Union
Connectivity
Review

Union Connectivity Review

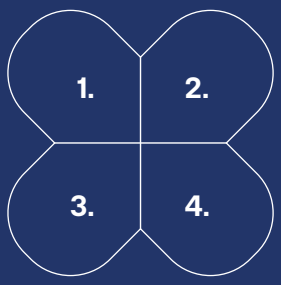
Interim Report – March 2021











Cover page images

1. Caledonian McBrayne service departing Tarbert, Isle of Harris
2. Planes at London Gatwick Airport
3. Severn Estuary and Severn Bridge, Chepstow, South Wales
4. Great Victoria Street Railway Station, Belfast, Northern Ireland

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UCR@dft.gov.uk

Union Connectivity Review

Department for Transport
Great Minster House
33 Horseferry Road
London SW1P 4DR
0300 330 3000
www.gov.uk/government/organisations/department-for-transport
General enquiries: forms.dft.gov.uk

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Foreword

Transport connectivity is vital to economic growth, job creation, building housing, and social cohesion. This government has recognised this with its commitments to 'building back better' and to the levelling up agenda. The Prime Minister's request to me to review the connectivity of the United Kingdom is a further recognition of the crucial nature of transport connectivity. I am pleased to submit my interim report.

Devolution has been good for transport where its delivery has been devolved; the Prime Minister confirmed that in his Manchester Museum of Science and Industry speech in July 2019. But I have already concluded that conversely that has also led to a certain lack of attention to connectivity between the four nations, due to competing priorities and complex funding.

Levelling up has also brought into focus the way in which transport investment proposals are prioritised. The recent review of the Green Book places much greater emphasis on the strategic case for investment, as indeed it should if better connectivity is to be delivered outside major conurbations and London and South East England. In this review I will look at priorities based on the wider strategic case for investment; as has the recent National Infrastructure Commission work on the Integrated Rail Plan for the Midlands and the North. I will develop an objective criteria against which to assess schemes that support these priorities. This will consider how improvements can better connect the Union, how they will provide an economic benefit, how they will impact the environment and, how they will improve the quality of life of the people that use them.

Leaving the European Union has meant we have also left behind the EU Trans-European Network for Transport, designed to identify routes and nodes across the EU into which EU funding would create EU-wide growth, jobs, housing and social cohesion. In recent years the UK has put an annual average of €447m into CEF-T, the EU transport funding mechanism, but received back only a tenth of that figure.

This creates the opportunity to replace this by a UK Network, with the same objectives, but tailored to respond to the UK's needs including the levelling up agenda, and which could be used to put resource into better connectivity between the four nations of the United Kingdom. My consultation in the early stages of this work suggests widespread approval for this concept, provided it is funded, and that funding is not subtracted from existing funding of the devolved administrations. UK government funding would, like the former EU funding, be used to add to existing funding streams, to enable higher capacity, faster, and more reliable connectivity. And, because the Network would be determined by the UK government, which I would expect it to do in consultation with the devolved administrations, it would be determined to directly address the UK's particular needs.

From the work I have done so far, some of the key concerns raised include the following, obviously not exhaustive list:

- Faster and higher capacity connections for passengers from HS2 to Scotland and North Wales, and consequently better freight capacity too
- Higher capacity and faster journey times to and from Scotland from England and Wales and Newcastle by rail (East Coast Main Line) and road (A1)
- A higher capacity and faster connection on the A75 from the ferry port at Cairnryan to the M6 corridor for freight and passengers to and from Northern Ireland
- Relief from congestion for the M4 corridor in South Wales, on which the Burns Commission recently reported to the Welsh Government, and consequent improvements to the South Wales main line
- Better port capacity at Holyhead, and connections from Ynys Môn and the North Wales coast to Merseyside and Manchester for freight and passengers
- Improved port capacity, road and rail capacity and journey times East/West across the Midlands and the North, for passengers, and to enhance freight capacity and connections from Ireland, and onwards to the East Coast ports for exports, post Brexit.
- Faster and higher capacity connections from Belfast to North West Northern Ireland, and to the Republic of Ireland, for passengers and freight, and to link with the Republic's plans for rail development
- Better air links to England to and from Northern Ireland and Northern Scotland, including but not exclusively to and from London Heathrow, for worldwide connections for passengers and freight; including the appropriate rate of Air Passenger Duty for journeys not realistic by rail
- Connections to freeports when those are announced by the government and the devolved administrations

All these, and other connectivity issues identified by our further work, will be reviewed in my final report.

I am asked to look forward, to what will be different in the next 20/30 years, and also to take into account the Government's environmental agenda, so my further review will take on board both. Transportation in the UK has opportunities to contribute to the UK's target of becoming net zero carbon by 2050. That will particularly go to air travel, where I would particularly like to take on board whether, and to what extent, essential domestic air travel can be made carbon neutral.

I have also been asked specifically about a fixed link between Northern Ireland and the British mainland. To do this I have asked two experts, Professor Douglas Oakervee, CBE, and Professor Gordon Masterton, OBE, to lead a discrete piece of work, using engineering consultants, to assess the feasibility of such a link, and an outline cost and timescale for the link and the associated works needed.

I have a small group of advisors who have already assisted materially with this work, and to whom I extend my gratitude. I have already had the benefit of the views of a wide range of stakeholders, and many written responses to the call for evidence, and I am appreciative to everyone for their time and effort involved. I am grateful to the small team of DfT officials for their hard work on the Review, alongside much else they have done related to both COVID-19 and Brexit. I am also grateful to others elsewhere in Government, and to the consultants who are contributing. But the responsibility for this interim report and, when submitted, the final report in the summer, is, and will be, mine alone.



Sir Peter Hendy CBE

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Executive Summary

This Review is an opportunity to assess current transport connectivity within and between the nations of the UK and to make recommendations that will maximise economic potential and improve quality of life

Transport connectivity is central to people's lives. Transport networks ensure that supermarkets are stocked, and doctor's appointments are met. It provides the opportunity for people to see their favourite football team play, attend a dream job interview and to visit their families. It keeps people connected to each other and to the wider world.

The Union Connectivity Review will assess transport connections and networks in, and between, England, Scotland, Wales, and Northern Ireland. It will consider how the quality and availability of transport can support economic growth, levelling up and an improvement in quality of life. The Review will deliver a series of substantive recommendations that seek to address inequalities in connectivity and economic potential in England, Scotland, Wales, and Northern Ireland. The Review will consider the impact of the COVID-19 pandemic which has significantly disrupted economic and social activity and the subsequent demand for travel across the UK.

This Interim Report considers existing transport connectivity of the UK and breaks this down by mode for passengers and for freight. It also provides detail on the environmental impact of travel between the nations of the UK.

It reviews the EU Trans-European Transport Network (TEN-T); its approach, the UK's contributions to the Connecting Europe Facility and the funding received from it, and to what extent the aims the EU has for TEN-T would be applicable to a similar network designed for UK needs.

This interim report briefly examines economic indicators such as GDP, productivity, population density and unemployment in order to build a picture of the current economic situation across the UK. More work is to follow on this.

Stakeholder engagement is vital to the successful delivery of this Review and a significant amount has taken place through direct engagement, roundtables, and a formal Call for Evidence. This has identified several key themes including a recognition of the importance of transport connectivity and a desire for increased investment in strategically critical infrastructure outside of London and the South East.

The Review has developed a pragmatic and well-evidenced approach to assess current transport needs and consider what a network of the future could look like. In line with HM Treasury's recent review of The Green Book this approach seeks to fully consider the strategic case for transport investment as opposed to just undertaking a strict cost-benefit analysis. This will help to ensure that any investment in transport arising as a result of this review will align with and supports the Government's wider strategic agenda.

A key emerging recommendation from the Review is the possible development of a new UK Strategic Transport Network. This could build on the top-down assessment approach taken to define the Trans-European Transport Network devised to support the European Single Market through improved connectivity and the closure of gaps in existing cross-border transport networks. The development of a UK equivalent could support better assessment of transport routes and investment decisions, better management of the flow of people and goods between nations and improved partnership working between the UK government and devolved administrations. This received strong support from stakeholders, subject to additional funding being made available. The Review believes that there is a strong strategic case for a new UK Strategic Transport Network and will undertake additional work to define this with further detail being provided in the final report. The Review will also work to define what such a network could look like and how it could benefit all the nations of the UK.

Going forward, the Review will continue to assess transport and economic baselines, undertake research, engage with stakeholders, and fully assess the responses from the Call for Evidence. It will use this information to consider policy and develop well evidenced recommendations which seek to improve transport connectivity and support economic growth and an improvement in quality of life for people across the UK.



Delivering the Review

In order to deliver this Review effectively Sir Peter Hendy CBE has worked to put in place an appropriate support structure. This includes an advisory panel of independent experts with relevant experience in transport planning and strategy development.

Sir Peter Hendy CBE has been the Chair of Network Rail since July 2015, and Chair of the London Legacy Development Corporation since July 2017. Sir Peter was previously Commissioner of Transport for London since 2006, having served since 2001 as TfL's Managing Director of Surface Transport. He led the successful operation of London's transport for the 2012 Olympic and Paralympic Games.

He is the International President of the Chartered Institute of Logistics and Transport for 2019, a fellow of the Chartered Institute of Highways and Transport and a fellow of the Institute of Civil Engineers.

He was knighted in the 2013 New Year's Honours List, having been made CBE in 2006.

Advisory Panel



Professor David Begg

Professor David Begg is Chief Executive of Portobello Partnership. He is a non-executive Board member of Heathrow Airport Holdings Ltd and chaired the Government's Commission for Integrated Transport and the recent Independent Glasgow Connectivity Commission. He was a board member of Transport for London and Chairman of Tube Lines and was a non-executive Director of the Strategic Rail Authority and before that British Rail.



Neale Coleman CBE

Neale Coleman has been appointed as a Commissioner for the National Infrastructure Commission. He worked at the Greater London Authority leading the Mayor's work on London's Olympic bid, the delivery of the Games and their regeneration legacy, and was a Board Member of the Olympic Delivery Authority throughout its life. He is an expert in urban regeneration and the contribution that transport infrastructure schemes can make to growth, jobs, and housing.



Michèle Dix CBE

Michèle started her career at the Greater London Council (GLC) after completing her PhD in transport. She spent fifteen years in the private sector with Halcrow Fox becoming the Board Director for urban transport. She joined Transport for London in 2000 as Director of Congestion Charging before becoming Managing Director of Planning and Managing Director of Crossrail 2. Michèle is a visiting professor for UCL and is prominent in the International Association of Public Transport, UTIP, where she chairs the committee that promotes public transport research and best practice globally.



Elaine Seagriff

Elaine Seagriff is Director of Transport Planning with Jacobs and leads their UK national transport strategy and policy team to shape strategic policy and transport strategy development in regions across the UK and internationally.

Prior to joining Jacobs in 2017 Elaine served as Head of Transport Policy and Strategy for Transport for London and was responsible for developing and implementing the 20-year Mayor's Transport Strategy. She is a member of the SE Wales Transport Commission and is currently leading the Whole Industry Strategic Plan for the GB rail network.

Fixed Link Advisors

The Terms of Reference of the Review[1] require Sir Peter to consider transport links between Northern Ireland and Great Britain. A key part of this consideration is the possible development of a fixed link. In order to effectively deliver recommendations on a technical project of this nature Sir Peter has procured the services of Doug Oakervee CBE and Professor Gordon Masterson who will be considering the feasibility, cost and timescales for this specific proposal.



Doug Oakervee CBE

Professor Oakervee is a past Chairman of both HS2 and Crossrail and was the 139th President of the Institution of Civil Engineers. He was the Chief Engineer on the Hong Kong Mass Transit Railway and was project Director for Hong Kong International Airport. He undertook a review of HS2 which reported to the Prime Minister in January 2020. He was awarded the CBE in 2010.



Professor Gordon Masterson

Professor Masterton is a previous Vice-President of Jacobs Engineering, a past President of the Institution of Civil Engineers and of the Institution of Engineers and Shipbuilders in Scotland, a former Chairman of the Construction Industry Council and founder and current Chairman of the Scottish Engineering Hall of Fame. He was the UK Government's project representative on Crossrail and chairs the Independent Assurance Panel for the HS2 high-speed rail link. He is Chair of Future Infrastructure at the University of Edinburgh.

Secretariat

In order to facilitate the day to day work of the Review Sir Peter has also engaged the Department for Transport (DfT) to provide a secretariat. Consisting of DfT staff this secretariat provides practical support to Sir Peter and enables him to effectively deliver the UCR. Sir Peter has procured the services of external consultants and has also engaged Sir Malcolm McKibbin to provide support to the Review.

1 www.gov.uk/government/publications/union-connectivity-review-terms-of-reference

Background

This is an interim report to update on progress of an independent review led by Sir Peter Hendy CBE. Final recommendations will be published in summer 2021.

This Review was launched in October 2020 to consider transport connectivity across the United Kingdom and to identify a series of recommendations that will support the Government's strategic ambitions.

Scope

The government has asked Sir Peter to undertake a detailed review of how the quality and availability of transport infrastructure across the UK can support economic growth and quality of life across the whole of the UK. This work should cover transport connectivity between England, Scotland, Wales and Northern Ireland via road, rail and air, and across the Irish Sea.

As part of this review, Sir Peter has been asked to consider:

- The quality and reliability of major connections across the UK
- Likely current and future demand for transport links
- The environmental impact of policy options (including with regard to climate change)
- Existing work completed by the government on cross-UK connectivity
- Work across modes to restart and recover from the COVID-19 pandemic, including the Aviation Recovery Plan

The Review will make recommendations as to whether and how best to improve transport connectivity in the long term, including how to bolster existing connections. These recommendations will be consistent with the UK's wider fiscal strategy, will have significant benefits to either economic growth or quality of life in the UK and will be underpinned by economic analysis. This analysis will be published.

The Review will consider the cost, feasibility and value for money of any recommendations made. It will also consider relevant delivery arrangements and timescales as well as how any proposed projects should be sequenced.

In carrying out this review, the Government has asked Sir Peter to consider likely future transport need and technological development in the long-term, which the government defines as the next 20 to 30 years.

The Government has also asked Sir Peter to consult widely with relevant government agencies, including the Department for Transport, its modal teams, Scotland Office, Wales Office, Northern Ireland Office, and National Infrastructure Commission, alongside the devolved administrations, local authorities and their infrastructure commissions as well as with industry, academics, engineering experts and the general public. The Review will provide a summary of this engagement activity.

Undertakings

In order to deliver a series of well evidenced and robust recommendations the Review will undertake the following:

- Assess current and future travel demand between the constituent nations of the United Kingdom, including a full consideration of the impact of COVID-19 and the UK's departure from the European Union
- Engage with stakeholders, including the governments of Scotland, Wales and Northern Ireland and assess responses from a detailed Call for Evidence seeking information on current travel patterns, challenges, opportunities and other possible improvements
- Fully consider the environmental impact of any recommendations made by the Review and ensure that these support UK Government commitments
- Commission social research to better understand the public perception of the ease and cost of travelling across the United Kingdom
- Consider the costs and benefits of developing a pan-UK strategic transport network
- Assess the feasibility, cost and timescales of constructing a fixed link between Northern Ireland and Great Britain
- Develop a pragmatic methodological approach by which the Review can assess the demand for improved connectivity and the benefits of any possible recommendations
- Fully consider other ongoing projects with a union connectivity element

Sir Peter will publish a final report in summer 2021 setting out a series of recommendations which support the Government's ambition to reduce inequality and improve quality of life by improving transport connectivity within and between the nations of the United Kingdom.

Preliminary Transport Assessments

It is vital for the Review to understand how people and goods currently move across the United Kingdom and how this could be improved through enhanced connectivity between England, Scotland, Wales and Northern Ireland

Developing a preliminary assessment of transport connectivity

Connectivity is defined as the extent to which people and businesses are connected to one another, to jobs & to goods and services and to existing and planned major economic centres. Excellent connectivity across the UK is crucial in driving sustainable, balanced and well-distributed economic growth.

It is crucial that the recommendations of the Review are founded upon a clear, robust evidence base. This means demonstrating the existence and extent of connectivity problems, before considering any solutions or interventions. As such, this initial assessment is focussed wholly on understanding current networks and demand levels. It does not attempt to fully identify problems with connectivity or make reference to potential interventions, nor does it pre-judge the outcomes or recommendations of the Review.

This assessment will set out the following:

- An overview of existing strategic transport networks within the UK
- A high-level summary of baseline transport connectivity and demand by each mode: road, rail, maritime and air. This also sets out freight movements and capacity across the UK
- A summary of current levels of transport related greenhouse gas emissions

The information contained in this report provides a summary of initial work to date. This is a snapshot of current activity and further assessment is ongoing. This further work will identify the links between existing transport connectivity and economic baselines and will identify areas where transport connectivity could be improved. This will be set out in the final report in summer 2021.

An overview of transport connections within the UK

England

The East Coast and West Coast Main Lines provide north-south rail connectivity from London to central Scotland, calling at key cities in the Midlands and North of England. The West Coast Main line is particularly important for freight. HS2, once operational, will provide opportunities to improve capacity and journey times on the West Coast Main Line, benefitting a wide array of routes across Great Britain. The Great Western Mainline is key for east-west connectivity into South Wales and the South West.

The Strategic Road Network is managed by Highways England to maintain and improve road connectivity. The M25 experiences significantly greater demand than any other road in England and is key for connectivity in the south east and onwards to Dover and other ports. The M6 and M1 are key corridors for north-south connectivity and are the most heavily used road freight corridors. The east-west M4 between South Wales and London serves many important origins and destinations.

As the largest of the UK's four nations, there is significant air travel within England. Important airports for north-south flows within England include Heathrow, Manchester and Newcastle. East-west flows are concentrated in the south, with the most significant airports being Newquay, Exeter, Heathrow and Southend. East Midlands Airport is comfortably the largest in the UK for dedicated domestic air freight.

England has many major ports which connect to the rest of the Union, to the Republic of Ireland, and to mainland Europe.

Scotland

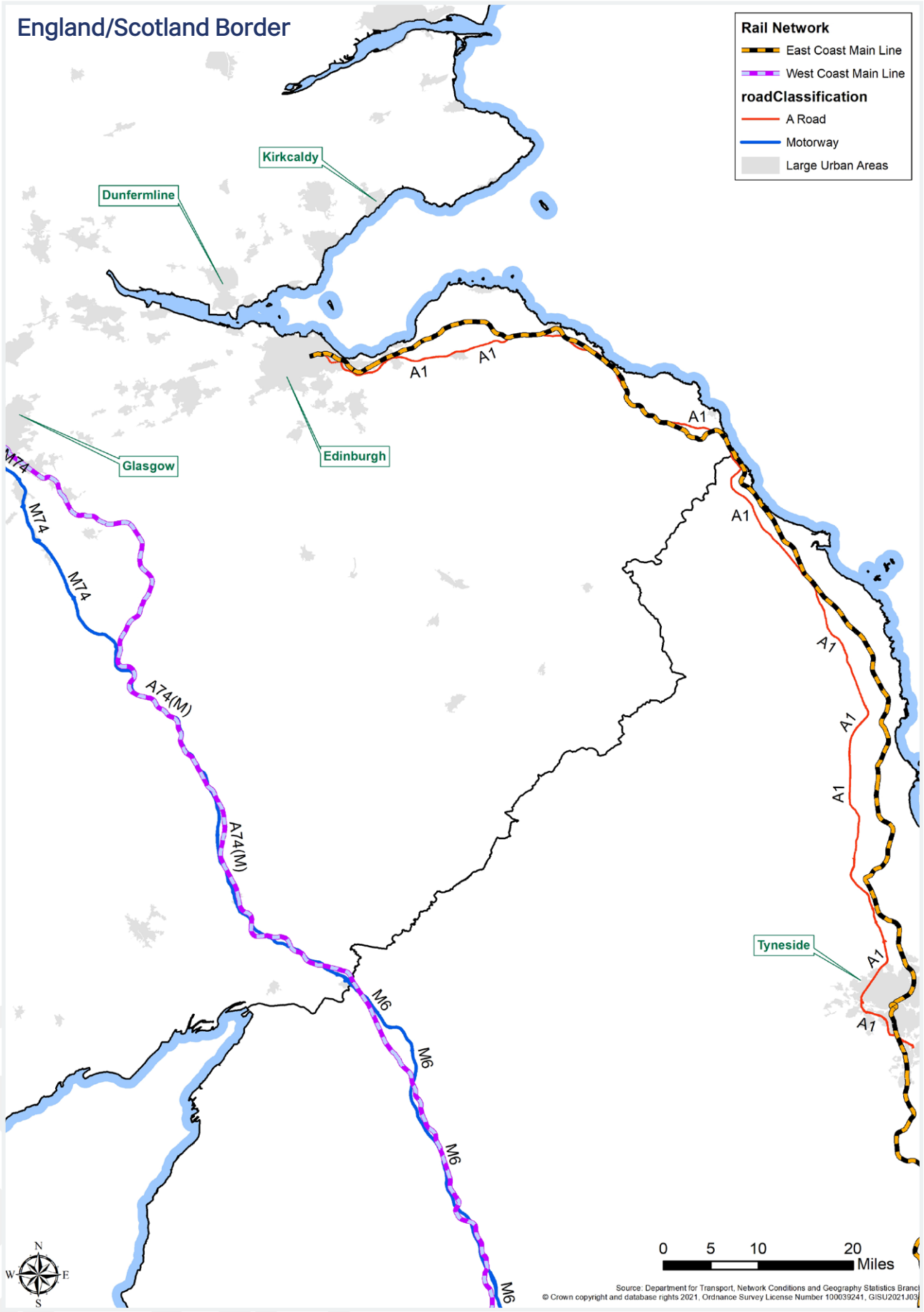
Rail is the main mass-transport mode across the England-Scotland border, with cross-border rail trips overwhelmingly to or from Glasgow and Edinburgh on both the West Coast and East Coast Main Lines. Large volumes of rail freight also travel to and from Scotland by both West and East Coast Main Lines, though the former dominates.

The M6 is the only motorway connection into Scotland; it has a higher proportion of freight trips (27%) than average. Another important road corridor is the A1 from Newcastle to Edinburgh, but which has a lower proportion of HGVs and a significantly lower total traffic flow. North of Newcastle the route is single carriageway where average delays are higher and average speeds lower than other non-motorway sections of the A1.

Air connectivity is important for Scotland, given the distances involved in accessing key cities in other nations. The volume of cross-border air passenger trips and the number of available routes greatly exceeds those in Northern Ireland and Wales. Glasgow, Edinburgh, Inverness, and Aberdeen airports have very significant domestic passenger flows. Aviation is also essential for connecting the Scottish mainland to its surrounding islands (as are ferries), with a high number of (largely) low demand routes ensuring connectivity to the furthest reaches of the UK. With regard to freight, Edinburgh and Aberdeen airports are the UK's third and fourth largest by freight tonnage respectively, and Glasgow Airport is also in the top 10.

Maritime connectivity between Scotland and Northern Ireland is critical for freight, not only between these countries, but also for goods travelling through Scotland between England and Northern Ireland. This freight flows through the port of Cairnryan; therefore, road connectivity to Stranraer on the west coast is of key strategic importance, specifically the A75 and A77 with the former being particularly important and carrying twice as many freight vehicles than the latter. There are a number of other major UK ports in Scotland, though none come close to the port of Cairnryan in terms of domestic freight volumes.

There are also significant passenger flows across the Irish Sea between Cairnryan (Stranraer) and Belfast, with a smaller flow to and from Larne. As with aviation, ferries play an important role in connecting people and goods between the Scottish Mainland and the surrounding islands.


England/Scotland Border
Rail Network
East Coast Main Line
West Coast Main Line
roadClassification
A Road
Motorway
Large Urban Areas
Kirkcaldy
Dunfermline
Edinburgh
Glasgow
Tyneside
A1
M74
A74(M)
M6
N
W
E
S
0 5 10 20
Miles
Source: Department for Transport, Network Conditions and Geography Statistics Branch
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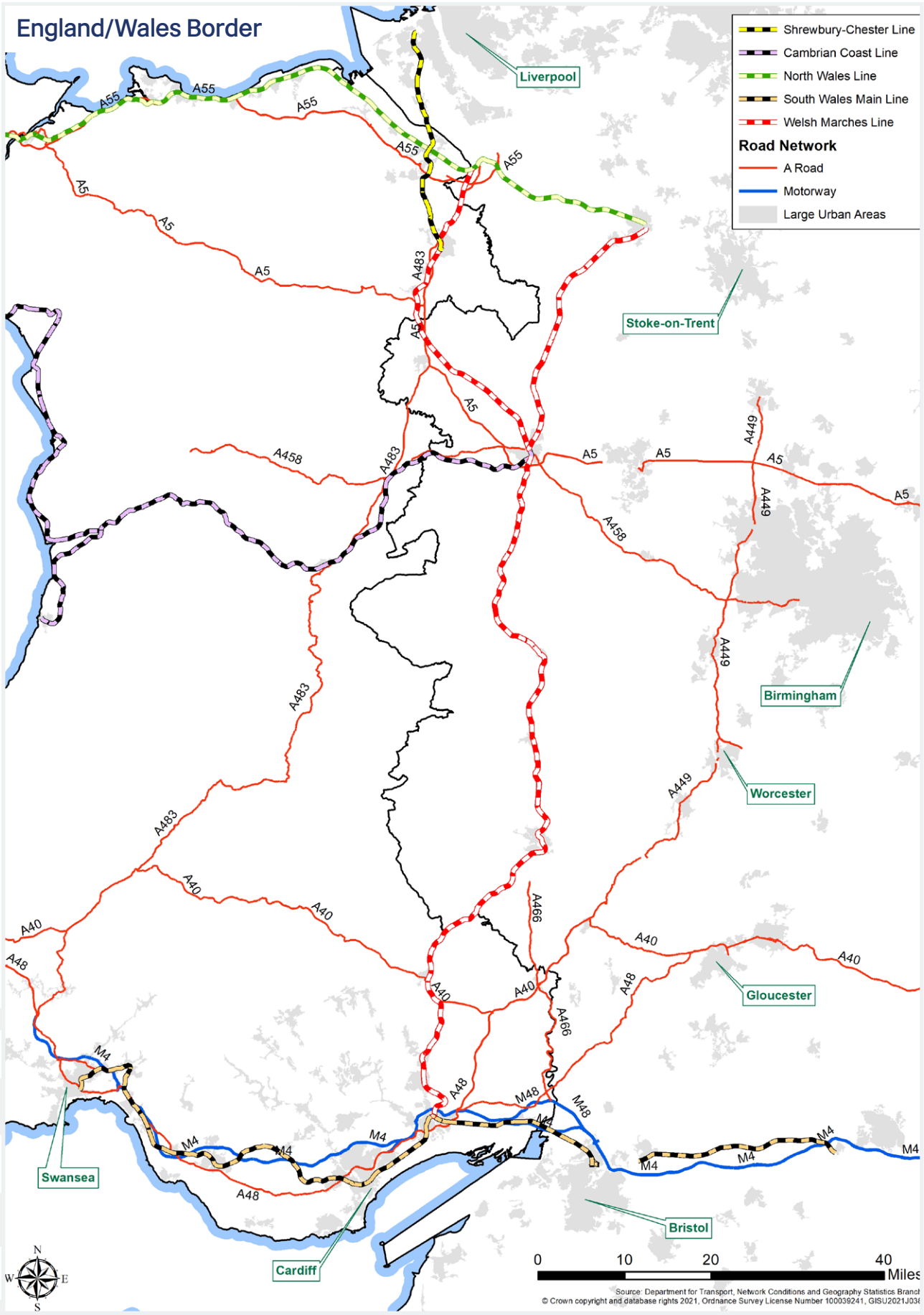
Wales

The population of Wales is heavily concentrated in the very south and very north of the country. Because of geography, unlike the other nations, there are significant cross- border commuting flows to and from England. Jobs in Bristol and the Midlands are accessible from Cardiff and Newport in the south, and jobs in Liverpool, Stoke and Manchester are accessible from north Wales. Almost all of these commuting trips are by car and this contributes to road congestion problems in the peak, most notably on the M4 in the south.

Since the areas of concentrated economic activity are in the North and South, the South Wales Main Line and the North Wales Coast Line are very important for rail connectivity, both within Wales and across the border to England. Rail freight to and from Wales is restricted by railway gauge limitations that prevent the use of larger freight wagons west of Didcot.

Holyhead is the only major UK port (cargo volumes of at least 1 million tonnes annually) in the North of Wales. It has significant freight crossings across the Irish Sea, and so access to and from Holyhead by the A55 is an important consideration for freight connectivity. There are a number of major UK ports concentrated along the south coast, namely Fishguard, Milford Haven, Swansea, Port Talbot, Cardiff & Newport. Of these, Milford Haven has the greatest freight volumes across the Irish Sea. The M4 is strategically important for access to these ports.

Cross-border trips by air to the rest of the UK are very small in comparison to the other nations. The distance to most locations in England is too small for air to be a competitive mode and much of the Welsh population can access very well-connected English airports. For example, Bristol and Manchester airports are well connected to the rest of the Union, and many Welsh passengers use these routes to access Northern Ireland and Scotland, however Cardiff airport is growing in importance. Freight volumes by air are similarly small.


England/Wales Border
Shrewbury-Chester Line
Cambrian Coast Line
North Wales Line
South Wales Main Line
Welsh Marches Line
Road Network
A Road
Motorway
Large Urban Areas
Liverpool
Stoke-on-Trent
Birmingham
Worcester
Gloucester
Bristol
Cardiff
Swansea
A55
A5
A483
A458
A449
A40
A466
A48
M4
M48
0
10
20
40
Miles
Source: Department for Transport, Network Conditions and Geography Statistics Branch
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Northern Ireland

Since it is divided from the rest of the UK by the Irish Sea, air and maritime routes are critical to Northern Ireland's connectivity.

Cross-border passenger aviation trips are dominated by those to and from Belfast, with many English and Scottish airports accessible from one or both of the city's airports. The route between Londonderry and Edinburgh is the most popular non-Belfast flow. Belfast International Airport is the second largest UK airport by freight tonnage.

As discussed for Scotland, passenger ferry travel is mostly between Belfast and Cairnryan (Stranraer), with a similar but smaller flow between Larne and Cairnryan. There are also passenger ferries between Belfast and Liverpool, but this has the smallest flow of the three routes. The freight routes across the Irish Sea are similar, but there are also important flows between Heysham in England and Belfast, and between Heysham and Warrenpoint in the very south-east of Northern Ireland. Both Belfast and Warrenpoint ports have seen notable increases in their freight traffic with the rest of the UK over the past ten years, whilst Larne has seen a decrease.

Within Northern Ireland, rail and road corridors connect Belfast to other major settlements of Londonderry, Enniskillen and Newry. These are the focus of the Northern Ireland Strategic Transport Network.

Given that both passengers and freight travel through the Republic of Ireland on their way between England and Northern Ireland, north-south connectivity through Ireland is important. Cross-border routes include the Irish M1 which runs along the coast from Dublin to Newry, joining the A1 and continuing to Belfast and the A5 which runs south from Derry through Strabane, joining with the Irish N2 on its way towards Monaghan and Dublin.

Greenhouse Gas Emissions

Transport contributes 28% of all UK domestic greenhouse gas emissions which is a larger contribution than any other sector. These emissions have increased recently and are only 3% lower than in 1990[2].

Road transport makes up the significant majority of these greenhouse gas emissions with 55% being produced by cars. There have been significant increases from commercial vans and from international aviation since 1990.

2 assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/932122/decarbonising-transport-setting-the-challenge.pdf

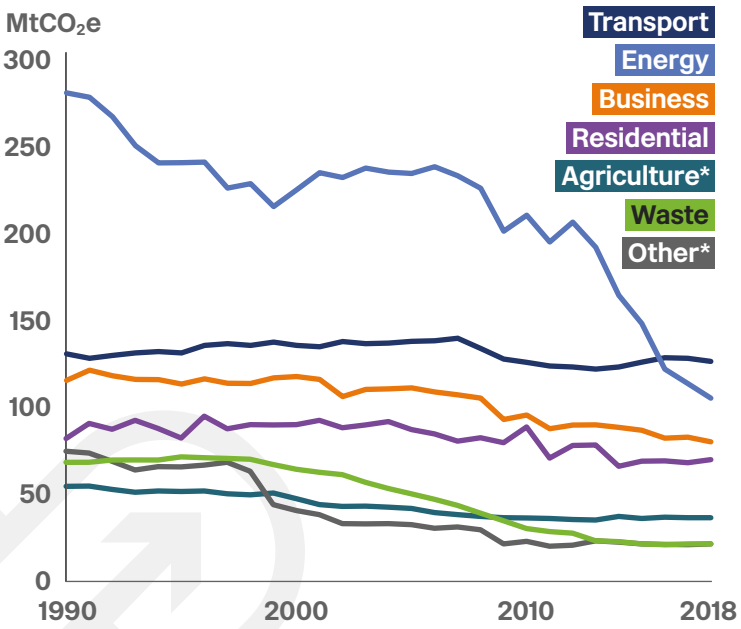
Aviation emits more greenhouse gases per mile than any other transport mode. A passenger travelling from London to Edinburgh by air would result in 144kg of greenhouse gas emissions while the same journey travelled by train would result in only 29kg of emissions. However, an individual making the journey in a petrol car would result in 129kg of emissions, although this would reduce as the number of people in the vehicle increases and would also vary depending on the type of vehicle and style of driving.

In June 2019, the UK became the first major economy to pass a net zero law to end its contribution to climate change by 2050. Net zero will require all sectors of the UK economy, including transport, to deliver substantial further emissions reduction. Although the DfT currently project that transport emissions will fall, the UK will need to go further and faster to achieve its climate change goals.

These ambitions will be supported by the development of new and innovative technologies such as electric vehicles and sustainable aviation fuels.

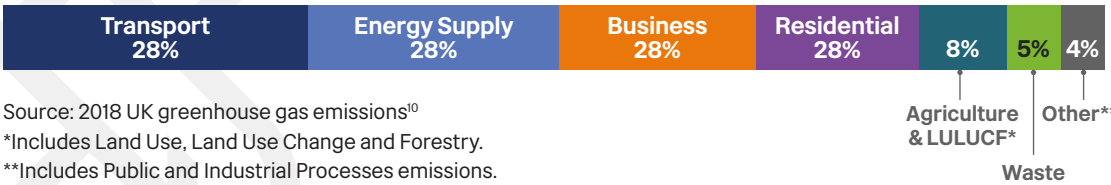
The recommendations of the Review will be consistent with the UK's climate change targets.

Greenhouse Gas Emissions by sector ($MtCO_2e$) 1990 - 2018



Transport became the largest emitting sector of GHG emissions in 2016. This follows large decreases in energy emissions while transport emissions have remained relatively static.

451 million tonnes of CO_2 equivalent ($MtCO_2e$) is the total net domestic greenhouse gas emissions from all UK sectors in 2018, down 2.1% from 2017.



Source: 2018 UK greenhouse gas emissions[10]
*Includes Land Use, Land Use Change and Forestry.
**Includes Public and Industrial Processes emissions.

Preliminary Transport Demand Assessment

The Review has undertaken a preliminary assessment of current transport demand across the UK. This is broken down by mode and summarised below along with supporting information. This should be considered as initial work and further analysis will be undertaken to close knowledge gaps and refine existing assessments.

Roads

Management of the road network in the UK is a devolved issue managed by Highways England, Transport Scotland, the Welsh Government (managed by North and Mid Wales Trunk Road Agent and South Wales Trunk Road Agent) and the Department for Infrastructure in Northern Ireland.

The road network is vitally important to the flow of goods and people across the UK with over 365 billion miles being driven on GB roads in 2019[3]. Over 62% of these miles were driven on Motorways or "A roads" despite these roads making up only 13% of total road length. The importance of the road network has grown over time with a 12x increase in vehicle traffic since 1949.

24hr Annual Average Weekday Traffic (AAWT) data show that demand for travel on the road network is high. The cross-border connections with the greatest traffic flows are the Severn Crossing between England and Wales and the M6 which handle combined daily totals of over 100,000 vehicles and 48,000 vehicles respectively.
The M6 is particularly important for freight traffic with HGVs making up over a quarter of all flows. The M6 handles almost five times as much daily traffic as the A1 which is likely due to differences in quality/capacity and the relative geographical locations of these corridors.

Border crossing	Location	Direction	24hr AAWT	%HGV
Scotland-England	M6	NB	24, 195	27%
Scotland-England	M6	SB	24,137	28%
Scotland-England	A1 north of Berwick	NB	5,905	15%
Scotland-England	A1 north of Berwick	SB	6,151	16%
Wales-England	Severn Crossings	WB	53, 268	14%
Wales-England	Severn Crossings	EB	54,4701	14%

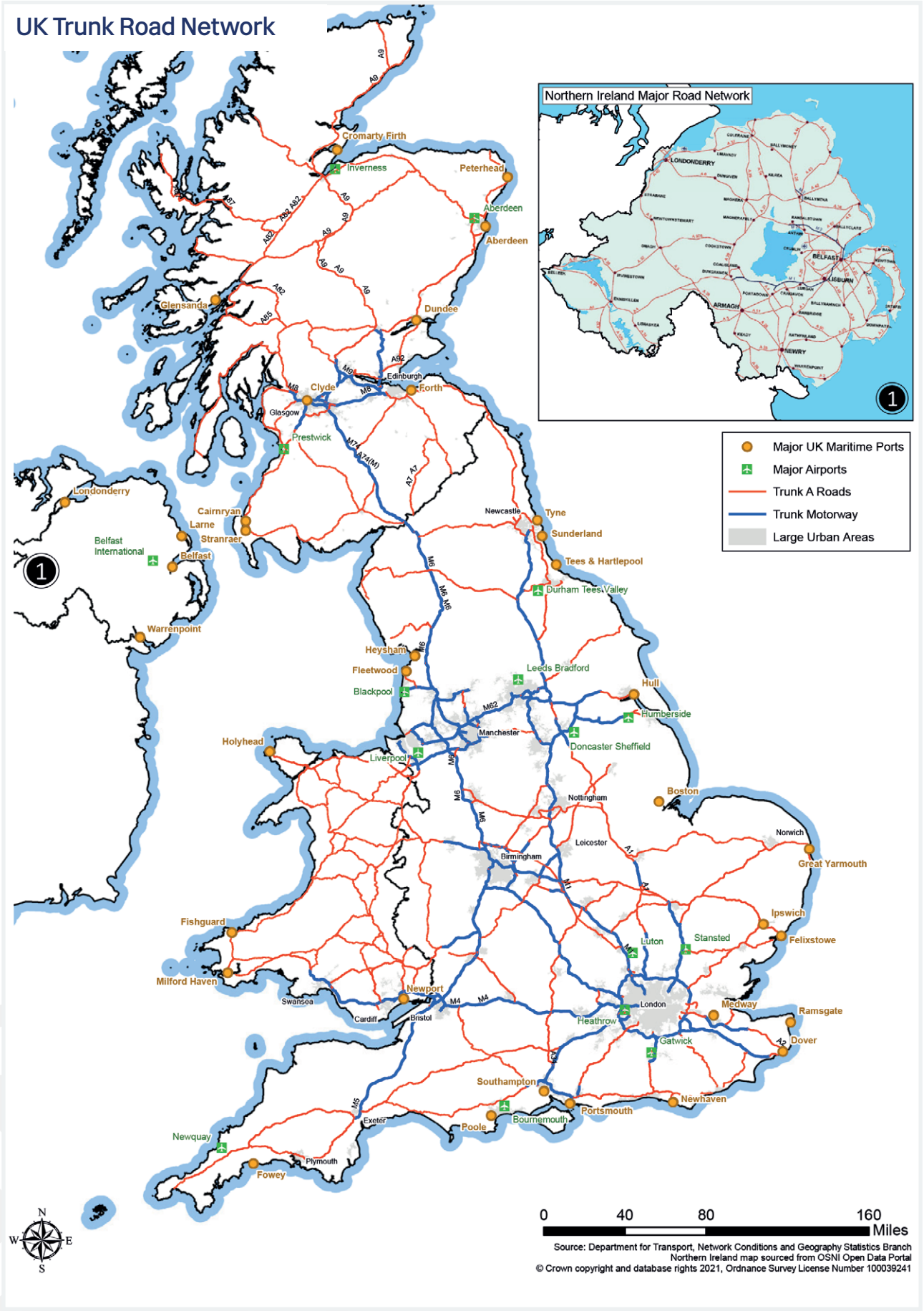
Notes: M48 EB average of Aug-19 to Mar-20 and M4 EB average of Aug-19 to Feb-20

3 assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/916749/road-traffic-estimates-in-great-britain-2019.pdf

Feedback from stakeholders and consultees have identified the following road connections as being of interest to the Review. This list is not exhaustive.

- A1 between Newcastle and Edinburgh
- A55 in North Wales
- Trans-Pennine routes including the A66 and A69
- A75 to the Port of Cairnryan
- M4 to South East Wales

Road transport is responsible for 91% of all emissions from the transport sector. This is mainly driven by car use. The average car in 2018 emitted 20% less emissions than an average vehicle in 1990. However, the increase in the number of vehicles on the road has offset this reduction, with total emissions falling by just 1% over the same period. An increase in HGV volumes has also contributed to an increase in overall greenhouse gas emissions, with road freight accounting for 17% of all road transport emissions. Goods are also carried by vans which make up 16% of all UK transport emissions. The use of these vehicles has more than doubled since 1990. Buses and coaches also make a small but significant contribution to road transport emissions, although they are more efficient than private vehicles with less greenhouse gas emissions per person per mile.


UK Trunk Road Network
Northern Ireland Major Road Network
Major UK Maritime Ports
Major Airports
Trunk A Roads
Trunk Motorway
Large Urban Areas
Cromarty Firth
Inverness
Peterhead
Aberdeen
Aberdeen
Glensanda
Dundee
Edinburgh
Forth
Clyde
Glasgow
Prestwick
Londonderry
Cairnryan
Larne
Stranraer
Belfast International
Belfast
Warrenpoint
Newcastle
Tyne
Sunderland
Tees & Hartlepool
Durham Tees Valley
Heysham
Fleetwood
Blackpool
Leeds Bradford
Hull
Humberside
Manchester
Doncaster Sheffield
Holyhead
Liverpool
Nottingham
Boston
Norwich
Great Yarmouth
Leicester
Birmingham
Ipswich
Felixstowe
Luton
Stansted
Fishguard
Milford Haven
Swansea
Newport
Cardiff
Bristol
London
Heathrow
Gatwick
Medway
Ramsgate
Dover
Southampton
Newhaven
Portsmouth
Bournemouth
Poole
Exeter
Newquay
Plymouth
Fowey
0
40
80
160
Miles
Source: Department for Transport, Network Conditions and Geography Statistics Branch
Northern Ireland map sourced from OSNI Open Data Portal
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Rail

The railway is a key mover of people in Great Britain and has its origins in the oldest railway system in the world. Demand for rail usage is high and has almost doubled over the last 20 years with journeys increasing by 97% to reach a record 1.8 billion journeys in 2018/19. This is a greater increase than any other mode of transport in the same time period.

The key cross border rail lines are the East Coast Main Line and West Coast Main Line which connect England and Scotland. Wales has direct connections to London and Birmingham from Cardiff and Swansea while North Wales is directly connected to Liverpool and Manchester as well as to the West Coast Main Line.

Journeys between England and Scotland and England and Wales dominate cross-border travel with 9.8m and 9.4m passenger journeys taking place in 18/19[4] respectively. Demand for rail travel between Wales and Scotland is relatively low with only 41,000 journeys taking place in 18/19[5].

Rail is increasingly important for the movement of freight across the UK; 9% of all freight moved in Great Britain in 2018 was moved by train. One in four containers arriving at seaports is carried inland by rail[6]. Rail freight is formed of inter-modal (shipping containers carried by rail) and trainload freight (goods carried on specialist railway vehicles). Intermodal rail terminals are essential to the movement of freight on the railway network, with both port and inland terminals spread throughout the UK but concentrated in the North West, London, South Wales and the Bristol channel, the Midlands, the Solent and the Edinburgh/Glasgow region.

Network Rail is currently working to enhance the strategic freight network with a number of projects being undertaken across the UK to improve the movement of goods on the railway[7].

Feedback from stakeholders and consultees have identified the following rail connections as being of interest to the Review:

- West Coast Mainline upgrade
- Rail capacity in the Bristol – SE Wales area East Coast Mainline upgrade
- HS2 capacity and journey times to Scotland
- Upgrade of rail connections between North Wales and Merseyside / Manchester area

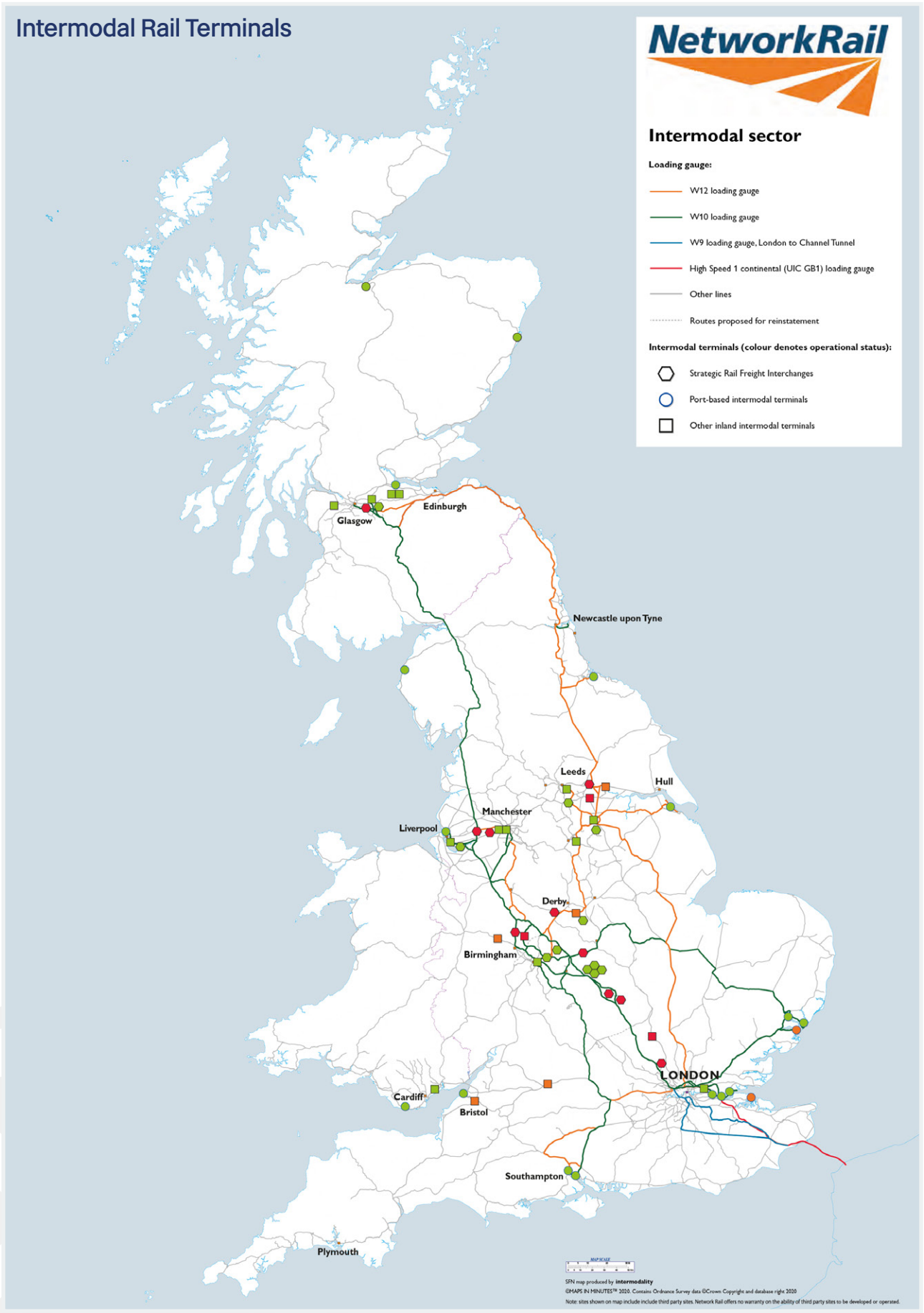
4 dataportal.orr.gov.uk/media/1240/passenger-rail-usage-2018-19-q4.pdf

5 dataportal.orr.gov.uk/media/1742/regional-rail-usage-statistical-release-2018-19.pdf

6 www.rfg.org.uk/rail-freight/facts-figures/

7 www.networkrail.co.uk/wp-content/uploads/2019/03/Strategic-freight-network-enhancement-schemes.pdf

Rail is a low carbon form of transport with only 1.4% of UK transport emissions being produced by rail movements despite accounting for 10% of all passenger miles travelled. The railway continues to become more environmentally friendly with the introduction of new trains and increased electrification. It is the most environmentally friendly way of moving freight and is estimated to remove over 7 million HGV journeys from the road every year.


Intermodal Rail Terminals
NetworkRail
Intermodal sector
Loading gauge:
W12 loading gauge
W10 loading gauge
W9 loading gauge, London to Channel Tunnel
High Speed 1 continental (UIC GB1) loading gauge
Other lines
Routes proposed for reinstatement
Intermodal terminals (colour denotes operational status):
Strategic Rail Freight Interchanges
Port-based intermodal terminals
Other inland intermodal terminals
Glasgow
Edinburgh
Newcastle upon Tyne
Leeds
Hull
Manchester
Liverpool
Derby
Birmingham
LONDON
Cardiff
Bristol
Southampton
Plymouth
SFN map produced by intermodality
©MAPS IN MINUTES™ 2020. Contains Ordnance Survey data ©Crown Copyright and database right 2020
Note: sites shown on map include include third party sites. Network Rail offers no warranty on the ability of third party sites to be developed or operated.

Maritime

UK ports handle both international and domestic movement of freight and passengers by sea, as well as supporting the offshore energy industry. Ports are essential to the movement of goods and people into and out of the UK and between points within the UK. In 2019 UK ports handled 486.1 million tonnes of goods[8].

Grimsby & Immingham and the London area ports handle the most tonnage annually while Dover handles the largest amount of roll on/roll off (Ro-Ro) traffic. Over a quarter of all UK Ro-Ro volumes pass through Dover every year. Other key ports include Southampton, Belfast, the Forth and Felixstowe.

Of all goods moved through UK ports in 2019 about 19% was classified as domestic i.e. it moved between two points within the UK or was bound for an UK offshore location such as windfarms. Most of this domestic traffic is coastwise i.e. traffic carried around the coast from one UK port to another, including domestic ferry services, with 73.3 million tonnes being moved in 2019.

97% of domestic freight is handled at "major" ports. The ports handling the most domestic freight in England, Scotland, Wales and Northern Ireland are Liverpool, Cairnryan, Milford Haven and Belfast respectively. The primary domestic freight route is between England and Northern Ireland with the ports of Liverpool and Belfast being key to this movement.

Category	Country Pairs (A-Z)	No. of Routes	Tonnage (000s)
Cross Region	England-Northern Ireland	65	9,320
Single Region	England-England	94	8,305
Cross Region	England-Scotland	88	6,529
Cross Region	Northern Ireland-Scotland	17	6,092
Cross Region	England-Wales	27	2,191
Single Region	Scotland-Scotland	32	1,445
Cross Region	Northern Ireland-Wales	12	1,371
Single Region	Wales-Wales	1	812
Single Region	Northern Ireland-Northern Ireland	1	460
Cross Region	Scotland-Wales	6	274

Maritime freight is a very environmentally friendly mode of transport and is becoming even more efficient. Greenhouse Gas Emissions from domestic shipping reduced by 30% between 1990 and 2018 and now make up only 1.3% of all domestic emissions.

8 assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/908558/port-freight-statistics-2019.pdf

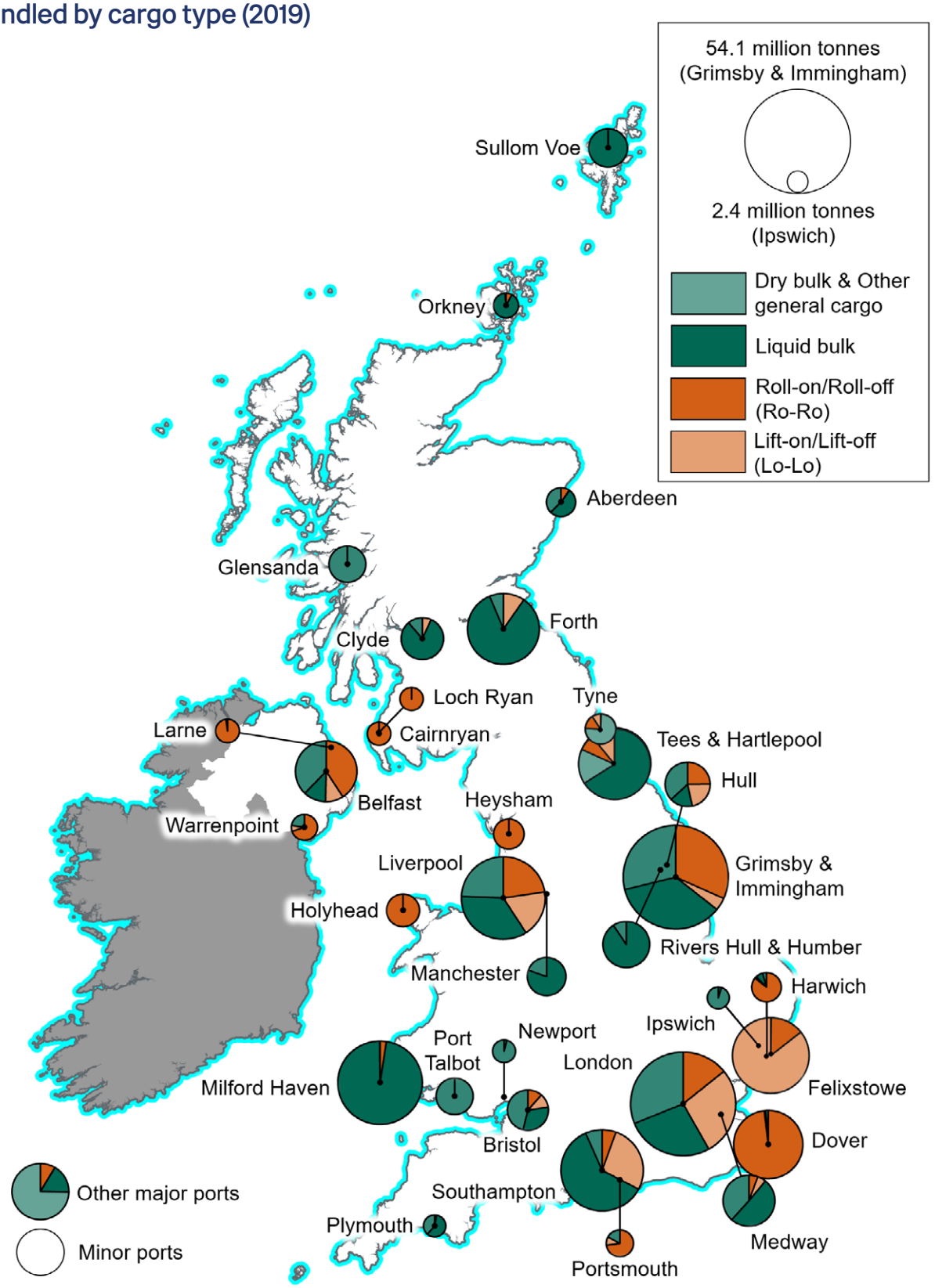
In addition to freight tonnage the movement of people is an essential function of maritime transport connections. This is particularly important when considering travel between Great Britain and Northern Ireland.

The two routes with the greatest number of annual passenger numbers in the British Isles are across the Irish Sea between Holyhead and Dublin and between Cairnryan and Belfast. Both routes have more than 1 million passengers annually – 1.8 million and 1.3 million respectively - demonstrating the reliance that large numbers of people have on maritime travel between Great Britain and the island of Ireland.

Stakeholder engagement has identified the following as being of further interest to the Review:

- Improved road and rail connections to ports e.g., Belfast and Liverpool
- Possible upgrade of West Coast ferry fleet to support greater number of movements and reduced emissions
- Improved cross country links between ports on East and West coasts
- A new Irish Sea ferry route between Warrenpoint and Holyhead

UK major ports* including total tonnage handled by cargo type (2019)



* All ports marked on map handled over 2 million tonnes of freight in 2019.

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Aviation

Travel between the nations of the UK can involve long distances - meaning that aviation is a popular mode for many journeys. Despite this domestic air travel has reduced over the last decade from 612,500 flight movements in 2009 to 484,300 in 2019[9].

Flights across the Scotland-England border dominate the demand for domestic air passenger travel, with Heathrow - Edinburgh being the most popular route. The air routes between Northern Ireland and Great Britain are particularly critical for capacity and resilience, given that the Irish Sea prevents rail or road routes.

Annual air passenger numbers between UK countries (thousands), 2019[10]

	England	Scotland	Wales	Northern Ireland	Scottish Islands
England	2,277.6	9,695.3	12.7	5,287.3	4.4
Scotland		22.0	136.6	1,081.0	596.9
Wales			0.0	62.4	0.1
Northern Ireland				0.1	0.0
Scottish Islands					43.0

Domestic air travel gravitates to London. The top 10 domestic routes all of which have an origin or destination point at a London airport with Heathrow/Edinburgh being the most flown route by a significant margin.

In early 2020, the key domestic airline Flybe collapsed. While some routes were quickly adopted by rival airlines, a significant number of unprofitable routes that the airline operated have not yet been filled. This will be a key consideration for the Review going forward.

The role of domestic air freight should not be overlooked with 79,500 tonnes of freight being moved in 2019 although this has decreased over the last decade. About three quarters of current domestic air freight volumes pass through East Midlands Airport or Belfast International Airport.

9 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/944133/avi0102.ods

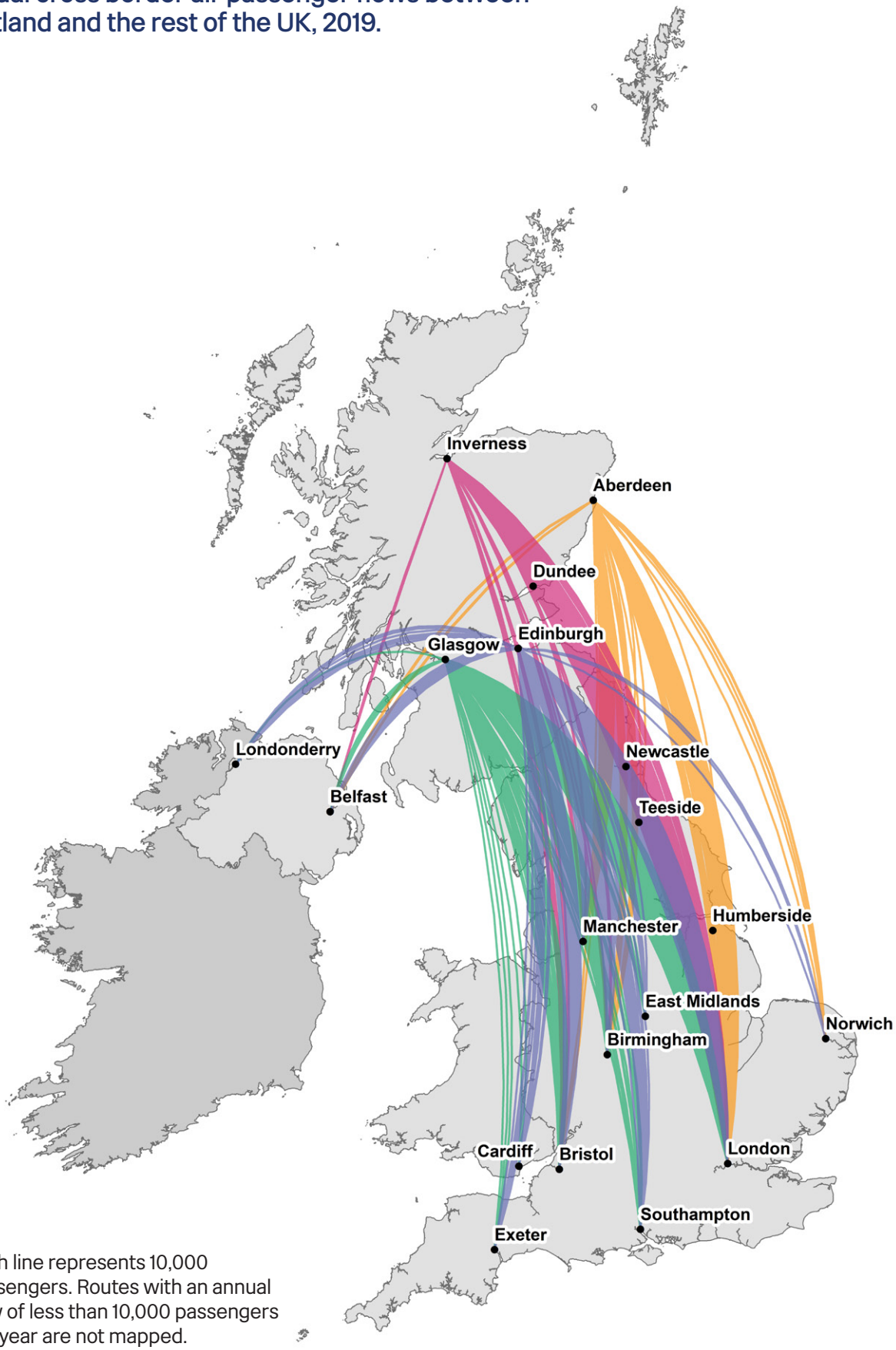
10 Civil Aviation Authority Airport Data 2019, www.caa.co.uk/uploadedFiles/CAA/Content/Standard_Content/Data_and_analysis/Datasets/Airport_stats/Airport_data_2019_annual/Table_12_2_Domestic_Air_Pax_Traffic_Route_Analysis.pdf

Although aviation is one of the least environmentally friendly modes of transport, the volumes are relatively small. Greenhouse gas emissions from domestic flights make up less than 1% of total domestic transport emissions.

Stakeholders have identified the following as being of interest:

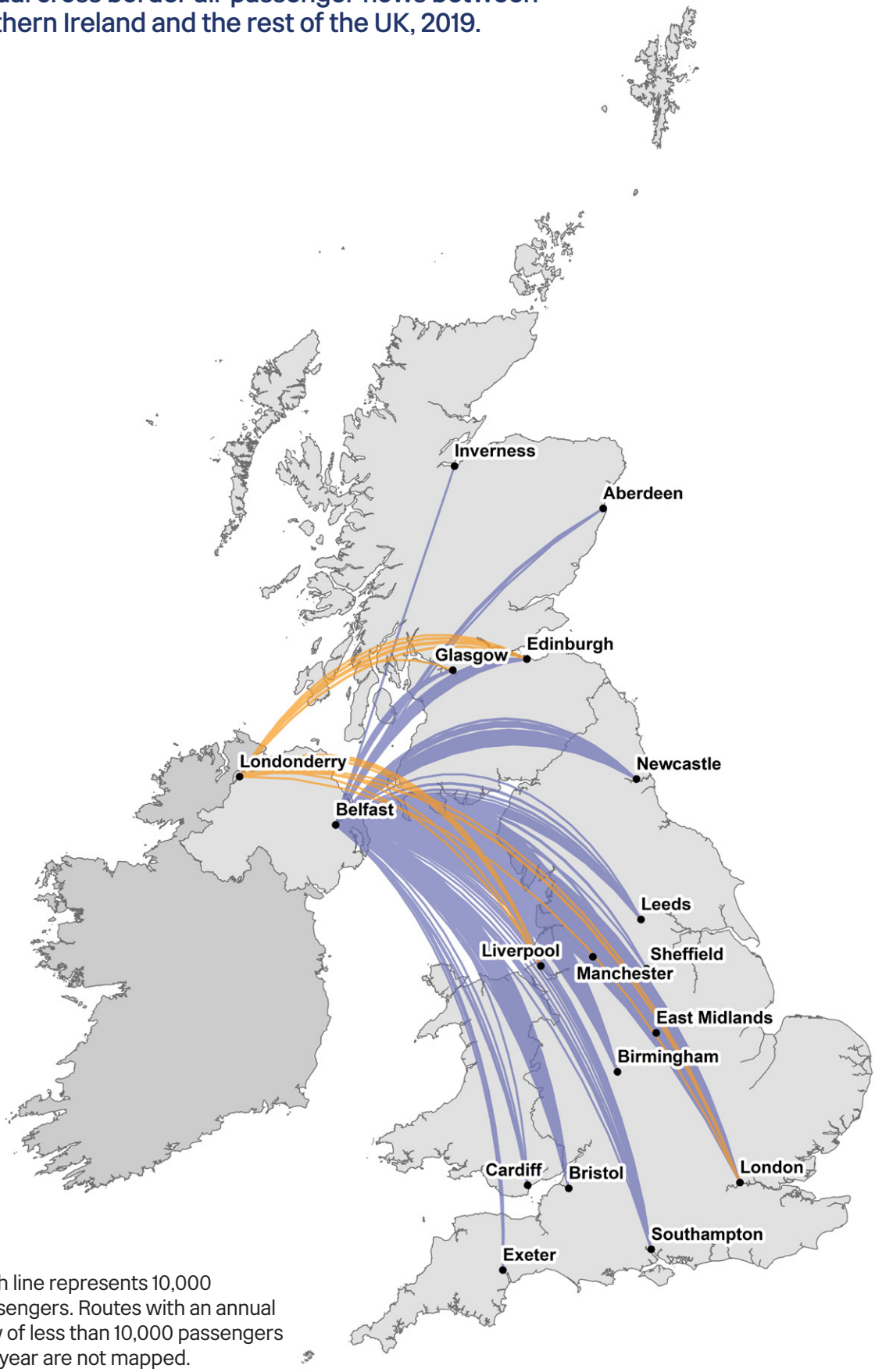
- Review of Air Passenger Duty on domestic flights
- Greater use of Public Service Obligation routes
- An Increase in airport catchment areas from investment in public transport

Annual cross border air passenger flows between Scotland and the rest of the UK, 2019.



Each line represents 10,000 passengers. Routes with an annual flow of less than 10,000 passengers per year are not mapped.

Annual cross border air passenger flows between Northern Ireland and the rest of the UK, 2019.



Each line represents 10,000 passengers. Routes with an annual flow of less than 10,000 passengers per year are not mapped.

Trans-European Transport Network (TEN-T)

While a member of the European Union, key parts of the UK's transport network were part of the Trans-European Transport Network (TEN-T). TEN-T was designed to support the development of the Single Market by improving connectivity, promoting social cohesion, and helping to ensure interoperability between different Member States through the alignment of technical standards. It is supported by regulatory targets for the completion of the core network by 2030 and the comprehensive network by 2050.

Member states can access funding through the Connecting Europe Facility for Transport (CEF-T) to help support the development of transport improvements that facilitate the completion of this network. In practice, CEF-T provides a funding and coordination mechanism while Member States retain responsibility for the operation of the strategic transport networks within their borders.

TEN-T is comprised of a 'core' network and a 'comprehensive' network. The core network links key European cities and regions together, while the comprehensive network supports the operation of the core network and ensures the connectivity of smaller towns and cities by connecting them to one another and to the core network.

To help implement and oversee the development of the core network, nine 'core network corridors' were established by the European Commission. Each corridor covers several countries. Corridor studies are regularly produced to analyse the existing state of the network, and how it compares to the required standards.

These studies are then used in dialogue with representatives from Member States, infrastructure managers, authorities, and regions, to produce a Corridor work plan. While in the TEN-T Network, the UK was part of the North Sea – Mediterranean corridor. Following the UK's departure from the EU, the UK will not participate in the future CEF funding programme.

The UK financial contribution was in the region of €447m annually. This is calculated as a percentage of the UK's contribution to the EU budget for 2014-2020[11]. Despite this level of funding, UK transport schemes only received around €48m annually from the CEF-Transport budget.

The connectivity aims of the Review align with those of TEN-T, and the approach taken by the EU to the inception, assessment and implementation of the European network will be considered in further detail. The Review will also consider whether TEN-T is on course to achieve its aims and what lessons can be learnt to support the development of a multi-nation transport network.

11 This is a notional cost calculated by the Review and is based on the UK's obligation to EU spending plans between 2014-2020. Actual cash contributions may differ due to payment periods not aligning with funding periods. These costs do not relate to the costs of the UCR's final recommendations.

Preliminary Economic Assessment

In order to understand how transport connectivity can maximise economic potential and support levelling up across the nations of the UK it is important for the Review to assess current economic indicators

This section sets out a preliminary overview of economic factors, demonstrating how several metrics vary across the UK including deprivation, productivity and income. This will support the Review in understanding where investment might best be focused to help deliver objectives such as growth and levelling up.

This represents an ongoing piece of work and further assessment will take place to fully understand the economic challenges facing the UK, and how these link to transport connectivity. Furthermore, an improved UK transport network will be considered, assessing how this could help the government achieve its strategic aims to reduce inequality and improve quality of life by improving access to jobs and services across the UK.

Deprivation

The initial assessment of deprivation undertaken by the Review has been based on the Indices of Multiple Deprivation (IMD) for England, Scotland, Wales and Northern Ireland. The IMD measures relative deprivation for small areas or neighbourhoods across multiple measures of deprivation including employment, income, and access to healthcare and education.

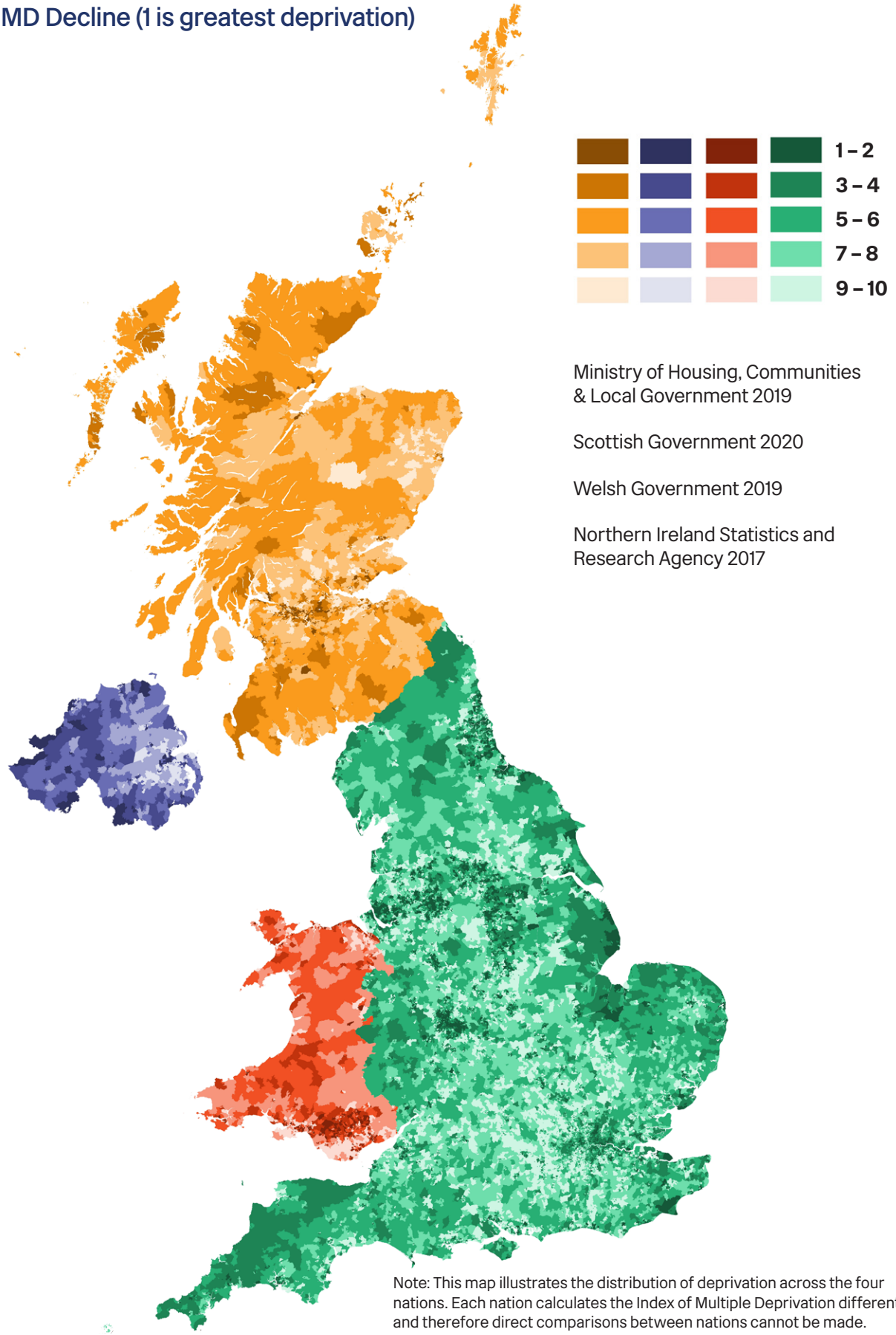
Each country of the United Kingdom has its own deprivation index, so a direct comparison between nations is not possible. Nonetheless, it is possible to visualise where deprivation is highest within nations. In all parts of the United Kingdom, Indices of Multiple Deprivation are calculated at the level of small areas or neighbourhoods with roughly equal populations.

Deprivation is dispersed across the UK, but tends to be higher in northern towns, cities, and coastal areas. Other areas of high deprivation includes some rural communities in England, the central belt in Scotland, the southern cities and valleys in Wales and Belfast and the border regions in Northern Ireland.

The link between transport connectivity and deprivation needs further consideration within a UK context and the Review will seek to better understand the extent of this link. However, in areas of high deprivation, limited connectivity can worsen deprivation by reducing affordable access to employment, education and healthcare. Those lacking the resources and transport options required for mobility become deprived from interacting with the whole extent of opportunities offered by society.

Providing transport facilities or reducing financial (and other) barriers to travel can offer ways to address poverty, through for example widening the range of opportunities for employment and education that can be reached. Transport can be seen as a service, which can reduce poverty by increasing economic efficiency and enhancing opportunities.

IMD Decline (1 is greatest deprivation)



Note: This map illustrates the distribution of deprivation across the four nations. Each nation calculates the Index of Multiple Deprivation differently and therefore direct comparisons between nations cannot be made.

GDP per capita and income

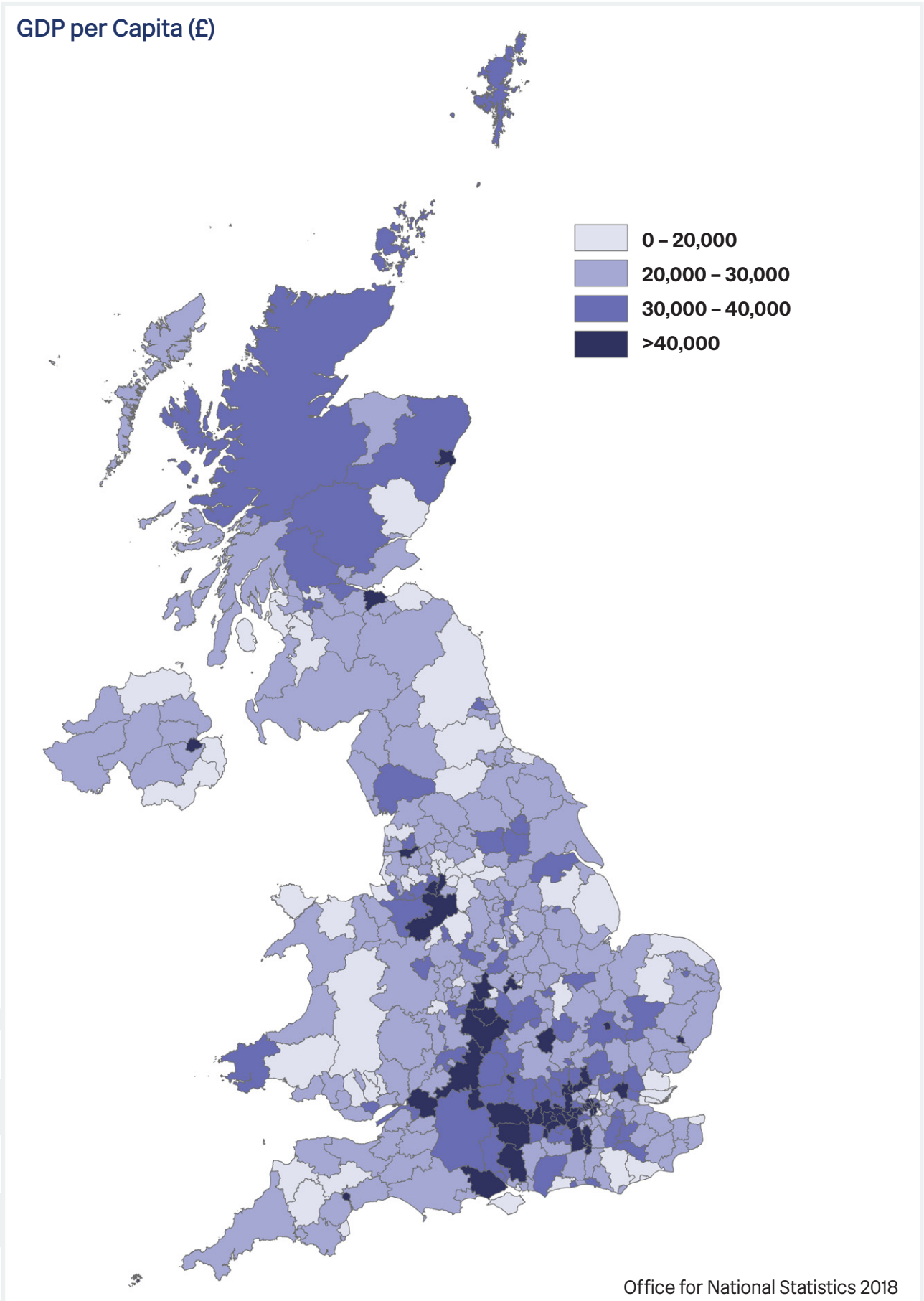
Gross Domestic Product (GDP) per capita is an important measure of average living standards and economic wellbeing. It is a measure of economic output, in terms of goods and services, per head of population in an area. By contrast, average earnings measure the income from employment of those resident within an area. For earnings, this Review has used data from the Annual Survey of Hours and Earnings (ASHE) which show income based on where people live, rather than where they work[12].

GDP varies significantly between local authorities across the UK. London and the south of England have a higher proportion of local authorities with high levels of GDP; nine of the top ten local authorities in the UK are found in London. Wales and Northern Ireland have very few areas with high levels of GDP. Cardiff has the highest GDP in Wales but is only the 75th highest in the UK, while the highest in Northern Ireland is Belfast, which is 41st in the UK. In Scotland, Edinburgh and Aberdeen have the highest GDP per capita but only rank 21st and 22nd in the UK.

The earnings data show a broadly similar picture with the highest levels of pay concentrated in London and the South East. Nine of the top ten local authorities in terms of earnings are in London, and 18 of the top 20 are in London and the South East.

Improved transport connectivity can increase GDP per head in local areas in several ways. For example, improved transport links improve the accessibility of goods and services which can reduce transport costs for businesses. As a result, costs of production decrease, allowing more goods and services to be produced more cheaply. Therefore, businesses in the area can increase their market share and competitiveness. At the same time, improved connectivity can increase earnings by allowing workers in those areas to access a wider range of jobs, including those in areas with higher wages. This in turn has knock-on effects on local GDP growth.

12 This earnings data is available across Great Britain but does not include Northern Ireland.


GDP per Capita (£)
0 – 20,000
20,000 – 30,000
30,000 – 40,000
>40,000
Office for National Statistics 2018

Productivity

Productivity data represent the average level of output produced by each job. This varies considerably by location and is partly a reflection of different sectoral splits of employment across the country, but it is also determined by other factors such as workers' skill levels and the state of technology. There is also a positive relationship between productivity and density, which is known as agglomeration.

Agglomeration describes the increase in productivity that individuals and firms derive from locating close to other individuals and firms. These benefits result from increased interactions between individuals and firms through improved labour market interactions, knowledge spill-overs and linkages between intermediate and final goods suppliers. This is why productivity is often higher in cities, all else being equal.

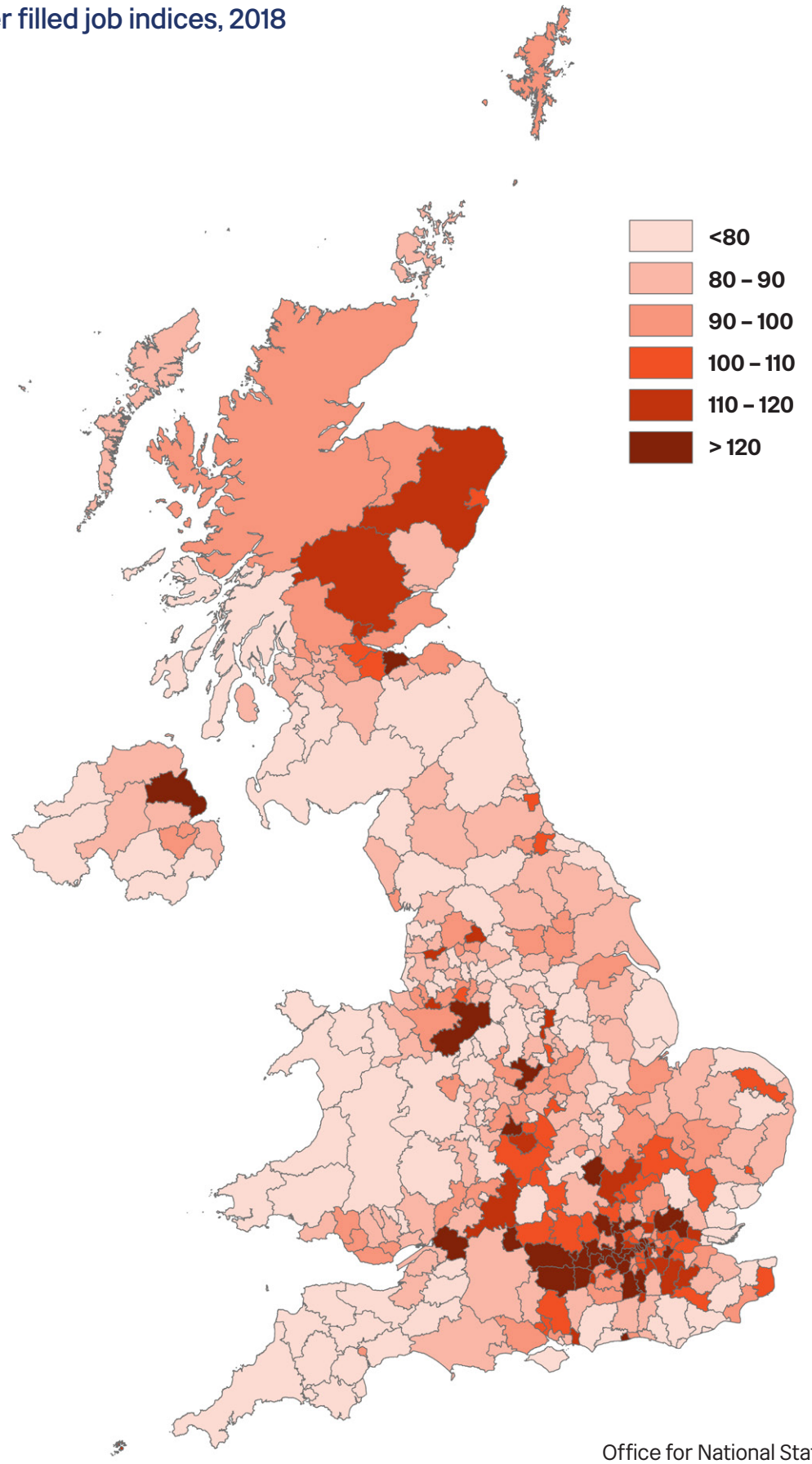
This report has used Gross Value Added (GVA) per filled job to assess productivity across the UK. This indicator is used here as it provides a direct comparison between the level of economic output and the direct labour input of those that produced that output. As such, it is a good measure of the productive capability of the workforce at a sub-regional level.[13].

The areas of the country with the highest productivity include some of those in London and the South East, but also parts of the Midlands and Cheshire, as well as Edinburgh and Mid and East Antrim. The lowest productivity areas are concentrated in the South West, Wales, the Scottish borders and the border areas of Northern Ireland.

Improved connectivity can lead to productivity growth and help to close the gap between the best and worst performing regions, by giving businesses access to the skills, labour and services they need and by enabling a greater pooling of people and capital. Better connectivity can also increase productivity through increased agglomeration, by increasing opportunities for interactions between individuals and firms. Improving productivity is crucial for both the productive capacity of firms as well as the wages of workers; both of which have significant implications for regional economic growth.

13 GVA is equivalent to GDP + Subsidies on products – Taxes on products.

GVA per filled job indices, 2018



Office for National Statistics 2018

Population Density

The Review has utilised local authority data to assess population density across the UK. As would be expected, population density is highest in major cities. Areas with particularly high population density include London and the home counties, the West Midlands, North West England, West Yorkshire and the Central Belt of Scotland.

Analysed in conjunction with some of the other economic data, this can help to show where the potential gains from investment in terms of inclusive growth and levelling up might be largest.

Unemployment

Estimates of local labour market indicators are available from the Annual Population Survey for the period July 2019 to June 2020. During this period, the local authorities with the highest unemployment rate estimates in the UK were Birmingham, Hartlepool, South Tyneside and Middlesbrough while a large number of areas with the lowest rates are concentrated in South East England.

The impact of the coronavirus pandemic on the labour market has not been uniform across the UK with available figures showing that city regions appear to have seen the largest increases in unemployment. However, we have also seen notable increases in less built-up areas such as in north Wales, the south west of England, and northern and western Scotland.

Transport plays a direct and important role in obtaining a job, keeping a job, or getting a better job; with access to work being greatly improved by more accessible and affordable public transport. High transport costs and poor accessibility can be a significant barrier to accessing work and can have distributional effects that contribute to socio-economic inequality. For example, the bus network tends be used by people who are lower paid, live in areas of deprivation, and are more likely to turn down employment due to transport limitations. Women are also more likely to use buses, meaning inadequate public transport creates barriers to women accessing employment.

Further work

The Review will undertake significant further work to fully understand the current economic baselines. This will include further assessment of multiple economic indicators. The Review will seek to assess how transport connectivity can maximise the potential for economic growth and how this can be best deployed to have the greatest possible impact across the nations of the UK.

Stakeholder Engagement

Engagement with a diverse range of stakeholders is essential to ensure that the Review has access to the widest possible range of views and can make use of all relevant evidence.

The Terms of Reference included a clear commitment for Sir Peter to consult and engage extensively in the preparation of this interim report, and the final report, to ensure any final recommendations are evidence-based and credible. Since launching in October the Union Connectivity Review has sought to engage with a broad range of interested organisations across the UK to listen to their initial views.

Approach to stakeholder engagement

A public Call for Evidence was published on 12th October inviting responses from all interested parties. In total 144 responses have been received so far and are being analysed. Of these responses the majority were received from local authorities and transport advisory bodies with 33 and 31 submissions respectively. Other respondents included businesses, trade bodies, airports, academics and charities.
The Review will continue to accept written submissions and will publish a full assessment of the responses to the Call for Evidence as part of the final report.

Alongside this, Sir Peter has had discussions with Ministers in the UK Government, Northern Ireland Executive, Welsh Government, Scottish Government and with senior officials in the Irish Government. Sir Peter has also met with government infrastructure advisory bodies, transport authorities and regional transport bodies to build on the work and evidence they have gathered to date.

Furthermore, from November to January Sir Peter held a series of 9 roundtable discussions at which over 100 individuals and organisations provided their initial views. These roundtables were thematic with the objective of better understanding the views of local authorities in Scotland, Wales, England and Northern Ireland; MPs representing constituencies across the UK; and, with representative bodies or private sector organisations operating in the UK's freight, aviation, rail, coach and shipping and maritime industries.

We are grateful to all those who have taken the time to engage with the Review to date. Further consultation and engagement is planned for in spring 2021.

Summary of stakeholder views

The Review team continues to analyse the written submissions received to date and will provide a full assessment as part of the final report. Below is not an exhaustive summary of the views the Review has received, however from the submissions received and engagement which has taken place to date the Review has noted several emerging themes:

1. **There is a desire across the UK for increased investment in our strategically critical transport infrastructure and improved connectivity both within and between our nations.** There are a considerable number of strategically critical transport projects across the UK which would benefit from investment and this review is welcomed if it can encourage Government to make funding available for a strategic set of priority investments. Specific investment proposals identified included improvements to connections to the port of Cairnryan, to the A1, to road connections to North and South Wales, improved rail connections between South Wales and England and across the North of England between North Wales, Merseyside and Manchester, improved connectivity between Dublin, Belfast and North West Ireland and improving surface access to strategically important ports and airports.

2. **There is much initial support for the development of a UK strategic transport network.** Most stakeholders engaged to date have expressed initial support for the UK government to lead on the development and implementation of a pan-UK strategic transport network. There is interest in such a network if it could support better assessment of transport routes and investment decisions across the UK, better management of the flow of people and goods between nations and could foster improved partnership working between the UK government and governments of Scotland, Wales and Northern Ireland. This was caveated in many cases by the need for a clear and strong commitment to additional funding and the desire to learn more about the network.

3. **There is a recognition that economic growth for many people and many communities is dependent on improved infrastructure.** Poor connectivity is a barrier to people's access to opportunities, quality of life, employment, and to the efficient and cost-effective movement of goods.

4. **The environment and the climate crisis have been raised by a majority of organisations the Review has engaged with.** There is a trade-off between investment to improve our road network for freight and people's everyday journeys, and the desire to reduce private vehicle usage and increase the amount of journeys by freight and passengers by rail, and to at the same time electrify more of our rail network. There is a desire for more freight to move by rail, and for investment in rail electrification, to meet decarbonisation targets.

5. **For those affected, air and ferry connections and good airport and port facilities are crucial**. Air corridors to Northern Ireland were raised by all stakeholders and the issue of Air Passenger Duty and its imposition on both legs of domestic flights was widely raised as an economic barrier, particularly in Scotland and Northern Ireland.



Methodology

A well evidenced and pragmatic methodology is required to deliver robust and practical recommendations that support the strategic aims of the Review

This section sets out the Review's proposed methodology as well as an overview of the Government's recent review of the Green Book and how the outcomes of this will be considered when assessing possible recommendations.

The Review of the Green Book

The Green Book is an HM Treasury document setting out how to appraise policies, programmes and projects. The principles set out in the Green Book also feed into departmental appraisal documents such as the DfT's Transport Appraisal Guidance.

In the 2020 Budget a review of the Green Book was announced in response to concerns about the extent to which it was consistent with the Government's "levelling-up" agenda.

The Review found that business cases often place a heavy reliance on the Benefit / Cost Ratio (BCR) and use considerable priority, time and resource to 'boost' the BCR rather than focusing on how to achieve policy objectives that offer best value for money in a compelling strategic case. The revised Green Book has put greater emphasis on developing the strategic case, assessing environmental impacts and capturing and presenting transformational change.

Considerations for the Union Connectivity Review

Because the Review is concerned with wider economic and social factors, including levelling up, as well as wider environmental considerations, it is important to ensure that a range of criteria are accounted for that address strategic objectives, rather than taking a narrow BCR-led approach. This is also because of the potential transformational impacts of improving intra-UK connectivity. The Review will articulate the potential contribution of individual projects that are identified.

Overview of methodology

This section sets out the proposed assessment methodology to be used by the Review, how this will determine transport and economic baselines and how it will support the identification of future recommendations.

1. Clarify purpose and objectives

The overarching purpose of this Review is to identify how the quality and availability of transport infrastructure across the UK needs to be enhanced to maximise the potential for economic growth and improved quality of life across all of the nations of the UK.

In order to support this, a clear and simple evidence base is required that can be applied to support specific recommendations. The development of this will utilise a simple assessment framework based on the objectives as set out in the Terms of Reference for the Review.

2. Review 2019 network

The first task in the 'review of an existing network' is to undertake a full literature review focused on the existing transport networks across the UK.

Following this the Review will consider information from the Call for Evidence and other sources that capture A) existing network performance (by mode / corridor) and B) socio-economic data including productivity, jobs, deprivation and population density.

An initial literature review has already taken place with some of the findings contained within this report.

3. Review future network

Using information from the Call for Evidence, previous studies and existing transport models the Review will consider possible future network performance. This will assess measures such as congestion, journey times and other measures where available including reliability, resilience and quality/costs. Due to the impact of the COVID-19 pandemic forecasting future travel demand and network performance is less certain; therefore the Review may adopt a scenario based approach when considering future network performance.

4. Identify 'network deficiencies'

The Review will then seek to identify 'network deficiencies' in the future network. These deficiencies could include issues such as bottlenecks, capacity constraints, extended journey time, runway constraints or air freight constraints.

5. Review of future trends

An assessment of the validity of previous studies will be undertaken by considering potential future changes that would result in outputs from these studies becoming invalid.

6. Sift 'network deficiencies'

This stage will assess whether any 'network deficiencies' identified in the previous stages are in scope and how the resolution of these deficiencies could support the objectives of the Review. A RAG rating will be applied to each of the following four areas to support this assessment and the development of future recommendations:

a. Does it play a significant role in connecting people and / or goods across the **United Kingdom**?

b. Will this improve **quality of life**?

c. Will this protect the **environment** and reduce the environmental impact of the transport network?

d. Will this support the **economy**?

The Review will consider several different assessment criteria when applying a RAG rating. Examples of these have been set out in the following table.

Example criteria

Areas	Criteria	Considerations for scoring
Union	Plays a significant role in connecting people and/or goods in the Union	Either short distance across border or longer distance through trips Extent to which these connect economic or population hubs and/or connectivity nodes
Quality of life	Enhance accessibility & connectivity	Extent to which number of jobs / people within a particular catchment area increases
	Reduce journey times	Extent to which journey time reduces
Environmental	Mode shift to public transport	Extent to which PT share of trips increases
	Shift towards zero carbon technologies	Extent to which transport-related CO_2 emissions decrease
Economic	Increase productivity	Extent to which business trips will save time Extent to which places with employment in sectors that benefit from agglomeration will be better connected (reduced GJT)
	Secure inward investment	Extent to which connectivity to international gateways is improved
	Contribute to levelling up	Extent to which increased connectivity will support economic growth in regions with higher than average levels of deprivation
	Deliver inclusive growth	Extent to which connectivity to/from areas with above average deprivation increases

7. Construct 'UK network for the future'

The Review will fully consider the development of a future strategic UK transport network covering rail, road, sea and air. This will seek to utilise an assessment approach which identifies the key and supporting routes which will form this network.

8. Recommend a list of priorities

The Review will then seek to determine which schemes should be prioritised and group projects such as 'very high priority', 'high priority' and 'medium priority'. In assessing this priority the Review will consider costs, benefits, need, feasibility, timing, value for money and environmental impact. It is also important to recognise that the best solutions are not always by investing in expensive infrastructure. Often solutions can be found by better connecting existing systems. The Review will therefore also offer policy recommendations where these can be valuable in improving connectivity. Integrated transport at a local level can be a major contributor to overall connectivity as well as having environmental benefits. Integration of land use and transport planning at key nodes can also offer improved quality of life by supporting healthier transport options such as walking and cycling.

A Future Strategic UK Transport Network

The potential development of a pan-UK strategic transport network will be a key focus of the Review going forward

Following strong support from stakeholders the Review believes that there is a strong strategic case for a new pan-UK transport network. A network of this type could improve direct transport connections between England, Scotland, Wales, and Northern Ireland, and between regions within these nations. It would support more effective movement of goods and people across the United Kingdom and would reduce delays and bottlenecks which limit economic potential and quality of life. The Review will undertake further work to fully define this strategic case and will set this out in detail in the final report. The Review will also consider how this network could be developed, implemented and operated.

This network would be multi-modal with road, rail, maritime and aviation infrastructure being included which will help to support the further integration of transport modes. This should provide an opportunity to promote modal shift, reduce carbon emissions and increase active travel where possible, all of which should be core objectives of a new pan-UK network.

Such a network would not replace existing strategic networks in England, Scotland, Wales and Northern Ireland and would complement these by providing an additional pan-UK strategic focus. An assessment of passenger and vehicle flows across such a network will help to ensure that bottlenecks and infrastructure gaps that impact travel between different nations and regions of the UK are better identified and resolved.

Having considered the operation of other similar networks across the world and having considered the current devolution settlement in the UK it is envisaged that existing operational responsibilities would remain. For example, Transport Scotland and Highways England would continue to operate the trunk road networks in Scotland and England respectively while the newly developed network provides a strategic framework within which transport along key strategic corridors can be better assessed and managed.

The movement of freight is of vital importance to the economy of the UK and as such will be a key consideration for a proposed pan-UK strategic transport network. The development of this network may provide opportunities to better integrate road, rail, maritime and air freight and help to ensure that it can move around the whole of the country, more quickly, more easily, and more safely. This will help to reduce barriers to trade and improve access to goods and services.

The following key areas will be considered:

Geographic scope of a pan-UK network

The Review will consider which existing and proposed transport connections and infrastructure should be included in any future pan-UK network. As set out in the methodology section of this report this will be identified using a top-down assessment of economic and demographic factors as well as existing transport connections. It will seek to better connect economic hubs with a view to maximising potential and improving quality of life. This work will seek to fully consider and prioritise the impact of improved connectivity on less economically successful regions of the UK.

Environmental impact

The Review will consider how the development of a pan-UK strategic transport network could impact the environment with a key focus being given to carbon emissions. The Review will seek to ensure that a UK strategic network encourages modal shift from private vehicles to public and active transport where possible.

Funding

A network such as this will require funding for development, implementation, operation and ongoing investment. The Review will assess what level of funding would be appropriate and set this out in the context of other UK Government spending commitments. Additional funding was a key concern for stakeholders who otherwise expressed strong support for the development of such a network.

Delivery arrangements and operations

The Review will assess how best to deliver a network of this nature and will fully consider the roles of the UK Government, devolved administrations and transport authorities. The Review recognises the benefits to transport that have arisen from devolution. It will seek to ensure that local expertise is fully leveraged in the development of this network and that local decision-making forms a key part of any future operational model.

Safety

It will be important to consider how the development of a network such as this can affect the safety of transport users. Where possible any new pan-UK network should seek to implement the highest safety standards of any comparable network anywhere in the world.

Stakeholder Engagement

The Review will continue to engage directly with key stakeholders. The role of the devolved administrations will be essential to the successful delivery and operation of this network and direct engagement and close working will be sought where appropriate.

The final report will include a detailed overview of this proposed network and is likely to make a series of recommendations relating to development, implementation, operation and funding.

Interdependencies

The Review does not operate in a vacuum and must consider the outcomes and lessons learnt from other work with a transport connectivity focus or element

This section identifies those reviews, activities and strategies currently being undertaken which may have an impact on the recommendations of the Union Connectivity Review. This list is not exhaustive and other reviews and continuing and completed work have also been considered. The Review has engaged with those leading on these pieces of work.

In addition to these specific reviews there are other areas of UK Government activity such as the development of Freeports that will be considered by the Review.

An Integrated Rail Plan for the North and Midlands[14]

In February 2020 following the recommendations of the Oakervee Review, the Government committed to publish an Integrated Rail Plan (IRP) for the North and the Midlands, including connectivity with Scotland. Informed by the National Infrastructure's Rail Needs Assessment which was delivered in December 2020 (see below), the IRP will ensure that Phase 2b of HS2, Northern Powerhouse Rail and other planned rail investments in the North and Midlands are scoped and delivered in an integrated way. The IRP will consider how rail investment can enable all parts of the country to benefit from opportunities for economic development and prosperity.

National Infrastructure Commission – Rail needs for the Midlands and the North[15]

As mentioned above, the NIC's final rail needs report informed the outcomes of the Integrated Rail Plan. It assessed current and future travel demand needs and made a series of recommendations for infrastructure improvements. These were grouped into packages which provided government with a series of strategic options. It recommends that the government consider regional links as well as identifying that transport alone cannot solve the economic problems faced by these regions.

14 www.gov.uk/government/publications/high-speed-north-an-integrated-rail-plan-for-the-north-and-midlands-terms-of-reference

15 nic.org.uk/studies-reports/rail-needs-assessment-for-the-midlands-and-the-north/rna-final-report/

Regional Air Connectivity Review[16]

In January 2020 the Prime Minister announced a strategic review of regional air connectivity. Due to the collapse of Flybe and onset of Covid-19 as well as the industry's reduced capacity to engage in a formal review, this work has since been refocused to support pandemic recovery and will ultimately feed into the Aviation Recovery Plan (ARP).

Williams Rail Review[17]

The Review has looked at how the railway can better serve customers, the taxpayer and government. The Department for Transport is working towards a White Paper into how Britain's railways can be better run with these objectives in mind.

Scotland National Transport Strategy[18]

The National Transport Strategy sets out Transport Scotland's vision for the Scottish transport system for the next 20 years. The strategy is multi-modal and frames the development of statutory regional strategies and local plans. The vision is underpinned by four priorities: Reduces Inequalities, Takes Climate Action, Helps Deliver Inclusive Economic Growth and Improves our Health and Wellbeing, each with three associated outcomes which will be key to defining future transport investment options.

Llwybr Newydd: a new Wales transport strategy[19]

This is a draft consultation which aims to support the development of an updated Wales Transport Strategy (WTS), which is a statutory document required by the Transport (Wales) Act 2006 (The Act). The Act places a duty on the Welsh Ministers to prepare and publish a WTS setting out its policies and how they will be discharged. Covering all modes, it sets out the Welsh Government's strategic priorities and desired outcomes, providing a link to the wider priorities as well as plans at the local authority level.

16 www.gov.uk/government/news/regional-air-connectivity-review-aviation-minister-visits-liverpool-john-lennon-airport-to-launch-uk-tour-of-regional-airports

17 www.gov.uk/government/collections/the-williams-rail-review

18 www.transport.gov.scot/publication/national-transport-strategy-2/#:~:text=The%20National%20Transport%20Strategy%20sets%20out%20an%20ambitious,2006%29%2C%20based%20on%20three%20pillars%3A%20collaborative%20working%20

19 gov.wales/llwybr-newydd

New Decade, New Approach[20]

The New Decade, New Approach agreement set out a series of high prolife and ambitious priorities for the reformed Northern Irish Executive and Assembly. Included within this are a series of new infrastructure schemes and a commitment from the Irish government for an additional 110 million euro investment in infrastructure over the next three years. Transport projects identified in this agreement include the York Street Interchange, a Belfast to Dublin connectivity strategy and the Narrow Water Bridge.

South East Wales Transport Commission[21]

Chaired by Lord Burns the SE Wales Transport Commission was tasked with considering how best to reduce congestion on the M4 in South Wales. Its final recommendations included a significant investment in public and active transport in SE Wales as well as better coordination between different modes of transport such as bus and rail.

The Transport Decarbonisation Plan[22]

The Transport Decarbonisation Plan will put forward a credible implementation plan to inform the delivery of necessary greenhouse gas emission reductions.

20 assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/856998/2020-01-08_a_new_decade_a_new_approach.pdf

21 gov.wales/south-east-wales-transport-commission

22 gov.uk/government/publications/creating-the-transport-decarbonisation-plan

Next Steps

This section sets out the Review's next steps.

Development of a UK Strategic Transport Network

The Review will work to develop proposals for a UK Strategic Transport Network covering road, rail, air and maritime. This will focus on the possible geographical layout of such a network, the potential benefits and challenges, assessment and performance metrics, legal considerations, environmental impacts, the role of key stakeholders, delivery arrangements and funding.

Call for Evidence

This Review has largely completed the initial listening phase of its work. Having engaged with a significant number of diverse stakeholders we have been provided with a large amount of information on the issues facing individuals, groups and organisations when travelling between the nations of the UK.

This engagement activity is supplemented by the Call for Evidence which closed on the 30th December 2020. The responses to this require full assessment and will be reviewed over the next two months to inform the final recommendations. A summary of these responses will be included in the final report.

Ongoing stakeholder engagement

Although the Call for Evidence has now closed and the stakeholder roundtables have concluded the Review will continue to engage with key stakeholders to better understand their views better and to seek further evidence. Ongoing engagement is key to the successful delivery of this work and the collective experience and knowledge of individual stakeholders will be invaluable in developing a comprehensive knowledge base.

Transport connectivity appraisal

The Review will begin to implement the methodology set out in this report. This will include a full appraisal of current economic and transport baselines and the links between connectivity and economic performance across the UK.

Social Research

The Review will commission social research. This will seek to understand the perceived ease of travelling across the UK and associated barriers to travel. It will also look to assess the perceived impact of connectivity within nations and across the union on opportunities, access to services and quality of life. As part of this work it will seek views from the public on the connectivity changes that would make the biggest improvement to quality of life and access to economic opportunities.

This social research will consist of a combination of quantitative and qualitative approaches including public surveys and face to face interviews with members of the public. It will provide evidence that industry and other stakeholders are unable to provide and will be essential to the development of a set of final recommendations.

Further research

Desktop research will continue to be undertaken with a focus on the objectives set out in the Terms of Reference. Whilst recognising that transport alone cannot alone solve major socio-economic problems the Review will seek to better understand how better connectivity between England, Scotland, Wales and Northern Ireland can support an improved quality of life, increased social cohesion and a reduction in inequality across the UK. Sir Peter and the UCR secretariat will continue to engage with subject matter experts in support of this ongoing research activity.

Final report

Sir Peter will publish his final report setting out his findings and recommendations in summer 2021.

Contact the Review

If you wish to get in contact with the UCR Secretariat, please email UCR@dft.gov.uk Further information or views on connectivity between the nations of the UK is welcomed and will be fully considered.

Union Connectivity Review