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Freight Transport Report for the Island of Ireland

Funder: InterTradeIreland commissioned this report in association with the Joint Business Council.

Freight Transport Report for the Island of Ireland

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InterTradeIreland

Acknowledgements

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Steering Group Members

Aidan Gough	Inter*Trade*Ireland
Christopher Ryan	Inter*Trade*Ireland
Dennis Galway OBE	
Doreen Brown	Department of Regional Development Northern Ireland
Ken Jordan	Department of Transport Ireland
Enda Connellan	Dublin Port
Neil Delaney	DHL
Tom Wilson	Freight Transport Association
Reg McCabe	IBEC/CBI
William Poole	IBEC/CBI

The study team is a multi-disciplinary consortium consisting of:

- WSP consultants from the Policy and Research Group;
- Dr Edward Sweeney and his team from the National Institute for Transport and Logistics (NITL), Dublin;
- Pantrak Transportation Limited, Bellshill, North Lanarkshire; and
- Professor Alan McKinnon, Edinburgh.

InterTradeIreland has commissioned this study in association with the Joint Business Council. However, the views expressed in this report and its annexes are those of the WSP-led consortium, they do not necessarily represent the view of InterTradeIreland or the Joint Business Council.

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Freight baseline and growth trends

Over the last 15 years the industrial structure of the Irish economy has changed radically and the rate of economic growth has been among the fastest of all developed economies. The economy of Northern Ireland has grown steadily and is amongst the fastest growing regional economies in the UK.

The current modal position for the island of Ireland can be summarised as:

- Road freight has long had the overwhelming share of inland freight movements within the island of Ireland.
- Rail freight has declined in absolute volume in recent years and appears unlikely to recover much of this lost traffic, though it still continues to have a role to play for certain specialised movements but only within Ireland, rail freight having ceased completely in Northern Ireland in 2003.
- Port and shipping services are of major and increasing importance to the island of Ireland because of its open economies and its peripheral location relative to European and World markets. In line with the rapid growth in economic trade, containerised traffic over the decade to 2006 through the island of Ireland's ports has increased by 125 per cent in units of TEU, while Ro-Ro has increased by 70 per cent in units of vehicles.
- Air freight has grown in recent years with a small base in terms of tonnage moved, but it is significant in terms of the value of the goods that it moves and their importance within high-tech industry sectors.

3 major trends are driving freight growth:

- Construction: A major part of the recent rapid growth in road freight in Ireland[1] (and to a lesser extent in Northern Ireland) is associated with the high recent levels of investment in new construction of dwellings, commercial buildings and transport infrastructure. By 2006, construction materials comprised almost half of all tonnes lifted in Northern Ireland by Northern Ireland registered goods vehicles, as well as almost two thirds of all tonnes lifted in Ireland by Irish registered vehicles. The massive infrastructure spend planned on the island of Ireland, coupled with continued demand for new dwellings, supported by rapid population growth, means this is unlikely to reduce greatly in the medium term. Traffic volumes in the other sectors are much less sensitive to short term changes in the economy.
- The Economic and Social Research Institute (ESRI) Medium Term Review (2005) in its high-growth scenario for Ireland forecasts an annual real growth rate in Gross National Product (GNP) of 4.9 per cent from 2005 to 2010 and then of 3.3 per cent through to 2015. While some correction is likely, the ESRI Quarterly Review (Winter 2007) still forecasts real annual growth in GNP growth of 2.3 per cent in 2008[2]. Current Department of Enterprise, Trade and Investment (DETINI) expectations are for real growth in Gross Value Added (GVA) of 3 per cent per annum in both 2007 and 2008 in Northern Ireland, up from the 2.5 per cent experienced in 2006 and growing at a higher rate in 2008 than the average for the rest of Great Britain.

1 Over the decade to 2006 the movements of construction materials on Irish roads increased 6-fold, growing from 14 per cent of all road tonne-kms in 1996 to 31 per cent in 2006.

2 Davy Stockbrokers forecast 2% this year, returning to a potential growth rate of 3.5-4% for 2009-1011.

- Even if economic growth eases somewhat, population growth pressure will ensure that the future demand for road and port capacity runs well ahead of that indicated by past official forecasts. The recent official projection of population growth in Ireland presents a 26 per cent increase in population in the 14-year period 2006 to 2020. The recent official projection of 4 per cent growth in Northern Ireland population in the 5 years from 2006, is close to double the past growth rate, and will lead to a 10 per cent increase in Northern Ireland population by 2021. Taken together this would render a population of 7.2million on the island of Ireland by 2020.

In summary, the combination of these 3 trends; rapid population growth, high levels of construction activity and continued economic expansion suggests that the growth of vehicle traffic on the road networks will continue at a rapid level.

Key findings and recommendations

Understanding Freight Growth

Current official projections for freight transport growth are much lower than the recorded recent growth in movements through ports and on roads.

The observed rate of growth in both car and HGV traffic on roads in Ireland and of unitised traffic through the ports, North and South is running at a rate close to double that assumed in the various forecasts that are currently being used by government to plan infrastructure investments in Ireland. Northern Ireland's flat 2 per cent growth in road use also seems conservative.

The simple reason for this underestimation is that the underlying assumptions on which the projections were originally constructed have changed considerably. Most significant is the upward revision to population growth forecasts that will inevitably induce higher freight demand. Evolving best practice in Europe is towards better data recording, supporting more complex models, to provide the necessary evidence base for long term transport planning.

In the absence of reliable forecasts the evidence base does not exist to adequately prioritise freight needs within transport planning. This has implications for the utilisation of our existing stock of infrastructure and for future investment in our port capacity and shared road network. Examining the current investment strategies in Northern Ireland and Ireland in light of the higher revealed freight movements, points to certain gaps and an overall need to expedite delivery of strategic transport projects.

Recommendation 1: The forecasting tools that are used to estimate future capacity requirements and to assess competing investment schemes need to be updated to take account of increases in underlying population growth projections. To improve the effectiveness and efficiency of the substantial planned investment on transport infrastructre the forecasting methodologies need to be improved to bring them in line with best practice (See Section 3.3)

Port Capacity

Ports are the nodal points through which the island of Ireland connects with the global economy. In relation to ports there are 2 issues: **capacity** and **connectivity**. Outside of ports the movement of freight is impeded by **city congestion** and

the state of completeness on the **inter-urban road network**. Underlying these points is the utilisation of transport infrastructure, the **regulation of the freight industry** and the **provision of a skilled workforce**.

Port capacity is currently stretched and will need to expand in the medium term to cater for continued freight growth. The Department of Transport Ireland (2006) commissioned a report from Fisher Associates to asses the future seaport capacity requirements for unitised trade on the island of Ireland. Working on the normal scenario, Lo-Lo would effectively be fully utilised by 2014 while an approximate 9 per cent increase on 2005 Ro-Ro capacity would also be required. It seems likely that additional capacity, for both Lo-Lo and Ro-Ro, will be needed by this time if not beforehand.

Although some uncertainty exists regarding future economic growth in Ireland, most forecasts predict a short term dip in 2008 returning to strong economic growth thereafter[2]. Fisher's normal growth scenario was based on 4.7 per cent annual GDP growth to 2014. The ESRI 2005 medium term review forecast that 4.8 per cent growth in GDP to 2015 would represent a high growth scenario. To date the high growth forecast has been conservative and it would seem that, a short term correction not withstanding, economic growth will continue to propel freight increases. Northern Ireland will also contribute to demand with real GVA growth of 3 per cent predicted for 2007-2008.

For both Ireland and Northern Ireland the upward revision of population projections to 1.8 per cent and 0.7 per cent per annum to 2016 should help sustain a higher trend in import volumes and the movement of goods.

Observed growth rates for unitised traffic in Ireland in 2005 and 2006 ran at double those predicted by the Fisher normal growth scenario. Similar levels of growth in container traffic through Northern Ireland have also been recorded during the same period. While over a short time span, this does indicate that the island, North and South is currently registering high growth in freight movements. Recently published figures for 2007 by Dublin Port suggest this trend has continued.

The need for extra capacity has been recognised by the port sector and major expansion plans are underway. It seems clear that expansion will be privately financed, both governments should facilitate this through timely planning procedures and supportive infrastructure that connects ports to the wider transport network.

There is inevitably a delay of some years between approval being given for a major new port facility and the date when it becomes fully available for use. Major long term damage would be caused to both economies if there was an interim period with inadequate port capacity for the import and export of unitised goods. Without spare capacity within the port system there will be no effective competition and little pressure to control prices or improve service levels in individual ports. The resulting price increases and congestion delays experienced in ports would impact on the competitiveness of exporting firms and on their ability to serve existing markets, causing serious potential long term economic consequences for the island of Ireland.

Recommendation 2: Unitised port capacity on the island must be expanded. Belfast Port has set a target of double capacity by 2020. Other ports have similar ambitions. These need to be delivered, particularly the development of Bremore new port, the Lo-Lo expansion in Dublin port and the Cork Lo-Lo Terminal in Ringaskiddy. Planning permission affecting their expansion needs to be progressed rapidly. (See section 3.5)

Decisions on investment need to take account of the worldwide move towards larger container vessels that call at fewer and larger ports with greater depth. A similar trend in increasing vessel size also applies to feeder vessels. Future investment must ensure that larger vessels can be accommodated and that freight can be transferred readily onto the wider transport network. This emphasis towards concentration needs to be counterbalanced by the desirability of competition to control prices, improve quality of service, as well as to serve the natural hinterlands of different parts of the island of Ireland. (See Section 3.5)

Port Connectivity to the Road Network

For ports to function effectively they must link seamlessly to the inland network. Particular bottlenecks exist in getting lorries in and out of ports, impacting on efficiency and the wider community. Given the significance of the land bridge to Europe, similar issues facing a number of key ports on the west cost of GB merit a co-operative East-West approach.

Recommendation 3: Improve local access routes adjacent to a number of ports / airports. These are: Belfast Port (York Street/Westlink junction); Belfast International Airport (upgrade road connections to M1 and M2); Warrenpoint (Newry Southern Relief road); Larne (full dualling of the A8); Rosslare (port access road and complete the N25); Drogheda (Northern and Southern Relief roads) and Cork (road system around the Jack Lynch Tunnel and N28 to Ringaskiddy). Though a number of these routes are contained in investment plans, it is important to implement these improvements early enough to support the rapid expected growth in future port traffic. (See Section 5.2)

British land corridor

A large proportion of the higher value trade between the island of Ireland and Europe (approximately 1.5million tonnes of imports and a little lower volume for exports) passes overland by lorry through GB, mainly down to the ports of south-east England and the Channel Tunnel. This relies on the quality and usage cost of the infrastructure in GB.

A lack of reliable road links to the ports of Pembroke and Fishguard (A477/A40), Heysham (construct Lancaster by-pass) and Stranraer / Cairnryan (A75/A77) has been identified. This is a serious issue facing hauliers and those ports on the island of Ireland which are geographically tied to these routes. This was mentioned regularly during the consultation. In the longer term, if the quality of access continues to deteriorate due to the growth of local congestion, this could seriously hamper the ability of the corresponding port, North or South to compete with others on the island of Ireland. Any erosion of competition between ports on the island of Ireland is unlikely to be in the public interest. (See Section 6.2)

Recommendation 4: Cooperation with the authorities in England, Wales and Scotland is required to ensure that these improvements are prioritised - EU structural funding could also be sought for what are strategic international rates. This might best be taken forward within the machinery of the British-Irish Council. (See Section 6.2)

Impact of City Congestion

Beyond the immediate access routes to ports is the broader issue of congestion in the major cities in which the strategic ports are located.

Congestion in our cities is a critical issue for the delivery and export of goods, acting as a thrombosis to the rapid circulation of goods within the economy.

There is a strong likelihood of continuing congestion in and around Dublin, particularly on the M50, which must be used to access the key gateway of Dublin Port. As well as the current M50 widening, other options that should be considered to lessen congestion impacts include the following:

Recommendation 5: Construct an eastern port access route to avoid the need for lorries from the south and south west to circle Dublin on the congested M50. If this scheme were not to proceed, then as a fall-back reduce for some or all of the day, the current restrictions on lorries passing from the south through the city to the port.

Recommendation 6: Apply demand management / pricing policy on the M50 in congested periods to discourage excess car traffic volumes but using technology to ensure it does not generate bottlenecks at toll booths.

Current congestion problems are often exacerbated by the delays associated with major construction works.

Recommendation 7: Re-organise the construction work on road widening, particularly on the M50, to reduce its impact on the throughput of traffic during congested periods. In Ireland night time construction, in line with international best practice, should be considered. A good positive example of best practice in this regard would be the planning and delivery of improvements to the Westlink in Belfast. (See Section 5.2)

Inter-Urban Road Network

While ports are of critical importance to the ability to import and export, these only form a small proportion of the total freight movement on the island of Ireland. Of critical importance to all freight is the quality of the major inter-urban routes. In order to ensure the needs of the freight industry are taken into account when planning future investments both governments could consider:

Recommendation 8: Establishing Freight Quality Partnerships to deliver freight solutions at a local level, on issues such as night-time curfews, no car lanes, drivers' rest areas and bridge and road strengthening. Examples of how this might be done are provided by the Belfast Freight Quality Partnership and by the Freight Action Plan for Scotland (Scottish Executive, 2006). (See Section 5.1)

Within Ireland the perception is that Transport 21 will deliver the necessary road connectivity. Care must be taken that, in line with the experience of the M50, a good supply of infrastructure does not induce demand resulting in congestion. Moreover, as Dublin acts as the central hub in the wider inter-urban network, congestion there has a national and indeed island wide effect.

Recommendation 9: Give go-ahead for the proposed Leinster Outer Orbital route (Drogheda - Navan-Naas), which is not currently in Transport 21, in order to relieve pressure on the M50. Adopt road use pricing policies and land use planning to discourage urban sprawl around it and support the development of national distribution centres adjacent to this route.

The planned rate of road investment in Northern Ireland needs to quicken in order to support the Northern Ireland's Executive's stated aim of balanced economic development. Given its peripheral locality and the associated high transport costs that accrue to companies and consumers, there is great urgency to complete road investments in the Key Corridors of Northern Ireland sooner than is currently indicated in the recent Draft Investment Strategy, 2008-2018 (Northern Ireland Executive, 2007).

This is necessary to enable enterprises in Northern Ireland to cooperate and compete effectively both with those in Ireland and in other regions in GB. It would also provide the help that freight transport companies need to meet the increasing demands of customers with respect to: more frequent deliveries; the increasing use of Just-in-Time (JIT) systems; reduced stock levels combined with more global sourcing which increases the requirement for delivery reliability; and in general much more streamlined supply chain management.

Recommendation 10: Northern Ireland should accelerate the pace of investment in key road corridors for freight and expedite the completion of schemes to dual the A5, A6 and A8, before congestion and delays escalate and add to (in part due to growth in Irish based traffic) the relative peripherality of western counties.

In order to maximise the benefits from the roads investment programmes in Ireland, it is important that road upgrades be complimented by improvements in traffic and congestion management. This is an area where there have been major improvements in Britain in recent years, providing free, real-time information to users of England's network of motorways and trunk roads, allowing them to plan routes and to avoid areas currently indicated to be congested.

Recommendation 11: There is considerable scope for developing similar technology-based solutions on an all-island basis. The potential in this regard should be considered in detail by the 2 Governments. (See Section 5.2)

EU Policies

Road Pricing / carbon taxes within the island of Ireland.

Within the short to medium term, EU policies to reduce carbon emissions are likely to lead to significant increases in road and air transport costs.

Given the limited scope for modal shift within the island of Ireland, the response to increased road costs will need to focus on improving efficiency in road transport and logistic structures. The main overall impact of carbon taxes on roads would be to reduce the consumption of carbon based fuels through reducing both HGV and particularly car traffic. In this way an indirect side effect would be to ease the growth in congestion, particularly on inter-urban roads.

Road Pricing/ carbon taxes within the EU.

This cost impact will bear most heavily on the longest distance road movements. However, future increases in lorry weight and /or size limits to allow longer / heavier vehicles (LHVs) could permit greater load consolidation and cut costs per tonne- and cubic metre-kilometre for long distance movements to the island of Ireland[3], alleviating a part of these cost impacts.

3 The Dutch have recently approved 60 tonne 25.25 metres LHV, the Danes are trialling them from Jan. 2008 and a UK study on the issue should be published soon.

Recommendation 12: Adoption rates of LHVs elsewhere in Europe need to be monitored to ensure the competitive position of the freight industry on the island of Ireland is not undermined.

For medium value goods or those with flexibility in delivery schedules it is likely that alternatives to the current use of road transport will be actively considered. This implies that Lo-Lo services direct to European ports or unaccompanied Ro-Ro routes that economise on road distances will gain some share from accompanied Ro-Ro services using the British Land Corridor down to the Channel ports.

There is a need to investigate the feasibility of new international services that are less road-intensive. There is substantial EU funding available through the Marco Polo II, Motorways of the Sea and other European Commission (EC) programmes which actively encourage such initiatives. Surprisingly, to date, little use of this funding appears to have been made on the island of Ireland, when compared to elsewhere in Europe, despite the very high dependence of both jurisdictions of Ireland on its maritime connections.

Recommendation 13: Both governments should be proactive in publicising and providing support to encourage greater involvement in European funded programmes that are focused on improving international freight transport connections to the island of Ireland, making use of the North/South Ministerial Council and the British-Irish Council as appropriate to progress joint funding applications. Otherwise the impacts of future increases in international road costs could prove problematic. (See Section 6.3)

Regulating the Freight Industry

The findings and recommendations of this report are designed to enable governments and the freight industry to take action to develop freight transport within the island of Ireland with a consequent contribution to economic growth and industrial development. As such, there could be value in their being examined by the North/South Ministerial Council which has an important role in considering strategic transport issues within the island of Ireland.

The findings, however, have a relevance beyond the island of Ireland in that they raise issues which relate to links between the island of Ireland, GB and beyond. There could also be a case for these issues to be considered within the framework of the Transport sector of the British – Irish Council (the sector for which Northern Ireland is the lead administration) to explore the scope for appropriate action to be taken.

With all ports directly competing on an all-island basis and greater synergies in the road networks North and South, a joint approach to certain regulatory issues could provide mutual benefit.

Recommendation 14: Adopt common vehicle height restrictions based on the UK de-facto limit of 4.95 metres. The proposed lower limit of 4.65 metres in Ireland would increase costs for trade to and from that jurisdiction because access would be denied to high-cube / double-deck vehicles which have become increasingly popular in the UK and which have lower ferry rates per cubic metre of load.

Recommendation 15: National speed limits for HGV should be equalised on the island of Ireland. This would include increases in Northern Ireland from 40mph to 50mph / 80kph permitted on high quality single carriageway roads. On economic grounds, the Irish government should consider increasing the current HGV speed limit from 80 to 90kph on the national road network for (some or all of) motorways and dual carriageways, for (some or all types of) HGV. On safety grounds, the Irish government should consider lowering the speed limit on regional roads for (some or all) HGVs to 70kph. Through encouraging HGV movements in Ireland to switch to the highest quality roads, the combined result of these speed changes should generate safety gains (provided that the limits are then rigorously enforced) because such roads have the lowest accident rates per vehicle km.

Recommendation 16: Centralise and improve the efficiency of providing permits for the movement of abnormal loads. Currently in Ireland, each of the 36 local authorities through which an abnormal load passes, needs to provide a separate permit, causing delay and cumulative costs. In contrast, to move a large load along Northern Ireland's roads requires only 2 authorities to be informed: Northern Ireland Roads Service (NIRS); and the Police Service of Northern Ireland (PSNI). The ideal approach would be for the North/South Ministerial Council to consider an all-island system that requires hauliers to contact the minimal number of separate organisations.

Recommendation 17: There should be a joint approach to the licensing of commercial vehicles and enforcement of Vehicle Standards. The response to cost pressures by local hauliers has often been to cut corners in many areas of legal compliance related to vehicle roadworthy condition, overloading, driver's hours, etc. The existence in both jurisdictions of different regulations and permit systems for transport movements creates many difficulties for companies operating across the island of Ireland. This is an area in which there is also an East/West interest, given the movement of vehicles from the island of Ireland to Scotland, England and Wales and, therefore, an area which might usefully be considered within the British-Irish Council. (See Section 5.3)

Provision of a Skilled Workforce

The freight industry has identified a particular need to raise the professional image and profile of the industry. To address this issue the Chartered Institute of Logistics and Transport (CILT), has been working to improve the skills base in logistics and to enhance its image. There is also a need for continuous education to develop the wider business skills appropriate for a contemporary service sector, as well as for safety and energy efficiency. Lessons can be learned from Skills for Logistics[4]:, the sector skills council for logistics in the UK, which provides a wide range of apprentice training opportunities to younger people entering the industry. It is developing training units that will enable the UK Council for the Curriculum,

4 See www.skillsforlogistics.org/en/ for further details of the activities of the Skills for Logistics Council

Examinations and Assessment to approve Transport as an additional occupational area, ideally leading to a NVQ Level 2 Transport qualification. This would potentially help recruitment to address the shortage of drivers.

Recommendation 18: Investigate the scope for increased joint provision of certified and recognised training at all levels, across the island of Ireland, making use of the North/ South Ministerial Council. (See Section 5.1)

Further Research

We have identified 2 areas where the evidence base for important future decisions is weak and for which future analytic studies should be carried out.

Recommendation 19: A study is needed of the impacts on imports and exports from both jurisdictions of expected future major road cost increases across the EU. This study would provide an up-to-date evidence base to guide on future short sea shipping demand and particularly on the balance of the associated future port capacity requirements for accompanied and unaccompanied Ro-Ro and for Lo-Lo. This study should be an all-island study because of the unified market for unitised shipping. The deliverable from this study would be authoritative guidance on the options and requirements for future increases in port and shipping capacity on each of Lo-Lo, accompanied and unaccompanied Ro-Ro services (See Section 6.3).

Recommendation 20: Create an up to date, behaviourally based modelling system for the forecasts used for longer term strategic planning of both the Northern Ireland and Ireland road systems. This model would forecast the joint influences on traffic volumes across the road network of: improved road infrastructure; and of potential future charges on lorries and cars that aim to reduce CO_2 emissions. Ideally it would be an all-island study to ensure that the vehicle movements across the border were consistent, particularly those for freight. This model needs to examine cars, vans and lorries in tandem, since they compete for the same road capacity. This model would provide improved estimates of local traffic growth and would identify areas subject to future congestion problems for passenger and freight traffic, for which suitable policies or investments could then be examined further. (See Section 3.3)

Recommendation 21: To support the above studies and to provide a sound evidence base on which to make future policy and investment decisions for both jurisdictions, there is need for a number of improvements to the assembly and publication of statistical data both in Northern Ireland and across the island of Ireland. These would provide greater consistency in statistics across the island of Ireland and would address particular weaknesses such as the absence of published information explicitly distinguishing van traffic, which is likely to be a significant and increasing future source of traffic growth in congested areas. (See Text Box 5.1)

Conclusions

Efficient freight transport is essential to the economy and to the quality of life across the island of Ireland. Economic growth generates increasing demand for freight transport. Goods have to be moved freely, reliably, efficiently to meet business needs, while minimising the impact on safety, on other transport users and on the environment.

This study has set out to understand the opportunities, constraints and key issues for freight on the island of Ireland. Through review and analysis, a baseline to help understand the trends of freight growth has been built up. A wide range of stakeholders have been consulted seeking their views on the current freight transport system, future trends, and the key policy objectives that should be addressed by government. Supported by the consultation and analysis, we have put forward a number of priority options for consideration in improving the provision of freight and logistics services across both jurisdictions have been put forward.

The most critical of these are:

- to improve data collection and forecasting of freight transport;
- to increase port capacity and target bottle necks in the road network;
- to co-operate North-South and East-West to regulate and support the freight industry; and
- to involve hauliers in transport planning.

The economy of Ireland has grown rapidly in the past and expectations are that this growth will continue, though probably at a less extreme rate. Economic and population growth in Northern Ireland have also recently started to accelerate recently. It is crucial to ensure that an efficient freight and logistics system is in place on both sides of the border, in time and with sufficient capacity, to encourage rather than to constrain this expected economic growth.

1. Introduction

1.1 Purpose of the study

1.1.1 The purpose of this study is to provide policy makers and industry stakeholders with an increased understanding of the role of the freight industry and therefore influence policies that act to increase the competitiveness of the industries on the island of Ireland, enabling them to compete more effectively in an ever more competitive World market. In particular, it sets out the key issues for freight movements in both jurisdictions over the next 10 – 15 years. The genesis of this report arose as a submission to Inter*Trade*Ireland from the IBEC-CBI Joint Business Council on behalf of its North South transport group members.

1.1.2 The study examines current freight flows throughout the Northern Ireland and Ireland and how freight moves between the both jurisdictions and GB, the rest of EU and the wider global economy.

1.1.3 The study includes:

- **A baseline of current freight characteristics and projections for the future.** Through review and analysis, a baseline is established in order to understand the existing and future demand for freight. The assessment of future demand takes account of economic, demographic, land use and logistical developments.
- **Identification of the opportunities, constraints and key issues for improving and developing freight in the island of Ireland.** Stakeholders from different economic sectors, geographical regions and all freight transport modes have been consulted on current policy measures and initiatives and on future opportunities and constraints.

1.2 Study approach

1.2.1 To address the aims of the study the work has included the following tasks:

- Establish the baseline geographic pattern of freight movements within the island of Ireland as well as of exports and imports;
- Analyse the future demand for transport in the light of demographic growth and of change in industrial, economic and supply chain structures;
- Examine the requirements of road, rail, shipping, air freight operators and logistics providers and the challenges that they face;
- Examine the requirements of the main industrial sectors for domestic and international freight transport services in the context of optimising their supply chain management; and
- Develop a set of recommendations for policy, operational and investment measures to improve the performance and efficiency of the freight and logistics services provided for the island of Ireland.

1.2.2 This study takes a multi-dimensional view of freight transport, examining it from several different perspectives:

- **Economic:** The requirements for transporting goods vary between sectors of the economy; a wide range of services with different balances of cost and quality of service will need to be provided to satisfy this spectrum of requirements;

- **Geographical:** examining the pattern of freight movement at different spatial scales ranging from local deliveries by vans to trans-continental container and air-freight flows; and also examining the different needs across the island of Ireland, ranging from the low density areas in the west to the highly urbanised areas of Dublin and Belfast. Attention will be paid to the island of Ireland's relative peripherality within the EU, as well as the internal peripherality of regions in the west;

- **Modal:** differentiating all the main transport modes (road, rail, water and air) and assessing the potential for improved inter-modal co-ordination;

- **Logistical:** recognising that freight transport is organised as part of the wider industrial supply chain and that it closely interacts with other logistical activities;

- **Temporal:** exploring trends and strategic options over different time-scales; and

- **Organisational:** taking account of the differing circumstances and logistical requirements of different sizes and types of company.

1.2.3 By taking a broad overview we ensure that important developments or issues are not overlooked.

1.2.4 Building from the baseline analysis of current freight transport characteristics, our stakeholder consultation has then identified some of the other more specialised issues that also need to be considered. The results from the consultation were combined with insights derived from reviewing the many studies covering aspects relevant to freight, to generate a detailed picture of the issues currently facing the industry and of the challenges and opportunities that it will face in the future. Particular use was also made of the findings from the Scottish Freight Strategy Scoping Study (WSP, 2006), which covered similar topics to this study in the context of freight transport and logistics in Scotland.

1.2.5 The findings and recommendations of this report are designed to enable government and the freight industry to take action to develop freight transport within the island of Ireland with a consequent contribution to economic growth and industrial development. As such, there could be value in their being examined by the North/South Ministerial Council, which has an important role in considering strategic transport issues within the island of Ireland.

1.2.6 The findings, however, have a relevance beyond the island of Ireland in that they raise issues which relate to links between the island of Ireland and its British neighbours and beyond. There could also be a case for these issues to be considered within the framework of the Transport sector of the British – Irish Council (the sector for which Northern Ireland is the lead administration) to explore the scope for appropriate action to be taken.

1.3 Structure of the report

1.3.1 This report is divided into 2 parts; the first provides a descriptive summary of the patterns and expected future trends in freight transport; the second part then analyses current and emerging freight and logistics issues and the actions that should be taken to address them. Chapter 2 summarises past growth trends and the current baseline characteristics of freight transport across the island of Ireland.

Chapter 3 reviews planned investments and forecasts of future freight growth trends. The methods adopted to carry out the consultation with stakeholders are summarised in Chapter 4. The freight transport issues that were raised in the consultation are analysed in detail in Chapter 5 for movements within the island of Ireland and in Chapter 6 for those parts of the movements of imports and exports that take place externally. The conclusions and recommendations for action are summarised in Chapter 7. An overview of the responses received through the consultation is provided in the Appendices.

2. Freight and Logistics Baseline

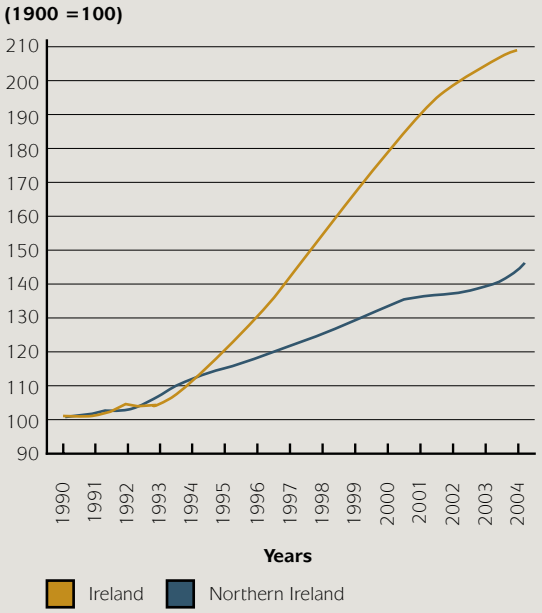
2.1 Overview

2.1.1 Freight issues are multi-dimensional. They influence industries, the wider economy, and society in various ways. This chapter provides a baseline review, starting from an overview of the economic forces that generate the demand for freight services and then examining the main features of the current freight transport services supplied across the island of Ireland. It takes a comprehensive view and examines freight issues from several different perspectives. It explains which goods are moved, where they are moved and by what means. Chapter 3 then assesses forecasts of future freight demand across the island of Ireland as a whole.

2.2 Economic context

2.2.1 Freight transport is a derived demand - it exists to enable the economy to function, rather than being an end in itself. Accordingly, this baseline review commences by analysing trends in the economy of both Northern Ireland and Ireland. From 1990 onwards, the Irish economy grew at a significantly higher rate than that experienced across the rest of Europe. From 1995 to 2003 real growth in the Irish Gross National Product (GNP excludes profits and dividends repatriated to non-residents - an important flow in Ireland) was around 8 per cent per annum, remaining over 4 per cent a year since then.

Figure 2.1 Northern Ireland and Irish total gross value added per capita 1990-2004 (constant prices)



Source: Northern Ireland and Irish National Accounts - Northern Ireland Economic Bulletin 2007

2.2.2 Past trends in economic growth are illustrated in Figure 2.1 for both Northern Ireland and Ireland using the common measure of gross value added (GVA) per capita in constant prices. It shows that for Ireland the pace of economic growth accelerated rapidly in the early 1990s from its earlier trend of low real growth, whereas Northern Ireland exhibited a much lower growth rate throughout this period, broadly tracking growth rates within the rest of the UK. The expansion in economic growth in Ireland has been mirrored by the associated rapid increase in freight demand over the past 15 years.

Sectoral economic development

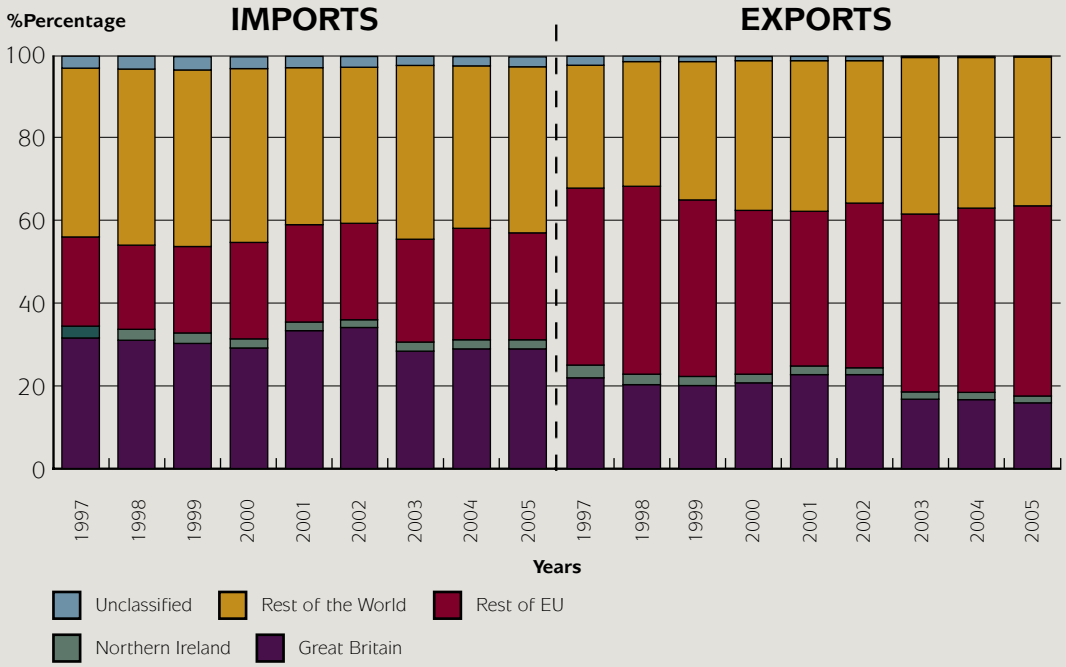
2.2.3 Over the last 15 years the industrial structure of the economy in Ireland has changed radically. Exports of food, beverages and agricultural products have grown at a relatively modest rate. Its traditional manufacturing sector was largely replaced by one specialising in modern electronic equipment, chemical, medical and pharmaceutical products, which tend to have relatively high value per unit of volume. This has meant that in **physical transport volume** terms Ireland has a much greater tonnage of imports than of exports, whereas in **monetary value terms the imbalance is in the reverse direction**. Figure 2.2 illustrates that the exports of goods from Ireland in 2005 exceeded its imports by €30billion (50 per cent), though this gap is somewhat inflated by transfer pricing by multinationals. The main categories of exports are machinery (particularly computer equipment) and chemicals / pharmaceuticals. The excess tonnage of unitised imports over exports, as illustrated in later sections, places hauliers from both jurisdictions at a price disadvantage relative to continental hauliers, but helps push down outbound haulage rates from the island of Ireland, which is beneficial to Irish exporters.

2.2.4 Figure 2.3 shows that Ireland has a different locational pattern of imports from exports. A significant proportion of its imports are sourced from GB, rest of the World (mainly Asia Pacific) and mainland Europe, while only 15 per cent comes from North America. In recent years, the distance that imports have been conveyed has increased, with GB losing some of its share to Asia Pacific.

Figure 2.2 Ireland: imports and exports by category, 1999-2005

Source: CSO (constant prices of 2001)

Figure 2.3 Ireland: proportion of imports and exports by location

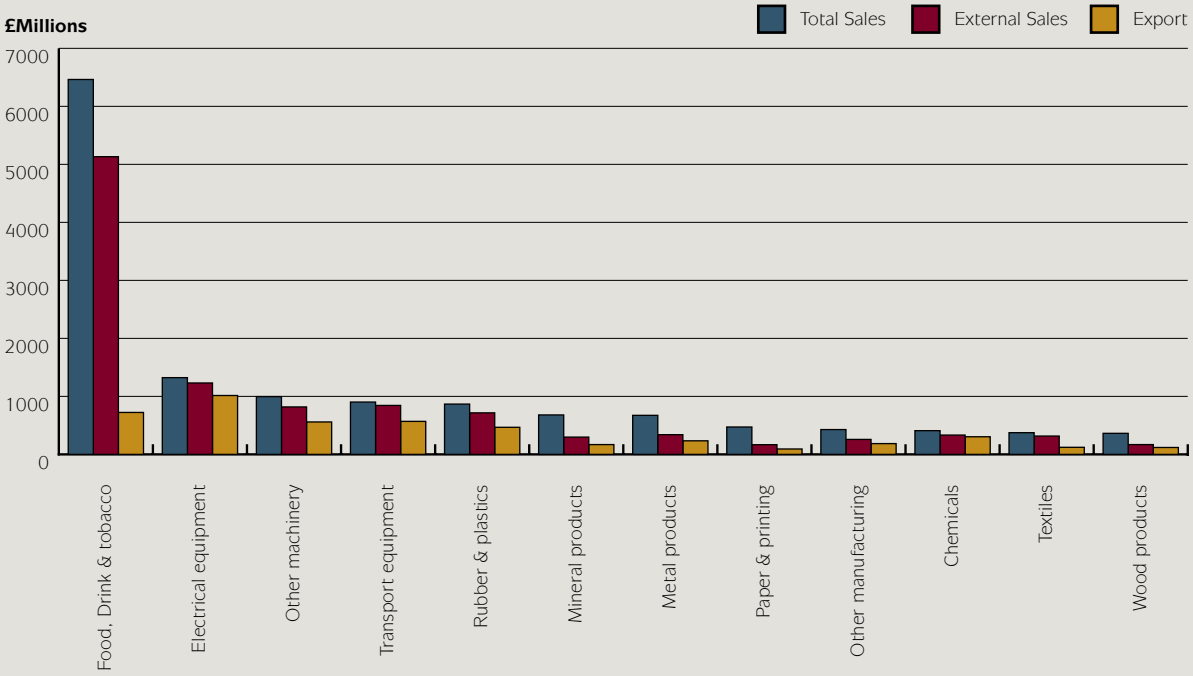


Source: CSO

2.2.5 Exports are mainly destined for mainland Europe, with North America having a slightly greater share than GB or the rest of the World. The proportion exported to mainland Europe is increasing, predominantly at the expenses of freight destined for GB and the rest of the World.

2.2.6 Figure 2.4 illustrates the sales and exports by Northern Ireland based manufacturers for each industrial sector. This highlights that food and drink strongly dominate both sales within Northern Ireland and those to GB. The sector with the highest value of exports to outside the UK is electrical equipment.

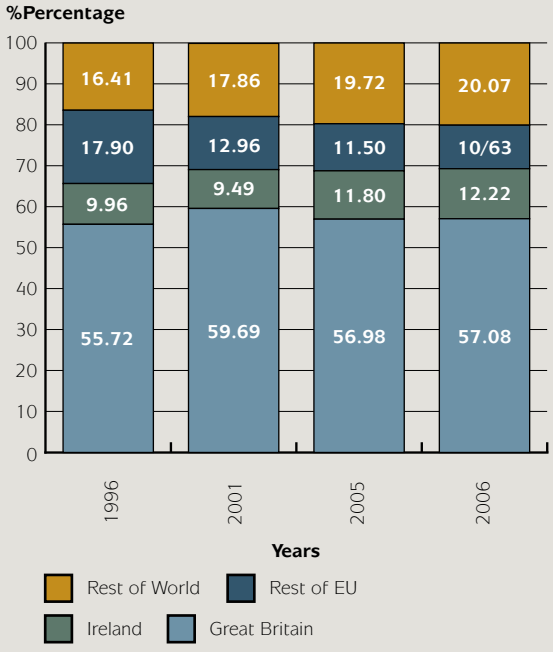
Figure 2.4 Sales in Northern Ireland by Sector 2005/06



Source: DETI, Northern Ireland Exports denote all sales outside Northern Ireland and GB

2.2.7 Figure 2.5 shows how the destinations of Northern Ireland's exports have evolved over the past 10 years, with the main location remaining GB. Over this period the percentage of exports going to mainland Europe has reduced from 18 per cent to 11 per cent, with the proportion destined for the rest of the World rising slightly. Part of this is due to the restrictions on meat exports enforced between 2001 and 2007 as a result of the foot and mouth outbreak. For Northern Ireland by 2006, only 30 per cent of total export value is destined for mainland Europe or the rest of the World, in contrast to 80 per cent of the value of exports from Ireland.

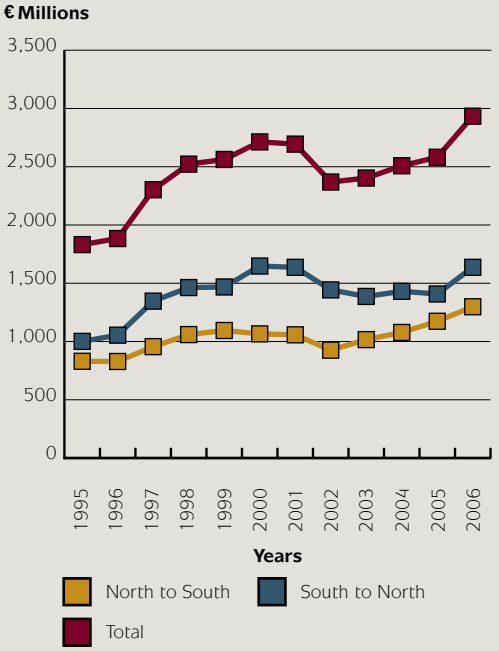
Figure 2.5 Northern Ireland: exports by location by value



Source: Northern Ireland Manufacturing Sales & Exports Survey 2005/2006

2.2.8 The gap in the balance of manufacturing trade between Ireland and Northern Ireland has closed over recent years whilst the overall monetary volume of trade across the border has increased recently, as highlighted in Figure 2.6.

Figure 2.6 Total Cross-Border trade 1995 - 2006



Source: Inter*Trade*Ireland *(deflated values - 1995 €)*

Freight transport demand and sectoral development

2.2.9 Understanding current and future economic trends is a pre-requisite to being able to plan for the island of Ireland's future freight developments. The transport service requirements of individual types of manufacturers are markedly different. Primary industry sectors generate and use many low unit value bulk goods. In contrast, processing industries (such as food, chemical and pharmaceuticals), light manufacturing and high tech industries (such as life sciences and computer equipment) produce and consume significant quantities of high value, time-sensitive consignments and parcels.

2.2.10 The minimisation of transport costs tends to be of greatest importance for low value bulk goods, which comprise about 40 per cent of road tonne kms. For example, the cost of hauling timber from forest to processing plant can be as much as 50-60 per cent of the value of the wood. For high value goods[5] their producers are generally willing to pay a premium for a good quality, reliable delivery service. Sophisticated logistics and production systems may be in operation for these goods that depend for their efficiency on having the right inputs in place on all occasions.

2.2.11 Ireland's specialisation on exports, such as pharmaceuticals, electronics and computer equipment that have high value density, means that relatively small tonnages of freight are generated per € million of sales. This differs from many other EU countries that still retain a substantial base of primary extraction or traditional manufacturing industries. This evolution of the structure of the economy partly explains why rail freight is now of low importance and why international container and ferry traffic has grown rapidly over the last decade.

5 For example, a full lorry load of bio-science products transported under refrigeration can be over €800,000 in value. A lorry load of computer systems equipment or tobacco products can reach €700,000, and Irish whiskey (net of tax) or prawns over €100,000.

2.2.12 The island of Ireland's industrial base continues to change and evolve in the light of global trends. The composition of its GDP is also changing; the service sector accounts for a steadily increasing share of output. These changes affect the nature, volume and distribution of freight demand. In particular in Northern Ireland, the recently improved political situation has the potential to provide a platform to enable similar rapid economic growth to occur to that of Ireland, though the extent to which this growth potential will ultimately be achieved remains to be seen. It is crucial to ensure that this potential economic growth would not be quickly choked-off by bottlenecks in transport infrastructure.

Geographical aspects

2.2.13 The ways in which economic structure governs the nature of the demand for freight transport services has been outlined above. Geographic structure also plays a significant role in determining the nature of the demand and supply for freight transport services.

2.2.14 The 4 main geographical categories of freight movements are distinguished below which differ in their service requirements and in the mode and vehicle types that support them. These geographical characteristics of freight transport can be summarised as:

- International movements: those links with other parts of Europe and with the rest of the World (account for 79 per cent of overseas trade by value for Ireland and 30 per cent of trade by value from Northern Ireland).
  - Bulk shipping continues to move large volumes of solid and liquid goods using specialised port facilities that are often integrated with processing facilities for these commodities, e.g. power station, fuel refinery or aluminium smelter.
  - Higher value unitised goods to / from nearby European destinations are moved mainly on ferries through use of accompanied or unaccompanied trailers (Ro-Ro: Roll-On / Roll-Off).
  - Unitised goods to / from more distant destinations in Europe and the rest of the World are transported in containers (Lo-Lo: Lift-on / Lift-off) on smaller feeder container vessels, with the intercontinental movements being transhipped to large deep sea vessels at the major European container hub ports.
  - The highest value goods and express parcels over longer distances are shipped by air.
- Movements generated in or destined for GB are very important for Northern Ireland representing 85 per cent of total trade. For Ireland, GB (i.e. excluding Northern Ireland) is still its largest individual country trade market (29 per cent of value) for imports, while for exports it is the second largest market (15 per cent) after the USA. Overall these GB movements account for 21 per cent by value of overseas trade for Ireland.
  - Most unitised traffic to/from GB is carried on Ro-Ro services, rather than being containerised.

- Inter-urban movements within the Island[6]:
  - Most of this traffic is carried by road with an increasing trend towards the use of larger HGVs (Heavy road Goods Vehicles), though the growth in goods sourced through internet shopping may also lead in future to increased use of delivery vans
  - Coastal shipping is used primarily for movements of bulk fuels.
- Local urban[7] and rural distribution within the island of Ireland:
  - For local movements and urbanised areas, smaller HGVs and vans are often used to provide a more effective delivery service for smaller consignments.

2.2.15 Freight movements at each of these geographic levels are not independent of each other but rather are often closely interrelated within logistic chains of varying degrees of complexity. The vast majority of the road tonne kilometres on the island of Ireland will be on the inter-urban roads, rather than within urban areas.

2.2.16 Because of its peripheral location relative to the producers of its inputs to industry and because of its extremely open economy, the direct and indirect costs of transport have the potential to be a larger proportion of production costs on the island of Ireland than is the case in most other EU countries. The past trend of rapid growth in modern higher technology industry has partly off-set this disadvantage, through specialising in the production of relatively higher value goods in industries such as electronics and pharmaceuticals, which can better bear these costs of transport. These industries do, however, require high levels of transport service quality to minimise total costs within their overall supply chain.

2.2.17 The continuing globalisation of the economy in both jurisdictions requires efficient and cost effective carriage of imports both to final consumer demand and for basic and intermediate inputs to manufacturing industry. If rapid economic growth is to be achieved, the channels for exports need both high degrees of reliability and competitive costs. The options available to meet these challenges are explored later in Chapter 6.

2.3 Freight movements - overview

2.3.1 The previous section has examined freight demand in terms of the monetary value of the goods shipped, we now review these movements in physical volume terms - the tonnes of goods lifted and the tonne-kilometres (tkm) moved to / from and within the island of Ireland.

2.3.2 The current modal position for the island of Ireland can be summarised as:

- Road freight has long had the overwhelming share of inland goods movements in both jurisdictions.
- Rail freight has declined in absolute volume in recent years and appears unlikely to recover much of this lost traffic, though it still continues to have a role to play for certain specialised movements but only within Ireland.

6 29 per cent of Irish HGV tonnes have a different destination NUTS3 region (see Figure 2.13) to the journey's origin, so that they are certainly inter-urban movements.

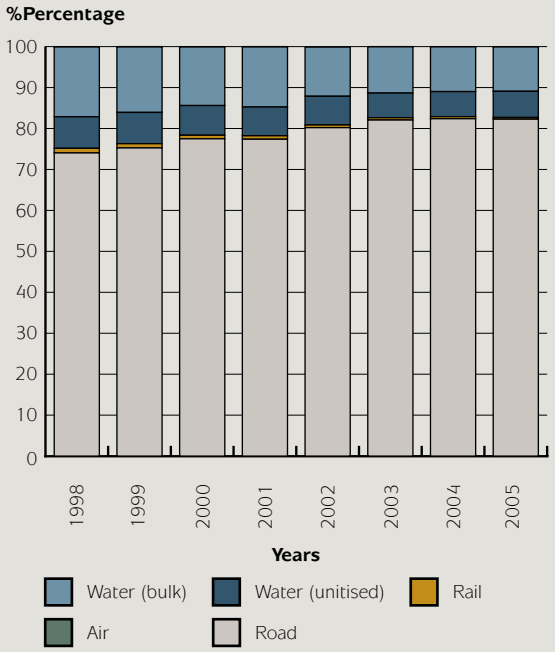
7 Only 10 per cent of all road tonnes moved occurred wholly within the Dublin Region, which contains 28 per cent of the resident population.

- Port and shipping services are of major and increasing importance to both jurisdictions because of its open economies and its peripheral location relative to European and World markets. In 2005, approximately 54million tonnes of freight were delivered from abroad to the island of Ireland, roughly 9.5 tonnes per person per year.

- Air freight has grown in recent years with a small base in terms of tonnage moved, but it is significant in terms of the value of the goods that it moves and their importance within high-tech industry sectors.

2.3.3 Figure 2.7 shows for the island of Ireland how the delivery of locally produced plus external goods tonnage was divided in units of volume between the transport modes during 1998-2005. Road accounted for over four-fifths of all freight tonnes in 2005, an increase of about 8 percentage points since 1998. Water-based services for imports and exports of unitised goods have expanded rapidly in absolute terms, whereas bulk maritime volumes have remained stable. Because of the short distances and relatively low volumes of bulk movements on the island of Ireland, rail freight has struggled to compete in Ireland and it has stopped completely in Northern Ireland since December 2003. The usage of units of volume (tonnes) in Figure 2.7 masks the importance of the air mode to the island of Ireland's economy, because air specialises in moving high value but low volume goods.

Figure 2.7 Percentage by mode of freight tonnes delivered on the island of Ireland: 1998-2005



Source: Road Freight Transport Survey, CSRGT (Northern Ireland), Statistical Yearbook of Ireland, Maritime Statistics & Eurostat

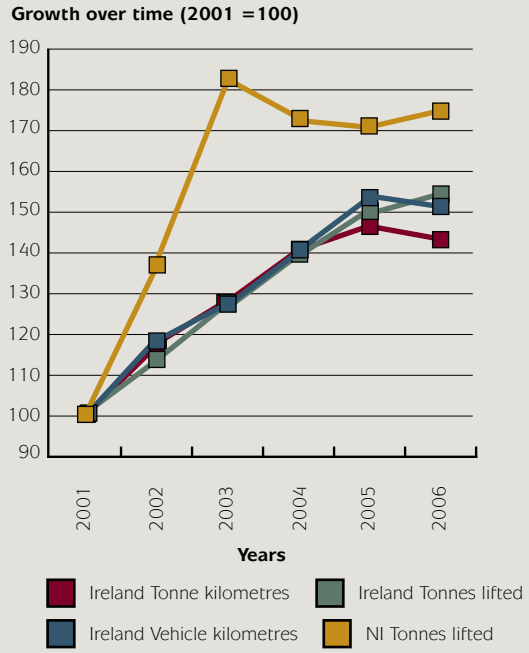
Note: The modal split here is calculated based on the total tonnes delivered from each transport mode on the island of Ireland. The tonnage data involves a degree of double counting of some shipments, e.g. a containerised import would be first moved by a vessel to a port and then lifted onto a lorry for its final delivery, with both legs being counted separately above.

2.4 Road

2.4.1 Currently 98 per cent of the internal merchandise trade in Ireland is carried on the road network, while this rate has grown to 100 per cent in Northern Ireland since 2003. This absence of any significant competition from the alternative modes of inland waterway or rail is atypical within the EU. However, the current economic structure, the very limited number of high volume bulk movements, the compact size and low density of activity on the island of Ireland, each militate against the economic viability of alternatives to road freight. Consequently, the central role served by road freight for inland transport in both jurisdictions appears to be unlikely to change significantly into the future, unless there are major economic, political or technological changes. This captivity to road freight has potentially important future environmental implications, as well as an ever increasing requirement for a high quality road network with sufficient capacity to carry both freight and passenger traffic, throughout the day.

2.4.2 The rapid growth in industrial output in Ireland has meant that its freight demand has grown very rapidly for many years. In the 10 years from 1996 to 2006, tonne-kilometres carried by Irish registered vehicles increased by 180 per cent whereas vehicle kilometres increased by 115 per cent, this lower rate being due to a switch to larger vehicles. However Figure 2.8 shows that since 2001 in Ireland, all 3 series: tonnes, tonne kilometres and vehicle kilometres, have grown at similar rates. This is because of the rapid expansion in materials carried for the building and road construction industry. Over the last 4 years, high levels of growth in road freight tonnes lifted have also occurred in Northern Ireland, again this is strongly related to increased carriage of construction materials.

Figure 2.8 Road freight activity in Ireland and Northern Ireland, 2001-2006



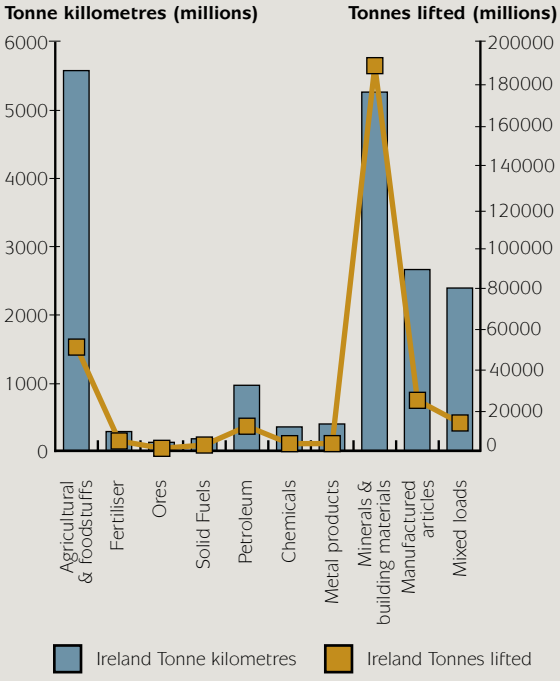
Sources: CSO (2007a) & CSRGT (Northern Ireland). Northern Ireland Tonne kilometres and Northern Ireland Vehicle kilometres are unavailable pre-2004 due to a change in survey methodology.

2.4.3 A major part of the recent rapid growth in road freight within the island of Ireland is associated with the high recent levels of investment in new construction of dwellings, commercial buildings and transport infrastructure, as well as processed foodstuffs. For example, over the decade to 2006 the movements of construction materials on Irish roads by Irish registered vehicles increased 6-fold, growing from 14 per cent of all road tonne-kms (36 per cent of all road tonnes lifted) in 1996 to 31 per cent (65 per cent of tonnes lifted) in 2006. There has also been an increasing concentration of construction materials on Northern Ireland roads, with their proportion on Northern Ireland registered vehicles growing

from 45 per cent of all road tonnes lifted in 1997 to 49 per cent in 2006. The proportion of total goods vehicle kms due to construction traffic is somewhat lower because of the usage of large vehicles for construction materials with full loads and relatively short lengths of haul.

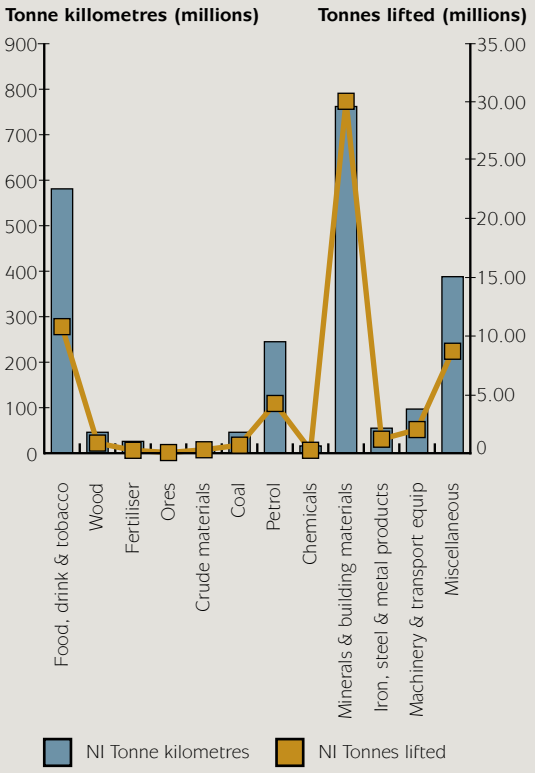
2.4.4 The construction sector is one of the most intensive consumers of freight services in all developed countries. This is illustrated in Figure 2.9 and Figure 2.10 which present the commodity types carried on road in Ireland and Northern Ireland respectively, though with some minor differences in the commodity type classifications that they publish. The yellow squares represent the tonnes lifted in each commodity type. They show that in both Ireland and Northern Ireland, by far the largest volume of tonnes lifted is in the category: minerals and building materials.

Figure 2.9 Irish domestic road freight activity in 2005 by commodity



Source: Road Freight Transport Survey 2005, includes Irish registered HGVs only

Figure 2.10 Northern Ireland domestic road freight activity in 2005 by commodity



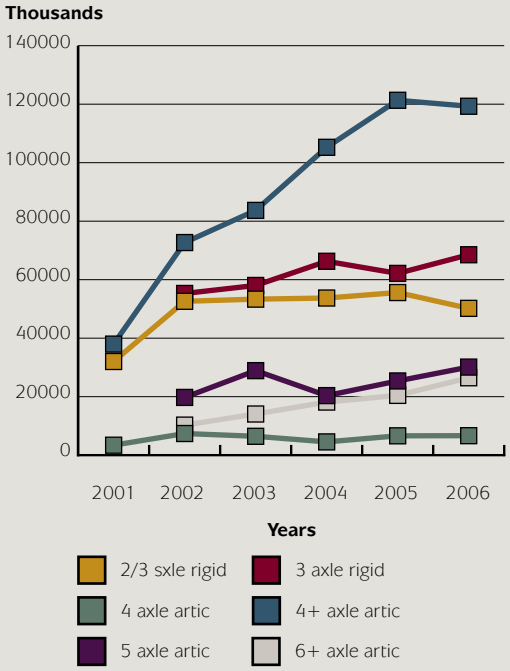
Source: CSRGT (Northern Ireland), includes Northern Ireland registered HGVs only

2.4.5 However, in order to understand the overall demand for road transport, it is more instructive to analyse the blue bars that represent the tonne-kilometres moved, rather than the tonnes lifted. In general, most of the inputs to construction are only moved over short distances so that in terms of tonne-kilometres the commodity, building materials, is broadly similar in magnitude to the food sector: (agriculture plus foodstuffs, Ireland / food, drink and tobacco, Northern Ireland) and to the general goods sector (manufactured articles plus mixed loads, Ireland / miscellaneous, Northern Ireland). Those sectors moving higher value goods tend to have the longest average lengths of haul (such as processed foodstuffs, metal products, machinery, equipment and manufactured articles).

2.4.6 The annual number of new dwellings constructed in Ireland almost trebled to 93,000 in the decade to 2006, while in the decade the number of dwelling completions in Northern Ireland doubled to a total of 18,000 per annum. If in the future there is a major cyclic slowdown in the construction sector that coincides with the completion of the major road investments in Transport 21 and in Northern Ireland, a relatively small proportion of HGV vehicle traffic growth would be removed from the road network. However, the projected significant increases in population discussed in Section 3.1 are likely to ensure that construction activity remains at a high level through the future. The traffic volumes in the other sectors are less sensitive to short term changes in the economy.

2.4.7 The type of vehicle used for freight transportation has changed in Ireland, with larger vehicles with more axles growing at the fastest rate. Figure 2.11 shows that the tonnes lifted by 4+ axle rigid has tripled in volume between 2001 and 2006 compared to 74 per cent growth of smaller rigid vehicles. The same trend occurs for articulated vehicles with the largest growth in the 6+ axle vehicle category.

Figure 2.11 Freight tonnes lifted in Ireland, by vehicle type, 2001-06

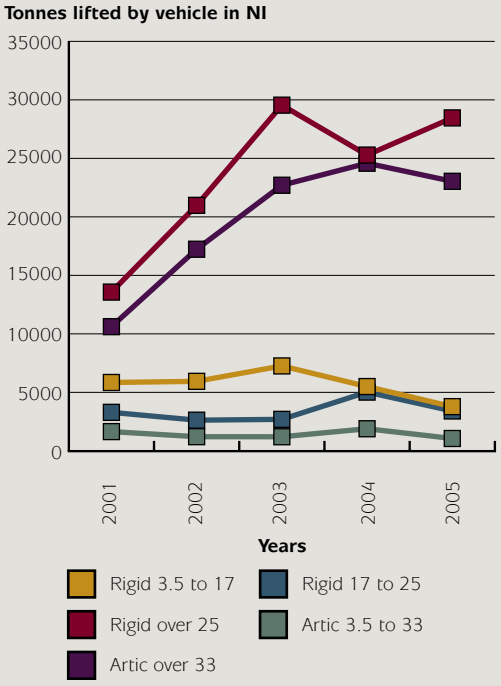


Source: CSO Road Freight Surveys 2001-06

2.4.8 Growth in overall tonnes lifted for rigid vehicles (153 per cent) exceeds the growth in articulated vehicles (112 per cent). Much of this growth in the large rigids is associated with the boom in building and road construction and consequently may ease in the future if investment in new buildings and transport infrastructure slows.

2.4.9 In Northern Ireland, freight vehicles are classified by maximum loaded weight. The same trends exist (Figure 2.12) as in Ireland: the largest rigid and articulated vehicles are increasing their share of freight transportation at the expense of smaller vehicles.

Figure 2.12 Freight lifted in Northern Ireland, by vehicle type, 2001-05



Source: CSRGT(Northern Ireland)

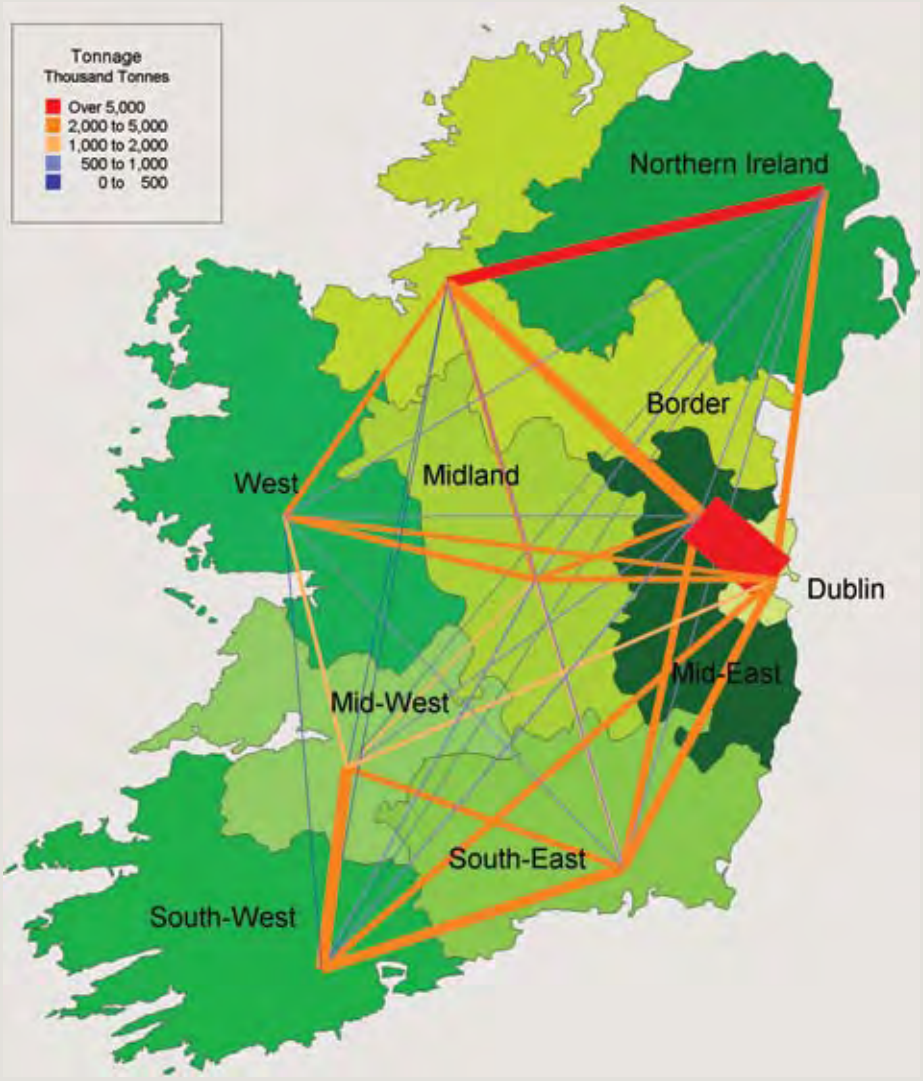
2.4.10 In general this trend to use larger vehicles is beneficial from a road transport point of view, provided that the average proportion of vehicle kilometres that are fully loaded does not reduce. For operators the efficient use of larger vehicles will be more cost-effective in terms of fuel usage, capital cost and driver costs than the use of smaller vehicles. It will also reduce the total number of vehicles on the road needed to carry a given tonnage of goods, which is beneficial in terms of easing the growth rate in road congestion for all other travellers. The main counter force lies in the growth of Just-in-Time (JIT) deliveries and of Internet based retail (e-commerce), both of which use small consignment sizes that are better suited to smaller vehicles.

2.4.11 The eventual size of the e-commerce market is difficult to estimate for the present but it does have the potential to lead to a major increase in traffic volumes, particularly in urban areas, which would only be partly offset by some reductions in car trips to retail. As e-commerce increases in scale it would, however, also provide opportunities for more efficient logistic systems using cost pressures and economies of scale to achieve efficient usage of a range of vehicle sizes. Long haul movements would take place in larger vehicles and the use of smaller vehicles would primarily be for local deliveries based on efficient routing systems.

2.4.12 There is growing interest elsewhere in Europe in Large Heavy Vehicles LHVs. Ireland in the past has tended to follow UK changes in maximum lorry weights and dimensions. The UK government will soon be publishing a report examining the case for allowing LHVs onto UK roads. The issue may also have to be reviewed by the Irish Government. As there is a relatively small proportion of dual carriageway / motorway on the island of Ireland, the movement of LHVs might have to be tightly restricted if they were to be legalised.

2.4.13 Figure 2.13 shows the volume of freight tonnes transported by road between different 'NUTS3' regions. This is compiled from haulier surveys of Irish and Northern Ireland registered goods vehicles and therefore excludes the tonnes on vehicles registered outside the island of Ireland. For reasons of clarity of illustration, the map shows all movements originating at a single point representing each region, though in reality many of these movements would be relatively short distance movements travelling just across the boundary to the neighbouring region. The largest volume of tonnes transported between regions is usually between neighbouring regions (particularly Dublin and Mid-East), with relatively low volumes being transported beyond 100 miles.

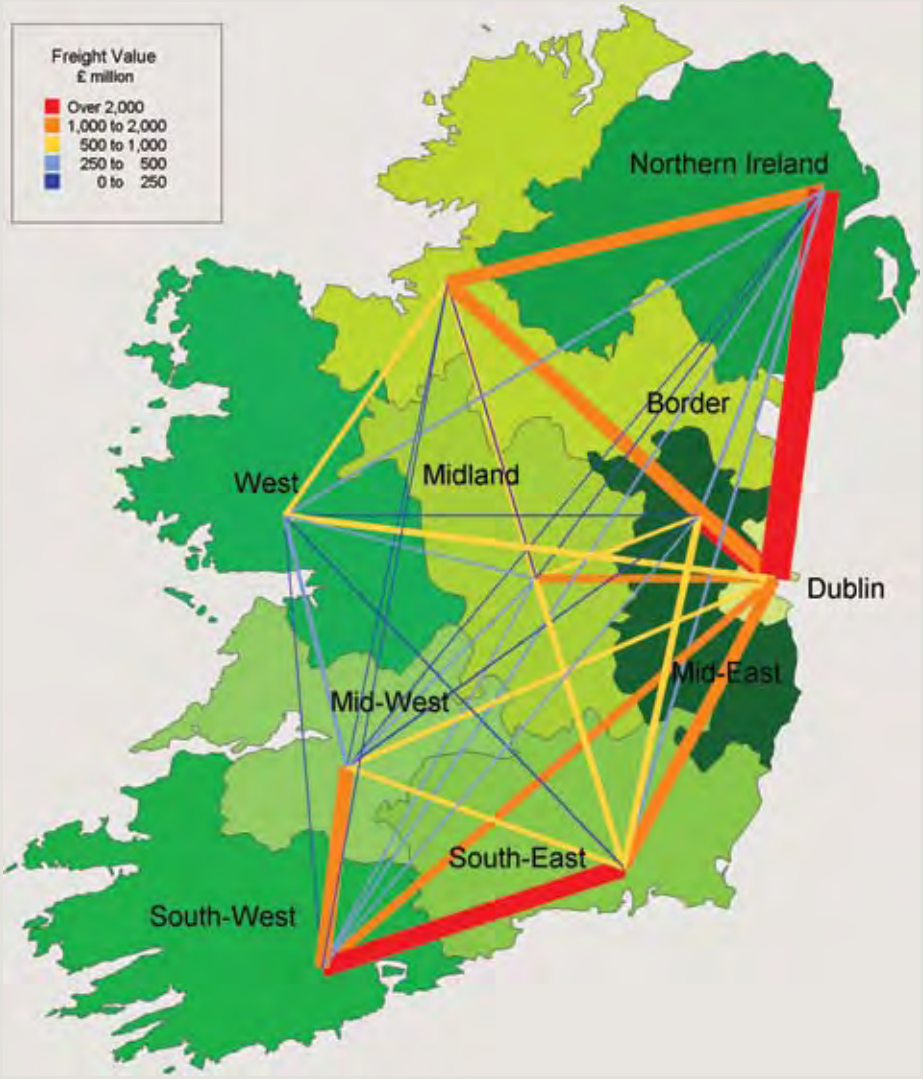
Figure 2.13 Freight tonnes moved by road between NUTS 3 regions



Sources: Central Statistics Office (Ireland) and CSRGT (Northern Ireland) 2005

2.4.14 Figure 2.14 shows the corresponding monetary value of freight transported by road between NUTS3 regions. A commodity price per tonne (based on UK data[8]) for each type of commodity transported has been used to calculate the overall value of each inter-regional freight movement. This commodity price is multiplied by the corresponding flow volume to calculate the value for each flow. Whilst Dublin remains the region with the most inter-regional road haulage, its main trading partner has changed from the Mid-East region to Northern Ireland when measuring the value rather than the volume of goods. This highlights the importance to the economy of the high-value haulage of foodstuffs and finished manufactured goods, which tend

Figure 2.14 Freight value moved by road between NUTS 3 regions



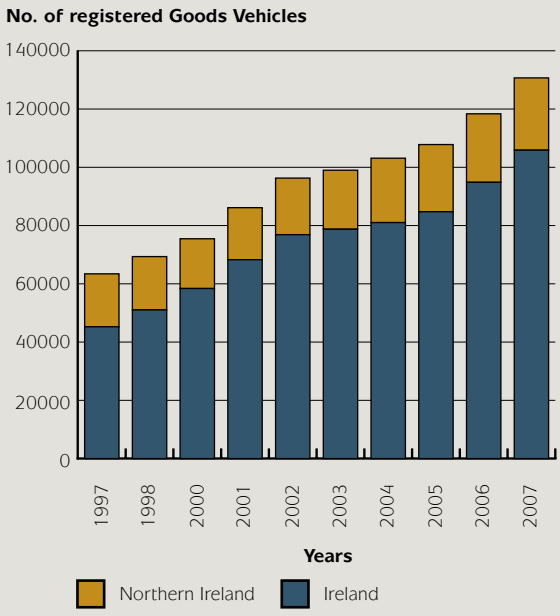
Sources: Central Statistics Office (Ireland) and CSRGT (Northern Ireland) 2005

8 Commodity price per tonne used is based on the UK values derived in Table 13.4 of the EUNET2.0 project (WSP, 2005) produced for the UK Department for Transport.

to be moved over long distances, relative to the lower value raw material inputs to manufacturing production and particularly to construction, many of which tend to be moved over short distances from the closest point of potential supply. The broad trend in developed economies is for the long distance haulage of higher value goods to become an increasing proportion of freight traffic.

2.4.15 The growth in the demand for freight movement has created a rapid increase in the fleet of goods vehicles, as shown in Figure 2.15 for those vehicles registered on the island of Ireland but this figure excludes the increasing number of foreign registered vehicles that also provide haulage services on the island of Ireland. The Irish-registered fleet has doubled in just 8 years since 1997[9]. Figure 2.15 shows that Northern Ireland has experienced slower growth in the fleet of goods vehicles.

Figure 2.15 Growth in the stock of Irish and Northern Ireland registered goods vehicles 1997-2006



Source: Road Freight Transport Survey, Ireland & Northern Ireland Transport Statistics

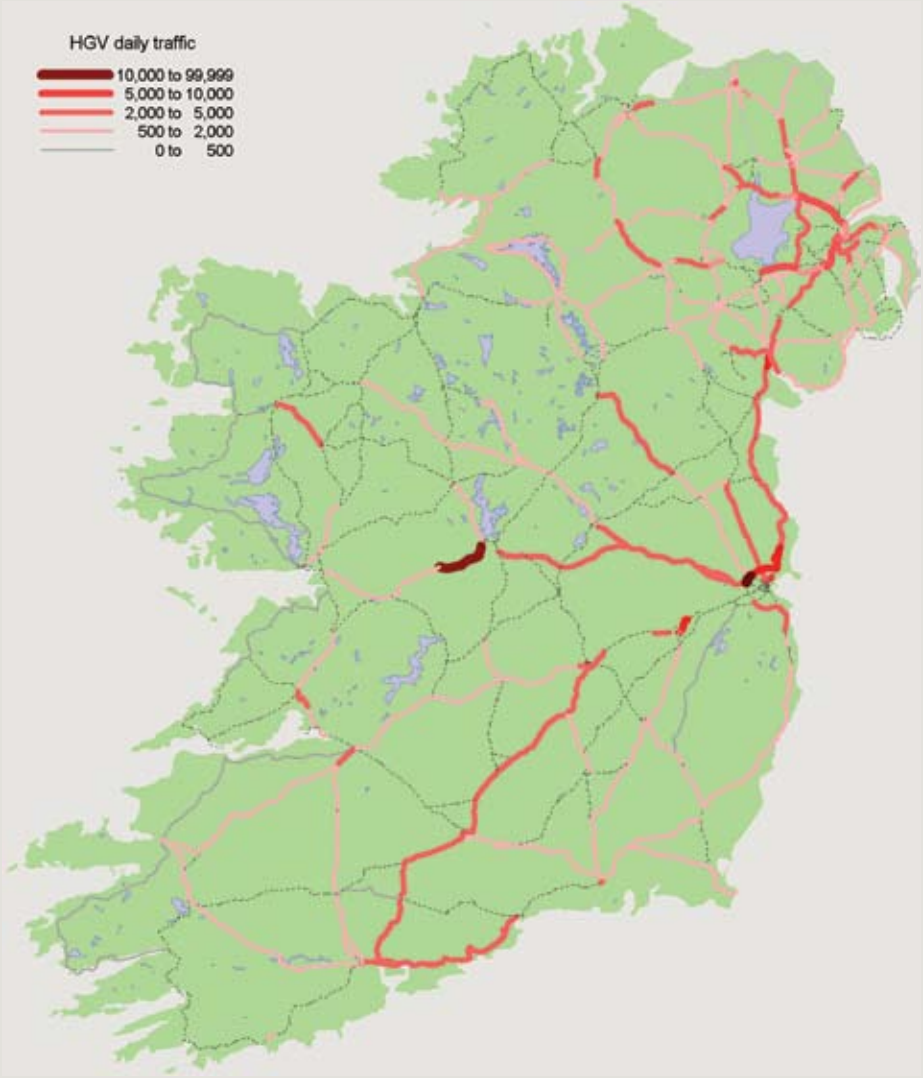
2.4.16 The number of cars in Ireland has jumped from just under 1 million vehicles in 1995 to over 1.5million in 2003, to 2.2million in 2007. Overall the population of Ireland has increased 2 per cent annually and car ownership has risen by 4.7 per cent per annum over the same period. The rapid population and car ownership growth in Ireland, which is associated with its rapid economic growth, has meant that congestion on both inter-urban and urban roads has grown at a rate that the recent investment in infrastructure has struggled to keep pace with up to now. The combination of ambitious investment schemes in Transport 21, coupled with suitable travel demand management measures may potentially improve this balance in the future, though as discussed in later sections the current forecasts of freight and passenger demand growth used for planning in Ireland are substantially underestimating current growth rates.

2.4.17 In Northern Ireland the growth pressures on the road network have been less extreme. The population has grown by 0.4 per cent per annum since 1996 while overall car ownership growth has been an average of 3.6 per cent per annum over the same period. However, a rapid pick-up in economic growth in Northern Ireland associated with the recent increase in its rate of population growth could over time lead to the same pressures and congestion outcomes that have occurred in Ireland.

2.4.18 Figure 2.16 highlights the busiest road sections for HGV traffic. Automatic vehicles counters, which cannot distinguish vans from cars, generate the majority of these counts so most van traffic is excluded from these HGV link counts. The freight volumes are lower in the rural west of the island of Ireland, than in the east, especially on the access roads to the gateways in Belfast and Dublin.

9 In contrast in Great Britain the overall size of the HGV fleet only grew by 8 per cent since 1996, though there has been growth of larger artics, replacing those under 34 tonnes.

Figure 2.16 Daily heavy goods vehicle link counts



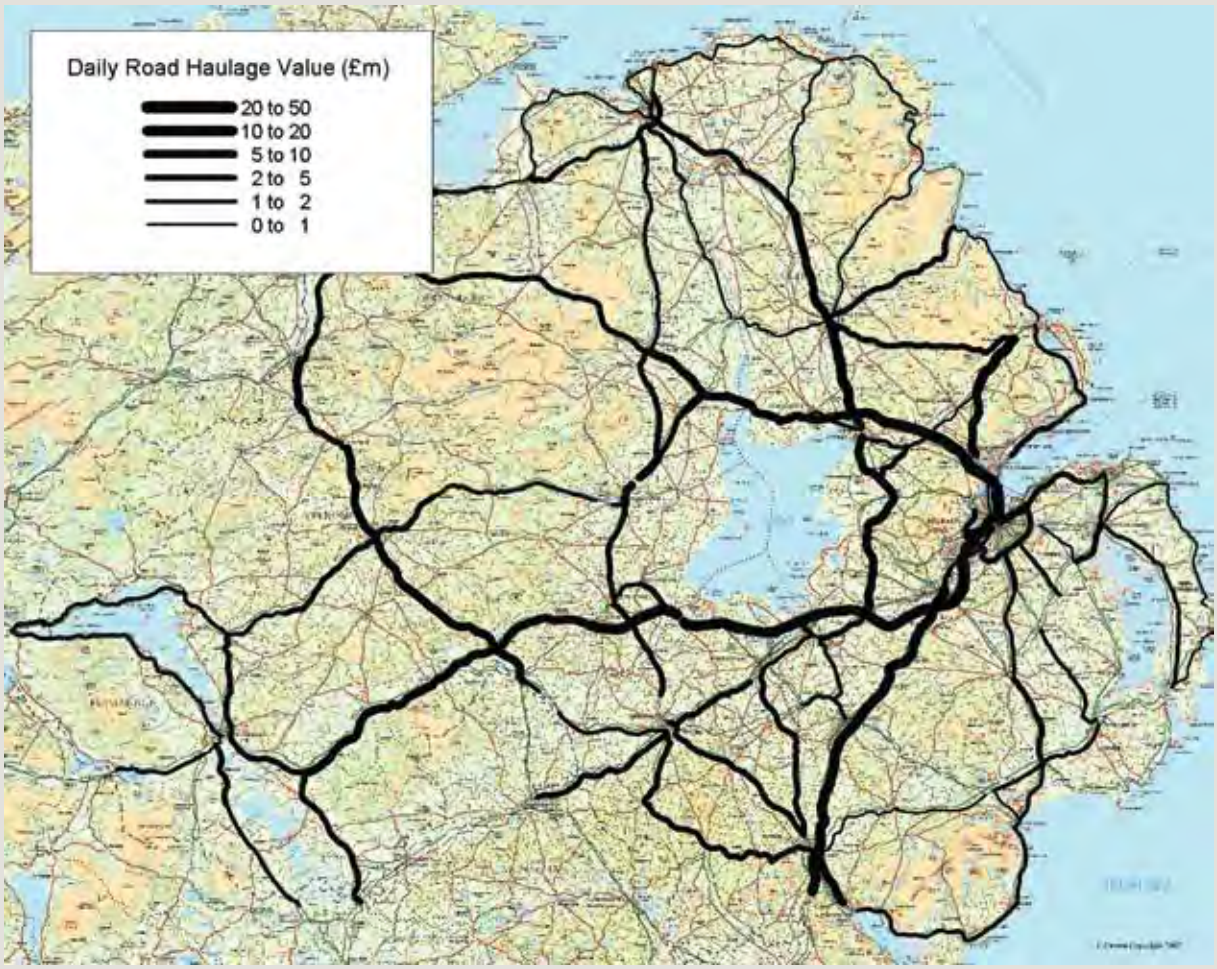
Source: National Roads Authority (Ireland) and Roads Service (Northern Ireland)

Note: The volume of freight traffic for an entire section of network (i.e. between major junctions) is assumed to match that of a single count point on that section. Where no count point exists on a road section, a dotted line is shown. Count used is latest in period 2004 to 2007.

2.4.19 Figure 2.17 maps the value of freight moved per day on the Northern Ireland road network. It is based on allocating an average freight value per articulated and per rigid vehicle, which was calculated from CSRGT (Northern Ireland) data on commodity loads on vehicles. This calculation indicates that on average, the freight carried by an articulated

vehicle is worth nearly 5 times that of a rigid vehicle. This is due to: a higher commodity value per tonne; a much higher average weight; and a lower proportion of empty running. Unlike in Ireland, the road counts in Northern Ireland are disaggregated into vehicle type, which facilitates the estimation of the volume of rigid and articulated HGVs and hence of the approximate value of freight carried on each road section.

Figure 2.17 Indicative value of freight on Northern Ireland road network



Source: Northern Ireland Roads Service & CSRGT (Northern Ireland)
Based upon Ordnance Survey of Northern Ireland's data with the permission of the Controller of Her Majesty's Stationery Office, © Crown copyright and database rights NIMA ES&LA 205.5

2.4.20 The map in Figure 2.17 indicates that the greatest value of freight is concentrated onto the Key Transport Corridors that have been identified within the consultation document (RSNI, 2006) on the Strategic Road Improvement Programme as:

- Eastern Seaboard Corridor: from Newry / Warrenpoint (Dublin M1) on A1 / A8 through Belfast to the port of Larne;
- South Western Corridor: Belfast Metropolitan Area on M1 / A4 to Enniskillen (Sligo N16);
- North Western Corridor: Belfast Metropolitan Area on M2 / A6 to Londonderry and on A2 (Ireland N13);
- Western Corridor: Aughnacloy (Monaghan / Dublin N2) on A5 via Strabane (Ireland N14 /N15) to Londonderry; and
- Northern Corridor: Belfast Metropolitan Area to Coleraine (A26), though the further A37 link through to Londonderry moves a lesser total value of freight.

2.4.21 This concentration of value into the Key Corridors arises in part because of the longer journey lengths that are associated with the higher value goods typically moved on articulated vehicles. These corridors also contain HGV traffic to and from Ireland, both that directly destined for Northern Ireland and that passing through to access the Northern Ireland ports. Figure 2.17 also illustrates that on the more local routes away from the Key Corridors (e.g. in east County Down and north County Antrim) the relative magnitude of the value of freight is rather less than the relative magnitude of tonnes of HGV traffic that has been presented in the earlier Figure 2.16.

2.4.22 The value transported map in Figure 2.17 excludes Irish roads because the automatic vehicle counts used there do not distinguish between rigid and articulated vehicle types. The trend shown of higher value movements being concentrated on the major inter-urban road network is almost certainly replicated south of the border. This map highlights the importance to the economies North and South of having a fast and reliable inter-urban network connecting all of the main urban areas to each other and to the gateway ports. The current network on the island of Ireland is as yet some way from achieving this goal.

2.5 Rail

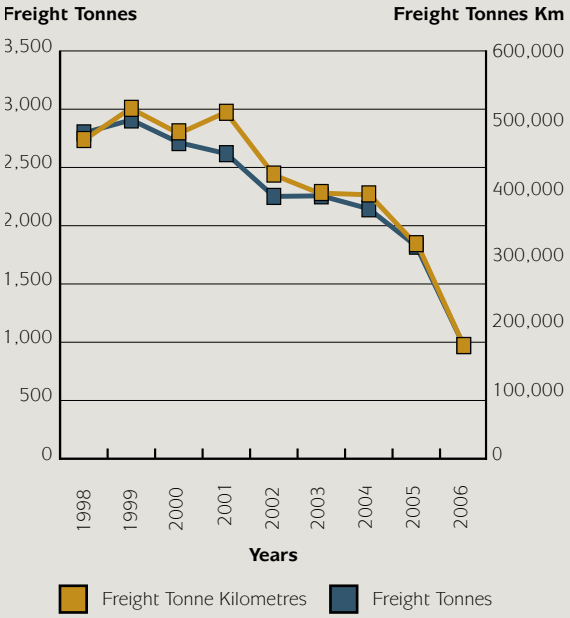
2.5.1 Rail freight has not been carried in Northern Ireland since freight services were terminated there in December 2003.

2.5.2 Iarnród Éireann Freight provides rail freight services through 2 of its business units: Bulk Freight (e.g. bulk cement, mineral ores and pulpwood.) in Ireland; and Fastrack (express parcels service using intercity passenger trains) throughout the island of Ireland. It utilises both rail and road modes of transport to provide an integrated distribution service.

2.5.3 Relative to Iarnród Éireann's passenger movements, the freight business is only a small and a declining proportion of the rail industry. Freight revenues comprised less than 10 per cent of the overall mainline rail revenues of Iarnród Éireann in 2006. Having in the 1980s been as high as 4million tonnes lifted per annum, rail freight in Ireland has declined (Figure 2.18) from 466million tkm (2.8million tonnes lifted)

in 1998 to 303million tkm (1.8million tonnes) in 2005 with major declines occurring in the cement, fertiliser and general freight commodity classes. There was a further reduction down to 192million tkm (1.3million tonnes) in 2006 because rail freight was adversely impacted by the cessation of sugar refining in Ireland with the consequent loss of the beet traffic, and by, Diageo's decision on cost grounds to transfer their kegs from rail distribution to road.

Figure 2.18 Rail freight tonnes and tonne kms in Ireland 1998-2006



Source: Iarnród Éireann

2.5.4 On a positive note, Iarnród Éireann has recently:

- re-introduced the trainload pulpwood business for Coillte between the west of Ireland and the south east;
- provided 4 additional trains per week for Tara Mines with a potential to carry an extra 100,000 plus tonnes of lead and zinc between Navan and Dublin Port per annum; and
- modified surplus platform wagons to provide a trainload service for containers between Ballina and Waterford Port.

2.5.5 Iarnród Éireann (2007) current rail freight strategy is presented as:

"The transformation of the freight business is continuing, with Iarnród Éireann refocusing freight operations to attract new business, develop existing profitable traffics suited to rail freight, and withdraw from loss-making services. Major businesses include, bulk cement, mineral ores and pulpwood. New business opportunities are being sought..."

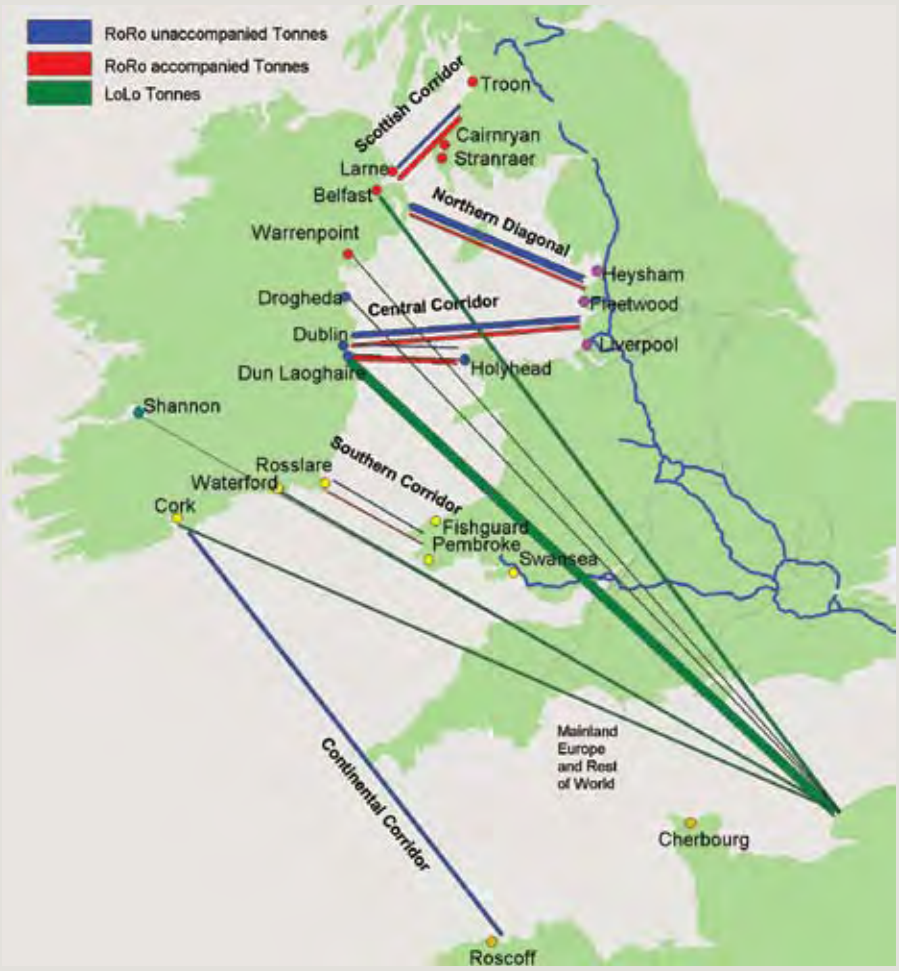
2.5.6 At present the Navan to Drogheda freight-only line is being relaid. This involves reusing second hand rails and sleepers, even though this line carries the heaviest trainloads on the Irish railway network to move the ores from the Tara mine. This line improvement is not part of Transport 21, which concentrates its investments instead on the passenger side of the rail business.

2.6 Ports and shipping

2.6.1 With the exception of a very small tonnage of airfreight, all international freight movements to and from the island of Ireland are by sea. With very few direct container sailings to destinations across the Atlantic, most intercontinental container trade travels on feeder container ships across the Irish Sea to deep sea ports either in GB or in mainland Europe. The Irish Maritime Transport Economist journal provides a good source of detailed current data and analysis of the maritime sector for the island of Ireland.

2.6.2 The ferry movements crossing the Irish Sea can be divided into corridors as shown on Figure 2.19. The Central Corridor additionally can be subdivided between short sea journeys to / from Holyhead and long sea journeys to / from England's north-west: Liverpool, Fleetwood or Heysham.

Figure 2.19 Ro-Ro Accompanied / unaccompanied and Lo-Lo freight tonnes shipped to the island of Ireland



Source: Maritime Statistics 2005 (DfT) and Statistics of Port Traffic 2005 (CSO)

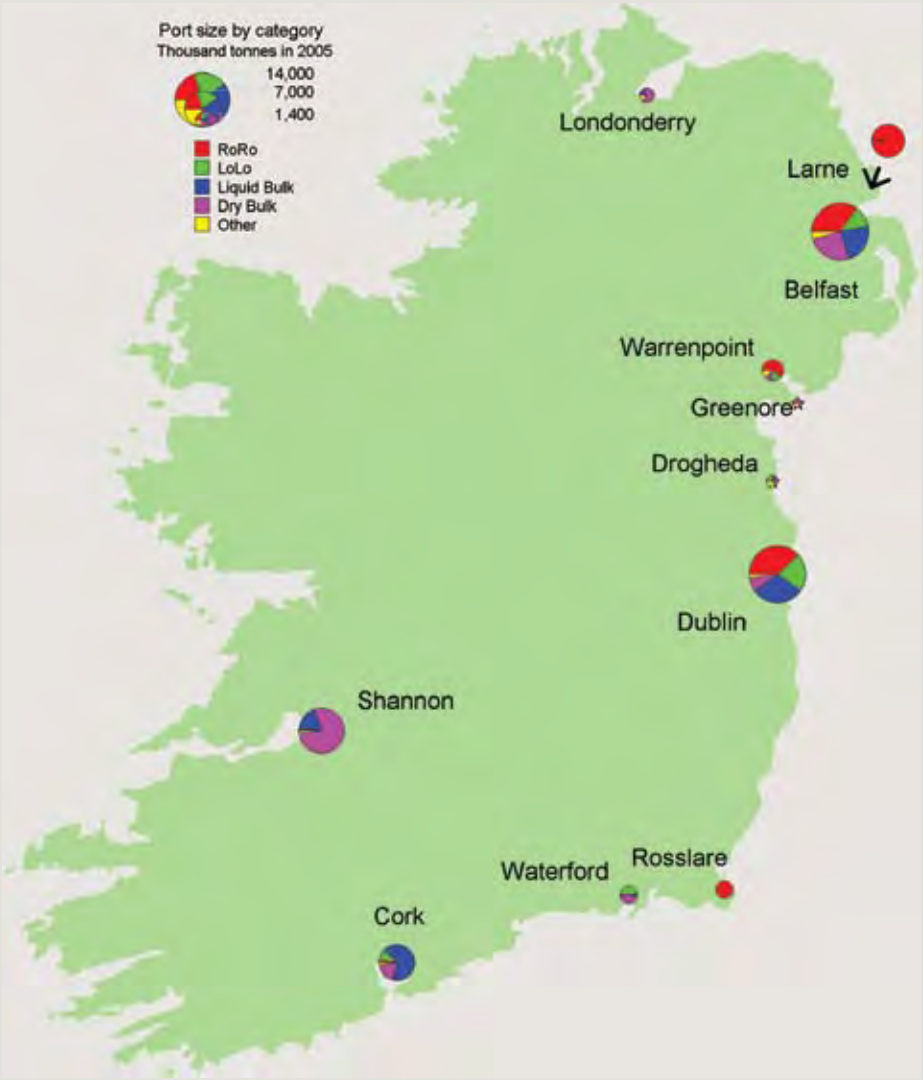
2.6.3 Figure 2.19 displays the annual tonnage carried by Ro-Ro ferry traffic destined for the island of Ireland. This traffic can be split into 2:

- Accompanied (red line): This freight tonnage is transported to and from the ferry by the same tractor and driver. This provides a more flexible and faster service. Accompanied vehicle movements are strongly concentrated on the shorter distance services such as Holyhead to Dublin and Cairnryan to Larne.
- Unaccompanied (blue line): The trailer carrying the freight tonnage is dropped off by a driver at the domestic port and travels by ferry without its driver or tractor. A different driver at the overseas port collects the trailer plus consignment. Unaccompanied is more competitive over the longer distance crossings, such as the flows from Cherbourg to Rosslare (Continental Corridor) or Northern Ireland to the north-west of England.

2.6.4 Figure 2.19 additionally shows Lo-Lo flows (green line) to the island of Ireland from mainland Europe. This tonnage is loaded and unloaded by dock-side crane and therefore is not automatically transported by road at either end. Currently Waterford is the only Irish port that has an active rail connection to its container berths.

2.6.5 Figure 2.20 highlights that ports tend to specialise in handling different types of freight to suit their own facilities and customer requirements (e.g. Rosslare and Larne primarily deal with Ro-Ro traffic, Foynes (Shannon) with bulks). The largest ports by volume are Dublin and Belfast, which have facilities to handle all the main types of commodities. Figure 2.20 also illustrates that on the island of Ireland the largest ports for Ro-Ro shipments are on the east coast. Ro-Ro is particularly focussed on the shortest crossings because it carries higher value, time-sensitive goods.

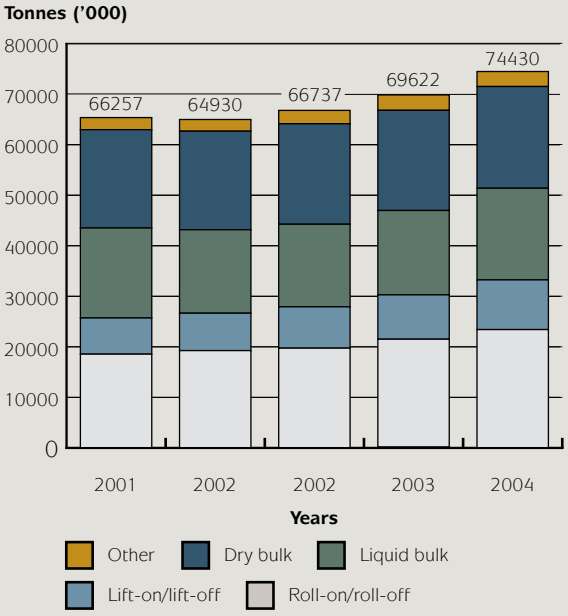
Figure 2.20 Port sizes by category of goods received



Source: Maritime Statistics, UK 2005 and Statistics of Port Traffic, Ireland 2005

2.6.6 Figure 2.21 demonstrates that the overall tonnage of Ro-Ro goods exceeds that of any of the other cargo types. This recent development is unusual in the European context and demonstrates the very open nature of both economies. Figure 2.21 also illustrates that it is the unitised traffic (Lo-Lo and Ro-Ro), rather than the bulk goods, that is the source of the growth in tonnage passing through the ports, North and South. In line with the rapid growth in economic trade, containerised traffic over the decade to 2006 through, North and South, has increased by 125 per cent in units of TEU while Ro-Ro has increased by 70 per cent in units of vehicles (IMDO, 2007).

Figure 2.21 Tonnage by category handled at ports of the island of Ireland 2001-2005

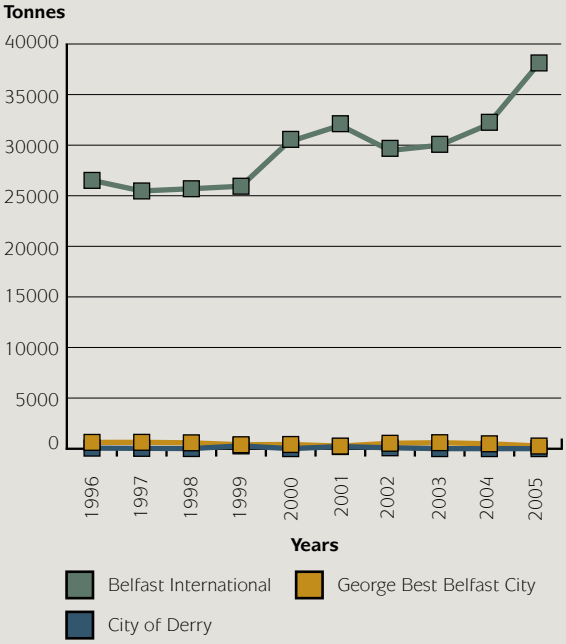


Source: Maritime Statistics, UK 2005 and Statistics of Port Traffic, Ireland 2005

2.7 Air

2.7.1 Northern Ireland air freight has long been concentrated on Belfast International airport as illustrated in Figure 2.22.

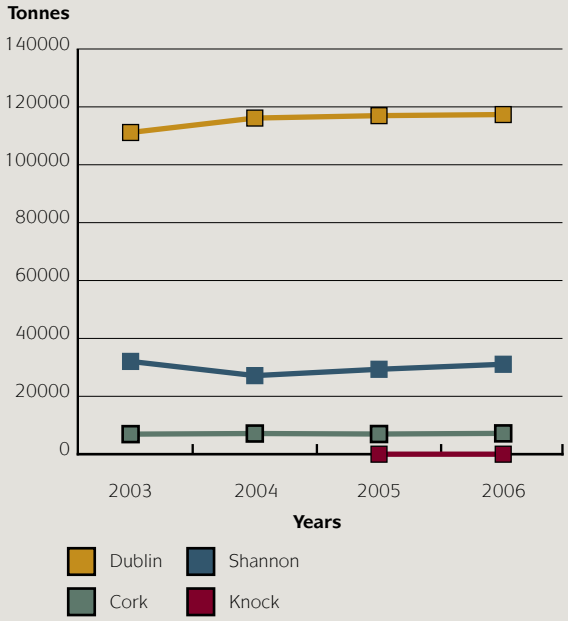
Figure 2.22 Cargo handled at Northern Ireland airports



Source: CAA, Northern Ireland Transport Statistics

2.7.2 Dublin followed by Shannon are the main airports in Ireland for handling freight as illustrated in Figure 2.23. Volumes at Dublin airport have increased since 2003, partly due to recently introduced services to the Middle East. Overall, the total tonnage of air freight to and from the island of Ireland has increased relatively slowly over the last decade.

Figure 2.23 Cargo handled at Irish airports



Source: Dublin Airport Authority for Dublin airport, Eurostat for others

3. Future Trends and Planned Investments

3.1 Introduction

3.1.1 This Chapter reviews future trends for freight growth across the island of Ireland, together with the forecasts of economic and population growth that will drive these trends. The main findings are:

- Economic growth is expected to continue at a strong pace in the future, being accelerated by faster population growth to 2020 than had previously been projected in both Ireland and Northern Ireland.
- The observed rate of growth in both car and HGV traffic on Irish roads and of unitised traffic through the ports, North and South is currently running at a rate close to double that assumed in the various forecasts that are being used at present by the Irish government to plan infrastructure investments in Ireland.
- Even if this rate of economic growth eases somewhat in the future, population growth pressure will ensure that the future demand for road and port capacity runs well ahead of that indicated by past official forecasts.
- Northern Ireland should accelerate the pace of investment in key road corridors for freight to complete schemes to dual the A5, A6 and A8 at as early a date as feasible.
- Unitised (Ro-Ro and Lo-Lo) capacity in the ports, North and South must increase at a rate that keeps ahead of the growth in demand so as to maintain active competition between ports that will ensure a high quality service for importers and exporters. It is important that planning permissions affecting the expansion of key Irish unitised port capacity can be progressed rapidly, particularly regarding the major investments in Bremore new port, the Lo-Lo capacity extension in Dublin Port and the Cork Lo-Lo terminal at Ringaskiddy.
- The forecasting tools that are used to estimate the future growth in demand for capacity and to assess competing investment schemes need to be updated to take account of increases in underlying population growth projections. The forecasting methodologies themselves also need to be improved to bring them in line with good practice elsewhere. This would ensure that the major expenditure on transport investment is wisely spent.

3.2 Forecasts of economic growth

3.2.1 Freight transport is a derived demand that exists to service the needs of the economy. The future rate of growth of population and of the GNP per capita will be major determinants of the rate of growth of freight transport demand on and to the island of Ireland.

3.2.2 A new set of Irish population projections up to 2020, based on the 2006 Census of Ireland, has been released (Table 3.1). The population growth to 5.3million by 2020 in this "medium growth" projection represents a considerable increase on the growth to 5.0million by 2020 that has been used as the "strong economic growth" projection within the National Spatial Strategy 2002-2020 (Govt. of Ireland, 2002). The new projection assumes that the recently observed high levels of in-migration to Ireland are likely to continue, producing a rate of 50,000 net in-migrants per annum to 2011, which then drops to 45,000 per annum to 2016. It implies a population growth rate of 1.8 per cent per annum up to 2016.

3.2.3 This significant increase in the rate of growth in population, above that previously expected, will in turn imply that previously produced forecasts of road traffic growth and of imports to final consumption should also be reconsidered. It represents an important input to the forecasts of future transport capacity requirements in Ireland and so needs to be considered as part of the overall updating of these forecasts.

3.2.4 A respected source of estimates of long term economic growth is that produced in the biennial Medium Term Review of ESRI (2005). Their high-growth scenario forecast an annual real growth rate in GNP of 4.9 per cent from 2005 to 2010 and then of 3.3 per cent through to 2015. In the period from 2005 to mid-2007 the observed GNP growth rate has been well above 4.9 per cent but the current slowdown in housing construction may balance this out over the next 2½ years. The net in-migration growth rate that was assumed in this high growth scenario is lower than that now projected by the Irish government. All in all based on events since 2005, this ESRI high-growth scenario seems on target, if not on the low side.

3.2.5 Northern Ireland also had a new set of 2006-based population projections (NISRA, 2007) released in October 2007. These project a 4 per cent increase in population (Table 3.1) over the next 5 years to 2011, which is close to double the observed population growth rate over the previous decade. The growth rate from 2006 to 2021 is projected to be 10 per cent, which implies a gradual slow down later in this period.

3.2.6 Current DETI expectations are for the real growth rate in GVA to be 3 per cent per annum in both 2007 and 2008 in Northern Ireland, up from the 2.5 per cent experienced in 2006 and growing at a higher rate in 2008 than the average for the rest of the United Kingdom (UK). In the past decade the Northern Ireland growth rate has stayed close to the GB trend, so the base value of GVA per capita in Northern Ireland has remained at about 80 per cent of the average for the UK as a whole.

3.2.7 In summary, the expectation for population growth through to 2020 is for more rapid growth than in the historic past. This increase in population growth has not been taken into account in the forecasts of freight transport demand in current use to estimate future capacity requirements. Economic growth is also expected to be strong during this period. These trends suggest that the growth of vehicle traffic on the road networks, North and South will also continue at a rapid level, as now discussed.

Table 3.1 National Population Projections to 2020, 1000 persons

Year	1996	2001	2006	2011	2016	2020
Ireland	3,626		4,235	4,655	5,055	5,333
Index	85.6		100	109.9	119.4	125.9
Northern Ireland	1,662	1,689	1,742	1,812	1,868	1,911
Index	95.4	97.0	100	104.0	107.2	109.7

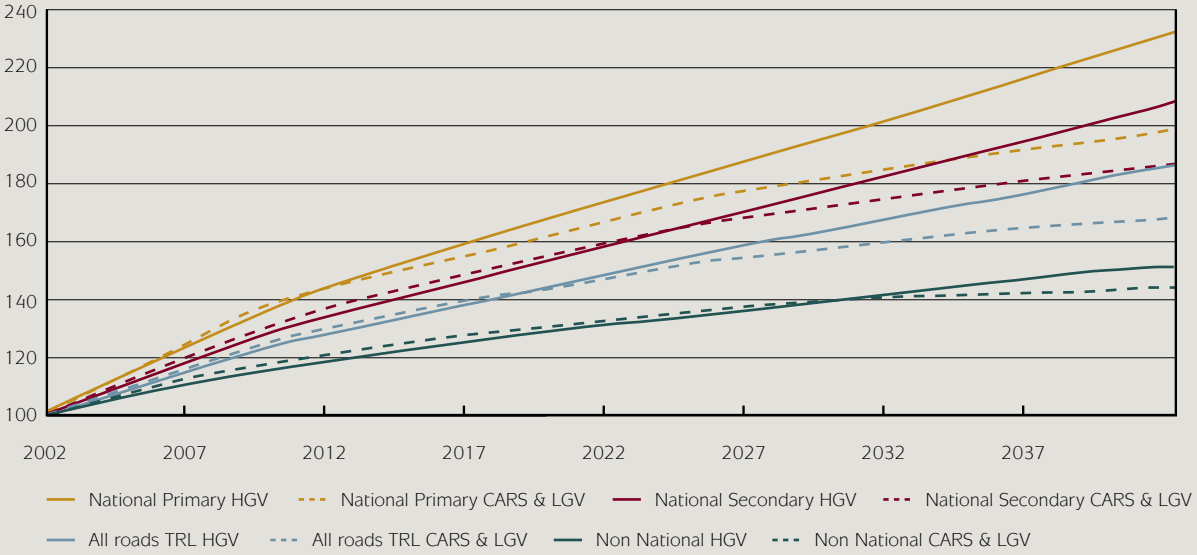
Source: National Population Projections and Regional Population Targets 2006 – 2020, Department of the Environment and Local Government, Ireland, 2007. Northern Ireland Population Projections, 2006, NISRA (2007)

3.3 Future road freight growth

3.3.1 The increased focus on recycling, waste management, reverse logistics and many other emerging trends all impact on the scale and nature of the transport services that will be required through the future. The growth of online shopping and home delivery is likely to alter the pattern of freight movement, particularly at the local level. In other words, road freight volumes are not simply a function of the quantity of goods produced and consumed in the economy. A range of logistics trends that influence the number and length of links in the supply chain also affect these volumes. These trends will be examined later in Section 3.6.

3.3.2 The NRA in 2003 produced forecasts for Ireland of the expected future growth in road vehicle movements by vehicle and road type as reproduced in Figure 3.1. These were based on a reduction from past rates of growth but with HGV growth continuing to exceed that of passenger cars plus vans. The observed growth in Irish registered HGV kilometres from 2002 to 2006 has been 28 per cent (CSO, 2007a), which is around 50 per cent above that presented in the NRA forecasts. Likewise, the observed 23 per cent growth in the car stock is again around 50 per cent above the forecast level for 2006 (CSO, 2007b). When coupled with the analysis in the previous Section of expectations of continuing rapid economic growth in Ireland and of acceleration in population growth, these observations suggest that the NRA forecasts are likely to underestimate significantly the future growth in vehicle traffic on the inter-urban road system.

Figure 3.1 Forecasts of road traffic growth by vehicle type and road type in Ireland



Source: Future Traffic Forecasts, 2002-2040, NRA (2003)

3.3.3 A similar conclusion has been drawn by the report, 2020 Vision: Ireland's Demographic Dividend (NCB, 2006), which forecast its best estimate of the stock of cars by 2020 in Ireland to be 3million. The National Spatial Strategy (2002) expected the number of cars to double to 2.1million over the 20-year period 1996-2016. However, by 2006 the growth already achieved is 68 per cent, which suggests that this doubling will occur as early as 2010. This implies that the NCB estimate looks quite plausible and that future car traffic growth will be rapid.

3.3.4 The approach used by the NRA in making the national road traffic forecasts for Ireland is summarised as:

"It was noted in the National Road Needs Study that the traffic growth on national primary roads was significantly greater than on national secondary roads. The future traffic growth factors indicated in this report predicted that the growth in traffic volumes on national primary roads would be 140 per cent for light vehicles, with the corresponding growth on national secondary roads at 80 per cent.

Analysis carried out by the National Roads Authority has indicated that this trend is still prevalent. Using the historical growth in traffic derived from the automatic traffic counters maintained by the NRA, the Authority has adapted the TRL forecasts and has produced separate indices for each road class. ...The forecast is given in index form and the index is represented graphically in the accompanying chart.

The growth can be taken to represent the number of vehicles or the vehicle kilometres of travel as it is assumed that the annual number of kilometres travelled by each vehicle class will not change during the years 2002 to 2040."

3.3.5 As explained in Section 3.4 below, the current major investments are achieving large changes in the speed and connectivity of the Irish road network. Accordingly a more sophisticated behavioural model-based study is needed to understand and then forecast the joint influences on traffic volumes across the road network of: improved road infrastructure; and of potential future charges on lorries and cars that aim to reduce CO_2 emissions (see Section 6.3). This study would need to examine cars, vans and lorries in tandem, since they compete for the same road capacity. The emphasis would be on identifying structural changes in the origin-destination matrices of passenger trips and freight tonnes, rather than just on scaling up traffic volumes on links. Ideally it could be an all-island study but if it were simpler it could focus just on Ireland, where the likelihood of major changes in demand patterns is greater. The Dublin Transportation Office transport model should be used to provide increased detail within the Greater Dublin Area.

3.3.6 The deliverable from this study would be a robust and transparent modelling methodology that is then used to provide published growth forecasts of traffic growth across the national network. This would provide improved estimates of local traffic growth and would identify areas that are forecast to be subject to future congestion problems for passenger and freight traffic. These would then need to be examined further as candidates for investment. These road traffic forecasts would be conditional on such future road pricing strategies as may be adopted for congestion management purposes or fuel cost increases to reduce CO_2 emissions.

3.3.7 McKinnon (2007) provides a detailed analysis of the potential contribution of 12 separate causes (Table 3.2) of the apparent recent "economic decoupling" of the growth in the UK GDP from the growth of road freight movement in the UK (measured in tonne-kms). His analysis provides guidance that would be valuable in developing the methodology to generate updated forecasts of the likely rate of growth in HGV kilometres on the island of Ireland. Although for reasons explained in Section 5.4 below, Ireland is unlikely to experience the rapid growth in rail freight seen recently in GB, the other contributors to road freight decoupling listed in Table 3.2 as being significant in the UK may also be of relevance to understanding future freight growth on the island of Ireland. The items 3 and 11 identifying a relative shift towards a service-based economy, coupled with migration of manufacturing activities to Asia are also underway on the island of Ireland. Increased penetration by foreign hauliers appears to be happening but statistics to measure its rate of growth are not readily available. Due to its lower rate of fuel duty increases, growth in the real cost of road transport has been less of an issue in the recent past in Ireland than the UK. However, the potential application of carbon taxes may have a more significant impact in all EU countries in future years.

Table 3.2 Estimated impact of the possible causes of UK decoupling of road freight tonne-kms from GDP growth

Possible cause of decoupling	Relative Contribution (% or qualitative estimate)
1. Change in the systems of statistical accounting	very little
2. Dematerialisation	little
3. Change in the composition of GDP	significant
4. Decline in road's share of the freight market	22%
5. Increased penetration of UK haulage market by foreign operators	33%
6. Displacement of freight from trucks to vans	little
7. Reduction in the average number of links in the supply chain	little
8. Diminishing rate of spatial concentration	very significant
9. Improvement in the efficiency of vehicle routing	little
10. Domestic supply chains becoming fully extended	significant
11. Erosion of industrial activity to other countries	very significant
12. Increase in the real cost of road freight transport	12%

Source: McKinnon (2007)

3.3.8 However, there are also potential causes of accelerating freight demand growth (economic coupling) on the island of Ireland. The saturation in the rate of centralisation of production and distribution systems is unlikely to be achieved until some years after the current major upgrades in the speed and reliability in the inter-urban road network have been completed. These improved conditions, coupled with political stability, are also likely to encourage some supply chains to extend to an all-island rather than continuing at a North / South or a regional level.

3.3.9 The recent trend in Ireland differs from the UK; Ireland has shown no sign yet of decoupling of freight growth from economic growth, instead the freight transport intensity of the Irish economy has been rising very steeply by European standards.

3.3.10 Turning to Northern Ireland, the Regional Strategic Transport Network Transport Plan 2015 (DRDNI, 2005), which provides the basis for planning the Northern Ireland strategic road system, adopts a forecast of 2 per cent per annum road traffic growth over the period 2002-2012 across all of Northern Ireland. The Minister for Regional Development confirmed in Written Answers to the Northern Ireland Assembly in August 2007:

- that this forecast rate continues to be used by Roads Service;
- That "Roads Service produces a traffic growth figure for the whole of Northern Ireland. This is not disaggregated into any further sub groups";
- The annual traffic growth rate has varied between a maximum of 5.4 per cent and a minimum of 0.6 per cent in the interval 2001 to 2005.

No further detail is published about the composition of this growth between cars and HGVs or how it divides up between urban areas, major or minor inter-urban routes. In the rest of the UK, the traffic growth rate tends to be highest on major inter-urban routes and least in large urban areas. In the absence of straightforward access to published data that can be used to analyse the pattern of traffic growth by vehicle type on the Northern Ireland inter-urban road system, it is difficult to draw conclusions on whether the current forecast of 2 per cent per annum is realistic, too high or too low for specific types of routes?

3.3.11 The description of the Northern Ireland Strategic Transport Model that appears to have been used to produce the above forecast suggests that this model was constructed in 1997 using 1991 Census journey to work data.

3.3.12 In summary, the forecasting tools that are used to estimate future capacity requirements and to assess competing investment schemes need to be updated to take account of increases in underlying population growth projections. The forecasting methodologies themselves also need to be improved to bring them in line with good practice elsewhere.

3.3.13 There is need to create an up to date, behaviourally based modelling system to provide greater rigour and increased detail for the forecasts used for longer term strategic planning of the road systems in both jurisdictions. This model would forecast the joint influences on traffic volumes across the road network of: improved road infrastructure; and of potential future charges on lorries and cars that aim to reduce CO_2 emissions. This study needs to examine cars, vans and lorries in tandem, since they compete for the same road capacity. Ideally it would be an all-island study to ensure that the vehicle movements across the border were consistent, particularly those for freight. However if it were institutionally simpler, separate studies could be initiated in Ireland and Northern Ireland, with a suitable exchange of results and the adoption of consistent assumptions.

3.3.14 The deliverable would be a robust and transparent modelling methodology that is used to provide published growth forecasts of traffic growth for all types of vehicle across the national network. This would provide improved estimates of local traffic growth and would identify areas subject to future congestion problems for passenger and freight traffic, for which suitable policies or investments could then be examined further. National models operating at this scale already exist in most other European countries, including a 10,000 zone transport model for GB that has been intensively used since 2001 by DfT to examine policy and investment issues.

3.4 Planned road investment

3.4.1 In order to understand how the needs of freight transport fed through to the determination of investments in the road network we carried out an initial review of 20+ reports on planning, economic development and investment. This suggested that

- overall there is very little explicit discussion of issues in a form specific to freight; and
- this does not necessarily imply that interests of freight are being ignored.

3.4.2 Existing road investment funding, as specified in Transport 21, based on the National Development Plan 2007-2013 (NDP, 2007) for Ireland, and in the Strategic Road Improvement Programme (RSNI, 2006), is heavily focussed on:

- access to external Gateways (ports, airports, cross-border); and
- connecting the main inter-urban centres with high quality routes.

3.4.3 As already discussed in the context of the earlier map in Figure 2.17 of the value of road freight movements in Northern Ireland, these are 2 of the main priorities to support freight transport. The broad approach is correct; the issues relate to the details and to the speed with which these investments are scheduled to be implemented. These are governed by the road investment budgets that have recently been indicated, which are:

- €17.6billion on the roads programme in Ireland in the 7 year period 2007-13 (NDP, 2007), with spending on the Transport 21 programme then reducing in the years after 2013; and

- £572million from 2008-11 followed by £2,117million from 2012-18 in the Draft Investment Strategy 2008-2018 for Northern Ireland (Northern Ireland Executive, 2007), together with a further £400million provided by the Irish Government to invest in Northern Ireland roads, giving a total of £3.09billion over this 10 year period.

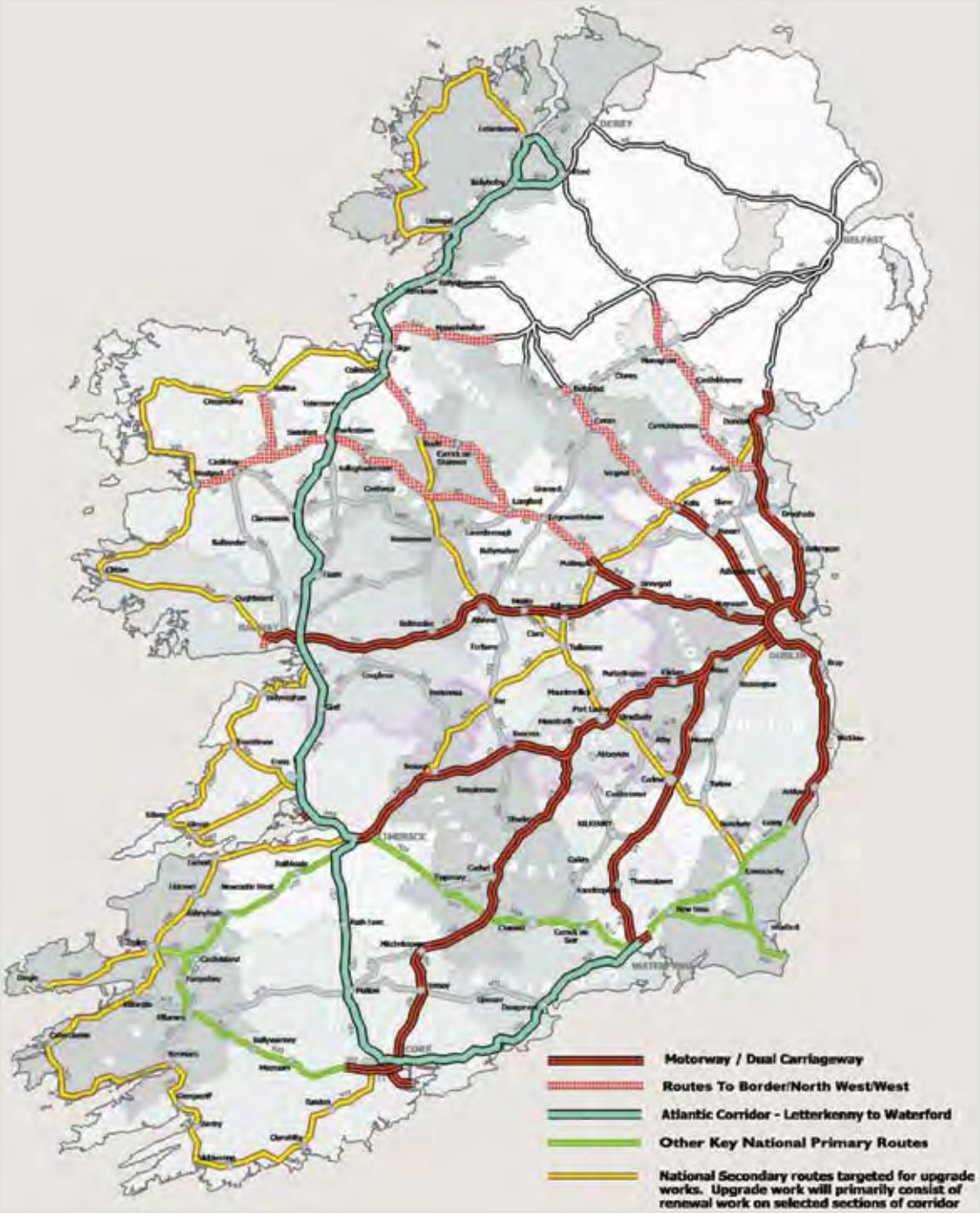
3.4.4 The investments currently planned are presented below, while the gaps in road network provision that have been identified by the consultation process are discussed in the later Section 5.2.14.

The road network in Ireland

3.4.5 In the late 1990s the scale of the inter-urban road infrastructure deficit relative to the rapidly expanding demand became all too clear to travellers using the Irish network. It did not require sophisticated forecasts to determine that major enhancements were needed across a large proportion of the primary network. In fact, the NRA (2003) traffic forecasts discussed above (Figure 3.1) have been developed using a relatively crude projection-based approach. This has led to the ambitious plans now being implemented in Ireland. The future Irish road network in 2015 is illustrated in Figure 3.2, based on the investments proposed within the Transport 21 programme.

3.4.6 These major improvements underway in the speeds and capacity of the inter-urban road network in Ireland are, however, likely to lead to substantial future changes in both passenger and freight patterns of movement. The history of the M50 illustrates how the availability of good infrastructure can cause major increases in traffic volumes, as also studied previously in the UK by the SACTRA (1994) committee on induced traffic.

Figure 3.2 Irish National road network, 2015 - Transport 21



Source: Transport 21, www.transport21.ie

The road network in Northern Ireland

3.4.7 The enhancements planned by Roads Service Northern Ireland (RSNI) for the road network through to 2015 are illustrated in Figure 3.3, based only on those investments that were proposed within the Strategic Road Improvement Programme 2015, Consultation Document (RSNI, 2006). An updated list of major schemes under construction and planned is included in Appendix C. In November 2007 2 further schemes on Key Transport Corridors of importance to freight movements have been introduced by RSNI to their current Programme, making use of £400million additional funding from the Irish Government:

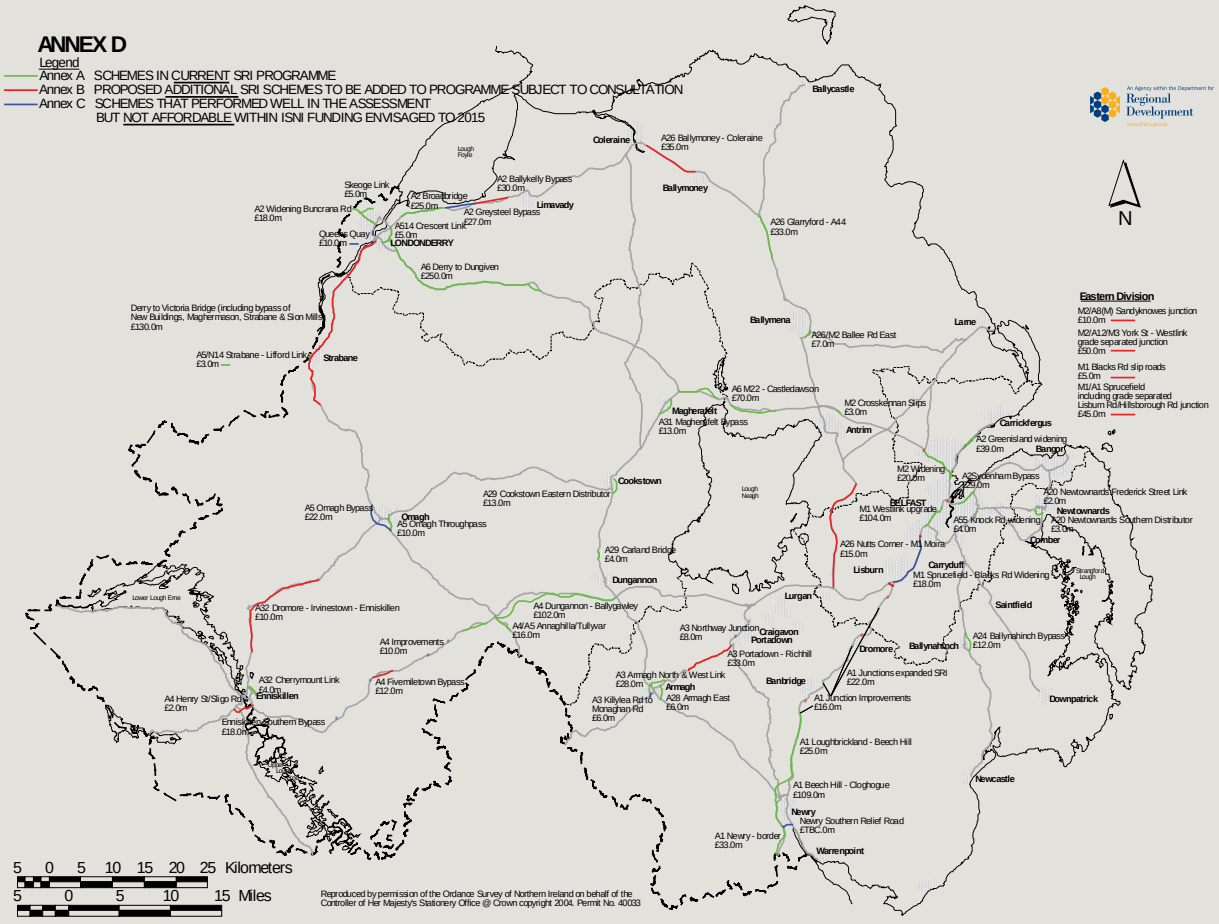
- the 88km dualling of the A5 from the border at Aughnacloy through to Londonderry;
- completion to dual carriageway standard of the remaining un-upgraded 16km of the A8 between Belfast and Larne.

3.4.8 Figure 3.3 shows that many of the upgrades and dualling schemes are focussed on the Key Corridors and so will be of direct benefit to the main freight movements. However, when taken together with Appendix C it also shows that:

- the proposed rate of road improvement is slow; it will be many years before a number of these schemes are in place; for example the A5 and A8 schemes would not start to be constructed until some date after 2012 but before 2018, while the dualling of the 30km of the A6 between Londonderry and Dungiven may not commence much before 2012.
- some improvements that are potentially important for freight access are either not affordable under the current RSNI funding to 2015 or are not yet even under consideration for improvement. We will return to this topic in Section 5.1.10.

3.4.9 The rapid increase in recent years in the rate of upgrade of capacity across the main inter-urban road network in Ireland demonstrates that it is feasible to rapidly expand road construction activities, provided that the required budget can be made available.

Figure 3.3 Roads Service Northern Ireland: planned investments on the strategic network to 2015



Source: Strategic Road Improvement Programme 2015, Consultation Document (RSNI, 2006)

3.5 Future port traffic growth

3.5.1 The future perspectives for freight growth through ports can be summarised as follows.

- The rapid past rate of growth in unitised traffic shown in Figure 2.21 is likely to persist through into the future so that increased capacity is needed now both for the inland modes that access them and particularly within the unitised ports themselves;
- Many of the items transported by Lo-Lo and particularly by accompanied Ro-Ro services have a high unit value so that the provision of a reliable and cost effective unitised service is of central importance to the economies, North and South;
- The growth in bulk tonnage has been slower in recent years than that in unitised goods, a trend in line with that in many other EU countries. Nor are bulk volumes expected to expand as rapidly into the future as will

the unitised trades. If anything, the momentum towards carbon taxes will put pressure to reduce the consumption of coal and petroleum products. Other major bulk movements, such as those associated with aluminium production at Foynes or the ore from Tara mines exported through Dublin port, depend for their future continuation on World market demand and on the ratio of production prices within Ireland to those elsewhere; and

- For many of the bulk traffic movements the goods are processed within areas adjacent to the port so that the pressure on the inland transport system is small and in industries such as oil refining and aluminium smelting, future port expansion decisions will be heavily influenced by the local processing firm and their needs from their privately owned facilities.

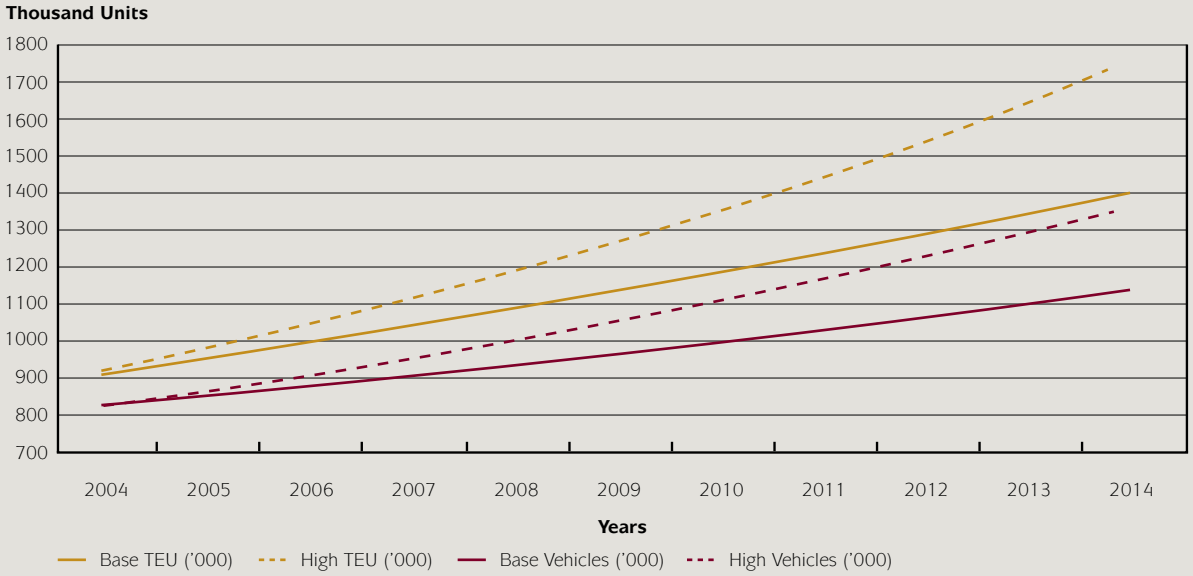
3.5.2 Accordingly, in the rest of this report when analysing ports and shipping the main emphasis is placed on the unitised more than the bulk or conventional traffic.

3.5.3 The Irish Department of Transport (2006) commissioned a report from Fisher Associates to assess the future seaport capacity requirements for unitised trade on the island of Ireland.

Unitised traffic comprises: Ro-Ro trade with near Europe (principally with or via GB); and Lo-Lo trade predominantly over greater distances, particularly with Asia and North America.

3.5.4 As shown in Figure 3.4, significant growth in both types of traffic is assumed, with the larger increase being expected to occur in Lo-Lo traffic (measured in TEUs to take account of the varying length of different containers). This Lo-Lo trade is primarily driven by the growth in the manufacturing economies of Asia (predominantly China), which is forecast to grow significantly. The base case scenario of DOT adopts annual growth rates over the decade commencing from 2004, of 4.5 per cent for Lo-Lo (TEU) and of 4.2 per cent for Ro-Ro (vehicles). These rates appear to be conservative. The growth rates for the 5 years up to 2004 were 6.8 per cent and 5 per cent respectively (IMDO, 2007). Since 2004 the observed growth rates over 2005 and 2006 in Irish ports have been 8.6 per cent (TEU) and 7 per cent (Ro-Ro units) per annum, which are closer to double the rates assumed in the base scenario. Dublin Port has recently released figures for 2007 which suggests this trend is continuing. Growth for 2007 was 9.3 per cent (TEU) and 5.8 per cent (Ro-Ro units). Given the future projections of 1.8 per cent growth in population and of 4.9 per cent per annum in real GNP for Ireland, these base scenario growth rates now appear unrealistic for the period through to 2010 at least, and perhaps to further ahead.

Figure 3.4 Unitised traffic forecast scenarios developed for Ireland



Source: DOT (2006) Information paper based on Fisher Associates, Future Seaport Capacity Requirement for Unitised Trade in Ireland.

3.5.5 These growth scenarios adopted in the Fisher Report were based on 3 key variables:

- Anticipated growth in GDP;
- Relationship between GDP and unitised growth;
- Changes in market share of Lo-Lo and Ro-Ro.

3.5.6 These predicted levels of growth were then compared against the current port capacity, which produced the following conclusions.

- The port sectors in Ireland and Northern Ireland are somewhat complementary:
  - Northern Ireland in 2005 had spare Ro-Ro capacity;
  - Ireland in 2005 had spare Lo-Lo capacity.
- In the base scenario
  - Lo-Lo: available capacity would effectively be fully utilised by 2014.
  - Ro-Ro: an additional capacity of 69,000 units would be required by 2014 (9 per cent approx. of total Ro-Ro units handled by Irish ports in 2005).
- In the high, risk-averse scenario, investment would be required sooner
  - Lo-Lo: an additional capacity of up to 350,000 TEU would be required by 2014 (35 per cent approx. of total TEU handled by Irish ports in 2005).
  - Ro-Ro: an additional capacity of 306,000 units would be required by 2014 (38 per cent approx. of total Ro-Ro units handled by Irish ports in 2005).

3.5.7 However, much of the above "spare capacity" for Ro-Ro is only available in the off-peak sailings, which are already priced lower so as to encourage movement from the peak services.

3.5.8 Growth rates for Ro-Ro traffic in Northern Ireland were 3 per cent per annum over the last 7 years, a rate lower than that in Ireland. After a stable period up to 2003, container traffic through Northern Ireland ports has doubled between 2003 and 2006 (IMDO, 2007), which may indicate an increased longer term trend that is tied in with the improved social and economic conditions forecast for Northern Ireland.

3.5.9 According to Fisher Associates, their 'high' growth scenario represented a risk-averse scenario where there was stated to be a less than 10 per cent probability of traffic volumes being exceeded. The experience since 2004 that has been presented above, coupled with the projections of continuing strong growth into the future, together imply that this 'high' scenario may in reality be much closer to the true picture than is the base scenario. Based on DOT's own work, this clearly points to the need to initiate major expansion now of unitised port capacity in Ireland.

3.5.10 The IBEC (2006) study, based on the forecasts of their consultants, Strategic Transport Solutions, arrived at similar conclusions that the rate of future growth in demand for unitised capacity through Irish ports will be much greater than the DOT's base case scenario assumptions.

3.5.11 There is inevitably a delay of some years between when a major new port facility is given the go ahead and when it becomes fully available for use. Major long term damage would be caused to the economies, North and South, if there were an interim period with inadequate port capacity for the import or export of unitised goods.

Without spare capacity within the port system there will be no effective competition and little pressure to control prices or improve service levels in individual ports. The resulting price increases and congestion delays experienced in ports would impact on the competitiveness of exporting firms and on their ability to serve existing markets, causing serious potential long term economic consequences for the island of Ireland. Options for port capacity increases to offset this problem are discussed in the next Section.

Port capacity increases

3.5.12 There has been recurring concern about the ability of the Irish ports to continue to provide capacity for the rapid economic growth that has been experienced. Currently insufficient ferry capacity is available, particularly at peak times both in Northern Ireland and Ireland. However, there is untapped resource on off-peak ferry services, which suggests further scope for adjustments to pricing. Northern Ireland suffers from lack of Ro-Ro capacity for its important "out of gauge" traffic to Fleetwood and Liverpool on route to North America (IITI/IEA, 2007). Some ports such as Dublin Lo-Lo and the Cork Lo-Lo Terminal at Tivoli in 2007 are already operating close to their capacity, though Waterford would happily receive the overflow traffic from the latter.

3.5.13 Dublin Lo-Lo capacity is being expanded at Alexandra Quay with the first phase to be completed by end of 2007 and further expansion plans are in place. However, the major expansion of Lo-Lo facilities in the port of Dublin as currently proposed, relies on reclaiming 9 Ha of foreshore land in phase 1, rising to 21 Ha reclaimed later for expansion of Ro-Ro and other facilities. The progress of this expansion

has been constrained by environmental concerns about this land reclamation within Dublin Bay, though alternative land uses within the port may emerge ultimately should this reclamation bid fail. This uncertainty has encouraged the Port of Drogheda to put forward an alternative new deepwater port at Bremore as outlined in Text Box 3.1.

TEXT BOX 3.1
BREMORE DEEPWATER PORT

The approval by the Irish Government in September 2007 of the establishment of a joint venture company to develop the new deepwater port at Bremore just north of Balbriggan could ultimately provide one alternative to the congestion around access to Dublin port. There will be facilities to accommodate new short sea shipping services to GB, Europe, Scandinavia and the Baltic states, handling Lo-Lo, Ro-Ro and passenger traffic. It will have the deepest berths on the Irish east coast. The project has been planned in three phases, with phase one catering for up to 10million tonnes of cargo a year.

With construction of the Leinster Orbital Route not expected to begin until 2012, Balbriggan Chamber of Commerce are concerned "that Phase I of Bremore Port will be open before construction begins on the Orbital Route. Communication and cooperation is required between all parties to investigate if both developments could run in tandem thus eliminating years of congestion for Dublin commuters".

In January 2008, the Irish Cabinet approved the transfer of compulsory powers for the acquisition of land by the Drogheda port company, to An Bord Pleanála through a forthcoming change to the Harbours Act in line with the Strategic Infrastructure Act.

3.5.14 The Dublin Port Authority has also put forward to the DOT (2006) port review a plan to provide Lo-Lo services at Greenore port, close to Warrenpoint in Carlingford Lough; the first stage of which would be 44,000 TEU but could potentially increase to 87,000. Expansion plans are underway in Waterford to extend the Belview container terminal and in Rosslare to cater for larger Ro-Ro vessels by the end of 2008.

3.5.15 The port of Belfast has recently expanded its Lo-Lo capacity by 50,000 containers per year and has space and access to investment funds available to allow for substantial future expansion of Lo-Lo capacity as it becomes needed. Its target is to double port capacity by 2025. Warrenpoint also has prepared expansion plans for its Ro-Ro services that will be completed in 2008, to provide almost a doubling in capacity to 120,000 vehicles per annum.

3.5.16 The expansion proposals put forward to the Irish port review (DOT, 2006) by most existing individual Irish unitised ports would be sufficient in total for a very large expansion in Ro-Ro and Lo-Lo capacity. The key question is how many of these ports will be able to generate the funding for their larger expansion aims, particularly the 350,000 TEU plus 400,000 Ro-Ro unit capacity proposed for phase 1 of Bremore port and the proposed 300,000 TEU phase 1 of the new container terminal in Ringaskiddy (Cork). This Cork terminal because of its southerly location and deep water would be particularly well placed to provide an option for a future direct call by a transatlantic service. However, the IITI/IEA (2007) study concluded that for wider commercial reasons there is little chance of securing a direct call at to any Irish port for the moment, despite the existence of sufficient

volume of core traffic to North America to justify a direct call. It is likely instead that most Irish shippers will for the foreseeable future get much more frequent and cheaper connections to a broader range of deep-sea destinations by feeding container traffic through the major European hub ports than by having a direct deep-sea service.

3.5.17 It is important that planning decisions affecting the expansion of key Irish unitised port capacity can to be progressed rapidly, in line with the Strategic Infrastructure Act, particularly regarding the major investments in Bremore new port, and in the Lo-Lo terminals at Dublin and Ringaskiddy.

3.5.18 Decisions on investment need to take account of the worldwide move towards larger container vessels that call at fewer and larger ports with greater depth. This same upward trend in vessel size also applies to feeder vessels. This has implications both for the spread of new investments across the set of ports, for the depths that they will require and for the magnitude of the inland road traffic generated around calls by these large vessels. This emphasis towards concentration needs to be counterbalanced by the need both to retain a sufficient number of efficient ports, North and South, to maintain genuine competition to control prices and improve quality of service, as well as to serve the natural hinterlands of different parts of the island of Ireland.

3.5.19 There is already perceived to be a problem for vessel operators to match increasing demand with larger vessels (giving them economies of scale) when terminal operators do not have sufficient service and infrastructure capacity to handle such vessels (800 – 1,000 TEU), in terms of vessel discharge and loading, terminal area and handling capacity and efficient landside collection and delivery systems.

3.6 Logistics and supply chain trends

3.6.1 Businesses, like their counterparts in other countries, are subject to a range of logistical and supply chain trends. To remain competitive in international markets they must economise on inventory, minimise order lead times, provide timed delivery (often within half-hour time windows) and offer a track-and-trace service. They have to respond to the centralisation of warehousing, wider use of hub-satellite networks, growth in direct shipment and online trading of logistical services. Companies supplying consumer markets have to meet the increasingly demanding requirements of major retailers and must often develop a multi-channel capability to guarantee high levels of reliability. The importance of suitable services for perishable and hazardous goods also needs recognition.

3.6.2 McKinnon, A.C. and Woodburn (1996) proposed that the volume, pattern and nature of freight movement are influenced by a wide range of logistical and supply chain trends, which affect:

- the number, sizes and locations of factories, warehouses, terminals and retail outlets;
- the pattern of freight flow between these premises throughout the supply chain;
- the scheduling of production and distribution activities, and whether goods are delivered in large consignments or replenished just-in-time in small quantities; and
- the choice of carrier, fleet management and vehicle routing.

3.6.3 When projecting freight demand into the future, it is therefore important to consider the following trends identified by consultees.

- **Relocation of production** - The dominant trend in industrial location over the past few decades has been the geographical concentration of production capacity in fewer larger plants that exploit economies of scale and cheap labour costs. The migration of manufacturing (particularly labour intensive manufacturing) eastwards is resulting in less product movement to/from the island of Ireland. The earlier Figure 2.2 shows that the value of imports and exports of machinery (mainly electronics) has dropped significantly in the last 3 years, which may indicate this behaviour. Some firms are retaining (for the present) the low volume, high value manufacturing and service activities. This implies fewer tonnes to be moved but not automatically the same proportionate rate of reduction in the value or number of containers to be moved. Several participants at the focus groups felt that logistics and freight issues within Ireland are likely to become significantly less important as a result of the migration of production. The establishment of more virtual operations shifts the emphasis to communications infrastructure and knowledge / skill development, where the strategic management functions may continue in Ireland but some of the goods may pass direct from producers in the East to consumers, while bypassing Ireland. This trend would tend to moderate some of the past increase in freight transport intensity (defined as the increase in tonne kms per unit increase in GDP).

- **Wider sourcing and distribution** - Another major driver of freight traffic growth has been the wider sourcing of supplies and wider distribution of finished products. Supply chains for the multinational sector increasingly have suppliers of commodity goods from around the World. This increases the demand for inbound and outbound movements of product, particularly for airfreight as occurred within the electronics sector in the 1990s.

- **Centralisation of inventory** - This has been driven by a desire to cut inventory levels, obtain economies of scale in warehousing, and improve lorry fill. It has been one of the main drivers of freight traffic growth for many years and has led to the growth in distribution centres around the Greater Dublin Area.

- **Hub-and-Spoke networks** - These are a fundamental restructuring of logistical systems. As a result of JIT pressures and the growth of direct marketing, an increasing proportion of products now leave factories in smaller, less-than-lorryload consignments. It is more economical for these orders to be despatched through the hub-and-spoke networks of pallet-load or parcel carriers. The routeing of freight through centralised hubs is making the movement more circuitous, although where high load factors can be achieved on the radial trunks, the net increase on lorry-miles can be modest. Most trunking occurs at night. This restructuring has occurred both within the island of Ireland with hubs often located in the Greater Dublin Area and at the international scale using European hubs (mainly of airfreight), often in the Benelux countries, to serve global marketplaces.

Irish-based companies also feed products into UK parcel and pallet-load networks, e.g. Dell distributes its UK orders via a parcel hub in the UK Midlands.

- Distribution centres for imported goods - The huge growth in imports of consumer goods has caused major retailers to restructure the systems of inbound logistics. Traditionally container loads of imported goods have been transported to their main distribution centres for 'de-stuffing'. Port based distribution centres (Portcentric logistics) have recently been introduced in major English container ports from which import goods are being distributed directly to retailer's regional distribution centres, avoiding the cost of moving the container out and back to the port. Some imports are also being distributed directly from the port to shops in what some companies are calling a 'DC-bypass' strategy.

- Growth of online retailing - This both affects the market for existing retailers (e.g. Borders decision in September to sell its UK and Ireland bookstores and to concentrate on online sales) and leads to very different requirements for freight services to cater for this online market. Online grocery retailing has created a need for new logistical operations capable of picking and delivering large numbers of items within tight time constraints. This can lead to increased local distribution traffic flows particularly within urban areas, using small vehicles for the final delivery leg.

- Just-in-time (JIT) / speed of delivery - By making frequent deliveries in small quantities and at the time when required, it is possible to minimise inventory and improve productivity and quality. JIT tends to reduce average payload per trip and favour road and air. Nevertheless many companies can implement JIT without significantly increasing traffic volumes, through load consolidation or 'milk-round' collection. It seems that most of this impact has already been felt in the island of Ireland. Increasing transport costs or congestion can force firms to give transport efficiency priority over inventory minimisation. Consultees report that some customers are becoming more cost sensitive and are now prepared to consider slower deliveries (off-peak ferries, road rather than air) to obtain reduced freight costs. There is also concern that inventory reductions have left some supply chains too vulnerable to a range of possible disruptions.

- Narrowing of Delivery Time Windows - It is now standard practice at factories, warehouses and shops for in-coming deliveries to be scheduled within 'time-windows' varying from ½ hour to 2 hours. This ensures that staff time and equipment can be more efficiently used if deliveries are evenly spread and handled at specific times. The narrowing of time windows amidst rising road congestion has increased costs significantly, through requiring contingency time to be built in for the journey, with the associated labour and capital cost losses. Disruption along the way that causes the window to be missed can carry heavy costs, such as having to return the consignment to base.

- Concentration in the logistics services market - A substantial proportion of total logistics expenditure (on transport, warehousing and handling) is now outsourced

and 70 per cent of all road tonne-km in Ireland is carried by haulage contractors. Intense competition, low margins and poor returns on investment in the general haulage market are leading logistics providers to sub-contract road haulage activity and concentrate on higher value added services. Concentration in the logistics service market offers several potential advantages to businesses. It can increase the geographical range and service portfolio of individual carriers. It can also result in rationalisation of transport operations, yielding reductions in empty running and increases in load factor. Consultees strongly perceived the need to maintain a sufficient range of choice of logistics providers and carriers to guarantee competition - this has greater potential to become an issue for ports and shipping than for road haulage.

- **Collaborative initiatives to improve vehicle utilisation** - Increasing numbers of companies have realised that a step-change in vehicle utilisation requires collaboration with others. This occurs where companies combine their loads to increase consignment size, or create new backloading opportunities. In addition, there is also joint planning of transport operations by manufacturers, retailers and carriers and sharing of information about traffic flows. To date however, there are still relatively few true collaborative initiatives in logistics that have succeeded. There are many practical problems to be overcome including lack of trust, disagreement / uncertainty over the division of benefits and competition laws. The Logistics XP initiative from Inter*Trade*Ireland was one such mechanism that was introduced for the island of Ireland but has recently been terminated. Further research and review of experiences elsewhere in the World is needed so as to identify effective approaches that can produce sustainable collaborative schemes.

- **Growth of out-of-hours delivery** - This appeals to carriers but less so to many of their smaller scale clients due to the need to synchronise freight movements with production and distribution schedules. The environmental case against night delivery has weakened because:

  - modern lorries emit much less noise;

  - more of the road network is surfaced with quieter asphalt.

- **The effects of B2B e-commerce on freight transport.** Online auctions for commodities are tending to promote wider sourcing. Online procurement of freight services (mainly road, but also other modes) is helping companies to reduce their transport bills, partly by intensifying competition in the freight market but also by improving vehicle utilisation, particularly on back hauls.

- **Growth of factory-gate pricing, especially in the retail supply chain.** By adopting this, large retailers in the UK, especially Tesco, are assuming responsibility for collecting supplies from the point of production and so are effectively controlling the supply chain.

4. Consultation

4.1 Methods

4.1.1 Extensive consultation has been undertaken with stakeholders to identify problems, constraints and opportunities. The main aims of this process were to:

- examine current concerns about freight issues;
- understand future trends and developments;
- generate new ideas and proposals for improvements in freight transport and logistics provision.

4.1.2 This consultation has been designed to cover the main economic sectors, geographical regions, modes and infrastructure operations across the island of Ireland. It includes freight operators, logistics providers and individual industrial sectors. It covers both the providers and the users of transport services.

4.1.3 The consultation has been carried out using 3 approaches:

- a questionnaire-based e-survey that had responses from 130 firms and individuals;
- semi-structured interviews; and
- focus groups in Dublin and Cork.

4.1.4 The semi-structured interviews have been carried out with key individuals from firms that provide freight transport and logistics services, from firms that use these services, as well as from trade and research bodies associated with transport. These interviews included both formal attitudinal questions and open-ended questions on topics of relevance to the respondent. The names of the entities consulted are listed in Appendix A.

4.1.5 The purpose of the focus group sessions was to gain additional insights into some of the issues raised by the e-survey and the feedback from the interview consultations. The underlying logic is that interaction among focus group participants brings out differing perspectives through the language that is used by the participant. Through involvement in the group individuals may reveal more than they would in the more formal interview setting. In this case we explored some of the key issues emerging from the other elements of the research methodology with a view to qualifying some of the findings and testing some of the recommendations.

4.1.6 The findings from the interview questions have generally been used to inform the discussions on issues in transport and logistics in Chapters 5 and 6 below. The results from the attitudinal questions and from the e-survey are summarised in Appendix B.

4.2 General findings

4.2.1 Prior to presenting the specific findings from the consultation in subsequent Chapters, there are some broad observations that have emerged that provide context for the later analysis.

4.2.2 There are clear differences between the interests and perceptions of some of the industrial firms (the users) and those of the Third Party Logistics providers (3PL) or transport operators (the providers of logistics and transport services to the users). For some users, particularly those in multinational corporations, their continuing existence on the island of Ireland is determined much more directly by: government taxation policies; labour cost differentials - allowing for skill levels; global corporate strategies ('we can't be sure if we'll exist in Ireland by the end of the year') and other factors that are a long way removed from transport issues. This certainly does not imply that the costs and quality of freight transport are ultimately unimportant to their business but rather that many such firms employ 3PLs to do the worrying about logistics management and requirements for transport services; this provides them the freedom to concentrate on their core business. As a result of outsourcing of logistics, some of the users perceived themselves as somewhat removed from freight transport issues, in contrast to the views of the providers, which were sharply focused.

4.2.3 There are important firms servicing the domestic sector, such as the retail multiple sector plus its suppliers, where efficient logistics and supply chain management are one of the main keys to profitability and where logistics initiatives, such as the move to centralised distribution systems, are central to maintaining competitiveness. For the electronics high-value export sector, similar issues arise but within a global rather than a national supply chain, focussed on airfreight more than on ferries. For such firms efficient logistics management is seen as a necessary ingredient within that business, rather than as an opportunity to obtain a competitive advantage in their marketplace.

4.2.4 Based on the consultation the most serious issues faced by the transport providers are highlighted as: inadequate infrastructure, fuel prices, peripherality and traffic congestion. These issues affect all transport sectors although they impact on road haulage the most, particularly in Ireland. Some accept that the peripherality of the island of Ireland is a fact of life that cannot be changed, though they understand that it imposes transport cost and quality of service challenges to importers and exporters.

4.2.5 Investing in better infrastructure was seen as the most important role for government relating to transport. Other issues with high ranking were: providing freight grants, updating the planning system and improvements to traffic management.

5. Internal Transport Challenges

5.1 Introduction

5.1.1 This Chapter analyses the challenges and opportunities facing freight transport and logistics within the island of Ireland. It discusses the various measures that can be adopted to address these challenges. It commences with a review of some broad issues in the transport and logistics sectors and then covers the road and rail sectors, which complements the next Chapter on external movements that then covers the air, port and shipping sectors.

5.1.2 Perception that freight needs are not being fully considered in transport planning. A number of consultees feel that the needs of freight are often not fully considered in the usage of existing capacities or in the planning of new investment. A balance should be struck between freight and passenger requirements for transport infrastructure. The transportation planning and strategy documents in both Ireland and Northern Ireland contain surprisingly few explicit references to freight traffic. This may have led, in part, to the stakeholders' perception that freight needs have not been fully taken into account. There is a need for those planning future investments and policies, particularly in the road sector, to recognise that the freight and logistics sector has particular needs that need to be taken explicitly into account. Freight Quality Partnerships, such as that in Belfast, are one means whereby communication can be improved.

5.1.3 Another example of how this might be done is provided by the Freight Action Plan for Scotland (Scottish Executive, 2006), which can provide guidance on the approach to be adopted by government in Ireland and Northern Ireland. For instance, when planning future investments / policies, the Scottish Executive proposes to take the needs of industry into account through:

- Establishing Freight Quality Partnerships to deliver freight solutions at a local level, on issues such as night-time curfews, no-car lanes, drivers' rest areas and bridge and road strengthening.
- Consulting with industry stakeholders to produce the Strategic Transport Projects Review. This will identify a programme of transport intervention for 2012 to 2022.
- A Scottish Enterprise led study into the need for and location of multi-modal freight hubs. This will engage with the freight transport industry to take account of the strategic economic importance of ports in providing access to international markets.
- Skills for Logistics[10]: working with the transport industry to identify future skills needs and to encourage appropriate levels of training and recruitment.

5.1.4 Provision of a skilled workforce. The freight transport and the passenger transport sectors cover a diverse range of industries including road haulage, couriers, shipping, transport planning, rail and aviation. Both sectors are vital to the economies, North and South. The rapid economic growth in Ireland, together with the upturn that Northern Ireland has experienced in the recent past, have had a profound affect on the logistics sector. Greater economic activity – especially in the retail and construction sectors, has meant that more freight movements and more distribution activity are necessary. The skilled workforce needs to be available to cater for this demand.

10 See www.skillsforlogistics.org/en/ for further details of the activities of the Skills for Logistics Council

5.1.5 In Northern Ireland these transport sectors are represented by 2 Sector Skills Councils. Skills for Logistics (SfL) represents the skills needs of the freight transport sector and GoSkills represents the skills needs of the passenger transport sector. Both have identified, as part of their Sector Skills Agreement process, that their sectors suffer from poor image/perceptions as sectors in which to work, poor diversity amongst the workforce, and an 'aged profile' (ie – consistent with a marked difficulty in attracting/retaining new recruits). Yet both sectors offer a diverse range of job roles and career opportunities to pupils of all abilities. SfL and GoSkills are proposing to undertake work to develop training units that will enable the UK Council for the Curriculum, Examinations and Assessment to approve Transport as an additional occupational area, ideally leading to an NVQ Level 2 Transport qualification.

5.1.6 Mangan et al (2001) provides a useful review of logistics skills in Ireland. There is also a need for continuous education to develop the wider business skills appropriate for a contemporary service sector, as well as for safety and energy efficiency. NITL, Dublin provides specialised education and training in supply chain management. There are benefits to investigating the scope for increased joint provision of certified and recognised training at all levels across the island of Ireland, making use of the North/South Ministerial Council.

5.1.7 The recent extension of the Driver Certification of Professional Competence from just HGV drivers to also cover LGV and passenger carrying vehicles (Text Box 5.1) should provide a more professional workforce within the road transport sector as a whole, and a more level playing field between the operators of HGVs and of LGVs.

TEXT BOX 5.1
DRIVER CERTIFICATE OF PROFESSIONAL COMPETENCE (DRIVER CPC)

The Driver CPC is a scheme for LGV and Passenger Carrying Vehicle (PCV) drivers who drive professionally throughout the UK and Ireland. It has been developed as a requirement of the EU Directive 2003/59, which is designed to improve the knowledge and skills of professional LGV and PCV drivers throughout their working life. Legislation to underpin the Driver CPC is currently in place and must be implemented for PSV drivers by August 2008 and for LGV drivers by September 2009.

Existing drivers who already hold a vocational licence by 2008 (PCV) and 2009 (LGV) will be required to complete a total of 35 hours Periodic Training within the following five years to keep the Driver CPC valid (and hence retain their licence). PCV Drivers acquiring the Driver CPC via acquired rights will have to complete their periodic Driver CPC by August 2013 and LGV Drivers by September 2014.

5.1.8 Negative perception of the freight industry. The freight industry across all modes has identified a particular need to raise the professional image and profile of the industry, so that users, policy makers and the wider public fully appreciate the recent progress in vehicle/vessel technology and service standards. To address this issue the Chartered Institute of Logistics and Transport[11], which has branches across the UK and in Ireland, has been working to improve the skills base in logistics and to enhance its image.

5.1.9 **Lack of appropriate freight and logistics data for transport planning.** One important reason why freight analysis has lagged behind that of passenger travel is that there are

11 See www.ciltuk.org.uk/pages/home and www.cilt.ie/ for further details of the activities of the Chartered Institute of Logistics and Transport in the UK and in Ireland, respectively.

significant gaps summarised in Text Box 5.2 in the freight and logistics evidence base, as well as in some more general transport statistics that are published by both governments. Information on freight movements is not currently available at an adequate level of detail to reflect the underlying supply chain characteristics. This makes it difficult to forecast future changes, and to interface with road passenger transport analysis at the national and regional levels. This then affects the ranking of investment priorities. There is an urgent need to improve the freight evidence base so that policy options can be appraised for their economic, environmental and social benefits in a similar way to passenger transport.

TEXT BOX 5.2
IMPROVEMENTS TO STATISTICAL DATA

Topics for which improved published statistical data are required are listed below, together with [the agency] who should provide such data:

for Ireland:

- The separation of accompanied from unaccompanied traffic within port statistics [CSO];
- The classification of HGVs by type within Irish traffic counts (AADT) [NRA]; and
- A systematic distinction of the movements to Northern Ireland from those to GB in all Irish published statistics [CSO]; for Northern Ireland, publish within the annual publication: Northern Ireland Transport Statistics [DRDNI]:
- Summary data analogous to that published in Transport Statistics GB on road traffic volumes for Northern Ireland as a whole, cross-categorised by vehicle type and road type, including trends through time. This data is routinely collected by RSNI but appears not to be published at an aggregate level in an accessible form; and
- Tables from CSRGT (Northern Ireland) on internal Northern Ireland tonne kilometres and vehicle kilometres analogous to the existing published table on tonnes.

For the Northern Ireland road freight statistical survey CSRGT (Northern Ireland): [DfT, UK]

- Revert for international movements to the IRHS sampling procedure, to ensure that an adequate sample of such movements is captured; and
- Include a question on main type of work normally associated with the vehicle, analogous to that in the Irish freight survey.

For the island of Ireland as a whole:

- A further subdivision of vehicle types that unambiguously separates out vans from cars or HGVs in all statistics [CSO, NRA, RSNI, DRDNI]; and
- Information on the traffic volumes and routes chosen across the GB land bridge for all vehicle traffic to and from the island of Ireland; [CSO, SRB/DETI]
- Data on the activities on the island of Ireland of hauliers in foreign registered vehicles, both within the port statistics and for aggregate road statistics on tonnes, tonne kilometres and vehicle kilometres. [CSO, SRB/DETI]

5.1.10 For example, it is known in GB that van traffic has grown at around twice the rate of car and HGV traffic in the last decade. Published Irish traffic statistics on vehicle stock, traffic counts or freight movements do not distinguish vans from other vehicles so that there is no clear evidence to confirm the existence of a similar trend in Ireland. Because of the growth in e-commerce and the shift towards a high value service economy, van traffic is likely to grow rapidly in the future.

5.1.11 Differential restrictions between vehicle types on HGV access, driver training requirements, speed limits or charging regimes could lead some freight traffic to switch to vans or smaller HGVs. It is important that policy makers appreciate fully the potential implications of policy measures that may as an indirect effect act to divert freight from a smaller number of large goods vehicles onto a greater number of smaller HGVs and vans. These implications include the external impacts resulting from potentially significant increases in traffic congestion and in carbon and other emissions as well as the internal cost increases on the haulage industry. To enable such impacts to be forecast and monitored, van movements need to be measured unambiguously in a form that can ultimately distinguish movements related to services (e.g. plumbers, repairs, etc.) from those related to freight (e.g. post, couriers, e-commerce and tertiary distribution).

5.2 Road infrastructure and congestion

5.2.1 Respondents to the consultation, particularly those operating in Ireland, have consistently identified road congestion as a major concern. There has been a major protest action by truckers on the M50 in May 2007 to try to retime the M50 road widening construction so as to lessen the severe congestion that it has generated. Newspaper headlines illustrate how large the problem can become in Dublin: "Gridlock stretched from Red Cow to the airport – and to Celbridge on N4" (Daily Mail 20/06/07), simply as a result of a problem with signage and of a minor road accident.

5.2.2 Congestion acts as a thrombosis, preventing the efficient circulation of traffic that is required for cost-effective operation of modern logistics operations. Congestion generates uncertainty about travel times, which makes cost-effective planning and usage of resources more difficult in both the short- and the long-term. The introduction of the working time directive (WTD) further exacerbates the side effects of the delays through the longer driver shifts caused by congestion. If and when compliance to the WTD is rigorously enforced by both jurisdictions, the costs of congestion will increase further.

5.2.3 Transport and logistics systems are increasingly trying to move to tightly scheduled operations that when operating correctly can achieve maximum efficiency in their use of vehicles and loading bays. Accurate scheduling can avoid queues of vehicles and unused loading facilities, so reducing capital requirements and operating costs. Some European ports have improved their efficiency by switching to reservation only entry of vehicles, thus avoiding the inefficient build-up of parked vehicles, reducing their vehicle turnaround times and reducing the proportion of empty backload journeys.

5.2.4 The current levels of congestion, particularly around Dublin and Belfast, greatly complicate any tight scheduling of freight activities during

the day and create delays, uncertainties and costs in accessing the major Regional Distribution Centres located there. Uncertainties on a day-by-day, hour-by-hour basis of the time taken to traverse the M50 in order to reach the port tunnel in Dublin mean that a significant contingency time needs to be built in by drivers. This ultimately applies an extra cost to the goods that are imported and exported. For instance, the benchmarking presented in the Annual Competitiveness Report, 2007 by Forfás (2007), shows that the average peak hour speeds on Dublin's roads rank 14th lowest out of the 16 major European cities examined.

5.2.5 The basic problem of congestion in Ireland has resulted from the rapid economic growth that has occurred in a country that started with a very low quality of road and rail infrastructure. In order to maximise the benefits from the roads investment programmes in the North and South, it is important that road upgrades be complimented by improvements in terms of traffic and congestion management. This is an area where there have been major improvements in Britain in recent years, particularly since inauguration of the National Traffic information system in 2006. The National Traffic Control Centre (NTCC) based in the West Midlands is a telematics project aimed at providing free, real-time information to users of England's network of motorways and trunk roads, allowing them to plan routes and to avoid areas currently indicated to be congested.

5.2.6 There is considerable scope for developing similar technology-based solutions on an North / South basis and it is recommended that the potential in this regard be considered in detail by the 2 Governments.

5.2.7 The currently planned road investments on the island of Ireland have been outlined in the earlier Section 3.4. The gaps in provision that have been identified from the consultation are now assessed.

Future investment levels on Northern Ireland roads

5.2.8 The perception in Ireland is that through the Transport 21 funding programme, rapid progress is at last being made so that road conditions on the Irish National Road network (see Figure 3.2) are on the way to improving significantly[12] - at least outside the major urban areas. Some further important Irish road investments that are still outstanding are discussed below.

5.2.9 However in contrast to Ireland, the rate of road investment in Northern Ireland has as yet lagged a long way behind. There is need to ensure that reliable road connections are in place in Northern Ireland's Key Corridors in time to cater for, rather than to constrain the possibilities for its future major economic growth.

5.2.10 The findings of the Eddington (2006) study group identified clearly the linkage between the state of transport infrastructure and the ability of the economy to grow[13] - the UK DfT has since taken this message on board in its current transport strategy (DfT, 2007). The Northern Ireland Assembly in its recent budget has announced targets to create 6,500 extra jobs and aims to greatly increase tourism. The whole thrust of the Northern Ireland Assembly is centred on Economic Development. They have a duty to provide a sustainable economy in line with the Investment Strategy for Northern Ireland. These aspirations can only be achieved if

12 A scheme description, completion date and current state of progress on each major Irish road scheme in the NRA investment programme for National Roads is provided at www.nra.ie/mapping/

13 The Eddington Study demonstrated that "the performance of the UK's transport networks will be a crucial enabler of sustained productivity and competitiveness: a 5 per cent reduction in travel time for all business travel on the roads could generate around £2.5billion of cost savings – some 0.2 per cent of GDP."

decision makers and investors see clear evidence of an efficient, cost effective and environmentally sustainable freight transport system to support a growing economy.

5.2.11 The huge display of investor confidence in the regeneration of Belfast City and other areas of Northern Ireland must be accompanied in the near future by parallel spending on the roads infrastructure. There are major firms who have made considerable investments because they have recently been given the confidence to invest in Northern Ireland. Although many of their needs may be contained in the Regional Strategic Transport Network Plan to 2015, based on the current road investment funding level for RSNI (see Appendix C) the rate of progress will continue to be slow in practice. Many important investments in the Plan are not scheduled to commence until well into the future (RSNI, 2006), while a number of other important improvements have not even made it into the Plan. The Draft Investment Strategy, 2008-2018 (Northern Ireland Executive, 2007) published in October for consultation, contains £572million for roads investment in the budget period 2008-11, with a further £2,417million from 2011-18. Its milestones include "opening of the A5 and of the remaining section of the A8 dualling schemes during the lifetime of the strategy ".

5.2.12 Given its peripheral locality and associated high transport costs, to enable enterprises in Northern Ireland to cooperate and compete effectively both with those in Ireland and in other regions in GB, there is great urgency to complete key road investments sooner than is currently planned so as to aid the Assembly in achieving its stated targets for economic development. This would provide the help that freight transport companies need to meet the increasing demands of customers with respect to: more frequent deliveries; the increasing use of JIT systems; reduced stock levels combined with more global sourcing which increases the requirement for delivery reliability; and in general much more streamlined supply chain management.

Specific further road investments required

5.2.13 A number of options are now discussed to lessen the occurrence of congestion, to lessen the costs that it creates and to reduce the effects of peripherality.

5.2.14 A new orbital route (see Text Box 5.3) between Drogheda, Navan and Naas that would interconnect the M1, M3, M4, M7 and M9 has been recently studied by the National Roads Authority (NRA).

TEXT BOX 5.3
LEINSTER ORBITAL ROUTE

"Both Transport 21 and the new NDP committed the NRA to carrying out a feasibility study on the Orbital Route. In April 2007, the NRA completed an updated feasibility study which builds on an earlier 2001 study, looking in particular at the costs and benefits of such a route. As part of the study various possible route corridors were examined in detail. A corridor linking Drogheda to Navan to Naas was identified as the optimum route having regard to the policy objectives set out in the policy documents.

The primary objective of the Leinster Orbital Route is to provide an alternative bypass of Dublin for national road traffic not wishing to access the Metropolitan Area and to provide a transport link between development centres in the Hinterland Area of the Greater Dublin Area, in a way which supports their sustainable, physical and economic development.

The updated NRA study finds that there is merit in constructing an Orbital Route linking Drogheda/ Navan/Naas. Neither Transport 21 nor the NDP provide funding for the project to be constructed in the period to 2015. However the Government Programme contains a commitment to prepare for delivery of the Route. The study is currently under detailed consideration by my Department."

(Source: Written Dáil answer: Minister for Transport and the Marine, Noel Dempsey, 28/06/07).

5.2.15 This Leinster Orbital Route, if built, would provide longer distance HGV movements with an attractive alternative route that avoids the congestion of Dublin. It would also be likely to lead to a major demand for island wide distribution centre developments around its major junctions that cross the radial routes travelling west from Dublin. In recent years Kildare has attracted many such developments due to its location close to the economic centre of gravity of Ireland. Based on experience in the UK, where the area adjacent to the junction of the M1 and M6 continues to attract major national concentrations of distribution, this orbital route would encourage further agglomeration of large distribution centres around its junctions.

5.2.16 **Atlantic Corridor infrastructure investment:** The investment within Transport 21 on road improvements from Letterkenny through to Cork and Waterford via Sligo, Galway and Limerick is to be completed by 2015. This has the potential to provide a major improvement in accessibility to peripheral areas in the west of the island of Ireland. For goods moving to and from the north-west of Ireland, the bulk port facilities in Londonderry and the unitised services of Belfast, Larne and Warrenpoint could potentially provide competition to those at Dublin. According to Northern Ireland port sources, 25 per cent of Belfast port traffic and 48 per cent of Warrenpoint traffic is currently destined for Ireland.

5.2.17 Likewise, the port facilities in Foynes, Cork and Waterford will provide similar alternatives for goods moving from the mid-west. This Atlantic Corridor improvement will have the dual benefit of easing road and port congestion in and around Dublin and in providing competitive pressures to keep down port costs and to improve services.

5.2.18 **Northern Ireland Key Corridor improvements.** For competition between the Northern Ireland and Irish ports to be fully effective, there is a need to improve the Northern Ireland road network from Ballygawley[14]: via the A4 to Enniskillen through to Sligo (the South Western Key Corridor); and via the A5 to Strabane and Londonderry (the Western Key Corridor). In the North Western Key Corridor, upgrading the A6 to full dual carriageway standard throughout its length (starting with the Dungiven by-pass) would lessen the peripherality of Londonderry, helping to encourage its economic and income levels to move closer to the Northern Ireland average, through reducing the time and unreliability of access to the Gateway unitised ports in the east.

5.2.19 As outlined in Section 3.4, RSNI have included: the dualling of the A6 from Londonderry to Dungiven and at Castledawson within the list of schemes to be started before 2012; and the dualling of the full length of the A5 in the list to be completed before 2018. **The key issue for freight is to ensure that these important schemes can be completed at the earliest feasible date.** This would provide their benefits when they are needed, rather than after congestion and delays have already multiplied (in part due to growth in Irish based traffic) so increasing the relative peripherality of the western counties.

5.2.20 **Local access connections** on road need urgent improvement for a number of ports and for Belfast International airport, otherwise their expected increased future traffic will both create difficulties for other travellers in the surrounding areas outside the terminal and will impact on the ability of the terminal to operate efficiently:

- **Belfast Port** - York Street/Westlink junction. Roads Service have acquired land and have commissioned plans which once complete would relieve the chronic congestion of traffic making access and egress to the Port of Belfast. This should be a priority to ensure the effective usage of the large investment by the Port to develop its trade facilities. Although this was costed at £50million and included in the list of schemes in the current Strategic Road Improvement Programme (Figure 3.3), it is not apparent within the list of planned or future schemes currently presented on the RSNI website[15].

- **Belfast International Airport** - road upgrades to the airport from the M1 at Moira and the M2 at Templepatrick will be needed to ensure that there is efficient and reliable access to the airport from the main transport corridors, comparable to that already available to access the competing Dublin Airport.

- **Warrenpoint** - the construction of the Newry southern relief road is crucial to the expansion of the port. It would enable effective access to the A1 link during the day, without adding to and suffering from the considerable congestion within Newry itself.

- **Larne** - the long promised dualling of the remainder of the A8 needs to be implemented sooner (current commitment is completion prior to 2018). This would ensure reliable port access, improve safety and avoid the "platooning" of vehicles along the route before and after sailings.

- **Rosslare** - the existing port access road, Delaps Hill, has a history of subsidence and of short-term repairs; should it fail it would

14 The dualling of the A4 between Dungannon and Ballygawley has recently been contracted, together with associated single carriageway realignments to the A4 at Annaghilla and the A5 at Tullyvar.

15 http://roadimprovements.roadsni.gov.uk/index.htm

present a serious risk to the functioning of the port with major local economic repercussions. The new N25 port access route is unlikely to be completed before 2012. Consider completing the Atlantic corridor connection by upgrading the links from Waterford to Rosslare port to ensure that the Ro-Ro services at Rosslare remain accessible to the south-west through reliable connections.

- **Drogheda** - the proposed northern and southern relief roads when eventually implemented will greatly improve port access, through avoiding the constrictions and delays in traversing Drogheda's historic town centre.

5.2.21 **Dublin M50 congestion.** The likelihood of continuing congestion in and around Dublin continues to be a concern, particularly on the M50 which must be used to access the key gateway of Dublin Port. Various other options merit consideration, over and above the M50 widening measures that are currently underway:

- In the short term, organise the construction work on road widening so as to minimise its impact on the throughput of traffic during congested periods. This approach of working outside congested periods is the norm in the UK for locations with major congestion. Safety regimes there are designed to cope with working by night. The approach successfully adopted for the Westlink construction in Belfast (Text Box 5.4) can provide guidance on how improved systems could be implemented for the M50 enhancements.

TEXT BOX 5.4 PLANNING AND DELIVERY OF THE WESTLINK PROJECT

Prior to the Department of Regional Development (DRD) Road Service appointing the contractors for this major reconstruction scheme in 2005 (a continuous scheme starting in 2006 with completion expected in 2009) they communicated closely with the freight industry, the Port of Belfast, Freight Transport Association and other business representative bodies. Road Service were determined to ensure that all possible measures were considered and developed into positive action plans so that the levels of congestion would be minimised during the works period.

Mindful of the strategic importance of this route, the Temporary Traffic Management Strategy for the Construction Phase of M1 Westlink was based on the view that diversion of the 65,000 vehicles, that use the road every day, was not a realistic alternative, as all the associated routes on this corridor were already at capacity in the peak hours.

During the contract, measures to manage traffic through the site have included the maintenance of at least two traffic lanes in each direction during the works. The contractor has also been working during off-peak times. The creation of additional dedicated bus lanes plus Park and Ride facilities outside Belfast has resulted in the extensive use of these and has taken a lot of commuter cars off this route.

- Other issues that helped to minimise the impact of the scheme included:
- Designation and signing of alternative routes.
- Restriction of other planned road works on associated routes into Belfast.
- Acceleration of improvement works on alternative routes.
- Additional CCTV coverage.
- Regular travel information using variable message signs, media reports, the trafficwatchni website and telephone line.
- Direct e-mailing to major employers and transport organisations.

- The Dublin Eastern bypass continues to be promoted as an important port link for freight movements from the South of Dublin and the South East of Ireland. For many vehicles it would avoid the need to add to the congestion on the M50 and to suffer its delays. This is an expensive and environmentally sensitive scheme that has been under scrutiny for many years. The NRA has recently completed a feasibility study (not as yet published) that will go to public consultation.

- Apply demand management / pricing policies on M50 in congested periods to discourage excess car traffic; it must not generate bottlenecks at toll booths so it would need to be largely based on electronic tagging (eg. eToll, see para. 5.3.9) or a licence purchase system such as the London Congestion Charge, though the operating costs of such licence systems can be high.

- Reduce for some or all of the day the current restrictions on lorries passing from the South through the city to the port.

5.2.22 In a similar vein in Cork, the roads adjacent to the Jack Lynch Tunnel, which need to be used by most traffic bound for the Ringaskiddy port, are congested for an increasing proportion of the day, despite most of this road system being of recent vintage. This suggests the need either for increased capacity or for congestion charging. In particular, the decision now being examined on the granting of planning permission for the construction of the major new Lo-Lo terminal at Ringaskiddy, should include the commitment to dual the N28 connection all the way to the port so as to cater for the resulting major increase in traffic.

5.2.23 Finally, there will be stretches of hilly roads away from the major improvement schemes where HGVs add to local congestion through their slow climbing speeds. For these a programme of introducing climber lanes will be a cost-effective means to improve local traffic conditions for all vehicles.

5.3 Road freight operations

5.3.1 This section covers a number of actions that could improve the operation of the road freight industry. A common thread for many of them is the benefit that would accrue from greater standardisation in regulations across the island of Ireland. This standardisation should be considered by the North / South Ministerial Council.

HGV speed limit adjustments

5.3.2 Speed limits outside built-up areas for HGVs in Northern Ireland are differentiated by road type and by vehicle size, whereas in Ireland there is a uniform speed limit of 80 km/h that is common across road types and HGV sizes, Table 5.1. This implies that there is considerable scope for confusion of speed limits between jurisdictions due to the differences that arise.

Table 5.1 Speed limits by road type for goods vehicles outside built-up areas

Vehicle type	> 3.5t gvw	> 2 <= 7.5 t gvw	> 7.5t gvw	Car	Car
Road type	Ireland	Northern Ireland	Northern Ireland	Ireland	Northern Ireland
Motorway	80 km/h (50mph)	(70 mph)	(60 mph)	120 km/h	(70 mph)
Dual carriageway	*80 km/h (50mph)*	(60 mph)	*(50 mph)*	100 km/h	(70 mph)
Single carriageway	*80 km/h (50mph)*	*(50 mph)*	(40 mph)	100/80 km/h	(60 mph)

Note: italics indicate where limits match in Ireland and Northern Ireland

5.3.3 There should be a recommendation to the North / South Ministerial Council for equalising national speed limits for HGVs on the island of Ireland. This would include increases in Northern Ireland from 40 mph to 50 mph / 80 km/h on high quality single carriageway roads as modern trucks have greatly improved braking technology. This would help to improve journey times but would also reduce the build up of vehicles behind trucks travelling at 40 mph and minimise risks of overtaking.

5.3.4 The EU Directive 2002/85 now requires speed limiters of 90 km/h to be fitted to all goods vehicles of above 3.5 tonnes gross vehicle weight (GVW), rather than previously just to the larger HGVs.

5.3.5 The Irish Working Group on the Review of Speed Limits (2003) recommended that a maximum speed limit of 90 km/h for HGVs should apply on motorways and dual carriageways, with a limit of 80 km/h on all other roads not subject to a lower limit. This higher HGV speed limit on duals and motorways was one of their few recommendations that was not adopted when metric speed limits were introduced to Ireland in January 2005.

5.3.6 The NRA (2006) survey of free flow speeds on the urban and rural road network of Ireland in 2005 has shown that on the National Primary road network: 83 per cent / 76 per cent (single carriageway) to 94 per cent / 88 per cent (motorway) of articulated / rigid vehicles are travelling above the current 80 km/h speed limit. On the Secondary and Regional network the proportion of HGVs above the limit is below 50 per cent.

5.3.7 The haulage industry would support an increase to 90 km/h for the Primary network in Ireland as it would improve the efficiency to their operations. It should lessen the widescale current flouting of the limits by HGVs, leading to a limit that is potentially more enforceable - this higher speed limit should then be enforced rigorously. On economic grounds, the Irish government should consider increasing the speed limit to 90 km/h on the National road network for (some or all of) motorways and dual carriageways, for (some or all types of) HGV. Road safety considerations would ultimately dictate which categories merit this increase in speed limits.[16]

16 The issue of HGV speeds on single carriageway roads was discussed by the Scottish Parliament inquiry into the freight transport system last year. It found evidence from New Zealand that increasing lorry speeds on single carriageway roads actually reduced accident levels, though this measure was accompanied by stricter enforcement of the limits.

5.3.8 Within GB, which has more detailed reporting of accident statistics than is available in the island of Ireland, the serious injury accident casualty rate per HGV kilometre on motorway is half the rate suffered on rural A roads and a third of the rate per HGV kilometre on other rural roads. This demonstrates the casualty reductions potentially available from concentrating HGV movements onto the highest quality road network. There has been a strong trend in GB over time for HGV traffic to switch onto the motorway and primary road network and away from the secondary network. Much of this has been associated with the relocation of distribution and related facilities to sites adjacent to the main arteries of the primary network. This relocation will have been encouraged by the 40 mph limit applied on single carriage roads to larger HGVs. A similar reduction in Ireland could encourage HGV usage of the primary road network. Therefore on safety grounds, the Irish government should consider lowering the speed limit on Regional roads for (some or all) HGVs to 70 km/h. The major improvements underway in creating a high quality connected National road network as shown in Figure 3.2, demonstrate that soon this reduction would not place undue burden on industry. The fact that Regional roads already have a distinct 80 km/h speed limit for cars would mean that no new signing would be required to provide clarity to HGV drivers on the speed limit in operation.

Carbon taxes / road pricing / demand management

5.3.9 Given that EU policies to reduce carbon emissions are likely before long to lead to significant increases in road costs, their potential impacts need to be considered seriously, both by governments and by industry. In July 2007 the NRA introduced a universal single electronic tag (eToll), which implies that drivers only need one tag for all tolling facilities in Ireland. This has the potential to facilitate the introduction of road charging either to ease congestion levels or to reduce carbon emissions. The topic of road charging is discussed in greater detail in the later Section 6.2 in the context of long distance international road movements for which its impacts will be greatest, while the impacts internal to the island of Ireland are summarised below.

5.3.10 For most movements internal to the island of Ireland there are currently few effective alternatives to road. This is likely to continue to be largely the case unless future carbon taxes become very high. Increases in Lo-Lo services from the minority of ports that have rail connections (e.g. Waterford and potentially Bremore (see Section 5.4) could lead to increased container movements on rail. However, given the relatively short distances encountered and the need to pay for transfer to road for the final link, even this might require subsidy equivalent to the "Sensitive Lorry Miles" funding used in the UK[17]. There are also rail capacity issues from the competition with passenger rail services and gauge restrictions, as discussed below in Section 5.4.

5.3.11 Given the limited scope for mode shift within both jurisdictions, the response to increased road costs will need to generate increased efficiency in road transport. This would entail use of larger, newer, more fuel-efficient vehicles with higher load factors and less empty running. This would lead in turn to adjustments in logistics strategies, such as: carrying higher stock levels due to fewer and larger deliveries; increased use of efficient hub-and-spoke systems for palletised goods;

17 Sensitive Lorry Miles is effectively a subsidy paid to rail freight operators for intermodal movements captured from road to reduce their tariffs by an amount equivalent to the external costs that would have arisen if these goods had instead been moved by road.

increased cooperation between transport providers to lessen empty running; a need for more comprehensive information systems on short-term transport demand, etc. However, in many instances these cost increases would eventually be passed through to customers so as to also influence their consumption patterns, though as noted below, hauliers often find it difficult to pass on additional costs to their clients. The main overall impact of carbon taxes on roads would be to reduce the consumption of carbon based fuels through reducing both HGV and particularly car traffic. In this way an indirect side effect would be to ease the growth in congestion, particularly on inter-urban rather than urban roads.

Other road topics

5.3.12 **Vehicle height restrictions.** The Irish Minister for Transport announced in early 2007 that he intends to reintroduce restrictions on truck and other vehicle heights on the road network, at a limit of 4.65 metres. This will both reduce the significant safety risk from bridge strikes as well as reducing the considerable delays to rail services that these strikes create. However, this height restriction is lower than the de facto UK restriction of 4.95 metres, where low bridges are considered to be those with a clearance of less than 5.03 metres. This will increase costs for trade to and from Ireland because access will be denied to high-cube / double-deck vehicles which have become increasingly popular in the UK in recent years and which have lower ferry rates per cubic metre of load. Accordingly, the RHA, IRHA, IBEC and FTA all have urged strongly that this restriction be rejected in the interests of open trade, uniform regulations and increased economic efficiency. Increased vehicle weight limits (payloads) would also be welcomed by these organisations. Consistency of vehicle height restrictions should be a subject for consideration by the North / South Ministerial Council.

5.3.13 **Driver shortages.** 4 out of 10 haulage companies based in Ireland were experiencing difficulties in recruiting drivers, according to a 2005 survey which was carried out jointly by Michelin's truck tyre division and the Fleet Management magazine. 32 per cent of the 150 transport managers surveyed said the driver shortage is impacting on their business and seriously affecting their ability to expand, whilst 72 per cent said they were finding it difficult to employ drivers who were native to the locality. The survey also found that almost a third of Irish fleets already employ either mainland EU or non-EU nationals as drivers.

5.3.14 The working time directive exacerbates this situation through increasing the overall demand for driver labour. As discussed previously in paragraph 5.1.4 there is a need for training schemes and career path opportunities to encourage more young people into the industry including female drivers.

5.3.15 **Haulage costs.** The main factors generating cost increases as perceived by consultees were:

- Fuel cost increases, with the added fuel duty burden in Northern Ireland causing 20 per cent dearer prices and associated difficulties in competing inside Northern Ireland with Irish hauliers with access to relatively cheaper fuel, though in practice many Northern Ireland hauliers purchase their fuel over the border;

- Working time directive impacts - compliance as yet is far from universal though the imposition of new digital tachographs will improve compliance; and
- Shortage of suitable labour, particularly within Ireland, but also to a lesser extent in Northern Ireland.

5.3.16 The response to cost pressures by local hauliers has often been to cut corners in many areas of legal compliance related to vehicle roadworthy condition, overloading, driver's hours, etc. Moves to ensure full compliance on the island of Ireland, to the extent now applied to their international movements by VOSA officials at British ports, would lead to significant upwards haulage cost pressures. Given competitive conditions in the general road haulage market, small hauliers find it difficult to recover cost increases in full from their clients. They tend therefore to buffer some of the inflationary effect of transport cost increases. Hauliers that endeavour to achieve compliance can be out-bid by "cowboys" so there are strong pressures against compliance in both jurisdictions. There should be a joint approach to the licensing of commercial vehicles and enforcement of Vehicle Standards. **The existence on the island of Ireland of different regulations and permit systems for transport movements creates many difficulties for companies operating across the island of Ireland. The North / South Ministerial Council should seek to create a common approach to these matters.** This is a topic in which there is also an East/West interest, given the movement of vehicles from the island of Ireland to Scotland, England and Wales and, **therefore, a topic that might usefully be considered within the British-Irish Council.**

5.3.17 **Fuel duty issues**. The higher fuel duty in Northern Ireland puts it hauliers at a competitive disadvantage to those in Ireland and abroad. The UK Department for Transport and the Treasury have been exploring options for restructuring fuel taxation in relation to road user charging. Although such road charging schemes are unlikely to be introduced in the short term, there is a need to examine the appropriateness of the options for Northern Ireland, as well as their wider implications for Irish hauliers on the GB land bridge as discussed in Section 6.3. It seems likely that a time-based vignette system will be introduced in the UK.

5.3.18 **Backloading.** This is an important requirement in meeting the overall transport cost for road haulage companies. As illustrated in the later Table 6.2, the total incoming Ro-Ro tonnage through Irish ports is almost 50 per cent greater than the outgoing tonnage. In 2006 for example, 34 per cent of Ro-Ro vehicles leaving Dublin port were empty, whereas only 5 per cent of incoming vehicles were empty (CSO, 2007c). Unlike the port statistics for Ireland, UK Maritime Statistics (DfT, 2007c) provide a split between accompanied and unaccompanied vehicles, which suggests that much of this East/West imbalance in tonnes relates to unaccompanied rather than to accompanied Ro-Ro. This imbalance leads to downward pressure on eastbound rates for traffic coming out of the island of Ireland which is threatening the viability of the resident transport industry whose hauliers are competing against Continental operators who have obtained goods rates for import traffic and so can compete fiercely for return traffic. While this downward pressure on outbound rates is beneficial to exporters of merchandise from Northern Ireland and Ireland, it is detrimental to its hauliers.

5.3.19 **Curfews / access control.**
Many operators have found the lorry restrictions in Dublin onerous. This when coupled with the absence of an eastern bypass to enter the port, and with M50 tolls and congestion, creates real difficulties for movements from the south.

5.3.20 **Night-time deliveries.** Communication between users and providers is not always effective. Some users have complained about difficulties in obtaining transport services outside normal business hours. Many transport operators believe that their customers' inability to accept out-of-hours deliveries is hampering their ability to cut costs and avoid congestion. There are potential synergies from bringing these groups together but the benefits to operators are generally greater than those for their individual clients, which makes it difficult to obtain widespread acceptance for out-of-hours deliveries.

5.3.21 **Centralise and improve the efficiency of providing permits for the movement of abnormal loads.** Every 1 of potentially 36 Irish local authorities must provide a seperate permit for the transit of an abnormal load. Thus causing delays and cumulative costs (€250 per permit). For example, the HMT shipping company at present employs 1 person full-time to deal with permits, while others consulted had similar experiences. In contrast, to move a large load along Northern Ireland's roads there are only 2 authorities to be informed: Northern Ireland Roads Service; and the Police Service of Northern Ireland. The ideal approach would be for the North / South Ministerial Council to consider an all-island system that requires hauliers to contact the minimal number of separate organisations.

5.4 Rail freight perspectives

5.4.1 **Rail freight service.** Rail in Ireland/ Northern Ireland has lost much/all of its freight market in recent years. The Strategic Rail Review (Booz Allen Hamilton, 2003) concluded that

"Freight services will be those that are commercially viable (full cost recovery of 'above rail' costs) and those conveyed under the auspices of direct and transparent Government-sponsored contractual agreement (e.g. train service agreement or other instrument with performance regimes and efficient cost calculations) where the net societal gains have been determined in a transparent manner using an appropriate methodology or where an incentive or State grant scheme, appropriately structured and administered, is in place"

5.4.2 The rapid growth in inter-city passenger and urban commuter services and the predominance of single track lines, except for Cork/Dublin/ Belfast, has meant that spare track capacity is in short supply, particularly on the approaches to Dublin through which most of the rail network interconnects. The Western Rail Corridor investment will however have track and signalling capable of accommodating freight as well as passenger trains. Passenger services already have priority over freight when driver shortages arise. This can impact on the reliability of rail freight services. At the current relatively low level of freight activity it may prove difficult through the future to ensure sufficient focus on investment in track, rolling stock, driver availability, etc. when competing internally with the rail passenger market, which is expected to continue to grow rapidly.

5.4.3 The carbon reduction agenda appears to be the main factor that could provide the level of financial (capital investment / subsidy?) and of regulatory support (road pricing?) that might enable rail freight to increase its market share. The allocation of the full environmental costs and benefits of road relative to rail freight might change the current competitive position and create a longer-term increased role for rail freight on the island of Ireland, though as discussed earlier, at present this does not appear likely. Nevertheless, it would be prudent to retain sufficient land and facilities for rail freight in key ports discussed below to enable it to be expanded in the future, if these changed circumstances should materialise.

5.4.4 The current perspective of the Irish Government on rail freight (see Text Box 5.5) does not suggest that significant rail freight growth is expected. The context within which rail freight is likely to continue to struggle to compete strongly has been clearly outlined in this Government statement.

TEXT BOX 5.5
RAIL FREIGHT PERSPECTIVES IN IRELAND

"Iarnród Éireann continues to pursue a policy of growing its rail freight business where real opportunities present and returning the rail freight business to profitability. Iarnród Éireann has made progress in recent years in growing the rail freight business in areas where it holds a competitive advantage over road haulage, e.g. large volumes or trainloads over long distances.

Iarnród Éireann has undertaken extensive engagement with industry and transporters but had genuine difficulty in identifying business opportunities that offer reasonable volumes of business on a regular basis. It is not feasible to run trains with one or two containers and Iarnród Éireann has not identified sufficient business, with the exception of the Ballina to Waterford service, to group a number of separate activities together to form a viable trainload. Most Irish industry is focused on 'just in time' transport which is particularly suited to our expanding and improving road network. Rail freight generally involves road movements at each end of the logistics chain and given the often short distances in Ireland it is difficult to develop a business case. The experience across Europe is no different. Rail freight activities are most economic over long distances with large volumes and where the freight to be carried is not time sensitive.

As part of the engagement with industry Iarnród Éireann works closely with port authorities to identify opportunities. Rail freight is fully liberalised since 1st January, 2007, and while no serious representations have been made to my Department for entry to the market to date, I would welcome any expressions of interest. In the absence of real opportunities or proposals for viable long term rail freight business, the development and use of fiscal incentives has not been considered."

(Source: Written Dáil answer: Minister for Transport and the Marine, Noel Dempsey, 28/06/07).

5.4.5 Rail to port integration for unitised services: Currently the scope to provide integrated rail to ship container services is limited, as summarised in Table 5.2. For operational reasons rail connections to Ro-Ro port operations are much less effective than at Lo-Lo ports because they require use of (maffi) trailers to move containers to the Ro-Ro vessel.

Table 5.2 Rail to port connections for unitised traffic

Port	Connected?	Comment
Dublin Lo-Lo	No	No connection to Lo-Lo berths as south of the river
Dublin Ro-Ro	Yes	North of the river
Drogheda Lo-Lo	No	
Waterford Lo-Lo	Yes	Long history of use of rail connection for containers
Cork Tivoli Lo-Lo	?	Further investment of €2million required
Cork Ringaskiddy	No	Not economic
Rosslare Ro-Ro	Yes	
Bremore	?	New port with rail connection potential
Foynes	No	Further investment of €20million required
Lo-Lo ports	No	But Larne Ro-Ro port has a rail connection

5.4.6 It is clear from this Table that within most of the existing Lo-Lo ports significant investment would be needed before rail container services could be provided. Given expected traffic levels, such investment may not be economically justified except for the proposed port of Bremore, which is a greenfield site adjacent to the existing Dublin -Belfast rail line. To carry unitised traffic from ports there would also be a need for investment to increase gauge clearance by increasing bridge dimensions in order to enable the larger containers that are coming into use to be carried through the rail network.

5.4.7 If the Bremore port development goes ahead, provided that the rail connection costs there are not excessive, it would be prudent for DOT to consider supporting a rail connection. This would provide scope for long term options to make use of rail, in case future conditions should change to make rail freight relatively more attractive. One possibility for consideration would be to export through Bremore the ore moved by rail from Tara mines, thus freeing up space in Dublin port for expansion of its unitised traffic and perhaps providing scope for a rail connection within Dublin port to Lo-Lo services.

5.4.8 The bulk volumes carried in the future by rail on the major lead and zinc ore shipments through the port of Dublin, will depend largely on the World market for ores and on the price competitiveness of Irish production and would not be expected to grow rapidly.

6. Transport Challenges External to the Island

6.1 Introduction

6.1.1 The location of the island of Ireland is peripheral to the EU as a whole. The relatively small overall market and its very open economies, North and South, both imply that the typical costs of transport faced by importing or exporting firms on the island of Ireland will be larger than those faced in most other EU countries.

6.1.2 The Northern Ireland Manufacturing Sales & Exports Survey (DETINI, 2007) found that for most individual manufacturing sectors, transport costs were the most commonly stated barrier to export trade outside the UK, with 45 per cent of all 1,550 respondents reporting this barrier. This illustrates the need to make sure that a cost-effective transport system is in place.

6.1.3 Both jurisdictions are effectively moving ever further from the EU centre of trade, by virtue of the series of EU extensions that have introduced many new member states from Eastern Europe into the EU. The economies of these states are expected to continue to grow rapidly post accession but these expanding markets for exports and for lower cost imports will be less accessible to firms on the island of Ireland than to firms elsewhere in the EU. This will imply that Irish goods will need to make longer, costlier than average overland movements to reach these countries.

6.1.4 These factors when coupled with the increasing importance in all economies of external trade, all point to a growing challenge for the island of Ireland in providing cost-effective transport services to European markets.

6.1.5 This Chapter reviews the issues and challenges that relate to the transport of export and import goods outside the island of Ireland. It argues that for Ro-Ro services travelling to mainland Europe there are likely to be significant increases in future costs and/or congestion levels along the key British land corridor and beyond on the mainland road network. This will encourage some traffic to switch to intermodal services: Lo-Lo from the island of Ireland, combined with rail or inland waterway services within continental Europe. It then discusses the various funding sources and measures that can be adopted to offset these transport challenges. It complements Chapter 5 by covering the Northern Ireland and Ireland port and airport sectors which are the gateways for imports and exports, as well as the road and rail service legs that take place outside the island of Ireland.

6.2 British land corridor

6.2.1 A significant part of the higher value trade between the island of Ireland and nearby Europe passes overland by lorry through GB, mainly down to the Kent ports and Channel Tunnel. The rough estimate of annual haulage of 1.5million tonnes (see Text Box 6.1) of imports, and a little lower volume for exports, shows the major importance of the British land corridor for higher value, time-sensitive trade flows to and from mainland Europe. The import volume is equivalent to more than a quarter of the total tonnes of containerised imports to the island of Ireland in 2006 from Europe plus the rest of the World combined.

6.2.2 What then are the issues that may arise in the future for the traffic passing through this corridor? Are future conditions and costs likely to improve or worsen? How will this impact on the modes of transport used?

TEXT BOX 6.1
ESTIMATES OF TRAFFIC THROUGH THE BRITISH LAND CORRIDOR

Since the early 1990s, between 30 and 45 thousand Irish registered, powered (i.e. accompanied) vehicles per annum travel to mainland Europe through the ports of the south and east of England (RoRo Survey, DfT 2007a). There are a significant further number of UK registered vehicles carrying goods between Northern Ireland and mainland Europe, though these are not distinguishable within this RoRo survey. There are also likely to be at least as many again EU hauliers carrying goods to and from Ireland and Northern Ireland. For the UK, the ratio in 2006 was 3 foreign to every 1 UK registered powered vehicle travelling to Europe, so an assumption of a 50:50 split to the island of Ireland is conservative. This methodology would give a roughly estimated total of 100 thousand vehicles per annum in each direction using the British land corridor for trade with mainland Europe. Using the observed average load of 15 tonnes per inbound Ro-Ro vehicle to the island of Ireland, this would translate to around 1.5million tonnes of imported goods from Europe using the British land corridor with perhaps a lower volume of goods travelling in the outbound direction. This estimate excludes any unaccompanied vehicle movements through the English ports and so again is likely to err on the side of conservatism.

An approximate check on this estimate can be made through use of the Irish Road Freight Survey statistics presented in Table 6.1. This shows that Irish registered powered vehicles carried almost half a million tonnes to and from European destinations. These statistics also illustrate that the 1.3million tonnes carried into Ireland by Irish registered powered vehicles (predominantly by Ro-Ro), is less than a fifth of the total inbound Ro-Ro tonnage to Irish ports in 2006 (Table 6.2). The remaining 5.7million tonnes of in-bound Ro-Ro traffic is mainly unaccompanied trailers and foreign registered powered vehicles, with a contribution also from through traffic of Northern Ireland registered vehicles and from 0.3million tonnes of imports of new and used vehicles destined for the motor trade.

IMDO (2004) using somewhat different data sources and methods estimated 1.5million tonnes of outbound Ro-Ro traffic from Irish ports using the British land corridor to Europe in 2002.

Table 6.1 Tonnage by ultimate international origin/destination to/from Ireland, by powered Irish registered vehicles 2006

	Originating from		Destined for	
Country	Thousand tonnes	%	Thousand tonnes	%
UK	4,344	90.5%	3,236	88.1%
GB	886	18.5%	779	21.2%
NI	3,458	72.0%	2,457	66.9%
Other	456	9.5%	438	11.9%
TOTAL	**4,800**	**100%**	**3,674**	**100%**

Source: CSO, Road Freight Transport Survey 2006

Note: excludes unaccompanied trailers, trade vehicles and all non-Irish registered vehicles

Table 6.2 All Ro-Ro tonnage from/to Irish ports in 2006, by foreign port of dispatch / receipt

	Received from		Dispatched to	
Foreign port	**Thousand tonnes**	**%**	**Thousand tonnes**	**%**
GB	6,670	94.2%	4,607	95.3%
Other	408	5.8%	229	4.7%
TOTAL	**7,079**	**100%**	**4,836**	**100%**

Source: CSO, Statistics of Port traffic 2006
Note: includes all accompanied and unaccompanied trailers and trade vehicles whether Irish or foreign registered

British road congestion

6.2.3 Although access to Holyhead has improved after the opening of the dual carriageway across Anglesey, many other British ports that are important for haulage to the island of Ireland still have poor access between them and the good quality GB trunk road network. Problems that have been identified by consultees include:

- Urban congestion on travel through Lancaster to Heysham; and
- Lack of reliable road links connecting the M4 to the ports of Pembroke and Fishguard (A477/A40) and connecting the Scottish motorway system to Stranraer / Cairnryan (A75/A77).

6.2.4 These final access routes to ports do not have a large local catchment population so that they are important primarily for their port traffic. This then requires cooperation with the relevant authorities in GB to ensure that these road improvements get serious consideration. This is a case where EU Structural Funding can potentially provide support because of the international trade dimension underlying these improvements in infrastructure.

6.2.5 **We recommend that the authorities in Ireland and Northern Ireland progress discussions with their local counterparts in England, Scotland or Wales, possibly through the British-Irish Council, using the funding from European Programmes such as Interreg to support individual studies leading to the funding of the required road improvements to the above mentioned ports.** This is a serious issue facing hauliers and those port authorities on the island of Ireland with services that are naturally tied by geography to these GB ports and routes - it has been mentioned regularly in our consultation. In the longer term if the quality of GB access continues to deteriorate due to the growth of local congestion, this could seriously hamper the ability of the corresponding island of Ireland port to compete with others in either jurisdiction. Any erosion of competition between ports on the island of Ireland is unlikely to be in the public interest.

6.2.6 Turning now from the local port access routes to the main trunk corridors in Britain, we see that there has been a gradual increase over the years in the level of congestion and in the proportion of the day over which it occurs on the main motorway routes, such as the M6,

M1, M4 and M25, which are used to reach the short sea crossing in Kent. As well as building the new M6 Toll route in the West Midlands, a number of motorway widening schemes have already been implemented, while more widening schemes are underway or planned. Nevertheless, in an era of substantial growth in population, incomes and car ownership in GB, the ambitious targets[18] by the UK DfT to achieve reductions in road congestion have proved difficult to achieve in practice up to now.

6.2.7 The recently published transport strategy by UK DfT (2007b) supported the recommendations of the Eddington Study (2006) on transport and the economy that DfT had previously commissioned. Rather than criss-cross the country with new links, DfT proposes a targeted approach for the most seriously congested parts of the urban, national and international networks. It argues that an innovative approach, which makes the most of existing networks through good regulation, and which sends the right price signals to users and transport providers, is likely to be just as important as further investment in new infrastructure. Infrastructure investment will sometimes be needed – but only if other options such as Advanced Traffic Management (ATM) measures[19] cannot solve the problem.

6.3 Road costs and fuel pricing

6.3.1 In order to address climate change through cutting CO_2 emissions, the DfT transport strategy recommends putting a price on carbon to ensure that businesses are faced with the full social cost of their actions. The UK government plans to cut total UK domestic CO_2 emissions by 26-32 per cent by 2020, and by 60 per cent by 2050. To help to achieve this, DfT proposes to "identify robust emissions reduction pathways for transport" but the actual measures to be implemented have not been identified yet.

6.3.2 DfT is also considering whether congestion in urban areas should be eased through congestion charging schemes that are differentiated by time of day and location. DfT has not fully committed to inter-urban road congestion charging, preferring to await the results of urban charging schemes and answers to technological and system challenges.

6.3.3 DfT is also currently investigating the feasibility of introducing a vignette scheme for non-UK based lorries that would lessen their existing strong price advantage from purchasing fuel at lower costs abroad. The collapse for UK hauliers of their competitiveness in the market for international movements has made this an important political issue. Tied in with this has been an increased emphasis in GB to ensure full compliance by foreign vehicles with UK regulations on driver's hours, vehicle roadworthy condition, overloading of vehicles, etc. The British enforcement agency, VOSA, is currently intensifying its activities particularly in the south-east of England and introducing a series of graduated on-the-spot penalties for vehicles infringing regulations. This could have a significant impact on Irish transit traffic, given the high level of infringement among Irish hauliers indicated in the statistics from VOSA. This strict enforcement in GB is in contrast to the position within Northern Ireland and especially Ireland where compliance rates for locally registered vehicles are low.

18 Target PSA 01 for the Highways Agency is to reduce the average travel time of the 10 per cent slowest journeys on key routes across the trunk road network.

19 ATM - Drivers using the UK M42 motorway can be directed to drive on the hard shoulder at times of peak congestion by hi-tech electronic signs above the carriageway. A 50mph speed limit will appear above the hard shoulder, and when it is in use, a maximum 50mph speed limit will also be applied to all lanes on the carriageway.

6.3.4 Road charging issues are certainly not confined to the UK. Although Maut the German satellite-based charging scheme for lorries hit some problems in its first year of operation in 2005, it now appears to be functioning smoothly for the 12,000 kilometres of the autobahn system, raising almost €3billion annually to fund the maintenance and expansion of transport infrastructure. Charging currently is applied to all lorries over 12 tonnes in weight and is based on (i) distance, (ii) engine class and (iii) number of axles and averages at €0.124 per kilometre. It uses an on-board unit that is supplied free to the vehicle but that needs to be installed. The alternative manual charging system, which is available for foreign vehicles occasionally entering Germany, generates only 14 per cent of the total toll income and is declining. This fully operational system acts as a demonstrator that the technology already exists to enable sophisticated charging procedures to be applied successfully, including those where the charges are differentiated by area, time of day and vehicle type in order to take account of congestion levels and environmental conditions experienced locally. The German firm Satellic is now actively seeking to market this system to other countries so that road charging for lorries could expand its coverage quite rapidly across the EU in the near future. The Dutch government has recently decided to introduce in 2011 distance-based road user charging for HGVs based on a satellite system that would enable charges to be differentiated by time, by place and by environmental factors. McKinnon (2006). reviews in detail the current range of road charging schemes in Europe.

6.3.5 At a higher level, the EU is increasing the pressure to take more coordinated and decisive action across the EU to cut CO_2 emissions across member states, which again makes future increases in road costs highly likely, though the exact form in which such cost increases would be applied has not yet been clarified. The long distance road movements between the island of Ireland and mainland Europe are exactly the types of movement that the EU wishes to encourage by carrot and stick to switch to more sustainable modes, so that significant cost increases for these movements would seem inevitable. What is uncertain as yet is: exactly when this would commence; how rapidly the cost would then be ramped up; and whether it is applied through some form of carbon tax on fuel, as part of an Emissions Trading Scheme and/or as a congestion or kilometre charge on vehicle movements.

6.3.6 A countervailing trend that could reduce road costs per tonne carried would result from increases in lorry weight and /or size limits to allow longer / heavier vehicles (LHVs). This could permit greater load consolidation and cut costs per tonne- and cubic metre-kilometre for long distance movements to the island of Ireland. The Dutch have recently approved a 60 tonne 25.25 metres LHV, the Danes are trialling them from Jan. 2008 and a UK study on the issue should be published soon. Adoption rates of LHVs elsewhere in Europe need to be monitored to ensure the competitive position of the freight industry on the island of Ireland is not undermined.

Impacts on short sea shipping demand

6.3.7 Having outlined the likelihood of major cost increases for the road legs of import and export movements to European market, we now examine the potential strategies to adjust transport and logistic systems to minimise the impacts on economic competitiveness of firms on the island of Ireland and on the costs to final consumers.

6.3.8 The primary response must be to lessen the distance of the total journey that takes place on road, while trying to maintain minimal loss of the benefits of a fast, flexible and reliable service. If cost were the sole consideration, it is likely that the goods would already be moving by Lo-Lo rather than Ro-Ro. 2 main options to switch from accompanied Ro-Ro travelling via the Kent ports by road through Europe exist.

- An unaccompanied Ro-Ro movement using a more direct land route, e.g. the Pennine land bridge from Liverpool to Immingham which has expanded to 60 Ro-Ro sailings a week to a variety of EU ports; or from Northern Ireland perhaps to use the Scottish land bridge (see Pantrak, 2004) from the west coast to the Superfast ferry service from Rosyth, now with just 3 sailings a week to Zeebrugge. These routes might still entail a significant road leg depending where in Europe the ultimate destination lies. They may also incur costs, delays and sources of unreliability at transfer points. These would tend to offset some of their direct financial cost advantages over accompanied vehicles. The extent to which these disincentives can be minimised will be governed by the improvements in operations achieved by the transport and logistics providers involved along the full chain of the movement.

- A Lo-Lo movement from the island of Ireland direct to European ports, primarily Rotterdam and Antwerp, which have regular sailings at present. This allows the option of waterway, rail or feeder container services to travel closer to the European destination before the final leg by road. The disadvantage is again the potential for costs, congestion and delays at each terminal along the way. This potential for unpredictable delays does not sit easily with efficient supply chain management for higher value goods.

6.3.9 The impacts outside the island of Ireland of increased road costs on pattern of transport of deep sea containers would be expected to be small. At present these are mainly transported on feeder ships to Rotterdam and Antwerp to be transhipped to the large vessels on the deep sea routes. The major increases in container capacity (IBEC, 2006) that are expected to be available in the UK east coast ports, may mean that these ports will become attractive again as an alternative location for the transhipment of deep sea containers destined for the island of Ireland. Lack of capacity in the UK container ports had led to a major decline in transhipment volumes in recent years (MDS, 2007).

Findings

6.3.10 Drawing these various strands together leads to the following conclusions about road transport connections to GB and particularly to mainland European markets.

- Unless technological or scientific breakthroughs change current perceptions of climate change dangers, the cost per kilometre faced by road vehicles is likely to increase significantly in future years across the EU, including the island of Ireland.

- Irish hauliers can avoid paying high fuel prices in the UK by filling their tanks outside the country. Any future switch of haulage taxation in GB from fuel duty to road user charging could significantly increase the cost of road transits across GB.

- This cost impact will bear most heavily on the longest distance road movements. This implies that European markets, especially those in the rapidly expanding eastern member states, will; become relatively more expensive to serve by road from the island of Ireland than from elsewhere.
- These cost increases may be internalised by high-value goods that have supply chains that require adherence to tight delivery schedules and for which the cost of transport is only a relatively small part of the final selling price. Though even here, changes in logistic structures may evolve to take account of these increased costs. Due to the recent evolution of the economy in Ireland and Northern Ireland, many of its exports to Europe fall within this high-value category but the imports from Europe tend to have significantly lower value per tonne.
- As always, some of these cost increases will be offset by increased operational efficiencies, through use of larger and fuel-efficient vehicles, higher load factors, less empty running, etc., as well as through adjustments to logistic systems. These responses have already been observed in Germany in response to the toll, though they have been quite marginal – especially the effects on logistics systems.
- However for lower value goods or those with greater flexibility in delivery schedules it is likely that alternatives to road transport will be actively considered.
- This implies that Lo-Lo services direct to European ports will gain some share from Ro-Ro services using the British Land corridor. For longer distance movements within the European mainland, Lo-Lo mode share will also be influenced by the lower costs available on connecting rail and inland waterway modes, which can further reduce the door-to-door costs of containerised intermodal services.
- The measurement of the scale of the future potential switch from Ro-Ro to Lo-Lo will depend critically on the level of road cost increases that are likely to emerge across the EU in the medium term future. It seems reasonable to assume that the current German average rate of €0.124 per vehicle kilometre will act as a lower bound rather than an upper bound on the levels of charging that may emerge in order to achieve reductions in carbon emissions. This measurement of impacts would also require a detailed analysis of the evolving composition of import and export trade between the island of Ireland and the EU to take account of the trend towards higher-value and lower volume goods, particularly for exports.

6.3.11 The report by IMDO (2004) provides a detailed analysis based on 2002 data of the likely impacts on Irish short sea shipping demand of the application of an extra €0.15 toll per vehicle kilometre across European roads. They found that the direct impacts on existing Lo-Lo movements would be small, except for the then relatively small volumes of trade with Eastern European countries. The impacts on Ro-Ro movements would be more significant and might support a new Ro-Ro service to Northern Europe bypassing the British land corridor. However, the importance of time and reliability to the higher value goods on Ro-Ro services might be sufficient to offset the impacts of these cost increases.

6.3.12 The policy recommendations from this IMDO report include:

- Promotion of change through providing appropriate information and research to encourage action and competition more rapidly than might otherwise be the case.
- Promotion of new routes through subsidies; the possibilities for EU funding support are discussed in the next section.
- Ensure that Irish ports have the capacity to handle the new unitised traffic generated.

6.3.13 The IMDO report also draws attention to two areas where further work was and still is needed:

- Improvements by CSO in the maritime data available for analysis, e.g. to identify actual routes used, (we would add the need to split between accompanied and unaccompanied Ro-Ro), etc.
- Carry out a detailed study of the impact on the economy of Ireland of road charging in the UK.

6.3.14 We agree on the continuing importance of all of these recommendations. Events since the IMDO report was written suggest that their proposed study should cover the economy of both jurisdictions and should analyse the effects of the application of charging and carbon taxes across the EU, not just in the UK. The Fisher Associates study (DOT, 2006) identifies one of the key unknowns affecting port investment decisions as the future growth rate of Ro-Ro traffic.

6.3.15 **A study is needed of the impacts on imports and exports from the island of Ireland of expected future major road cost increases across the EU.** This study would provide an up-to-date evidence base to guide on future short sea shipping demand and on the associated balance of port capacity requirements for accompanied and unaccompanied Ro-Ro and for Lo-Lo. The deliverable from this study would be authoritative guidance on the options and requirements for future increases in port and shipping capacity on each of Lo-Lo, accompanied and unaccompanied Ro-Ro services.

6.4 EU support for transport projects

6.4.1 In order to encourage major improvements in the service quality potentially available from the alternatives to road transport, the EC has initiated important EU funding streams that are outlined in Text Box 6.2 and Text Box 6.3.

TEXT BOX 6.2
MOTORWAYS OF THE SEA PROGRAMME

"Motorways of the Sea are indeed a new and ambitious initiative actively developed by Member States in co-operation with the public and the private sector. They represent a cost effective, energy-efficient and climate-friendly alternative to extending motorway networks on land. Both energy consumption and emissions of greenhouse gases per tonne-kilometre are lower than for any other mode of land-based transport and the investment costs for Motorways of the Sea are only a fraction of the cost of new terrestrial motorways."

Motorways of the Sea are a special feature of Short Sea Shipping and can be defined as follows:

- Motorways of the Sea are existing or new sea-based transport services that are integrated in door-to-door logistic chains and concentrate flows of freight on viable, regular, frequent, high-quality and reliable Short Sea Shipping links. The deployment of the Motorways of the Sea network should absorb a significant part of the expected increase in road freight traffic, improve the accessibility of peripheral and island regions and states and reduce road congestion.

Motorways of the Sea can be based on existing or upgraded quality Short Sea Shipping links that fulfil the above criteria or new links, with or without the involvement of Community funding.

Implementing and promoting Motorways of the Sea as an alternative to building new or upgrading existing major road highways parallel to the coast can bring important benefits.

The Community can provide funding for the planning and implementation of Motorways of the Sea through a number of financing instruments, such as the TEN-T, Marco Polo II, structural funds, cohesion funds and research and development programmes. Motorways of the Sea are also eligible for funding under the European Investment Bank and can in some regions benefit from State aid. However, at the end, Motorways of the Sea are for the industry to implement."

Source: European Commission Staff (2007) Report on the Motorways of the Sea: State of play and consultation, COM(2007) 606 final, SEC(2007) 1351. http://ec.europa.eu/transport/logistics/freight_logistics_action_plan/doc/maritime/2007_consultation_motorways_of_the_sea_en.pdf).

6.4.2 The EC has defined 4 individual Motorways of the Sea (MOS), of which the Motorway of the Sea of Western Europe is the MOS that relates to the island of Ireland. It leads from Portugal and Spain via the Atlantic Arc to the North Sea and the Irish Sea. The Commission currently are expecting 2 proposals for this MOS (a combined French-Spanish and a combined Dutch-Belgian initiative) in the 2007 TEN-T call for MOS projects.

TEXT BOX 6.3
MARCO POLO II PROGRAMME

"It aims at achieving a traffic shift or avoidance that is a substantial part of the expected yearly aggregate increase in international road freight traffic, measured in tonne-kilometres, to short sea shipping, rail and inland waterways or to a combination of modes of transport in which road journeys are as short as possible.

It will run between 2007 and 2013 with a global budget of €400million (2004 value) and will be the subject of yearly calls for project proposals. In principle, each call will be published in the last quarter of every year and be closed in the first quarter of the following year. †

It proposes to support actions to reduce congestion, to improve the environmental performance of the transport system and to enhance intermodal transport, thereby contributing to a more efficient and sustainable transport system which will provide EU added value without having a negative impact on economic, social or territorial cohesion.

5 distinct types of action will be supported:

- Modal shift actions, which focus on shifting as much freight as economically meaningful under current market conditions from road to short sea shipping, rail and inland waterways. They may be proposing start-up of new services or significantly enhance existing services.
- Catalyst actions change the way non-road freight transport is conducted in the Community. Under this type of action, structural market barriers in European freight transport are overcome through a highly innovative concept: causing a real break-through.
- Motorways of the sea actions achieving a door-to-door service, which shift freight from long road distances to a combination of short sea shipping and other modes of transport. Actions of this kind are innovative at a European level in terms of logistics, equipment, products and services rendered,
- Traffic avoidance actions integrate transport into production logistics: reducing freight transport demand by road with a direct impact on emissions.† Actions of this type shall be innovative and shall not adversely affect production output and production workforce
- Common learning actions enhance knowledge in the freight logistics sector and foster advanced methods and procedures of co-operation in the freight market. Under this type of action, improvement of co-operation and sharing of know-how is encouraged."

Source: http://ec.europa.eu/transport/marcopolo/summary_en.htm

6.4.3 The typical size of the support that was granted in Marco Polo I was €1–€2million. Out of the 56 projects financed through Marco Polo up to 2006, the only Irish involvement was a grant of €1million to EUCON in 2003 to support improved Lo-Lo connections between Irish ports and Continental Europe (Rotterdam, Antwerp, Dunkirk and Radicatel / Rouen). Since 2003 there has been no Irish involvement in Marco Polo projects. In 2004 the EC initiated a second, significantly expanded "Marco Polo" programme to operate from 2007 onwards.

6.4.4 A review of 37 of the EC's Interreg maritime and logistics projects initiated between 2000 and 2006, shows that none appear to have any significant involvement from the island of Ireland, even in directly relevant projects such as ATMOS - Atlantic Area Motorway of the Sea. Typical support from the ERDF in these Interreg studies is around €1million. Nor is the island of Ireland involved in European regional bodies with a strong transport focus such as the Atlantic Arc Commission, one of the 7 Geographical Commissions in the Conference of Peripheral Maritime Regions of Europe.

6.4.5 It appears that the island of Ireland has not been to the forefront recently in following up the EU funding possibilities for providing maritime alternatives to road transport, despite the crucial importance for imports and exports of maritime connections. The MOS funding runs to €310million in total from 2007 to 2013, subject to revision by 2010. The further funding available under the Marco Polo II programme, can be combined with the MOS financing within a single project. The funding opportunities are explained in detail in Annex II of European Commission Staff (2007). Further information specific to the island of Ireland on all forms of maritime funding support is available from the report "Funding Opportunities for the Irish Maritime Transport and Research Sectors" produced by the IMDO (2005).

6.4.6 This absence of involvement in current EU funded transport programmes, contrasts strongly with past success of Ireland in obtaining EU funding for internal transport infrastructure investment. Because of its peripheral location and the threat of major cost increases in external road transport connections, the importance of intermodal transport to the island of Ireland should make these funding sources an attractive option for operators or other bodies considering measures to improve freight transport connections from the island of Ireland to the rest of Europe.

6.4.7 **Both governments should be proactive in publicising and providing support to encourage greater involvement in European funded programmes and bodies that are focused on improving international freight transport connections to the island of Ireland.** The existence now of devolved Government in Northern Ireland should streamline progress in obtaining EU funding, **making use of the North/South Ministerial Council and the British-Irish Council as appropriate to progress joint funding applications.**

6.5 Ports and shipping

6.5.1 A number of port and shipping developments have already been discussed regarding:

- Demand growth and future port capacity provision in Section 3.5;
- Port road access link improvements in Section 5.1.10; and rail connections in Section 5.4;
- The impacts of road cost increases on the balance of growth of Ro-Ro and Lo-Lo in Section 6.2.

6.5.2 **Imbalance in freight traffic flows.** A particular problem for the island of Ireland is that there continues to be a significantly larger volume of unitised traffic imports than exports, leading to a large proportion of outgoing units remaining empty - a 2:1 imbalance is not unusual on a number of routes. This imbalance will increase overall shipping costs, through the inefficient movement of empty containers and trailers. Continuing trends towards higher value exports with lower volume seem likely to exacerbate rather than ease this problem (IMDO, 2004). Improvements in information systems and cooperation between service providers can help to mitigate but not avoid this effect.

6.5.3 **Competition between Ports.** To ensure that competitive import / export services are available to both economies North and South, it is imperative that there is growth in competition between ports in order to encourage innovation and to gain efficiencies. The major improvement in the cost effectiveness of Aer Lingus, in response to competition from low cost airlines, provides an example in what competition can achieve in the transport sector. Accordingly, the island of Ireland needs to have: a set of competing ports for Ro-Ro with good connections to accessible ports on the main corridors to GB and to Europe; as well as a set of competing ports for Lo-Lo that have good feeder connections to the main European deep sea ports. Future investment will be required to increase overall port capacity so as to ensure that active competition will continue, rather than stagnate due to the eventual lack of alternative capacity to which shippers could switch.

6.6 Air freight

6.6.1 Although in volume terms, airfreight is tiny (0.5 per cent of import/export tonnage for Ireland), Dublin Airport believes it moves 29 per cent of the monetary value of import/exports of Ireland. Regular and competitively priced airfreight services are crucial for Irish high-tech industry to thrive in an environment where much of the low-end production of its input components is carried out in the Far East. A number of shippers were actively increasing their road freight share to European hubs to reduce the high costs they were facing for airfreight. They also believed that the outsourcing of production to the East was ultimately likely to act to reduce the demand for airfreight. These developments could reduce the critical mass of demand for airfreight, thus reducing the regularity of the supply of services on offer.

6.6.2 There are 2 main airfreight categories on the island of Ireland with distinct forms of operation and markets:

- Airfreight carried in the bellyhold of passenger aircraft: Dublin is the largest carrier, with Belfast International and Shannon also specialising in this type of traffic, all serving trans-continental routes either directly or via European hubs. Small volumes of courier parcels and other urgent traffic are also carried from the remaining airports. In general the bellyhold market is expected to grow as the supply of long distance passenger services increases.

- Airfreight consignments handled by the integrated express carriers or other dedicated cargo airlines: the services for DHL, FedEx, TNT and UPS cater mainly for mail and parcels. All 4 are concentrated at Dublin and Shannon Airports in Ireland, with DHL and TNT also growing rapidly in Belfast International. These services operate on a hub-spoke basis at a UK and European level.

6.6.3 A substantial part (26 per cent of the Irish traffic) of airfreight from the island of Ireland travels by accompanied Ro-Ro to Heathrow via Rosslare to avail of the frequent direct services to a wide range of destinations that Heathrow serves. On the other hand, this overland volume makes it more difficult for carriers to maintain direct services to and from Irish airports on the island of Ireland and this also carries a service penalty for users. Routing Irish traffic via Heathrow can add at least a day to transit times. For companies in sectors characterised by short lead times and highly time-sensitive delivery this can be a significant handicap.

6.6.4 The bellyhold sector of the market within Europe has suffered from the rise of the low-cost airlines, which avoid carrying cargo so as to achieve a fast turnaround at airports. The demise of the Aer Lingus connection from Shannon to Heathrow, which has had the knock-on effects of complicating the use of Heathrow as a hub for movements from the west of Ireland. Shannon in 2008 will also suffer from the phasing out of the Shannon Stop as envisaged under the EU-US Open Skies Agreement. Accordingly, Shannon Airport is exploring new opportunities to maintain its significant air cargo volume catering for the industrial base in the corridor from Galway (healthcare) through Limerick (ICT) to Cork (pharmaceuticals), and to retain the traditional close economic links between the Shannon Free Zone and North America. Shannon Airport has specifically identified airline services to the main European Hub airports of London-Heathrow (LHR), Paris (CDG), Amsterdam (AMS) and Frankfurt Main (FRA) as being of key strategic importance to its ongoing development. Through its European Hub Airport Incentive Scheme an airline that initiates a service schedule in 2008 that maximises the connecting opportunities to Shannon for business and tourism development, will benefit from reduced airport charges over a 5-year period. The existence of regular freight services from Shannon Airport is important to many firms in the west of Ireland, thus supporting the National Spatial Strategy to counterbalance excessive growth in the Greater Dublin Area.

6.6.5 An article by Sean Barrett (2007) argues strongly against government intervention on the grounds of promotion of businesses, tourism and regional development to retain the Shannon-Heathrow service. He shows that there are many competitive alternatives to the Shannon-Heathrow service and that these are already attracting consumer support. In December 2007 CityJet and Air France announced the commencement of a new twice-daily Shannon to Paris-Charles de Gaulle business-type service. This would provide similar intercontinental connectivity to that previously available via Heathrow.

6.6.6 In contrast to Shannon, long distance passenger flights from Dublin have increased, through new services to Dubai, Bahrain and Abu-Dhabi, as well as increased services to North America. A route incentive scheme for destinations outside Europe had been available from the Dublin Airport Authority from 2005 until it was terminated in August 2007. The recent agreement on the construction of a second runway in Dublin will ease future capacity constraints there, though there has been some uncertainty over future cargo terminal facilities in Dublin Airport.

6.6.7 An analogous now discontinued Northern Ireland Air Route Development fund has helped to introduce a Continental service from Belfast International to Newark. The creation of an Aer Lingus hub at Belfast International will increase the competition within the air market on the island of Ireland. The curfew restrictions on flights in the George Best Belfast City airport affect its ability to provide appropriate late night services to Heathrow, whereas Belfast International has no such restrictions. Belfast international has a large landbank for future expansion. Its air cargo forecasts indicate 69,000 tonnes of flown freight and mail per annum by 2015, 109,000 tonnes by 2030. They also expect that after 2015, improvements in the road access to the M2 and probably M1 motorways would be needed.

6.6.8 Whereas Aer Lingus operates all year, US carriers Delta/American/ Continental and US Airlines operate on a seasonal basis with severely reduced numbers of flights in winter. This generates a shortage of freight capacity in the key late autumn period. Aer Lingus think forwarders/shippers should pay more attention to this fact and recognise the company's commitment to new investment and year round services.

6.6.9 Airfreight services will be very vulnerable to future oil price rises and to any correction of the current fuel tax anomaly that exempts aviation kerosene from tax, despite the fact that CO_2 emitted at high altitude has twice the global warming potential of surface emissions.

7. Key findings and recommendations

Understanding Freight Growth

Current official projections for freight transport growth are much lower than the recorded recent growth in movements through ports and on roads.

The observed rate of growth in both car and HGV traffic on roads in Ireland and of unitised traffic through the ports, North and South is running at a rate close to double that assumed in the various forecasts that are currently being used by government to plan infrastructure investments in Ireland. Northern Ireland's flat 2 per cent growth in road use also seems conservative.

The simple reason for this underestimation is that the underlying assumptions on which the projections were originally constructed have changed considerably. Most significant is the upward revision to population growth forecasts that will inevitably induce higher freight demand. Evolving best practice in Europe is towards better data recording, supporting more complex models, to provide the necessary evidence base for long term transport planning.

In the absence of reliable forecasts the evidence base does not exist to adequately prioritise freight needs within transport planning. This has implications for the utilisation of our existing stock of infrastructure and for future investment in our port capacity and shared road network. Examining the current investment strategies in Northern Ireland and Ireland in light of the higher revealed freight movements, points to certain gaps and an overall need to expedite delivery of strategic transport projects.

Recommendation 1: The forecasting tools that are used to estimate future capacity requirements and to assess competing investment schemes need to be updated to take account of increases in underlying population growth projections. To improve the effectiveness and efficiency of the substantial planned investment on transport infrastructre the forecasting methodologies need to be improved to bring them in line with best practice (See Section 3.3)

Port Capacity

Ports are the nodal points through which the island of Ireland connects with the global economy. In relation to ports there are 2 issues: **capacity** and **connectivity**. Outside of ports the movement of freight is impeded by **city congestion** and the state of completeness on the **inter-urban road network**. Underlying these points is the utilisation of transport infrastructure, the **regulation of the freight industry** and the **provision of a skilled workforce**.

Port capacity is currently stretched and will need to expand in the medium term to cater for continued freight growth. The Department of Transport Ireland (2006) commissioned a report from Fisher Associates to asses the future seaport capacity requirements for unitised trade on the island of Ireland. Working on the normal scenario, Lo-Lo would effectively be fully utilised by 2014 while an approximate 9 per cent increase on 2005 Ro-Ro capacity would also be required. It seems likely that additional capacity, for both Lo-Lo and Ro-Ro, will be needed by this time if not beforehand.

Although some uncertainty exists regarding future economic growth in Ireland, most forecasts predict a short term dip in 2008 returning to strong economic growth thereafter[2]. Fisher's normal growth scenario was based on 4.7 per cent annual GDP growth to 2014. The ESRI 2005 medium term review forecast that 4.8 per cent growth in GDP to 2015 would represent a high growth scenario. To date the high growth forecast has been conservative and it would seem that, a short term correction not withstanding, economic growth will continue to propel freight increases. Northern Ireland will also contribute to demand with real GVA growth of 3 per cent predicted for 2007-2008.

For both Ireland and Northern Ireland the upward revision of population projections to 1.8 per cent and 0.7 per cent per annum to 2016 should help sustain a higher trend in import volumes and the movement of goods.

Observed growth rates for unitised traffic in Ireland in 2005 and 2006 ran at double those predicted by the Fisher normal growth scenario. Similar levels of growth in container traffic through Northern Ireland have also been recorded during the same period. While over a short time span, this does indicate that the island, North and South is currently registering high growth in freight movements. Recently published figures for 2007 by Dublin Port suggest this trend has continued.

The need for extra capacity has been recognised by the port sector and major expansion plans are underway. It seems clear that expansion will be privately financed, both governments should facilitate this through timely planning procedures and supportive infrastructure that connects ports to the wider transport network.

There is inevitably a delay of some years between approval being given for a major new port facility and the date when it becomes fully available for use. Major long term damage would be caused to both economies if there was an interim period with inadequate port capacity for the import and export of unitised goods. Without spare capacity within the port system there will be no effective competition and little pressure to control prices or improve service levels in individual ports. The resulting price increases and congestion delays experienced in ports would impact on the competitiveness of exporting firms and on their ability to serve existing markets, causing serious potential long term economic consequences for the island of Ireland.

Recommendation 2: Unitised port capacity on the island must be expanded. Belfast Port has set a target of double capacity by 2020. Other ports have similar ambitions. These need to be delivered, particularly the development of Bremore new port, the Lo-Lo expansion in Dublin port and the Cork Lo-Lo Terminal in Ringaskiddy. Planning permission affecting their expansion needs to be progressed rapidly. (See section 3.5)

Decisions on investment need to take account of the worldwide move towards larger container vessels that call at fewer and larger ports with greater depth. A similar trend in increasing vessel size also applies to feeder vessels. Future investment must ensure that larger vessels can be accommodated and that freight can be transferred readily onto the wider transport network. This emphasis towards concentration needs to be counterbalanced by the desirability of competition to control prices, improve quality of service, as well as to serve the natural hinterlands of different parts of the island of Ireland. (See Section 3.5)

2 Davy Stockbrokers forecast 2% this year, returning to a potential growth rate of 3.5-4% for 2009-1011.

Port Connectivity to the Road Network

For ports to function effectively they must link seamlessly to the inland network. Particular bottlenecks exist in getting lorries in and out of ports, impacting on efficiency and the wider community. Given the significance of the land bridge to Europe, similar issues facing a number of key ports on the west cost of GB merit a co-operative East-West approach.

Recommendation 3: Improve local access routes adjacent to a number of ports / airports. These are: Belfast Port (York Street/Westlink junction); Belfast International Airport (upgrade road connections to M1 and M2); Warrenpoint (Newry Southern Relief road); Larne (full dualling of the A8); Rosslare (port access road and complete the N25); Drogheda (Northern and Southern Relief roads) and Cork (road system around the Jack Lynch Tunnel and N28 to Ringaskiddy). Though a number of these routes are contained in investment plans, it is important to implement these improvements early enough to support the rapid expected growth in future port traffic. (See Section 5.2)

British land corridor

A large proportion of the higher value trade between the island of Ireland and Europe (approximately 1.5million tonnes of imports and a little lower volume for exports) passes overland by lorry through GB, mainly down to the ports of south-east England and the Channel Tunnel. This relies on the quality and usage cost of the infrastructure in GB.

A lack of reliable road links to the ports of Pembroke and Fishguard (A477/A40), Heysham (construct Lancaster by-pass) and Stranraer / Cairnryan (A75/A77) has been identified. This is a serious issue facing hauliers and those ports on the island of Ireland which are geographically tied to these routes. This was mentioned regularly during the consultation. In the longer term, if the quality of access continues to deteriorate due to the growth of local congestion, this could seriously hamper the ability of the corresponding port, North or South to compete with others on the island of Ireland. Any erosion of competition between ports on the island of Ireland is unlikely to be in the public interest. (See Section 6.2)

Recommendation 4: Cooperation with the authorities in England, Wales and Scotland is required to ensure that these improvements are prioritised - EU structural funding could also be sought for what are strategic international rates. This might best be taken forward within the machinery of the British-Irish Council. (See Section 6.2)

Impact of City Congestion

Beyond the immediate access routes to ports is the broader issue of congestion in the major cities in which the strategic ports are located. Congestion in our cities is a critical issue for the delivery and export of goods, acting as a thrombosis to the rapid circulation of goods within the economy.

There is a strong likelihood of continuing congestion in and around Dublin, particularly on the M50, which must be used to access the key gateway of Dublin Port. As well as the current M50 widening, other options that should be considered to lessen congestion impacts include the following:

Recommendation 5: Construct an eastern port access route to avoid the need for lorries from the south and south west to circle Dublin on the congested M50. If this scheme were not to proceed, then as a fall-back reduce for some or all of the day, the current restrictions on lorries passing from the south through the city to the port.

Recommendation 6: Apply demand management / pricing policy on the M50 in congested periods to discourage excess car traffic volumes but using technology to ensure it does not generate bottlenecks at toll booths.

Current congestion problems are often exacerbated by the delays associated with major construction works.

Recommendation 7: Reorganise the construction work on road widening, particularly on the M50, to reduce its impact on the throughput of traffic during congested periods. In Ireland night time construction, in line with international best practice, should be considered. A good positive example of best practice in this regard would be the planning and delivery of improvements to the Westlink in Belfast. (See Section 5.2)

Inter-Urban Road Network

While ports are of critical importance to the ability to import and export, these only form a small proportion of the total freight movement on the island of Ireland. Of critical importance to all freight is the quality of the major inter-urban routes. In order to ensure the needs of the freight industry are taken into account when planning future investments both governments could consider:

Recommendation 8: Establishing Freight Quality Partnerships to deliver freight solutions at a local level, on issues such as night-time curfews, no car lanes, drivers' rest areas and bridge and road strengthening. Examples of how this might be done are provided by the Belfast Freight Quality Partnership and by the Freight Action Plan for Scotland (Scottish Executive, 2006). (See Section 5.1)

Within Ireland the perception is that Transport 21 will deliver the necessary road connectivity. Care must be taken that, in line with the experience of the M50, a good supply of infrastructure does not induce demand resulting in congestion. Moreover, as Dublin acts as the central hub in the wider inter-urban network, congestion there has a national and indeed island wide effect.

Recommendation 9: Give go-ahead for the proposed Leinster Outer Orbital route (Drogheda - Navan-Naas), which is not currently in Transport 21, in order to relieve pressure on the M50. Adopt road use pricing policies and land use planning to discourage urban sprawl around it and support the development of national distribution centres adjacent to this route.

The planned rate of road investment in Northern Ireland needs to quicken in order to support the Northern Ireland's Executive's stated aim of balanced economic development. Given its peripheral locality and the associated high transport costs that accrue to companies and consumers, there is great urgency to complete road investments in the Key Corridors of Northern Ireland sooner than is currently indicated in the recent Draft Investment Strategy, 2008-2018 (Northern Ireland Executive, 2007).

This is necessary to enable enterprises in Northern Ireland to cooperate and compete effectively both with those in Ireland and in other regions in GB. It would also provide the help that freight transport companies need to meet the increasing demands of customers with respect to: more frequent deliveries; the increasing use of Just-in-Time (JIT) systems; reduced stock levels combined with more global sourcing which increases the requirement for delivery reliability; and in general much more streamlined supply chain management.

Recommendation 10: Northern Ireland should accelerate the pace of investment in key road corridors for freight and expedite the completion of schemes to dual the A5, A6 and A8, before congestion and delays escalate and add to (in part due to growth in Irish based traffic) the relative peripherality of western counties.

In order to maximise the benefits from the roads investment programmes in Ireland, it is important that road upgrades be complimented by improvements in traffic and congestion management. This is an area where there have been major improvements in Britain in recent years, providing free, real-time information to users of England's network of motorways and trunk roads, allowing them to plan routes and to avoid areas currently indicated to be congested.

Recommendation 11: There is considerable scope for developing similar technology-based solutions on an all-island basis. The potential in this regard should be considered in detail by the 2 Governments. (See Section 5.2)

EU Policies

Road Pricing / carbon taxes within the island of Ireland

Within the short to medium term, EU policies to reduce carbon emissions are likely to lead to significant increases in road and air transport costs.

Given the limited scope for modal shift within the island of Ireland, the response to increased road costs will need to focus on improving efficiency in road transport and logistic structures. The main overall impact of carbon taxes on roads would be to reduce the consumption of carbon based fuels through reducing both HGV and particularly car traffic. In this way an indirect side effect would be to ease the growth in congestion, particularly on inter-urban roads.

Road Pricing/ carbon taxes within the EU

This cost impact will bear most heavily on the longest distance road movements. However, future increases in lorry weight and /or size limits to allow longer / heavier vehicles (LHVs) could permit greater load consolidation and cut costs per tonne- and cubic metre-kilometre for long distance movements to the island of Ireland[3], alleviating a part of these cost impacts.

Recommendation 12: Adoption rates of LHVs elsewhere in Europe need to be monitored to ensure the competitive position of the freight industry on the island of Ireland is not undermined.

For medium value goods or those with flexibility in delivery schedules it is likely that alternatives

3 The Dutch have recently approved 60 tonne 25.25 metres LHV, the Danes are trialling them from Jan. 2008 and a UK study on the issue should be published soon.

to the current use of road transport will be actively considered. This implies that Lo-Lo services direct to European ports or unaccompanied Ro-Ro routes that economise on road distances will gain some share from accompanied Ro-Ro services using the British Land Corridor down to the Channel ports.

There is a need to investigate the feasibility of new international services that are less road-intensive. There is substantial EU funding available through the Marco Polo II, Motorways of the Sea and other European Commission (EC) programmes which actively encourage such initiatives. Surprisingly, to date, little use of this funding appears to have been made on the island of Ireland, when compared to elsewhere in Europe, despite the very high dependence of both jurisdictions of Ireland on its maritime connections.

Recommendation 13: Both governments should be proactive in publicising and providing support to encourage greater involvement in European funded programmes that are focused on improving international freight transport connections to the island of Ireland, making use of the North/South Ministerial Council and the British-Irish Council as appropriate to progress joint funding applications. Otherwise the impacts of future increases in international road costs could prove problematic. (See Section 6.3)

Regulating the Freight Industry

The findings and recommendations of this report are designed to enable governments and the freight industry to take action to develop freight transport within the island of Ireland with a consequent contribution to economic growth and industrial development. As such, there could be value in their being examined by the North/South Ministerial Council which has an important role in considering strategic transport issues within the island of Ireland.

The findings, however, have a relevance beyond the island of Ireland in that they raise issues which relate to links between the island of Ireland, GB and beyond. There could also be a case for these issues to be considered within the framework of the Transport sector of the British – Irish Council (the sector for which Northern Ireland is the lead administration) to explore the scope for appropriate action to be taken.

With all ports directly competing on an all-island basis and greater synergies in the road networks North and South, a joint approach to certain regulatory issues could provide mutual benefit.

Recommendation 14: Adopt common vehicle height restrictions based on the UK de-facto limit of 4.95 metres. The proposed lower limit of 4.65 metres in Ireland would increase costs for trade to and from that jurisdiction because access would be denied to high-cube / double-deck vehicles which have become increasingly popular in the UK and which have lower ferry rates per cubic metre of load.

Recommendation 15: National speed limits for HGV should be equalised on the island of Ireland. This would include increases in Northern Ireland from 40mph to 50mph / 80kph permitted on high quality single carriageway roads. On economic grounds, the Irish government should consider increasing the current HGV speed limit from 80 to 90kph on the national road network

for (some or all of) motorways and dual carriageways, for (some or all types of) HGV. On safety grounds, the Irish government should consider lowering the speed limit on regional roads for (some or all) HGVs to 70kph. Through encouraging HGV movements in Ireland to switch to the highest quality roads, the combined result of these speed changes should generate safety gains (provided that the limits are then rigorously enforced) because such roads have the lowest accident rates per vehicle km.

Recommendation 16: Centralise and improve the efficiency of providing permits for the movement of abnormal loads. Currently in Ireland, each of the 36 local authorities through which an abnormal load passes, needs to provide a separate permit, causing delay and cumulative costs. In contrast, to move a large load along Northern Ireland's roads requires only 2 authorities to be informed: Northern Ireland Roads Service (NIRS); and the Police Service of Northern Ireland (PSNI). The ideal approach would be for the North/South Ministerial Council to consider an all-island system that requires hauliers to contact the minimal number of separate organisations.

Recommendation 17: There should be a joint approach to the licensing of commercial vehicles and enforcement of Vehicle Standards. The response to cost pressures by local hauliers has often been to cut corners in many areas of legal compliance related to vehicle roadworthy condition, overloading, driver's hours, etc. The existence in both jurisdictions of different regulations and permit systems for transport movements creates many difficulties for companies operating across the island of Ireland. This is an area in which there is also an East/West interest, given the movement of vehicles from the island of Ireland to Scotland, England and Wales and, therefore, an area which might usefully be considered within the British-Irish Council. (See Section 5.3)

Provision of a Skilled Workforce

The freight industry has identified a particular need to raise the professional image and profile of the industry. To address this issue the Chartered Institute of Logistics and Transport (CILT), has been working to improve the skills base in logistics and to enhance its image. There is also a need for continuous education to develop the wider business skills appropriate for a contemporary service sector, as well as for safety and energy efficiency. Lessons can be learned from Skills for Logistics[4]:, the sector skills council for logistics in the UK, which provides a wide range of apprentice training opportunities to younger people entering the industry. It is developing training units that will enable the UK Council for the Curriculum, Examinations and Assessment to approve Transport as an additional occupational area, ideally leading to a NVQ Level 2 Transport qualification. This would potentially help recruitment to address the shortage of drivers.

Recommendation 18: Investigate the scope for increased joint provision of certified and recognised training at all levels, across the island of Ireland, making use of the North/South Ministerial Council. (See Section 5.1)

4 See www.skillsforlogistics.org/en/ for further details of the activities of the Skills for Logistics Council

Further Research

We have identified 2 areas where the evidence base for important future decisions is weak and for which future analytic studies should be carried out.

Recommendation 19: A study is needed of the impacts on imports and exports from both jurisdictions of expected future major road cost increases across the EU. This study would provide an up-to-date evidence base to guide on future short sea shipping demand and particularly on the balance of the associated future port capacity requirements for accompanied and unaccompanied Ro-Ro and for Lo-Lo. This study should be an all-island study because of the unified market for unitised shipping. The deliverable from this study would be authoritative guidance on the options and requirements for future increases in port and shipping capacity on each of Lo-Lo, accompanied and unaccompanied Ro-Ro services (See Section 6.3).

Recommendation 20: Create an up to date, behaviourally based modelling system for the forecasts used for longer term strategic planning of both the Northern Ireland and Ireland road systems. This model would forecast the joint influences on traffic volumes across the road network of: improved road infrastructure; and of potential future charges on lorries and cars that aim to reduce CO_2 emissions. Ideally it would be an all-island study to ensure that the vehicle movements across the border were consistent, particularly those for freight. This model needs to examine cars, vans and lorries in tandem, since they compete for the same road capacity. This model would provide improved estimates of local traffic growth and would identify areas subject to future congestion problems for passenger and freight traffic, for which suitable policies or investments could then be examined further. (See Section 3.3)

Recommendation 21: To support the above studies and to provide a sound evidence base on which to make future policy and investment decisions for both jurisdictions, there is need for a number of improvements to the assembly and publication of statistical data both in Northern Ireland and across the island of Ireland. These would provide greater consistency in statistics across the island of Ireland and would address particular weaknesses such as the absence of published information explicitly distinguishing van traffic, which is likely to be a significant and increasing future source of traffic growth in congested areas. (See Text Box 5.1)

Conclusions

Efficient freight transport is essential to the economy and to the quality of life across the island of Ireland. Economic growth generates increasing demand for freight transport. Goods have to be moved freely, reliably, efficiently to meet business needs, while minimising the impact on safety, on other transport users and on the environment.

This study has set out to understand the opportunities, constraints and key issues for freight on the island of Ireland. Through review and analysis, a baseline to help understand the trends of freight growth has been built up. A wide range of stakeholders have been consulted seeking their views on the current freight transport system, future trends, and the key policy objectives

that should be addressed by government. Supported by the consultation and analysis, we have put forward a number of priority options for consideration in improving the provision of freight and logistics services across both jurisdictions have been put forward.

The most critical of these are:

- to improve data collection and forecasting of freight transport;
- to increase port capacity and target bottle necks in the road network;
- to co-operate North-South and East-West to regulate and support the freight industry; and
- to involve hauliers in transport planning.

The economy of Ireland has grown rapidly in the past and expectations are that this growth will continue, though probably at a less extreme rate. Economic and population growth in Northern Ireland have also recently started to accelerate recently. It is crucial to ensure that an efficient freight and logistics system is in place on both sides of the border, in time and with sufficient capacity, to encourage rather than to constrain this expected economic growth.

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9. Glossary and Abbreviations

Term	Explanation
3PL	Third Party Logistics provider - manages the logistics for manufacturing and retail firms
CBI	Confederation of British Industry
CSO	Central Statistical Office, Ireland
CSRGT, NI	Continuing Survey of Road Goods Transport, Northern Ireland - published annually by UK Department for Transport
DETINI	Department for Enterprise, Trade and Investment, Northern Ireland
DfT	Department for Transport, UK
DOT	Department of Transport, Ireland
DRDNI	Department for Regional Development, Northern Ireland - with responsibility for transportation planning in Northern Ireland
GDP	Gross Domestic Product: represents total expenditure on the output of final goods and services produced in the country
GNP	Gross National Product: is GDP plus net factor income from the rest of the World - i.e. it excludes the net repatriation of profits and dividends to non-residents
GVA	Gross Value Added
gvw	Design gross vehicle weight / maximum laden weight
HGV	Heavy Goods Vehicles - road vehicles above 3.5 tonnes gross vehicle weight
kms	Kilometres
km/h	kilometres per hour – speed
IBEC	Irish Business Employers Confederation
I-O Table	An Input-Output matrix measuring the pattern of inter-relationships of trade between economic sectors
IMDO	Irish Maritime Development Office, Dublin
LGV	Light Goods Vehicles - light goods/commercial vehicles of up to 3.5 tonnes gross vehicle weight
Lo-Lo	Lift-on Lift-off of containers on vessels

Lorry	Usually denoting heavy goods vehicles above 3.5 tonnes gross vehicle weight, though detailed definitions from different data sources vary
Lorry-km	A lorry travelling over the distance of one kilometre
MOS	Motorways of the Sea, EC funding programme
mph	Miles per hour – speed
NRA	National Roads Authority, constructs and operates the Irish strategic road network, excluding concessionary or PPP schemes
O-D matrix	A matrix of movements from an origin zone to a destination zone
RDC	Regional Distribution Centre for goods
Ro-Ro	Roll-on Roll-off (powered goods vehicles or unaccompanied trailers on ferry services)
RSNI	Roads Service Northern Ireland: constructs and operates the Northern Ireland strategic road network,
Tonne-km (tkm)	One tonne of freight moved over a distance of one kilometre
TEU	Twenty foot Equivalent Unit - standard common measure of intermodal containers, which may in practice come in many different sizes.
Tonnes lifted/ dropped	Freight tonnes loaded onto / unloaded from a vehicle or vessel
Unitised	Freight conveyed in containers or hauled on standard trailers
Van	Usually denoting light goods vehicles up to 3.5 tonnes gross vehicle weight, though detailed definition from different data sources vary
WTD	Working Time Directive of the EU, which governs maximum driving hours and the requirements for breaks

Appendices, Figures & Tables

Appendix A
List of Stakeholders Interviewed

Consultees

Londonderry Port

Port of Belfast

Port of Larne

Warrenpoint Harbour Authority

Drogheda Port

Dublin Port Company

Port of Rosslare Euro Port

Port of Waterford

Port of Cork

Shannon Foynes Port Company

Irish Continental Group (Eucon)

Irish Ferries

Norfolk Line

P&O Ferries

Stena Line

Samskip

Hamilton Shipping

IFS Global Logistics

DHL Freight

Nolan Transport

HMT Shipping

DSV Ireland Limited

Iarnród Éireann

George Best Belfast City Airport

Belfast International Airport

Dublin Airport

Shannon Airport

Menzies Aviation

RHA Ireland (Dublin)

RHA UK

Freight Trade Association

Irish Maritime Development Office

Shannon Development

Analog Devices Inc. (electronics)

Avid (digital media)

Cemex Ireland (construction materials)

Dairygold (food products)

Dell (electronics)

EMC (electronics)

Glanbia (food products)

Re3 Group (waste)

Sanofi Aventis (pharmaceutical)

Tesco (retail)

Tyco Healthcare (pharmaceutical)

Irish Small & Medium Enterprises Association - ISME

Corus Steel (steel distribution)

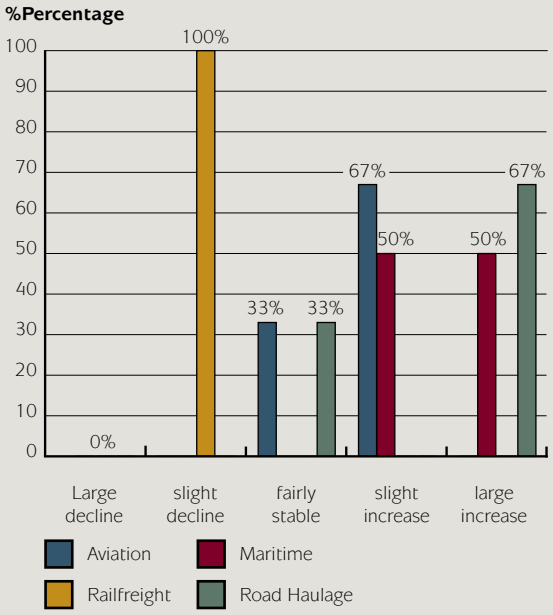
SPX Dollinger (filtration equipment manufacture)

Appendix B
Results and Analysis from the Consultation

B.1 Interviews with transport providers

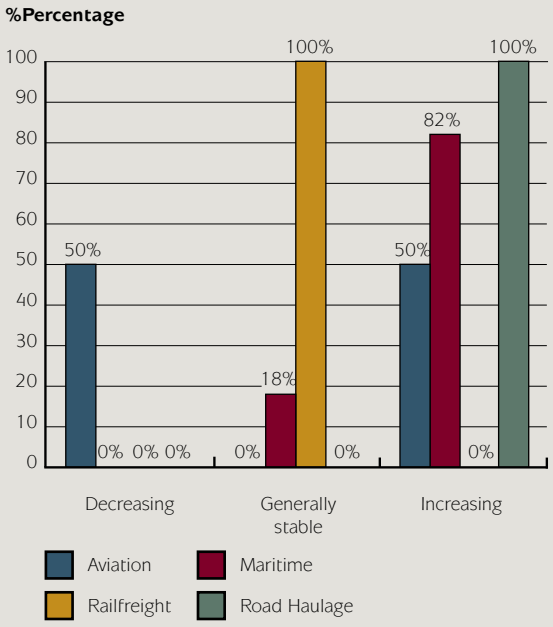
B.1.1 The responses of transport providers (carriers) to the attitudinal scale questions on their perceptions of various aspects of freight are summarised in the following Figure 9.1 to Figure 9.7. The findings from the open-ended questions have been examined in the main part of this report.

Figure 9.1 Expected trends in freight transport demand by mode



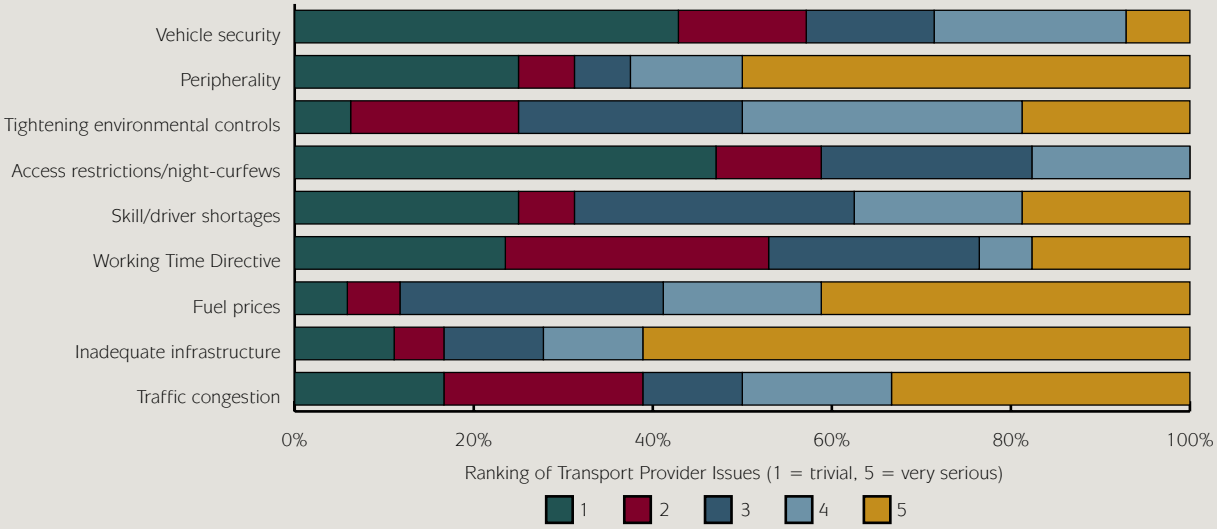
B.1.2 The responses to this question indicate that whilst overall freight traffic is expected to increase over time, this growth is not uniform across different transport modes. A number of respondents in the road haulage and shipping sectors forecast large increases in demand, which would continue the trend of the past 5-10 years. This contrasts with the aviation sector which forecasts a slight increase or stable level of demand, while rail freight predicts its decline in market share will continue.

Figure 9.2 Trends in costs of transport services by mode



B.1.3 Whilst costs are perceived to be rising across much of the transport industry, this appears to be felt most in the road haulage sector with many of the reasons summarised in Figure 9.3. Maritime costs are also rising, whilst there is a mixed picture for aviation.

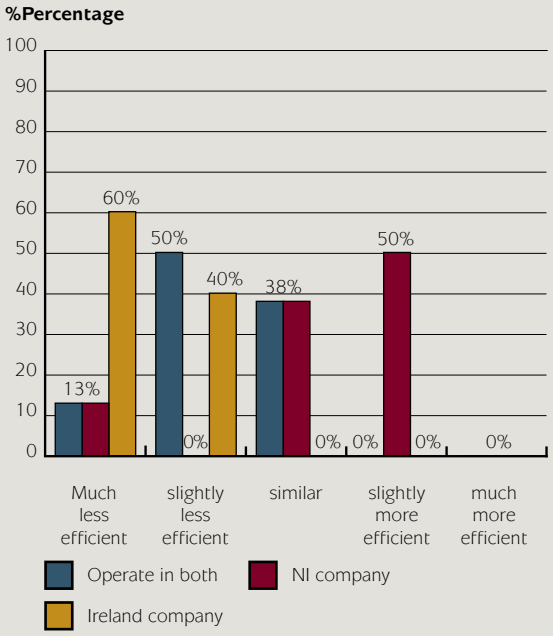
Figure 9.3 Issues faced by transport providers



B.1.4 Inadequate infrastructure, fuel prices, peripherality and traffic congestion are ranked as the most serious issues faced by the transport providers on the island of Ireland. These issues affect all transport sectors although they impact on road haulage the most, particularly in Ireland. Some accept that the peripherality of the island of Ireland is a fact of life that cannot be changed, though they understand that it imposes transport cost and quality of service challenges to importers and exporters.

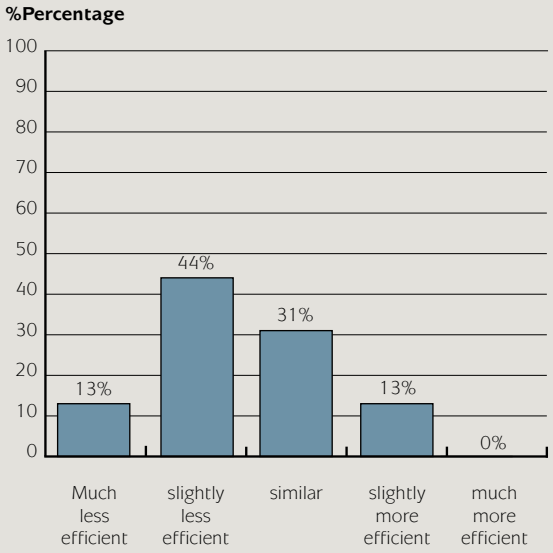
B.1.5 Overall, access restrictions / curfews and vehicle security were ranked the least important issues although both issues were ranked as more serious if responses from road hauliers' alone are considered. In particular, the daytime requirement for access permits for vehicles with 5+ axles inside the Dublin cordon have been cited as an issue for some.

Figure 9.4 Transport infrastructure compared to Europe



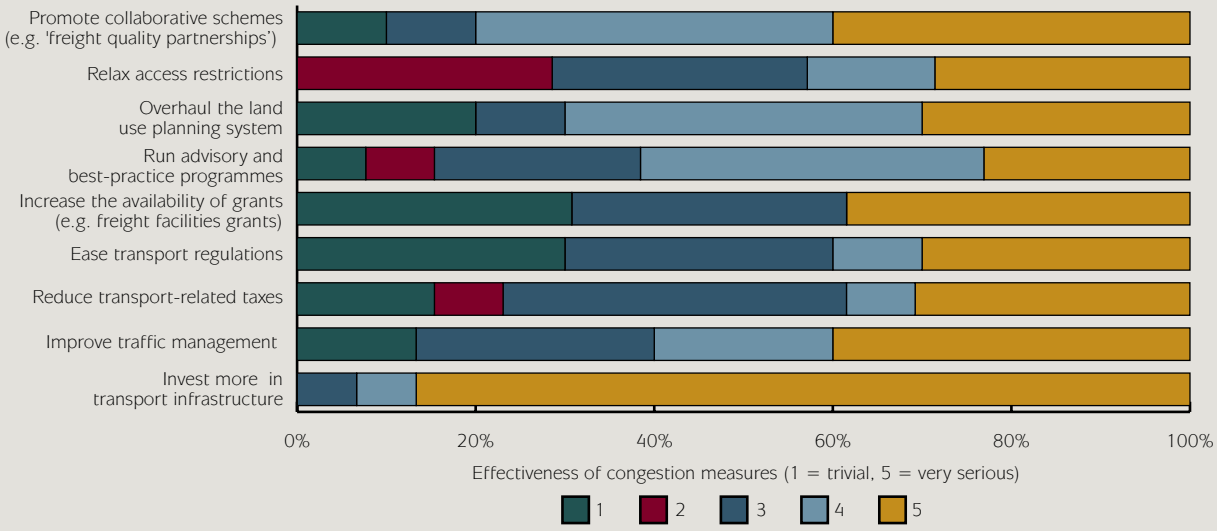
B.1.6 Whilst no response ranked the island of Ireland to have much more efficient transport links than those of the rest of Europe, Northern Ireland is considered to compare better than Ireland. 60 per cent of companies that are based only in Ireland consider the country's internal links are much less efficient than those elsewhere in Europe. This is understandable given the problems currently encountered on the road system in Ireland, which in some places (e.g. M50, Dundalk to Newry) are exacerbated by the upgrades and new construction that are currently underway. In 5 years time when many of these new road investments will have come on stream in Ireland, the perceptions may be different.

Figure 9.5 The island of Ireland's external links compared to Europe



B.1.7 The responses to this question indicate that the island of Ireland's connectivity is slightly less efficient than that experienced elsewhere in Europe. This is likely to be related to the island of Ireland's geographic peripherality within Europe and its reliance on shipping for international transportation. The limited direct shipping destinations from the island of Ireland may be reflected here.

Figure 9.6 Effectiveness of measures to alleviate congestion or its impacts on transport providers

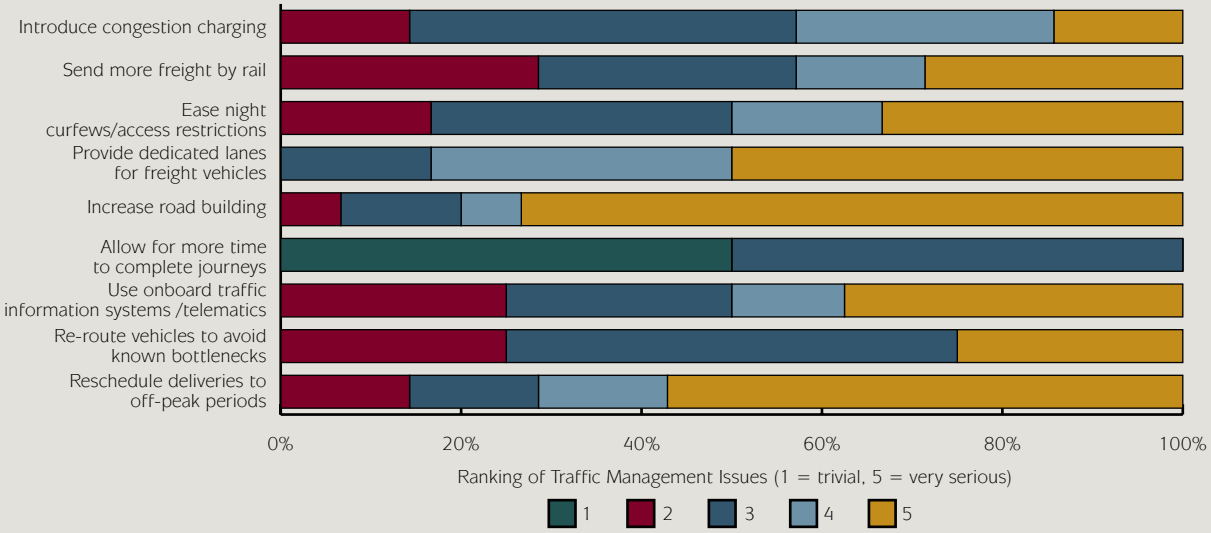


B.1.8 Road building, rescheduling deliveries and provision of dedicated motorway freight lanes were ranked at the most important responses to ease the impacts of congestion. The top ranking of road building probably includes both the disruption of road construction and the benefits to journey times from the greater capacity, once the road enhancement is complete.

B.1.9 Allowing more time to complete journeys and the introduction of congestion charging were ranked the lowest.

B.1.10 Sending more freight by rail equally attracted both high and low ranking responses. This reflects rail's ability to remove lorries from the road network (with consequential congestion and environmental benefits) being limited to only a few sectors (especially as few ports are rail connected).

Figure 9.7 Transport issues for government



B.1.11 Investing to improve infrastructure is seen as the most important role for government relating to transport. Other issues with high ranking are: providing freight grants, updating the planning system and improvements to traffic management. These direct actions are all rated as more important than softer initiatives such as: running advisory / best-practice programmes.

B.2 Interviews with users of transport

B.2.1 The responses of the users of freight transport (shippers) to the attitudinal scale questions on their perceptions of various aspects of freight are summarised in the following

General Questions about Freight/ Logistics Operations

- logistics / supply chain management are critical to business model;
- there are other factors (e.g. tax, global corporate strategies, labour costs) that are more important to the continuing presence of the business in the island of Ireland;
- future freight requirements for multinationals may depend on HQ decisions about role of Irish operation in global supply chain;
- biggest change is increasing service requirements (particularly speed) of customers;
- transport costs are generally increasing; and
- detailed shipping decisions made by carrier not shipper.

Logistics and Supply Chain Trends and Issues

- outsourcing and geographical spread of suppliers/customers are the key issues affecting future requirements;
- reverse logistics / environmental issues becoming more important;
- good competition for 'pure haulage'; not so much for other logistics services;
- choice of 3PL and relationships are critical; and
- Irish infrastructure is very poor relative to other key EU countries (resulting congestion makes time planning difficult).

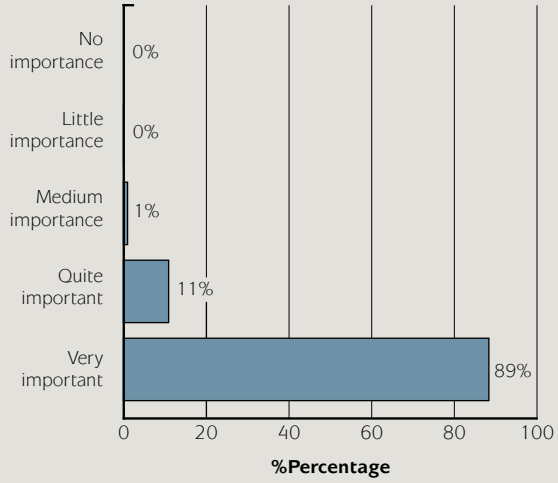
Role of Government

- more investment required in critical infrastructure; and
- reduce regulatory burdens.

B.3 Results from the e-survey

B.3.1 This e-survey has obtained 130 responses that are summarised below. These responses were mainly from freight transport customers such as logistics companies, multinational distributors and retailers.

Figure 9.8 Importance of freight transport for competitiveness



B.3.2 Almost all respondents agree on the importance of a high quality freight transportation system to ensure competitiveness, although Figure 9.9 indicates that users of the island of Ireland's freight transport systems do not believe the current state of the transport system has a positive effect on this competitiveness.

Figure 9.9 Current transport system's effect on competitiveness

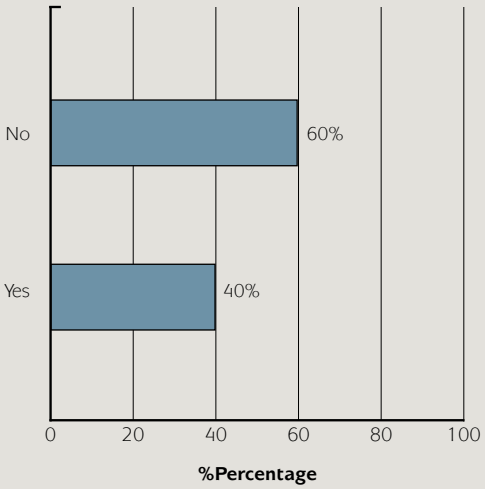
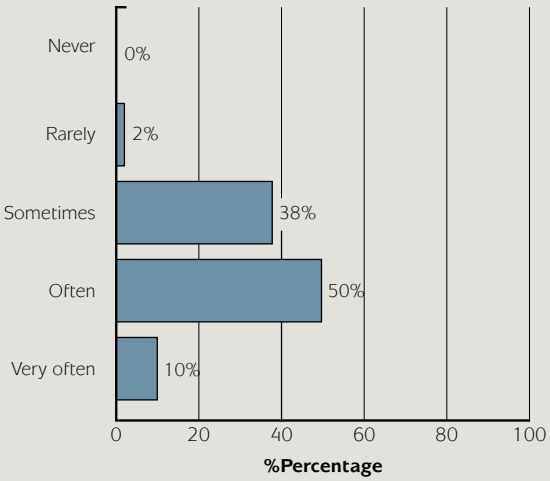


Figure 9.10 Quality of freight service



B.3.3 40 per cent of respondents believe they receive a good freight service only sometimes or rarely.

Figure 9.11 Level of freight transport adaptation to supply chain needs

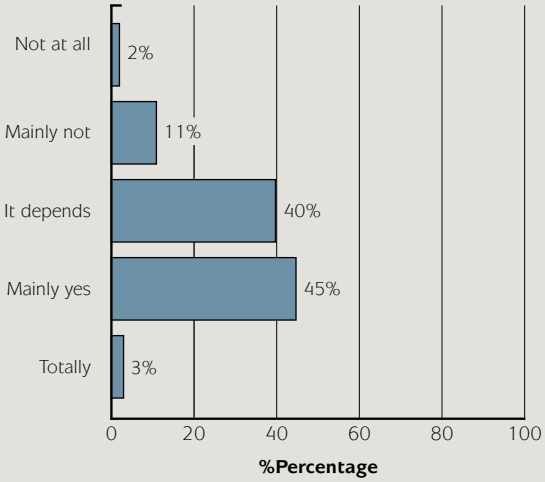
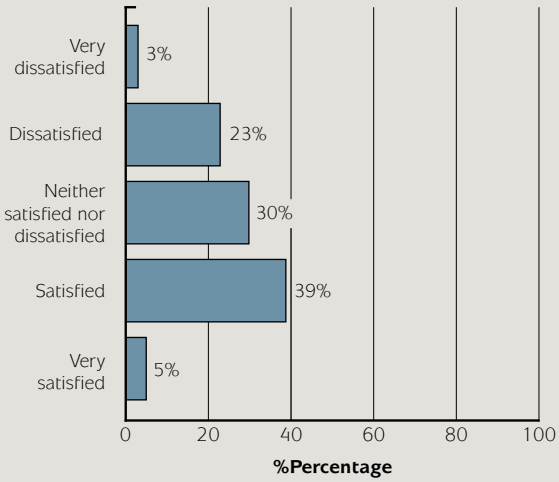
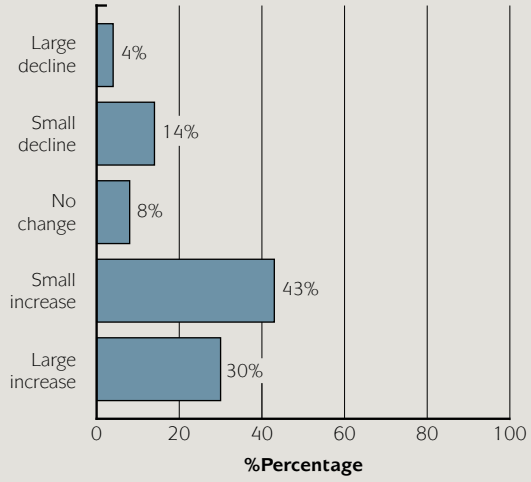


Figure 9.12 Freight service value for money



B.3.4 In terms of freight service value for money and its ability to meet supply chain needs, most respondents rate freight service on the island of Ireland as being adequate or good. Only a small number rate the service in either category very highly or badly.

Figure 9.13 Future road haulage vehicle loading factors



B.3.5 73 per cent of respondents predict an increase in load factors through more efficient use of lorry space over the next 10 years.

Figure 9.14 E-Survey: policy recommendations

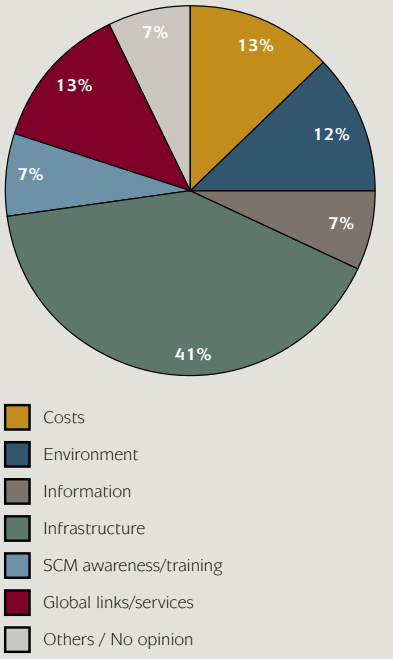
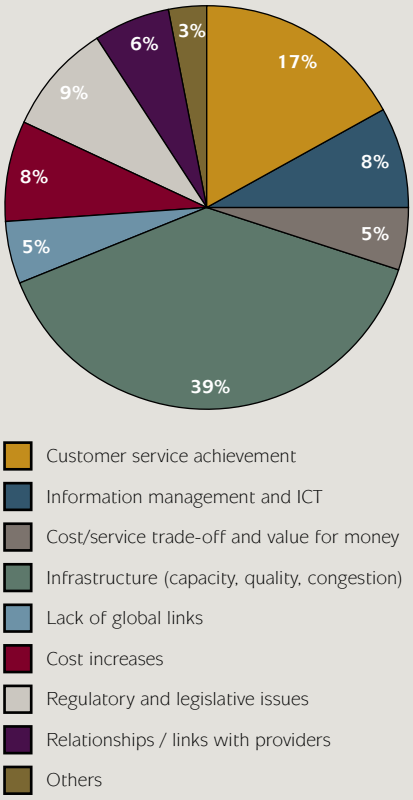


Figure 9.15 E-Survey: challenges / concerns / difficulties



Appendix C
Road Schemes in Northern Ireland

This summarises the list of road schemes in Northern Ireland as listed by RSNI in January 24, 2008 at: http://roadimprovements.roadsni.gov.uk/index/schemes.htm. The A8 dualling has also been agreed in November 2007 but has not been added as yet to the Internet list below.

Road No	Road Description	Improvements	Scheme estimate £m	Comment
UNDER CONSTRUCTION				
A514	Crescent Link Phase 3	Dual carriageway from Kilfennan Roundabout to Altnagelvin Roundabout	1.7	Completion due Winter 2007
M1	M1\Westlink	Improvements	103.9	Completion due Spring 2009
M2	M2	Widening (Sandyknowes to Greencastle)	19.5	Completion due Spring 2009
A2	Skeoge Link	New 1.9km Dual carriageway Link Road	4.8	Completion due Spring 2008
IN PLANNING (envisaged to start with five years)				
A26/ M2	M2 Link Ballee Road East to Ballymena Bypass Dualling Scheme	Dual carriageway	6.6	Public Inquiry held 23 March 2007
A1	Junctions at Hillsborough, Banbridge, Loughbrickland & Dromore	Junction Improvements	16.3	Statutory Procedures Completed December 2006
A4	Dungannon to Ballygawley	Realignment and upgrading	102	Statutory Procedures Completed February 2007.
A1	Beech Hill to Cloghogue	New Dual Carriageway	109.1	Statutory Procedures Completed January 2007
A4 / A5	Annaghilla and Tullyvar	Realignment	15.7	Statutory Procedures Completed February 2007.

A55	Widening at Knock Road, Belfast	Carriageway Widening	9.7	Scheme Approval in February 2007
A2	Shore Road Greenisland	Carriageway Widening	39.1	Public Inquiry held on 8th October 2007
A2	Broadbridge - Maydown to City of Derry Airport	New Dual Carriageway	25.4	Public Inquiries held on 27th March 2007
A20	Newtownards Frederick Street Link	Single carriageway link road	2	Planning Approval received February 2007
A20	Newtownards Sourthern distributor	Link Road	2.5	Environmental Statement and NIMDO published
A29	Carland Bridge	Realignment	4	Progressing through the Statutory Procedures
A5	Strabane Bypass - Stage3	Carriageway Bypass Extension	4.1	Awaiting Developments on A5 Corridor
	Cairnshill Park and Ride	7-800 Park & Ride Site with Terminus Building	10	Planning Application readvertised in July 2007
A3	Armagh North & West Link	Link Road	27.5	Public Information Day held in March 2007
A32	Cherrymount Link	Link Road	3.8	EIA currently underway
A4	Henry Street / Sligo Road	Additional Lane	1.7	Options study received and being considered
A6	Derry to Dungiven	Dual Carriageway	250	Community Information Events being held week beginning 17th September 2007
A6	Randalstown to Castledawson Dual Carriageway	Dual Carriageway	69.5	Public Inquiries to be held in November 2007

FUTURE SCHEMES (envisaged to start within 10 years)				
	Bankmore Link	Link road between Dublin Road and Cromac Street, Belfast.	7.8	
A2	Sydenham Bypass	Widening from 2-lane dual carriageway to 3-lane dual carriageway	28.7	
	Fortwilliam Park & Ride	Park & Ride site with dedicated bus services to / from central Belfast via M2	TBC	
	Kennedy Way Park & Ride	Park & Ride site with dedicated bus services to / from central Belfast via M1	TBC	
	Tillysburn Park & Ride	Park & Ride site with dedicated bus services to / from central Belfast.	TBC	
	Cairnshill Park & Ride	7-800 space park & ride site with terminus building	10.0	
A2	Buncrana Road, Londonderry-1	Widening to 4-lane carriageway between Pennyburn Roundabout and the proposed Skeoge Link Roundabout	13.3	
A2	Buncrana Road, Londonderry-2	Widening to 4-lane carriageway between proposed Skeoge Link Roundabout and the Border	5	
A5	A5 / N14 Strabane Bypass - Lifford Link	New link road between N14 / N15 Lifford and A5 Strabane	3.2	
A26	Glarryford to A44 Drones Road	Provide Dual Carriageway	33.4	
A28	Armagh East	2.5km single carriageway link road	5.6	
A29	Cookstown Eastern Distributor	2.8km single carriageway distributor road	13.1	
A24	Ballynahinch Bypass	4.1km single carriageway bypass and climbing lanes	12.1	
A31	Magherafelt Bypass	3.0km single carriageway bypass	13.1	
A5	Aughnacloy (Border) - Londonderry	Upgrade 88km of existing route to dual carriageway	560	

Note: Estimates were developed at 2005 prices.

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For more information, please contact:
Communications Department
Telephone: 028 3083 4100 (048 from Ireland)
Textphone: 028 3083 4169 (048 from Ireland)
Email: equality@intertradeireland.com

InterTradeIreland

The Trade and Business Development Body
The Old Gasworks Business Park
Kilmorey Street
Newry
Co Down
BT34 2DE

Telephone: 028 3083 4100 (048 from Ireland)
Fax: 028 3083 4155 (048 from Ireland)
Textphone: 028 3083 4164 (048 from Ireland)
Email: info@intertradeireland.com
Web: www.intertradeireland.com

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