bristol, Charlotte (North Carolina), Georgetown, Osaka, Tampa
Gamma	Glasgow, San Juan, Marseille, Guadalajara, Leeds, Baku, Vilnius, Tallinn, Raleigh (North Carolina), Ankara, Belfast, San Jose (Ca.), Colombo, Valencia (Sp.), Cincinnatti, Milwaukee, Muscat, Ljubljana
Gamma -	Nantes, Tianjin, Accra, Algiers, Gothenburg, Porto, Columbus (Ohio), Utrecht, Orlando, Ahmedabad, Asuncion, Kansas City, Seville, Turin, Dar Es Salaam, Portland, Krakow, Managua, Pune, Leipzig, Malmo, La Paz
Source: Globalisation and World Cities Network, Loughborough University	

5.8 In addition to comparing against the benchmark regions, we also then go on to include some city/airport benchmarking relevant to the individual airports of the North, though covering some cities included within the regional benchmarking.

5.9 We now set out a short portrait of the connectivity of each region, followed by the comparator analysis.

Rhine/Ruhr

5.10 Within the Rhine/Ruhr region, there are four main international airports, which is fewer than the seven in the Northern Powerhouse region presently[41]. Total passenger throughput for these three airports in 2015 was around 36.7 million passengers, just over 3 million more than the North's airports. The airports in the Rhine-Ruhr are:

- Dusseldorf: The largest airport, handling 22.5 million passengers in 2015, just behind Manchester Airport's figure of 23 million. The Airport has a broad range of airlines and services and, unlike any airports in the North of England, Dusseldorf acts as a hub airport for a major international airline, Air Berlin;
- Cologne/Bonn: The second largest airport in the region it handled 10.3 million passengers in 2015, more than twice the number seen at Newcastle and Liverpool airports. The Airport also serves as a major logistics hub and is the main European hub for integrator UPS;
- Dortmund: The smallest of the three airports in the Rhine-Ruhr region, Dortmund is served exclusively by low fares airlines, albeit one of these is the subsidiary of national carrier Lufthansa. With a passenger throughput of just under 2 million in 2015, the Airport falls between Leeds/Bradford (3.5 million) and Doncaster/Sheffield (850,000);
- Weeze: The smallest of the four airports in the Rhine-Ruhr region, Weeze is in close proximity to Dusseldorf and has historically been promoted as the low fares airport for the City. The Airport is exclusively served by Ryanair. In 2015, the throughput was 1.9 million passengers, just a touch below Dortmund's throughput, similarly putting the Airport between Leeds/Bradford and Doncaster/Sheffield.

5.11 To some extent, the stronger performance of the main airports may reflect a greater degree of concentration but it will also reflect the economic performance gap compared to the North.

5.12 In Summer 2016, there will be 216 unique international destinations served from the region, approximately 20% more than from the Northern Powerhouse region, although some of these are flights serving multiple airports for the same city. The scope of the network can be seen in **Table 5.3** below.

[41] Carlisle Airport is excluded from the comparator analysis as it is not yet operational for commercial traffic.

Table 5.3: International Destination Served, July 2016					
	Cologne/ Bonn Airport	Dortmund Airport	Dusseldorf Airport	Weeze	Unique
Africa : Central/Western Africa	1	0	1	0	1
Africa : Eastern Africa	1	0	0	0	1
Africa : North Africa	4	0	7	4	12
Asia : North East Asia	0	0	3	0	3
Asia : South East Asia	2	0	0	0	2
Europe : Eastern/Central Europe	25	19	22	3	40
Europe : Western Europe	75	9	117	34	135
Latin America : Caribbean	3	0	5	0	5
Latin America : Central America	1	0	1	0	1
Middle East	1	0	7	0	7
North America	1	0	9	0	9
Total	**114**	**28**	**172**	**41**	**216**
Source: OAG					

Randstad

5.13 Although there are only two international airports within the Randstad region, one of these is significant, being Amsterdam Schiphol; the other being Rotterdam. In 2015:

- Amsterdam handled 58.3 million passengers, putting throughput far closer to London Heathrow's than any airport in the North. Indeed, total throughput was nearly double that of the airports in the North of England combined. KLM dominates the Airport, but low fares carriers (easyJet and Transavia) do provide significant numbers of services too;
- Rotterdam Airport handled 1.7 million passengers, putting it similar in scale to Dortmund, but below the larger of the regional airports in the Northern Powerhouse region. Low fares carriers dominate the services, at Rotterdam, mainly in the form of KLM's subsidiary Transavia. High frequency services to London by regional airlines and British Airways also play an important part in local connectivity.

5.14 In terms of considering the role of aviation in the economy of the Randstad, it must be recognised that the air service offer from Amsterdam is bolstered by the hub role it plays. It has been the policy of the Dutch Government to promote the role of Schiphol as a global 'Mainport'. This is possible because of the role played by KLM, the national airline, in operating it as a full hub airport, feeding long haul flights from short haul services across Europe. This reflects a clear view that the small scale of the Netherlands home market would be too small to support the level of global air connectivity needed by the economy, which has historically been essentially a global trading economy. The development of the hub by the airline was seen as the only way that the level of air connectivity necessary to the international economy could be sustained and this was promoted by Government long before the liberalisation of air services in Europe, with air services operating on purely commercial terms. Even following liberalisation, this hub policy was carried through into the agreement with Air France, when it acquired KLM, which guaranteed the continued operation of the Amsterdam hub in parallel with Paris.

5.15 As a result, there are 267 unique destinations served from the two airports[42], 48% more than from the airports in the North. The strength of KLM's network is clear in **Table 5.4** with a much broader number of world regions served. Furthermore, the frequency of services, even on destinations which are comparable with those served from the Northern Powerhouse region, are much higher, reflecting the requirements of a successful hub. This includes substantial feeder operations from most of the airports in the North.

[42] Including destinations that are linked and one operated via the other as KLM operates a number of triangular services.

Table 5.4: International Destination Served, July 2016			
	Amsterdam Airport	Rotterdam Airport	Unique
Africa : Central/Western Africa	6	0	6
Africa : Eastern Africa	5	0	5
Africa : North Africa	10	1	10
Africa : Southern Africa	3	0	3
Asia : Central Asia	3	0	3
Asia : North East Asia	11	0	11
Asia : South Asia	2	0	2
Asia : South East Asia	6	0	6
Europe : Eastern/Central Europe	23	2	23
Europe : Western Europe	144	21	145
Latin America : Caribbean	10	0	10
Latin America : Central America	3	0	3
Latin America : Lower South America	4	0	4
Latin America : Upper South America	5	0	5
Middle East	10	0	10
North America	21	0	21
Total	**266**	**24**	**267**
Source: OAG			

5.16 It should be noted that the conditions for replicating the development of a major global hub on the scale of Schiphol will be difficult to replicate in the North. The development of the hub was undertaken at a time when airlines were largely State owned and could be 'directed' to operate a particular route network. This is no longer the case and the global airline alliances have fixed on their hubs to a large extent. The North lacks an individual airline with the same commitment to developing a hub network from any of the region's airports so even Manchester has to rely on attracting a range of different airlines to develop its network. This means in air connectivity terms, the Randstad is almost certainly an unrealistic benchmark for the North even at an aspirational level.

5.17 In terms of the shipping, the Randstand presents a more relevant comparator. Ports within the Randstad region include Rotterdam, Amsterdam (where the port complex incorporates the roro and passenger ferry port of Ijmuiden) and the smaller inland river port of Dordrecht. Rotterdam and Amsterdam are ranked as the first and fourth ports of Europe (in terms of cargo throughput) in a part of Europe where there is intense port competition from competitors such as Antwerp and Hamburg (2nd and 3rd largest ports respectively). UK ports appearing in the European top 20 include Grimsby and Immingham and the Port of London (ranked 13th and 20th respectively).

5.18 Rotterdam and Amsterdam have been the subject of a recent OECD study[43] into the competitiveness of global port cities. The report highlights the fact that Rotterdam and Amsterdam can be considered to be ports that have significance for the whole of Europe**.** Rotterdam is certainly the main hub port in Europe for containers and dry and liquid bulk, whereas Amsterdam is a major hub for petrol, steel and cocoa. Most of the ports' hinterlands are located outside the Netherlands, with Rotterdam being the main port for large parts of Germany, as well as a major port for Central Europe and Eastern Europe, Switzerland and northern Italy.

5.19 In terms of the scale of the port operations, as shown in **Tables 5.5** and **5.6**:

- Rotterdam handled 466 million tonnes in 2015. This is more than twice the volume handled at the 2nd largest port (Antwerp). Ferry passengers handled through the port amounted to 1.3 million in 2014, which indicates a slight recovery over the previous year, though volumes have fallen by a an average of 2% per annum since 2005. The only passenger ferry service (as opposed to driver accompanied freight services) to Rotterdam from the UK Northern ports is the daily service operated by P&O Ferries from Hull. Stena Line also operates a daily service into the Hook of Holland from Killingholme, but this is dominated by freight traffic. Cruise tourism is not a major focus of the port's offer, although there is a cruise terminal with good transport links to the city.

[43] Merk, O., Notteboom, T. (2013), The Competitiveness of Global Port-Cities: the Case of Rotterdam, Amsterdam – the Netherlands », OECD Regional Development Working Papers, 2013/06, OECD Publishing.

- The Port of Amsterdam handles around 540,000 ferry passengers a year and around 340,000 cruise passengers. Ferry and cruise berths at Ijmuiden are located on the seaward side of the locks and so allow for faster turnaround times for vessels. The only passenger ferry service into Ijmuiden from the UK is that operated by DFDS from Newcastle. The service is daily and the crossing time is 16.5 hours. DFDS is also marketing the route for two day mini cruises which incorporate a day trip to Amsterdam and two overnight sailings on the ferry. Amsterdam is one of the more important cruise destinations in North West Europe. It attracts a number of the major cruise operators and is a popular point for starting cruises bound for the Norwegian fjords and Baltic Sea. The Passenger Terminal at Amsterdam in the centre of the city handles the bulk of port's cruise traffic. A key attraction for international cruise passengers is the proximity Central Station with a high frequency of train services to Schiphol Airport. The other key attraction of the port of Amsterdam for cruise passengers is that it is a major starting port for passengers joining river cruises. The number is increasing rapidly and in 2014 the number of river cruise vessels had risen to 1,685 ship calls and more than 430,000 passengers, up from 1,380 ship calls and 322,000 passengers in 2012.

Table 5.5: Ferry Passenger numbers, Ports of Rotterdam and Amsterdam, 2005-2014

	Rotterdam			Amsterdam (Ijmuiden)		
Year	Total	Inwards	Outwards	Total	Inwards	Outwards
2005	1,518	761	757	575	286	289
2006	1,504	747	757	606	297	309
2007	1,172	595	577	680	341	340
2008	1,195	593	602	744	374	370
2009	1,087	546	541	525	269	255
2010	1,260	641	619	722	358	364
2011	1,083	509	574	685	413	272
2012	1,181	601	581	520	257	262
2013	1,182	598	584	537	271	265
2014	1,268	623	644	532	269	263

Source: Eurostat

Table 5.6: Cruise vessel calls and passenger numbers
Ports of Rotterdam & Amsterdam

	Amsterdam		Ijmuiden		Rotterdam	
Year	pax	Calls	pax	calls	pax	calls
2015	281,941	135	58,998	44	na	38
2014	253,092	126	84,405	56	74,000	32
2013	276,212	137	67,457	39	72,000 (e)	28
2012	289,757	144	65,517	43	72,000	28
2011	260,622	123	16,028	23	49,500	26
2010	198,530	90	4,125	10	47,500	17

Source: Cruiseeurope

(e) estimated

5.20 Data published by Cruise Europe for Amsterdam indicates that Germany is a major source of cruise passengers, in 2015 accounting for 29% of the 282,000 passengers. The UK accounted for 18.5 % up from 8.5% in 2014.

5.21 Connectivity by ferry is available between the Randstad and the UK ports via the P&O Ferries daily service between Hull and Rotterdam, the DFDS service between Newcastle and Ijmuiden and the service from the Hook of Holland to Harwich. The routes to the Northern ports appear to have established a niche, offering a connection to the North Continent that bypasses the Dover Straits and provides the opportunity for overnight mini-cruises. The number of passengers has been reasonably stable in recent years. There are also some cruise ships which call at both the Randstad ports and ports in the North of England.

5.22 In terms of comparability with Northern UK ports, the Ports of Rotterdam and Amsterdam are operating at a different scale to their partner ports in the North of England. Apart from the volume of goods handled and transhipped at these ports, both ports function within world renowned logistics hubs with multimodal connectivity including by sea, inland waterways, road and rail links to large metropolitan areas and beyond into the heartland of Europe. The economic significance of the ports and their contribution to the Dutch economy is acknowledged at a national level and is supported by Government, with key facts and figures on the economic value of the ports highlighted in port websites and literature.

5.23 The other key difference is that of ownership and the level of state-funded contribution to the ports' infrastructure and activities. In terms of ownership and management there are some important differences with the UK in that both the Port of Rotterdam and Amsterdam are public sector owned and financed, though ostensibly operating on commercial principles. Rotterdam is state-owned, shareholders of the Port of Rotterdam Authority being the Municipality of Rotterdam (approx. 70%) and the Dutch government (approx. 30%). Port infrastructure is funded by the public sector: investment in public infrastructure, such as roads in the port area, in customer-specific infrastructure, such as quay walls and jetties, and in the development of new port sites is funded by the Authority. The Authority manages the whole of the port estate and in acting as landlord and conservancy authority derives income in the form of rentals from port tenants and conservancy charges (port dues) on shipping. Large areas of the port are leased to port operators on long term concessions and it is these agreements that have part-funded the development of large projects. In 2013, the Port of Amsterdam changed from being a municipal service to a governmental public limited company with the City of Amsterdam as its single shareholder. In this sense the ports bear greater similarity to UK trust ports such as the Port of London, Dover of the Tyne. By contrast, the state owned port of Ijmuiden was privatized in 1989

5.24 The Passenger Terminal Amsterdam is a joint venture between the Port of Amsterdam and Dutch Railways, a former semi-public company with limited company status, all of whose shares are still owned by the Dutch Government. The Passenger Terminal and the Felison Cruise Terminal in IJmuiden have recently joined forces with regard to marketing and PR activities, working with Amsterdam Marketing to promote the use of the cruise terminals.

5.25 In conclusion, there are some clear links between the Randstad region of the Netherlands and the North of England due to the ferry links between them and, in some cases, shared cruise line customers on itineraries that involve calls at North Sea ports. The key difference between the two regions is the emphasis that is placed on the importance of port-based economic activity in the Randstad as the Netherlands is a relatively small country with two very large ports that provide huge economic benefits to the country as a whole; this means that the public sector takes a much greater role in the management and funding of the ports than would be possible in the North of England with its mainly private sector owned and funded ports. The situation in respect of the significance of the ports is largely similar to the emphasis placed on Amsterdam as a global hub airport. Nevertheless, the Randstad may provide an example of how organisations can collaborate in order to market ferry/cruise services and how public transport provision can be better integrated with ferry and cruise operations.

Lombardy

5.26 Although there are four airports capable of handling international passengers in the Lombardy Region, only three of these currently have international passenger services, all centred around Milan. In total, these handled just under 37 million passengers in 2015 which, as with Rhein-Ruhr is higher than the combined total of the North. This reflects both the economic performance gap between the regions and the strength of the Lombardy tourism product.

5.27 The four Lombardy airports are:

- Milan Linate: The 'downtown' airport for Milan is dominated by full service airlines operating to European points. In 2015, the Airport handled around 9 million passengers, although more than half of these were on domestic routes as the proximity to the City makes this the main airport for Milan's domestic network. Alitalia dominates operations, but most major full service airlines have a presence. A relatively short runway length and constrained site led to the Airport being replaced as the intercontinental hub for Milan but airlines were allowed to retain some services from Linate;
- Milan Malpensa: Malpensa was historically the 'second' airport for Milan but was redeveloped into an international hub to replace Linate when the former's site became too constrained. The Airport handled 17.3 million passengers in 2015, so was slightly behind Manchester. Alitalia previously operated a dual-hub system (Milan & Rome) when Malpensa was redeveloped, but more recently has focused its hub activities on Rome which led to a scaling back of the network and services at Malpensa. Today, easyJet is the largest carrier by movements at Malpensa, accounting for nearly 50% of flights in Summer 2015;
- Milan Bergamo: A low cost and freight airport to the north east of Milan, Bergamo handled 10.4 million passengers in 2015. More than 80% of flights in Summer 2015 were flown by Ryanair. Low fares carriers made up the majority of the flights;
- Brescia Airport to the east of the Lombardy region had limited numbers of international flights up until 2010 when the only international airline, Ryanair moved all services to nearby Verona. Currently, the Airport mainly handles freight flights.

Verona Airport lies just outside the region but also operates a small number of passenger services.

5.28 In Summer 2015, there were 187 unique destinations served, around 4% lower than the airports within the Northern Powerhouse region, although some of these are flights serving multiple airports for the same city. **Table 5.7** illustrates there is a reasonable breadth of world regions served, but in some cases the number of destinations is quite limited. Alitalia's policy of directing Milan originating passengers through the Rome hub will clearly have an impact on this, in a similar way to British Airways' policy of feeding domestic passengers into its London Heathrow hub means that it doesn't provide extensive international services from the regions. Unlike British Airways' approach to regional airports, however, Alitalia does maintain a European network from Milan Linate.

Table 5.7: International Destination Served, July 2016				
	Milan Bergamo Airport	Milan Linate Airport	Milan Malpensa Airport	Unique
Africa : Central/Western Africa	1	0	3	3
Africa : Eastern Africa	0	0	4	4
Africa : North Africa	9	0	14	15
Asia : North East Asia	0	0	5	5
Asia : South Asia	0	0	4	4
Asia : South East Asia	0	0	2	2
Europe : Eastern/Central Europe	26	1	19	35
Europe : Western Europe	56	22	71	95
Latin America : Caribbean	0	0	5	5
Latin America : Central America	0	0	2	2
Latin America : Lower South America	0	0	3	3
Middle East	1	0	9	9
North America	0	0	5	5
Total	**93**	**23**	**146**	**187**
Source: OAG				

Regional Benchmarking

5.29 We include Randstad within the analysis here for completeness but focus much of our analysis on the remaining two comparator regions which provide a better benchmark for the reasons outlined earlier in this section.

5.30 **Table 5.8** illustrates that in some markets, the airports in the Northern Powerhouse provide comparable numbers of destinations in some regions of the world to both Lombardy and Rhine-Ruhr and, in some cases, actually provide more destinations than some of the comparator regions, such as the key market of North America and also (by comparison to Lombardy) even in the key Western European market.

Table 5.8: Comparison of Unique International Direct Destinations by Comparator Region				
	Northern Powerhouse	Lombardy	Rhine-Ruhr	Randstad
Africa : Central/Western Africa	2	3	1	6
Africa : Eastern Africa	0	4	1	5
Africa : North Africa	4	15	12	10
Africa : Southern Africa	0	0	0	3
Asia : Central Asia	0	0	0	3
Asia : North East Asia	2	5	3	11
Asia : South Asia	2	4	0	2
Asia : South East Asia	1	2	2	6
Europe : Eastern/Central Europe	28	35	40	23
Europe : Western Europe	111	95	135	145
Latin America : Caribbean	8	5	5	10
Latin America : Central America	2	2	1	3
Latin America : Lower South America	0	3	0	4
Latin America : Upper South America	0	0	0	5
Middle East	5	9	7	10
North America	15	5	9	21
Total	**180**	**187**	**216**	**267**
Notes: Based on airport rather than city				
Source: York Aviation				

5.31 Although the networks offered in each of the comparator regions are broader than that in the Northern Powerhouse in 2016, it is the value of these networks which is of interest as large numbers of services to leisure destinations offer lower value for business connectivity than flights to key business destinations. Service frequency remains important too for business travellers, as do the number of hub connections available to overcome any shortfall in direct connectivity.

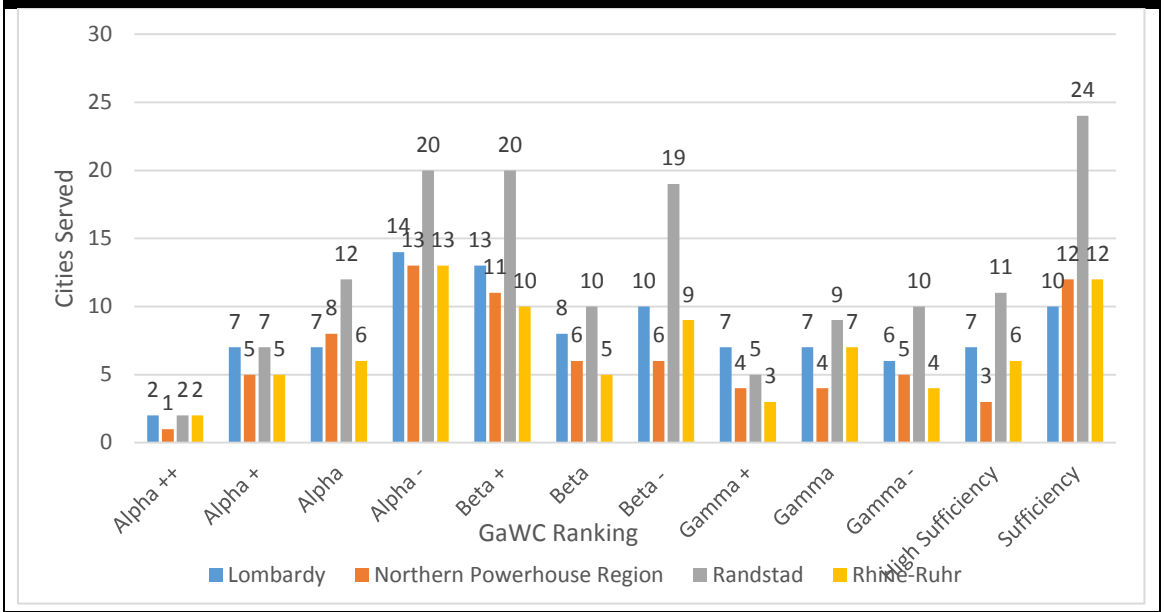
5.32 There are a significant number of major hubs around the world, but we have reviewed the average weekly frequency to a number of key hubs by the hub airlines and alliance partners from each comparator region, as shown in **Table 5.9**. This shows that there are more weekly departures across all the hubs from the Northern Powerhouse Region than any comparator. Further services are available to these destinations by airlines other than those feeding the hub and these may offer some additional hub connectivity value, though this will be more limited. The Northern Powerhouse is particularly strong on services to Middle-East hubs, albeit these are only served from two of the Airports, Manchester and Newcastle. By far the biggest hub with flights from the Powerhouse Region is Amsterdam, with over 140 departures per week by the hub carrier/alliance in 2016, followed by London Heathrow.

Table 5.9: Weekly Departures to Key Hubs by Home Alliance					
	Hub Airport	Lombardy	Northern Powerhouse	Randstad	Rhine-Ruhr
Key European Hubs	Amsterdam	42	141	1	35
	Frankfurt	60	41	84	35
	London (LHR)	68	111	55	40
	Madrid	28	3	14	21
	Munich	40	20	39	144
	Paris (CDG)	60	41	84	35
Key Near and Middle East Hubs	Abu Dhabi	7	14	7	7
	Doha	14	16	7	0
	Dubai	21	28	14	14
	Istanbul	28	21	35	49
Key US Hubs	Chicago (ORD)	0	7	7	7
	New York (EWR)	7	13	7	7
	New York (JFK)	21	14	28	14
	Washington (IAD)	0	7	7	0
Total To Key Hubs		**413**	**464**	**347**	**422**
Source: OAG					

5.33 Analysis of the networks with reference to the GaWC rankings provides some insight into the value of the networks. **Figure 5.2** shows that the airports in the Northern Powerhouse actually provide services to a comparable number of the most economically important cities globally, with the exception of the Alpha++ cities, which includes London but which is excluded from the analysis for the Northern Powerhouse (as it is not international). Otherwise, the region serves the lowest number of GaWC cities in only two categories, Gamma and High Sufficiency, both at the lower end of the scale. Some key points are:

- The Northern Powerhouse serves more destinations than the Rhine-Ruhr region in 5 of the 12 categories, equals the Rhine-Ruhr in 4 of the 12 (when adjusting for London), and serves less in only 3 cases;
- The Northern Powerhouse serves more destinations than the Lombardy region in 2 of the 12 categories, equals Lombardy in 1 of the 12 (when adjusting for London), but serves less in 9 cases;
- When viewed at a broader Alpha, Beta, Gamma, Sufficiency level, the Northern Powerhouse serves more cities than the Rhine-Ruhr in the highest Alpha category and is comparable in both the Beta and Gamma categories (short by one each) to the Rhine Ruhr;
- The principal gap appears to be in the middle ranked cities Beta – and Gamma suggesting some shortcomings in network breadth.

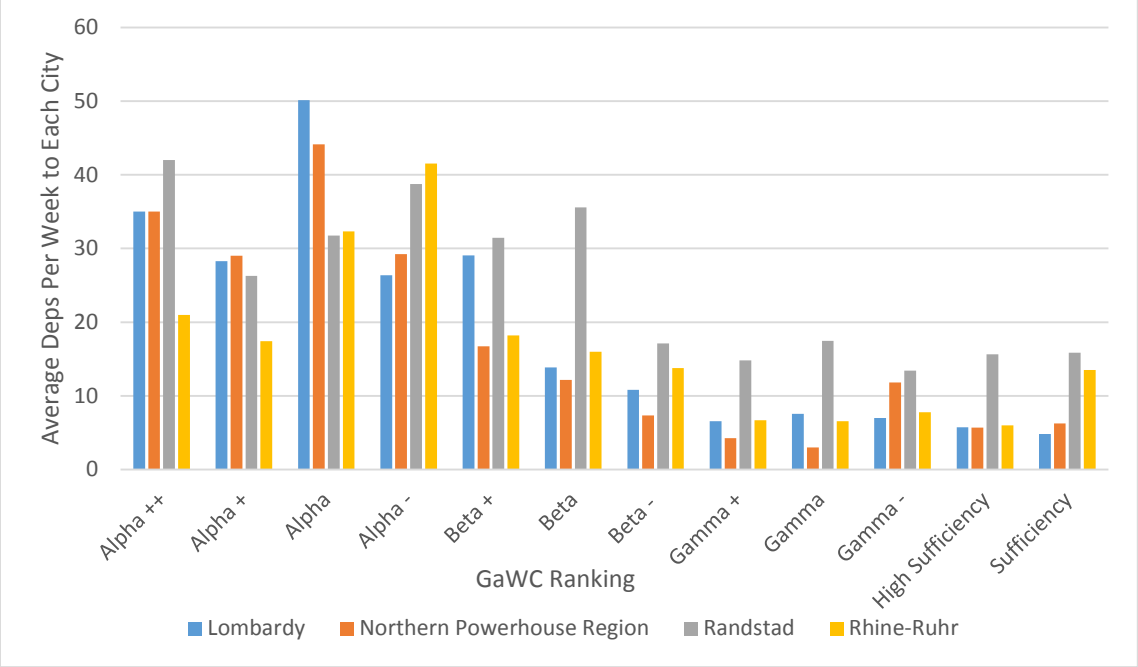
Figure 5.2: Total International City Destinations Served by GaWC Ranking



Source: York Aviation

5.34 When considering the average weekly frequency by destination in each category, the Northern Powerhouse appears strong across the board, though does fall down the ranks the lower the economic importance of the destination city, as can be seen in **Figure 5.3**. Again, this would suggest some shortcomings in network breadth.

Figure 5.3: Average Weekly Departures Per International Destination in each GaWC Category*



Note: *Excludes frequencies to London from comparators for ease of use. Average frequencies per route in Alpha++ increase to 128 from Lombardy, 210 from Randstad and 87 from Rhine-Ruhr.

Source: York Aviation

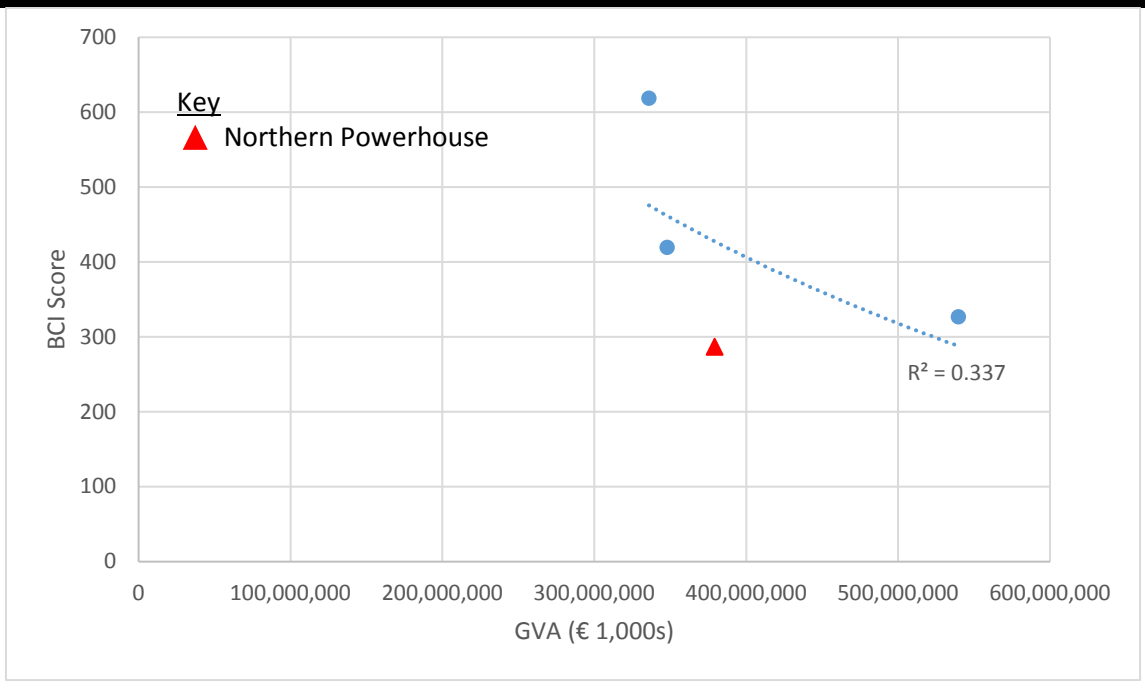
5.35 We have also considered the economic value of each region's existing route network using York Aviation's Business Connectivity Index (BCI). This index provides an assessment of value of the network for business travel. The BCI represents an extension of the analysis undertaken using the GaWC cities. It examines each route in airport and region's network and scores the destinations between 0 and 10 based on the destination city's ranking within GaWC. This score is then weighted according to the level of frequency offered to that destination. This weighting curve reflects the strong gains in connectivity made by the addition of daily frequency initially but the diminishing returns as frequency reaches saturation levels.

5.36 The results of this can be seen in **Table 5.10**, but, despite a reasonable average frequency of service to key cities in the Alpha and Beta categories, the overall BCI score for the Northern Powerhouse falls below all the comparator regions. In part, this reflects the importance of London to the remaining regions as part of their international networks (but excluded for the Northern Powerhouse because of its domestic status), which contributes between 9-11% of the BCI score for each of the comparator regions. If the effect of London is excluded, the gap to the other regions, particularly Rhine-Ruhr narrows but remains material. The importance of London as a business destination to these regions is important, as it is to the Northern Powerhouse where a range of air and rail connections is available.

Table 5.10: BCI Score for International Flights			
Region	With London	Without London	London Share of BCI
Lombardy	420	375	11%
Northern Powerhouse	287	287	N/A
Randstad	619	562	9%
Rhine-Ruhr	327	294	10%
Source: York Aviation			

5.37 Underlying economic conditions will also be a factor in the level of international connectivity which can be sustained by each region. We have plotted the GVA[44] for each region against the BCI score in **Figure 5.4** which shows that on this basis the Northern Powerhouse region does appear to perform well below the comparator regions on the value of international connectivity (when London is retained for comparators). The limited number of comparators does restrict this analysis and the relationship rather perversely suggests that, for these four regions business related connectivity declines with scale of overall GVA. This strongly suggests that factors other than the simple scale of the economy are significant influencers.

Figure 5.4: GVA/BCI Relationship

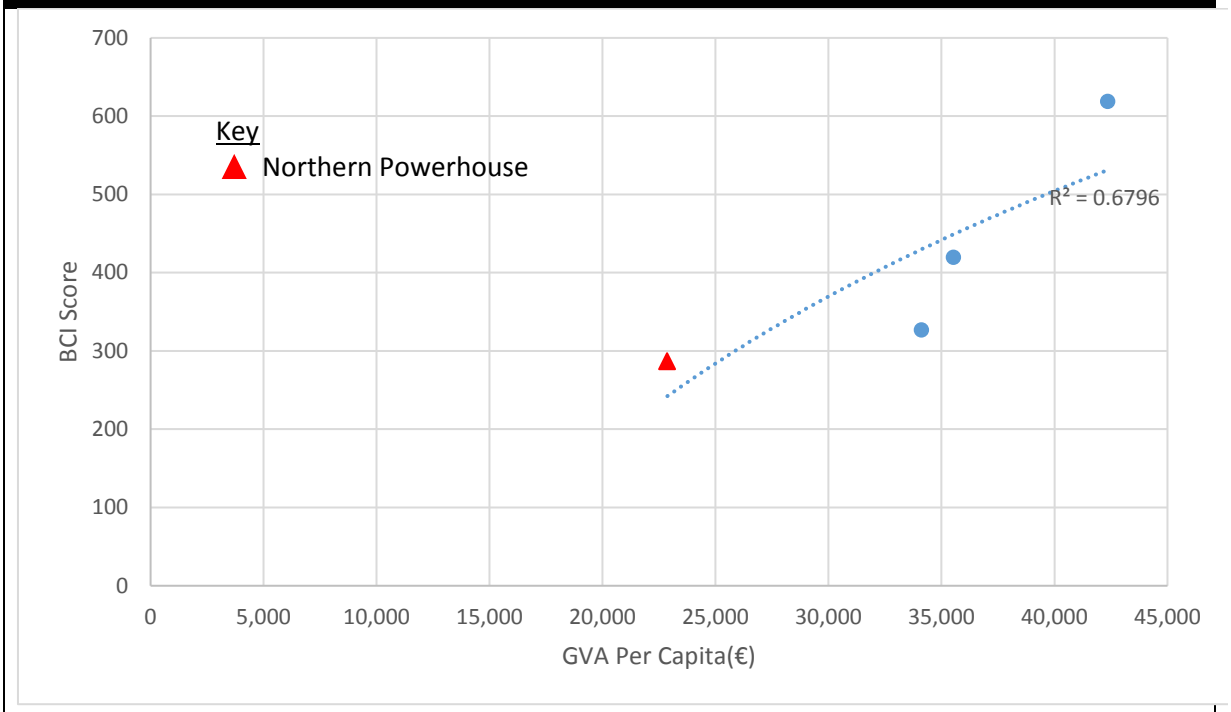


Source: York Aviation

[44] At present the GVA used is based on York Aviation's analysis of the Eurostat data and there is a discrepancy between this and the figures presented in the IER. We are currently attempting to reconcile this.

5.38 We have explored the relationship relative to GVA per Capita[45] to explore the extent to which more productive economies are characterised by better international connectivity, which would appear to be the case. As can be seen in **Figure 5.5**, the Northern Powerhouse's positon improves and lifts above the trendline, whilst both Lombardy and Rhine-Ruhr fall below the trend. Again, some caution need to be attached this given the limited number of comparators. However, prima facie, this suggests that the lower level of business connectivity available to the North may reflect the lower GVA per capita and, hence, be some reflection of the poorer productivity performance rather than the overall size of the economy. This is broadly consistent with the Intervistas work cited at paragraph 2.43.

Figure 5.5: GVA per Capita/BCI Relationship



Source: York Aviation

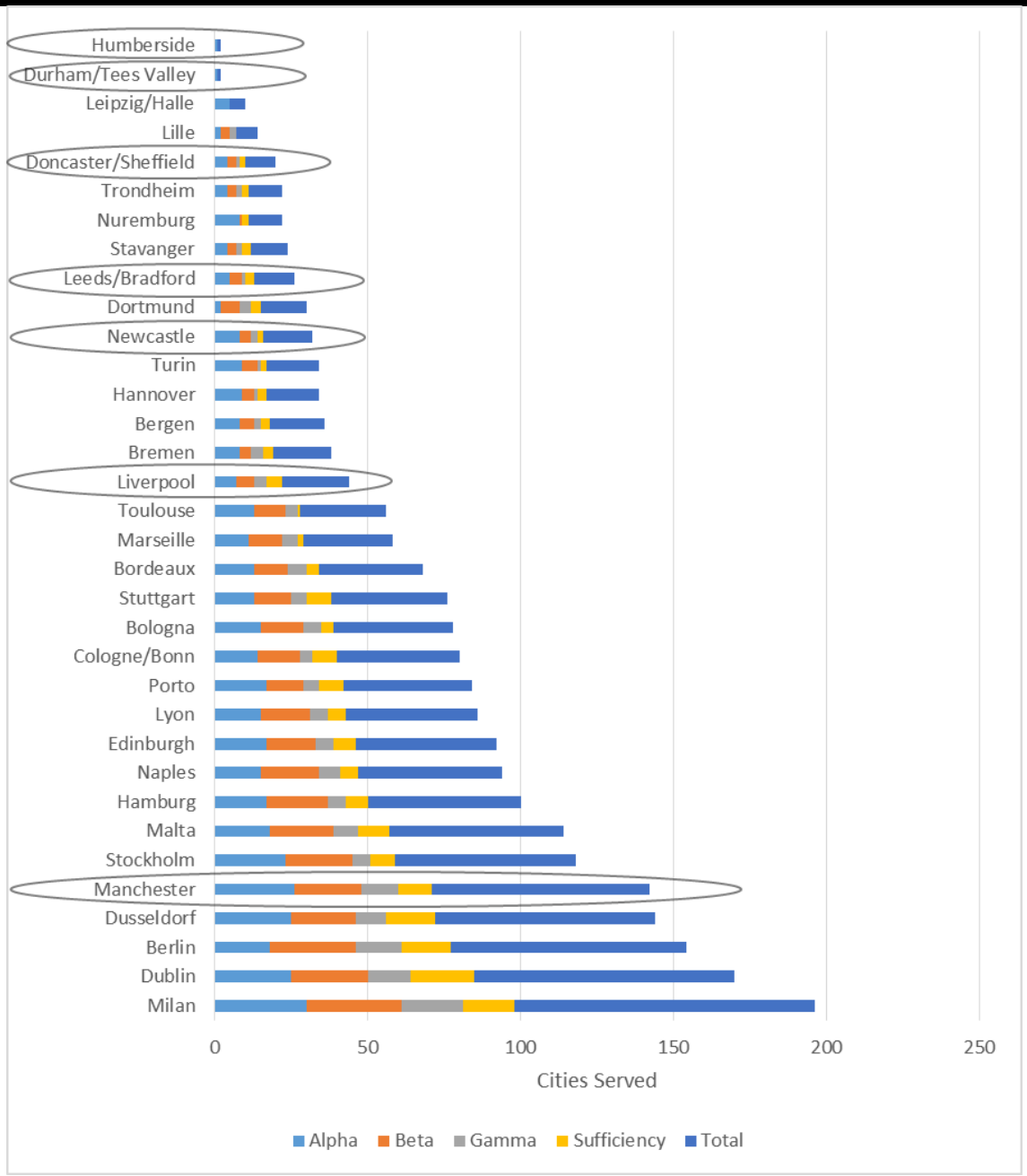
City/Airport Benchmarking

5.39 We have also considered how well individual airports support their local catchment areas by comparison to similar cities/airports throughout the UK and Europe. We have chosen comparator cities based either on airport throughput or because they have economic characteristics similar to those within the North. In total, there are 34 comparators, including cities in the Northern Powerhouse. However, it should be noted that, even here, establishing strict comparators is difficult due to the limitations of data available within Eurostat.

[45] At present the GVA per Capita used is based on York Aviation's analysis of the Eurostat data and there is a discrepancy between this and the figures presented in the IER. We are currently attempting to reconcile this.

5.40 In looking at the number of GaWC Cities served, most of the airports within the North fall at the lower end of the scale. Leeds/Bradford is ranked 26th out of the 34, Newcastle is ranked 24th and Liverpool is ranked more centrally at 19th out of the 34. Manchester Airport, however, is well placed, even above Stockholm, at 5th highest out of the 34 cities. This can be seen in **Figure 5.6** below.

Figure 5.6: GaWC Cities Served by Broad Rank from Comparator Airport Group



Source: York Aviation

5.41 On a frequency per route basis, in each GaWC category, a similar pattern exists, although in some cases there is some decline in rankings, particularly for Liverpool where lower frequency low fares services exist to a larger number of destinations. Similarly, there is some decline in rank for Manchester Airport where similar low fares services drive down the average frequency. Durham/Tees Valley and Humberside do climb the rankings significantly for Alpha category cities but, in both cases, this is because of the high value of a single destination, Amsterdam. The rankings can be seen in **Table 5.11**. Exclusion of routes serving London from the comparators would be expected to see some northern airports climb the rankings further in terms of frequency due to the relatively high frequencies of service operated to London from the European comparators.

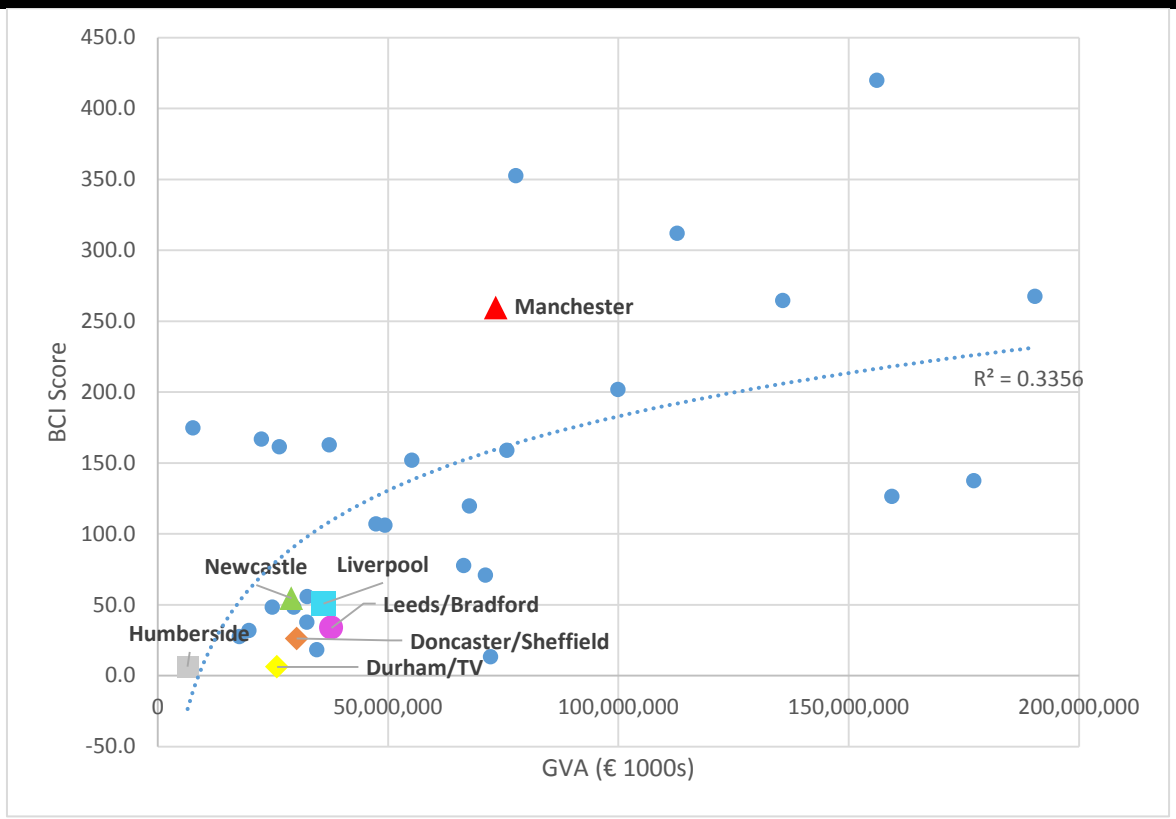
Table 5.11: Northern Powerhouse Airport Rankings In Comparator Group

Northern Airport	Cities Served Rank	Average Weekly Frequency to Alpha Rank	Average Weekly Frequency to Beta Rank	Average Weekly Frequency to Gamma Rank	Average Weekly Frequency to Sufficiency Rank
Doncaster/Sheffield	30	32	26	20	30
Durham/Tees Valley	33=	14	n/a	n/a	n/a
Humberside	33=	11	n/a	n/a	n/a
Leeds/Bradford	26	24	30	19	26
Liverpool	19	23	25	17	19
Manchester	5	8	8	10	5
Newcastle	24	25	24	24	24
Source: York Aviation					

5.42 Finally, we have also reviewed the BCI in relation to the GVA for each city/region, the results of which are shown in **Figure 5.7** overleaf[46]. On this basis, even with the London route included for the comparators, Manchester Airport lies well above the trend in offering greater levels of connectivity than would be expected to serve the city, which reflects its broader role. With the exception of Humberside Airport, all the remaining airports in the North do, however, fall below the trendline, and whilst the picture improves with the exclusion of London from the international comparators, this is not enough to lift any of these back above the trendline. The worst three performers overall are Durham/Tees Valley, Doncaster/Sheffield and Leeds/Bradford in terms of local air connectivity relative to overall GVA.

[46] At the City level, the GVA per capita comparison does not show a relationship, which is probably due to the limitations of data available within Eurostat relative to the catchment area of each airport.

Figure 5.7: GVA/BCI Relationship For Comparator Cities/Airports



Source: York Aviation

5.43 What this suggests is that all of the airports in the North may be underperforming their peers in Europe to some degree in terms of the connectivity offered relative to the size of the city region economy. However, some caution needs to be exercised relative to the exact comparability of economic data between cities and regions. Again, there are other factors at play including the extent to which airports serve areas beyond their immediate city region, for example Manchester Airport serving not just Greater Manchester but much of Cheshire & Warrington. Also some comparator airports serve a broader role, such as Dublin which is the national airport for Ireland and a hub for Aer Lingus which result in higher levels of connectivity than would be strictly related to the local catchment.

5.44 What this relative underperformance may also reflect is the greater number of airports serving the North than in the comparator regions discussed earlier. This has the inevitable effect of resulting in the connectivity being spread across a greater number of airports to the detriment of at least some of the airports' performance relative to local GVA in their own city regions.

5.45 We explore further why this might there may be discrepancies in performance in the next section on our consultations with stakeholders.

6 STAKEHOLDER VIEWS

Approach to Stakeholder Engagement

6.1 In discussion with the study lead, York Aviation and MDS Transmodal developed a stakeholder list of those to be consulted as part of this study. TfN initially provided key contacts for each of the LEP areas and the other workstream leads. York Aviation and MDS Transmodal identified key industry representatives. These initial contacts introduced us to other suitable contacts to advise on the business related need for international connectivity to/from the North. A list of stakeholders interviewed is included at **Appendix E**[47].

6.2 Initial stakeholder consultations have been undertaken individually, with the majority being undertaken by telephone by York Aviation and/or MDS Transmodal as appropriate. Some key contacts, in particular the major ports and airports, have been undertaken on a face to face basis. A topic guide was developed to assist in ensuring a consistent approach to the interviews. This is attached at Appendix E.

6.3 We now go onto summarise key themes which have emerged by:

- Pan-regional economic stakeholders
- LEP Area
- Airports
- Shipping

We also include a brief summary of the key themes from the Strategic Economic Plan (SEP) for each of the LEP areas, drawing on the consultations, the IER and ONS data. This is by way of providing a context for the views expressed on the need for international connectivity.

Stakeholder Views

6.4 We summarise here the key themes which have emerged from each group of stakeholders consulted.

[47] All suggested consultees were contacted but, as is common with such exercises, no response was received in some cases. We, nonetheless, consider that we have sufficient representative views across the North and in the individual LEP areas. A short summary of each interview undertaken has been provided to the client in a separate confidential volume to reflect stakeholder confidentiality.

General Economic Stakeholders

6.5 It became clear from our consultations that the economy of the North is relatively dispersed and does not have concentrated flows of trade and travel in the same way as the economy of London, with its heavy dependence on the Financial Services sector. Clearly, this is one of the issues that the Northern Powerhouse intends to address in terms of encouraging growth through agglomeration and through focussing on the core capabilities. However, the IER does not suggest that the growth of the economy will come through replicating that of London but through building on the region's existing strengths. Hence, this more dispersed pattern of travel requirements to support economic growth is likely to remain, with a focus initially on Europe and the US as the primary trade and investment partners, providing around 40% and 30% of inward investment respectively today, although links to the Far East are likely to become more important in the future. It is harder to be specific about individual air routes which will be significant for the future given the more dispersed pattern of travel requirements and we consider further later in the report the extent to which existing patterns of trade and investment may need to change to deliver transformational growth.

6.6 Overall, there were no strong views expressed that shortfalls exist in international air connectivity to support businesses in the North today[48], although there were specific examples of where improvements could be made or productivity lost through the inconvenience of having to use the London airports or transit via hubs. The general view was that where companies see opportunities to trade overseas, lack of direct air connections may not be a significant impediment, although the inconvenience of indirect and infrequent connections can be a deterrent to those companies which are more risk averse in terms of developing new markets. This has implications in terms of delivering transformation which will require further innovation and diversification. Lack of connections can also add to the costs and loss of productive working time compared to businesses based in London. For the North, it is believed that trade in services largely mirrors where there is trade in goods rather than being a separate market as in London. In other words, exports of services are related to specialisms linked to local exports of goods.

6.7 In terms of inward investment, there is potentially more of an impact from the lack of direct connections. If the North is perceived to be more difficult to reach, some investment will be deterred, although this is considered to be less of a factor in the overall economic performance of the North than internal connectivity and labour market issues, as identified in the IER. International connectivity is not believed to be holding the North back at present compared to these other issues. However, in the longer term, there are likely to be benefits from ensuring that at least one airport has a good range of frequent connections to all key business cities rather than a more dispersed pattern which sees more airports offering services but at lower frequency less helpful to businesses.

[48] Although there were some strong views expressed about the role which airports can play in the economy of an area through their operational activity and the ability to attract clusters of businesses in and around an airport.

6.8 Direct services are also important for attracting inbound tourism as such passengers may be less likely to look at a destination if they have to connect through a hub or travel a long distance by surface means. This has implications for the level of service offered at a more local level.

6.9 Whilst, locally, as we go on to discuss, there may be perception issues associated with the presence or absence of an airport in the vicinity, this may not be directly connected with the level of international connectivity which the airport actually offers. The presence of an airport offers some marketing advantage when seeking to attract new investment. Hence, many stakeholders believe the presence of an airport locally to be very important. However, ultimately, the key economic drivers, and current impediments, to growth are seen as skills and productivity.

6.10 The universities are seen as key drivers of innovation leading to more productive economic sectors. The universities are all developing overseas links and attracting a broad range of overseas students, for whom air connectivity is important. The volume of students travelling can also help to underpin the viability of air services which then support other business activity,

6.11 As we go onto discuss further below, some airports in the region are perceived as being too heavily focussed on outbound leisure traffic and this deters some business travellers from using them as facilities may not be appropriate or there is a perception that the terminals are too busy with holiday makers. Sometimes, this may deter business passengers even considering using their local airport regardless of the route network actually offered.

6.12 The focus of our consultations has been on air travel requirements as the ferries are not seen as particularly important for passenger related business travel, other than some usage for day return business trips from Hull. However, ferries are seen as potentially important in the context of inbound tourism, particularly from across the North Sea. A further factor in tourism promotion is the absence of through ticketing between air and rail connections which could be addressed making it easier to market direct regional air links to the key tourism centres such as York and the Lake District. It was also felt that more could be achieved by coordinated marketing of the tourism product and in ensuring that Visit Britain placed more of a focus on promoting the North in relevant overseas markets for which the connectivity exists.

LEP Areas

6.13 We start each area with a summary of the key economic context and growth potential taken from the SEPs to provide a context for considering the views of stakeholders on the role of international connectivity to economic growth.

Cheshire & Warrington	
Economic Position	GVA of £23.2bn in 2013 and population of 909,000 (source: ONS). GVA per filled job in 2013 of £51,947 (source: ONS) which is 121% of the average for the North, and 114% of the average of all LEP areas (excluding London).
Existing Sector Strengths	Advanced Engineering Life Sciences & Pharmaceuticals Chemicals Energy & Environment Financial & Professional Services
Potential Growth Sectors	Agri-tech & food
SEP Priorities	Atlantic Gateway in Cheshire Cheshire Science Corridor Crewe High Growth City

6.14 The area is strong economically and this is reflected in high levels of business related air travel demand as we have set out in Section 3. Unsurprisingly, much of the current international connectivity is provided by Manchester Airport but Liverpool Airport does play a role, particularly for cities in Eastern Europe where Liverpool offers a better network than Manchester.

6.15 The sectoral structure of the Cheshire and Warrington economy is already more 'international' than some other parts of the North. This may reflect, in part, the area's proximity to Manchester Airport although we have not been able to distinguish definitively the extent to which proximity to the Airport has led to businesses requiring international access clustering in the area or whether there are other factors at play, such as related to trade through the Mersey ports and the historic salt trade.

6.16 Improvements in rail services, such as the 'Halton curve', will improve access from the West of the area to Liverpool Airport but there remain concerns at the relatively poor access from much of the area to Manchester Airport by rail. Road access suffers from congestion on the M56, although access from the east will be improved by SEMMMS.

Cumbria	
Economic Position	GVA of £9.7bn in 2013 and population of 499,000 (source: ONS) GVA per filled job in 2013 of £40,354 (source: ONS) which is 94% of the average for the North, and 89% of the average of all LEP areas (excluding London).
Existing Sector Strengths	Nuclear Advanced Manufacturing Rural & Visitor Economy
Potential Growth Sectors	Low Carbon
SEP Priorities	Advanced manufacturing growth Nuclear and energy excellence Vibrant rural and visitor economy Strategic connectivity of the M6 Corridor

6.17 Surface connectivity to Cumbria is poor, particularly from much of the County to the West Coast mainline, particularly from the Furness Peninsula where there is a particular concentration of business activity. This makes access to air services particularly poor, albeit this has not prevented the development of successful exporting businesses, such as GSK in Ulverston which relies on the link from Manchester to Philadelphia. For many of the economic stakeholders, improved surface to Manchester Airport is seen as key to improving the position of Cumbrian exporters, supporting the economy's key strengths in energy, advanced manufacturing and the visitor economy.

6.18 That said, there is a strongly held belief that and support for the opening up of Carlisle Airport for commercial services will improve the perception of Cumbria as a place to do business, given the current travel time to Manchester. Simply having an airport available for commercial services is perceived as important to the Cumbria brand. Hence, the decision of the LEP to provide funding for the improvements in infrastructure necessary for the commencement of air services to London, Belfast and Dublin for which start up funding has been granted by the Government.

6.19 We were told that the nuclear sector had particular links to the US and Japan, which reinforces the potential importance of Manchester with a range of direct routes to the US and with the potential to develop services to Japan over time. Nonetheless, the potential for a connection to the US via Dublin from Carlisle Airport is potentially attractive, albeit the low frequency of services will result in quite a long elapsed journey time due to the stopover in Dublin, which may require an overnight stay and may not meet the needs of business travellers as well as using existing direct links from Manchester, Newcastle or the Scottish airports.

6.20 International connectivity is seen as important in terms of quality of life to ensure that growth sectors, such as nuclear (new power stations) and advance engineering (BAE Systems) can attract the necessary skilled workforce to support growth.

6.21 Rather surprisingly, the potential role of Newcastle Airport in serving northern Cumbria, alongside Carlisle, was not recognised, although we were told that, for example, the Emirates 'chauffer drive' service for premium class passengers from Newcastle covered the whole of Cumbria.

6.22 Tourism is a key growth sector for the Cumbrian economy Key tourist markets for inbound tourism are Australia, the US, Japan, Germany and the Netherlands, with the latter two to some extent dependent on links through the North Sea ports. There is some activity with cruise ships stopping in Barrow and Workington but the activity is currently negligible. Air connectivity will be important to securing tourism growth.

Greater Manchester	
Economic Position	GVA of £56.3b in 2013 and population of 2.7m (source: ONS). GVA per filled job in 203 of £43,389 (source: ONS) which is 101% of the average for the North, and 95% of the average of all LEP areas (excluding London).
Existing Sector Strengths	Health & Life Sciences Financial & Professional Services Creative & Digital Manufacturing
Potential Growth Sectors	Advanced and 2D Materials including Graphene
SEP Priorities	(Inter alia) Reshaping our economy to meet new, global demands Improving connectivity locally, nationally and internationally Placing our city region at the leading edge of science and technology Building our global brand

6.23 ICT and Professional Srvices seen as the key drivers of employment growth in the short to medium term, along with admin and catering and hospitality, with the latter in particular in support of the tourist sector.

6.24 The principal trade and investment partners for the Greater Manchester economy remain the US and Europe, although there are signs of increasing investment from the Far East in both infrastructure and in research and development. In part, this builds on the strong innovation culture through the universities, particularly in the new research institutes, such as the Graphene Centre. This is seen as one of the key drivers to increase the value added in the advanced manufacturing sector and will, in turn, require improved air connectivity to the Far East.

6.25 The Creative & Digital sector is seen as another driver for growth. These companies have particular links to the West Coast of the USA and the impending introduction of direct flights to Los Angeles and San Francisco from Manchester are seen as important, even if these are operating initially a relatively low frequency aimed at leisure markets, as they connect companies in the area with potential investment partners. It was noted that US investors typically dislike connecting through Heathrow and much prefer services to Manchester from key US hubs. A key issue is the reliability of connections and there is a dislike of having to rely on hubs such as Amsterdam which is perceived as increasingly unreliable.

6.26 The Financial & Professional Services sector in Manchester is becoming more international and a number of foreign banks, e.g. BNY Mellon, and US law firms have been attracted in recent years. This increases the importance of US links. The nuclear sector in Manchester and Birchwood has particular links with Japan and direct services would be a priority and this is perceived to be the biggest gap in the network currently.

6.27 To some degree the relative internationalisation of the Manchester economy may reflect the long standing role of the City as a port, building on the Manchester Ship Canal.

6.28 Overall, it is believed that success breeds success in terms of Manchester Airport's long haul network. Improved road and rail connections across the Region would enhance the catchment area and make more services viable.

6.29 Marketing Manchester does work with the Airport to promote new services through destination marketing at the other ends of the routes. Key tourism target markets for Manchester are the USA, China, Europe and India, with the UAE, Japan and Australasia second order priorities. There are similar target markets for inward investment. However, in terms of inbound tourism, there are greater concerns regarding the local supporting infrastructure, e.g. local tour operators, than the level of international connectivity.

Hull & The Humber	
Economic Position	GVA of 16.4b in 2013 and population of 922,000 (source: ONS). GVA per filled job of £43,648 in 2013 (source: ONS) which is 102% of the average for the North, and 96% of the average of all LEP areas (excluding London).
Existing Sector Strengths	Ports & Logistics Chemicals/Petrochemicals Food Processing and Agri-Tech Other Manufacturing including Healthcare Technologies
Potential Growth Sectors	Energy Renewables (including offshore wind)
SEP Priorities	Creating an Infrastructure that Supports Growth (with an emphasis on connections to Manchester Airport). Supporting Businesses to Succeed A Great Place to Live and Visit A Skilled and Productive Workforce Flood Risk and Environmental Management

6.30 The local economy is SME dominated and, hence, does not generate as much international travel as some other areas. Although the Digital sector is growing and is trading internationally, there is relatively little need to travel due to 'digital' trading. That said, it was claimed that is often easier to trade in Europe than in the UK and this is partly linked to the availability of the connection from Humberside Airport to Amsterdam, which has operated successfully for many years. Locally, ferry services which offer some day return business capability are also used.

6.31 Rather surprisingly, Humberside Airport is seen as being leisure dominated, despite its most important services being to the Amsterdam hub and to Aberdeen. Doncaster Sheffield Airport is similarly viewed as a leisure airport, although there were some views expressed that it could be better used.

6.32 In terms of inward investment and doing business beyond Europe, the view was that longer surface access journeys to airports were not an impediment, for example when visiting the US, although improved access to Manchester Airport through electrification of the rail network was seen as important to ensure that journeys are reliably around the 2 hour mark.

Lancashire	
Economic Position	GVA of £25.6b in 2013 and population of 1.5m (source: ONS). GVA per filled job in 2013 of £39,970 (source: ONS) which is 93% of the average for the North, and 88% of the average of all LEP areas (excluding London).
Existing Sector Strengths	Aerospace Automotive Energy Advanced Chemicals & Polymers
Potential Growth Sectors	Health Digital Business Process Outsourcing
SEP Priorities	Maximising economic strengths National Centre for Advanced Manufacturing Maximising the economic value of centres of research and innovation excellence Refocusing the local skills system Strengthening and refreshing our business growth hub Driving forward the Enterprise Zone and City Deal Creating the right conditions for business and investor growth Ensuring major transport projects and investments are fully aligned Developing complementary local growth accelerator strategies

6.33 Advanced manufacturing and aerospace are seen as the key drivers of economic performance. These tend to be higher skilled activities which depend on knowledge sharing and consequentially have a higher dependence on air travel. Export markets are also important to some of the more traditional manufacturing activities.

6.34 Manchester is seen as the main airport of relevance to Lancashire businesses. Some difficulties do remain in terms of the reliability of road and rail connections to the Airport which need to be addressed.

6.35 Whilst there is a preference for direct air service connections, it is accepted that hubs are necessary to provide the broad range of connectivity required to serve developing markets.

Leeds City Region	
Economic Position	GVA of £60.5b in 2013 and population of 3.0m (rce: ONS). GVA per filled job in 2103 of £42, 756 (source: ONS) which is equivalent to the average for the North, and 94% of the average of all LEP areas (excluding London).
Existing Sector Strengths	Advanced Manufacturing Financial & Professional Services Health & Life Sciences Digital & Creative Food & Drink
Potential Growth Sectors	Low Carbon & Environmental Industries
SEP Priorities	Supporting growing businesses; Developing a skilled and flexible workforce; Building a resource smart City Region; and Delivering the infrastructure for growth.

6.36 Stakeholders generally noted that the Leeds City Region economy is less dependent on exports than some other areas of the North and that much of that exported is actually within the UK. Other strong markets tend to be within Europe, particularly the larger markets in Northern Europe, particularly Germany and France. Some views were expressed that local businesses may be more risk averse than elsewhere and tend to trade in 'safer' markets. It was reported that many of the exporting businesses are in the Food & Drink sector, although specialised, high value added, manufacturing is growing.

6.37 The financial service sector, which is strong in the city region, is dominated by business which largely serve UK markets, such as building societies.

6.38 Some consultees noted that the lack of direct connections to Leeds Bradford Airport, particularly from a range of larger European cities, is an impediment to inward investment in higher value added activities such as research and development which tend to be located in better connected areas. It was felt that a city the size of Leeds should have direct services to a broader range of European capital cities.

6.39 Economic consultees did express some concerns that Leeds Bradford Airport was too focussed on leisure passengers and the facilities were better suited to their needs than those of business travellers. Surface access was considered an issue as was parking. Discussions are ongoing about how best to provide a rail connection to the Airport and the current favoured solution appears to be a Parkway Station on the nearby Leeds to Harrogate line.

6.40 It was also noted that for many businesses in the City Region, the Airport was in the wrong place and, particularly for those adjacent to the M62, that it was easier to get to Manchester Airport. In general, Manchester Airport was seen as the global gateway, offering a range of direct services. Some of the businesses that we spoke to stated a preference for using Manchester because of the greater range of services that it offers and facilities that were perceived as being more suited to the needs of business travellers. It was felt that access to Manchester Airport from the City Region was generally good, albeit that there are some problems with resilience and reliability.

Liverpool City Region	
Economic Position	GVA of £27b in 2013 and a population of 1.5m (source: ONS). GVA per filled job in 2013 of £43,581 (source: ONS) which is 101% of the average for the North, and 96% of the average of all LEP areas (excluding London).
Existing Sector Strengths	Health & Life Sciences Advanced Manufacturing Super Port (Liverpool 2) Low Carbon Digital & Creative
Potential Growth Sectors	Professional, Scientific & Technical Service Sector
SEP Priorities	Globally connected City Region Low Carbon growth opportunity Innovation, Science & Creativity Hub Competitive place, with competitive people and businesses

6.41 Liverpool has a more international economy than much of the rest of the North due, in part, to its long history as a port. There are strong international connections, including to China through the University of Liverpool's overseas campus. The Services sector is also relatively international based on specialisms, such as maritime law.

6.42 International business related tourism is seen as growth sector based around the new Exhibition Centre. The leisure tourism product is also strong as is evidenced by the high number of visitors. The Cruise sector is also seen as a growth opportunity with the new Cruise Terminal.

6.43 Because of the relative internationalisation of the economy, there is a strongly expressed need for more business related routes from Liverpool Airport. Notwithstanding the relative proximity of Manchester Airport, there is a belief that new services from Liverpool Airport would add more economic value locally than simply growing the frequency of service on key routes from Manchester. Even if more routes are to leisure type destinations, it is believed that the growth of the Airport is important for the perception of Merseyside as an international business centre.

6.44 Direct air connections are particularly important to the tourism sector.

6.45 It is considered that surface access to Liverpool Airport from much of the conurbation remains poor. There is some concern that the new Transpennine rail franchise may reduce services to Liverpool South Parkway, which would impact on the extent to which Liverpool Airport can attract passengers to some of its unique routes, e.g. to Eastern Europe, from across the Transpennine corridor. Stakeholders consider that Liverpool Airport has improved the customer experience in recent years and, under its new ownership, is more engaged with the sub-regional economic agenda. However, there remain criticisms of passenger 'drop-off' arrangements which present some deterrent to using it.

North East	
Economic Position	GVA of £33.9b in 2013 and a population of 1.9m (source: ONS). GVA per filled job in 2013 of £41,723 (source: ONS) which is 97% of the average for the North, and 92% of the average of all LEP areas (excluding London).
Existing Sector Strengths	Passenger Vehicle Manufacturing Life Sciences & Healthcare Subsea and Offshore Technologies
Potential Growth Sectors	Creative & Digital (the SEP also refers to business services, low carbon, tourism and logistics as growth sectors)
SEP Priorities	The Vision is to increase employment by 100,000 jobs by 2024, but also to make at least 60% of these higher skilled and higher paid private sector jobs.

6.46 The North East economy is more international that some other parts of the North, reflecting in part the original port as an attractor to international business. As a consequence the North East is a successful exporting region, albeit that there is still a heavy dependence on the public sector as a source of employment.

6.47 50% of exports are to Europe but beyond that markets are quite dispersed, so there is a dependence on hub connections. Strengths are in the Automotive and Oil & Gas sectors, as well as Advanced Manufacturing more generally. The connection to Dubai and the new service to New York are particularly important. There is some evidence that local businesses are diversifying further overseas using the Emirates service.

6.48 There is quite a large 'short-break' tourism market to the area, so quick and direct links to the area are important.

6.49 Overall, there remains a perception that the North East is remote. Local stakeholders believe that, even with the planned improvements in road and rail links across the Pennines, Manchester Airport will still be too far away to provide an acceptable standard of service. This is one reason why the air connection to Heathrow will remain important and which Newcastle is able to sustain some long haul connectivity.

6.50 The Airport is seen as a crucial factor in attracting inward investment. However, the fact that the route network is seen as somewhat 'unstable' can make the region harder to sell.

6.51 There is substantial concern at the effect that reductions in Air Passenger Duty in Scotland could have a devastating effect on Newcastle's route network, particularly the long haul routes. Airlines may opt to serve the market from Edinburgh if there is a tax differential and this would be damaging to the economy.

Sheffield City Region	
Economic Position	GVA of £30.6b in 2013 and a population of 1.8m (source: ONS). GVA per filled job in 2013 of £40,253 (source: ONS) which is 94% of the average for the North, and 89% of the average of all LEP areas (excluding London).
Existing Sector Strengths	Advanced Manufacturing Health Technologies Creative & Digital Low Carbon and Nuclear Logistics
Potential Growth Sectors	Advanced Manufacturing, Engineering & Materials
SEP Priorities	Vision is of a City Region with a stronger and bigger private sector that can compete in national and global markets. Improving international connectivity is a Key Theme.

6.52 The Advanced Manufacturing sector is seen as vital to the South Yorkshire economy, particularly for Sheffield and this is likely to see more internationalisation of businesses.

6.53 However, it was noted that in the rest of the City Region, the economy tends to be dominated by SMEs who do not trade so widely, mainly in Europe. There are, nonetheless, opportunities for the rail sector in Doncaster to export more to places such as India and South America. There are opportunities in relation to Education Technologies in Malaysia and the Middle East.

6.54 There are strong feelings locally that more use should be made of Doncaster Sheffield Airport, which is seen as a strong potential local economic driver if it can develop a vibrant cluster of aviation related businesses on the site. There are high hopes that the new operation by Flybe, which provides previously absent connections to some business cities and hubs will be a 'game changer'. Completion of the Finningley and Rossington Regeneration Route Scheme (FARRRS) road to the Airport was also perceived as another game changer in reducing access times by 12 to 20 minutes, including from the centre of Sheffield when completed later this year. This would enlarge the Airport's catchment area and make more services viable. Improved rail access to the East Coast mainline is also under consideration.

6.55 Economic stakeholder told us, however, that having to use Manchester Airport for as the primary airport for business connections was, in practice, acceptable for existing businesses and existing trading patterns but that the surface journey could be an impediment to attracting new business or investment and might contribute to existing local firms being unwilling to experiment in new markets.

Tees Valley City Region	
Economic Position	GVA of £11.4b and a population of 665,000 (source: ONS). GVA per filled job in 2013 of £43,017 (source: ONS) which is the equivalent of the average for the North, and 95% of the average of all LEP areas (excluding London).
Existing Sector Strengths	Process Industries Advanced Manufacturing
Potential Growth Sectors	Digital technologies Low Carbon
SEP Priorities	The SEP focuses on 6 priorities: • an innovation culture and positive environment for business growth. • Secure the transformation into a Low Carbon High Value economy. • Secure improved skills levels to address future demand. • Secure additional capacity on the East Coast Main Line rail route and improve rail services to major northern cities and within the Tees Valley. • Improve our air, road, port, land and property infrastructure to enable economic growth. • Create and retain wealth by establishing the Tees Valley as a preferred location to live in, work and visit.

6.56 Newcastle Airport being only 40 miles away makes it hard for Durham Tees Valley Airport to sustain a range of services. That said, the connections to Amsterdam and Aberdeen are highly valued by the local business community, particularly the Chemicals sector. The local business community would like to see more services, with the loss of the connection to Heathrow a few years ago being cited as a particular concern.

6.57 Again, somewhat surprisingly, Durham Tees Valley Airport is seen as being leisure dominated, despite its most important services being to the Amsterdam hub and Aberdeen, and the re-focussing the Airport as a business oriented airport. There was a feeling that this change in emphasis had not been as well marketed as it might be.

6.58 There is strong local support for the retention of the Airport and the level of connectivity which it currently offers. To that end there is support for the objectives of the new Master Plan for the Airport which aspires to the attraction of a cluster of logistics and maintenance related businesses. These would generate economic activity in their own right and could underpin the ongoing viability of the Airport and the connectivity it provides to the local area.

York, North Yorkshire & East Riding	
Economic Position	GVA of £21.7b in 2013 and a population of 1.1m (source: ONS). GVA per filled job in 2013 of £41,991 (source: ONS) which is 98% of the average for the North, and 92% of the average of all LEP areas (excluding London).
Existing Sector Strengths	Agri-tech Food Manufacturing Bio-Renewables & Low Carbon Visitor/Leisure Economy
Potential Growth Sectors	As above, plus offshore wind and potash mining.
SEP Priorities	• Create 20,000 new jobs • Deliver £3 billion growth • Connect every student to business • Double house building One of the sub-priorities identified is *"a well connected economy".*

6.59 There is a relatively limited international export market and limited foreign direct investment in North Yorkshire. The Food & Drink sector is the dominant sector.

6.60 Tourism is important and many of the longer stay visitors bring their cars through the North Sea ports from Northern Europe. The perception is that relatively few visitors come direct to the region by air, with shorter visits largely focussed on York and usually part of a larger visit to the UK with London as the gateway.

6.61 It is felt that there is relatively good access to a range of airports when road and rail access is taken into account, although there are local road accessibility issues at Leeds Bradford and Newcastle.

6.62 It was felt that Manchester offers a good range of air service connections to meet the needs of North Yorkshire. Leeds Bradford Airport could be used more, given its proximity, if it had a broader range of services.

Aviation

Airports

6.63 Each of the airports see the scope for further development of their route networks, including business focussed routes. In the main, these fall into two categories:

- ✈ improved connections to hub airports, such as Amsterdam, Paris and Frankfurt, with airlines able to offer a high frequency of service and through ticketing. For airports, such as Liverpool, the absence of any marketed hub connection with a network airline has meant that the airport appears 'not to exist' to many potential visitors as they cannot book global connections to the City, although this has been remedied by the Aer Lingus connection through Dublin;
- ✈ more direct connections to the main cities in Europe, particularly Germany and Scandinavia, at a sufficient frequency to enable day return business trips.

For those airports which have services, links to London and the hub at Heathrow continue to be important to providing global connectivity.

6.64 For most of the Region's airports, the problem remains attracting suitable airlines to operate these services on a sustainable basis. Many of these airports are not in a position to provide sufficient financial incentives to encourage airlines to operate such services, which are often seen as high risk for the airline. As we discuss below, following the recession, all airlines are more risk adverse than previously, which encourages them to concentrate on core routes and larger markets. It was pointed out that such new, business oriented, routes would deliver wider economic benefits than simply the benefits to the airport. It was questioned why LEPs could not invest, on a risk sharing basis, in the development of such services where there was demonstrable wider economic benefit. However, there appears to be some inconsistency as LEPs can invest in the attraction of new investment which can generate jobs but, prima facie, the rules on State Aid to Airports and Airlines, which we discuss in Section 7, preclude such investment in economically beneficial air services.

6.65 The high cost of Air Passenger Duty (APD) remains a problem for regional markets. The markets are inherently more price sensitive than the London market and, in this context, outbound leisure travellers are a material consideration as they underpin the viability of services even to markets which are relevant to business travel. APD adds to the price which the passenger has to pay and, ultimately, serves to depress the yield to the airlines reducing the viability of services so delaying the time when new frequency or routes might be added. Leisure passengers, in particular, will often travel longer distances to obtain a lower cost flight.

6.66 This is particularly an issue for those airports which have or are seeking to develop long haul services because of the very high cost of APD outside of Europe. In the case of Newcastle Airport, and to a lesser extent, Manchester Airport, the potential reduction in APD rates in Scotland poses a threat not just to the development of new long haul routes but the retention of existing routes. Airlines operate in a commercial environment and will seek the most profitable routes to operate rather than simply looking at the sufficiency of market size. If they can effectively earn a higher return from operating their aircraft (recognising that airlines do not have unlimited fleets) elsewhere due to a lower tax regime or other cost or revenue factors, airlines are not averse to simply moving services to alternative routes serving different markets.

6.67 The high cost of APD impacts on the attractiveness of developing new routes to the North. As noted above, the cost of APD may still leave serving London, the world's largest international air market, as an attractive proposition but can leave UK regional airports at a disadvantage compared to other European regional city airports in attracting new long haul services, which are inherently more risky and lower yielding to the airline. This particularly impacts on Manchester which has shown that, in recent years, development of new long haul routes has accelerated in Europe compared to the UK. To a lesser extent, these same factors impact on all of the North's airports in the attraction of short haul services.

6.68 All of the airports would like to see surface access improvements. This varies from seeking direct rail or improved road connections through to better local bus services. Improved surface access extends airport catchment areas and potentially makes more services viable. However, there may be diminishing returns in terms of wider benefit where catchment areas overlap as it may simply result in services or passengers switching between airports.

6.69 However, at a more strategic level in terms of the addition of new direct services which would not otherwise operate at all from the North, Manchester Airport considers that there would be a material wider economic payback from improving strategic road and rail links to the Airport so extending its catchment area and enabling it to support a wider range of long haul services over time. This would tilt the balance between someone favouring a hub connection over Amsterdam or via London as their quickest route to using the direct services, so enhancing the viability of each long haul route operated directly.

6.70 To some extent, the same principles could apply to the development of more long haul services from Newcastle, but here a note of caution needs to be exercised because of the risk of leakage to Edinburgh. Given the length of the journey to Manchester, even with the proposed road and rail improvements in the North, Newcastle does operate with a relatively self-contained catchment area for long haul services, albeit significantly smaller in scale and this needs to be safeguarded.

6.71 The airports were all keen to stress the local economic benefits of their operations, with particular ambitions to develop their activities and attract additional operational activities to the airport site, including air freight activities and other supporting business, such as maintenance operations. This often follows from improved surface access to airports which make them attractive sites for development more generally. Such developments can be locally significant in terms of employment and income generation and, whilst there is some link between the route network offered by the airport and the attraction of business clusters, such clusters do not in themselves necessarily underpin the development of a network of routes to support wider economic growth. We have addressed, the benefits of such clusters or agglomerations in part in terms of the employment and GVA benefits of the operation of airports in Section 4. We discuss the relationship between connectivity and operational effects further in Section 9.

Airlines

6.72 A general view emerged that only Manchester offers a strong enough market for substantial development of the route network in terms of new routes, particularly for long haul services, in the North. Even for short haul services, airlines noted the greater potential yields at Manchester, which enhance service viability, allowing higher frequency services to key business cities than was possible from the other airports. All airlines are currently seeking to maximise yields and are less willing than pre-recession to take the risk in entering and developing new markets. This, of course, represents a relatively short term view as is typical with airlines that tend to operate with shorter planning horizons that infrastructure providers.

6.73 It was noted that Manchester was beginning to develop as a hub itself, with airlines increasingly taking up opportunities to connect with other airlines and this was assisting in the development of the network, particularly for long haul routes and services from the rest of the UK connecting to them. A further factor was the perceived 'virtuous circle' in that the more long haul services that are operated from Manchester, the more passengers see the Airport as their first choice rather than London. This is seen as benefitting all airlines in terms of increased load factors. In essence, there is a critical mass effect at play.

6.74 The airlines were generally fairly positive about the scope for growth across a wider range of airports, with scope to add new routes at the local level even if these destinations were already served from Manchester or to serve local niche markets, e.g. connections to Scandinavia related to oil & gas activity on the east coast. It was also noted that, even if a new runway is constructed at Heathrow or Gatwick, this might not act as a brake on the development of more direct services due to the costs of paying for a new runway which could make operations from the North look relatively stronger in terms of profit potential.

6.75 The airlines did not see major impediments to developing more regional services other than the fundamental of market viability. However, the cost of APD remains a major impediment and makes UK regional markets less attractive for the airlines than serving markets elsewhere in Europe. The North generates lower yields for the airlines than the London market making the costs of operating (such as APD) even more important and this, coupled with the size of the market, is ultimately the key constraint. Nonetheless, the Region's airports were felt to be commercially astute and supportive of the airlines extending their route networks. It was noted, however, that improved surface access to airports, and Manchester in particular, could extend the catchment areas so making it more attractive to a wider range of passengers to use direct services from many of the airports. This was seen as a particular factor at Doncaster Sheffield in the short term given the improved road connections nearing completion.

6.76 There was no suggestion that there were deficiencies in the airport facilities available in the North, although it was noted that Manchester was currently experiencing some congestion in peak periods, which would be addressed by the planned upgrading works.

Shipping

Ferries

6.77 The economics of the ferry services both now and in the future cannot be considered solely from a passenger perspective without considering also the economics of roll-on roll-off freight traffic. All the ferry services to and from ports in the North of England carry freight to a greater or lesser extent.

6.78 The ferry and aviation markets are generally seen as being quite distinct, with most passengers travelling door-to-door with their own cars. However, the services on the East coast between Hull/Newcastle and the Near Continent also carry significant numbers of foot passengers and coaches, particularly outside the summer peak season. This is mainly based on the ability of the ferry services to provide an overnight cruise experience with easy access to city centres at either end of the ferry journey.

6.79 About 5% of the passengers on East coast services to/from the North of England are business travellers and the ferry services to and from the North are generally more balanced in terms of inbound tourists versus outbound tourists compared to the GB-Continent market as a whole. The East coast ports are mainly providing a gateway to the North of England and Scotland (key destinations for overseas residents are the Lake District, the Yorkshire Dales, York and Edinburgh) for relatively independent and 'adventurous' travellers from the Benelux area and Germany. Outbound UK residents are mainly from the North of England and Scotland, choosing to take a direct ferry to the Near Continent rather than driving to the south east of England to take the shorter crossings to France. The services to/from northern ports allow inbound tourists to arrive at their destinations in the North of England and Scotland without getting 'lost' en route through southern England and allow northern residents to access destinations on the Near Continent directly, reducing environmental emissions and other external costs related to longer drives to southern English ports.

6.80 The stakeholders consulted believe that the overnight cruise ferry offer between Northern ports and the Near Continent and Ireland for both car passengers and foot and coach passengers is likely to remain an attractive offer in the future. Both the east and west coast passenger markets are generally stable after the economic downturn and are expected to provide steady if unspectacular growth in the future.

6.81 Opinions on the potential for new routes vary according to the specific stakeholder. The existing private sector operators generally believe that the current routes are sufficient and the market is stable; new services would be expected to affect the economics of the existing services, potentially undermining their commercial viability. Public sector stakeholders may have a greater interest in seeking, with private sector operators, to revive historic services that have been lost, such as the Newcastle-Norway service that provided benefits to Newcastle because of its popularity with Norwegian tourists.

6.82 No major technological changes are expected in the ferry industry that might radically change the fundamental economics of ferry services, but the introduction of the Sulphur Emissions Control Area (SECA) in the North Sea in January 2015 means that when ships reach the end of their useful economic lives (after about 25 years) a decision needs to be made about the most economic fuel that should be used for new ships for the long term (such as LNG) to meet the low sulphur requirements of the new regulations.

6.83 The ferry offer to and from the North of England could be strengthened by:

- The availability of riverside (rather than in-dock) berths so that port turnarounds can be faster and quay to quay transit times can be reduced;
- Improved 'last mile' access to ferry ports such as Liverpool and Hull on the A63 and A5036 respectively;
- Improved network resilience and more reliable door-to-door journey times by car across the North and, in particular, across the Pennines;
- Improved public transport provision between city centres and ferry ports (for foot passengers) and potentially improved infrastructure for cyclists.

Cruise

6.84 Cruise tourism is generally regarded as providing significant benefits to the cities where calls are received rather than to the port operators. Cruise tourists that join cruises at ports in the North are generally UK residents, but there are some cruise passengers who fly from the south of England to Newcastle Airport to join cruises from the Tyne. Way-call cruise tourists, on the other hand, are more likely to be overseas residents and their spending during the calls at ports in the North of England, therefore, provide net economic benefits.

6.85 The Liverpool Cruise Terminal is regarded as having been a success and has been handling turnaround calls as well as way calls since 2012. Its location is ideal for way calls in that many of the attractions in Liverpool are within walking distance of the terminal. The main drawback of the location is the lack of space for future expansion, although feasibility work has been carried out on potential expansion of the terminal at Pier Head. Similarly, the Port of Tyne has been successful in developing an increasingly number of cruise ship calls, 50% of which are turnaround calls. There have been discussions between ABP and the local authority on the potential for the development of a cruise terminal at Hull.

6.86 A key need is for improved marketing of cruise tourism across the North of England, while reducing the existing fragmentation of the overall marketing effort between a number of different organisations and agencies.

6.87 Improved inland transport connections of all kinds (such as faster and more frequent rail services across the North of England) would also help to improve the overall experience for UK cruise tourists joining their ships at ports in the North, while discouraging the use of private cars.

Stakeholder Workshop

6.88 The initial key emerging themes and issues from consultation, along with a summary of the baseline analysis, was presented to a Stakeholder workshop to be held in Leeds on 18th May 2016. This workshop was attended by forty people from a wide variety of stakeholder groups. The aim of the workshop was to test the findings of the baseline analysis and the emerging views from the Stakeholder consultations in order to identify any gaps in the analysis of emerging issues and opportunities.

Outcomes of International Connectivity Workshop

6.89 Following the presentation of the emerging findings, two discussion groups were formed to discuss the issues and to identify ways in which international connectivity might be improved. We report the findings of these discussion groups by theme.

<u>Data and Analysis</u>

6.90 In general, there were no fundamental issues raised with the data and analysis as presented, although the following observations were made:

- ✈ It was considered important not to underestimate the potential value of leisure passengers, which often underpin and sustain routes. It is also important to acknowledge the importance of outbound leisure routes to attracting people to live and work in an area from the perspective of quality of life;
- ✈ It was felt that it would be helpful to have better data on where inbound tourists originate. It was also suggested that mobile phone data should be used to track passenger and in particular tourism flows to find out how many tourists actually visit the North. This was a potential action for the future in terms of improving coordination of the tourism offer;

- Some stakeholders felt that the GVA impact of the baseline international connectivity identified seemed low and questioned whether the figure included wider 'catalytic' effects. It was confirmed that it does;
- There was concern expressed about the about the regional benchmarks and whether the choice and number of these played down the strengths of the North by comparison, although it was also noted that the benchmarks were taken from those set out in the Independent Economic Review (IER);
- It was felt that WebTAG might not provide a suitable vehicle for looking at the business case for aviation interventions in the North and that a customised business case model might be needed, particularly to deal with interventions that have a multi-modal dimension. There were also concerns about WebTAG's ability to take tourism benefits into account;
- Data about surface access mode to airports would be useful.

6.91 We have addressed some of these data gaps where we are able in Section 3.

The Nature of the North's Economy

6.92 It was noted that evidence suggesting that the Manchester and Merseyside economies might be more international than the rest of the North was probably correct, as a result of these cities' historical trading legacies. The focus on the eastern side of the country was more towards Europe.

6.93 There was general agreement that no large structural change in the economy is expected to take place that would fundamentally change the demand base in future. The USA and Europe remain the largest inward investors. There is growth potential in other global regions, such as India, but overall there was no expectation of significant change.

6.94 There was some discussion about whether international connectivity stimulates economic investment, or whether the economic investment has to come first. Examples were provided of both cases and it was felt that both factors could apply but, in general, it was agreed that connectivity tends to follow economic growth, rather than the other way round. Sometimes land availability and skills availability are the determinants of where inward investment goes, rather than international air connectivity. The role of airports in their local economies was also stressed in terms of their ability to act as local drivers for growth, including tourism and freight.

6.95 It was felt that the issue for the Financial and Professional services sector in the North was largely about the lack of HQ functions and therefore less need to travel. However, there were some signs that improved long haul connectivity to Manchester Airport was encouraging firms to locate their European HQs close by. Other cities may be able to attract similar inward investment off the back of new long haul services if surface access was improved. The key was to increase the area within a 30 minutes/1 hour catchment to ensure that supply chain and investment benefits could be spread from the development of such long haul services.

6.96 It was considered that account should be taken of factors which might reduce the need for physical international connectivity in future, such as digital communication. Environmental pressures and concerns about safety and security could lead to companies discouraging international travel, although it was accepted that this might vary across business sectors.

6.97 It was highlighted that there is an important distinction in the Independent Economic Review (IER) between the core capabilities which will drive GVA growth and the enabling capabilities which are seen as more important for employment growth. It was felt that there would be benefits if Strategic Economic Plans more clearly identified unique strengths and the scope for clusters of excellence, rather than seeking the same core capabilities across all LEP areas. This created some difficulty in being specific about future international connectivity requirements in different parts of the North.

Airport Concentration versus Dispersal

6.98 There was some discussion about the benefits of seeking to concentrate increased services from Manchester versus promoting competition from a range of northern airports. Some concern was expressed as to whether smaller regional airports can sustain new routes in the way that Manchester could and whether extending Manchester's catchment would make some long haul services viable that otherwise would not serve the North at all. Some felt that there needed to be a pan-northern approach to promoting routes and services and Manchester's experience was that there was little awareness of the range of direct flights operated from Manchester.

6.99 On the other hand, concern was also expressed that the default position might become too Manchester-centric at the expense of other northern airports, where a lack of services could act as an impediment to attracting inward investment. More peripheral regions could be economically at risk if the focus was on a limited number of airports/ports and each had particular needs which were not always consistent with the concept of 'the North' as a single entity.

6.100 It was felt that is was misleading to speak in terms of the North having eight airports today, in terms of comparison with the benchmark regions, as Carlisle was not operational and its role is not yet clear. Humberside Airport is outside the northern region. The larger geographic size of the North compared with the benchmark regions could explain why more airports are needed to cope with different regional specialisms. It was felt that each of the five core cities should be able to support its own airport.

6.101 There was, however, a general consensus that it was ultimately the market that will decide where new routes and services will be located. However, some felt that this should not mean that the default strategy should be centred around Manchester. The point was also made that it is not just about new routes from the North; it is also about increasing frequencies of existing routes, which can be just as important. Marketing and raising awareness of the availability of air links from different airports was also flagged up as important.

Hubbing

6.102 It was noted that some parts of the North that would never sustain a range of long haul routes from their local airports and this made hubbing services via Heathrow or Amsterdam critical to their economies. However, it was also noted that long connections at hubs may be off-putting to inward investors.

6.103 The view was expressed that east-west surface connections across the North are very important and that, whilst hubbing connections via Amsterdam were important, access from the east to bigger airports such as Leeds Bradford and Manchester was also key to improving connectivity for the future.

Surface Access

6.104 There was extensive discussion about surface access and all stakeholders felt this was a critical issue and an important area for potential intervention. It was generally agreed that two hours is a reasonable travel time to an airport in order to make a flight, but it depends who is travelling and how much time they have – a leisure passenger would be prepared to travel further to get a better price, for example. It was suggested that the TfN strategy should provide a clear statement of aspirational journey times from cities to airports as well as between cities.

6.105 It was noted that for some of the more peripheral regions, improving surface access to and within the region is the key to improving international connectivity via the region's airports.

6.106 There was a concern that Government had invested public money in improving surface access in the South East at the expense of the North, where there had been an unfair expectation that private operators would invest. It was felt that use of the northern airports should offer real journey time and cost advantages compared with using Heathrow, but that current surface transport times and costs were a real problem for the North.

6.107 It was acknowledged that improving surface access could be a 'double edged sword' in that by improving access to one airport, access to a competitor airport is also improved.

Ports and Shipping

6.108 It was felt that growth in seaborne freight could drive economic growth more generally and, therefore, the need for international business connectivity.

6.109 It was recommended that the study should include ferries to the Isle of Man in considering seaborne passengers. The study should also consider US sea operators coming into northern ports.

6.110 It was highlighted that there is strong growth potential from cruise passengers.

Potential Interventions

6.111 It was generally felt that surface access would be a fruitful area for intervention. All airports could gain from improved surface access. It was also noted that any big surface access schemes could take 5-10 years (or more) to deliver, whereas smaller local airport interventions would be cheaper and could be delivered immediately. Even improving local bus services can make a difference at a local level.

6.112 There was a view that private sector ownership of airports could be an impediment to delivering improved connectivity, as public sector owners were more inclined to take a wider view on investment to support new route growth.

6.113 Airports believe that they are taking much of the risk in seeking to attract more services currently and that there needs to be better coordination, in particular, of tourism activities and on the markets of primary interest to the North to maximise inbound tourism across the North. There also needs to be better packaging of the product across a 'northern brand'.

7 POTENTIAL INTERVENTION MECHANISMS

7.1 Before we go on to identify the potential interventions which will provide the necessary enhancement to international connectivity required to support the 'Transformational' economic scenario, we describe here the policy context within which the potential intervention mechanisms need to be considered, in particular in relation to international policy and regulation.

Policy Context

Aviation

7.2 The air transport sector in Europe was progressively liberalised from 1987[49]. Whereas, prior to that date, most airlines and airports were owned by Government, in some form, there has been privatisation of airlines and, increasingly, airports. Prior to that date, Governments had the ability to direct airlines which airports to fly from and which routes to operate, even if those routes were not financially viable. Governments also, typically, funded airport expansion.

7.3 In the liberalised market, airports and airlines, with some exceptions, are subject to the full force of competition law and this limits the scope for Government intervention. The principles of the liberalised market are increasingly being extended beyond Europe and the principles of 'fair competition' apply universally. This would continue to apply following BREXIT.

7.4 As a consequence, the market is the main determinant of what air services will be offered and from which airport. However, there are factors which can be subject to influence and these would include:

- surface access which could extend an airport's catchment area and make the provision of a service more viable;
- the quality of facilities and service offered by an airport, which could include the length of the runway, the availability of other infrastructure or the quality of the service in the terminal;
- the cost of operating the route, including direct and indirect charges made by the airport and government taxes.

7.5 Ultimately, given the liberalised aviation market, any steps taken to improve international connectivity for the North will need to work with the market rather than work against it and will, to a significant extent, necessarily follow the pattern of economic change. In other words, airlines will react fundamentally to the strength of each market rather than develop services in advance of there being a profitable market. Hence, finding mechanisms to strengthen the market at the individual airport level will be key to achieving transformational growth.

[49] More details are given in http://researchbriefings.files.parliament.uk/documents/SN00182/SN00182.pdf

UK Aviation Policy

7.6 UK Aviation Policy is set out in the Aviation Policy Framework (APF)[50]. Although some detailed provisions may be adjusted by the outcome of current deliberations regarding the provision of additional runway capacity to serve London, the core principles are unlikely to change.

7.7 Whilst recognising the economic benefits of aviation, a fundamental principle is set out as follows:

"Aviation in the UK is largely privatised and operates in a competitive international market. The Government supports competition as an effective way to meet the interests of air passengers and other users. We also welcome the continued significant levels of private sector investment in airport infrastructure across the country and the establishment of new routes to developed and emerging markets"[51]

and

"We believe that the role of the Government should be largely confined to facilitating a competitive aviation market within a proportionate international and domestic regulatory framework to ensure a level playing field and the maintenance of high standards of safety and security."[52]

7.8 The APF identifies the ways in which Government can support airports across the UK and defines the scope for intervention in relation to protecting air connectivity to London through Public Service Obligations as defined in EU law and the use of Route Development Funding, which itself is subject to EU Guidelines as discussed further below. In the main, the rules apply equally whether the airport is publically or privately owned as airports are treated as commercial entities.

7.9 The APF makes clear the importance of integrating airports within the wider transport network, including both rail and road access enhancements, such as improvements to rail access to Manchester Airport[53] and the new road link to Robin Hood Airport[54]. It goes on to talk about the medium to long term role for others in facilitating improved access to airports, which is very much part of TfN's agenda:

[50] Department for Transport, Aviation Policy Framework, March 2013.
[51] Ibid, paragraph 8.
[52] Ibid, paragraph 27.
[53] Ibid, paragraph 1.92.
[54] Ibid, paragraph 1.97.

"Through its Long Term Planning Process, Network Rail, in conjunction with airport and train operators, local authorities and LEPs is considering options for enhancing rail services to major airports. Route-based studies will assess the case for taking forward options relating to individual airports alongside the future needs of rail passengers and freight customers as a whole. Where a good case for train service improvements to airports is identified, the DfT will consider them for potential delivery through its High Level Output Specification for the railway and through its franchising activities."[55]

Similar considerations of integration with broader strategies would similarly apply in relation to road proposals to improve access to airports. Although the APF goes onto note that:

"The general position for existing airports is that developers should pay the costs of upgrading or enhancing road, rail or other transport networks or services where there is a need to cope with additional passengers travelling to and from expanded or growing airports. Where the scheme has a wider range of beneficiaries, the Government will consider, along with other relevant stakeholders, the need for additional public funding on a case-by case basis."[56]

7.10 The scope for public sector intervention to support airports and the steps they can take to develop the range of air services serving the North is circumscribed by policy and competition law. Nonetheless, there is scope to promote surface access improvements and to ensure that a supportive planning framework is in place to facilitate necessary enhancements to airport infrastructure. A key issue in appraising potential surface access interventions will be to find the right balance between airport contributions, where the Airport stands to gain financially through increased passengers, and the wider public good in terms of achieving the overall economic transformation of the North, for which this boost in connectivity will be required. This may require some adjustment to the way the wider economic benefits are included within the appraisal as the WebTAG does not expressly deal with such wider benefits from international connectivity as well as a recognition that the need for improved surface access to airports and ports stems from the economic need to improve connectivity rather than simply being a mechanism to allow an airport to increase its volume of business.

[55] Ibid, paragraph 1.99.
[56] Ibid, paragraph 5.12.

EU State Aid Guidelines

7.11 Public sector support to airports and airlines is strictly governed by the EU's State Aid Guidelines[57]. These guidelines were updated in 2014 and, although they lack the force of law directly, they provide the basis of what is *de facto* case law in terms of actions which the Commission has taken to intervene where illegal state aid is considered to have been granted to either an airport or an airline. Very recently, the Commission is proposing to include the provisions relating to funding of infrastructure investment at airports, and ports, into the Block Exemption Regulation[58] which will define the circumstances where the investment funding to bridge the gap between the cost of a project and its expected returns does not require notification. BREXIT notwithstanding, it is not anticipated that these rules will cease to apply in the UK so long as the UK seeks to continue to access the European single aviation market.

7.12 The Guidelines clearly define boundaries of competition between airports. Where airports are within 60 minutes surface access time (by any mode) or 100 km distance, any individual intervention is considered to be a distortion of competition and, therefore, not normally allowed. This applies also to intervention to support individual air routes at one airport where they exist at another within the defined radius. This impacts on the extent of intervention which could be made in respect of Durham Tees Valley and Newcastle, Doncaster and Humberside, and Liverpool and Manchester airports as these lie within the journey time/distance thresholds and specific direct interventions in the airports or in attracting airlines could be deemed to distort competition. The Guidelines also seek to prevent public funding of unprofitable airports where catchment areas overlap and there are no overriding socio-economic reasons why intervention is required to ensure that an airport remains operational.

Funding to Airports

7.13 In the first instance, the Guidelines recognise that there may be certain activities relating to safety or security at airports which could be imputed to be the responsibility of the State and provide for these to be directly funded by Government. However, the UK policy is that all such costs should be funded by the industry.

7.14 Secondly, there are strict limitations on operating aid being paid to airports, i.e. it is no longer acceptable, in principle, for public authorities to simply subsidise loss making airports. Airports operating above 3 mppa, which is all of the four main airports serving the North, are not allowed to receive operating aid, other than in very special circumstances and subject to notification to the EU. Smaller airports, such as Durham Tees Valley, Humberside and Robin Hood, could continue to receive subsidies for a limited period if they were in public ownership but in the longer term the possibility of any subsidy is likely to be limited to very small airports with less than 700,000 passengers a year where a clear social need for their retention can be made.

[57] European Commission, Guidelines on State Aids to Airports and Airlines, 2014.
[58] http://ec.europa.eu/competition/consultations/2016_gber_review/index_en.html

7.15 However, where the case can be made that the support being given is equivalent to that which a private sector operator would make and with the expectation that it will enhance long run profitability, support can be granted under the 'market economy operator' principle (MEO). These same principles can apply to support granted by a publically owned airport to an airline to develop new routes. In either case, there needs to be a clear business plan prepared to show how the airport will be better off following the investment than without it and/or that the investor will receive a commercial rate of return on the investment made. However, the MEO rules do not allow for wider economic benefits to be taken into account in the appraisal, which is purely on the basis of the investment realising a commercial financial return to the operator.

7.16 As indicated above there are provisions which permit investment by public bodies in airport infrastructure but again these are very limited for airports handling more than 3 mppa passengers a year and effectively prohibited once an airport exceeds 5 mppa. The Guidelines also set out ceilings on the proportion of the investment which can be funded with 75% allowed below 1 mppa and 50% up to 3 mppa. Above 3 mppa, aid must be notified and limited to 25% of the cost. However, surface access infrastructure does not fall within the infrastructure covered by these limits which relate to airport operational facilities, including car parking.

7.17 As can be seen, the scope to provide any direct funding to the Region's airports in terms of investment in airport operational facilities or in supporting the cost of operation is extremely limited.

Funding for Air Service Development

7.18 Equally, the scope to support air route development by direct financial contribution to airlines (or via airports) is limited under the Guidelines. Start up aid from public bodies to support the development of air services is strictly limited to intra-EU routes only and is prohibited for airports handling more than 5 mppa. Although this would only strictly preclude funding for route development at Manchester Airport, Liverpool and Newcastle Airports are operating in the 4-5 mppa bracket and are expected to pass the 5 mppa threshold in the not too distant future. There are also limitations on the use of route development funding for airports operating between 3 and 5 mppa, which also includes Leeds Bradford Airport, such that any funding would need to be cleared on an individual route by route basis with the Commission demonstrating exceptional circumstances as to why funding should be provided.

7.19 Below the 3 mppa threshold, a scheme can be set up, subject to EU clearance, to provide start up aid for new intra-EU air services from regional airports. Such aid is limited to 50% of airport charges for up to 3 years provided that it can be demonstrated that the route is expected to be commercially viable at the end of the 3 year period.

7.20 The UK Government has exercised these provisions in the operation of the Regional Air Connectivity Fund, which was approved by the Commission and has recently provided funding to a number of new regional air services, including those planned to be operated from Carlisle Airport. The operation of such funds is supported in the APF[59] and there would be the potential for TfN or any of the LEPs to set up a fund, subject to the provisions of the Guidelines. However, the overall impact on international connectivity would be expected to be relatively small and unlikely to have a transformational impact at the level of the North due to the limitation to intra-EU routes from the smaller airports and given the overlapping catchment areas of many of the airports.

7.21 In addition, there are provisions in EU Law[60] which allow public service obligations (PSOs) to be placed on some air services which are demonstrably vital for the social and economic wellbeing of an area. In the main, PSOs have been used to secure air links between remote communities and the mainland or to capital cities. There are a number in force in Scotland and PSOs have been imposed on routes between Newquay and London and Dundee and London. However, as well as provisions governing overlap with services from nearby airports, another test is whether there is adequate rail services with a journey time of less than 3 hours. Although, it is possible to use a PSO designation to secure the reservation of slots at a congested airport, such as Heathrow, the UK Government policy is that the PSO can be to any London airport[61], i.e. focussing on links to the capital city rather than specific access to a hub as the basis for justifying a PSO.

7.22 As with direct support to airports, direct support to air service development is limited according to the EU Guidelines to the smaller airports and is unlikely to deliver substantial enhancements to global air connectivity.

7.23 Airports can, themselves support route development through discounted charges and marketing incentives, so long as these are not fundamentally anti-competitive as between different airlines. If publically owned, any substantial incentives need to meet the Market Economy Operator test, i.e. that the investment in the incentive is likely to deliver a positive financial return such that it is an investment which a private sector operator would have made in similar circumstances. This decision has to be based solely on the financial returns to the Airport and cannot take into account wider economic benefits. It was put to us that LEPs and other local economic agencies ought to be able to co-fund such arrangements in the light of the wider economic benefits which a new air service might be expected to deliver on the basis that if the benefits are not delivered, the Airport would be required to repay the support. This could be a potentially attractive mechanism for delivering locally beneficial aviation connectivity and would mirror other economic interventions that they make in other market sectors. However, prima facie, these would appear to be ruled out by the sector specific State Aid Guidelines for aviation.

[59] APF, paragraphs 1.30-1.32.
[60] Regulation (EC) No 1008/2008 of the European Parliament and of the Council of 24 September 2008 establishing common rules for the operation of air services in the Community
[61] https://www.gov.uk/government/publications/public-service-obligation-regional-air-access-to-london

Shipping

7.24 Ports in most Member States of the European Union are state-owned and are often regarded as being of strategic importance to the economy of the country. For example, the Netherlands is a relatively small country with a deep water port at the mouth of the Rhine and the Dutch state has continually invested in the port's port and hinterland infrastructure since the end of the Second World War. The port competes for market share in markets such as deep sea containers with other co-called Northern Range ports (principally, Antwerp, Le Havre, Hamburg and Bremen) and so the Belgian, German and French states have also invested heavily in port and, increasingly, hinterland infrastructure.

7.25 In the UK, on the other hand, the UK ports sector (which did not have to concern itself, in most markets, with competition from ports in other countries) was very largely privatised in the 1990s and investment in port infrastructure is made by private companies according to market principles. The state has made no significant investments in port infrastructure since that time and UK ports policy states that the public sector should not, as a general rule, be involved in funding investments in port infrastructure. In any event, the ports would be subject to the proposed inclusion of ports within the Block Exemption set out above in relation to airports and this places defined legal limits on the circumstances where public sector investment would be permitted without specific notification to the Commission for the time being.

7.26 Where the public sector has been involved in funding infrastructure, it has generally been in hinterland road and rail links. The Department for Transport has also avoided preventing the EU part-funding dredging campaigns and both the Thames and Liverpool has benefited in this way.

7.27 The cruise sector in the North of England provides an interesting case study in relation to the funding of the £19 million Liverpool Cruise Terminal at Pier Head, which is owned by the City Council. The terminal was funded by the public sector (central government grant and ERDF) and was not initially allowed to receive turnaround calls because this could have a competitive impact on the position of other privately owned ports, including the Port of Southampton. The Council repaid some of the grant and the terminal now receives turnaround calls.

7.28 Commercial shipping services are subject to strict state aid rules, which limit public funding to shipping to avoid unfair competition in what are competitive markets. Funding can be provided in two main areas:

- To support 'lifeline' services between a mainland and a small island community where the service would not exist at all if public subsidy was not available;
- To support innovation in ferry services, mainly to help the industry to adapt to new regulations on emissions.

7.29 It has also been possible to provide operating subsidy during the start-up phase of a service (2-3 years) under an EU-funded scheme called Marco Polo but this approach appears to have been very largely discarded because of the potential competitive impact on existing maritime services. At the EU level, there is now more focus on providing funding to ports to support ferry services, mainly to carry freight.

Potential Intervention Mechanisms

7.30 Whilst direct funding for airports, ports or to directly support international air or sea connections is virtually precluded by EU law and UK policy, there are potential interventions which could make a difference. We set out here the mechanisms which are available.

Surface Access to Ports and Airports

7.31 As noted above, UK Policy and EU State Aid Guidelines still allow for improvements to surface access to airports and ports to be publically funded, at least in part. Each case needs to be appraised on its merits and the relative public sector contribution will depend on the ability to demonstrate clear benefits to other transport users (i.e. those not accessing the airport/port) and wider economic benefits.

7.32 As we have discussed above and as will become clear in relation to supporting the North's international connectivity needs, there are demonstrable economic benefits to be obtained from reducing surface access journey times to the key airports and ports in the North. The reductions in 'generalised' cost attainable will contribute to improving productivity in the North and delivering wider benefits. It will be important that these wider benefits are taken fully into account in appraising how the schemes can be delivered. We return to this in making our recommendations in Section 9.

Improvements to Airport/Port Infrastructure

7.33 As noted above, there are limitations under State Aid Guidelines as to the extent to which direct public sector funding of airport or port infrastructure works is permitted. It is also UK Government policy that operational infrastructure should be funded by the industry. Nonetheless, there may be some limited opportunities for public sector support if airport or port capacity is considered to be the major impediment to the delivery of regionally important international connectivity and a specific project can be defined to overcome the obstacle, such as the provision of infrastructure to enable a specific aircraft to be handled or additional terminal infrastructure such as check-in. Such support has in the past been paid, for example at Bristol Airport by the South West Regional Development Agency to provide terminal facilities necessary to allow Continental Airlines to serve New York. The provision of a grant towards the cost of the required facilities allowed the airport to offer lower charges to the airline than would otherwise have been the case. Nonetheless, the strict limits on the share of public funding would still need to be complied with.

7.34 Whilst financial support to the provision of infrastructure at ports and airports may be limited in scope, the cost of ensuring that the right facilities are provided when and where they are needed can be reduced where there is a supportive planning framework in place. This can also extend to ancillary developments, such as business parks or other revenue earning developments at airports which may provide the airport with the financial ability to support the airlines in opening up more new air routes. The potential wider benefits of such schemes in terms of facilitating the delivery of improved connectivity should be considered over and above the more conventional assessment of local employment generation.

Support to Air Route Development

Regional Connectivity Funds

7.35 Under the State Aid rules currently applicable, directly payable route development funding is only possible for smaller airports of less than 3 million passengers a year or where a specific case can be made that there are exceptional circumstances for individual routes from airports up to 5 million passengers per annum. Support can only be provided up to 50% of published airport charges and must be paid direct to the airline by the public authority[62]. Routes can only be supported where there a no competing services from airports within 60 minutes or 100 kilometres and the service will provide local economic benefits but the ability to support route development is limited to routes within Europe. Hence, a Regional Connectivity Fund on the current model is unlikely to be the vehicle for delivering strategically important improvements to international connectivity for the North. Indeed, the level of support that can be offered under the EU Guidelines may not be sufficient to make the difference for the airline and the process is considered bureaucratic by the airlines in terms of the detailed information required relative to the levels of support which can be offered.

7.36 Airlines are increasingly seeking a risk sharing approach with the airport operator but smaller airports may not have the funds to provide sufficient underwriting of the costs of strategically important new routes. Hence, the suggestion that LEPs or other economic stakeholders might support airports in sharing in underwriting the risk to airlines of initiating new economically beneficial air services. Whilst, prima facie, there may well be a case in terms of deliverable wider benefits to the local economy through attracting new investment or generating trading opportunities, such support is likely to still be considered as state aid and subject to the rules and limits outlined above. Even if such schemes were possible, any incentives would only be effective in bringing forward the time when new routes are introduced but, ultimately, the market has to be strong enough to sustain such services in the longer term.

[62] In some cases, it may be paid to the airport which discounts the charges to the airline accordingly.

Marketing Support

7.37 An alternative model to support strategic route developed and which can be adopted within the Guidelines has been developed by Scotland. The Scottish Government identified the development of international air connectivity as a key feature of its economic strategy in the early 2000s, which resulted initially in the establishment of the Interim Route Development Fund in 2002. This Fund ultimately ran until 2007, when it was unable to continue following the 2005 EU State Aid Guidelines on start-up aid to airlines, which made the funding of airport charges discounts illegal and substantially tightened the regulations as to the airports from which routes might be fundable. The Fund was administered by Scottish Enterprise with the Scottish Executive, Highlands and Islands Enterprise and VisitScotland as partners and these partners continue to cooperate as 'Team Scotland' today.

7.38 Following the closing of the Scottish Route Development Fund, the individual organisations continued to undertake ad hoc route support activity, with limited co-ordination until 2011 when a more coordinated approach was adopted. Scottish Enterprise and Transport Scotland (the executive agency of the Scottish Government responsible for transport) are the key drivers of activity, with VisitScotland and Highlands and Islands Enterprise as key partners.

7.39 Currently, Team Scotland does not provide funding of any form to potential routes[63]. Its role is to promote Scotland as a market to airlines and to support the route development activities of the Scottish airports where these coincide with the priorities of the Scottish Government. However, it still undertakes an appraisal of route opportunities[64], in a similar fashion to a formal appraisal of start up aid, in order to ensure that it only lends support to routes which would be net beneficial to the Scottish economy. The primary activity is to raise market awareness with airlines. Representatives of the team meet regularly with airlines, for instance at the Routes conferences, to discuss the opportunity offered by Scotland and to provide data on the market, including outline forecasts for potential routes. For this work, Team Scotland employ consultant resources to assist with developing the data, presenting to airlines and appraising opportunities.

7.40 The work is generally on a non-airport specific basis. It is all about Scotland not Glasgow or Edinburgh or Aberdeen or similar. Given the proximity of the airports in lowland Scotland particularly, this is seen as being very important to ensure that the Scottish Government is not seen to be 'playing favourites'. Once an airline has expressed an interest in starting a service to a specific Scottish airport, the Team will continue to work with that airport but it is the airport that is the key driver of activity from that point onward. This fits with the Team Scotland position that its purpose is to secure the route for Scotland not for any specific airport.

[63] VisitScotland does provide destination marketing support to potential new routes but this falls outside of the Team Scotland activities. However, it is quite possible that VisitScotland might support a route that Team Scotland has also worked on. It should also be noted that Scottish Enterprise on behalf of Team Scotland spent some time examining if there was anything that could be done within the Guidelines but concluded that there was not.

[64] York Aviation developed and operates the appraisal framework and contributed to the DfT's appraisal of routes submitted for start up aid.

7.41 Ultimately, it is very difficult to identify whether the activities of Team Scotland have been the determining factor in relation to any particular route as Edinburgh Airport, in particular, has been very active in promoting route development over the period. Since the joint working arrangement has been reinvigorated, there have been a number of notable successes that the Team has worked on, including:

- the second daily service from Glasgow to Dubai;
- the Edinburgh to Doha route;
- the Edinburgh to Chicago route.

It is also noticeable that the activity continues despite the pressures on public sector budgets. It would, therefore, seem reasonable to suggest that the Scottish Government values the role played by the Team Scotland approach.

7.42 There are perhaps three key messages from the Scottish experience:

- the co-ordination of activity across agencies is both possible and has value. It also does not necessarily need to be attached to defined funding stream;
- there is a need to be systematic and realistic from the outset of any process to ensure that resources are used effectively;
- it is possible to manage the relationship between competing airports but this does require considerable care and a very firm focus and public attitude that activity is about securing routes for North as a whole.

7.43 The Team Scotland approach provides a model which could be followed by Transport for the North and has proven to be capable of delivering a number of strategically important new routes. However, we believe that the approach could be enhanced by defining up front, and on a rolling basis, the routes which TfN is seeking to add to the North based on their economic value. This would allow a more targeted approach to securing key strategic routes.

Hosting of Conferences or Events

7.44 As part of such a coordinated approach, which includes attendance at Routes – the global route development conference[65], it has been suggested that the North might benefit from hosting such a conference. This is a relatively expensive exercise as there is competition amongst airports and cities to host the event. However, it does bring an immediate boost in terms of visitor expenditure in the host city and can assist in raising the profile of the host city with both airlines and tourism bodies.

[65] There is also an annual European level conference.

7.45 There is also evidence[66] that where cities have hosted Routes events, the local airport has seen a short term boost to new route announcements in the year following. This suggests that hosting the event does stimulate airlines to take up route opportunities earlier than they might otherwise. What is less clear is how widely these benefits would spread beyond the host city as there is no example where the event has been held on behalf of a larger region. Given the nature of the event[67], which is inevitably concentrated in a single venue, it is probably less likely that the benefits would be realised across a larger geographic area, albeit that the addition of new services from the host city airport might serve a wider northern catchment, particularly if they were new destinations from the North.

Regional Access to Heathrow

7.46 In so far as some international connectivity may still require access to the hub at Heathrow, TfN could seek to support such services under the Public Service Obligation mechanism. However, this is only possible where there are no alternative surface access or air connections to London. Given rail journey times to London from most of the North, the scope for PSO interventions appears limited to only the most northern part of the Region and, even then, could not be used to guarantee hub access other than through the provisions to safeguard the slots if this provision was exercised.

Tourism Initiatives

7.47 In the light of the concern expressed that Visit Britain tended to focus its marketing efforts on promoting the main attractions in London and in global markets seen as key for London, there would be merit in a more tailored approach to tourism marketing for the North. This would require a recognition that, to a significant extent, there are different tourism markets for the North compared to London, with perhaps a greater focus on European visitors which have already visited Britain. Enabling tourists to visit the North more directly could encourage more visitors to the North overall, with itineraries based in the North rather than always starting or ending in London but this would require coordination through tour operators to ensure integrated products are available.

7.48 It is also believed that much could be gained by tying tourism promotion of Northern attractions more closely to the availability of air services from parts of the Region. So helping to ensure that key air services remain viable. In essence, this is similar to the 'Team Scotland' approach which recognises tourism as part of the overall strategy to optimise international connectivity.

[66] York Aviation has undertaken assessments of the benefits of hosting the conference on behalf of the event organisers.
[67] Likened to 'speed dating' for airports and airlines.

Air Passenger Duty

7.49 The high cost of Air Passenger Duty has been highlighted by both airlines and airports as a significant factor hampering the development of more direct air services from the North. The UK has the highest cost taxation regime on air transport of any country in Europe. This has the effect of either:

- ✈ increasing the fare paid by passengers so deterring some from travelling; or
- ✈ reducing the yield to the airline in order to maintain passenger volumes on a route.

7.50 Either way, this means that markets have to be stronger than would otherwise be the case in order for airlines to be willing to initiate services. As a consequence, airlines may favour developing routes from airports elsewhere in Europe where the impact of any travel tax is less or non-existent and the risks are less in terms of volume or yield, recognising that airlines are not obliged to serve markets and choose to deploy aircraft where they can make most profit. This impacts disproportionately on the UK's regional airports compared to London as the markets are inherently smaller and lower yielding (in terms of fare levels) to the airlines.

7.51 An added consideration is the expected move by the Scottish Government[68] to reduce air passenger duty from its airports by 50%. This is expected to impact on all of the North's airports to a greater or lesser extent, making them less attractive to airlines compared to Scotland. In the case of Newcastle, there may be a more direct effect in terms of passengers opting to use Edinburgh to avail of cheaper fares such that existing services could be placed at risk given the potential overlap of catchment areas across the border.

7.52 In principle, the UK aviation industry believes that the high level of air passenger duty is damaging the UK economy by deterring tourism and, to a lesser extent, trade and investment. There is evidence from other countries which have removed the tax, such as Ireland, that international connectivity has dramatically improved following the removal of the tax burden. However, the Treasury receives over £3 billion in revenue each year from the tax. Nonetheless, regional airports across the UK have been making the case to the Treasury that measures will be required to ensure that English regions are not detrimentally affected by the prospective reducing in tax rates in Scotland and potentially Wales and Northern Ireland.

7.53 The Treasury has recognised that there is a potential issue and there are a number of potential approaches that have been suggested by the region's airports:

- ✈ a devolved approach to regional governments (city regions) on the Scottish model, whereby any grants to the region would be reduced by the amount of the reduction in APD receipts. TfN and its partners would need to consider whether this was the most effective mechanism for improving connectivity[69];

[68] It has recently consulted on how to make the change.

[69] A similar exercise carried out by NICEP and York Aviation for the Northern Ireland Government in 2014/5 concluded that this was not the most appropriate approach given the high volumes of outbound leisure travel from the Province.

- revenue neutral reductions in APD at uncongested airports (including most if not all of those in the North) with increases at airports deemed congested, e.g. Heathrow, to ensure an overall balance of revenue to the Treasury. It is unclear, at present, whether this could be achieved within current tax rules and further work on the mechanism for defining an airport as congested would be required;
- APD 'holidays' for new routes, particularly long haul routes. The rationale for this approach is to reduce the risk to airlines of initiating new routes. This would bring forward the time when new routes would be introduced and the cost implications to the Treasury would be substantially less than a blanket reduction. However, this may not assist in mitigating the risk of a loss of passengers to Scotland on existing routes.

7.54 There is currently no consensus amongst regional stakeholders as to the best option for the North as a whole and further work would be required to determine the optimum approach. We return to this in Section 9 in the light of the required interventions to deliver improved connectivity.

Summary of Recommended Intervention Mechanisms

7.55 In the light of this analysis of possible interventions, we are concentrating our recommendations on three areas of activity:

- Surface access improvements.
- A coordinated approach to Route Development, including tourism.
- Air Passenger Duty.

8 FUTURE INTERNATIONAL CONNECTIVITY REQUIREMENTS

Economic Context

8.1 The economic context for considering the future connectivity requirements of the Northern Powerhouse is the 'Transformational Scenario' developed by SQW and Cambridge Econometrics for the IER. It is noted that this scenario requires an improvement in all the identified drivers of productivity, including improvements in connectivity in the broadest sense. This Transformational Scenario sees GVA growth improving by 0.4% per annum compared to the 'Business as Usual' scenario (and employment growth improving by 0.2% per annum) with an implied improvement in productivity. This Transformational Scenario sees growth potentially being above the national average over the period to 2050 as modelled by Cambridge Econometrics.

8.2 The IER identifies[70] that productivity growth under the Transformational Scenario will be driven by the Prime Capabilities, financial and professional services, agriculture and other manufacturing services. Whilst ideally we would have worked with this sectoral breakdown to analyse the requirements for international connectivity to contribute to the achievement of the necessary improvement in productivity, the IER is not specific enough for us to identify the precise improvements in international connectivity required to support future economic growth by sector either at the pan-North level or for the individual LEP areas and does not provide sufficient detail in terms of the growth path of individual sectors.

8.3 This presents us with some challenges as we recognise that the intention is to transform the economy of the North which may require different levels of international connectivity in future compared with today to support the internationalisation of different sectors or geographies but this has not come through in either the IER or the stakeholder consultations. We set out below how, as a consequence, we have approached the identification of the potential requirements and how such improvements might contribute to delivering economic growth.

8.4 A central challenge is identifying where improved international connectivity has the potential to drive economic change or the extent to which the provision of international connectivity for the North as a whole, and in individual areas within the North, is simply the inevitable reflection of the underlying economic performance. In other words, is international connectivity the 'chicken' or the 'egg'. For example, to what extent is the stronger apparent internationalisation of the economy in the axis between Liverpool and Manchester a product of the international air connectivity offered by Manchester Airport or does the route network at the Airport simply reflect an economy which was historically more internationally focussed based around the port of Liverpool and the Ship Canal. Whilst this is a central question in terms of what improvements in international connectivity are required to support the Northern Powerhouse's economic agenda and which have the potential to go further and act as drivers of change either across the North or more locally, the current evidence base only allows this to be assessed in the most general terms.

[70] Workstream 4 report, paragraph 5.6.

8.5 We recognise, nonetheless, that achieving the improvements in productivity and innovation foreseen in the Transformational Scenario will require the North to pull on all of the levers to attain this growth. Improved international connectivity will improve productivity by reducing journey times and transactional costs. This will enable firms in the North to trade more internationally, for the North to attract more foreign investment as well as providing a boost to inbound tourism. Ultimately, all of these factors will enhance both productivity and the scope for innovation. Hence, we believe that delivering the required improvement in international connectivity will be a key component in enabling the Transformational Scenario to be delivered.

Assessing Connectivity Requirements

8.6 However, within that general context, assessing the extent and nature of the North's future connectivity needs is challenging. As we have described above, connectivity is ultimately a concept and, consequently, identifying how changes in the need for connectivity will be reflected in 'real' and visible metrics is subjective to a significant degree.

8.7 In our analysis so far, we have considered a number of parameters that we believe reflect the North's connectivity needs:

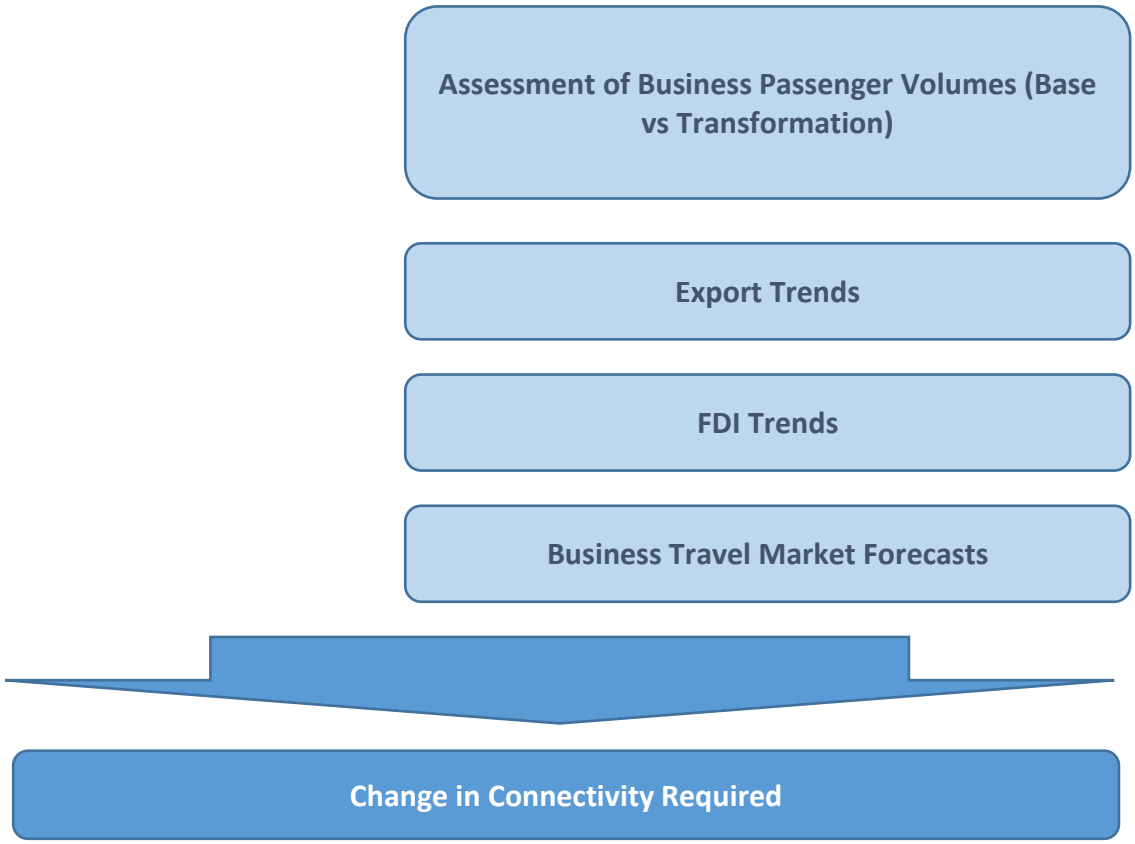
- Business Passenger Volumes – the number of business passengers travelling to or from the North of England can be seen as a reflection of the underlying economy's need to travel to support GVA growth. The Transformational Scenario, with its improved productivity and higher GDP growth rates, results in more business passengers requiring to travel each year, reflecting the greater volume of connectivity required to support the economy;
- Export and FDI Patterns – geographical patterns of business travel are likely to be influenced over time by changes in trade and FDI flows. It should be noted that changes in these patterns are likely to be a reflection of changes over time rather than between the Base Case and the Transformational Scenario. They are, however, important in defining the overall connectivity needs of the North in the future regardless of the growth scenario;
- Business Travel Patterns – analysis of how individual country markets might evolve in the future, given differences in expected demand growth rates, is also helpful evidence as to how the North's connectivity needs might change in the future. Unlike the analysis of FDI and exports, this analysis can be used to examine the difference between the two future growth scenarios for the North.

8.8 The first of these metrics allows us to assess the scale of improvement in international connectivity required. The latter two provide us with some guidance on the global priorities for improving connectivity.

8.9 This quantitative analysis has been supplemented with the views collected through the extensive stakeholders consultation programme undertaken over the life of the project. These consultations have primarily provided evidence in relation to geographic patterns of demand in the future, albeit we have limited evidence to suggest that the patterns of demand and the nature of the connectivity required will growth differentially across the North in future, compared to the pattern today, albeit we recognise that there is some potential for improved international connectivity to increase the internationalisation of business where new air service connections are made available at an airport within a convenient distance. We return to this theme later in this section. We also recognise that achieving the 'Transformational Scenario' may require even more radical changes to patterns of trade and FDI than we are able to evidence at this stage.

8.10 This evidence base has then been used to consider the overall scale of the task in terms of generating additional connectivity and how this links to the different potential interventions discussed. This approach is summarised in **Figure 8.1**.

Figure 8.1: Approach to Assessing International Connectivity Requirements



Source: York Aviation

Business Passenger Volumes

8.11 The growth of the Northern economy through to 2050 will result in a substantial increase in the demand for business travel from the North, whatever the growth scenario is assumed. However, the faster GDP growth associated with the Transformational Scenario will mean higher levels of business travel will be required than associated with the Base Case. The extent to which the additional growth in GDP requires more travel versus the extent to which additional travel results in higher GDP (the Chicken and Egg question above) is open to question. However, for the purposes of this analysis, we have assumed that the additional passengers seen in the Transformational Scenario are indicative of the scale of improvements to international connectivity required in order for the Transformational Growth scenario to be delivered.

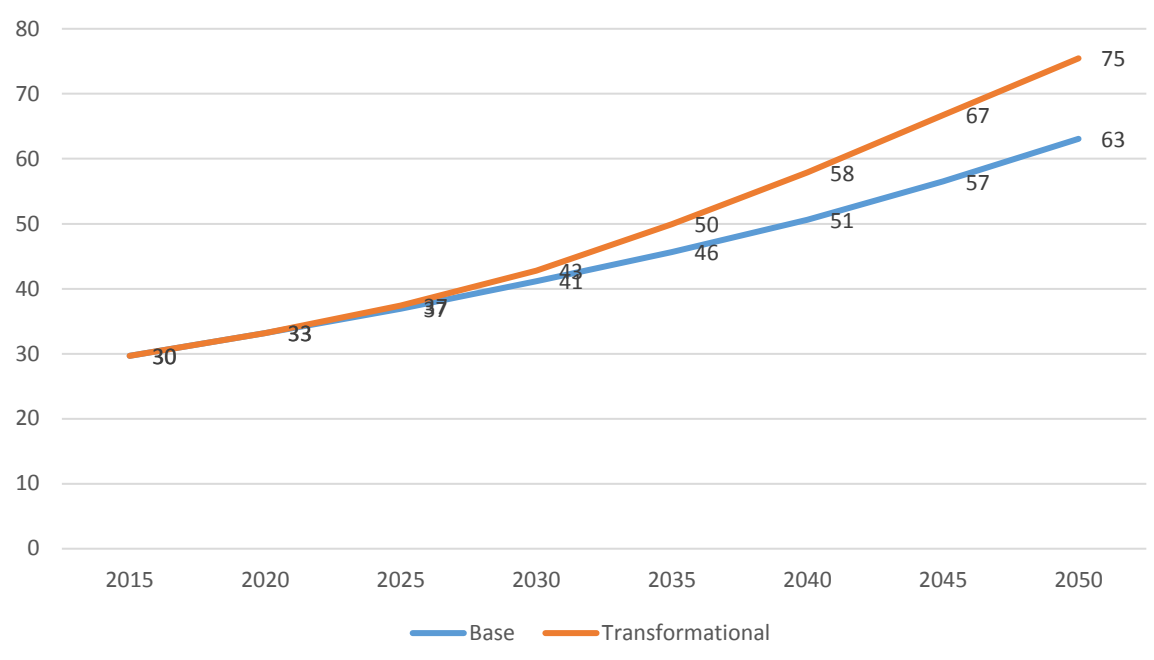
8.12 We have developed passenger forecasts for travel to/from the North of England through to 2050 based on analysis of the CAA Passenger Survey data, as set out in Section 4, and the Department for Transport UK Aviation Forecasts 2013. The Base Case scenario is assumed to reflect DfT's Central Case growth rates for air traffic and current passenger volumes are simply grown forward to 2050 by passenger segment (UK Business, UK Leisure, Foreign Business or Foreign Leisure) and World Area (Europe, OECD countries, New Industrialising Countries (NICs) and Less Developed Countries (LDCs)).

8.13 In the Transformational Scenario, the DfT's central case growth rates have been adjusted to reflect the additional GDP growth expected using the income elasticities identified within the DfT modelling work.

8.14 The resulting demand forecasts for total international traffic from the Northern Powerhouse region are shown in **Figure 8.2**. This suggests that by 2050 international air transport demand from the North will be around 12 million passengers per annum higher in the Transformational Scenario versus the Base Scenario. One key point to note is that, whatever the scenario, the demand for air travel from the North is expected to grow significantly over the period to 2050. In other words, the quantum of international connectivity that will be required in the future is greater than currently regardless. Although this represents substantial growth, we do not envisage a problem for the region's airports in handling this quantum of growth based on their current Master Plans, albeit some enhancements to capacity will be required at individual airports.

8.15 This suggests that, by 2050, under the Transformational Scenario, levels of air travel demand to/from the North would be of a similar order as to/from the South East of England today. This demonstrates the scale of the challenge in ensuring that the international connectivity of the North is enhanced to support this growth. It is important to recognise, however, that this does not mean that the North's airports would be expected to replicate the extent of global connectivity offered by the London airport's today as these airports serve a wider catchment including the East of England, parts of the South West of England and the South Midlands which are closer to one or more of the London airports than local airports within these regions. Furthermore, it is unlikely that Heathrow's hub role[71] would be replicated in the North so the route network would be dependent largely on the level of point to point demand to/from the North and immediately adjacent areas. Thirdly, the route network would be heavily influenced by the types of passenger demand and, whilst business travel and inbound tourism are expected to grow more rapidly under the Transformational Scenario, the market to/from the North is likely to remain proportionately more focussed on outbound leisure markets than that seen at the London airports. This will affect the services that the airlines will be willing to operate.

Figure 8.2: Total International Air Passenger Demand from the Northern Powerhouse Region (millions)

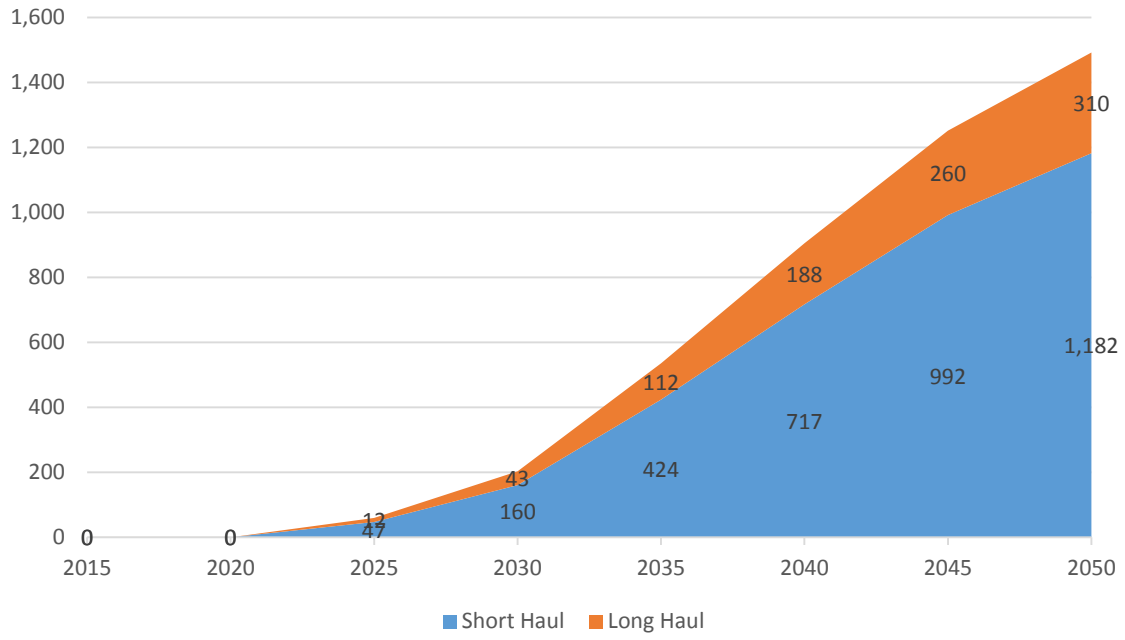


Source: York Aviation, DfT, CAA Passenger Survey

[71] Assuming Heathrow retains this role and the hub does nor relocate over the period.

8.16 **Figure 8.3** focuses on the gap between the Transformational Scenario and the Base Case for business air travel. By 2050, there are around 1.5 million additional international business passengers requiring connectivity to or from the Northern Powerhouse region in order to achieve the Transformational Scenario (equivalent to 40% of the level of business related air travel seen in 2014). These are expected to be split between short haul (1.2 million) and long haul (0.3 million) passengers assuming that the growth in global connectivity required to/from the North is consistent with the Department for Transport's expectations of relative global growth, albeit we recognise that there may need to be changes to this balance post BREXIT and to deliver the target economic transformation. Overall, this would suggest an overall business travel requirement of close to 10 million air passengers by 2050 under the Transformational Scenario, more than double the number in 2014. Business related air travel to/from the North would also increase from around 8% of the total market to around 13% by 2050.

Figure 8.3: Additional International Business Travellers in the Transformational Scenario (000s)



Source: York Aviation, DfT, CAA Passenger Survey

8.17 The 1.5 million passengers articulates the volume of additional international connectivity required by the Northern Powerhouse region to achieve the Transformational Scenario over and above the Base Case, i.e. over and above the improvements in connectivity which would be expected in any event[72]. This represents a 17% increase in the requirements for international business air travel by 2050 above the Base Case and which the market might not be expected to deliver on its own as this increase is required to drive GVA growth rather than simply being a reflection of it. Affecting this change will most likely require intervention in the market to improve its functioning, lower the generalised cost of travel and thereby stimulate the demand for air travel necessary. We have considered the extent of intervention required further below.

8.18 **Table 8.1** sets out the estimated average generalised cost facing air travellers from the North currently, split between short haul international and long haul travel, and the amount by which it needs to be reduced in order to deliver the connectivity uplift efficiently. In other words, the business travel market could be suppressed below that necessary to support the Transformational Scenario if the relative cost of travel to/from the North is not reduced as part of the overall drive to improve productivity.

Table 8.1: Change in Generalised Cost Required to Support Growth in Business Travellers at 2050

	Average Current Generalised Cost	Required Increase in Demand	Generalised Cost Elasticity	% Change in Generalised Cost Required	Generalised Cost Change Required	Equivalent in Time (mins)
Short Haul	£296	18%	-1.1	-16%	-£47	-30
Long Haul	£1,283	13%	-0.4	-31%	-£393	-248
Total	£517	17%	-1.0	-17%	-£89	-56
Source: York Aviation						

8.19 At the outset, it should be said that the numbers involved are significant:

- the generalised cost facing an average short haul traveller is around £296 but to achieve the 18% increase in demand necessary there is a need to reduce costs by around £47 or, if this monetary value were to be converted to time, around 30 minutes for every traveller;
- for long haul travellers, the required reduction to realise the necessary 13% increase in demand is around £393 or 248 minutes against a base generalised cost of around £1,283;
- the average across both segments is a required reduction of around £89 or 56 minutes.

[72] It is implicit in our approach that these improvements to meet the requirements of the Baseline Scenario will be delivered by the market without further interventions as airlines are assumed to be market rational and to respond to market opportunities as they arise.

8.20 We recognise that all of the improvement in generalised costs needs to come from improved journey times – the components of generalised cost are set out more fully in paragraph 4.4. Some of the improvements could be delivered through improvements to the competitive position of air services from the North's airports in terms of flight frequency and air fares. Similarly some of the improved journey times will be attained by passengers able to use direct services where previously they would have used hub connections or incurred lengthy journeys to London.

8.21 Nonetheless, the level of reduction required suggests that a range of potential interventions may be required to maximise the potential to achieve this change. For instance, even potentially significant changes in the market such as for instance a 50% reduction in APD would not have a sufficient impact to completely bridge the gap:

- For short haul passengers, such a move might result in a saving of around £3.25 (assuming a uniform reduction across the UK. Reductions at certain airports could also alter passenger distribution and, hence, have knock on effects). (This would be equivalent to 2 minutes of time);
- For long haul passengers, given current usage of premium classes by Northern business passengers, we estimate that the saving from a 50% reduction in APD would be around £21 (or the equivalent of 13 minutes of time).

8.22 The need to save substantially larger amounts would suggest the need to support interventions that significantly reduce travel times for passengers, notwithstanding the potential contribution of lower air fares and increases in flight frequency. Interventions could include:

- Surface access schemes that reduce access times to airports directly or that will result in significant clawback of demand from airports outside the region, notably Heathrow, by altering the relative balance of accessibility. Similarly, schemes that increase the reliability of airport access by reducing delays, thereby reducing passengers' need to allow contingency time in any journey, will assist in lowering generalised cost;
- Support that encourages the development of either new direct services that allow passengers to bypass hubs (thereby saving connection times and overly long air routings) or by encouraging the development of access to new hubs that add new destinations to the indirect network that remove the need for second stops in existing journeys or lengthy surface access journeys to access hubs, again removing connecting times and improving air journey times. New hub development is likely to primarily relate to long haul hubs which provide accessibility to second order destinations in their home regions. Such second order destinations may have markets that are unlikely to support direct services even in the longer term but will clearly be important for segments or the market and, in totality, travel to such markets could be significant.

Analysis of Export Patterns

8.23 Data on goods exports from the Northern Powerhouse Region is available from the HMRC's Regional Trade Statistics (RTS) database. No regional level data is available for the trade in services from the region. The RTS provides time series data back to 1996 and we have used this data to examine how trade between the Northern Powerhouse Region has evolved with the growth in real GDP in the trading partner economy (World Bank data). This evolution has then been used as a basis to project forward how export markets might evolve in the future given GDP growth in the destination country through to 2050[73]. It should be recognised that this is not intended to be a full trade model but to provide an initial evidence based analysis of trends and potential future shifts in geographic patterns for exports from the North. This provides a start point for considering future international connectivity requirements pending further work to develop the template for changes in global reach necessary to deliver the transformational economic change required by the IER.

8.24 **Table 8.2** shows the results of this analysis for different world regions and also examines the business air travel demand and level of exports per business passenger in 2014.

8.25 In 2015, Developed Europe was by some margin the largest export market for the Northern Powerhouse Region. Given the size and proximity of this economic area, this is not surprising. North America is the region's next largest trading partner, which is again not a surprise given the USA's position as the world's largest economy and its (relative) proximity compared to other intercontinental destinations. Other significant export markets include Asia, Emerging Europe, the Middle East and Scandinavia.

8.26 The size of these export markets is largely reflected in the demand for business travel to these areas, albeit it is also clear that longer haul markets tend to offer greater returns on a per passenger basis. On average, exports per business passenger for Developed Europe were around £10,000, while exports per business passenger for Latin America were around £29,000. However, this may reflect the distance involved and a reluctance to 'chase' lower value contracts where travel is time consuming. This is an area where improved international connectivity could deliver results in terms of increasing the volume of trade with more distant markets by lowering the 'resistance costs'.

[73] OECD Country Economic Forecasts.

Table 8.2: Northern Powerhouse Region Export Trends							
Area	2015 (£m)	Share	2050 (£m)	Share	Growth	Pax 2015	Exports per Pax
Developed Europe	£23,200	43%	£37,600	40%	62%	2,360,000	£10,000
North America	£9,500	18%	£18,400	19%	94%	330,000	£28,000
Asia	£6,400	12%	£10,500	11%	64%	270,000	£24,000
Emerging Europe	£4,200	8%	£10,600	11%	152%	290,000	£15,000
Middle East	£4,200	8%	£7,300	8%	74%	200,000	£21,000
Scandinavia	£2,700	5%	£4,500	5%	67%	300,000	£9,000
Africa	£1,400	3%	£2,600	3%	86%	130,000	£11,000
Latin America	£1,000	2%	£2,000	2%	100%	40,000	£29,000
Australasia	£800	1%	£1,100	1%	38%	30,000	£26,000
Caribbean	£100	0%	£100	0%	0%	10,000	£7,000
Total	£53,500	100%	£94,700	100%	77%	3,960,000	£14,000
Source: York Aviation analysis of HMRC, World Bank, OECD and CAA Passenger Survey data							

8.27 Over time, the pattern of exports is actually projected to change relatively little based on current global economic projections. Exports to all world areas are expected to grow but some areas will grow faster than others. Developed Europe and North America remain by some margin the most important export markets, albeit that Developed Europe loses market share slightly while North America gains. Emerging Europe overtakes Asia, perhaps reflecting the potential for rapid economic growth and relative proximity, but Asia still gains compared to Developed Europe.

8.28 In terms of the pattern of connectivity required for the North this analysis suggests three things:

- exports to all regions are expected to grow so across the board improvements in the North's connectivity will be required to support this growth;
- connections in to Developed Europe and North America are likely to remain the most important elements of connectivity in to the future;
- the key areas for above baseline growth (i.e. where expansion is beyond the average) are likely to be North America and Emerging Europe. Improved long haul connectivity generally is desirable as this will assist in developing trade in areas where there appears to be a better return per business passenger.

8.29 This analysis would not suggest the need for a dramatic change in the pattern of connectivity required. Based on global economic projections, the North's key trading partners are likely to remain similar but there are some opportunities for particular expansion. However, it is possible that a greater degree of change will be required to deliver transformational economic change but this will only become clear as the next stages of work on the IER are developed.

8.30 In **Table 8.3**, we consider export patterns in the same way but at an individual country level. The table sets out the Top 30 export markets for the North in 2015 and the projection for 2050. In the main, this provides a similar message to the analysis of world areas. The North's key trading partners currently are major European countries and the USA. This is not expected to change significantly in the future. The possible exceptions to this are the continued rise of China and Russia in the rankings, along with the growth in trade with Scandinavia. The entry of two Central and Eastern European countries in to the rankings is also notable, Czech Republic and Romania. Again, this analysis may be subject to refinement as the IER is developed further in terms of geographic markets.

Table 8.3: Top 30 Country Export Markets in 2015 and 2050						
Rank	Country	2015	Rank	Country	2050	Change in Rank
1	United States	£8,741	1	United States	£18,516	0
2	Germany	£4,887	2	Netherlands	£8,661	1
3	Netherlands	£4,264	3	Germany	£6,910	-1
4	France	£2,903	4	Irish Republic	£5,537	2
5	Belgium	£2,684	5	Belgium	£4,730	0
6	Irish Republic	£2,680	6	China	£4,299	3
7	Saudi Arabia	£2,503	7	Italy	£3,505	3
8	Spain	£2,299	8	Spain	£3,345	0
9	China	£2,243	9	Saudi Arabia	£3,336	-2
10	Italy	£1,699	10	France	£2,977	-6
11	Turkey	£1,173	11	Turkey	£2,951	0
12	Sweden	£1,075	12	Russia	£1,682	6
13	Switzerland	£916	13	UAE	£1,631	2
14	Poland	£871	14	Norway	£1,557	5
15	UAE	£762	15	Poland	£1,365	-1
16	Japan	£730	16	Switzerland	£1,318	-3
17	Australia	£706	17	Sweden	£1,304	-5
18	Russia	£669	18	Denmark	£1,122	6
19	Norway	£636	19	South Korea	£1,111	1
20	South Korea	£584	20	Brazil	£1,111	1
21	Brazil	£562	21	Australia	£994	-4
22	India	£550	22	Japan	£981	-6
23	Hong Kong	£548	23	Thailand	£974	New
24	Denmark	£528	24	Czech Republic	£953	New
25	Canada	£510	25	Finland	£762	2
26	South Africa	£498	26	Canada	£755	-1
27	Finland	£485	27	Egypt	£716	New
28	Singapore	£465	28	India	£705	-6
29	Other Asia and Oceania	£433	29	Singapore	£678	-1
30	Hungary	£310	30	Romania	£655	New
Source: York Aviation analysis of HMRC, World Bank and OECD data						

Analysis of FDI Patterns

8.31 Eurostat provides detailed information on UK inward and outward FDI stocks over a considerable time series. Unfortunately, similar information is not available at a regional level. As with our analysis of exports, we have considered changes in FDI stocks relative to GDP growth in the foreign partner country and then projected how stocks might change by 2050 based on these trends and economic growth in the partner country.

8.32 **Table 8.4** sets out the 2015 estimates of inward FDI stocks in the UK by world region of origin. The patterns observed and messages for future connectivity are ultimately the same as those identified via the analysis of export patterns. Developed Europe and North America are currently the most significant sources of inward investment and are likely to remain so in the future. Other markets are expected to grow but the hierarchy remains similar. The one stand out growth area for the future appears to be the Middle East, which is expected to significantly increase its FDI stocks in the UK. We recognise that this analysis may not reflect the pattern which will be seen post-BREXIT.

Table 8.4: UK Inward FDI Stocks Trends

Area	2015 (£m)	Share	2050 (£m)	Share	Growth	Pax 2015
Developed Europe	£482,800	60%	£1,223,200	63%	153%	2,360,000
North America	£268,000	33%	£608,300	31%	127%	330,000
Asia	£59,100	7%	£125,100	6%	112%	270,000
Scandinavia	£19,600	2%	£39,600	2%	102%	300,000
Australasia	£9,000	1%	£12,900	1%	43%	30,000
Emerging Europe	£5,900	1%	£14,500	1%	146%	290,000
Middle East	£2,300	0%	£8,800	0%	283%	200,000
Africa	£900	0%	£2,000	0%	122%	130,000
Latin America	£600	0%	£1,500	0%	150%	40,000
Caribbean	£100	0%	£200	0%	100%	10,000
Total	£848,300	100%	£2,036,100	100%	140%	3,960,000

Source: York Aviation analysis of Eurostat, World Bank, OECD and CAA Passenger Survey data

8.33 **Table 8.5** repeats this analysis at a country level, showing the Top 30 inward FDI investors now and in the future. The list is dominated by major European countries and the USA and there is little change over time. However, as noted above, this may not fully reflect a transformational pattern, post-BREXIT

Table 8.5: Top 30 Country Inward FDI Stocks in 2015 and 2050						
Rank	Country	2015 (£m)	Rank	Country	2050 (£m)	Change in Rank
1	United States	£254,002	1	United States	£626,930	0
2	Netherlands	£135,829	2	Netherlands	£309,479	0
3	France	£73,942	3	Germany	£179,795	1
4	Germany	£61,433	4	Japan	£158,926	3
5	Luxembourg	£51,658	5	France	£140,740	-2
6	Spain	£39,544	6	Luxembourg	£89,675	-1
7	Japan	£39,220	7	Spain	£83,749	-1
8	Switzerland	£32,399	8	Switzerland	£68,491	0
9	Belgium	£30,411	9	Belgium	£61,332	0
10	Canada	£14,022	10	Irish Republic	£49,025	1
11	Irish Republic	£13,151	11	Hong Kong	£39,474	1
12	Hong Kong	£9,923	12	Italy	£31,811	2
13	Australia	£8,524	13	Canada	£28,714	-3
14	Italy	£8,312	14	Denmark	£19,102	2
15	Sweden	£7,375	15	Australia	£14,523	-2
16	Denmark	£5,565	16	Sweden	£11,657	-1
17	Norway	£4,702	17	Cyprus	£11,635	3
18	Singapore	£4,179	18	Norway	£11,091	-1
19	Austria	£4,096	19	Singapore	£10,517	-1
20	Cyprus	£3,743	20	Austria	£7,176	-1
21	South Korea	£2,446	21	India	£4,421	1
22	India	£1,949	22	UAE	£4,380	2
23	Finland	£1,932	23	South Korea	£4,333	-2
24	UAE	£1,233	24	Israel	£2,637	6
25	Russia	£1,148	25	Russia	£2,506	0
26	China	£1,103	26	Greece	£2,267	3
27	Malta	£992	27	Finland	£2,218	-4
28	South Africa	£787	28	China	£2,197	-2
29	Greece	£639	29	Portugal	£1,598	New
30	Israel	£602	30	Panama	£1,530	New
Source: York Aviation analysis of Eurostat, World Bank, OECD and CAA Passenger Survey data						

8.34 **Table 8.6** provides the same analysis at world area level for outward FDI from the UK. Again, the analysis is dominated by Developed Europe and North America. These two world areas are the primary destinations for UK outward FDI and, on current evidence, they remain so in the future. Other markets grow significantly but cannot always keep pace.

Table 8.6: UK Outward FDI Stocks Trends						
Area	**2015 (£m)**	**Share**	**2050 (£m)**	**Share**	**Growth**	**Pax 2015**
Developed Europe	£502,000	53%	£1,329,400	56%	165%	2,360,000
North America	£228,800	24%	£554,000	23%	142%	330,000
Asia	£71,100	8%	£140,200	6%	97%	270,000
Australasia	£39,600	4%	£80,900	3%	104%	30,000
Scandinavia	£29,600	3%	£74,300	3%	151%	300,000
Emerging Europe	£22,200	2%	£60,500	3%	173%	290,000
Africa	£20,800	2%	£53,800	2%	159%	130,000
Latin America	£15,500	2%	£32,700	1%	111%	40,000
Middle East	£7,700	1%	£23,900	1%	210%	200,000
Caribbean	£2,600	0%	£9,800	0%	277%	10,000
Total	£939,900	100%	£2,359,700	100%	151%	3,960,000
Source: York Aviation analysis of Eurostat, World Bank, OECD and CAA Passenger Survey data						

8.35 The analysis of outward FDI by country again reinforces the message that despite growth in FDI stocks across a wide range of country markets, the fundamental pattern may not change with time (see **Table 8.7**).

Table 8.7: Top 30 Country UK Outward FDI Stocks in 2015 and 2050						
Rank	Country	2015 (£m)	Rank	Country	2050 (£m)	Change in Rank
1	United States	£193,323	1	United States	£500,573	0
2	Luxembourg	£131,622	2	Netherlands	£251,047	1
3	Netherlands	£118,988	3	Luxembourg	£247,619	-1
4	France	£51,312	4	Irish Republic	£140,888	2
5	Australia	£40,139	5	France	£100,623	-1
6	Irish Republic	£39,061	6	Hong Kong	£93,818	3
7	Belgium	£35,564	7	Belgium	£89,852	0
8	Spain	£34,832	8	Australia	£86,229	-3
9	Hong Kong	£33,781	9	Spain	£71,593	-1
10	Canada	£31,377	10	Canada	£62,589	0
11	Germany	£18,084	11	Italy	£60,257	3
12	Switzerland	£18,067	12	Switzerland	£45,585	0
13	Sweden	£16,757	13	Germany	£40,805	-2
14	Italy	£14,489	14	Sweden	£36,603	-1
15	South Africa	£12,657	15	Denmark	£22,429	3
16	Brazil	£10,766	16	South Africa	£22,330	-1
17	Singapore	£8,664	17	Brazil	£21,991	-1
18	Denmark	£7,625	18	Mauritius	£17,441	5
19	China	£6,692	19	Turkey	£16,733	2
20	Russia	£5,812	20	Japan	£15,216	4
21	Turkey	£5,698	21	Norway	£14,906	4
22	India	£5,693	22	China	£14,082	-3
23	Mauritius	£5,370	23	Singapore	£13,620	-6
24	Japan	£5,102	24	Egypt	£13,592	2
25	Norway	£4,731	25	Russia	£13,456	-5
26	Egypt	£4,458	26	India	£10,192	-4
27	Mexico	£4,129	27	Saudi Arabia	£7,906	New
28	Poland	£3,809	28	Poland	£6,904	0
29	Indonesia	£3,375	29	Portugal	£6,802	New
30	South Korea	£3,324	30	South Korea	£6,779	0
Source: York Aviation analysis of Eurostat, World Bank, OECD and CAA Passenger Survey data						

8.36 Overall, our analysis of potential trends in FDI presents a picture in which the North's need for connectivity will grow across the board but, on existing evidence, it would appear that that there would not be a fundamental shift in the geographic nature of requirements. Traditional markets in Europe and North America appear remain the most important but other world regions will grow so it is likely that new routes and improved hub connections will be needed to support this growth. It should be recognised that this analysis is based on limited data and relatively simply trend analysis and, as such, results should be seen as broadly indicative. However, whilst the trends identified seem reasonable in the round and also fit with comments that have been received from relevant stakeholders, we recognise that this may be more reflective of the baseline position than the extent of change required to support the transformational economic growth scenario.

Development of Future Business Travel Markets

8.37 Based on the above analysis, we have given initial consideration to how business traffic forecasts by country might affect travel patterns based on DfT's Aviation Forecasts 2013 growth rates and adjusting for increased GDP growth in the Transformational Scenario (as described above). This analysis compares the Base Case versus the Transformational Scenario at 2050 and hence focusses on how the additional connectivity required to support the Transformational Scenario might look based on the current economic evidence. It should also be recognised that there is a degree of interdependency with the analysis above. If export and FDI markets are not expected to change significantly, this is likely to be reflected in patterns for business travel. We recognise that further work may be required to refine these to fully reflect the extent of economic transformation required.

8.38 **Table 8.8** shows the forecast business traffic by world area in 2050 for the Base Case and Transformational Scenario.

Table 8.8: Business Passengers by Scenario in 2050

Area	Base	Transformation	Difference
Developed Europe	5,140,000	6,080,000	940,000
North America	720,000	810,000	90,000
Emerging Europe	660,000	770,000	110,000
Scandinavia	640,000	760,000	120,000
Asia	630,000	710,000	80,000
Middle East	510,000	580,000	70,000
Africa	330,000	370,000	40,000
Latin America	100,000	120,000	20,000
Australasia	70,000	80,000	10,000
Caribbean	30,000	40,000	10,000
Grand Total	8,830,000	10,320,000	1,490,000

Source: York Aviation analysis of DfT, CAA Passenger Survey and IER

8.39 This data reflects a position that connectivity will need to grow across all world areas but that the overall pattern of business travel requirements may not be expected to change fundamentally. Based on our analysis to date, the ranking in terms of volume of demand to different world areas may not change between the scenarios but there is significantly more business travel required to support the Transformational Scenario in all cases. Further consideration will need to be given to this as more detail emerges of changing economic landscape.

Implications for Future Air Connectivity Needs

8.40 Our analysis suggests that to support the Transformational Scenario in 2050 the Northern Powerhouse Region will need to facilitate around 1.5 million additional business passengers. This equates to around a 17% increase in business demand for air travel. This is a significant challenge and is likely to require interventions that significantly reduce the generalised cost of international air travel for the North's users, either by reducing real incurred costs such as APD or by improving access times, reducing delays or encouraging the development of new air services that offer direct connectivity or remove the need for a second change of flights. Increasing frequency of service will also help to reduce wait times and costs.

8.41 In terms of the breadth of connectivity required, our initial analysis suggests that the geographic balance of connectivity needs could remain largely similar, with Europe and North America likely to remain the most important links. However, growth in trade, FDI and business travel relationships is expected across all world areas, suggesting that network growth or improved hub connectivity will be required across the board. However, prima facie, Europe and the US may well remain the most important markets for business and, although the Far East and other emerging markets are likely to become more important, they are unlikely to generate the same magnitude of passenger demand for the foreseeable future. In the longer term, achieving the 'Transformational Scenario' may well require more radical shifts in business links.

Aviation Market Opportunities

8.42 Although the IER does not provide a basis for determining how the requirement for improved air connectivity might vary across the North, we have examined the aviation market opportunities airport by airport by extrapolating forward current patterns of demand in the catchment area of each airport[74] to 2050, based on the levels of travel required to support the Transformational Scenario of the IER and taking into account the extent of expected global shifts in trade and investment patterns outlined above, accepting that these may be conservative at this stage of the work in developing an understanding of how the 'Transformational Scenario' will be delivered. This gives us an initial basis, at least, for assessing what each airport would be required to deliver to support the target economic growth and to compare this with what might be delivered in any event by the market over the time period.

[74] including areas outside the North as relevant for each airport.

Methodology

8.43 In order to do this, we have reviewed new markets which could, by 2030 and 2050, have the potential to be viably operated from each of the region's airports under the Transformational Scenario compared to the baseline which the market would be expected to deliver if the North continues to perform as historically. This illustrates the potential for each airport to contribute to improved international connectivity if the generalised cost of using the airports can be reduced as set out above.

8.44 Two approaches have been used, as outlined below, one covering all the airports and both long and short haul services, and another focusing in more detail on potential long haul services from Manchester.

8.45 In the first instance, we have considered the ability of each airport to support new routes based largely on its local catchment area but recognising that each airport draws from a wider area to some extent. The steps in the analysis were:

1) Allocate all districts within the UK to individual airports to determine the core catchment area for each;

2) Review a basket of well served existing routes to establish the ratio between total demand in the core catchment and the total passengers actually attracted by existing services to determine the degree to which airports attract beyond their own catchment area;

3) Projecting forward growth in the catchment districts by DfT Growth Rates and also by an uplifted growth rate reflecting the IER's transitional growth rate to 2030 and 2050;

4) Applying the existing catchment area ratios (from 2) above) to the future projections to determine the likely demand which could be attracted by each airport if services to new destination were provided;

5) Based on existing performance from UK regional airports, an uplift is then applied to allow for passengers who may use the destination as a hub to make onward connecting flights.

8.46 For the purpose of this analysis, we have assumed that the relative competitive position of the airports, in terms of local catchment areas, will be maintained. We will expand on our approach to this issue in the next section.

8.47 We have also based this analysis on the existing carrier mix at the airports and applied relevant viability thresholds, albeit we recognise that these could change over the period to 2030 and beyond.

8.48 However, it is important to note that these lists of potential new routes are not unique to each airport and, given the overlapping nature of airport catchment areas, it is unlikely that all of the opportunities would be realised at all of the airports. Furthermore, the levels of connecting passengers at each destination will ultimately be driven by the type of airline that serves the routes; whether that be full service airlines with a hub at the destination or low fares carriers who do are less likely to facilitate onward connections. Nonetheless, the analysis gives an initial list of target routes which have the potential to be brought on stream by 2030 and 2050 to support the economic growth agenda. We return in the next section to the interventions which may be required to support the delivery of such new routes as a necessary condition to deliver the Transformational Scenario for economic growth.

Potential New Markets

8.49 At the outset, it should be noted that we have focussed on new connections from each airport rather than the potential for frequency growth. Growth in the frequency of connections to core business markets is another important deliverable to secure the improvements in international connectivity and this would sit alongside these new market connections as the economy grows and if surface access to the airports can be improved.

8.50 The list of potential new routes are shown for each airport in **Tables 8.9 – 8.15** below and includes leisure as well as business routes as route development is driven by both components of demand. The lists of routes are not intended to be definitive as it is not realistic to be specific about individual new route opportunities as far ahead as 2030 and 2050. Rather, we have sought to give a flavour of what may come forward to support economic growth. There may be other niche opportunities, particularly in leisure markets, which could come forward over time but which are not obvious from the patterns of route level demand visible today. In the case of Manchester, the potential for new strategic long haul routes is considered separately below.

Table 8.9: Manchester Airport Top Potential New Short and Medium Haul Routes

By 2030		By 2050	
Baseline	**Transformational**	**Baseline**	**Transformational**
Bratislava	Bratislava	Vilnius	Vilnius
Bucharest	Bucharest		Bordeaux
Poznan	Poznan		Porto
	Warsaw		
Wroclaw	Wroclaw		
Source: York Aviation			

Table 8.10: Newcastle Airport Top Potential New Routes			
By 2030		By 2050	
Baseline	Transformational	Baseline	Transformational
Berlin	Berlin	Athens	Athens
Frankfurt	Frankfurt	Stuttgart	Stuttgart
Hamburg	Hamburg	Toulouse	Toulouse
Istanbul	Istanbul		Atlanta
Munich	Munich		Budapest
Oslo	Oslo		Delhi
Zurich	Zurich		Hong Kong
Source: York Aviation			

Table 8.11: Liverpool Airport Top Potential New Routes			
By 2030		By 2050	
Baseline	Transformational	Baseline	Transformational
Antalya	Antalya	Corfu	Corfu
Abu Dhabi	Abu Dhabi	Helsinki	Helsinki
Brussels	Brussels	Heraklion	Heraklion
Copenhagen	Copenhagen	Philadelphia	Philadelphia
Dalaman	Dalaman	Rome	Rome
Dusseldorf	Dusseldorf	Venice	Venice
Dubai	Dubai		Budapest
Frankfurt	Frankfurt		Marrakech
Istanbul	Istanbul		
Milan	Milan		
Munich	Munich		
Murcia	Murcia		
Oslo	Oslo		
Paphos	Paphos		
Sharm El Sheikh	Sharm El Sheikh		
Stockholm	Stockholm		
	Basle		
	New York		
Source: York Aviation			

Table 8.12: Doncaster/Sheffield Airport Top Potential New Routes			
By 2030		By 2050	
Baseline	Transformational	Baseline	Transformational
Barcelona	Barcelona	Antalya	Antalya
Dublin	Dublin	Brussels	Brussels
Dubai	Dubai	Budapest	Budapest
Fuerteventura	Fuerteventura	Copenhagen	Copenhagen
Malta	Malta	Dusseldorf	Dusseldorf
Nice	Nice	Geneva	Geneva
		Heraklion	Heraklion
		Hurghada	Hurghada
		Larnaca	Larnaca
		Leipzig	Leipzig
		Marrakech	Marrakech
		Prague	Prague
			Bodrum
			Frankfurt
			Kos
			Munich
			Zakinthos
Source: York Aviation			

Table 8.13: Leeds/Bradford Airport Top Potential New Routes			
By 2030		By 2050	
Baseline	Transformational	Baseline	Transformational
Athens	Athens	Bourgas	Bourgas
Berlin	Berlin	Chicago	Chicago
Copenhagen	Copenhagen	Hurghada	Hurghada
Cork	Cork	Keflavik	Keflavik
Dubai	Dubai	Knock	Knock
Frankfurt	Frankfurt	New York	New York
Istanbul	Istanbul	Poznan	Poznan
Madrid	Madrid	Stockholm	Stockholm
Mahon	Mahon		Bergerac
Milan	Milan		Innsbruck
Naples	Naples		Keffalonia
Oslo	Oslo		Salzburg
Sharm El Sheikh	Sharm El Sheikh		Shannon
Wroclaw	Wroclaw		Verona
Zurich	Zurich		
	Warsaw		
	Vienna		
	Brussels		
Source: York Aviation			

Table 8.14: Humberside Airport Top Potential New Routes			
By 2030		By 2050	
Baseline	Transformational	Baseline	Transformational
	Tenerife	Alicante	Alicante
		Malaga	Malaga
		Palma	Palma
Source: York Aviation			

Table 8.15: Carlisle Airport Top Potential New Routes[75]			
By 2030		By 2050	
Base Growth Rate	Transformational Growth Rate	Base Growth Rate	Transformational Growth Rate
Alicante	Alicante	Malaga	Malaga
Palma	Palma		Antalya
Tenerife	Tenerife		Lanzarote
Source: York Aviation			

8.51 The results of this analysis do reflect the current scale of networks from each airport so, for example, they show only a limited number of wholly new short haul destinations from Manchester Airport over time because of the current extensive network, whereas airports such as Liverpool and Leeds/Bradford appear to have a longer list of potential new routes, driven by existing gaps to core destinations in Europe and beyond.

8.52 There is, however, extensive overlap between many of the destinations which may be served, particularly at the airports along the M62 corridor and down to Sheffield and it is unlikely that all routes would be served from all airports. In particular, we would not expect the appearance of the key long haul destinations such as Dubai and New York across all of the airports due to the overlaps in the catchment areas and the benefits to the airlines of a degree of concentration in long haul markets. Ultimately, however, it is the airlines which will determine which airports to serve within the competitive market.

8.53 It is notable that, even assuming a relatively low threshold of 20,000 passengers a year for a viable route from Carlisle, Durham Tees Valley and Humberside Airports reflecting the smaller size of aircraft largely operated from these airport, there appears to be little scope for these airports to expand their route networks to provide additional business related air connections. Indeed, our analysis indicated the potential for there to be no new destinations added at Durham Tees Valley over time and only limited leisure routes at the others[76]. Nonetheless, it is possible that there may, over time, be niche lower volume routes which could still be attractive to the airlines, and that some services could have a greater penetration outside of the core catchment than currently experienced[77], leading to additional services being added, particularly where there are specific local economic developments such as growing international specialisations or growth in the visitor economy. To support the expanding economy, we would expect frequency growth on existing services across the range of airports.

[75] A route to Dublin has been supported by the Regional Connectivity Fund and is expected to start operating in the near future.

[76] Our viability threshold is higher than the initial expected levels of demand on the Carlisle to Dublin route which formed the basis of the grant of start up aid.

[77] For example, Durham Tees Valley achieved a wider catchment area previously when services were operated by bmibaby but low cost carriers would not fit with the Airport's new business model and reduced terminal facilities.

8.54 Ultimately, it is the market which will decide what routes the airlines will operate and over the next 35 years it is also likely that other routes which are not identified in the tables will become viable as a result of changing market dynamics or airline strategies. In particular, it is difficult to project future new routes for low fares airlines which have the ability to heavily stimulate low levels of underlying demand to a points that they can make services viable and some of these have the potential to add economically valuable connectivity.

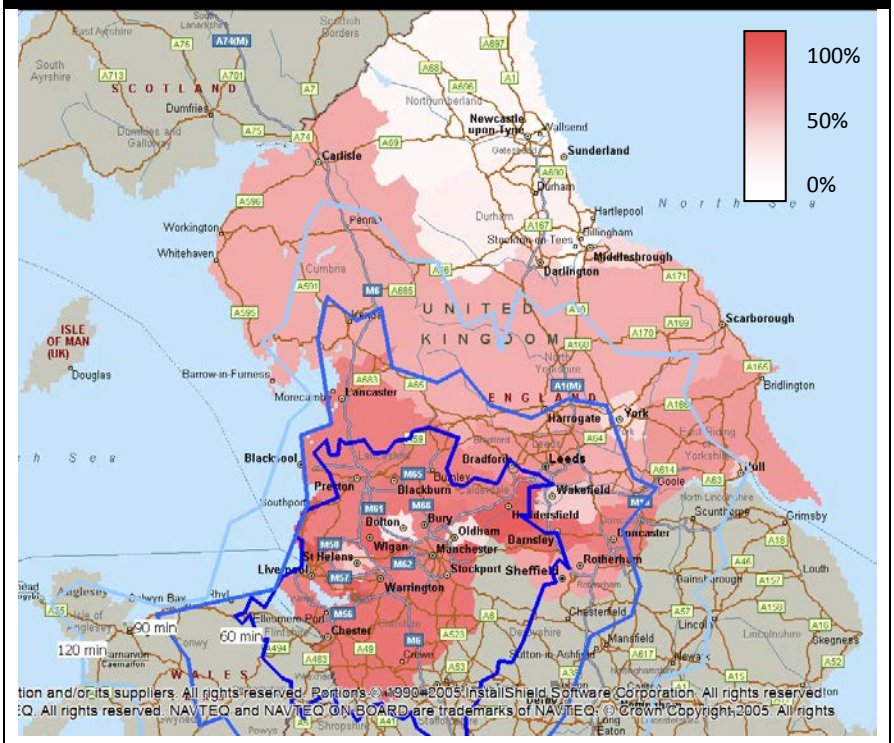
Strategic Long Haul Routes from Manchester

8.55 Our second approach looks specifically at long haul routes from Manchester Airport as the airlines told us that they did not see a realistic prospect of opening completely new long haul routes to the North from airports other than Manchester. That is not to say that there is no potential for other airports, such as Newcastle, Leeds Bradford or Liverpool, to develop long haul services but these are likely to be destinations or in markets already served from Manchester, such as the Middle East or East coast of the USA. These route opportunities to serve more local markets are already reflected in our analysis above.

8.56 In the case of these new strategic opportunities, we have considered these in terms of the impact that strategic new connections, such as HS3 and the Transpennine Road Tunnel, could have on extending Manchester's strategic catchment area enabling a broader portfolio of new direct routes to be added. We have illustrated Manchester's market share on its existing high frequency long haul services showing the proportion of the total market to these destinations[78] using the direct services from Manchester with the current journey time isochrones up to 2 hours superimposed in **Figure 8.4**. It is evident that market penetration falls away dramatically beyond the 2 hour mark and is only around 50% of the market beyond 90 minutes. This is because passengers have the alternative of higher frequency connections from London or even continental hubs such as Amsterdam from their local airports. Extending Manchester's 90 minute catchment area is fundamental to ensuring that more routes can be viably offered and increasing frequencies of services supported so creating a 'virtuous circle' of increased long haul connectivity for the North.

[78] Atlanta, Chicago, Dubai, New York, Philadelphia.

Figure 8.4: Manchester Airport Market Share on Frequent Direct Long Routes



Source: York Aviation

8.57 Even without this improvement in surface access times to Manchester Airport, it is can be demonstrated how the availability of direct services from Manchester can benefit travellers from the wider North. In **Table 8.16** below, by way of illustration we show comparative journey times to Tokyo from York today and compare this to the situation if a direct flight was operated from Manchester. There are material journey time savings, of around 100 minutes on the whole journey, to be made across the whole of the North if a direct service could be attracted and enabling the Airport to penetrate a larger market in an extended catchment area is likely to be fundamental to securing such a route at the earliest opportunity.

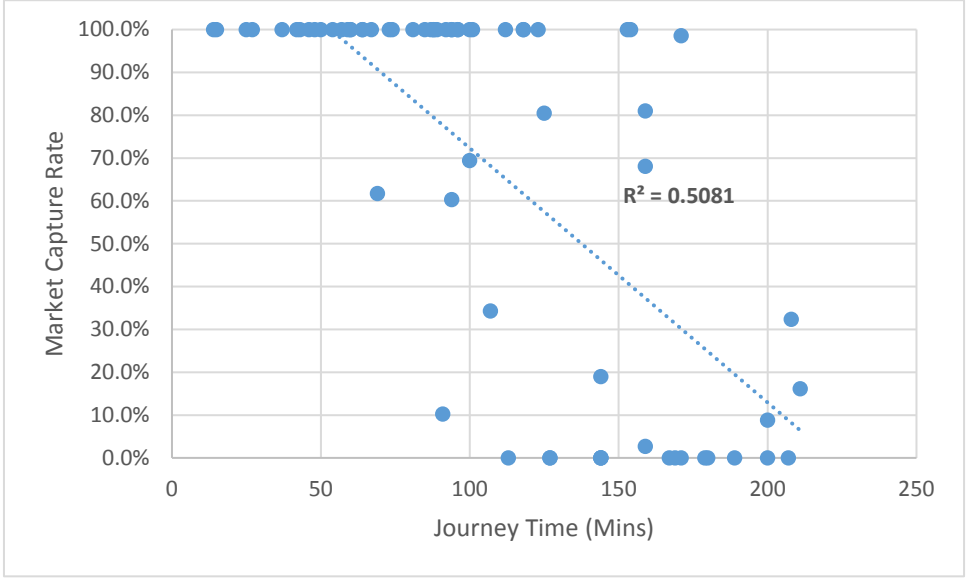
Table 8.16: Comparative Total Journey Times York to Tokyo with a Direct Flight from Manchester Airport				
Routing	**Drive/Train Journey time**	**Processing Time at Initial Airport**	**Total Flight Journey Time including connection**	**Total Time**
Drive to Leeds Bradford, fly via Amsterdam	56	55	930	986
Train to Heathrow and direct flight	196	75	690	961
Train Manchester, fly via Abu Dhabi	122	55	805	982
Train to Manchester and future direct flight	122	75	700	897

8.58 In order to assess the potential for important new long haul services to be attracted to Manchester, we have, as with the first analysis, grown underlying demand based on both a base case growth rate, in line with the Department for Transport, and also based on an uplifted growth rate reflecting the Transformational Growth projected in the IER. Where the Airport attracts demand beyond the Northern Powerhouse region, it is assumed that this will continue at the same rate.

8.59 As with the earlier analysis, we also apply onward connecting passengers to the demand to understand whether routes may reach sustainable passenger levels in totality. The levels of onward connecting passengers have been determined using either the current actual levels on the same routes as observed from other UK airports, or levels of onward connecting passengers on comparator long haul routes and applied to the potential point to point demand that could be attracted.

8.60 Bearing in mind that, for long haul services in particular, routes from Manchester compete with higher frequency services offered from Heathrow, we have examined the likely market penetration from districts across the North based on the current pattern. The regression analysis is illustrated in **Figure 8.5**. Whilst this shows quite a high degree of variability, indicating that other factors are at play, there is a general relationship between market share and surface access journey time. When we apply this relationship as a cross check to demand levels on existing services, the tolerance of error is of the order of 2-5%, indicating that this gives us a reasonable basis for assessing Manchester's expected market capture on new services in future and with improved surface access times. This analysis, then, provides the basis for estimating the change in market capture from districts across the north in future if key long distance surface access is improved to Manchester Airport, mainly though HS3 and the Trans-Pennine road tunnel towards Sheffield, although we recognise that improved connectivity to the north would also be support Manchester enhancing connectivity to areas such as Cumbria.

Figure 8.5: Manchester Airport Long Haul Surface Journey Time/Market Capture Relationship



Source: York Aviation

8.61 We have assumed that, in broad terms, the combined effect of the potential strategic surface access schemes, HS3 and Transpennine Tunnel, would deliver journey time savings in aggregate across all passengers (road and rail) for the purpose of this analysis of long term potential for new air routes[79]. However, the changes in journey time to Manchester Airport are not applied across all districts, and only those with key transport nodes are assumed to be subject to journey time improvements for the purpose of this analysis[80]. These are:

- Borough of Darlington, reduction in rail journey time of 30 minutes;
- Leeds District, reduction in rail journey time of 30 minutes;
- Liverpool District, reduction in rail journey time of 30 minutes;
- Newcastle upon Tyne District, reduction in rail journey time of 30 minutes;
- Sheffield District, reduction in journey time of 30 minutes, associated potentially with either improved rail services or the Trans-Pennine Tunnel; and
- York District, reduction in rail journey time of 30 minutes.

[79] More detailed analysis would be required to estimate the precise impacts of each intervention, including more detail than is currently available on the precise expected changes in journey time to the Airport from each district and also in terms of surface mode share effects. This is beyond the scope of this study.
[80] Based on the information provided in High Speed North: National Infrastructure Commission, March 2016.

We recognise that the exact journey time improvements may vary precisely, but have applied the 30 minutes equally to illustrate the impact of achieving this level of time saving. This may potentially be conservative to the extent that improved access is achieved more widely to areas such as the Humber and Cumbria.

8.62 We consider route potential at three levels, these being determined as:

- 60-80,000 passengers equates to between three and five departures per week to a destination depending on the aircraft size;
- 80-110,000 passengers covering routes which see a build in aircraft size and/or frequency towards daily services; and
- 110,000 passengers is the likely minimum for a daily service with realistic size of long haul aircraft.

8.63 The long haul routes that look most viable over time through this analysis are shown in **Table 8.17** below, these routes are on top of those already operating, which would also be expected to grow. However, many of these new services would be reliant on the onward connecting passengers and so it is highly unlikely that the full basket of routes would be sustainable as this would include double-counting of onward connecting passengers and would not adequately net off those who would switch from flying via hubs onto new direct flights. However, these do not take account of passengers who may connect onto the services using Manchester as a hub, which could bolster the traffic levels.

Table 8.17: Manchester Airport Long Haul Potential With Surface Access Improvements

	2030			2050			
	60-80,000 Annual Pax	80-110,000 Annual Pax	Over 110,000 Annual Pax	60-80,000 Annual Pax	80-110,000 Annual Pax	Over 110,000 Annual Pax	GAWC Rank
Auckland		✓				✓	Beta
Bangkok			✓			✓	Alpha-
Beijing		✓				✓	Alpha+
Boston		✓				✓	Alpha-
Brisbane		✓				✓	Beta
Cape Town				✓			Beta+
Delhi			✓			✓	Alpha-
Houston (IAH)	✓					✓	Beta+
Johannesburg			✓			✓	Alpha-
Kuala Lumpur					✓		Alpha
Los Angeles		✓				✓	Alpha
Manila				✓			Beta+
Mauritius					✓		Beta-
Melbourne		✓				✓	Alpha-
Miami	✓					✓	Alpha-
Mumbai			✓			✓	Alpha
Perth			✓			✓	Beta-
San Francisco	✓					✓	Alpha-
Shanghai			✓			✓	Alpha+
Sydney			✓			✓	Alpha+
Tokyo (NRT)	✓					✓	Alpha+

Source: York Aviation

8.64 Some of these routes have recently started or have been announced for launch, such as Beijing Los Angeles, Miami and San Francisco, albeit at low frequencies at this time. This corroborates our view as to potential viability and the likelihood of the airlines commencing services. However, the analysis clearly demonstrates the potential for the addition of economically beneficial new services.

8.65 The list of potential long haul routes includes:

- 4 cities rated as Alpha+ within the GAWC rankings;
- 3 cities rated as Alpha;
- 7 cities rated as Alpha-;
- 3 cities rated as Beta+;

- 2 cities rated as Beta; and
- 2 Cities rated as Beta-.

8.66 There are no destinations with ratings below Beta–, illustrating the potential value of these services in providing direct connections to the most important points globally. Crucially, these potential new routes could see the North serve all points ranked in the GAWC ratings as Alpha+, as the remaining 5 cities were already served in 2015, and would see only 3 Alpha cities without sufficient demand to sustain services (Mexico City, Sao Paulo and Moscow, though the latter has been served previously and could return over time). Similarly at Alpha-, Beta+, Beta and Beta-, these long haul routes have the potential to fill some significant gaps, although it would be unlikely that all points in these ranks could be achieved, even with the surface access improvements.

8.67 A number of the potential destinations are in Australasia, however, and, based on current travel patterns and airline strategies, it is not clear whether there will ever be a return to direct services between regional European airports and Australasia. These passengers currently, and in future, underpin many of the Middle Eastern hub services and, thus, these, and their benefits of a wide range of connecting destinations, could be undermined by direct services to Australia and New Zealand.

8.68 Although a number of beneficial routes could be achieved by 2030, such as Delhi, Mumbai, Shanghai and Johannesburg, the market dominance of the Middle Eastern hubs may deter market entry on such routes. However, we recognise that achieving transformational growth could require an even wider portfolio of direct services to be realised.

8.69 The role played by improved market capture, resulting from improved surface access, may be significant on some routes and would potentially mean the difference between these services operating directly from the North or otherwise. In the list of 21 destinations shown in Table 8.6 above, the average uplift in the potential size of the market as a result of the strategic improvements to surface access is 7.9% in both 2030 and 2050. The lowest of these is at 3% (Houston) but the highest, Tokyo, is around 20% higher in both projection years than would be the case without the surface access improvements and this could make the difference between the service potentially being viable in 2030 or not, and being able to sustain daily services by 2050. Similarly, the uplift in passengers to San Francisco (10%) may be sufficient by 2050 to support sustainable daily services, which are less likely to be achieved in the absence of improved surface access.

8.70 Across all the routes however, there is a crucial element, which is that, in so far as volumes and yields are lower in the North than the South, the expanded market capture may allow airlines to consider the widest basket of new routes possible, drawing on the maximum volume and highest value travellers from across the region.

8.71 The benefits of improved surface access would not be contained to just new routes either, with existing services also likely to receive a boost, allowing them to increase frequency or operate with larger aircraft bringing the benefits of lower operating costs and helping make the routes more sustainable. Hong Kong could see an increase of around 9% in passenger numbers, Toronto could see an uplift of 6% and Chicago an 8% uplift in demand. In total, across existing services to the USA, this could generate an additional daily service by 2030 and two additional daily flights by 2050 compared to the baseline position with no improvements to strategic surface access, providing critical frequency to an important business destination in addition to the new direct routes. To some degree this may underplay the demand benefits because it appears that much of the leakage to London at present is a result of the higher frequency services available from there, and for each new frequency added from the North, this could improve the share of passengers that can be attracted at the northern airports.

8.72 The growth in the long haul route portfolio from Manchester and, to a more limited extent, other airports has the potential to increase the volumes of freight handled from the Northern airports as most freight is carried in the bellyholds of passenger aircraft. Freight can be an important component in helping to make long haul services viable but, as we have explained in Appendix C, there is no direct relationship between the origin of air freight in the North and the use of the Northern airports for its uplift. If the movement of air freight could be organised so that freight originating in or destined for the North was uplifted from a Northern airport, this could reduce the amount of road haulage to the London airports and/or the continent but this cannot be guaranteed with the existing structure of the air freight industry.

8.73 Whilst we are able to give only a broad indication of the potential impact of improved strategic access to Manchester Airport in our analysis so far – more detailed information would be required on the improved access times across all schemes and the whole catchment area to refine the analysis – it is clear that improved surface access has the potential to deliver improved connectivity to key global business centres which would help to drive the Transformational economic agenda. We consider further the specific interventions in the next section.

Shipping Market Opportunities

The importance of maintaining ferry passenger connectivity

8.74 While the international passenger ferry services may not carry significant volumes of passengers compared to the aviation services to and from northern airports, they perform a valuable role in providing connectivity between the North and both Ireland and the European continental mainland for passengers who want to travel door-to-door in their own cars or, to a lesser extent, as foot passengers. This allows business travellers based in the North to access key markets in the Benelux area and Germany and Ireland directly in their own cars, without having to drive to ports in the South East, North Wales or South West Scotland. It also allows inbound tourists, in particular from Germany, Belgium and the Netherlands, to arrive directly in the North of England, without risking 'losing their way' in the South of England en route from the Channel ports. Finally, the international ferry services provide longer but more direct crossings that minimise the mileage compared to the alternatives (particularly via the Channel ports and the Eurotunnel Shuttle) and therefore provide a more environmentally sustainable option.

8.75 However, these services should not be taken for granted. Since the end of the economic downturn, the passenger ferry services to and from the North of England have secured reasonably stable volumes of traffic, but with fluctuations and without securing significant growth. This is despite the closure of some routes before the recession and some industry consolidation. There have been no new entrants into the North Sea or Irish Sea passenger ferry markets since the downturn. This all tends to suggest that, while the passenger market is reasonably stable, it also suggests that the operators are likely to replace existing tonnage with ships that make more capacity available for RORO freight.

8.76 There are particular risks to services when there are changes in the regulatory environment. In January 2015 the Sulphur Emission Control Area (SECA) was introduced in the North Sea (but not the Irish Sea) which required operators to burn fuel with a lower sulphur content than Heavy Fuel Oil. However, the lower sulphur fuel is much more expensive and, as longer distance services have a lower utilisation, for example, than those on the Dover Straits, there was a risk that much higher bunker costs would lead to the closure of some services. In the event, the global price of oil fell significantly as the SECA was being introduced and the extent of the potential impact was reduced.

8.77 However, there are further risks when vessels are reaching the end of their useful economic lives (usually 25 years), when the operator needs to decide whether to invest in new vessels or, alternatively, to close the service.

8.78 Hence, supportive interventions are also likely to be necessary to support indirectly the viability and market penetration of ferry services to ensure that existing economically beneficial links can be maintained and, in some cases, enhanced by private sector operators. These measures are also likely to benefit the cruise industry and the potential for attracting additional 'calls' thereby delivering tourism benefits.

9 DELIVERING IMPROVED INTERNATIONAL CONNECTIVITY

9.1 As we have discussed in Section 7, both air transport and shipping operate in commercially liberalised environments so TfN has limited tools available to influence the delivery of economically beneficial improvements in international connectivity. Having analysed, in the previous section, the minimum requirement for improved connectivity to support the Transformational economic agenda, we now set out further consideration as to how this may be delivered. To the extent that achieving economic transformation required further improvements to global connectivity, the challenge is even greater.

Barriers to Delivery

9.2 We start by considering barriers to entry – is there a market failure which would justify public sector intervention? There are two principal issues to be considered.

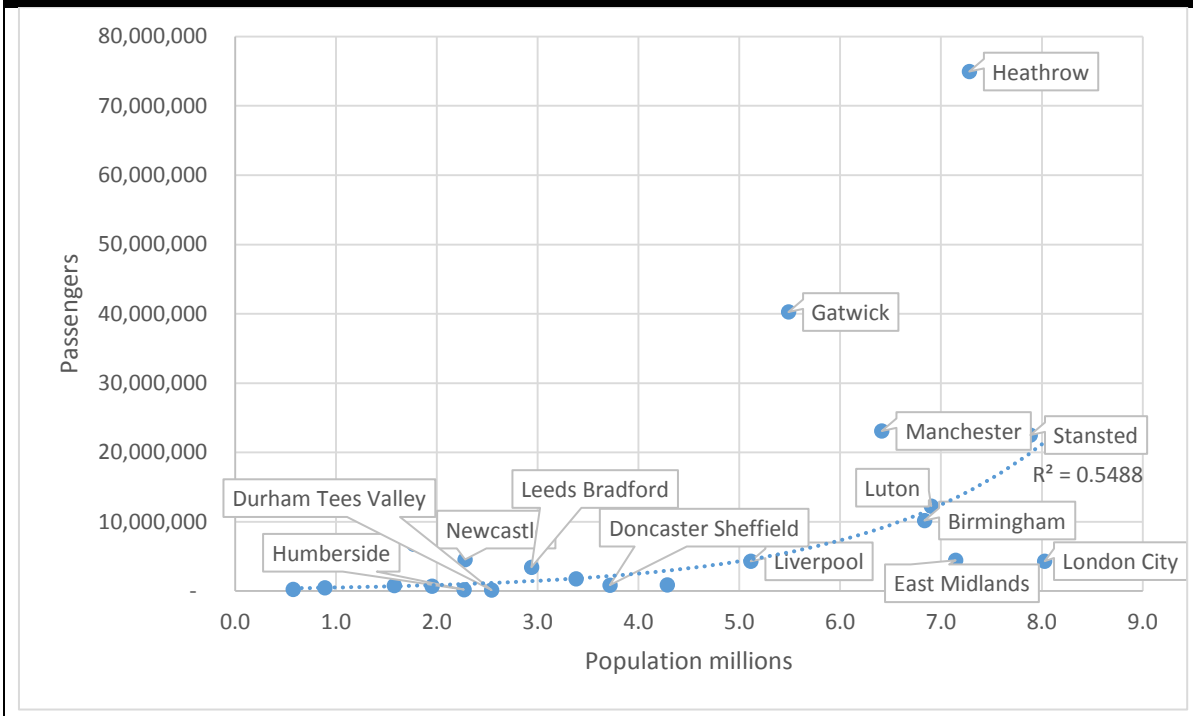
Size of the Market

9.3 As expressed by stakeholders and in the context of UK and European aviation policy, the market is the ultimate determinant of what air services are operated. The scope for intervention in the market is very limited and the key determinant of what routes and services are operated remains the scale of an airport's catchment area in terms of population, wealth, inbound tourism and the internationalisation of its economy. The biggest barrier to delivery of more economically valuable air services at the North's airports remains the scale of the market overall.

9.4 As we have illustrated, in Figure 8.4, Manchester Airport's ability to capture a high share of the market on its regular direct long haul services is closely related to a surface access time of around 90 minutes. Beyond this, a greater proportion of passengers tend to favour other indirect routings or connections in London which offer higher frequencies of service. However, it is not simply a matter of the scale of population within an airport's catchment area but its economic prosperity which determines how successful an airport may be. Competition with neighbouring airports is also a factor, as we go onto discuss below.

9.5 In **Figure 9.1**, we illustrate the relationship between the total number of passengers handled by an airport in 2015 relative to the population within 60 minutes road access time, using the Department for Transport data set out in Table 3.1. This demonstrates clearly that the London airports outperform relative to a simple consideration of population served as, indeed, do Manchester, Newcastle and Leeds Bradford. However, there is a clear relationship between the scale of activity at an airport and the number of people within its immediate catchment area.

Figure 9.1: Number of Passengers using Airports in 2015 relative to the Population within 60 minutes' Drive Time



Source: York Aviation

9.6 Whilst it might be tempting to assume that improving surface access is less important to securing growth of the North's airports, in fact the converse is true as the propensity to fly in the North as a whole is materially less than the South East and London in particular, so the population within any airport's catchment area needs to be extended to provide sufficient market for the airline to consider services, not least as the yields to the airlines are lower due to the greater dependence on outbound leisure travellers from the North compared to the South East of England. The airlines told us that the size of the market in the North and the relatively lower yields attainable were the principal reasons why more direct services are not operated. Extending airport catchment areas through improved surface access is one means of overcoming this impediment, particularly in terms of tilting the balance towards enabling Manchester to develop a broader range of long haul services, which would not otherwise be sustainable from the North.

9.7 Improving the economy will also contribute to making more services viable but here the 'chicken and egg' argument comes into play as we are seeking to improve international connectivity to drive economic growth through productivity and innovation, so improving the accessibility of the North's airports becomes a more important springboard to that growth.

The Risk

9.8 Not unconnected to the size and strength of the market is the perceived risk by the airlines in terms of starting new air services. Airlines are looking to airports to 'de-risk' the initiation of new services at least for the early years until routes become established to a greater extent than that would be the case in the more affluent markets in the London area.

9.9 As we have already discussed in Section 7, in the context of the lower yielding markets in the North, with greater dependence on leisure traffic, the cost burden of APD is seen as a significantly greater impediment to the initiation of new services from the North than from the London airports, which adds substantially to the perceived risk of starting new services.

9.10 The risk of starting new air routes is clearly less when there is a large leisure market in the area, even if this is predominantly outbound. This is important in the context of the North and may explain why some long haul routes can be sustained, such as to New York and Dubai, whilst others such as Tokyo are more difficult to attract, despite the economic advantages of doing so.

9.11 Airports are increasingly expected to share the risk with the airlines but this is a challenge for the smaller airports as they do not generate sufficient profit to take the risk in the first instance, even if the service is expected to be able to deliver long term profitable growth. Indeed, the smallest airports in the Region struggle to attain profitability, resulting in very limited ability to support airline services.

9.12 In the light of the State Aid guidelines, the scope for intervention by the public sector is very limited, even in cases where there would be demonstrable economic benefits across the North or locally. However, there remains a role for the public sector in working with airports to deliver economically beneficial new routes on the 'Team Scotland' model.

9.13 The public sector can also assist airports by ensuring that planning frameworks are supportive and recognise the important value of ancillary development delivering revenue to support the ongoing operation of the airport and creating the climate where there can be a virtuous circle of growth.

Competition between Airports

9.14 Clearly, as we have demonstrated, the North is well served by airports with three to the West of the Pennines, once Carlisle commences operations, and five to the East. As we have indicated, to some degree, the relative underperformance of some airports compared to international benchmarks may relate to the number of competing airports given the overall size of the market and the economy.

9.15 Nonetheless, there are benefits from competition in the airport sector. These have been widely recognised, not least in the decision taken by the Competition Commission to secure the breakup of BAA's near monopoly of airports serving London and in the Scottish lowlands. The benefits arise through competition to attract airlines and passengers in terms of quality of service and price, which in turn increase the number of air services offered across the North as a whole and reduces the cost of travel overall.

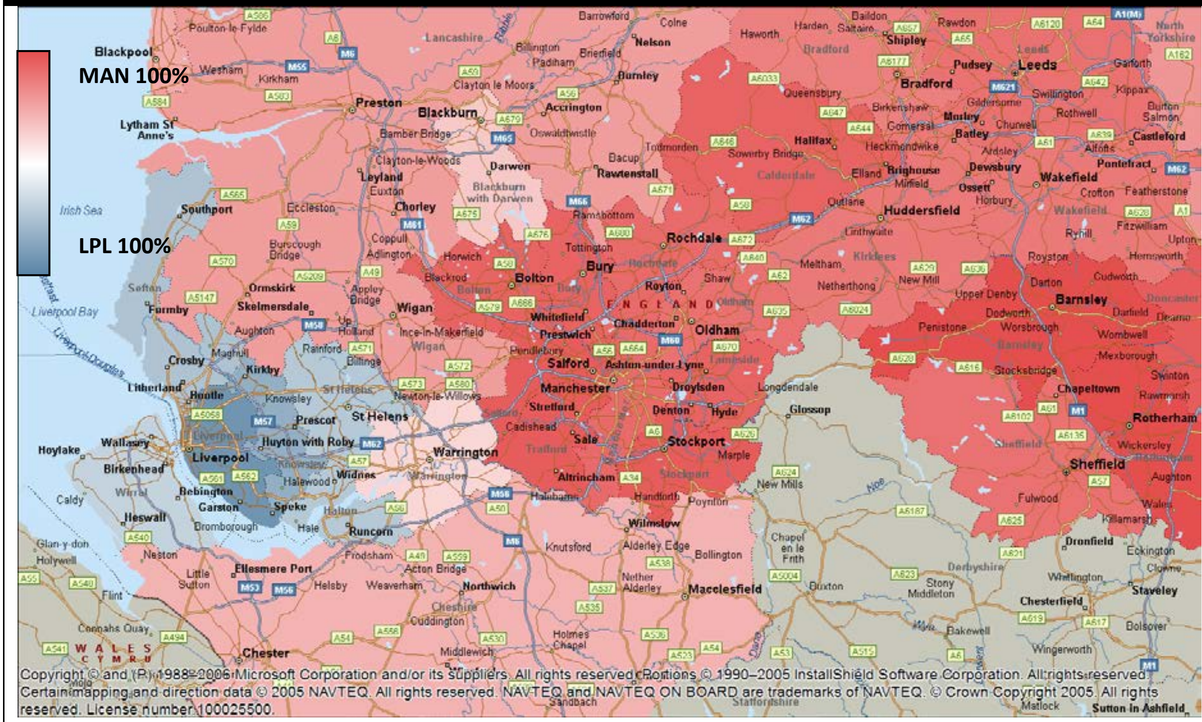
9.16 However, a balance needs to be struck between encouraging competitive airport provision and the benefits from a degree of concentration to allow larger airports to avail of network synergies and deliver routes which would not otherwise be served at all. Indeed, the EU State Aid Guidelines make clear that, in a liberalised competitive market, the Commission would not expect to see ongoing subsidy from the public sector to loss making airports within a 60 minute catchment area of each other.

9.17 As we have identified, reducing surface access times is key to helping the North's airports to deliver more direct air connections, in particular new long haul services from Manchester. If the journey times to Manchester Airport can be improved, it would bring more of the North within 60, 90 and 120 minutes of the Airport, so making it more attractive for airlines to initiate new services which would only otherwise be available at airports outside of the North. As a consequence, to the extent that the international connectivity offered from Manchester has been a factor in supporting the stronger growth and internationalisation of the economy in the immediately surrounding area, reducing the surface journey would allow this benefit to be spread further, as Manchester would be perceived as 'local' in terms of businesses located in Sheffield and Leeds for example. Where direct services exist from Manchester to places such as New York and Chicago, using Manchester is already the preferred choice for travellers to/from these cities but the existing surface journey time may act as a deterrent to investment and deter innovation and global expansion of trade. Such surface access improvements have the potential to help these cities penetrate global markets better.

9.18 These benefits may not extend as far as Newcastle. Hence, delivering enhanced global connectivity to the North East will require Newcastle Airport to improve its long haul offer, albeit to destinations which are likely to be already served from Manchester.

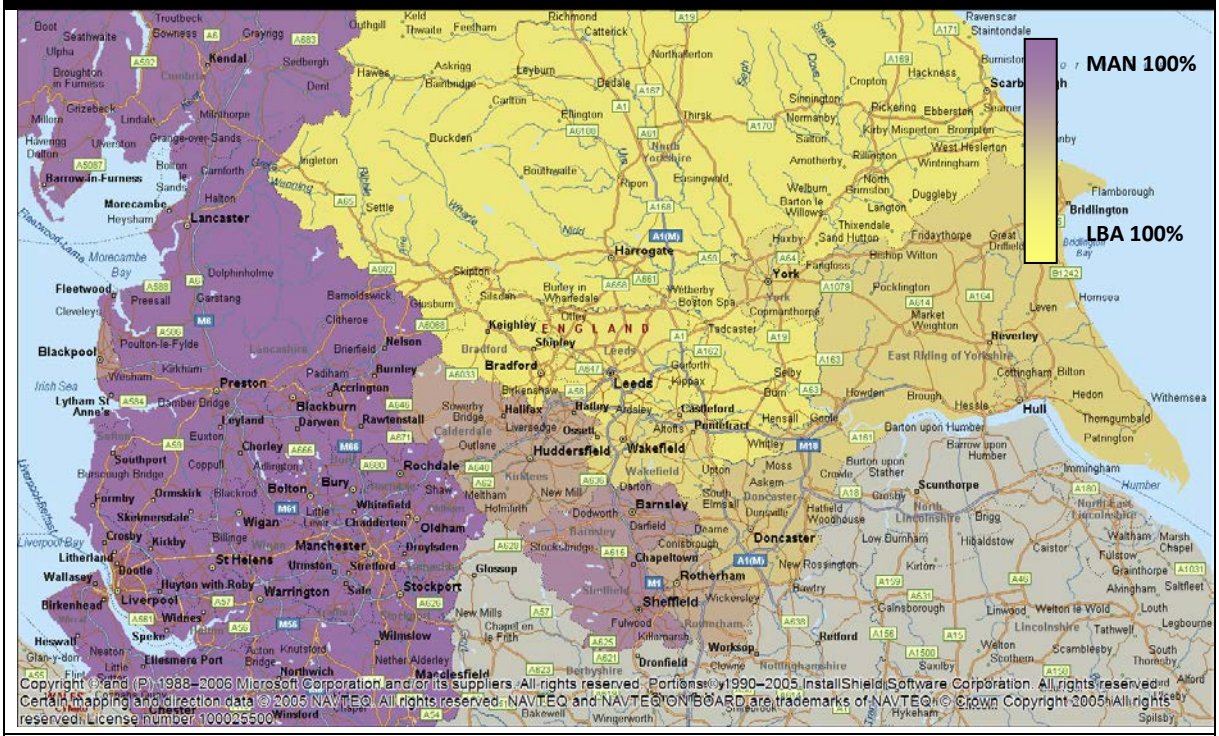
9.19 Whilst there are clear benefits to the North from enabling Manchester to support a broader portfolio of long haul services, the effect of improving surface access to Manchester in isolation has the potential to denude the catchment areas of other neighbouring airports making it more difficult for them to develop and sustain a broader portfolio of short haul services to meet local catchment area needs and deliver local connectivity. This is well illustrated by the existing short haul market shares on routes offered at a high frequency from both Liverpool and Manchester Airports and both Leeds Bradford and Manchester Airports as illustrated in **Figures 9.2** and **9.3**. Improving access times to Manchester Airport would reduce the scale of the catchment areas available to neighbouring airports so reducing the range and frequency of services they could support unless counterbalancing improvements in their local accessibility are made. This is important in the light of the significant role played by the other airports locally both in terms of delivering short haul connectivity (and potentially some long haul connectivity on key routes in the longer term) as well as delivering local economic benefit through their operations in terms of jobs and GVA.

Figure 9.2: Manchester Airport Market Share compared to Liverpool Airport on Shared Short Haul Routes



Source: York Aviation

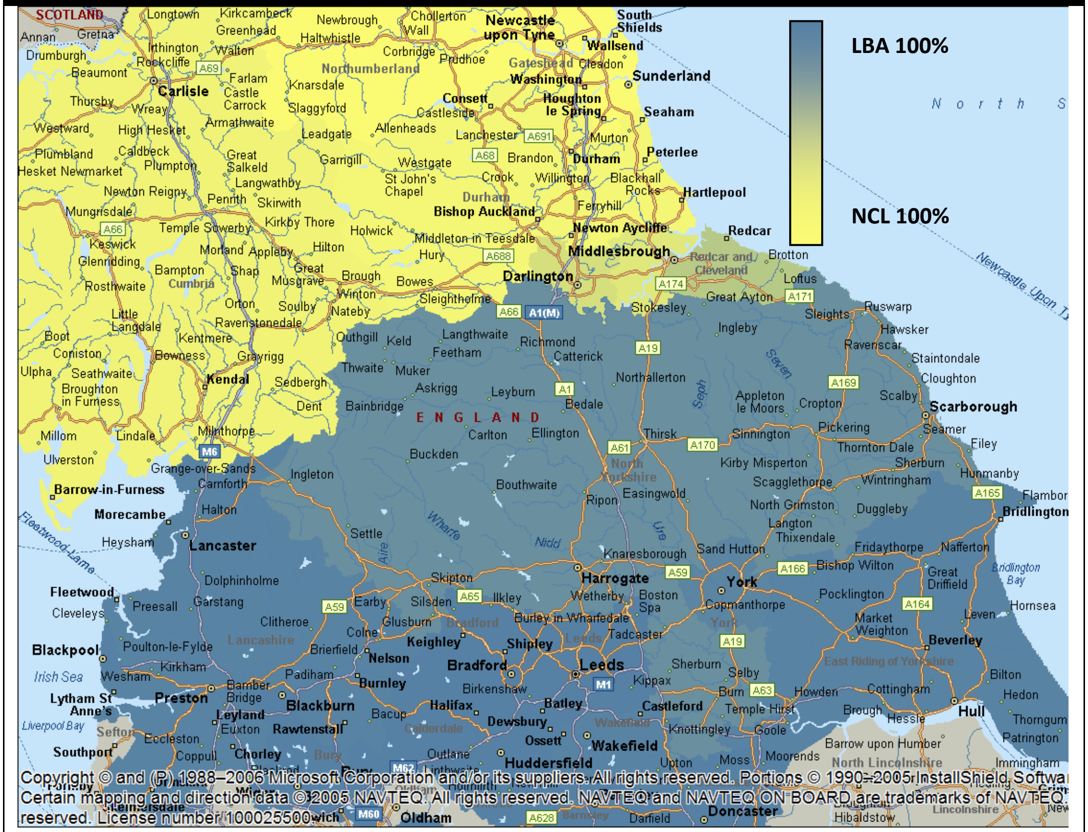
Figure 9.3: Manchester Airport Market Share compared to Leeds Bradford Airport on Shared Short Haul Routes



Source: York Aviation

9.20 Whilst the market across the M62 corridor is highly competed, it is notable that the market in the North East appears much more self-contained. To some degree, this is evident in terms of the extent to which Manchester Airport penetrates the North East market in Figure 8.4, where Manchester's market share of the market is low. However, the same distinct watershed is also evident on short haul routes as between Newcastle and Leeds Bradford Airports as shown in **Figure 9.4**. Whilst strategic improvements to Transpennine road and rail links will reduce the surface journey times from the North East to Manchester, it will still leave journey times beyond the 90 minute mark where passengers prefer to use Manchester compared to alternative indirect routings from the local airports. This suggests that the requirements of the North East for international air connectivity will continue to be met largely from Newcastle Airport for the foreseeable future, with relatively greater dependence on hub connections.

Figure 9.4: Newcastle Airport Market Share compared to Leeds Bradford Airport on Shared Short Haul Routes



Source: York Aviation

Interventions Required to Deliver Air Connectivity Improvements Required to Support Economic Growth

9.21 In Section 7, we identified the potential areas for intervention as

- Surface access improvements.
- A coordinated approach to Route Development, including tourism.
- Air Passenger Duty.

9.22 Our consultations did not reveal particular issues around airport capacity or facilities as being shortcomings preventing the beneficial enhancement of international connectivity for the foreseeable future, albeit that there were some comments regarding short term capacity short falls at peak periods at Manchester Airport, which are expected to be overcome through the planned transformation programme there. In the longer term, it may be expected that there will be a need for enhancement of facilities across at least the larger of the airports in line with their Master Plans but no specific intervention can be identified at this stage. In any event, State Aid guidelines would require such improvements to be funded primarily by the airports themselves other than at the very small airports, such as Carlisle which has recently received LEP funding to allow the infrastructure to be upgraded. However, there would be a role for TfN in lending support to airport improvement programmes as they come forward through the planning system where there are demonstrable connectivity benefits, including those which provide supporting revenue streams (enabling development) which can be demonstrated to be in support of the overall objective.

9.23 Nor do we set out specific roles or an overarching strategy for the North's airports as this would be inappropriate in the liberalised air transport market which encourages competition between airports. However, our analysis of route opportunities in Section 8 does give some indication of the different roles which the airports can play.

Surface Access

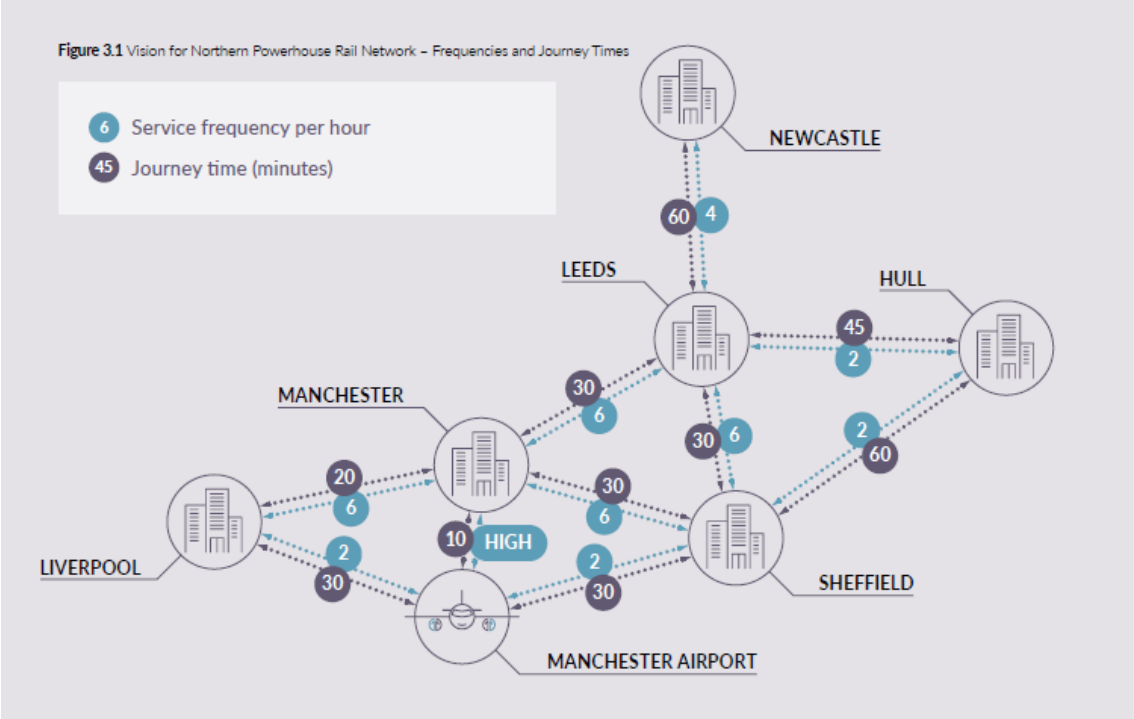
9.24 In the previous section, we identified the potential to deliver new direct connections airport by airport across the North. In the case of long haul routes, we assumed as a start point the proposed strategic improvements in surface access, i.e. HS3 and the Transpennine Tunnel and the target improvements in inter-city journey times set out in One North. Our assumption, therefore, has been that these strategic routes will be connected directly to Manchester Airport to support its strategic role as a global gateway. These will be important Pan-North interventions but, as we have explained above, it will be important at the City Region level to improve local access to the airports, so that the benefits of local air connectivity, particularly in short haul markets, can be retained and enhanced. We set out the interventions airport by airport below by reference to other TfN workstreams.

9.25 We now identify the proposed surface access improvements for each airport and relate these to the proposed improvements identified in other workstreams, in particular the Strategic Local Connectivity workstream.

<u>Manchester</u>

9.26 As we have identified above, improvements in strategic access to Manchester Airport have the potential to deliver improved connectivity to the North by enabling the Airport to expand its catchment area to provide sufficient market to allow airlines to operate a broader range of global air connections viably. This would require the improvements in rail access envisaged in the Transport for the North Spring 2016 Report as reproduced in **Figure 9.5** below and equivalent improvements to road access.

Figure 9.5: Northern Powerhouse Target Strategic Rail Access



9.27 As we have identified, 90 minutes surface access is something of a critical threshold to see Manchester Airport attain higher market shares on long haul routes. Hence delivering improved global connectivity for the North will require the Airport to be linked directly to HS3 and the Transpennine tunnel. Furthermore, there would be benefits in terms of spreading the benefits of improved global connections from Manchester across the North into Lancashire, Cumbria and the Humber from the proposed direct connection, via a station at the Airport, into HS2.

9.28 In order to ensure improved access to Manchester Airport from the North and West, including Cumbria, it is important that the Golborne curve is provided as this would allow trains from the Airport to access the West Coast Mainline. It would also potentially facilitate fast access from Liverpool to the high speed network, making use of the HS2 tunnel into Manchester to provide a connection to HS3. We understand that the provision of this link is under review.

9.29 Manchester Airport's Long Term Access Strategy was also noted as a **TfN Endorsed** scheme in the Strategic Local Connectivity workstream. These are described as a series of local measures improving access to Manchester Airport from the South to be delivered around 2030-2035. Reference is also made to a second phase of SEMMMS (South East Manchester Multi-Modal Study). However, it is not clear what works would be involved or how the timing of these proposed improvements would address, for example, the need for improved access to the Airport from Cheshire as identified in our work or improved road access from the north and west.

9.30 The Airport's Surface Access Strategy identifies that, whilst the impact of airport traffic dissipates quickly on the Strategic Road network, congestion in the vicinity is an issue for the Airport and cites a number of schemes underway which will mitigate these impacts in the short term:

- A6 to Manchester Airport Relief Road (SEMMMS) improving access to Stockport, East Cheshire and Derbyshire;
- Highways England Pinch Point Schemes, including:
  - M56 J7 Eastbound; – this adds a 1km lane to the eastbound carriageway;
  - M56 Thorley Lane Bridge – a replacement bridge over the M56, designed to accommodate a western extension to the Metrolink network.
- M60 J8 to M62 J20 smart motorway scheme;
- A556 Knutsford to Bowdon Improvement;
- Airport Western access improvements between Terminal 2 and the M56 at Junction 6 to be complete by the time the Airport is handling 30 mppa.

It will be important to ensure that problems of congestion do not recur in future if the benefits on improved international connectivity are to be delivered and shared and this may well depend on other interventions as the economy and road usage grows, particularly to ensure that Manchester can act as a global gateway for most of the North, including Cumbria and the Humber.

Newcastle

9.31 The Newcastle Airport Link Road was classified as a **TfN Endorsed** scheme in the Strategic Local Connectivity Work Stream. This is proposed to link Newcastle Airport to the A1 and could be delivered by 2020, albeit the funding for this is not yet committed.

9.32 Other improvements which Newcastle Airport believe would improve the accessibility of the Airport from the local area comprise:

Immediate term

- Expansion of through ticketing and promotion partnerships, with for example First TransPennine and Northern Rail.

Short Term up to 5 years

- Further improvements to A1 Western Bypass, at Allerdene Bridge, Swalwell and the West Newcastle sections.

Medium Term up to 10 years

- Replacement of Metro rolling stock and extensions to Metro network, utilising heavier grade trains that are able to run from the Metro line onto the mainline. To include possible services from the Airport to Seaham, Hartlepool, Middlesbrough, Stockton, Carlisle, Washington, Blyth.
- Fast train from main points in Teesside and Carlisle to Newcastle Central.

- Support upgrade for the A69 and improved links between the Airport and A69 through an extension to the Airport – A1 link road.

Longer Term

- Improved rail to the Metro interchange at Newcastle Central Station;
- Link road between Airport and A19 at the Seaton Burn junction.

Liverpool

9.33 Improved access to Liverpool Airport was the only airport access scheme rated **TfN Supported** in the Strategic Local Connectivity workstream. This envisages both improved road and rail access to Liverpool Airport for delivery in the period 2024-2034. We understand that key component of the scheme comprise:

- *Eastern Access Road* - improved road access from the Motorway network from the end of the A5300 Knowsley Expressway accessing the Airport from the East to be included within the Strategic Road Network.
- *Direct Rail Link* to the Airport from the National rail network – ideally from Liverpool South Parkway. This could include linking the South Liverpool and Halewood areas into the Merseyrail network providing benefit to the local region but may be a longer term scheme given the Airport's current throughput.

9.34 In addition, the Airport considers it important to ensure completion of the Halton Curve project, which provides rail access from Chester, Wrexham and North Wales to Liverpool South Parkway and the Airport in the shorter term, as well as to ensure that future rail franchise decisions in both England and Wales take into account the importance of access to Liverpool Airport.

Leeds Bradford

9.35 There were no surface access schemes to benefit Leeds Bradford Airport identified within the Strategic Local Connectivity workstream. Despite this, improved rail connectivity to the Airport is seen as a priority within the city region. The emerging preferred scheme is for a Parkway Station to the north of Horsforth on the Leeds to Harrogate line with onward connection to Guiseley, following a feasibility study which considered heavy rail, light rail and a tram connection. The Parkway Station, as illustrated in **Figure 9.6**, would be connected to the Airport by bus connection and would improve rail connectivity to the Airport from the city region as well as York and Harrogate compared to the current bus link from the city centre. The provision of the Parkway Station would be underpinned by a commuter park and ride facility.

Figure 9.6: Proposed Leeds Bradford Airport Parkway Station

9.36 Alongside the provision of a Parkway Station, consideration is also being given to the construction of a road link to Leeds Bradford Airport, bypassing the village of Yeadon. The preferred option is a new road from the A65, running along the eastern edge of the airport before joining the A658 to the North. The road would provide an improved link between the Airport and the Leeds Outer Ring road a short distance to the south and beyond to Leeds centre, Bradford and the M62. The A658 provides connectivity to the A660, which is a key north-south link to Leeds in the south and North Yorkshire to the north and also across to Harrogate, the A1 and York beyond. The road would also open up potential employment land and is, hence, included within the draft Leeds Site Allocations Plan (SAP). Subject to a business case, construction of the road could commence by 2024.

Doncaster Sheffield

9.37 Doncaster Sheffield Airport will shortly benefit from the completed FARRRs road link to the M18. It is estimated that this will improve journey times to the Airport by 12 to 20 minutes from the centre of Sheffield, so extending the Airport's catchment area relative to Manchester. To some extent, the implications of this have been anticipated by Flybe in initiating a range of more business oriented services from the Airport in 2016, including services to Amsterdam, Berlin, Dusseldorf and Paris. In our analysis, we were unable to fully model the impact of this changes but it will contribute to counterbalancing the impact of strategic access improvements to Manchester Airport.

9.38 Over and above the FARRRS road, the Strategic Local Connectivity workstream identified a project to improve train and bus connectivity to Doncaster Sheffield Airport as a **Local Priority**. In the short to medium term, the Airport seeks improved bus connectivity to Doncaster but in the longer term the aspiration is for a rail station to be opened on the local line which passes adjacent to the Airport. Consideration is also being given locally to the scope for connecting directly to the East Coast Mainline, either through diversion of the line or construction of a Parkway Station. These connections have the potential to also serve the growing logistics cluster on the nearby iPort as well as on the airport site. As assessed in the Strategic Local Connectivity workstream, the benefits would principally be in terms of staff travel and the international connectivity impacts were not assessed.

Humberside

9.39 Humberside Airport did not identify any particular surface access schemes, although it has sought funding from the LEP to support the costs of upgrading X-ray equipment[81] and refurbishing the runway; so far without success. This provides an example of the types of investment in facilities, identified above, which might be required to ensure the continued operation of the current range of air services from an airport.

Durham Tees Valley

9.40 The Airport's Master Plan is aimed at securing the development of the airport towards a stronger focus on business passengers, underpinned by ancillary development including housing, hangars and logistics facilities. The full development of the logistics park to the south of the airfield is dependent on the provision of a new link road to the A67, which was approved late in 2015. There are also proposals to provide improved rail connections to Dinsdale Station in the short term and in the longer term to relocate Teesside Airport railway halt to provide improved access to the activities on the airport site, including the proposed residential community. These improvements in surface access will enhance the development of the cluster of business activities at Durham Tees Valley, our analysis would suggest that they would have little impact on improving strategic international connectivity for passengers from the North.

Carlisle

9.41 The main priority at Carlisle Airport is securing the necessary improvements in airport facilities to enable the commencement of commercial air services, supported by the Department of Transport's start-up aid. Should these services prove successful there may be a requirement to improve surface access from Carlisle city centre, including regular bus services and a review is underway. Links could potentially be provided to the rail network but the impact is expected to be relatively small.

[81] Required by 2018 to meet the latest EU standards.

Coordinated Marketing

9.42 Although we expect the majority of the required reduction in the generalised cost of using the North's airports to come through the implementation of a range of surface access improvements, this may not be sufficient on its own. As noted above, airlines are becoming more risk averse in terms of opening up new routes and there is intense competition across Europe to attract airlines to operate new air services.

9.43 As we have explained in Section 8, the Team Scotland coordinated approach to promoting Scotland and encouraging airlines to initiate new strategically important air services has proved successful in attracting new global connections, particularly to Edinburgh and Glasgow Airports. We recommend a similar initiative is developed for the North, working at the Pan-North level. There it should supplement the work of the LEPS at a local level but focus on globally significant new connections to the North.

9.44 It will be important that the work of 'Team North' is coordinated with more general tourism promotion activities to ensure that there is a linkage between the promotion of the North in key tourist markets reflects the connectivity offer, as well as the local product, given the evidence that tourists are more likely to visit where direct connections by air or sea exist.

Air Passenger Duty

9.45 We also identified in Section 8 that the high level of Air Passenger Duty levied in the UK was a major obstacle to the development of more air services to/from the North. There is not, however, consensus as to the most effective mechanism to reduce regional APD so we recommend that TfN works with stakeholders to identify the most appropriate mechanism to deliver maximum benefit to the North and to lobby Treasury accordingly.

9.46 In **Table 9.1** below, we summarise the recommended potential aviation related interventions to drive the required improvement in international connectivity. It should be noted that these have not been subject to individual value for money assessments at this stage as further work would be required to define the specific costs and benefits of each, which is beyond the scope of this initial evidence study.

Table 9.1: High Level Assessment of Aviation Related Potential Public Sector Interventions					
Category of intervention	**Intervention**	**Impact**	**Policy fit**	**Timescale**	**Conclusion**
Planning	TfN support for strategic airport planning applications aimed at ensuring sufficient airport capacity to support the required improvement in international connectivity, including schemes for ancillary development which can be demonstrated as critical to the ability of airports to deliver improved connectivity.	Ensure that there are no impediments to airports delivering improved connectivity.	Generally compliant with Aviation Policy, subject to specific consideration of environmental effects.	Ongoing	Recommended intervention.
Strategic Surface Access to Manchester Airport	Ensure that Manchester Airport is fully connected to HS2, HS3 and the TransPennine Tunnel.	Expand Manchester Airport's catchment area to support increased global air connections.	Good.	Medium to Long term.	Recommended intervention.
Surface Access – Manchester Airport General Improvements	Ensure that congestion bottlenecks on the immediate road network are overcome.	Maintain existing local surface access journey times and improve resilience.	Good.	Ongoing.	Recommended intervention.
Surface Access – Newcastle Airport A1 Link Roads	Provision of a Link road between the Airport and the A1.	Improves connections between the Airport and the sub-region.	Good.	Short term.	Recommended intervention.
Surface Access – Newcastle Airport Metro	Upgraded Metro rolling stock and network extensions,	Improved image and public transport access to the Airport.	Good.	Medium term.	Recommended intervention.

Surface Access – Newcastle Airport Wider improvements	Other road and rail schemes in the North East which would contribute to improving access to the Airport.	Improved accessibility within the North East.	Good	Long term.	Recommended intervention.
Surface Access – Liverpool Airport Eastern Link Road	Direct road connection into the Airport from the East to provide direct access to the M62.	Improve access to the Airport from North and East of the city centre. Reduce congestion on Speke Boulevard.	Good.	Medium term.	Recommended intervention.
Surface Access – Liverpool Airport Rail	Provision of a direct rail link from Parkway station connection to the Merseyrail network.	Improved public transport access from the City Centre.	Good.	Long term.	Recommended intervention.
	Ensuring that Liverpool South Parkway is recognised as a gateway to the Airport in franchise renewal.	Better connections across the North	Good.	Short term.	Recommended intervention.
Surface Access – Leeds Bradford Parkway Station	Provision of a Parkway Station serving Leeds Bradford Airport	Improved public transport access between Leeds Station and the Airport and to the North, with onward connections	Good.	Medium term	Recommended intervention.
Surface Access – Leeds Bradford Link Road	Link road connecting Leeds Bradford Airport to the A65 and A658.	Provides improved road connections to the North and to the Leeds Outer Ring Road.	Good.	Long term.	Recommended intervention.
Surface Access – Other Airports	Local action to improve public transport access to airports.	Local benefits to accessibility and sustainability.	Good.	Ongoing.	Local level intervention to be supported.

Coordinated Route Development and Tourism Marketing	Establishment of a 'Team North' to work with the airports to deliver more strategically important air routes to the North.	Improved air connectivity.	Good.	Ongoing.	Recommended intervention.
Air Passenger Duty	Facilitate the development of a scheme to reduce the burden of APD on airports and air services in the North.	Create the conditions where the perceived risk to the airlines of initiating new air services is reduced and ameliorating the risk of detrimental effects from the proposed reduction in APD at the Scottish airports.	Possible conflict with Treasury.	Short term.	Recommended intervention.
Source: York Aviation					

9.47 Whilst the potential reductions in journey times to access airports are substantial if all of these interventions are delivered – we note the aspiration for the Transpennine Tunnel to reduce the generalised cost of travel between Manchester and Sheffield by 35% according to the National Infrastructure Commission and the aspiration for a 30 minute rail journey time between Manchester and Leeds and Sheffield city centres – we are not able to estimate the combined effect of the package of interventions, as this would require more detailed modelling of the specific impacts of each individual scheme on the totality of passenger throughput at each airport and would require more information than is currently available about frequencies of service and the 'last mile' journey time to the airport. However, given the scale of overall reduction in generalised cost required to secure the uplift in international connectivity by 2050, it is likely that most if not all of the identified schemes will be required to support the IER's Transformational Scenario, as well as action to alleviate the burden of Air Passenger Duty and to stimulate the market through coordinated activity. Further work will be required to assess the business case for any individual intervention.

Shipping Connectivity Improvements to Support Economic Growth

9.48 In order to establish our recommendations for potential public sector interventions in relation to international passenger ferry connectivity and cruise activity, we have used the following two criteria for the assessment of each potential measure:

- Impact in terms of enhancing or maintaining international passenger ferry connectivity and cruise activity in the North;

- ‘Fit’ with existing UK government policy and, where appropriate, its likely legality.

9.49 A long list of potential interventions was developed based on a review of reports from other TfN work streams, the results of the stakeholder consultation exercise and MDS Transmodal’s consultant’s own knowledge. The potential interventions were classified as follows:

- Surface access schemes: schemes that will improve ‘last mile’ access to ferry and cruise ports and also improve wider network capacity and resilience. In general terms such schemes reduce journey times and therefore reduce the generalised cost of passenger transport to and from the ports.
- Port infrastructure schemes: schemes that will improve the capacity and capability of ferry terminals by, in particular, developing RORO terminals outside lock gates. Such schemes allow the ferry operators to reduce crossing times and increase the utilisation of their vessels, thereby increasing the viability of their services. In addition, this general category of intervention also includes the development of LNG bunkering for ferries and cruise ships which would provide the necessary bunkering facilities to allow future generations of ships to use a low sulphur fuel which is also more cost effective for longer distance ferry services.
- Shipping service support: schemes that improve the viability of ferry services. Direct operating subsidy is likely to be illegal under state aid rules because it would distort the shipping market, but there may be scope for support for shipping companies to make technical adaptations of their vessels to meet the SECA regulations. There may also be a case for carrying out independent feasibility work on the potential for the reinstatement of a ferry service between Newcastle and Norway.
- Marketing support: co-ordinated marketing campaign by all the relevant tourism agencies and the cruise and ferry operators to promote both the North as a destination and direct access to northern tourist attractions via ferry services to northern ports.

9.50 In **Table 9.2** below, we set out a summary of the recommended interventions, a description of the high level assessment against the two criteria and the timescale over which they might be implemented. However, as with the recommended aviation interventions, these have not been subject to detaled value for money assessment at this stage.

Table 9.2: High Level Assessment of Shipping Related Potential Public Sector Interventions

Category of intervention	Intervention	Impact	Policy fit	Timescale	Conclusion
Surface access schemes – road	A63 Castle Street Stage 2: Programme entry being - 1.5km improvement at A63 Castle Street, including a new split level junction.	Reduce journey times for car passengers to/from Port of Hull’s ferry terminals.	Good.	Medium term	Recommended intervention.

Surface access schemes – road	A5036 Princess Way - Port of Liverpool Access Stage 0: Committed Scheme (ground investigations/surveys conducted Summer 2015) - Comprehensive upgrade to improve access to the Port of Liverpool from the A5036	Reduce journey times for car passengers to/from Port of Liverpool's ferry terminal in Gladstone Dock.	Good.	Medium term	Recommended intervention.
Surface access schemes – road	Improvements to the capacity and resilience of the strategic network across the North e.g. M60 Quadrant, North, on-going management schemes for the M60/M62	Reduce journey times for car passengers to/from northern ferry and cruise ports.	Good.	Medium term	Recommended intervention.
Surface access schemes – rail	Improvements to the capacity and frequency of rail services across the North, particularly east-west across the Pennines.	Reduce journey times for, in particular, cruise passengers embarking and disembarking cruise ships in the North.	Good.	Medium term	Recommended intervention.
Surface access schemes – rail	Review of public transport connections between railway stations and cruise/ferry terminals.	Increase convenience of using public transport for, in particular, cruise passengers embarking or disembarking cruise ships in the North.	Good.	Short term	Recommended intervention.

Port infrastructure schemes	Develop second in-river terminal at Hull for the Hull-Zeebrugge service	Enhances economics of the ferry service by allowing a faster crossing time and greater utilisation of the vessels; reduces congestion through locks for the port operator.	May not be in line with UK ports policy.	Medium term	May need to be funded by the private sector, but public sector should investigate potential for using Local Growth Fund
Port infrastructure schemes	Develop in-river ferry terminal at Liverpool for Liverpool-Dublin service	Enhances economics of the ferry service by allowing a faster crossing time and greater utilisation of the vessels; reduces congestion through locks for the port operator.	May not be in line with UK ports policy.	Medium term	May need to be funded by the private sector, but public sector should investigate potential for using Local Growth Fund
Port infrastructure schemes	Public sector support for Liquid Natural Gas (LNG) bunkering and cold ironing infrastructure at ports.	Provides bunkering infrastructure for low sulphur and lower cost fuel; also. allows ships to have a power supply in port without damaging air quality	Good. In line with EU policy to assist the shipping industry to adapt to the SECA regulatory environment.	Medium term	Recommended intervention
Shipping service support	Operating subsidy to support existing and new passenger ferry services.	Increases the profitability of the services, supporting their long term future.	Likely to be illegal under state aid rules as the shipping industry is fully liberalised.	-	Not recommended.

Shipping service support	EU support via Motorways of the Sea for the retrofit of alternative fuel technology on ferries or for part-funding of new technology to reduce sulphur emissions.	Reduces the impact of introducing new technology to meet new regulations on the economics of North Sea ferry services.	Good. In line with EU policy to assist the shipping industry to adapt to the SECA regulatory environment.	Short term	Recommended intervention
Shipping service support	Public sector funding of feasibility work to assess the economic viability of a mixed passenger and freight ferry service form Newcastle to Norway.	Would establish the likely economic feasibility of a re-started service.	Good.	Short term	Recommended intervention
Marketing Support	Co-ordinated marketing initiative to promote the North of England as a whole as a tourist destination, linked to accessibility via a northern port.	Would encourage overseas tourists both to take cruises involving calls at northern ports but also to access the North directly via the North's ferry ports.	Good.	Short term	Recommended intervention
Source: MDS Transmodal					

9.51 It should be noted that more specific analysis will be required to support individual potential interventions, taking into account the specific improvements which can be made to generalised cost on a case by case basis. Such detailed cost benefit analysis is beyond the scope of this initial study.

Economic Benefits of Improving International Connectivity

9.52 The basis of our analysis has been to assess the international connectivity requirement to support the Transformational economic agenda. Our analysis establishes the scale of reduction in generalised cost required to deliver this uplift to ensure that international connectivity plays its part in driving productivity and innovation, the two key drivers identified in the IER.

9.53 The GVA contribution of delivering this uplift in international connectivity amounts to some £1.9 billion in 2050 at 2015 prices, representing approximately 4% of the overall uplift in GVA sought within the IER[82].

9.54 Taken over the period to 2050, the value of the improvement in international connectivity £9.6 billion discounted over the period to 2050. Over a 60 year appraisal period, taking into account that the strategic surface access improvements will only be delivered over the medium to long term, the discounted value of the potential uplift in international connectivity is £23.4 billion. In the context of the North, this contribution is substantial and gives an overall measure of the significance of the supportive interventions identified. Further work will be required as a next step to refine the analysis for each specific intervention and to make or contribute to the overall business case for each individual scheme.

Alongside this boost to GVA in the wider economy from improved connectivity, the increased activity at the airports alone will increase employment at airports by between 9,000 and 25,000 FTE jobs by 2050 compared to today, with a GVA boost from operational activities of around £2 billion in 2050 at current values. The additional employment as a consequence of attaining Transformational levels of growth is between 7,000 and 9,000 of these employees, delivering GVA of £550 million more than the baseline. Such enhanced activity is likely to be highly significant at the local level around each airport and could justify other interventions to support the local economic role of individual airports.

9.55 Not only will these interventions help to secure the desired uplift in the economic performance of the North but, to the extent that accessibility to airports is improved, this will enable more of the North to benefit from the perceived enhanced international connectivity which already appears to be a factor driving a more international economy in the vicinity of Manchester Airport

[82] To put the significance of the uplift in connectivity required in the North, an additional runway at Heathrow of Gatwick is expected to add 0.5-0.75% to UK GDP overall.

APPENDIX A: BASELINE DATA – AIRPORTS

Assignment of CAA Districts to TfN Areas			
TfN Area	**District/City/County**	**TfN Area**	**District/City/County**
Cheshire & Warrington	Cheshire East	Liverpool CR	Halton
	Cheshire West and Chester		Knowsley
	Warrington		Liverpool
Cumbria	Allerdale		Sefton
	Barrow-in-Furness		St. Helens
	Carlisle		Wirral
	Copeland	North East CR	Berwick-upon-Tweed
	Eden		Castle Morpeth
	South Lakeland		Chester-le-Street
Greater Manchester	Bolton		County Durham
	Bury		Durham
	Manchester		Gateshead
	Oldham		Newcastle upon Tyne
	Rochdale		North Tyneside
	Salford		Northumberland
	Stockport		South Tyneside
	Tameside		Sunderland
	Trafford	North Yorkshire	Craven
	Wigan		East Riding of Yorkshire
Hull & Humber CR	Kingston upon Hull		Hambleton
Lancashire	Blackburn with Darwen		Harrogate
	Blackpool		Richmondshire
	Burnley		Ryedale
	Chorley		Scarborough
	Fylde		Selby
	Hyndburn		York
	Lancaster	Sheffield CR	Barnsley
	Pendle		Doncaster
	Preston		Rotherham
	Ribble Valley		Sheffield
	Rossendale	Tees Valley CR	Darlington
	South Ribble		Hartlepool
	West Lancashire		Middlesbrough
	Wyre		Redcar and Cleveland
Leeds CR	Bradford		Stockton-on-Tees
	Calderdale		
	Kirklees		
	Leeds		
	Wakefield		

Note: The analysis deals with the North of England as defined by the three regions of the North East, the North West and Yorkshire and the Humber, although recognise that Hull and the Humber CR and Sheffield CR include areas which fall outside of this definition. These areas are dealt with in Appendix B.

Manchester International Airport Profile

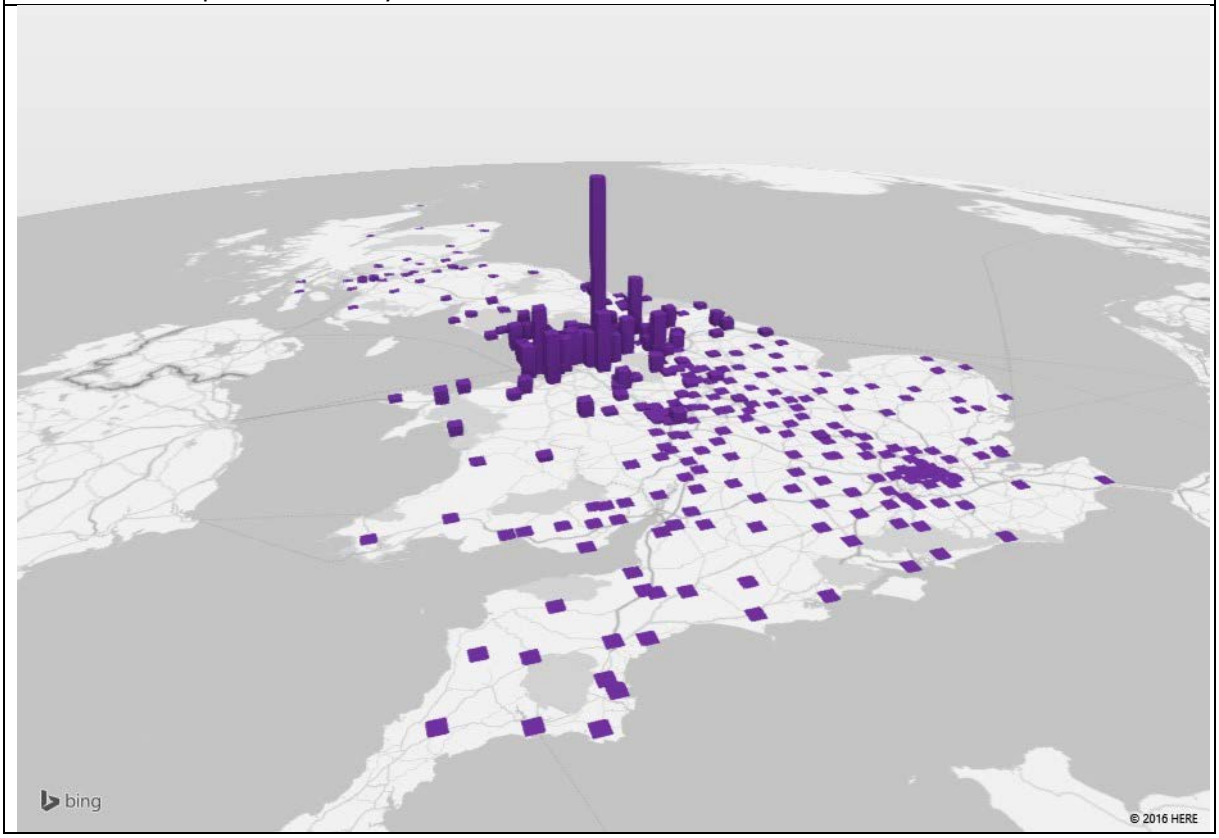
Total Passengers on International Flights 2015	20.7 million
Of which	
Scheduled	*16.8 million*
Charter	*3.9 million*
Approximate % of Passengers on International Flights Originating from Northern Powerhouse Region (2014)	78%
Total Domestic Passengers 2015	2.4 million
Northern Powerhouse Region passengers flying internationally via London Heathrow (2014)	550,000
Northern Powerhouse Region passengers flying internationally via other UK Airports (2014)	0
Number of International Destinations Served in 2015	189
Number of Airlines Serving International Destinations in 2015	54
Total Freight 2015 (tonnes)	99,234
Of which	
Bellyhold	*89,725*
Pure Freighter	*9,482*
Total International Freight 2015 (tonnes)	98,366

Top 20 Direct International Destinations 2015				
Rank	Destinations	2015 Scheduled Pax	2015 Charter Pax	2015 Total Passengers
1	Dubai	861,194	0	861,194
2	Dublin	856,774	1,883	858,657
3	Amsterdam	852,741	679	853,420
4	Tenerife (TFS)	583,071	142,422	725,493
5	Palma	433,952	232,451	666,403
6	Lanzarote	563,145	67,491	630,636
7	Malaga	487,384	69,336	556,720
8	Paris (CDG)	477,306	437	477,743
9	Orlando (MCO)	450,575	0	450,575
10	Abu Dhabi	431,364	309	431,673
11	Faro	377,117	47,279	424,396
12	Dalaman	168,662	243,115	411,777
13	Lanzarote	311,830	85,850	397,680
14	Frankfurt	390,015	185	390,200
15	Munich	323,083	1,547	324,630

16	Copenhagen	297,187	0	297,187
17	Doha	293,357	0	293,357
18	Barcelona	281,852	2,513	284,365
19	Sharm El Sheikh	114,258	167,439	281,697
20	Paphos	155,695	111,909	267,604

Inbound/Outbound and Business/Leisure Splits for NP Region Passengers			
	UK Outbound	Foreign Inbound	Grand Total
Business	1,590,000	950,000	2,540,000
Leisure	11,310,000	2,240,000	13,550,000
Grand Total	12,900,000	3,190,000	16,090,000

Manchester Airport Demand By UK District



Newcastle International Airport Profile

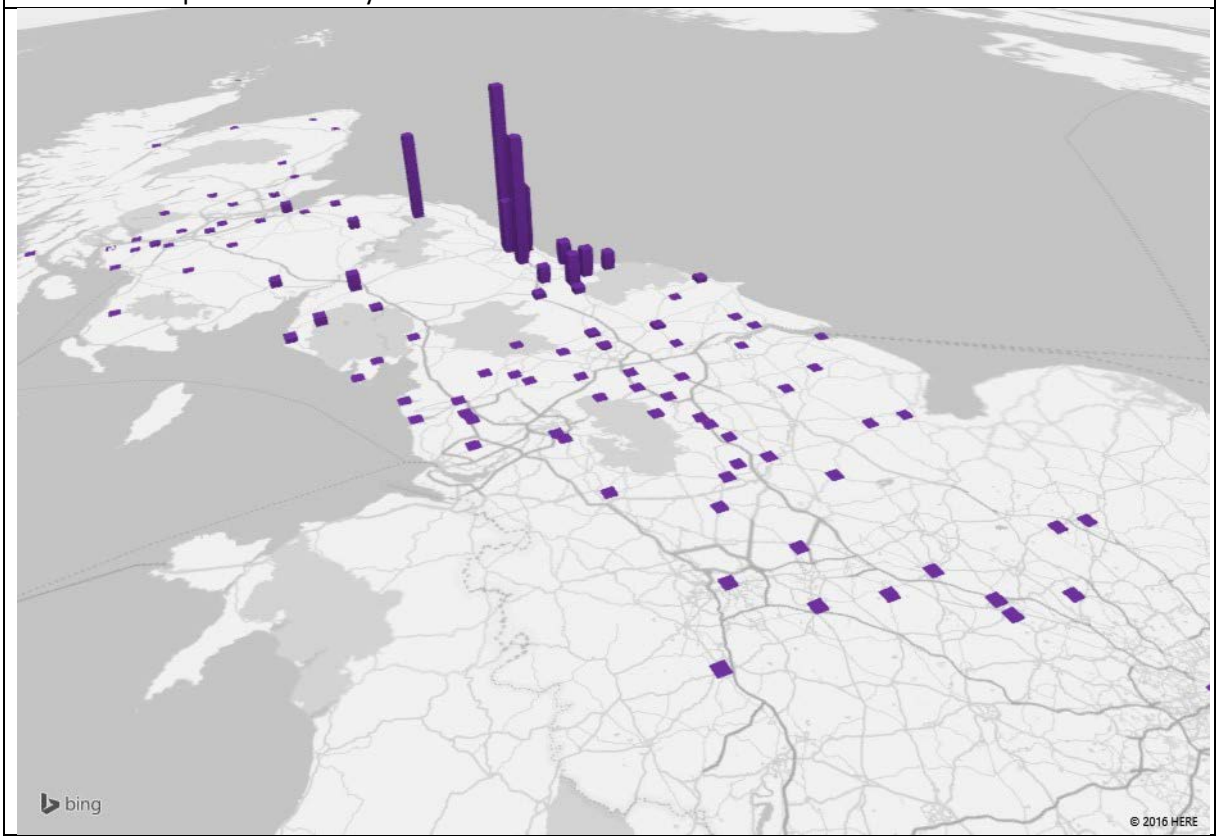
Total Passengers on International Flights 2015	3.4 million
Of which	
Scheduled	*2.4 million*
Charter	*0.9 million*
Approximate % of Passengers on International Flights Originating from Northern Powerhouse Region (2014)	84%
Total Domestic Passengers 2015	1.1 million
Northern Powerhouse Region passengers flying internationally via London Heathrow (2014)	350,000
Northern Powerhouse Region passengers flying internationally via other UK Airports (2014)	50,000
Number of International Destinations Served in 2015	67
Number of Airlines Serving International Destinations in 2015	21
Total Freight 2015 (tonnes)	3,739
Of which	
Bellyhold	*3,045*
Pure Freighter	*694*
Total International Freight 2015 (tonnes)	3,598

Top 20 Direct International Destinations 2015				
Rank	Destinations	2015 Scheduled Pax	2015 Charter Pax	2015 Total Passengers
1	Amsterdam	379,759	253	380,012
2	Alicante	196,228	38,405	234,633
3	Dubai	233,489	0	233,489
4	Palma	137,074	89,989	227,063
5	Dublin	198,425	67	198,492
6	Tenerife (TFS)	116,217	58,313	174,530
7	Malaga	150,603	19,252	169,855
8	Paris (CDG)	153,815	55	153,870
9	Dalaman	26,985	99,532	126,517
10	Faro	101,171	9,298	110,469
11	Lanzarote	66,833	28,566	95,399
12	Ibiza	36,767	38,937	75,704
13	Barcelona	66,132	147	66,279
14	Geneva	57,053	4,122	61,175
15	Sharm El Sheikh	0	49,521	49,521

16	Corfu	13,330	33,793	47,123
17	Paphos	20,379	25,957	46,336
18	Malta	36,230	5,706	41,936
19	Larnaca	7,809	33,090	40,899
20	Antalya	7,857	32,773	40,630

Inbound/Outbound and Business/Leisure Splits for NP Region Passengers			
	UK Outbound	Foreign Inbound	Grand Total
Business	250,000	180,000	430,000
Leisure	2,690,000	380,000	3,070,000
Grand Total	2,940,000	560,000	3,500,000

Newcastle Airport Demand By UK District



Liverpool John Lennon Airport Profile

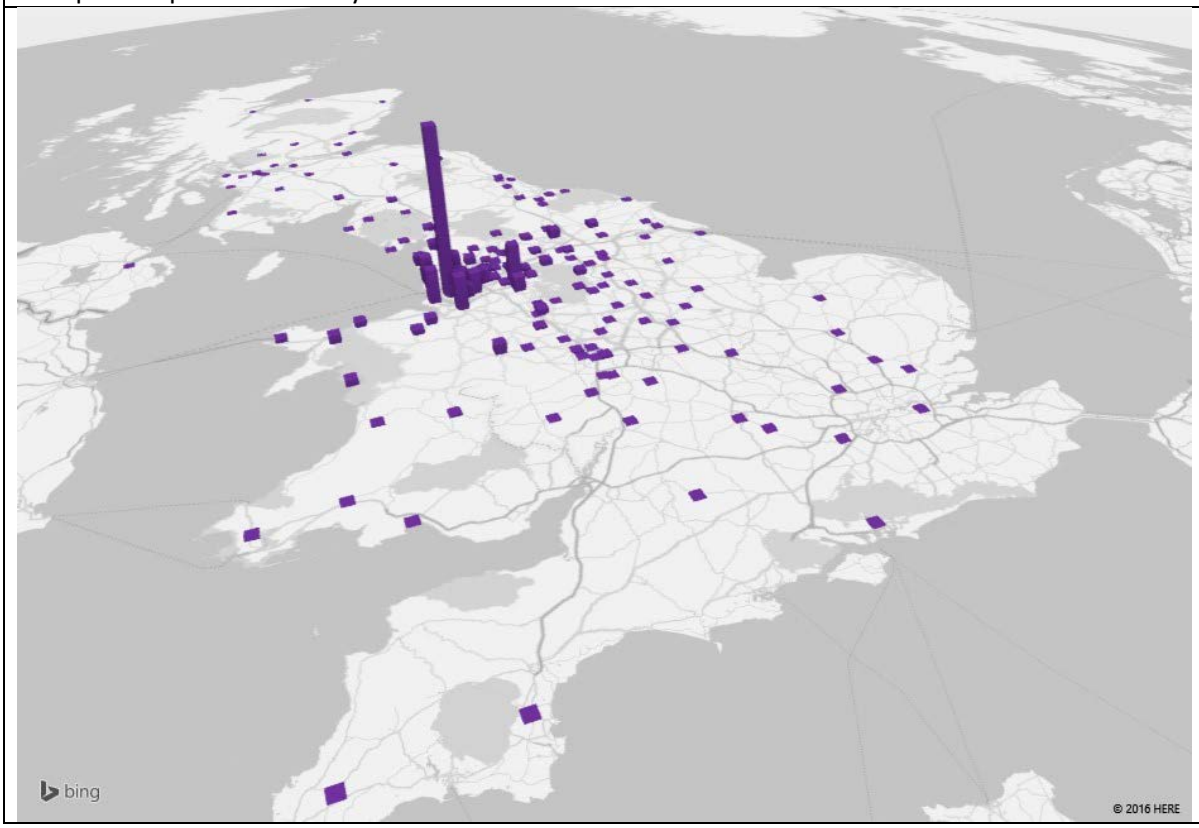
Total Passengers on International Flights 2015	3.4 million
Of which	
Scheduled	*3.4 million*
Charter	*0.0 million*
Approximate % of Passengers on International Flights Originating from Northern Powerhouse Region (2014)	85%
Total Domestic Passengers 2015	0.9 million
Northern Powerhouse Region passengers flying internationally via London Heathrow (2014)	0
Northern Powerhouse Region passengers flying internationally via other UK Airports (2014)	0
Number of International Destinations Served in 2015	60
Number of Airlines Serving International Destinations in 2015	9
Total Freight 2015 (tonnes)	219
Of which	
Bellyhold	*219*
Pure Freighter	*0*
Total International Freight 2015 (tonnes)	53

Top 20 Direct International Destinations 2015				
Rank	Destinations	2015 Scheduled Pax	2015 Charter Pax	2015 Total Passengers
1	Dublin	335,605	0	335,605
2	Barcelona	232,083	0	232,083
3	Amsterdam	227,383	0	227,383
4	Alicante	214,309	0	214,309
5	Malaga	194,064	0	194,064
6	Palma	181,544	0	181,544
7	Faro	169,490	0	169,490
8	Geneva	132,014	187	132,201
9	Krakow	104,733	0	104,733
10	Madrid	95,716	56	95,772
11	Paris (CDG)	88,818	125	88,943
12	Nice	86,440	0	86,440
13	Knock	82,429	0	82,429
14	Cork	77,811	0	77,811
15	Berlin (SXF)	75,544	0	75,544

16	Warsaw (WMI)	74,895	0	74,895
17	Lanzarote	71,390	0	71,390
18	Wroclaw	57,519	0	57,519
19	Fuerteventura	56,388	0	56,388
20	Bratislava	54,677	0	54,677

Inbound/Outbound and Business/Leisure Splits for NP Region Passengers			
	UK Outbound	Foreign Inbound	Grand Total
Business	120,000	80,000	200,000
Leisure	1,830,000	660,000	2,490,000
Grand Total	1,950,000	740,000	2,690,000

Liverpool Airport Demand By UK District



Leeds/Bradford International Airport Profile

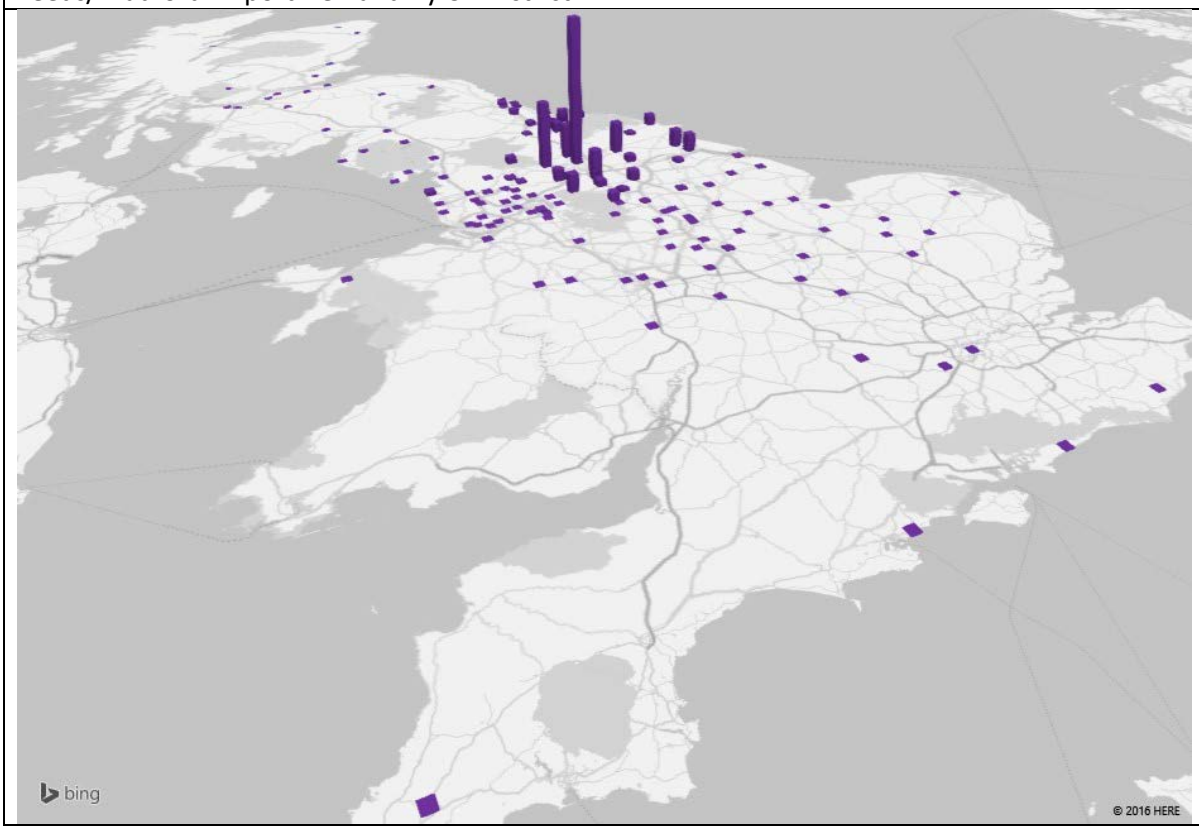
Total Passengers on International Flights 2015	3.0 million
Of which	
Scheduled	*2.9 million*
Charter	*0.1 million*
Approximate % of Passengers on International Flights Originating from Northern Powerhouse Region (2014)	93%
Total Domestic Passengers 2015	0.4 million
Northern Powerhouse Region passengers flying internationally via London Heathrow (2014)	100,000
Northern Powerhouse Region passengers flying internationally via other UK Airports (2014)	0
Number of International Destinations Served in 2015	64
Number of Airlines Serving International Destinations in 2015	9
Total Freight 2015 (tonnes)	7
Of which	
Bellyhold	*7*
Pure Freighter	*0*
Total International Freight 2015 (tonnes)	6

Top 20 Direct International Destinations 2015				
Rank	Destinations	2015 Scheduled Pax	2015 Charter Pax	2015 Total Passengers
1	Dublin	284,404	0	284,404
2	Alicante	272,104	0	272,104
3	Amsterdam	250,568	0	250,568
4	Malaga	231,108	0	231,108
5	Palma	194,405	31,981	226,386
6	Faro	188,599	0	188,599
7	Tenrife (TFS)	149,768	18,716	168,484
8	Lanzarote	114,115	0	114,115
9	Dalaman	58,690	18,637	77,327
10	Barcelona	76,461	0	76,461
11	Ibiza	66,482	9,098	75,580
12	Murcia	58,466	0	58,466
13	Fuerteventura	56,287	0	56,287
14	Krakow	54,714	458	55,172
15	Dusseldorf	50,289	158	50,447

16	Paris (CDG)	49,110	0	49,110
17	Malta	43,880	0	43,880
18	Gdansk	40,357	0	40,357
19	Geneva	40,254	6	40,260
20	Heraklion	30,213	8,898	39,111

Inbound/Outbound and Business/Leisure Splits for NP Region Passengers			
	UK Outbound	Foreign Inbound	Grand Total
Business	100,000	80,000	180,000
Leisure	2,080,000	330,000	2,410,000
Grand Total	2,180,000	410,000	2,590,000

Leeds/Bradford Airport Demand By UK District



Doncaster/Sheffield Airport Profile

Total Passengers on International Flights 2015	0.8 million
Of which	
Scheduled	*0.5million*
Charter	*0.4 million*
Approximate % of Passengers on International Flights Originating from Northern Powerhouse Region (2014)	73%
Total Domestic Passengers 2015	0 million
Northern Powerhouse Region passengers flying internationally via London Heathrow (2014)	0
Northern Powerhouse Region passengers flying internationally via other UK Airports (2014)	0
Number of International Destinations Served in 2015	37
Number of Airlines Serving International Destinations in 2015	5
Total Freight 2015 (tonnes)	2,538
Of which	
Bellyhold	*5*
Pure Freighter	*2,533*
Total International Freight 2015 (tonnes)	2,529

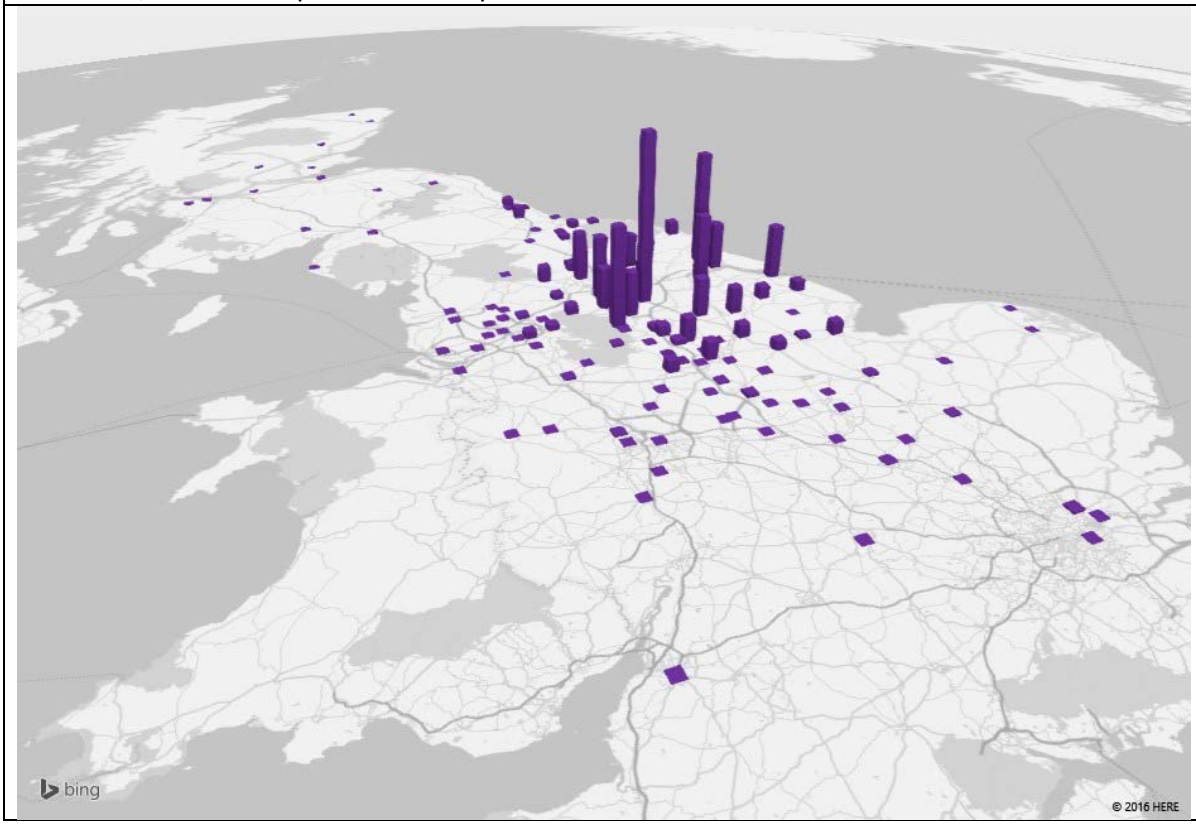
Top 20 Direct International Destinations 2015				
Rank	Destinations	2015 Scheduled Pax	2015 Charter Pax	2015 Total Passengers
1	Katowice	77,627	0	77,627
2	Gdansk	76,029	0	76,029
3	Palma	0	56,609	56,609
4	Poznan	54,101	0	54,101
5	Wroclaw	48,618	0	48,618
6	Warsaw (WAW)	44,157	0	44,157
7	Tenerife (TFS)	4,623	38,147	42,770
8	Vilnius	40,421	0	40,421
9	Malaga	1,356	37,139	38,495
10	Alicante	3,165	35,146	38,311
11	Riga	33,410	0	33,410
12	Bucharest	32,822	0	32,822
13	Dalaman	0	29,303	29,303
14	Paphos	0	23,159	23,159
15	Sharm El Sheikh	0	21,724	21,724

16	Ibiza	0	19,533	19,533
17	Kosice	19,314	0	19,314
18	Lanzarote	1,630	17,657	19,287
19	Las Palmas	1,298	17,318	18,616
20	Faro	0	17,884	17,884

For Summer 2016, Flybe will add a number of new destinations at Doncaster/Sheffield some of which will offer value to business travellers. This includes a daily service to Amsterdam and twice daily flights to Paris (CDG). A lower frequency service to Berlin may also prove attractive. The Flybe network does include a number of leisure destinations too and in totality could deliver 300-400,000 passengers if successful.

Inbound/Outbound and Business/Leisure Splits for NP Region Passengers			
	UK Outbound	Foreign Inbound	Grand Total
Business	10,000	10,000	10,000
Leisure	400,000	70,000	480,000
Grand Total	410,000	80,000	490,000

Doncaster/Sheffield Airport Demand By UK District



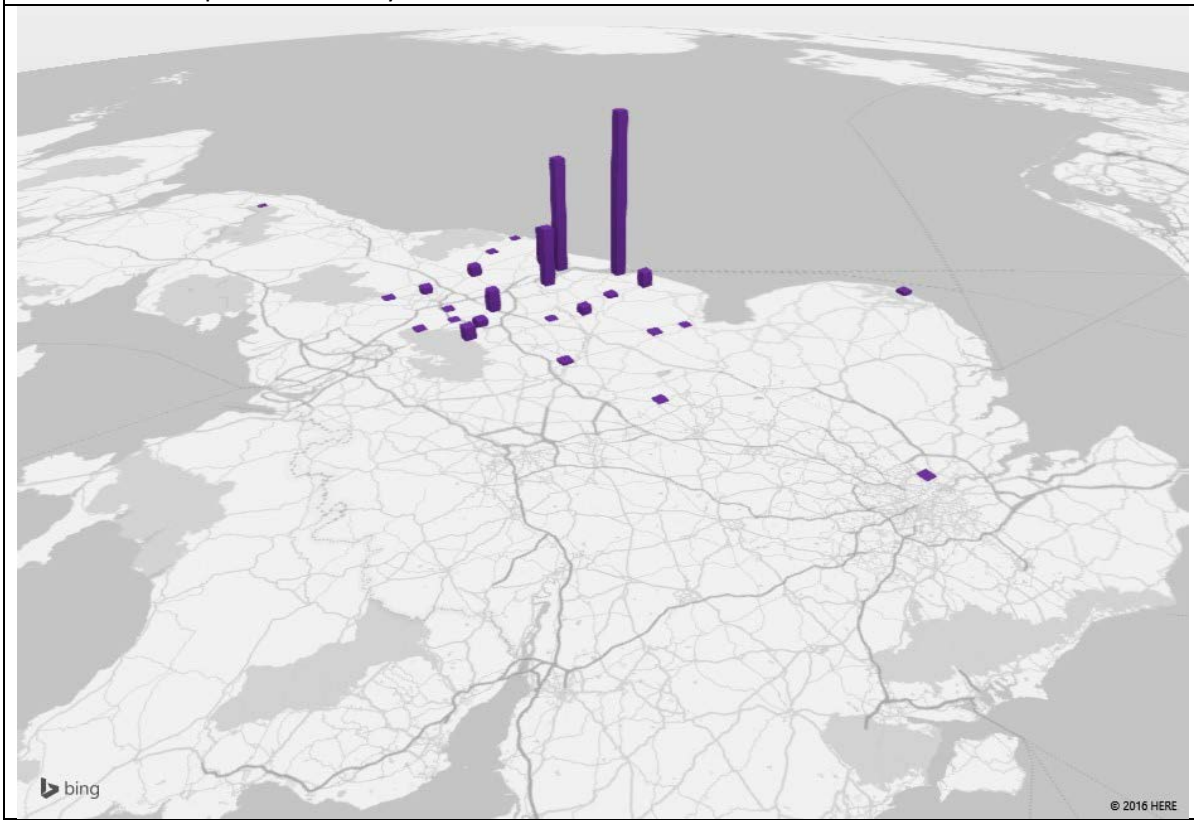
Humberside Airport Profile

Total Passengers on International Flights 2015	0.2 million
Of which	
Scheduled	*0.1 million*
Charter	*0.1 million*
Approximate % of Passengers on International Flights Originating from Northern Powerhouse Region (2014)	52%
Total Domestic Passengers 2015	0.03 million
Northern Powerhouse Region passengers flying internationally via London Heathrow (2014)	0
Northern Powerhouse Region passengers flying internationally via other UK Airports (2014)	0
Number of International Destinations Served in 2015	6
Number of Airlines Serving International Destinations in 2015	6
Total Freight 2015 (tonnes)	146
Of which	
Bellyhold	*120*
Pure Freighter	*26*
Total International Freight 2015 (tonnes)	124

Top 5 Direct International Destinations 2015				
Rank	Destinations	2015 Scheduled Pax	2015 Charter Pax	2015 Total Passengers
1	Amsterdam	121,763	0	121,763
2	Palma	0	8,262	8,262
3	Bourgas	0	4,932	4,932
4	Alicante	0	1,384	1,384
5	Naples	0	711	711

Inbound/Outbound and Business/Leisure Splits for NP Region Passengers			
	UK Outbound	Foreign Inbound	Grand Total
Business	20,000	0	30,000
Leisure	30,000	10,000	30,000
Grand Total	50,000	10,000	60,000

Humberside Airport Demand By UK District



Durham Tees Valley Airport Profile

Total Passengers on International Flights 2015	0.1 million
Of which	
Scheduled	*0.1 million*
Charter	*0.0 million*
Approximate % of Passengers on International Flights Originating from Northern Powerhouse Region (2014)	99%
Total Domestic Passengers 2015	0.03 million
Northern Powerhouse Region passengers flying internationally via London Heathrow (2014)	0
Northern Powerhouse Region passengers flying internationally via other UK Airports (2014)	0
Number of International Destinations Served in 2015	1
Number of Airlines Serving International Destinations in 2015	1
Total Freight 2015 (tonnes)	0
Of which	
Bellyhold	*0*
Pure Freighter	*0*
Total International Freight 2015 (tonnes)	0

Primary Direct International Destination 2015				
Rank	Destinations	2015 Scheduled Pax	2015 Charter Pax	2015 Total Passengers
1	Amsterdam	105,636	0	105,636

Inbound/Outbound and Business/Leisure Splits for NP Region Passengers			
	UK Outbound	Foreign Inbound	Grand Total
Business	40,000	20,000	50,000
Leisure	50,000	10,000	60,000
Grand Total	90,000	30,000	110,000

Durham/Tees Valley Airport Demand By UK District

APPENDIX B: ADDITIONAL AREAS IN SHEFFIELD AND HULL & HUMBER CITY REGION

The majority of the analysis contained within the main body of the report focuses exclusively on districts which fall within the North, but we recognise that some of the LEPs have boundaries that extend into the Midlands and therefore have greater levels of underlying demand within them than is reflected in the report. However, these passengers would also be counted in any analysis undertaken in the Midlands due to these districts falling into multiple LEPs and therefore cannot be fully considered within this work.

In total, there were just over 1 million air journeys originating or ending in these districts in 2014.

Passenger Split In Non-Northern Districts							
	UK Outbound Passengers			Foreign Inbound Passenger			
	Business	Leisure	Total	Business	Leisure	Total	Total
Hull & Humber City Region Additional Districts							
Humberside Airport	200	100	300	2,800	0	2,800	3,100
North East Lincolnshire	27,100	151,600	178,700	9,500	23,300	32,800	211,500
North Lincolnshire	12,000	169,500	181,400	7,800	17,900	25,800	207,200
Sheffield City Region Additional Districts							
Bassetlaw District	11,900	120,500	132,400	2,100	17,400	19,400	151,800
Bolsover District	7,400	55,700	63,100	0	2,000	2,000	65,100
Chesterfield District	4,000	179,900	183,800	6,600	22,700	29,300	213,100
Derbyshire Dales District	12,100	85,800	97,900	3,500	15,700	19,200	117,100
North East Derbyshire District	3,800	72,900	76,700	0	3,200	3,200	79,900

Passengers from these additional districts remained particularly reliant on services from Manchester Airport, but also made significant use of East Midlands Airport and the London Airports. Doncaster/Sheffield also played an important role in serving these passengers, but the majority of these came from the Hull and Humber region.

Airport Choice of Additional District Passengers			
	Hull & Humber City Region Additional Districts	Sheffield City Region Additional Districts	Grand Total
Doncaster/Sheffield Airport	74,300	33,600	107,900
Durham Tees Valley Airport	100	0	100
Humberside Airport	60,300	100	60,400
Leeds/Bradford Airport	27,300	17,300	44,500
Liverpool Airport	5,200	3,600	8,800
Manchester Airport	142,100	162,800	304,900
Newcastle Airport	500	700	1,200
Birmingham Airport	7,700	65,300	73,000
East Midlands Airport	53,600	230,200	283,900
London Airports	50,700	112,100	162,800
Other Airports	0	1,400	1,400
Grand Total	**421,800**	**627,100**	**1,048,900**

APPENDIX C: AIR FREIGHT

Introduction

Air freight into and out of the UK is around 2.5 million tonnes per annum as compared with some 500 million tonnes of goods handled through seaports and therefore has a lower impact on the highways network. However, it is generally of high value but, as a consequence, tends to be insensitive to the level of transport costs overall and, in particular, road transport costs between the origin or destination of the cargo and the relevant airport.

Within the air freight transport market itself, the high cost of air freight does itself lead to a pressure to be cost effective and for 'dealing' between airlines (and therefore airports) by shippers and their freight forwarders in order to secure the lowest possible freight rate. As the road transport costs are so low compared to the value of the cargo and the air freight costs, air freight cargo is often trucked long distances to find capacity (at a lower freight rate) and this forms an important driver in the way airports are selected and results in less of a direct relationship between the true origin and destination of the cargo and the Airport which it is flown from. For example, there is anecdotal evidence of much cargo being trucked from the rest of the UK to use the Emirates service from Newcastle, which has spare freight capacity.

Air freight sectors

Air freight can be broken down into three main sectors:

(i) belly-hold, where cargo is carried in wide-body long-haul passenger jets, providing a wide variety of destinations from the main hub airports such as Heathrow, which dominates the UK market.

(ii) freight only non-network services, which are viable on only a handful of routes.

(iii) 'parcel' services that operate on a hub and spoke network basis by 'integrators' (typically DHL, TNT and UPS). East Midlands and Stansted Airports dominate the UK market.

The majority of tonnage moves by belly-hold, which is why the market is dominated by Heathrow because of the range of passenger services available and the belly-hold capacity that that provides.

A handful of freight only services complement these belly-hold services where there is sufficient cargo to justify dedicated planes.

Traffic for both the above options tends to be assembled by specialist air freight forwarders and then passed on to the airlines based upon price. The charges levied per tonne of cargo for the inter-continental leg are high relative to inland haulage costs so that a relatively small difference in air freight rates between lines operating from 'nearby' airports will easily pay for extra inland haulage. In this respect, 'nearby' airports would include all those long-haul airports in the UK as well as those on the Near Continent (Paris, Brussels, Schiphol and Frankfurt). The belly-hold air freight market tends to cater for shippers who need faster services than ships can offer but can tolerate transit times of four

or five days. Given road freight transit times from (say) the Manchester area to Heathrow, Paris, Brussels or Schipol is less than 24 hours, most of the air freight market can tolerate a few extra hours of inland haulage to secure a better price. Therefore, air freight cargo can be consolidated in an air freight distribution centre near Manchester Airport and then trucked to Heathrow or a continental hub via the Dover Straits.

In this belly-hold market, it follows that if airports in the North are to secure a greater market share then they will need to win more wide body long haul passenger services. This explains why only Manchester secures significant volumes as it has the majority of wide body jet services to markets such as North America, China and the Middle East, particularly Dubai. The promotion of long haul passenger services is, therefore, the means by which more air freight can be secured.

The integrator sector carries more urgent parcel traffic based upon hub and spoke networks offering (typically) two day intercontinental transits. Spoke services from the UK from East Midlands and Stansted serve NW European hubs at airports such as Brussels and Frankfurt. The need for frequency tends to mean that typically only one 'spoke' can be justified per company per country and they tend to be centrally located to maximise accessibility from all parts of Great Britain. In practice, the level of accessibility that major Northern cities (e.g. Leeds, Sheffield and Manchester) share to East Midlands Airport is similar to that of London.

Air freight volumes

Table 1 describes data from the Civil Aviation Authority (CAA) on UK air freight volumes by airport. It shows how air freight volumes overall declined following the 2008-09 economic downturn and have still not returned to 2004 levels. The North's market share has fallen from about 7% to just over 4% since 2007 due to the increasing dominance of Heathrow with its extensive network of long haul passenger services.

Table 1: UK air freight volumes by airport group, 2004-14

Thousand tonnes

Area/ Airport	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	% change 2004 - 2014
Manchester	149	147	148	165	141	102	115	107	96	96	93	-37%
Newcastle	1	..	..	1	2	3	4	3	3	4	4	457%
Heathrow	1,325	1,305	1,263	1,310	1,397	1,277	1,472	1,484	1,464	1,422	1,498	13%
East Midlands	253	266	272	274	261	255	273	264	264	266	277	10%
North of England	161	157	156	173	150	107	121	112	101	101	99	-62%
London area	1,795	1,789	1,717	1,724	1,743	1,564	1,808	1,803	1,806	1,761	1,820	+1%
Other South of England & Midlands	300	300	322	326	307	302	324	310	319	322	300	0%
Scotland, Wales & N Ireland	124	126	129	111	91	83	77	78	82	84	91	-37%
Total UK	2,380	2,372	2,324	2,334	2,291	2,055	2,331	2,303	2,307	2,268	2,310	-3%

Source: MDS Transmodal, based on Civil Aviation Authority data

Similarly, within the North of England, 90% of tonnage in 2014 was handled through Manchester Airport due to the availability of greater capacity on long haul passenger services.

Table 2 shows the proportion of UK air freight transported by dedicated cargo planes and belly-hold on passenger aircraft between 2004 and 2014. The general pattern since 2004 has been a decline in the proportion of freight transported on pure cargo planes by 8%. This is due to larger passenger aircraft being used on longer routes between hub airports, with additional space for air freight on passenger flights to Middle East hub airports such as Doha, Dubai and Abu Dhabi.

Table 2: UK air freight by plane type, 2004-14

Airport		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Manchester	Passenger	52%	52%	56%	52%	55%	57%	60%	71%	82%	85%	89%
	Cargo	48%	48%	44%	48%	45%	43%	40%	29%	18%	15%	11%
Newcastle	Passenger	11%	65%	16%	88%	91%	89%	95%	90%	90%	89%	83%
	Cargo	89%	35%	84%	12%	9%	11%	5%	10%	10%	11%	17%
Heathrow	Passenger	92%	94%	94%	94%	94%	94%	95%	95%	95%	95%	98%
	Cargo	8%	6%	6%	6%	6%	6%	5%	5%	5%	5%	2%
East Midlands	Passenger	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Cargo	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total UK	Passenger	63%	64%	64%	65%	67%	66%	69%	70%	70%	70%	71%
	Cargo	37%	36%	36%	35%	33%	34%	31%	30%	30%	30%	29%

Source: MDS Transmodal, based on Civil Aviation Authority data

In the case of Manchester, the proportion of freight carried on passenger aircraft has risen by 37% since 2004, although Manchester has at the same time lost 37% of its freight volumes. East Midlands Airport is the exception in the shift away from dedicated freighter aircraft as it is the main hub for integrators whose business offer relies on a hub and spoke network using dedicated freighter aircraft to provide the required door-to-door transit time.

Table 3 shows the breakdown of imports and exports for selected airports in 2014 based on commodity data from HM Revenue and Customs. It is worth bearing in mind the HMRC data relates to where the freight is cleared by customs, which may not be the airport where it leaves from, or arrives in, the UK. This explains why HMRC data by airport for 2014 differs slightly from the CAA data for the same year. The CAA data also takes into consideration the small levels of domestic air freight.

Table 3: The value and volume of imports and exports for selected airport groups, 2014

	Imports		Exports	
Airport	Tonnes	Value (£ millions)	Tonnes	Value (£ millions)
Manchester	91,618	2,838	45,644	3,093
Newcastle	3,166	105	4,939	470
East Midlands	36,746	4,048	19,527	4,530
Heathrow	509,772	43,662	357,007	61,831
North of England	98,213	3,161	55,291	3,634
Total UK	794,093	65,598	521,855	80,737

Source: MDS Transmodal, based HMRC data

Overall, UK imports in tonnes are greater than exports, but the value of exports is greater than imports, which is likely to be the case for most western European economies that have to increasingly focus on high value added manufactured products.

Some 153,000 tonnes of air freight were cleared at Northern airports, but only 99,000 tonnes were actually flown in and out of Northern airports. At the same time, only 868,000 tonnes of air freight were cleared at Heathrow Airport, while 1.50 million tonnes were flown in and out of the Airport. This shows the extent to which air freight may be consolidated at, in particular, Manchester Airport and then trucked south to Heathrow.

Table 4 shows the top 5 import commodities by value cleared at Manchester, Newcastle, East Midlands and Heathrow Airports in 2014. With the exception of gold, the main commodities are high value equipment and manufactures.

As Manchester dominates air freight flown directly into and out of the North of England, the table offers an insight into the types of freight arriving into the Northern economy - including quite large volumes of clothing and accessories.

Table 5 shows the top 5 export commodities by value cleared at Manchester, Newcastle, East Midlands and Heathrow Airports in 2014.

Table 4: The top 5 imported commodities for selected airports by value, 2014

Import				
Airport	2 Digit Commodity	Tonnes	Value (£)	Value per tonne
Manchester	79 OTHER TRANSPORT EQUIPMENT	1,512	369,319,931	244,179
Manchester	84 CLOTHING & ACCESSORIES	17,941	263,459,573	14,685
Manchester	77 ELECTRICAL MACHINERY	5,262	248,834,475	47,290
Manchester	75 OFFICE MACHINES & ADP EQUIPMENT	1,959	222,841,054	113,739
Manchester	76 TELECOM & RECORDING EQUIPMENT	1,995	206,379,291	103,432
Newcastle	77 ELECTRICAL MACHINERY	543	21,845,169	40,194
Newcastle	54 MEDICINAL/PHARMACEUTICAL PRODUCTS	43	10,465,093	241,928
Newcastle	74 GENERAL INDUSTRIAL MACHINERY	365	10,438,988	28,593
Newcastle	87 INSTRUMENTS - SCIENTIFIC, ETC	133	9,464,518	70,935
Newcastle	71 POWER GENERATING MACHINERY	225	6,698,543	29,757
East Midlands	77 ELECTRICAL MACHINERY	4,987	666,258,821	133,595
East Midlands	89 MISCELLANEOUS MANUFACTURES	4,689	507,455,905	108,227
East Midlands	75 OFFICE MACHINES & ADP EQUIPMENT	1,871	476,814,316	254,899
East Midlands	87 INSTRUMENTS - SCIENTIFIC, ETC	1,641	462,596,170	281,814
East Midlands	76 TELECOM & RECORDING EQUIPMENT	2,478	326,653,641	131,830
Heathrow	9 GOLD,NON MONETARY	520	11,971,324,751	23,014,874
Heathrow	71 POWER GENERATING MACHINERY	12,637	4,934,234,103	390,470
Heathrow	76 TELECOM & RECORDING EQUIPMENT	22,438	4,666,955,586	207,995
Heathrow	89 MISCELLANEOUS MANUFACTURES	52,330	3,647,024,621	69,693
Heathrow	75 OFFICE MACHINES & ADP EQUIPMENT	15,622	2,752,913,216	176,220
Total UK				
	9 GOLD,NON MONETARY	535	11,988,662,646	22,408,087
	71 POWER GENERATING MACHINERY	22,284	8,865,516,542	397,836
	79 OTHER TRANSPORT EQUIPMENT	19,905	6,864,816,946	344,879
	76 TELECOM & RECORDING EQUIPMENT	29,534	5,814,481,740	196,873
	89 MISCELLANEOUS MANUFACTURES	71,868	4,992,214,797	69,463

Source: MDS Transmodal, based on HMRC trade data

Table 5: The top 5 exported commodities for selected airports by value, 2014

Export				
Airport	2 Digit Commodity	Tonnes	Value (£)	Value per tonne
Manchester	54 MEDICINAL/PHARMACEUTICAL PRODUCTS	2,664	928,739,554	348,595
Manchester	71 POWER GENERATING MACHINERY	1,870	395,032,096	211,239
Manchester	87 INSTRUMENTS - SCIENTIFIC, ETC	1,211	220,196,560	181,887
Manchester	74 GENERAL INDUSTRIAL MACHINERY	4,061	184,495,505	45,436
Manchester	77 ELECTRICAL MACHINERY	1,913	183,813,804	96,071
Newcastle	54 MEDICINAL/PHARMACEUTICAL PRODUCTS	290	271,003,862	935,096
Newcastle	59 OTHER CHEMICALS	456	47,908,602	105,018
Newcastle	74 GENERAL INDUSTRIAL MACHINERY	627	22,963,794	36,625
Newcastle	77 ELECTRICAL MACHINERY	591	21,751,288	36,796
Newcastle	87 INSTRUMENTS - SCIENTIFIC, ETC	156	16,404,443	105,256
East Midlands	71 POWER GENERATING MACHINERY	1,345	1,484,323,268	1,103,619
East Midlands	87 INSTRUMENTS - SCIENTIFIC, ETC	1,538	566,042,868	367,954
East Midlands	77 ELECTRICAL MACHINERY	2,492	545,209,199	218,763
East Midlands	74 GENERAL INDUSTRIAL MACHINERY	2,101	291,279,530	138,667
East Midlands	76 TELECOM & RECORDING EQUIPMENT	748	237,997,173	318,295
Heathrow	9 GOLD,NON MONETARY	960	23,089,099,544	24,045,209
Heathrow	89 MISCELLANEOUS MANUFACTURES	42,250	6,546,064,632	154,936
Heathrow	71 POWER GENERATING MACHINERY	15,706	6,506,859,109	414,283
Heathrow	54 MEDICINAL/PHARMACEUTICAL PRODUCTS	11,454	4,673,182,679	407,994
Heathrow	87 INSTRUMENTS - SCIENTIFIC, ETC	13,437	2,689,360,047	200,144
Total UK				
	9 GOLD,NON MONETARY	963	23,100,442,243	23,980,577
	71 POWER GENERATING MACHINERY	23,930	10,700,626,540	447,167
	89 MISCELLANEOUS MANUFACTURES	52,099	7,421,184,738	142,444
	54 MEDICINAL/PHARMACEUTICAL PRODUCTS	16,420	6,584,895,759	401,028
	79 OTHER TRANSPORT EQUIPMENT	13,611	4,707,887,641	345,888

Source: MDS Transmodal, based on HMRC data

There are generally similarities in the types of commodities being imported and exported through airports in the North of England, although the value per tonne of the same commodity group is greater for exports than for imports as UK manufacturing companies produce higher added value goods. For example, the Electrical Machinery commodity group cleared at Manchester has a value of £47,000 per tonne imported and £96,000 per tonne exported.

Manchester and Newcastle's biggest air freight export commodity by value is Medicinal/Pharmaceutical Products, representing some £1.2 billion of exports for the UK.

Road haulage movements to and from airports

We have also used road haulage data to estimate the proportion of air freight cargo to and from the North that uses Northern airports. It has to be recognised that some of this tonnage will reflect retail goods sold at the respective airports but we believe the data does broadly reflect performance in the air freight market. Our conclusion from this analysis is that Northern England is the origin or destination of around 14% of total UK airfreight and that its airports (principally Manchester) secure around 30% of that available market with the rest trucked to airports outside the North of England or further afield.

Public sector interventions

It is difficult to identify any specifically freight oriented interventions that could assist Northern Airports to secure air freight. The most positive action would be to promote additional long haul passenger services to and from Northern airports and therefore there is a strong link between international passenger connectivity for the North and the development of air freight volumes and market share for the North of England. However, it is the case that the logistics industry (and its customers) located in distribution centres around a relevant airport in the North of England does benefit from its nearby access to airfreight services. This provides benefits to the logistics sector in the Greater Manchester area, in particular, as it provides local access to air freight capacity to a range of long-haul destinations around the world.

APPENDIX D: BASELINE DATA – PORTS

Cruise

UK cruise market size & segmentation

The UK cruise market is segmented into two markets:

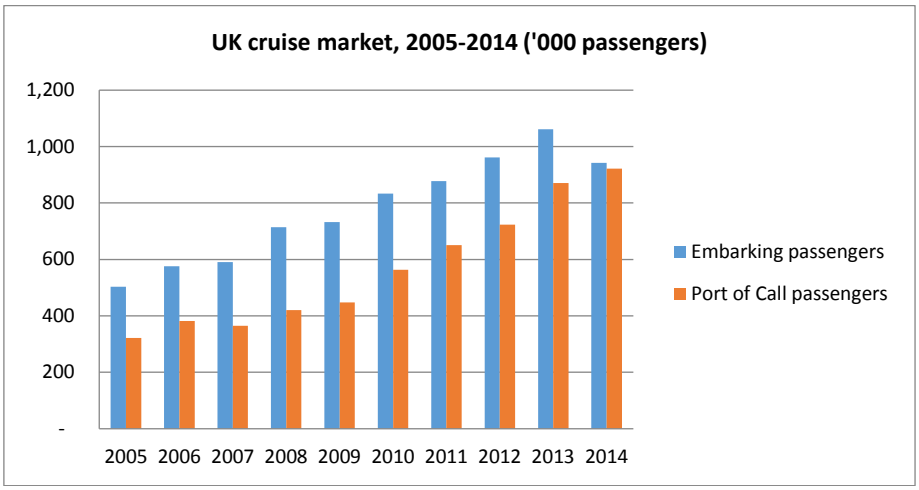
- The turnaround (T/R) market provides 'homeport' facilities for cruise lines for embarking/disembarking passengers at the beginning and end of their cruise;
- The port of call (POC) market (sometimes referred to as the transit market) includes those ports included on a cruise itinerary as 'way calls' for passenger excursions.

Figures published by IRN Research indicate that growth in the UK port of call market has been outpacing that in the turnaround market in the last few years. Both markets had been demonstrating year-on-year growth over the last ten years, even during the recession, albeit growth rates slowed in 2009. However, in 2014 while the POC market still grew by 6%, the number of embarking passengers decreased by 11%.

Total UK cruise market 2005-2014 (000 passengers)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	CAGR 2005-14
Embarking passengers	503	576	591	714	733	833	878	962	1,062	942	7.2%
Port of Call passengers	322	382	365	420	448	563	651	723	871	922	12.4%
Total	825	958	956	1,134	1,181	1,396	1,529	1,685	1,933	1,864	9.5%

Source: IRN Research



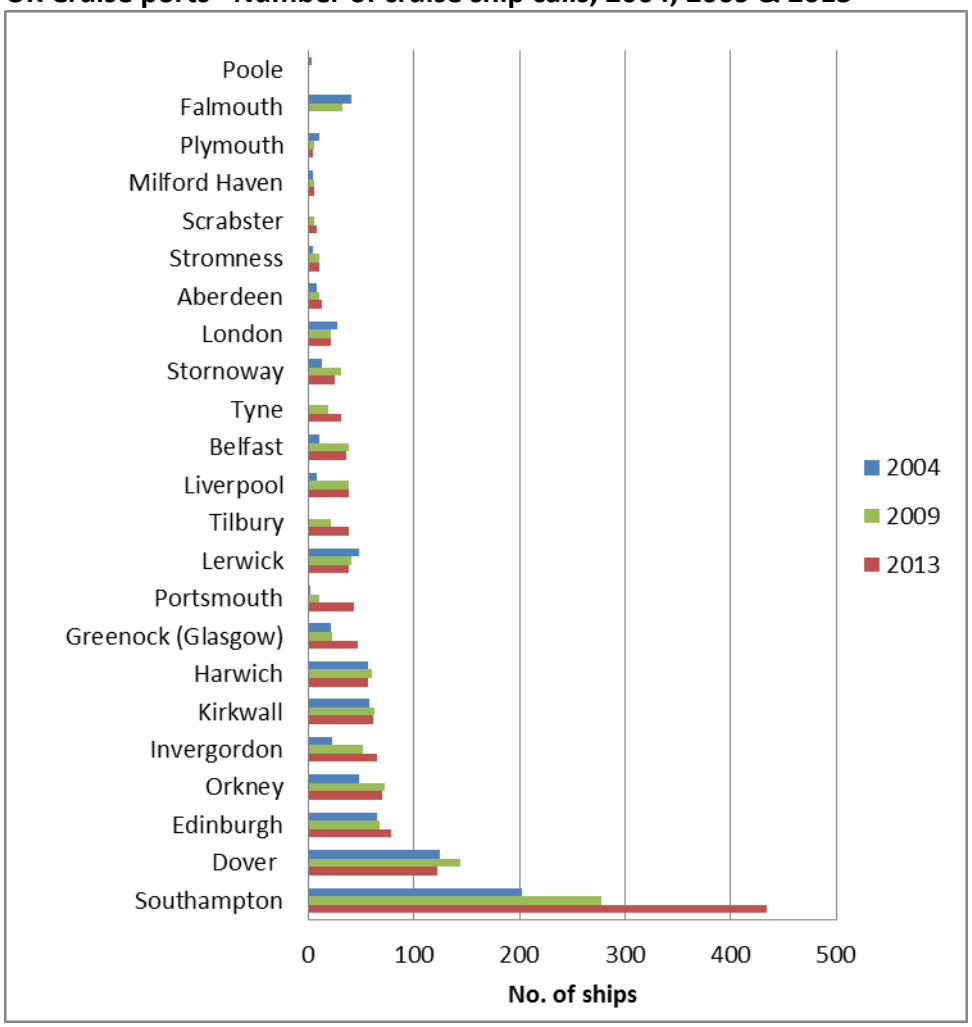
Source: IRN Research

Partly this has been caused by several major cruise brands moving some capacity away from the UK port market in 2014 (mainly to the Caribbean), and the increase in the number of longer cruise itineraries is thought to have reduced the availability of berths. It also reflects the expanding reach of the global cruise market and growing competition from the fly-cruise market.

On the upside there was a 12% increase in the number of port of call passengers in the UK in 2014, with the number of ports benefitting from this is reported to have increased to 57 UK ports.

The major UK cruise ports ranked in terms of the number of ship calls in 2013, the most recent year for which is data is available for the whole market, is shown below.

UK Cruise ports –Number of cruise ship calls, 2004, 2009 & 2013



Source: Shippax

The main turnaround ports in the UK are Southampton, Dover and Harwich. Apart from these dominant homeports in the South East, the Scottish ports have been successful in attracting calls, while the ports of Poole, Falmouth and Plymouth in the South West have all lost out calls in recent years. However in the North the ports of Liverpool and especially Tyne are enjoying an increasing market presence.

Nationality of cruise tourists

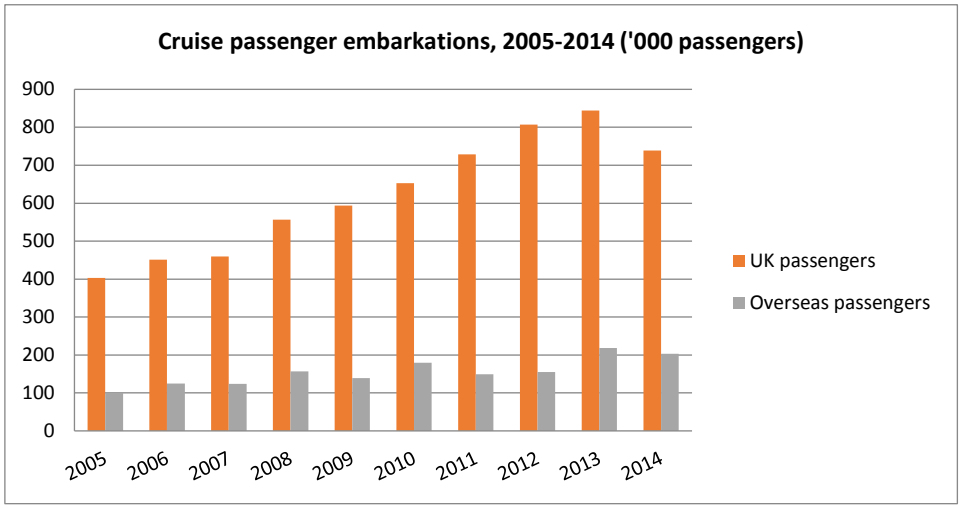
The principal cruise market in the UK is for UK nationals embarking for a cruise holiday. Growth in the market has been strong, and this continued even during the recession, though dipping in 2014. The

reasons for this trend in 2014 are the movement of capacity away from the UK and an increase in the fly-cruise market, in both cases particularly to the Caribbean, though the Mediterranean remains the most booked destination. Cruise holidays are growing in popularity in the UK, are seen to provide good value for money and the market outlook remains good.

Demand from foreign nationals joining cruises at a UK port dipped in 2009 and again in 2011-12. This may be related to the movement of ship capacity away from the UK and the negative impact of economic conditions in Europe, but the number of passengers on cruises that start elsewhere and call at UK ports has remained strong.

Cruise passengers embarking from UK ports (000 passengers)

Passenger origin	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	CAGR 2005-14
UK	403	451	460	557	594	653	729	807	844	739	7.0%
Overseas	100	125	124	157	139	180	149	155	218	203	8.2%
Total	503	576	584	714	733	833	878	962	1,062	942	7.2%

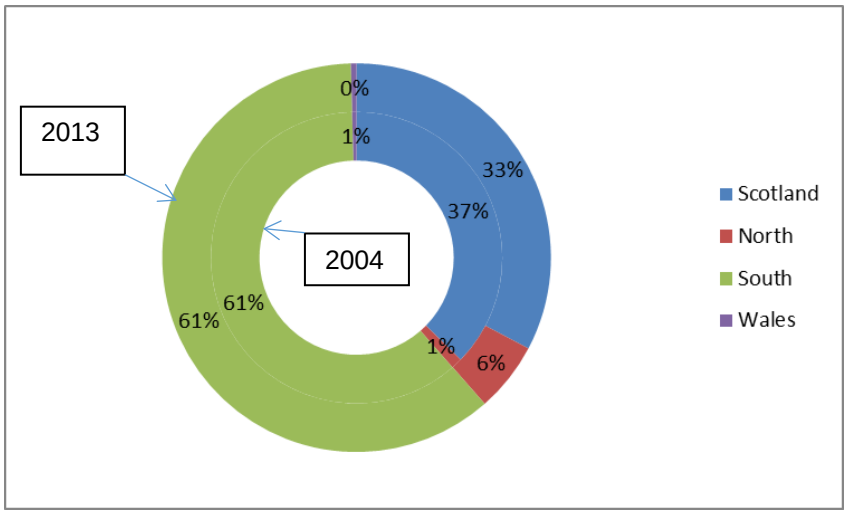


Source: IRN Research

Regional Split

The breakdown of the market shares of different UK regions is indicated below; complete data for 2014 is not yet available from this source. This is based on the number of cruise ship calls and indicates that northern ports have increased market share of the total number of calls from 1% to 6% since 2004.

Cruise market shares by GB Region

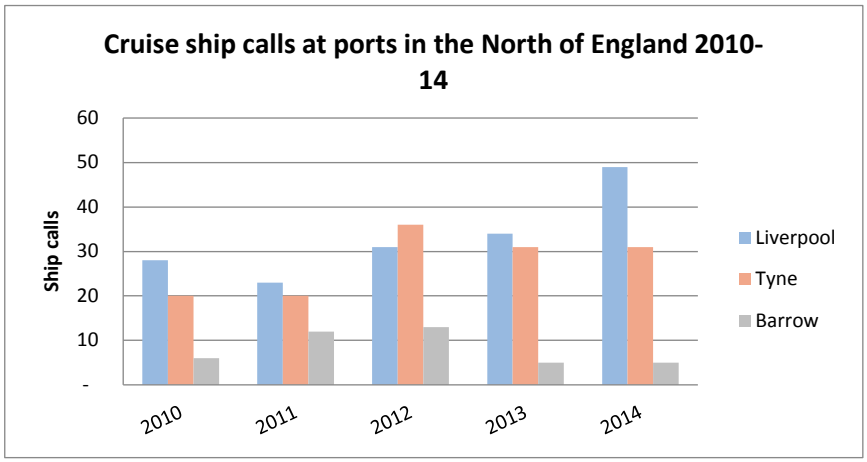


Source: MDS Transmodal based on Shippax data

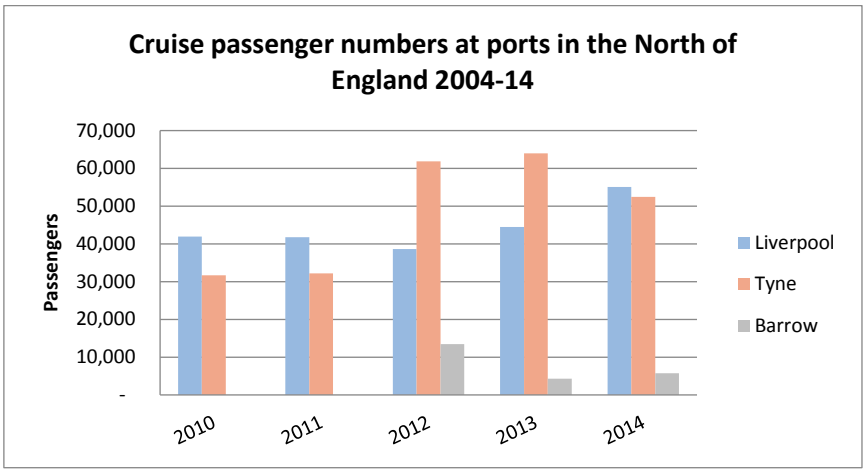
Cruise ports in the North of England

The two main cruise ports in the North of England are Liverpool and the Port of Tyne. Between them in 2013 the ports received 74 calls, the number having trebled in the last ten years. The ports of Barrow and Hull have also received cruise calls.

Data from Cruise Europe suggests that between 2010 and 2014 the Tyne, Liverpool and Barrow have exactly doubled the number of calls from 54 to 108 and the number of passengers from 74,000 to 113,000.



Source: Cruise Europe



Source: Cruise Europe

Port of Tyne

The number of ships calling at the Port of Tyne has risen rapidly in the last decade. In 2005 the port received 8 calls bringing 5,300 passengers into the port. In 2013 this had risen to 36 calls and 62,000 passengers. 2014 was quieter with 31 calls, but in 2016 a record 48 calls are scheduled of which 29 will be turnaround calls.

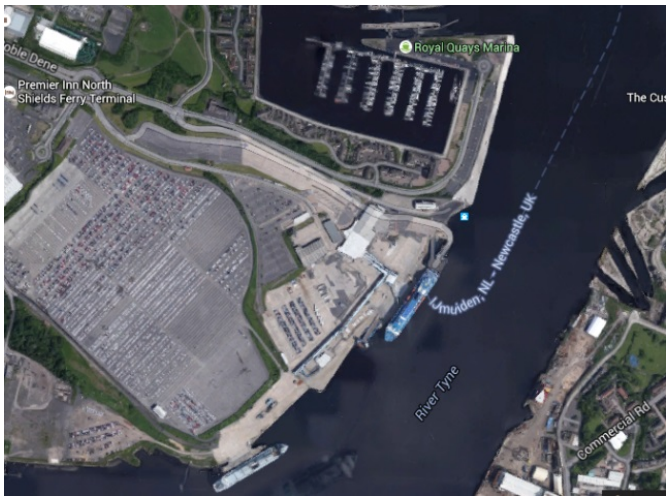
The list of cruise line operators and vessels scheduled on 2016 is shown below. A number of the cruises are calling at Port of Tyne as way calls on itineraries taking in Scandinavia, the Baltic, Iceland and the northern isles of Britain. Two cruise lines, Fred Olsen and Cruise & Maritime have chosen the Port of Tyne as their homeport and will embark 28 cruises from the port to various destinations throughout the year.

Port of Tyne cruise calls 2014

Operator	No. of calls	T/R or POC	Ship Name(s)	Passenger Capacity
Aida Cruises	2	POC	Aida Vita	1,582
Cruise & Maritime	3	TR	Marco Polo	800
	6	TR	Magellan	1,250
	1	POC	Astor	600
Crystal Cruises	1	POC	Crystal Symphony	940
DFDS	1	TR		
Disney	2	POC	Disney Magic	2,700
Fred Olsen	6	TR	Boudica	850
	12	TR	Balmoral	1,400
FTI Cruises	1	POC	Berlin	412
Holland America	1	POC	Zuiderdam	1,950

	1	POC	Koningsdam	2,650
Oceania Cruises	2	POC	Nautica	684
	1	POC	Marina	1,200
Ponant Cruises	1	TR	Ocean Diamond	226
Phoenix Reisen	2	POC	Artania	1,260
	1	POC	Amadea	604
Regent Seven Seas Cruises	2	POC	Seven Seas Voyager	700
Saga Cruises	1	POC	Saga Pearl II	449
Swan Hellenic	1	POC	Minerva	350

Source: Cruisebritain website/Shippax



Embarkations are from the newly refurbished Newcastle International Cruise Terminal located at North Shields (Tyne & Wear). The terminal is 15 miles from Newcastle International Airport. The terminal comprises four cruise berths which are adjacent to Royal Quays Marina. The terminal can accommodate up to 2000 passengers embarking/disembarking.

On the marine side, vessels of up to 300m length and 10m craft can be accommodated. The largest ship in the 2016 schedule of calls Disney's 2,700-passenger 'Disney Magic' has a loa of 294m, beam of 32.2m and draft of 7.9m. Also scheduled is Holland America's newest ship 'Koningsdam', which is due to be delivered in April 2016. The vessel is 99,500 tons deadweight with an loa of about 283m.

Port of Liverpool

The Port of Liverpool will host 60 cruise calls in 2016. Its cruise line customers include many of the lines also calling at Port of Tyne. Liverpool is attracting Lines from the Carnival stable (AIDA, Cunard, Princess, Seabourn) as well as some of the smaller specialised operators. Transit or way calls are the mainstay of the cruise business at Liverpool, with most of the turnaround calls being provided, as for Port of Tyne, by Fred Olsen and Cruise & Maritime. Cruise & Maritime is mainly offering trips to the Baltic Sea and Norwegian fjords while Fred Olsen offers a number of longer duration (8-16 day) cruises to northern destinations and 20+ day cruises to the Mediterranean and Black Sea.

The largest ships to call in 2016 is Princess Cruises' 'Caribbean Princess' which has a length of 290m, beam of 36m and draft of 8m and the 'Celebrity Silhouette' at 315m x 36.9m x 8.3m.

Operator	No. of calls	T/R or POC	Ship Name(s)	Passenger Capacity
Aida Cruises	2	POC	Aida Vita	1,582
Celebrity Cruises	1	POC	Azamara Quest	702
	4	POC	Celebrity Silhouette	3,129
Cruise & Maritime	4	TR	Marco Polo	800
Crystal Cruise	1	POC	Crystal Symphony	1,010
Cunard Line	1	POC	Queen Elizabeth	2,092
Disney	2	POC	Disney Magic	2,700
Fred Olsen	18	POC & TR	Boudica	850
	2	POC & TR	Black Watch	205
	2	POC	Braemar	1,090
Hapag Lloyd	3	POC	Europa	408
Oceania Cruises	2	POC	Nautica	684
Phoenix Reisen	2	POC	Artania	1,260
	2	POC	Amadea	604
Ponant Cruises	2	POC	L'Austral	264
	1	POC	Le Boreal	264
Princess Cruises	7	POC	Caribbean Princess	3,592
Regent Seven Seas Cruises	2	POC	Seven Seas Voyager	700
Seabourn Cruises	1	POC	Seabourn Quest	450

Source: Cruisebritain website/Shippax

The Liverpool Cruise passenger terminal located adjacent to Pierhead in the centre of Liverpool. The vessels berth at a 250m floating pontoon. There are two mooring dolphins which provide a further 108m in order to facilitate mooring of larger cruise liners of up to a maximum of 365m. The maximum allowable draft is 11m. The largest ship to berth was Cunard's Queen Mary 2 which has a an overall length of 345m, a beam of 41m and a draft of 10.3m.

Port of Liverpool cruise berths and terminal

In May 2015, the Cunard fleet of Queen Mary 2, Queen Elizabeth and Queen Victoria berthed simultaneously in Liverpool creating an unprecedented maritime event that attracted a global audience and a reported 1.3 million spectators to the River Mersey.

Passenger Ferries

GB ferry market size & segmentation

The GB ferry market is split between two main markets, the GB –Ireland market served by ports on the west coast of GB (from Pembroke in the south to Troon in the North) and the GB-Continent market which is served by ports on the east and south coasts (from Plymouth to the Tyne). The GB-Continent market (about 29 million passengers in 2014) is much bigger than the GB-Ireland market (about 5 million passengers).

With the rise of low cost airlines following the liberalisation of the intra-European aviation market since 1997 there are now very few foot passengers on ferries and so the market is mainly for passengers travelling with their own cars for leisure purposes. These passengers tend to prefer to drive to ports which provide them with the shortest and fastest crossings, such as Dover and Holyhead, rather than take longer crossings. As they are travelling for leisure purposes they also tend to travel during the period April to September, rather than during the winter and autumn.

All the routes operating in these markets also carry roll-on roll-off freight and the HGV drivers are included in the passenger data.

Passenger ferry markets are affected by:

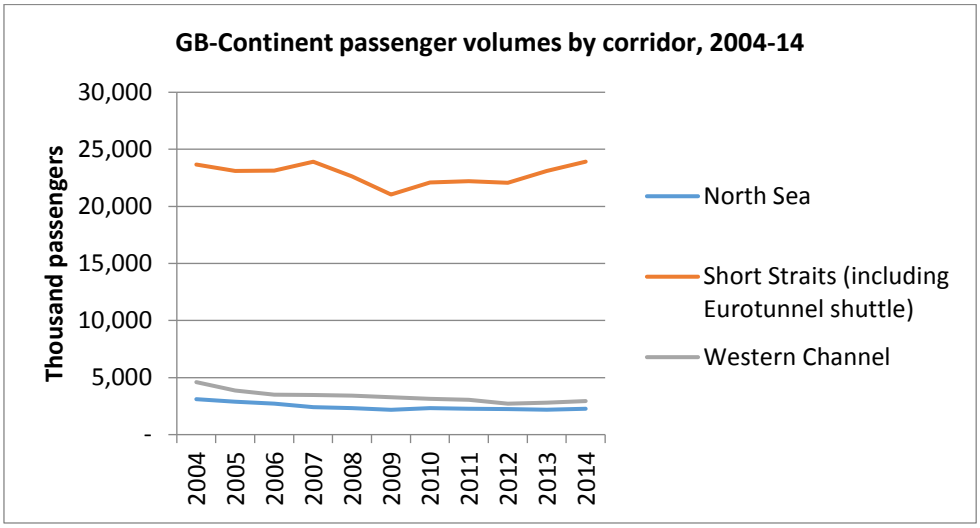
1. Levels of prosperity and disposable income, which affects the propensity to travel for leisure purposes;
2. The exchange rate between sterling and the euro which affects the relative cost of holidays for both inbound and outbound tourists;
3. Destination competition, for example between Ireland and France as destinations for UK residents which can be attractive for car accompanied holidays compared to destinations such as Spain, Greece and the USA.
4. Modal competition for the markets that are attractive to people interested in car accompanied holidays from fly drive holidays (facilitated by the relatively low fares offered by low cost airlines).

Trends in the GB-Continent market

The GB-Continent market is also generally split by analysts into three corridors:

- The North Sea Corridor between ports from the Thames to the Forth inclusive and continental mainland ports in the Netherlands and Belgium.
- The Short Straits Corridor between ports in Kent and the Nord Pas de Calais region of France. This corridor includes the Eurotunnel passenger shuttle services because, although it uses railway technology, it competes directly with the ferry services across the Dover Straits. For the purposes of this analysis we have excluded the Eurostar rail services through the Channel Tunnel between London St Pancras and Paris/Brussels because these are mainly city centre to city centre services for both business and leisure travellers that compete (very successfully) with aviation services.
- The Western Channel Corridor between ports in a range from Newhaven to Plymouth, which offer longer distance passenger services to ports in Normandy, Brittany and northern Spain.

The following figure shows how the overall market has declined by 7% overall during the period 2004-14, but since the end of the economic downturn in 2008-09 the market has expanded and the Short Straits has also secured some market share.



Source: DfT Sea Passenger Statistics: Final 2014 & Eurotunnel

The following table shows the six routes that have operated from northern ports during the period 2004-14, along with some of the other major GB-Continent routes. This shows that two long distance routes from the North of England have closed during the period, but the well-established Tyne-

IJmuiden, Hull-Rotterdam and Hull-Zeebrugge routes have been able to maintain their volumes (with fluctuations) throughout the period.

GB-Continent passenger ferry market 2004-14

Thousand passengers

	2004	2006	2008	2010	2012	2014	
Tyne – Gothenburg	**72**	**56**	**.**	**.**	**.**	**.**	
Tyne – Norway	**224**	**144**	**119**	**.**	**.**	**.**	
Tyne - Ijmuiden	**471**	**448**	**475**	**604**	**579**	**567**	**20%**
Hull - Rotterdam	**596**	**616**	**598**	**593**	**587**	**575**	**-4%**
Hull - Zeebrugge	**380**	**402**	**367**	**357**	**360**	**354**	**-7%**
Killingholme - Hook of Holland	**26**	**31**	**63**	**49**	**59**	**67**	**162%**
Harwich-Hook of Holland	843	736	473	510	521	601	-29%
Other North Sea	495	289	233	200	130	107	-78%
Total North Sea	*3,106*	*2,722*	*2,329*	*2,313*	*2,237*	*2,271*	*-27%*
Dover-Calais	13,446	11,550	11,058	10,307	9,415	10,767	-20%
Dover - Dunkirk	586	1,512	2,133	2,535	2,503	2,519	330%
Other Short Straits	405	963	821	481	100	13	-97%
Eurotunnel Shuttle	9,226	9,110	8,625	8,774	10,039	10,610	15%
Total Short Straits	*23,663*	*23,136*	*22,636*	*22,097*	*22,057*	*23,909*	*1%*
Western Channel	*4,600*	*3,498*	*3,431*	*3,145*	*2,712*	*2,938*	*-36%*
Total	*31,369*	*29,355*	*28,396*	*27,555*	*27,006*	*29,118*	*-7%*

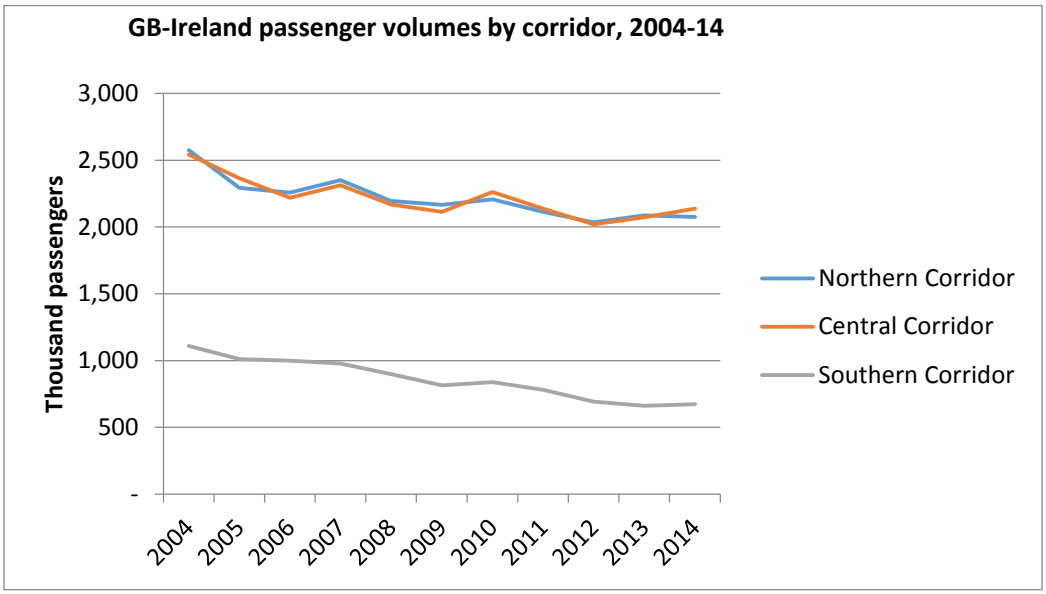
Source: DfT Sea Passenger Statistics

Trends in the GB-Ireland market

The GB-Ireland market is generally split by analysts into three corridors:

- The Northern Corridor between GB and ports in Northern Ireland; there is a service from the Mersey to Belfast, but the routes with the most traffic are the shortest crossings from South West Scotland to Larne and Belfast.
- The Central Corridor between GB and ports in Dublin Bay; there is a service from Liverpool to Dublin, but the route with the most traffic is the shorter crossing from Holyhead to Dublin.
- The Southern Corridor between south west Wales and ports in the south of Ireland, principally Rosslare.

The following figure shows how the overall market has declined by 22% during the period 2004-14.



Source: DfT Sea Passenger Statistics: Final 2014

The following table shows the three routes that have operated from northern ports during the period 2004-14, along with some of the other major Irish Sea routes, showing that the Liverpool-Belfast route has managed to secure healthy growth in traffic following the closure of the Fleetwood-Larne route in 2010, while the Liverpool-Dublin route has lost traffic and market share at the expense of the routes via Holyhead.

GB-Ireland passenger ferry market 2004-14

Thousand passengers

	2004	2006	2008	2010	2012	2014	Change 2004/14
Liverpool - Belfast	**158**	**171**	**190**	**221**	**207**	**267**	**69%**
Fleetwood - Larne	**72**	**59**	**58**	**51**	**.**	**.**	
Loch Ryan - Belfast/Larne	1,914	1,807	1,731	1,694	1,641	1,616	-16%
Other Scotland-N Ireland routes	432	221	214	241	186	192	-56%
Total Northern Corridor	*2,576*	*2,257*	*2,194*	*2,207*	*2,033*	*2,075*	*-19%*
Liverpool - Dublin	**270**	**162**	**172**	**190**	**121**	**124**	**-54%**
Holyhead - Dublin	1,376	1,311	1,374	1,821	1,709	1,875	36%
Holyhead - Dun Laoghaire	887	745	622	252	189	139	-84%
Mostyn -Dublin	10	.	.	.	.	.	
Total Central Corridor	*2,542*	*2,218*	*2,168*	*2,262*	*2,019*	*2,138*	*-16%*
Total Southern Corridor	*1,108*	*998*	*899*	*838*	*693*	*673*	*-39%*
Other routes	5	4	2	2	1	1	-79%
Total Irish Sea market	*6,232*	*5,478*	*5,263*	*5,309*	*4,746*	*4,887*	*-22%*

Source: DfT Sea Passenger Statistics

Passenger ferry ports in the North of England

The three main passenger ferry ports in the North of England are Hull, the Port of Tyne and Liverpool. Between them in 2014 the ports received 1.9 million passengers, 1.5 million on the east coast and 0.4 million on the west coast.

Hull

The P&O Ferries Hull-Rotterdam service is from the port's Ferry Terminal 1, which allows the ferries to berth on the River Humber. The service is provided by two ferries so that overnight crossings can be provided in both directions, offering a mini-cruise experience. The crossing time is about 11 hours.

The P&O Ferries Hull-Zeebrugge service is from the port's in-dock Ferry Terminal 2. Again, the service is provided by two ferries so that overnight crossings can be provided in both directions. The crossing time is about 13 hours.

Liverpool

The P&O Ferries Liverpool-Dublin service is from the Gladstone Dock (Seaforth Docks) and generally offers three sailings a day, with a departure in the middle of the night, one in the morning and one in the late evening. The crossing time is up to 8.5 hours.

The Stena Line Birkenhead-Belfast service is from the Twelve Quays riverside terminal and offers two sailings a day from Birkenhead, with a departure mid-morning and another late evening. The crossing time is about 8 hours.

Port of Tyne

The DFDS Seaways Newcastle-Ijmuiden (Amsterdam) service is from the International Passenger Terminal in North Shields and offers an overnight crossing in both directions deploying two ships and offering a mini-cruise experience. The departure from North Shields is at 17:00 in Newcastle and the crossing time is 15.5 hours.

APPENDIX E: STAKEHOLDERS CONSULTED

Stakeholder Consultations Topic Guide

Economic Stakeholders

1) How would you describe the international economy within the North of England and/or your particular geographic area of interest in terms of:
   a. FDI success
   b. Export position
   c. Key sectors / companies (collect details of potential contacts if possible)
   d. Key overseas markets
   e. Strengths, Weaknesses, Opportunities, Threats

2) How important is international connectivity to the main players in the international economy? Why is it important? Do you have specific examples of companies for whom air connectivity has been a key factor in location, reinvestment or growth in exports/business growth more generally?

3) What do you feel are the current strengths and weaknesses of Northern Airports and ports (ferry and cruise only, not freight shipping) in supporting the Northern economy? Are you able to give any specific examples?

4) What do you see as the local airport to your area and what role does this play compared to others in the North and wider UK? Are local air services important?

5) Is surface access to Northern Airports adequate? What needs improving? Do you have a view on what is an acceptable time to access the network of air services or ferry services?

6) What would you say are the barriers to securing better air connectivity in the North?

7) From your perspective, what are the key air routes served from Northern Airports that are important to economic growth in the North? Are there some routes which are (or will be) economically important, but which are not currently served direct? What is the value of direct services over hub connections, do they matter for business? Are the considerations different in terms of attracting inbound tourists?

8) How do you think the Northern Airports compare with their competitors in the UK or overseas in terms of providing connectivity? Is the North of England as well served or otherwise compared with its competitor cities or regions in the UK and Europe?

9) How do you think the economy of the North of England would differ without good air connectivity? Would there be an impact on overall prosperity? Which sectors would be particularly affected?

10) What role do passenger ferries play in International Connectivity from the North. Is the current offer adequate and to what extent do you think ports outside of the region can fulfil the needs versus direct services?

11) (If appropriate to the stakeholder…) How important are the Northern Airports in bringing leisure or business tourists to the region? What are the key markets for the visitor economy?

12) What role do cruise ships have in the tourism economy in the region and wider North, currently and in the future?

Airport/Airline Stakeholders

Relevant questions from above plus…

13) What role do you see for your Airport/Airline within the North, currently and in the future? Pan-regional sub-regional, city-region? What areas do you feel you cover?

14) What role do you see for the other airports in the North? (Manchester, Liverpool, Leeds/Bradford, Doncaster, Durham Tees, Newcastle, Carlisle).

15) To what extent do you believe you are meeting the needs of the your local area and/or the wider region, and do you believe you are not meeting all needs? (if so, please expand). What network gaps are there in the North and how should they be filled?

16) What barriers do you have to expanding air services to meet the needs of The North and/or the sub-region you serve? Do you have any physical constraints or are you lacking any facilities that could be necessary to attract certain air services?

17) What could be done by the public sector to help overcome these barriers? (Policy interventions, funding?).

TfN		
Department for Transport	Ian Elston	Head of Aviation Policy
TfN	Julie Carrier	
TfN Strategy Team (Sheffield CR)	Amy Harhoff	
TfN Strategy Team (Leeds CR)	Liz Hunter	
Manchester Airport	Tim Hawkins	Corporate Affairs Director
Newcastle Airport	Graeme Mason	Planning & Corporate Affairs Director
Liverpool Airport	Mark Povall	Director of Air Service Development
Doncaster/Durham Tees Airports	Steve Gill	Managing Director
Leeds/Bradford	John Parkin	Managing Director
Humberside International	Deborah Zost	Managing Director
Carlisle Airport	Glyn Jones	CEO Stobart Aviation
Flybe	Martin Pearce	
easyJet	Ali Gayward	UK Commercial Manager
Ryanair	Kate Sherry	Dep Director Route Development
Emirates	Laurie Berryman	VP UK & Ireland
British Airways/IAG	Jonathan Bailey	Head of Gov Affairs
Shipping Related		
Port of Tyne	Susan Wear	Corporate Affairs Director
Peel Ports	Warren Marshall	
Liverpool Cruise Terminal	Angie Redhead	Cruise Operations Director
P&O Ferries	Janette Bell Sue Mackenzie Stephen Weaver	Commercial Director Operations Director Strategy & New Business Development
Associated British Ports	Frank Robotham	
DFDS Seaways	Max Foster	Managing Director
Cheshire & Warrington		
Chesh. & Warr. LEP	Andy Hulme	Policy Manager
LEP & Various Chambers of Commerce	Nigel Schofield	
Marketing Cheshire	Katrina Michel	CEO
Heat Trace	Dan Berrisford	MD
Cumbria CC	Alison Hatcher	Regeneration Manager
Cumbria CC	Michael Barry	
GSK Pharmaceuticals	Pat McIver	GSK Site Lead
BAE Systems	Jackie Arnold	Head of Strategy
Westinghouse	Lindsay Roche	Supply Chain Director
Cumbria Tourism	Ian Stephens	Managing Director

Greater Manchester		
Marketing Manchester	Sara Tomkins	Destination Director
MIDAS	Tim Newns	Chief Executive
Manchester University	Colin Bailey	Dep Vice Chancellor
New Economy Manchester	John Steward	
Vimto	Simon Hunt-Brown	International Commercial Director
BASF	Gordon Thompson	Director Manufacturing UK
Turner & Townsend	Dave Unwin	
Hull & Humber City Region		
Hull University	Ian Mills	Business School
Hull City Council	Malcolm Relph	Economic Regenaration
Lancashire		
Lancashire CC/LEP	Kathryn Molloy	Head of LEP Development & Co-ordinaiton
Lancashire CC/LEP	Andy Walker	
Leeds City Region		
Shulmans LLP	Jeremy Shulman	Owner
Leeds City Region LEP	Amanda Potter	Policy Lead Int Trade
Airedale International Air Conditioning Ltd	Asim Ansari	Export Sales Manager
Lime Tree Ltd	Paul Walters	Director
Liverpool City Region		
Marketing Liverpool	Chris Brown	Director
University of Liverpool	Patrick Hackett	Vice Chancelor
Sefton Borough Council	Margaret Carney	CEO
Liverpool ACC	Bob Prattey	CEO
St Helens Chamber	Tracy Mawson	Director of Business Svs
Liverpool ONE	Chris Bliss	Estates Director
St Helens Council	Mike Pailn	Chief Executive
North East City Region		
Newcastle CC	Mark Wilson	Head of Transport Policy
NE Combined Authority	Rob Hamilton	Head of Economic Policy
North East LEP	Richard Baker	Head of Strategy & Policy
Automotive Alliance	Paul Butler	CEO
North East Combined Authority	Guy Currey	Inward Investment Director
Newcastle/Gateshead initiative	Catherine Walker	n/a
Ward Hathaway	Jamie Ward	Managing Partner
North East Chamber	Arlen Pettitt	Policy Advisor
Nicander Limited	Trevor Platt	Business Development Manager

North Yorkshire		
North Yorkshire	Andrew Bainbridge	Team Leader Transport Planning
North Yorkshire	Mark Kibblewhite	Senior Policy Officer
Sheffield City Region		
Doncaster Chamber	Dan Fell	CEO
Sheffield City Region LEP	Fiona Boden	Senior Economic Policy & Delivery Analyst
University of Sheffield	Gordon E Dabinett	Prof Regional Studies
Advanced Manufacturing Park	Iain Thompson	Partnerships Manager
Tees Valley City Region		
Darlington BC	Dave Winstanley	Asst Director of Transport
Tees Valley Unlimited LEP	Steve Payne	Strategic Transport Manager
Stockton on Tees Borough Council	Richard McGuckin	Head of Economic Growth & Development
NEPIC	Dr Stan Higgins	CEO
Others		
UKTI	Marian Sudbury	Director Global Ops
N8 Research Partnership	Peter Simpson	Director
Visit Britain	Melanie Sensicle	Project Lead
Business North/CBI	Guy Parker	