Project Ireland 2040

National Investment Framework for Transport in Ireland

Background Paper 13: Supporting International Connectivity

Prepared by the
Department of Transport
gov.ie/transport
Disclaimer
This Background Paper has been prepared as part of the supporting analysis for the National Investment Framework for Transport in Ireland. It reflects the latest data and information available to the author at the time of writing. The views presented in this paper do not represent the official views of the Department of Transport or the Minister for Transport.
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1. Introduction

On 16 February 2018 Government launched Project Ireland 2040 with the publication of the National Planning Framework (NPF) and National Development Plan (NDP). The aim of this policy initiative is to guide planning and infrastructure investment over coming decades in order to cater for a projected population increase of one million people in a balanced and sustainable manner. To support this vision, the NDP sets out a €116bn public capital investment programme to cover the first decade of the NPF to 2027. Major transport projects to be delivered include BusConnects, MetroLink and the M20 Cork to Limerick.

The National Investment Framework for Transport in Ireland (NIFTI) is the Department of Transport’s contribution to Project Ireland 2040. NIFTI’s objective is to develop a transport investment framework which delivers a land transport network that meets the travel needs of the population in the coming decades and which supports the realisation of the Project Ireland 2040 National Strategic Outcomes. As part of the development of this framework, five areas relating to the future transport network have been analysed. These are:

1. Compact growth;
2. Interurban connectivity;
3. Rural and regional accessibility;
4. Supporting international connectivity; and,
5. Alternative demand scenarios.

This paper considers the fourth of these areas, supporting international connectivity. It will discuss the importance of strategic international links for a small open economy like Ireland, examine upcoming challenges for our surface...
access network to these key international strategic links, and identify the areas of congestion which are likely to emerge over the coming years. For the purposes of this paper, ‘Supporting International Connectivity’ is defined as providing surface access to the key strategic ports and airports which facilitate Ireland’s international connections to the rest of the world.

Project Ireland 2040 has established ten National Strategic Outcomes, which are a single vision and shared set of goals for every community in Ireland. In some cases transport’s role in realising these outcomes is explicit, such as delivering sustainable mobility, while in others transport has a facilitating role, such as access to high-quality childcare, education and health services. In support of Project Ireland 2040, transport investment can deliver positive outcomes in the following areas:

- Delivering clean, low-carbon and environmentally sustainable mobility;
- Supporting successful places and vibrant communities;
- Facilitating safe, accessible, reliable and efficient travel on the network; and
- Promoting a strong and balanced economy.

How these positive transport outcomes relate to supporting international connectivity and how this can be measured can be seen Table 1.1.

Table 1.1: Supporting international connectivity questions and performance indicators

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Question</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supporting the development of a land transport network that delivers a high level of service for everyone</td>
<td>How congested are the surface access routes for our key international strategic links?</td>
<td>Volume over capacity ratio on approach roads; Travel time to closest key international strategic link</td>
</tr>
<tr>
<td>Enabling the delivery of National Planning Framework objectives for where people will live and work</td>
<td>How will access to Ireland’s key international strategic links change over after the lifetime of the NDP?</td>
<td>Changes in travel time to the closest key international strategic link over the lifetime of the NDP.</td>
</tr>
<tr>
<td>Increasing Ireland’s economic competitiveness</td>
<td>How accessible are Ireland’s key international strategic links?</td>
<td>Travel time to the closest key international strategic link</td>
</tr>
<tr>
<td>Realising a low-carbon, sustainable transport system in Ireland</td>
<td>To what extent are the trips to Ireland’s key international strategic links sustainable?</td>
<td>Modal mix for travel to key international strategic links</td>
</tr>
</tbody>
</table>
2. Key Strategic Links in Ireland

2.1 The Importance of Supporting International Connectivity in an Irish Context

Ireland is an island on the western periphery of the European Union with one of the most open economies in the world. In 2017 the World Bank ranked Ireland as the fourth most open economy based on trade (imports and exports) as a percentage of GDP (World Bank, 2018). The economic model operated by Ireland promotes foreign direct investment, which requires effective and efficient strategic connections with the rest of the world. These connections must deliver a high level of service for all the people of Ireland to enhance competitiveness and increase the attractiveness of Ireland as a tourism destination and, in conjunction with this, there must be a focus on ensuring surface access to our international strategic connections remains reliable.

Our ports and airports are essential for the movement of freight which is being exported and imported in and out of the country and to enable international journeys by leisure and business travellers, the latter of whom place a particular importance on the ease of surface accessibility at international connections (PWC, 2017). While the impact of international connectivity on the economic development of Irish industry is difficult to assess, in 2017 overseas visitors to Ireland spent a total of €4.9bn (excluding fares). €2.8bn of that relates directly to expenditure from leisure travellers (CSO, 2018).

International strategic links are also of particular importance for Irish industry as Ireland has a high degree of backwards participation in global value chain. This means that Ireland imports high levels of intermediaries for use in producing our exports, with just over 40 per cent of our exports utilising contributions from foreign industries in 2009 (Central Bank of Ireland, 2015). The ESRI (2018) has estimated that a 10 per cent increase in the level of imports of intermediate goods into Ireland leads to a 3.9 per cent increase in the level of Irish goods exports. This indicates that a smooth timely flow of goods imports into the country is itself vital for Irish exports.

The Strategic Investment Framework for Land Transport (SIFLT) highlighted that investment that improved connections to key seaports and airports would maximise the contribution of the land transport network by enhancing the efficiency of the existing network.

2.2 Irish Ports

Irish ports are essential infrastructure for international trade, with approximately 99 per cent of Ireland’s merchandise trade volume moving by sea in 2017 (CSO, 2018). The National Ports Policy (Department of Transport, Tourism and Sport, 2013) categorised the ports of Ireland into three Tier 1 ports (Dublin, Cork and Shannon Foynes) and two Tier 2 ports (Belview and Rosslare-Europort). In 2018 Irish ports handled over 55m tonnes of freight, with the three Tier 1 ports accounting for almost 85 per cent of national freight traffic and Dublin port alone handling almost 50 per cent of total tonnage (CSO, 2019).

It should be considered that the geographical proximity of the two Tier 2 ports to continental Europe could lead to an increase in the significance and tonnage of freight traffic through these ports following Brexit.

Irish ports handled over 2.7m passenger journeys and are seeing increased passenger numbers from cruise ships with a 277 per cent increase in visitors since 2006 at almost 399k passengers in 2018 (CSO, 2019).
2.3 Irish Airports

International air travel is an essential driver of inward direct investment, and surface access to Ireland’s airports is crucial for both arriving and departing passengers as well as those working in and around the airport and the movement of freight through the airports.

Ireland has three State owned airports (Dublin, Cork and Shannon) as well as four smaller regional airports which are supported by Exchequer funding (Donegal, Ireland West Airport Knock, Waterford and Kerry). In 2018 Ireland’s airports handled 36.6m passengers (up from 34.5m in 2017) and 157k tonnes of freight (CSO, 2019). While air freight accounts for approximately 1 per cent of total freight tonnage it represents about 35 per cent of the value of all freight into and out of Ireland—mainly seasonal foodstuffs, pharmaceuticals, medical devices and IT components (Department of Transport, 2015). The largest share of both passengers and freight passes through Dublin airport, with 85 per cent of overall passenger numbers and 91 per cent of overall freight.

Figure 2.1: Travel times to Dublin Airport, 2017

Available indices to assess the international relative connectivity of airports focus on the connectivity of the airport itself (i.e., number of international destinations) with no relative measures which include surface access.

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routes being readily available. The 2018 Airport Industry Connectivity report ranked Dublin Airport 19th in Europe for direct connectivity (Airports Council International Europe, 2018) by measuring the number of destinations and frequency of flights from the airport. This compares to Cork Airport at 148th, Shannon airport at 170th and Ireland West-Knock Airport at 239th and demonstrates the importance of Dublin airport for the entirety of Ireland. Figure 2.1 shows travel time in 2017 to Dublin airport from the entire country.

2.4 European Policy Objectives: Trans-European Transport Network (TEN-T)

As discussed in NIFTI Background Paper 4, since the early 1990s the EU has sought to develop an infrastructure policy that supports the functioning of the internal market through continuous and efficient networks in transport, energy and telecommunications. In particular, the 2013 TEN-T Regulations establish standards, guidelines and timelines for the development of a dual-layer structure consisting of a ‘Core’ and ‘Comprehensive’ transport network. Improving surface access to maritime ports, airports and railroad terminals on the TEN-T network form key elements of the TEN-T policy.

Figure 2.2: North Sea-Mediterranean Core Network in Ireland

As shown in Figure 2.2, the Tier 1 Ports of Dublin, Shannon-Foynes and Cork are all part of the North Sea-Mediterranean Core Network and, under the terms of the TEN-T regulations, improved surface access through motorway or expressway standard and rail links is to be delivered by 2030. In order to comply with these
regulations, upgrades of the N69 Limerick to Foynes, Dunkettle Interchange and M28 Cork to Ringaskiddy form key elements of Project Ireland 2040 and National Development Plan, with rail access to these ports also being appraised.

The wider comprehensive network is to be served through what is termed as high-quality and 'conventional strategic road', and has a delivery date of 2050. While appraisal of many of the schemes required to deliver the comprehensive network has yet to be initiated, completion of the comprehensive network would be expected to improve surface access to all of Ireland's key strategic gateways, in addition to supporting more widespread economic development for the western and northern regions through the delivery of the Atlantic Economic Corridor.
3. Current Surface Access Network to International Strategic Links

3.1 Current Network

The analysis conducted for the 2018 ‘Future Capacity needs at Ireland’s State Airports’ review indicated that the road system around Dublin airport is already congested with existing routes, specifically the M1, R132 and R108, under pressure in terms of traffic volumes and speeds at current passenger levels. Current planning restrictions on Dublin airport restrict passenger numbers to 32m due to concerns about surface access issues. However, it appears that surface access issues are not as severe as were anticipated at current levels of demand as a greater proportion of passengers are taking public transport. It is therefore anticipated that this condition could be relaxed in the short to medium term.

With a predicted increase in annual passenger numbers of 17m to 45m by 2040 under the baseline scenario used in the report (Oxford Economics, 2018) and increasing population growth in the area, it needs to be considered how the increased congestion on approach to Dublin airport can be managed. NIFTI Background Paper 10 considers in detail the emerging pressures which will lead to increased congestion in the urban areas, which contain our key international strategic links.

Figure 3.1: State Airport catchment areas, 2016
A National Transport Authority (NTA) passenger survey conducted in 2016 (NTA, 2017) collected data on the origins or destinations of a sample of passengers that were travelling to or from the three State airports on the days of the survey. The data obtained can be used to approximate the catchment areas for these airports. It demonstrates that Dublin airport, which has the highest level of international connectivity, is the airport dominant in the majority of the State and as such attracts passengers from the entire island. Cork airport is dominant in Munster and Shannon airport has a smaller catchment radius covering the Mid-West\(^1\).

The NTA survey also reported the mode of travel by passengers to each of the airports. It can be seen that there is a very high dominance of car as the central means of transport to and from the airport, with between 62 per cent and 82 per cent of passengers arriving by car (including private car, rented car and taxi) at each of Ireland’s State owned airports. The high percentage of taxi passengers at Dublin airport is indicative that reducing parking facilities at the airport could have limited success in reducing arrivals by car.

**Table 3.1: Passenger travel modes to State Airports**

<table>
<thead>
<tr>
<th>Mode</th>
<th>Dublin</th>
<th>Cork</th>
<th>Shannon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private/Rental Car</td>
<td>37%</td>
<td>63%</td>
<td>73%</td>
</tr>
<tr>
<td>Taxi</td>
<td>25%</td>
<td>19%</td>
<td>8%</td>
</tr>
<tr>
<td>Bus</td>
<td>37%</td>
<td>16%</td>
<td>13%</td>
</tr>
<tr>
<td>Active Travel/Other</td>
<td>1%</td>
<td>2%</td>
<td>6%</td>
</tr>
</tbody>
</table>

As a comparison, a 2016 survey of Heathrow airport passengers by the UK Civil Aviation Authority found that between 1991 and 2016 (during which time the number of passengers increased from 30m to 49m) the percentage of surface access passengers arriving by car decreased from 67 per cent to 61 per cent. In 2014 Manchester airport, which handles a similar number of passengers to Dublin Airport, had approximately 84% of passengers arriving or departing by car (Liverpool John Lennon Airport, 2014). The 2016 Sustainable Development Plan for Manchester Airport has set an ambitious target of having a 50% public transport modal share for passengers by the time passenger volumes reach 45m (Manchester Airport, 2016).

Dublin port is well connected to the national road network. In particular the Port Tunnel which opened in 2006 provides fast access to the M50 and M1 and has assisted in removing congestion from within the port estate and the environs of the port. The NTA Transport Strategy for the Greater Dublin Area 2016-2035 identified that the safeguarding of these key access routes (which are also critical for Dublin airport access) for strategic trips of high economic value (including the movement of goods) is essential (NTA, 2016).

Shannon Foynes is accessed by the national secondary road network and is connected to the national motorway network at Limerick. The improvement of the road connection to Shannon Foynes was identified in the National Ports Policy (Department of Transport, Tourism and Sport, 2013) as a priority and is currently at the planning stage.

The vast majority of freight movements in Ireland are by road, with rail freight remaining an extremely low percentage of overall land freight in Ireland at 581,000 tonnes or 0.4 per cent in 2016 (CSO, 2017). The majority

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\(^{1}\) Belfast and Derry airports as well as the regional Irish airports were not included in this survey and so there catchments are not illustrated.
of the scheduled freight rail services in Ireland travel to one of the country’s ports. Until recently both Dublin and Waterford ports received rail freight, however in May 2018 due to lack of commercially viability the scheduled rail freight service from Ballina, Co. Mayo to Waterford Port ceased.

Figure 3.2: Total tonnage carried by rail by freight type

Dublin port is currently the only port in Ireland to have a scheduled rail freight service and active rail line. However, there are plans to provide rail links to the Port of Cork and Shannon Foynes in line with the TEN-T requirement that a rail connection be in place for core ports by 2030.

The short journeys undertaken for most freight transport movements to ports in Ireland, the high quality of existing road links, and the relative dispersal of industrial sites appear to remain constraints in the development of further infrastructure to promote growth in the volume of rail freight.

There is currently only one public transport route serving Dublin port. This route, operated by Dublin Bus, departs once an hour from Talbot Street in the north city centre. Therefore public transport access to Dublin port could be improved for both the 65 per cent of national sea passengers who use the port and those working within the port. An option which has been suggested by Dublin port that could increase service levels in the short term is the introduction of a bus route which would link the Luas red line with the passenger ferry terminals in the port—currently up to 46mins walk.
4. Emerging Constraints for Supporting International Connectivity

4.1 National Planning Framework Population Targets

The regional population targets as set out in the NPF will inform, subject to review in 2027, the next ten-year cycle of the National Development Plan. The targets aim for a total growth of 990,000-1,100,000 in the overall population of the State, up to 5,750,000-5,860,000. The regional breakdown can be seen in the table below.

Table 4.1: NPF regional population projections, 2026, 2031 and 2040

<table>
<thead>
<tr>
<th>Region</th>
<th>2026 NPF Targeted Population Growth</th>
<th>2031 NPF Targeted Population Growth</th>
<th>2040 NPF Targeted Population Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern and Midland</td>
<td>240,000-265,000</td>
<td>335,000-375,000</td>
<td>490,000-540,000</td>
</tr>
<tr>
<td>Northern and Western</td>
<td>65,000-75,000</td>
<td>100,000-110,000</td>
<td>160,000-180,000</td>
</tr>
<tr>
<td>Southern</td>
<td>155,000-170,000</td>
<td>220,000-245,000</td>
<td>340,000-380,000</td>
</tr>
<tr>
<td>State Total Growth</td>
<td>460,000-510,000</td>
<td>655,000-730,000</td>
<td>990,000-1,100,000</td>
</tr>
<tr>
<td>State Total Population</td>
<td>5,220,000-5,275,000</td>
<td>5,415,000-5,490,000</td>
<td>5,750,000-5,860,000</td>
</tr>
</tbody>
</table>

With the targeted increase in the national population level, including an increase of 660,000 in the numbers in employment, there will necessarily be an increase in the size of settlements around the country which will lead to increased use of the State’s transport infrastructure. A short-term example of the overall levels of economic and population growth in the State having an impact on the surface access to key international strategic links regardless of increased use of the international strategic links themselves; is the construction by the DAA of a business park in the airport campus which can be expected to increase demand on the road infrastructure in the environs of Dublin Airport (planning permission for which was secured in February 2017).

It is perhaps of particular note that the settlement patterns targeted in the NPF predict an increase in the population of the “Northern and Western” region of 160,000 to 180,000 people by 2040 (an additional 115,000 in employment). This region currently contains no State airports or Tier 1 or Tier 2 ports. The increase would bring the population in the region to just over 1 million.

4.2 Brexit

The possible impacts of Brexit on Ireland are considered in more detail in NIFTI Background Paper 4. This paper found that the “framework for future transport investment should seek to enhance both our intranational and international connectivity independent of the future of the relationship between the EU and the UK” as well as finding that the effects of Brexit are likely to be particularly acute in the North-West. Depending on the final Brexit deal reached with the UK it is possible that regions in the North-West may find that the journey time to the nearest port or airport could increase if Irish exporters/importer and passengers are no longer in a position to easily use a port or airport in Northern Ireland, or to travel through Northern Ireland on the way to a port elsewhere in Ireland. Additionally an increase in the importance and use of the Tier 2 ports (Waterford and Rosslare) after Brexit, due to their proximity to continental Europe, could lead to increased congestion levels in their environs and could therefore lead to increased travel time to the nearest port in the South-East region.
5. Strategic Plans, Infrastructure Development and NDP Schemes

5.1 Airport and Port Strategic Plans and Infrastructure Developments

It is critical that the surface access to the country’s strategically important ports and airports keeps pace with the planned enhancements in the capacity of the ports and airports. Infrastructure projects which are currently underway at Irish airports to expand capacity include a new runway and control tower, both at Dublin airport. A recently completed study of the Future Capacity Needs at Ireland’s State airports has identified possible additional future needs including a third terminal for Dublin airport (Oxford Economics, 2018).

The National Aviation Policy (Department of Transport, Tourism and Sport, 2015) acknowledged the need to improve surface access to the State airports as expected passenger growth forecasts for the airports will mean that surface access capacity will come under increasing pressure. The congestion on approach roads to Dublin airport has been recognised by the Oxford Economics Future Capacity report and the need for a surface access study at Dublin airport has been identified and should proceed as a priority. Fingal county council is in the early stages of preparing a new Local Area Plan for Dublin airport. A short strategic issues paper has been published by the council to guide public submissions and includes “the need for Surface Access Enhancements” as a key issue.

Major infrastructure projects are currently underway in all three Tier 1 ports: Alexandra Basin Redevelopment at Dublin port, Ringaskiddy Development at Port of Cork, and Capacity Extension Works at Shannon Foynes Port. These infrastructure projects will enhance connectivity and provide for increases in national port capacity. In addition to this, a national ports capacity study is currently underway and expected to be finalised before the end of 2020.

The Dublin Port Masterplan (2012) states that Dublin port has the capacity for the annual volume of containerised freight moved by rail to reach 1.3m tonnes (approximately 0.9% of freight at 2016 levels). Recent infrastructure projects by Dublin port to achieve this include the development of the 1.6km rail spur at Dublin port which opened in July 2011 and has seen rail freight handled through Dublin port increase in the since 2012.

The Dublin Port Masterplan has identified a number of additional road access options including the north-south port interconnector bridge and the southern port access route, which would link the southern end of the Port Tunnel to the south port area. The latter of these has also been included for delivery during the lifetime of the Transport Strategy for the Greater Dublin Area 2016-2035 (NTA, 2016).

Given the expectation that Dublin port will reach capacity by 2040, planning for the development of another port on the eastern seaboard may also need to be considered in advance of any major surface access projects.

The Shannon Foynes Masterplan: Visions 2041 (2013) lists the reinstatement of the rail line to Limerick (which was discontinued in 2000) as a key action needed to reach their Vision 2041 targets, including an increase in tonnage through the port from 9.9m in 2011 to 11.6m in 2041 (CSO statistics indicate that tonnage had already reached 11.3m in 2017). Feasibility studies on the reopening of the line, co-funded by Shannon Foynes Port Company and the EU, were completed between 2014 and 2016. Shannon Foynes Port Company has since also commissioned Irish Rail to undertake a detailed design of the line.
As Europe’s second largest port, the Port of Antwerp acts as a gateway to the European market. With approximately 60,000 people working in the port, maintaining the quality and sustainability of port access is vital for both the local community and for the swift onward transport of people and goods to other destinations. With the degree of congestion in Antwerp rising from ca. 125 km-hours in 2011 to ca. 230 km-hours in 2016, and with over 80% of port employees currently traveling to work by car, the Antwerp Port Authority and its partners committed to a sustainable mobility policy as part of their ‘Vision 2030–2050’ plan.

This plan sets out three long-term objectives:

- To establish the Port of Antwerp as a ‘smart hub’, offering the highest possible efficiency and best possible product for worldwide supply chains;
- To expand and enrich the port through the creation of synergies with existing activities to provide regional added value; and,
- To support and maintain the well-being of the local community and the environment.

The sustainable mobility action plan implemented to support these goals encompass:

- Improvements to road infrastructure around the port — In addition to the maintenance and upgrade of access roads around the port, increased emphasis is being placed on the provision of safe cycling infrastructure and park and ride facilities.
- Promoting more sustainable modes — By limiting car transport and encouraging the use of sustainable travel modes and creative solutions (e.g., the Water Bus), the port aims to provide alternatives to private cars and enable employees to commute safely.
- Extended opening hours and streamlining operational practice — Initiatives whereby the dock was open from 5 AM on Monday to 5 AM on Saturday saw more efficient trips, faster turnarounds and a reduction in peak traffic. Rail facilities in the port have also been systematically opened to rail traffic throughout the weekend.
- Replacing obsolete rail infrastructure — A comprehensive modernisation package is being introduced to upgrade rail facilities within the port and provide essential ICT systems for the coordination, communication and control of rail transport.

In addition to these initiatives to address the rising congestion around the port, an ambitious goal of shifting from a current freight modal split of 52-40-8 (road-barge-rail) to a 40-40-20 modal split by 2030 has been set out. Overall, the port’s focus on accessibility and sustainability are viewed as vital to Antwerp’s future prosperity.

While Antwerp port is much larger than Dublin port and has a more diverse modal mix as its starting point, aims and initiatives similar to those of the Antwerp action plan could be adopted by Dublin port to sustainably increase the volume of freight which enters the port without the increase in tonnage arriving exclusively by road.
5.2 NDP Surface Access Schemes to Support International Connectivity

Enhancing land side access to airports, particularly through increased public transport, and improving land transport connections to the major ports are key infrastructure objectives of the Project Ireland 2040 National Strategic Outcome of High Quality International Connectivity.

The key NDP project which is expected to improve access to the country's largest and most connected airport, MetroLink (due to be completed in 2027), will cater for 15,000 passenger per direction per hour and will link Dublin airport with Swords to the north and Dublin's city centre to the south. There are no confirmed road access schemes for Dublin airport included in the NDP.

There are also no confirmed NDP schemes for new public transport infrastructure or surface road access specifically for Cork, Shannon or Ireland-West Knock airports.

The NDP identifies that the long-term sustainable development of the ports will require strategic transport connections. A number of key infrastructure projects to improve access to the Tier 1 and Tier 2 ports are featured in the NDP. These include the planned N28 Cork to Ringaskiddy road, and the N21/N69 which will provide a high-quality link from the M20 at Limerick to Shannon Foynes Port. Additionally the on-going development of the M11 will improve connectivity to Rosslare Europort.
6. Future Network

To inform the development of NIFTI, the Department requested that Transport Infrastructure Ireland (TII) provide outputs from the National Transport Model (NTpM) indicating future projections of national road capacity and levels of accessibility. This scenario, which for the purposes of NIFTI is referred to as the 2040 Do-Minimum Scenario, is based on the population and settlement targets set out in the NPF and committed transport investment as set out in the NDP. Alongside this, the Base Scenario shows the modelled performance of the network in 2017.

6.1 Travel Time to Closest Tier 1 or Tier 2 Port

The red regions in the maps below, which have been prepared by TII, indicate areas where the travel time to the nearest port is less than 30mins and the purple regions show areas where the nearest port is more than 120mins travel time. The North-West, particularly Mayo, is especially distant from strategic international connections and the model estimates that the delivery of all the schemes in the NDP will have little to no effect to decrease the travel time from the relevant areas in the North-West to the nearest port. In general it can be seen that travel time to the nearest Tier 1 port can be expected to increase marginally from 2017 to 2040 even with the delivery of all NDP schemes. The area which can access the Tier 2 ports in the South-East within 30mins is, however, likely to increase slightly in the 2040 Do-Minimum Scenario.

Figure 6.1: Access to Tier 1 and 2 ports, Base Scenario and 2040 Do-Minimum Scenario

It should be recognised that road transit is generally faster than transit by sea, so where speed is critical there is a preference for use of ports that are closer to the final destination rather than ports which are closest to the point of origin. Therefore, ensuring that road access from the North-West to the Tier 1 and Tier 2 ports is maintained
and improved is likely to be better suited to reducing overall travel time rather than the development of port infrastructure in the North-West itself.

The travel time maps above provide a metric on the travel time to the nearest port but do not give an indication of which ports are actually being used most frequently in the regions across the country. Close to 50 per cent of all freight traffic is handled through Dublin port so the travel time to Dublin port is likely to be the most relevant statistic for more of the country than what is indicated above. Figure 6.2 shows that in 2040, even with the delivery of all NDP schemes, for a large majority of the country travel time to Dublin port will be two hours or more in the absence of further intervention between 2027 and 2040.

**Figure 6.2: Travel time to Dublin Port, 2040 Do-Minimum Scenario**

6.2 Travel Time to Closest Airport
The maps below show the travel time to the nearest State owned airport. Again in 2017, the North-West has a large region where the travel time is 120 minutes or more to the nearest State airport. However, in contrast to seaports, there is also a region of the South-East and a significant area in the South-West where the travel time exceeds 120 minutes to the nearest State airport.
The TII modelling indicates that, with the delivery of the NDP schemes, by 2040 the time taken to reach the nearest State owned airport will remain relatively similar with some increases in travel time expected, notably in the north of Donegal and the South-East. The heat maps do not include the regional airports (Kerry, Ireland West Knock Airport and Donegal) or the airport in Derry. The inclusion of these airports would materially reduce the travel time to the closest airport for the more peripheral regions of the North-West. However, the relative international connectivity of these airports is much smaller than that available in the State airports.

In order to support the delivery of the population target as set out in the NPF and assist the progress of enterprise and connectivity in the North-West, the development of an enhanced level of international connectivity at Ireland West Knock airport to bring it closer to the level of the State owned airports may be necessary. However, increased use of Ireland West Knock airport would likely lead to increased congestion on the approach roads into the airport.

6.3 Capacity of Primary Road National Road Network

TII also modelled volume-capacity ratios for the national primary road network. The results indicate that, in the absence of further intervention between 2027 and 2040, there will be increased congestion on some urban radial approach routes into the areas that contain our Tier 1 and Tier 2 ports, and State owned airports. On Figure 6.4, the red lines are routes which are estimated to be operating at above 120% of capacity and the dark red lines indicate routes which are expected to be operating at 140% of capacity.

The modelling suggests that the strategically significant routes in Dublin, including the M50 and M1, which are of critical importance for access to Dublin airport, are likely to be significantly above capacity by 2040. This is consistent with the preliminary analysis contained in the Future Capacity needs at Ireland’s State Airports, which indicated that the road system around Dublin airport was already under pressure and is likely to be above capacity.
well in advance of 2040 (Oxford Economics, 2018). The congestion on current approaches to Dublin airport in particular could be expected to increase in line with increased passenger numbers if a decision is made to build a third terminal in the eastern campus and therefore continuing the model of a single entry way to the airport.

Case Study: Heathrow Surface Access Strategy

Heathrow airport has published a set of five key surface access priorities, with aims to mitigate the effect of the expansion of the airport on local communities while maximising the benefit to the local area and wider UK.

The key priorities fall into two distinct categories:

- **Mitigating the impacts of the expansion by:**
  - Making public transport the preferred choice for most passengers;
  - Offering sustainable and affordable transport alternatives for airport workers; and,
  - Facilitating more efficient and responsible use of the road network.

- **Delivering wider benefits to the national economy and local communities by:**
  - Connecting all of the UK to growth through better surface access; and,
  - Ensuring local communities benefit from the surface access strategy.

In order to meet these priorities the airport has set a number of targets, including increasing the percentage of surface access passengers arriving or departing the airport by public transport to 55% by 2040 and connecting the largest 100 towns or cities in the UK to Heathrow by 2030 by public transport or air. The airport aims to make progress on these priorities through the improvement of infrastructure and levels of service. Measures proposed include:

- Improving rail access to Heathrow;
- Providing a resilient and reliable road network;
- Improving coach and bus access and frequency;
- Supporting and providing incentives for those who work at the airport to travel to work in sustainable ways;
- Improving on-campus transport facilities to encourage the use of public transport;
- Investing in local transport solutions;
- Improving ticketing to promote affordable fares and increase public transport opening hours to make public transport easier to use; and,
- Implementing innovative initiatives to enable more efficient and responsible use of the road network, minimising the number of vehicles driving around Heathrow.

The location of Heathrow airport on the edge of the largest city in the country, and therefore subject to the natural increases in congestion which come with increased urban population levels (regardless of increased passenger numbers at the airport itself) compares to the conditions of increased congestion levels on the approaches to Dublin airport. The focus on increasing public transport options to cater for increased passenger and staff numbers, so as to mitigate rather than aggravate the levels of congestion, is of critical importance to ensure that the levels of congestion in the environs of Dublin airport do not reach acute levels in the short to medium term.
Expanding road access is unlikely to be sufficient to cope with the increased passenger numbers and would be likely to result in continued increases in the already significant levels of congestion, particularly as existing routes, specifically the M1, R132 and R108, are already under pressure at current passenger levels. Consequently, to keep congestion to acceptable levels and secure strategic routes for high economic value trips, it is likely that there will be a requirement to introduce a mix of increased public transport options and demand management measures in the medium term. A number of such measures for the M50 are referenced in the Transport Strategy for the Greater Dublin Area 2016-2035 (NTA, 2016) and include parking restrictions, multi-point tolling and ramp metering.

With regard Shannon and Cork airports there does not appear to be any areas of particular concern for emerging congestion between now and 2040 and, in general, the capacity of the performance of approach roads are expected to improve with the delivery of the NDP schemes in the local environs. For Ireland-West Knock Airport the congestion on the road links to the airport from Sligo (N17) and north Mayo (N26) is already operating well above capacity and even including the delivery of all NDP schemes it is expected that by 2040 these roads will be operating even further above capacity in the absence of additional intervention.
7. Conclusions

The key Irish ports and airports are State-owned commercial entities with the ability to raise their own finance in order to fund infrastructure projects which enhance their capacity to handle passenger and freight volumes. Therefore, the key budgetary investment requirement for the Exchequer is around ensuring land side access routes to our Tier 1 and Tier 2 ports and State owned airports are sufficiently well developed, reliable and uncongested to cope with the increases in capacity which are planned at Ireland’s key international strategic links, in addition to the predicted increase in the State’s population.

If we take the 2040 population and settlement targets from the NPF, congestion on the land side access routes into our major strategic ports and airports will inevitably increase. In some areas significant levels of congestion will emerge even with the successful completion of all the transport schemes in the NDP and will result in increased transit time and reduced journey reliability for exports and imports and increased overall journey times for air and sea passengers—though it should be noted that this scenario assumes no new investment between 2027 and 2040. This level of congestion would unavoidably have an impact on Ireland’s economic attractiveness and therefore Ireland’s desirability as a destination for foreign direct investment, as well as having an impact on the ease of travel for Irish residents and overseas visitors.

The current access model for passengers and freight using Ireland’s State owned airports and Tier 1 and Tier 2 ports is heavily reliant on road access. To cope with the increased demand on access routes to key international strategic links, while also working towards a low carbon, sustainable and reliable transport system, a decreased emphasis on road access and an increased focus on alternative means of surface access will be required for future development projects. In particular the use of key strategic routes in Dublin, including the M50, M1 and Port Tunnel, must be secured for traffic of high economic and strategic value, including the movement of goods.

The priority areas for intervention to support international connectivity identified in this paper include the already significant levels of congestion emerging on the approach roads to Dublin airport and the lack of connectivity to State owned airports and Tier 1 or Tier 2 ports in the North-West of the country, particularly in Co. Mayo and Co. Donegal. The modelling completed by TII appears to show that the emerging issues in these locations will not be eased by the delivery of the NDP schemes alone.

Given the targeted increase in passenger numbers and expected increases in population levels in the area, it is of particular importance that the emerging surface access issues for Dublin airport are subject to further detailed study. While the completion of the MetroLink project will assist in encouraging modal shift for those accessing the airport, in order to avoid congestion intensifying above current levels, or indeed to reduce congestion below current levels, there will necessarily need to be a further increase in spending on transport infrastructure (such as the routing of a fixed line rail network through Dublin airport) or the introduction of demand management measures (which are currently available to transport planners for the port tunnel but not the other key Dublin strategic routes) to secure surface access in the environs for strategic traffic of high economic value.

The connectivity concern for the North-West should also be prioritised. As previously stated, there is generally a preference for transit over land to the port closest to the freight destination, so the development of road or rail
access in the region should be prioritised to reduce travel time to the nearest port rather than the development of new port infrastructure in the North-West itself.

The development of Ireland West Knock Airport to increase its international connectivity would increase the connectivity of the North-West Region as a whole, but it should be noted that the access roads to the airport from Sligo and north Mayo are already at capacity and the modelling suggests that this congestion will increase by 2040. Therefore the development of Ireland West Knock airport to support international connectivity in the North-West region should be accompanied by the development of its approach roads from the local urban centres.

Development of the priority areas identified above is necessary to ensure that access to our strategic international connections remains relatively reliable and efficient to enable the delivery of long term economic, environmental and social progress across Ireland and to help deliver Project Ireland 2040.
8. References


Fingal County Council (2018). Dublin Airport Strategic Issues Paper.


