Ernst & Young
Chartered Accountants
Ernst & Young Building,
Harcourt Centre, Harcourt Street,
Dublin 2, Ireland
Tel: +353 (0)1 475 0555
Fax: +353 (0)1 475 0599
www.ey.com/ie

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[redacted]ager
Port of Cork
Cork

Rail Report for An Bord Pleanála

Dear Denis

The Port of Cork Rail Connection Report, completed while I was at my previous employer, is attached for forwarding to An Bord Pleanála as agreed at our meeting on 20th December. Any questions on it should be addressed to me.

During the meeting we also discussed the latest EU transport policy changes that are potentially relevant to the application. These are:

- European Transport White Paper 2011"Roadmap to a Single European Transport Areas - Towards a more competitive and resource efficient transport system"

- new EU core transport network (TEN-T).

In our view, the key points of note are:

- There is a strong emphasis on competitiveness, efficiency and sustainability, which are seen to be important for the success of all transport investments. Solutions for the future maintenance and development of the Port of Cork, which will require investment, should therefore be those which maximise its competitiveness, efficiency and sustainability.

- The creation and support of multi-modal freight corridor structures is proposed but rail is not necessary for shorter distances. Indeed, policies in relation to rail and waterborne freight have been more clearly articulated than before. The goal is that 30% of road freight over 300 km should shift to rail or waterborne transport by 2030. As 95% of Port of Cork's customers are in the Southwest and Midwest regions, trips generated are well within the threshold distance. On the other hand, failure of Port of Cork to develop would result in less waterborne freight movement to/from the region and more freight by road from Dublin.

- Cork-Dublin-Belfast remains a TEN corridor, with Cork designated as a core port. The inclusion of Marino Point or any other sites along the railway in the Port of Cork's portfolio would meet the requirement that core ports should be adequately connected to the railway.

- Implementation of EU policy must be sustainable, efficient and economically viable at a regional and national level.

An Bord raised some specific questions relating to consultation and rail activity at other ports during the meeting. These are addressed below.

- **Consultation:** During the assessment, we consulted with Iarnród Éireann on freight, operations, rolling stock, business strategy, property development (in relation to the future of the loop line at Kent Station) and engineering. On completion of the assessment, we held separate meetings with Iarnród Éireann, Department of Transport, Cork City Council, Cork County Council and the Southwest Regional Authority to present and discuss the findings.

- **Rail activity at Dublin:** In addition the Tara mines services, there are five container trains/week in each direction, estimated to operate at 90% of capacity. A total of around 14,000 TEU is estimated to be taken to/from the port by train per annum. To put these volumes in context, Dublin Port handled 554,000 TEU in Lo-Lo traffic and 726,000 Ro-ro freight units in 2010.

- **Rail activity at Waterford:** In addition to the bulk timber services to Sallypark, which continue by road to the port, there are two container trains /week in each direction to both ports. These are estimated to operate at 80% of capacity, resulting in some 6,000 TEU taken to/from the port by rail each year. Port of Waterford handled some 71,000 TEU in Lo-lo traffic in 2010.

- Since the rail analysis was undertaken in 2009, there have been changes in the freight services operated, as set out in the table below which summarises all services in Ireland.

From – To	Type of traffic	Trains per week 2009	Trains per week 2011
Ballina - Dublin	Containers	-	5
Ballina -Waterford	Containers	3-4	2
Kilmastulla (Bird Hill) – Castelmungret (Limerick)	Bulk (shale)	12	-
Navan – Dublin Port	Bulk (Tara mines)	15-20	15
Drogheda – Tullamore	Bulk (cement)	2-3	-
Ballina – Westport-Waterford	Timber	4	3

Finally, An Bord requested details of the origins and destinations of port traffic. These are given in pages 59-62 of the attached report.

Sincerely

[redacted]
Head of Transport

booz&co.

Port of Cork Rail Connection

Draft Final Report

Booz & Co were asked to assess the case for rail freight to/from the Port of Cork to inform both its planning and Government policy

Brief

- The overall aim of the assessment was to establish under what circumstances, if any, a rail connection to the Port of Cork would be feasible. Specifically, the objectives of the study were to:
  - Establish which of the port's existing market segments or individual customers could be served by rail, and under what scenarios
  - Taking a long term view, establish if there are new (existing or future) markets which could be attracted to rail, and under what scenarios
  - Establish the benefit that would accrue from these markets being served by rail
  - Set out options for serving the Ringaskiddy and Marino Point container terminal sites by rail
  - Set out the impact of the rail options on the wider rail network (infrastructure, rolling stock, operations, etc.)
  - Establish the life cycle costs of the rail transport options, including costs incurred elsewhere on the rail network
  - Complete a cost/benefit analysis for the scheme

Approach

- Bottom-up assessment:
  - A set of conditions were developed which would contribute to a rail freight operation being feasible
  - Individual freight flows were examined to assess their suitability towards rail freight
  - Supply side factors were examined to determine what infrastructure gaps exist and their impact on a case for rail freight
- Top-down assessment:
  - A "best possible" demand scenario and three infrastructure options were devised to test feasibility
  - Socio-economic analysis was used to determine feasibility of each option
  - Interviews and site visits were conducted to strengthen confidence in findings

"Business as usual" would not support a rail link, so we developed a Best Possible Scenario involving a Distribution Centre

Existing Rail Freight Baseline

- Rail freight in Ireland is negligible, it has been in decline for some time and now serves only niche markets
- Nationally there is a lack of rail freight facilities and none of the port's customers are connected to the railway
- The Loop Line at Kent Station would need to be retained if the Cork suburban line were to be used by freight
- Using existing wagons, 9 ft 6 in containers cannot pass through the Cork Rail tunnel but this can be overcome with new rolling stock
- By comparison with rail, the road haulage industry itself is highly competitive: there is a large supply of trucks mainly owner-operated. Road and traffic conditions regionally are reasonably good
- While distance need not be a limiting factor, lengths of haul to and from the Port of Cork are generally on the low side for rail freight operations
- Customers are dispersed. Individual businesses generally do not generate sufficient volumes to form full trainloads
- In summary, many factors can contribute to the attractiveness of cargoes being moved by rail, but the current situation in Cork is unpromising.

Our hypothesis for a "Best Possible Scenario"

- A Distribution Centre concept was developed as the Best Possible Scenario to overcome market and infrastructure difficulties
- Containers for export would be taken from the customer by road to a Distribution Centre where they would be assembled into full train loads to be taken to the port by rail. Imported containers would travel from the port to the Distribution Centre by rail and onward from there by road. This overcomes the lack of customer railheads and relatively small volumes generated by individual customers
- The Distribution Centre would be located in the Mallow area (no site identified) as most of the Port's customers are located to the North and North West of the catchment
- Over time, there would be a socio-economic benefit in removing trucks from the road between the container terminal (whether it were located at Ringaskiddy or Marino Point) and the Distribution Centre

None of the options we developed for Marino Point or Ringaskiddy proved to be feasible under expected circumstances

Marino Point

- Option1: build a rail terminal at Marino Point and connect to Cork - Cobh Line. Operate a shuttle service between it and a Distribution Centre in the Mallow area
- Loop Line at Kent Station must be retained
- Capital Cost c. €25 million (excluding rolling stock)
- Leasing of new rolling stock means that height clearance for 9ft 6inch containers is not a problem at rail tunnel
- Investment also needed in additional operations and maintenance staff
- Cost / benefit ratio: 60% over 30 years under our central estimate.
- The Marino Option is not feasible under expected circumstances

Ringaskiddy Options

- Option 2: build a rail terminal at Ringaskiddy and a new link between it and the Cork - Cobh Line, requiring some 10km of new railway and a major bridge over the West Passage
  - Operate a shuttle service between Ringaskiddy and a Distribution Centre in the Mallow area
  - Capital Cost €500m +/- 50%
  - Cost / benefit ratio: 10% over 30 years under central estimate
- Option 3: build a rail terminal at Ringaskiddy and a new link between it and the Cork - Dublin Line, requiring some 30km of new railway
  - Operate a shuttle between Ringaskiddy and a Distribution Centre in the Mallow Area
  - Capital cost €250m +/- 50%
  - Cost/benefit ratio: 20% over 30 years under the central estimate
- For both options, investment is also needed in rolling stock and additional operations and maintenance staff
- The Ringaskiddy options are not feasible under any reasonable circumstances due to high cost

The case for the Marino Point - Distribution Centre option is not robust but there are circumstances where it may be worthwhile

Prerequisites for a rail connection to Marino Point

- The Kent Station Loop Line must be retained or an alternative provided when site developed. Discussions with Iarnród Éireann indicated that this would not be a problem as there is no longer a plan to remove it
- The potential line from Marino Point must then be mothballed until one of two viable scenarios for rail freight materialises:
- Scenario A:
  - Niche customer(s) emerge along the lines of Lisheen Mines, with sufficient scale to warrant a rail service to and from the Port, and the provision of infrastructure at either end of the route
- Scenario B:
  - The scale of growth of the Port occurs broadly in line with the forecasts made for the Oysterbank Proposal
  - An inland port operation is established with a distribution centre and rail shuttle, run by a commercial logistics provider and subsidised by government
  - Rail competes better against road, for example, with increased congestion, so that is a reasonable proposition for the distribution centre to handle at least 25% of all the port's containers.
  - Government meets capital and operating expenditure funding gaps

Stakeholder Engagement

- The findings of the study were discussed with the main stakeholders, including Iarnród Éireann, Cork City Council, Cork County Council and Department of Transport's Maritime Transport, Public Transport, Sustainability and Freight & Logistics Divisions
- The stakeholders accepted the findings of the study and recognised the need for regional, county and local planning policies to support the Port's strategic development plan

For optimal future sustainability, local and regional policies need to support the Port's future development

Conclusions

- The Kent Station Loop Line must be retained or an alternative provided when site developed. Discussions with Iarnród Éireann indicated that this would not be a problem as there is no longer a plan to remove it. The City Council are aware of this and recognise it will be taken into account in plans to redevelop the station to turn to face the river
- If the Port is not allowed to develop its container handling capability, it will become increasingly uncompetitive. More goods will be taken to and from the Port of Cork's catchment via other ports. The result will be longer truck trips than at present with a subsequent increase in negative impacts
- Having a competitive regional port will therefore provide for a sustainable future for the region. It follows that the port should relocate to the site which best meets its business needs, providing the best competitive advantage
- This study shows that there is no socio-economic case for a rail operation to the Port of Cork under expected circumstances. Even at the Marino Point site, which is close to the railway, there is no robust case for a rail operation for transporting containers. The circumstances under which the railway opportunity might be taken up are unlikely
- Given these findings, whether or not the site for a future container terminal is near to a railway should not be given undue weighting in decision making. It would be undesirable and ultimately unsustainable to encourage the port to select a railway-oriented site if it does not make business, operations, economic or environmental sense and if the limitations of that site constrained the port's potential competitive advantage
- The Regional Planning Guidelines, in expressing objectives in relation to the region's port, should clarify the strategic regional development, competitiveness and sustainability issues
- The Local Area Plans that cover the Ringaskiddy and Marino Point sites should support the Port's Strategic Development Plan

Chapter 1	**Context**
Chapter 2	Policy Background
Chapter 3	Rail Freight Baseline
Chapter 4	Existing Demand
Chapter 5	Future Scenario with Rail
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Chapter 7	Socio Economic Evaluation
Chapter 8	Other Options
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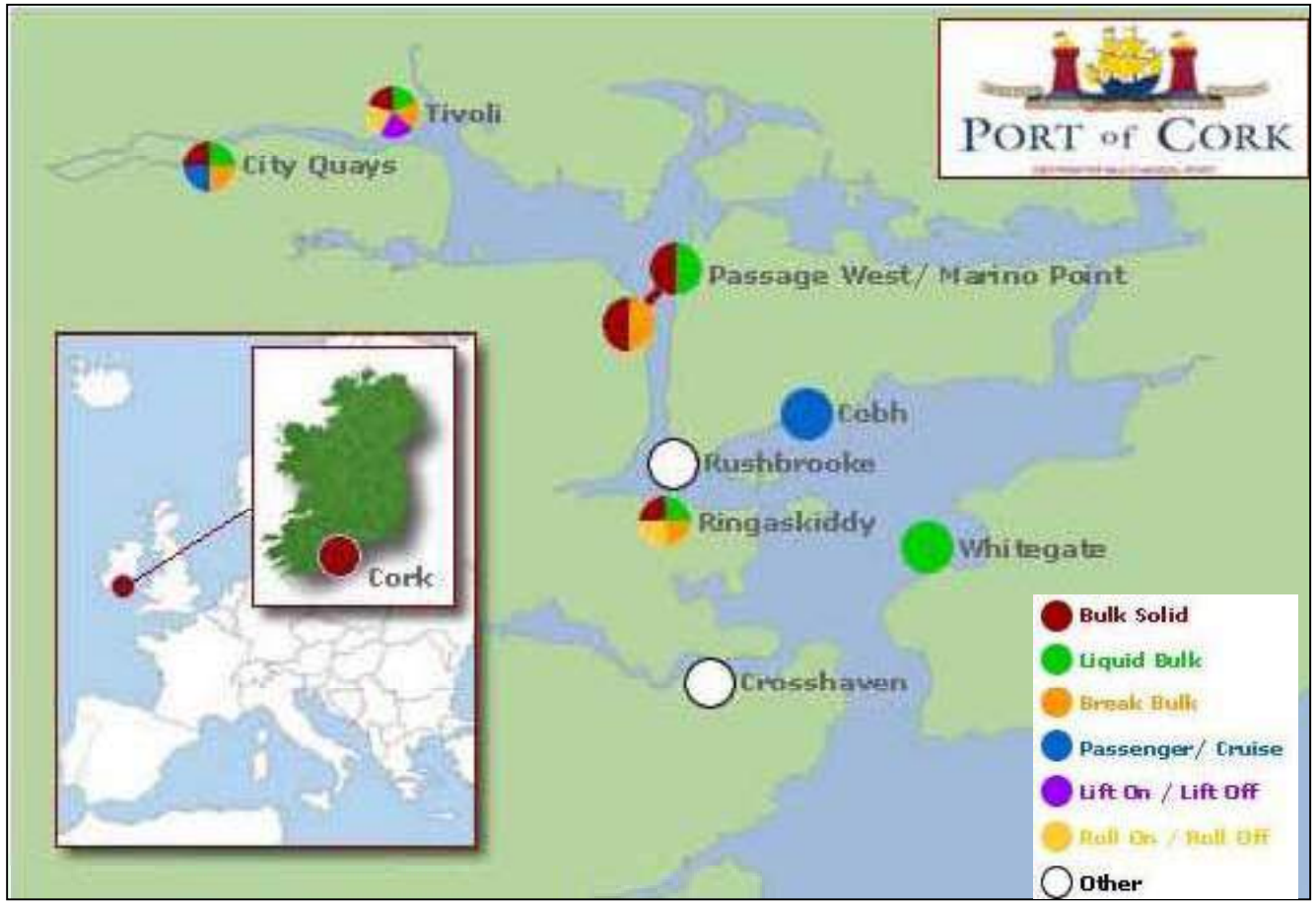
In June 2008, Port of Cork was refused permission to relocate its container terminal from Tivoli to Oysterbank, Ringaskiddy



Decision

- The decision is final
- It cannot be appealed
- It will affect all future port development applications

The reasons for the decision were the perceived negative impact on the road network and the lack of rail access to Ringaskiddy

An Bord Pleanála's Reasons and Considerations

- *The proposed development entails the relocation of commercial freight activities of the Port of Cork from its existing location at Tivoli Docks, which is served by a railway line and has reasonably direct access to the national road network, to a location to the south-east of Cork city at Ringaskiddy which is not connected to the national rail system and would be totally reliant on road-based transport.*

- *While the Board accepts that there is a need to move port activities from Tivoli Docks and expand at other location(s) within the Cork Harbour area, it is considered that the proposed development would:*

  (a) result in much of the port related traffic traversing the city road network which would adversely impact on the carrying capacity of the strategic road network in and around Cork city and in particular the carrying capacity of the strategic interchanges at Bloomfield, Dunkettle and Kinsale Road and the Jack Lynch Tunnel which it is necessary to preserve. The proposed development would exacerbate serious traffic congestion at these strategic interchanges, and

  (b) be unable to make use of rail freight carrying facilities in the future and would, therefore, represent a retrograde step in terms of sustainable transport planning having regard to the policies in the RPG and CASP.

- *The proposed development would, therefore, be contrary to the proper planning and sustainable development of the area.*

Source: Board Direction, 24th June, 2008

While Inspector accepted the poor viability of a rail service in the short term he thought this would change in the longer term

- The Inspector:
  - Stated that *"The applicants in my view have demonstrated adequately that current Government commitment to promoting unitised freight is low"*
  - Took the view that *"in the medium to long term the need for more sustainable transport requirements will force the State to prioritise (rail) freight transport"*
  - Acknowledged that the applicants had demonstrated:
    - The decline in rail freight in Ireland
    - The low priority given to freight by Iarnród Éireann
    - The difference between Cork and the major Northern European ports
    - That there is "little evidence of government policy actively pursuing or supporting major expansion in rail freight services"
  - Considered that "*there is a firm policy commitment to rail freight transport particularly in relation to the Port of Cork*", shown in
    - The National Spatial Strategy
    - Cork Area Strategic Plan (CASP)
    - Regional Planning Guidelines for the South West Region
  - Argued that *"in the medium to long term the viability of transporting goods by rail freight will improve and become more competitive as costs associated with road-based transport will increase"*

Source: Planning Inspector's Report

Booz & Co were asked to assess the case for rail freight to/from the port to inform both its planning and Government policy

- The overall aim of the assessment was to establish under what circumstances, if any, a rail connection to the Port of Cork would be feasible.

- Specifically, the objectives of the study were to:
  - Establish which of the port's existing market segments or individual customers could be served by rail, and under what scenarios
  - Taking a long term view, establish if there are new (existing or future) markets which could be attracted which would be served by rail, and under what scenarios
  - Establish the benefit that would accrue from these markets being served by rail
  - Set out options for serving the Ringaskiddy and Marino Point container terminal sites by rail – be it a direct link or a barge and rail combination
  - Set out the impact of the rail options on the wider rail network (need for new infrastructure, rolling stock, operational considerations, etc.)
  - Establish the life cycle costs of the rail transport options, including costs incurred elsewhere on the rail network
  - Complete a cost/benefit analysis for the scheme

Essentially, what was needed was an analysis of the gap between the existing situation and aspirations for a future rail link

Existing Situation

- Road freight is a highly competitive industry
- Although the existing container terminal at Tivoli Docks is adjacent to the railway, no goods have been transported by rail to/from Cork for many years.
- Elsewhere in Ireland, some bulk and containerised commodities continue to be transported by rail to port, but some key customers have exited rail freight in recent years (e.g. sugar beet, kegged beer)
- IÉ's freight infrastructure has been reduced
- Since 2005, IÉ only offers container transport on the basis of a full train load (18 containers)
- The only intermodal container service now operating is between Ballina, Co. Mayo and Waterford Port
- 65% of trips to/from the existing container terminal are to/from counties Cork and Kerry i.e local in nature and generally not served by the rail network

External Views and Expectations

- EU policy encourages for modal transfer from road to rail - both for passengers and rail
- National and local policy for modal transfer from road to rail implicit in some policy documents (at the time of the planning inquiry - specific policy has been developing rapidly since then)
- Planning Inspector's acceptance that economic viability of rail freight is questionable but *"Notwithstanding the above arguments, the advantage of rail freight cannot be underestimated in my opinion"*
- ABP view that it is unsustainable to plan for a new port facility without rail access
- Well organised objectors have already succeeded in intervening in the port development process

- **The assessment should therefore be regarded as a "Gap Analysis" rather than a "Feasibility Study"**

The assessment was undertaken in the spirit of the Inspector's view that, in the long term, a rail connection will become desirable

- The reasons why the container terminal is no longer served by rail, the lack of a market or any Iarnród Éireann or Government support to develop the market, and the particular difficulties of serving the Ringaskiddy site by rail were all adequately demonstrated during the planning process
- The situation the port finds itself in called for a fresh approach with every effort made to determine how a rail operation might work and the circumstances under which that might be enabled
- The aim is to help answer the key questions that have been raised since the planning decision:

Is there a financial reason?

- Our initial hypothesis is that a rail connection would not be financially viable and it would need government support to fund capital and running costs, in order for it to be financially attractive to users.

Is there a socio-economic reason?

- Our assumption is that government might consider funding if there were a socio-economic case for the rail connection based on the benefits of removing trucks that would otherwise be on the roads. If there were, it might be worth examining the commercial proposition.

Is there another policy reason?

- Even with a weak socio-economic case, if the scheme were affordable, there may be a case for its prioritisation if it were strongly supported by other policies. This is addressed in the next chapter.

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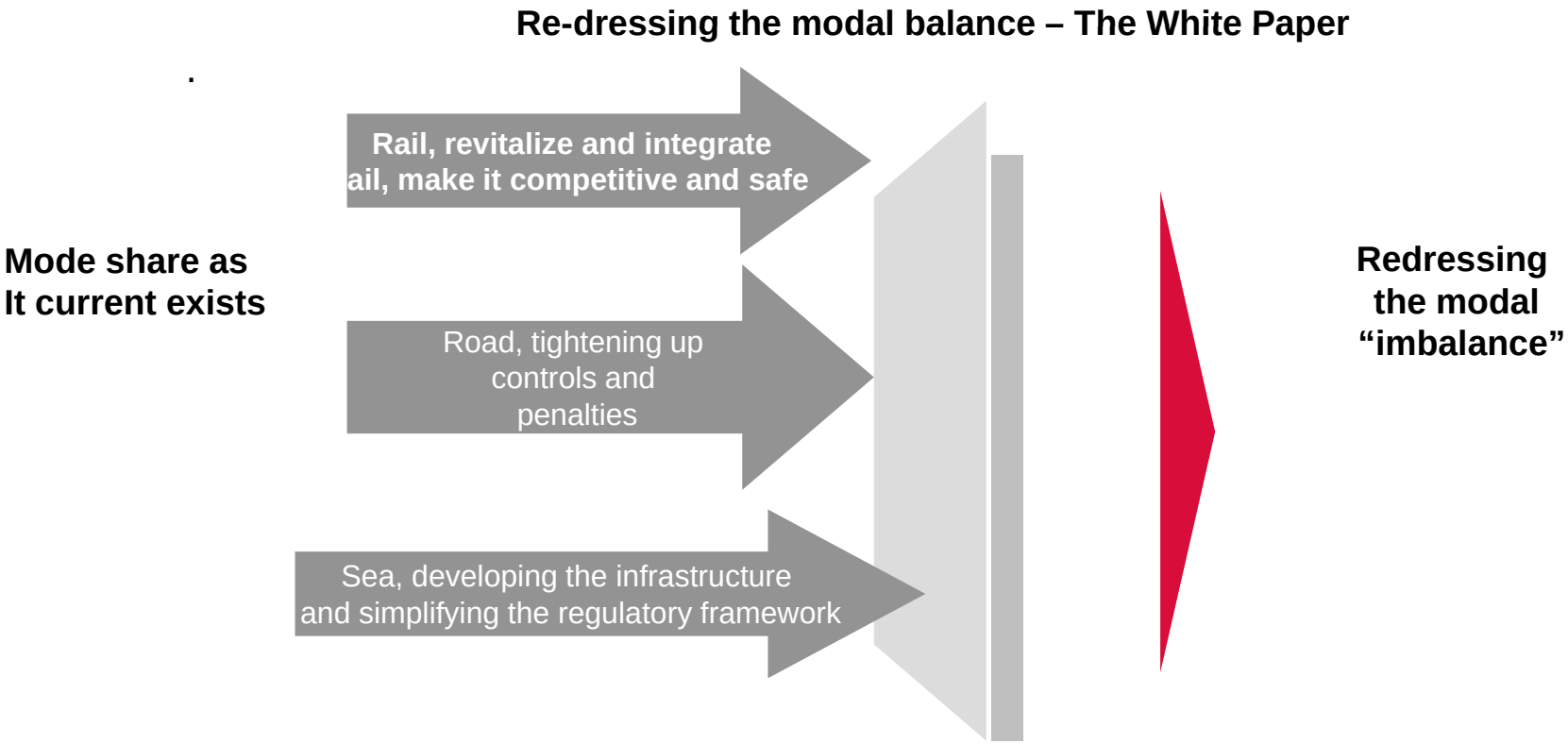
The assessment has been informed by the latest rail freight policy at European through to local level

Policy Levels	Summary of Current Situation
European	▪ 2001 White Paper: European Transport Policy to 2010 ▪2006 Transport Policy Review ▪2007 Logistics: Keeping Freight Moving ▪2009: The Future of Transport
National	▪National Spatial Strategy 2002 - 2020 (2002) ▪Smarter Travel - A Sustainable Transport Future: A New Transport Policy for Ireland 2009 - 2020 (2009) ▪"Assessment of Port Services Issues for Enterprise, Forfas, January 2009
Regional	▪ Revision of the Regional Planning Guideline for the South West (2004) is currently well underway and will culminate in the *Regional Planning Guidelines for the South West 2010-2022*
Local	▪Cork Area Strategic Plan Update 2008 ▪Cork City Development Plan 2009-2014 ▪Cork County Development Plan 2009 - 2014

European Commission White Paper of 2001 – 'European transport policy for 2010: time to decide', still provides the EU policy context



The White Paper's approach was to incentivise sustainable modes and discourage the reliance on road*

Rail- revitalize and integrate rail, make it competitive and safe

- Removing barriers to rail freight market entry
- Engaging the ERA (European Rail Agency) and OTIF (Intergovernmental Organisation for International Carriage by Rail)
- Marco Polo Intermodality "open to appropriate proposals to shift freight from road to more environmentally friendly modes"

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Road - tighten up controls and penalties

- Proposed road user charging for road freight related to:
  - axle loadings
  - impact on congestion
  - distance travelled
- Attempt to "tighten up" on road freight practices e.g. safe driving time

*The EU's goal was not only modal shift for environmental reasons but from a sociteal perspective - Improve road safety and halve the number of road deaths by 2010

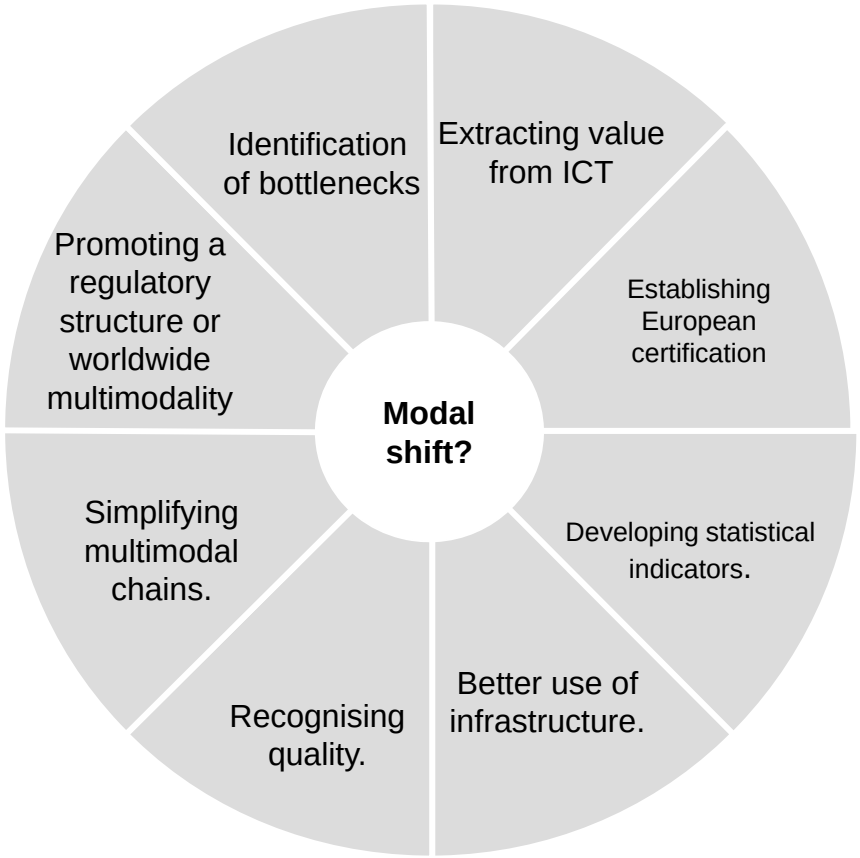
The White Paper had a mid term review in 2006 which reinforced policies to try to shift freight from road to rail

- Although rail freight volumes were growing, rail's share of the freight market was not
- However, there were several relevant success stories, including:
  - Opening up of rail freight transport to competition
  - Definition of 30 TEN priority projects
  - New road charging directive
  - Promotion of intermodal transport via Marco Polo
- It was decided that policy should continue along the lines set by the 2001 White Paper
- Specific actions were set relating to freight:
  - Road transport: internal market review (2006), review of legislation on working conditions (2007)
  - Rail transport: remove technical barriers to interoperability (2006), promote rail freight corridors
  - (2006), rail market monitoring (2007)
- The concept of "Co-Modality" was introduced to recognise the lack of success to the extent expected in implementing modal shift policies. "…….therefore, the future policy will have to optimise each mode's own potential to meet the objectives of clean and efficient transport systems"

There were subsequent moves to ensure logistics was considered in transport policy, making it a factor in decision making

- EU Communication (2006) 336 The “key to sustainable mobility” recommended modernizing logistics to boost efficiency of individual modes of transport and their combinations.
- This communication in particular recommended inititaives which may “lead” to changes in mode choice towards “ more environmentally friendly, safer and more energy efficient modes of transport”.

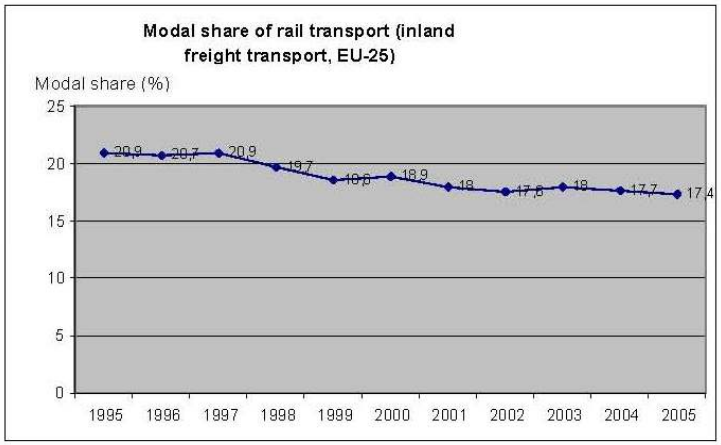
Initiatives from EU with regard to logistics



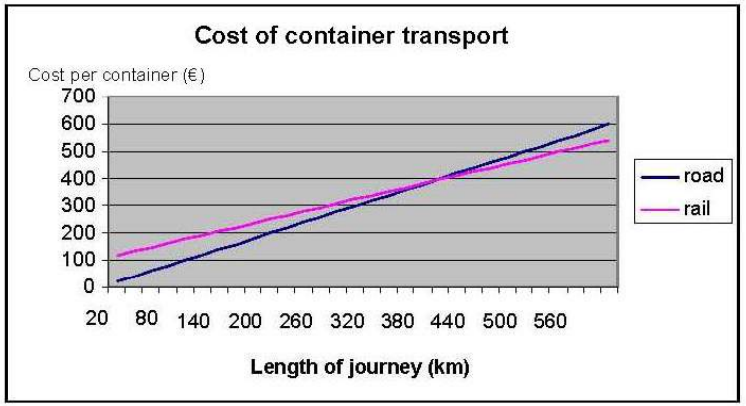
European research showed rail freight to be more cost effective over very long distances (over 400 km)…

Memo "Towards a more competitive rail freight sector"

- Predicted goods transport will grow by a further 50% between 2000 and 2020
- Noted that the initiatives aimed at revitalising rail freight transport which were launched over the last 15 years or so, by the European Community have produced satisfactory results, but concluded that they do not go far enough.
- Reported that, in the first half of 2007, rail freight increased by 7%, However rail's modal share of freight transport was scarcely increasing.
- Reported on research that indicated that it would cost less to transport a container by road than by rail unless the distance was over 400km or so.



Source : Eurostat



Source : Impact assessment, Atkins

Source: EC Com 2007Logistcs: Keeping Freight Moving, Memo "Towards a more competitive rail freight sector

… but other European research [1] suggested that the distance where rail can compete with road on cost is lower, at around 150 km

- The Communication cites *"A pilot study on rail freight performance by distance conducted in 2006 by the Community of European Railways (CER) and the International Union of Railways (UIC) on a group of railway undertakings holding 20% of the rail freight market showed that:*
  - *the market share of rail compared with road is significantly higher for longer distances (> 150 km = 22%, > 300/325 km = 26% and > 500 km = 30% compared with 19% of the total traffic).*
  - *On distances exceeding 150 km the average costs of moving goods by rail are usually lower than for transporting them by road .*

1 Monitoring Development of the Rail Network - COM(2007) 609

Are the distances in the Port of Cork case too short for rail?

- There are no "hard and fast" rules about whether it costs more to transport a container by road or rail - a lot will depend on the local infrastructure and service providers, and their charges
- It is, however, safe to say that the Port of Cork's hinterland does not cover the distances normally considered for rail freight (leaving aside the fact that little of the area is covered by the rail network).
- Despite the fact that rail transport may cost more than road, many European governments chose to fund the cost differential on the basis that there are environmental and other socio-economic benefits associated with removing trucks from the road.
- While we are confident that there would be no commercial case for transferring freight from road to rail in the Cork area at present, we have to establish if there may be a socio-economic case to do so in future.

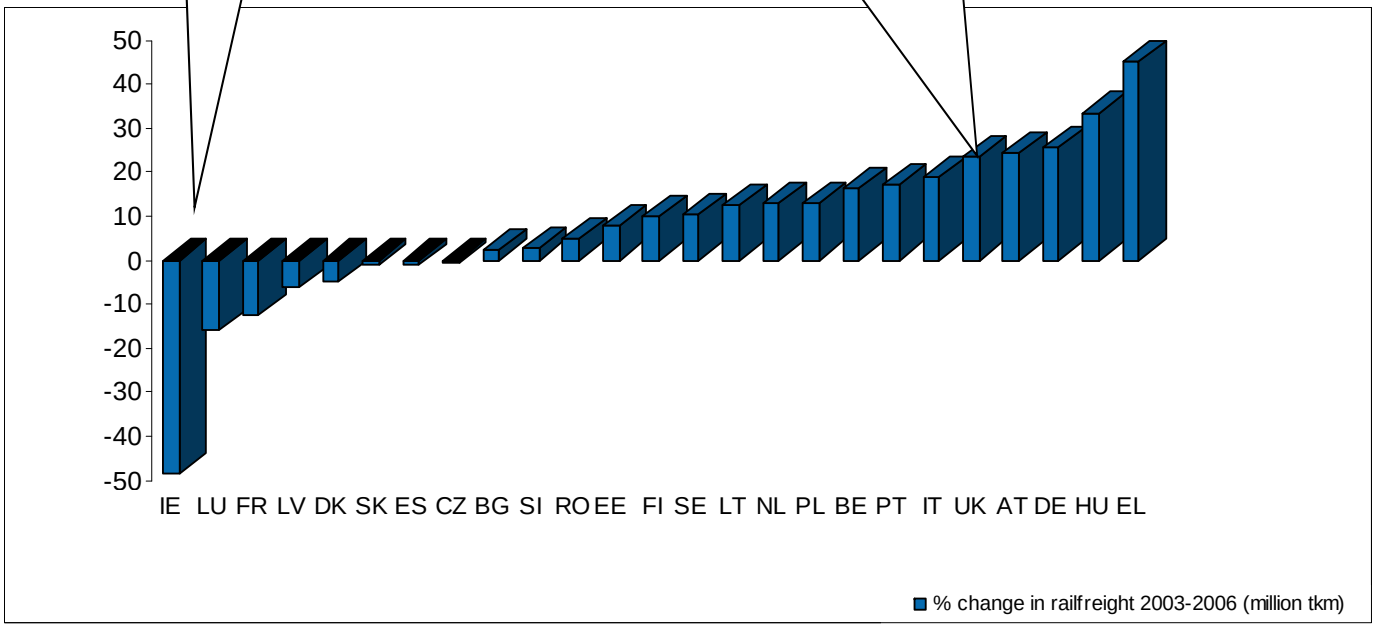
The European Commission is currently looking at "The Future of Transport" which will input to the next 10-year White Paper

The Future of Transport (2009) - emerging themes relating to rail freight
▪ The trend of increasing demand for long distance freight transport is unlikely to reverse
▪ The logistics sector would be creating more flexible, but complex networks
▪ Large intercontinental ports might reach high congestion levels ….smaller ports may present spare capacities if not integrated in the established circuits.
▪ European network of rail freight corridors and increased competition in the railway markets would facilitate enlarging the share of rail
▪ Rail freight vehicles would very likely become longer, bigger and more energy efficient.
▪ Trucks, ships and aircrafts would increasingly rely on alternative fuels

The result of EU directives and initiatives has been varied

- There was a 48.5% decline in rail freight in Ireland between 2003 and 2006

- Railfreight in the other island economy, UK, grew by 23.4% between 2003 and 2006
- UK Government has taken measures, including financial incentives, to encourage freight to shift from road to rail

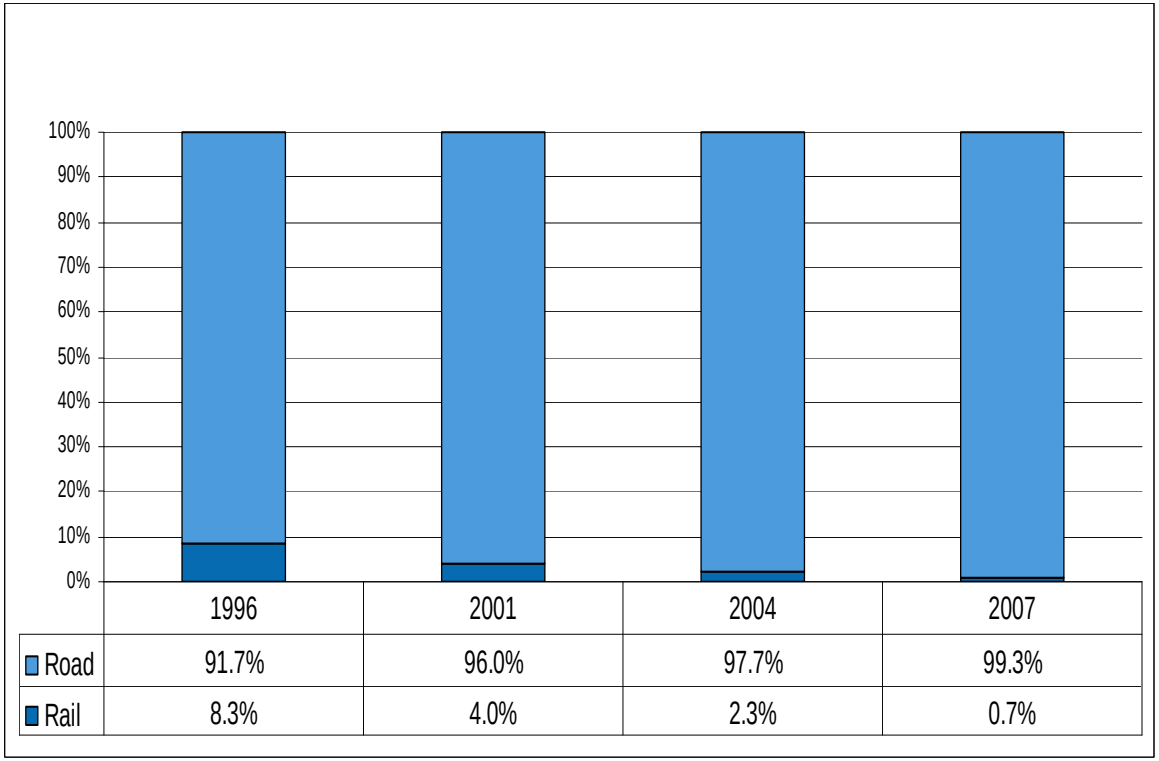


Source: Eurostat, Booz Analysis

Limitations of European Examples

- Compared with Ireland, in continental Europe:
  - distances are long; and
  - port opportunities are few
- In the case of Netherlands, for example, data include freight travelling between Dutch ports and other countries.
- International traffic accounts for 44% of all rail freight in Europe and is the fastest growing sector
- In UK, the only other island economy in the EU, rail freight is growing
- Beyond Europe, in New Zealand, for example, there are many examples of freight going by rail over short distances

Rail freight in Ireland has now declined to the point where it has nearly ceased, carrying only 0.7% of trade in 2007



	1996	2001	2004	2007
Road	91.7%	96.0%	97.7%	99.3%
Rail	8.3%	4.0%	2.3%	0.7%

Source: Eurostat

Milestones in the Decline

- 2009: IÉ discontinues Fastrack, its parcels business
- 2006: cessation of sugar refining in Ireland and loss of beet trains
- 2006: Diageo decide to transfer beer kegs from rail to road
- 2003: Closure of North Wall Freight Depot
- 2002: closure of IFI at Marino Point
- Growth of a highly competitive road freight sector
- Gradual closure of freight lines (e.g. to Tivoli, to Foynes) and of freight yards

According to the Strategic Rail Review (2003), many of the underlying causes for the decline were institutional

The Strategic Rail Review (2003) forecast this decline in rail freight in the absence of a national Government policy to halt it

- Much of the freight traffic carried in 2001 was loss-making and most of the freight rolling stock was nearly life-expired. Since then, IÉ has exited the loss-making traffics and now concentrates on more profitable niche businesses
- There were no direct support schemes to rail freight in Ireland similar to those operating in many European countries which explicitly aim to recognise rail's social benefits in the haulage task. There has been no change since them.
- Four strategic options were considered by the SRR. The outturn situation has been Option 1, but with elements of Option 4.

Criterion	Freight Option 1 Continue current policy		Freight Option 2 Stimulate IÉ to improve position		Freight Option 3 Active Government involvement		Freight Option 4 Limit IÉ role; New logistics partnerships	
Exploit rail strengths for high quality competitive service	0	• Service quality is inconsistent • Reliability of service is poor (over 20% of services cancelled) • Asset renewal unlikely	1	• Improvement in rail competitiveness • Sustainable traffic growth • Potential nevertheless may be limited	3	• Greatest likelihood of modal shift from road to rail, through operating or capital support and incentives	2	• Creates opportunities for innovative and efficient services, resulting in growth • Nevertheless, degree of partner interest and viability still uncertain
Support land use, social and economic policy	0	• Rail traffic lost to road will increase	1	• Some shift of traffic to rail	3	• Greatest shift of traffic to rail	2	• Also greater shift to rail, but uncertain degree of partner interest
Improve environmental quality	0	• Further decline of rail traffic will have a negative impact on the environment	1	• Some shift of traffic to rail will reduce external costs to society	3	• Greatest shift to rail • Allows government to target services with greatest environmental benefit	2	• Also greater shift to rail, but uncertain degree of partner interest
Promote sound project selection	2	• No approvals or policy changes required • May not fulfil pragmatic political objectives	3	• Minimal policy changes required • Should be a win-win for all involved	2	• Potential political cost of increased public funding • Increased public consultation on investment/service targets	1	• Possible stakeholder resistance to changed IÉ activity and private participation in market

Legend:

4	*Best or fully meets*	3	*Substantially meets*	2	*Partially meets*	1	*Remotely meets*	0	*No or negative effect*

Source: Strategic Rail Review, 2003

Although the National Spatial Strategy (2002) called for the future role of rail freight in the Irish economy to be developed in the light of the SRR, commitment to action has been very recent

- *Smarter Travel - A Sustainable Transport Future: A New Transport Policy for Ireland 2009 - 2020* was published by the Department of Transport in February 2009. It commits to specific actions to address the national deficit in freight policy
- The Oyster Bank planning decision has focused attention on the need for policy guidance in relation to rail freight.
- *Smarter Travel* notes that little is known about the potential for rail freight.
- The Department of Transport intends that the proposed freight forum will be established in Autumn 2009
- The Port of Cork Rail Connection Analysis will be of significant interest to the proposed Forum

Smarter Travel - A Sustainable Transport Future (2009)

Action 10

We will:

- *Ensure that the Department of Transport deals with freight policy issues in a more integrated manner and prepares a specific strategy for the freight sector. We will set a target aimed at reducing the environmental impact of freight while at the same time improving efficiency in the movement of goods and promoting economic competitiveness*
- *Organise a forum to bring all interested parties together, including industrial development agencies and industry representative bodies, to explore in greater depth the issues relating to the movement of goods, including:*
  - ***The realistic potential for rail freight***
  - *Priority freight routes allowing access to vehicles with greater load factors and capacity*
  - *Developing key logistics centres to transfer goods to more sustainable forms of transport for final delivery in urban areas*
  - *Scheduling of deliveries from the ports and in urban areas to avoid peak use of networks as far as possible*
  - *The incentives and disincentives needed to move to more fuel-efficient vehicles*
  - *The need to have more rigorous testing of goods vehicles to reduce emissions*
  - *The potential of Intelligent Transport Systems and Services to improve efficiency.*

Action 29

- *We will also review ports policy and the 2005 Ports Policy Statement with a view to maximising efficiency in the movement of goods and in the light of the review of the freight sector referred to in Action 10, Chapter 4.*

The Forfás policy priorities for ports in 2009 include the development of a deep water container terminal at Ringaskiddy

- In January 2009, Forfás published **"Assessment of Port Services Issues for Enterprise"** which identified the following key policy priorities:
  - *Improving internal access:* The timely upgrade of the N28 (Cork to Ringaskiddy)…. is required. A recent An Bord Pleanála decision refusing an application for a significant port capacity project at Ringaskiddy cited the absence of a rail link as one of the main reasons for refusal. This highlights the need for an integrated approach to transport policy across all modes (road, rail, seaports and airports).
  - *Improving the use of ICT:* While by and large the quality of service offered to enterprise today
  - *Provision of deeper water facilities:* ….. the proposed development by the Port of Cork at Ringaskiddy has the type of deeper water levels that will be required to accommodate larger ships; and
  - *Certainty regarding future of the Port of Dublin*

Implications

- Forfás appears to take the view that:
  - The proposed container terminal at Ringaskiddy is a national priority
  - Ringaskiddy would be adequately served by road
  - The planning refusal was due to unclear, fragmented and/or disconnected transport policies across modes.
- Elsewhere in the paper, Forfás comments that rail cannot be expected to play more than a limited role in transporting freight in Ireland[1]

[1] quotes EC Com 2007 609 as saying that rail freight is only viable over distances of over 150km. In fact, as discussed on page 14, the research reported that " *On distances exceeding 150 km the average costs of moving goods by rail are usually lower than for transporting them by road " - which amounts to the same point for the purposes of the Forfás analysis*

The Regional Planning Guidelines 2004 - 2009 assumed and supported further port development at Ringaskiddy, while seeking to promote rail generally, but these are now being revised

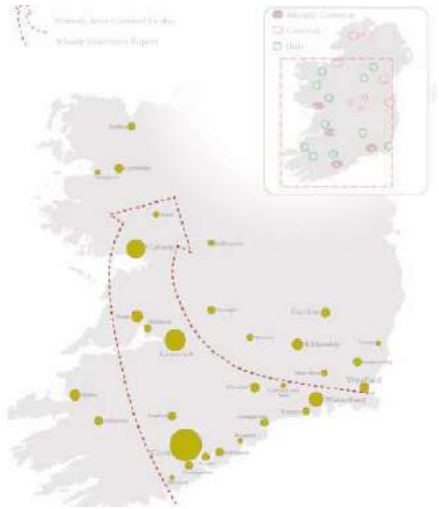
Regional Policy

- The Regional Planning Guidelines for the South West 2004 recommend that the local and port authorities:
  - *Identify and reserve key strategic sites for the further development of the Port at downstream locations, replacing the loss of the City quays and the demand for extra capacity.*
  - *Prioritise the upgrading of the N28, Cork to Ringaskiddy, to facilitate ease of access to the Port. This will also facilitate industrial development in Ringaskiddy. Provision for public transport priorities should be built into this scheme.*
  - *Work together with Iarnród Éireann to promote expansion of rail freight connections to port facilities. Access exists at Tivoli and Marino Point, which should be considered as strategic access points and protected in development plan policies. Use of rail reduces the need for HGVs, increases the sustainability of development and reduces environmental pollution.*
  - *Work together to implement the Cork Docklands Strategy, which is critical to the regeneration of the City.*
  - *Promote the development of a lower harbour, wastewater treatment scheme, to facilitate the development of lands at Ringaskiddy.*

- The 2004 RPG support for port development at Ringaskiddy and raise no expectation of a rail freight while also expressing a desire for the existing line to be used for rail freight.
- There is more clarity expressed in the issues for the revised guidelines - see next page.

The port's relocation from the City Quays and Tivoli is one of the issues for the revised Regional Planning Guidelines 2010-2022

Atlantic Gateways



PoC related Issues

- " *…there is an urgent need for the Port to move its operations out of the Docklands area of the Gateway to a new location in lower Cork Harbour. Public investment will be required primarily in the upgrading particularly of roads to facilitate this development."*
- … "*Cork is the principal conurbation on the Atlantic Gateways and has a population, which exceeds that of Limerick Galway and Waterford combined. The Cork Gateway is very significant contributor to national output…"*
- "*….if the Atlantic Gateways are to provide a viable counter-pole to the Dublin and the Mid East,,, the Cork Gateway will provide the greatest levels of population, employment, productive outputs and wealth creation and is the key engine of growth of the Atlantic Gateways. Therefore, it is logical that investment in Cork on specific drivers of growth within the Gateway is prioritised,… These include…. the relocation of the Port of Cork, to free up space in the heart of the gateway for new developments"*

- There is no mention of freight in the issues paper - road or rail
- The removal of the Port from the City Quays and Tivoli is clearly an objective
- No specific guidance is provided on where to the port should relocate
- Road upgrading to facilitate port development is supported, rail is not mentioned
- The revised Guidelines are expected to be aligned with the City and County Development Plans

Source: Issues Paper On the Review of the Regional Planning Guidelines 2010-2022, South West Regional Authority

Cork Area Strategic Plan (CASP), at sub-regional level, influences both regional and local policy

CASP (2001)

- The Regional Planning Guidelines were strongly influenced by the Cork Area Strategic Plan (2001) (CASP) and reflect CASP policies
- CASP assumed the relocation of port activities from the City Quays and Tivoli to Ringaskiddy while also seeking to maximise use of the railway and protect its alignment and access arrangements

CASP Update (2008)

- An update of CASP to take account of the outturn population and employment growth and the role envisaged for the City Region under the National Spatial Strategy was published in July 2008.
- The Draft CASP Update aims to refocus growth in line with CASP objectives as well as identifying locations for expanded growth. Its main findings have been included in the City and County Draft Development Plans (see next page).
- The City Council Development Plan is currently at Draft Consultation stage.
- The County Development Plan was adopted in February 2009.

The Cork City (Draft) and County Development Plans support the move to Ringaskiddy and ...

- **City Draft Development Plan**
  - *The Port of Cork proposes to relocate container traffic downstream to the Oyster bank and to relocate bulk and other trade from the city quays to Ringaskiddy. This will provide for major regeneration and development opportunities at the Docklands, and Tivoli areas. - It is the policy of Cork City Council to support the Port of Cork in its strategically important operations and future plans for expansion and relocation. (Policy 5,20 Port of Cork)*

- **County Development Plan**
  - The Strategy

    …..Other important elements of the strategy for the area concern the critical need to relocate land uses from the port/industrial areas on the eastern approaches to the City so that these areas can be redeveloped to provide a new focus for population and employment growth close to the City centre. The preferred area for the relocation of many of these uses is in the lower harbour mainly near Ringaskiddy, where deep-water berths exist and are capable of expansion, and modern motorway standard roads are planned to facilitate the movement of freight to and from the new port facilities. (Section 2.3.10)

  - Objectives:

    ….To assist in the redevelopment of the Cork City Docklands by providing for the relocation and development of industrial uses and major port facilities, primarily at Ringaskiddy, where deep-water berths can be developed and modern road infrastructure is planned to facilitate freight transport.

  - Marino Point

    *…there is also potential to redevelop the former IFI site at Marino Point. The review of the Local Area Plan will establish an appropriate development framework for this site. (*Section 3.2.38)

  - Ringaskiddy

    Ringaskiddy, with excellent port facilities, will also play an important role in the redevelopment of the Cork City Docklands by providing for the relocation and development of industrial uses and major port facilities. (Section 3.4.3)

….the new County Development plan specifically deals with An Bord Pleanála's decision

- *Port of Cork Strategic Plan was aligned with the CASP goals and the CASP Strategy articulated the key linked benefits of the Port's strategy of relocating the Container Terminal from Tivoli to Ringaskiddy. The Planning Authorities in conjunction with the Port of Cork will carefully assess the issues raised by An Bord Pleanála in relation to future Ringaskiddy developments and if necessary consider possible alternatives.*

- CON 3-5 - Locations for Port Related Development
  - *It is an objective to ensure that land with the potential to accommodate port related development, particularly at Ringaskiddy, but also at the other ports throughout the County, is, normally, protected from inappropriate development that would prejudice its long term potential to accommodate this form of development.*

- The Port of Cork
  - *It is an objective to support the relocation of port activities and other industry away from the upper harbour on the eastern approaches to the city. Ringaskiddy remains the preferred location for the relocation of these activities. The Council is committed to engage with the Port of Cork and other relevant stakeholders in order to address the issues in relation to Ringaskiddy and, if necessary, give consideration to possible alternative locations*.
  - *A recent decision by An Bord Pleanála, relating to a proposed container terminal at Ringaskiddy, has identified concerns regarding traffic impact at key locations on the road network and the lack of potential for the future transport of freight by rail in the Ringaskiddy area. The maintenance of modern port facilities and the need to release port related land in the Docklands and at Tivoli for mixed-use development formats are both critical to the overall strategy for the sustainable development of the CASP area and to the achievement of the target populations for the City. (6.4.2)*
  - *While Ringaskiddy remains the preferred location for the relocation of port activities, Cork County Council is committed to engage with the Port of Cork and other relevant stakeholders, to seek a resolution to the difficulties raised by An Bord Pleanála and, if necessary, give consideration to possible alternative locations. (6.4.3)*
  - *In order to establish an appropriate land-use strategy for Ringaskiddy, the Carrigaline Electoral Area Local Area Plan will address the land use issues associated with the port relocation, set out a strategy to maximise the regional economic potential of other undeveloped land and to establish infrastructure to support enhanced public transport to serve the area. (6.4.5)*

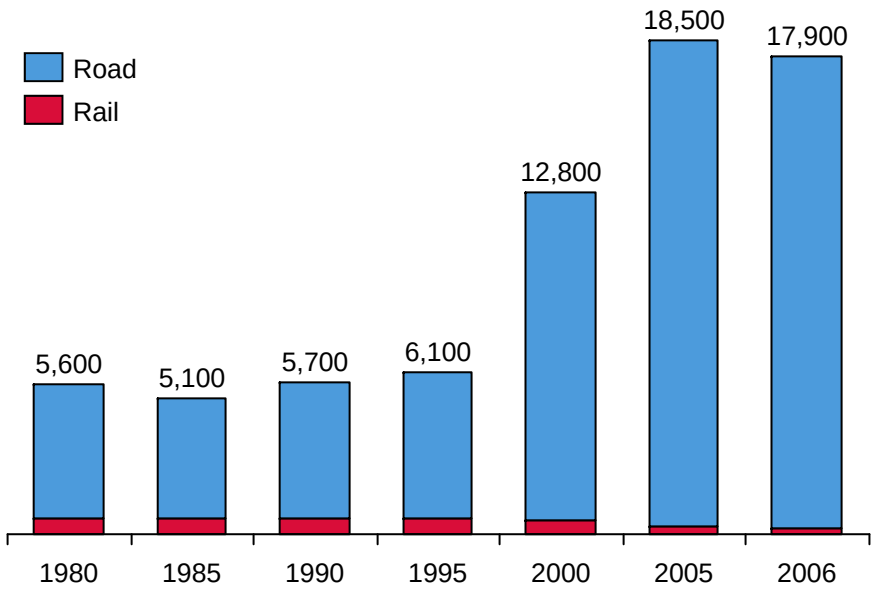
In summary, evaluation of the emerging policies does not show a rail connection for Port of Cork to be an objective

Policy Level	Main Interests
Port customers	▪Cost ▪Speed and reliability
Port Company	•Customer retention and growth, ability to compete with other ports on cost •Environmental and economic sustainability
Local & Regional Authorities	•Viable local/regional port •Efficiently operating road network •Best possible local environment •Specifically, the City and County Development Plans: •Support the redevelopment of Docklands/relocation of port •Support a container terminal at Ringaskiddy •Contain no stated objective to get trucks off the roads in the Cork City area •Forthcoming Regional Planning Guidelines expected to align with Development Plans
National Government	•Sound socio-economic case for State investment (DoT/DoF) •Affordability (DoT/DoF) •Efficient provision of transport services (DoT/DoF) •Despite the recommendations of the Strategic Rail Review and the National Spatial Strategy, no specific rail freight policy has been developed (DoT/DoE) •*Smarter Travel : A New Transport Policy for Ireland 2009 - 2020* commits to addressing the national deficit in freight policy, has no explicit objective to shift freight from road to rail but commits to exploring the realistic potential for rail freight (DoT) •Support for the container terminal to relocate to Ringaskiddy (Forfas, Jan 2009)
EU	•Shift of freight from road to rail desirable but policy should optimise the potential of each mode. Competitive transport markets are key •Irish Government usually granted derogations in relation to EU rail policy

- Local and National Policy has developed since the ABP decision against the Oysterbank proposal
- Local policies support the relocation of the container terminal at Ringaskiddy
- Emerging national policies unlikely to support rail freight projects unless they were affordable and supported by a robust case
- EU policy allows individual countries to determine what suits them best and will not support rail freight where there is no case for it

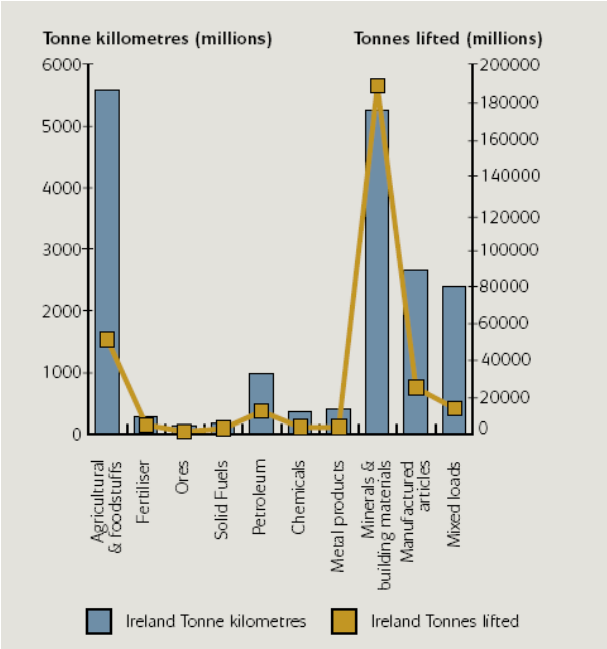
Nearly all of Ireland's freight is carried by road. Main cargoes are agricultural and foodstuffs, and minerals & building materials…

Ireland's freight movements (Million tonne kilometres) - 1980-2006 *



In 2006, road accounted for 98% of freight kilometre movements in Ireland. Rail accounted for the remaining 2%

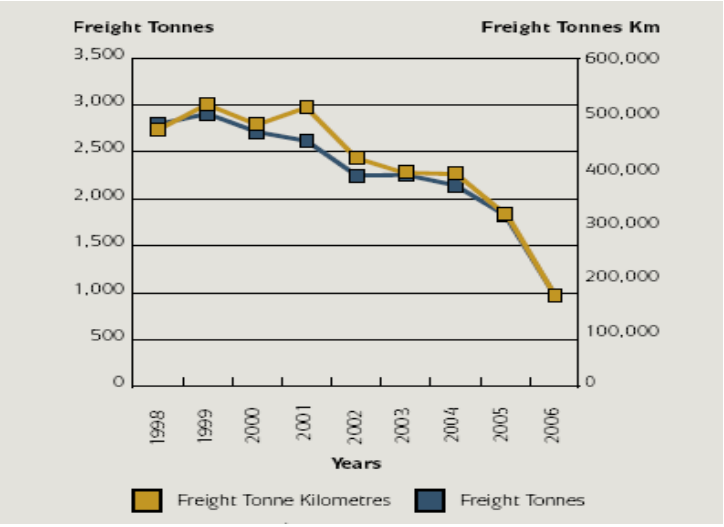
Ireland's main road freight movements 2005 **



* Source: Booz & Company analysis based on Eurostat data in Evidence by Bernard Feeney, Goodbody Economic Consultants, 2008, p16
** Source: Inter TradeIreland, 2007, Freight Transport Report for the Island of Ireland

…Ireland's relatively small rail freight task is contained to a few niche cargoes, and has been in decline for some time

Ireland's rail freight movements (tonnes, and tonne kilometres) - 1998-2006 *



Over the past ten years, there has been a rapid decline in Irish rail freight.

The highest declines in cargo types has been in cement, fertiliser, sugar, beer and general freight commodity classes.

Current Freight Operations in Ireland

From – To	Type of traffic	Miles	Trains per week
Ballina -Waterford	Containers (mainly soft drinks)	215	3-4
Kilmastulla (Bird Hill) – Castelmungret (Limerick)	Bulk (shale)	21	12
Navan – Dublin Port	Bulk (Tara mines)	50	15-20
Drogheda – Tullamore	Bulk (cement)	98	2-3
Ballina – Westport-Waterford	Timber	211	4

- The only freight trains running are full train loads - IÉ no longer carries single containers and consolidates them into train loads
- A new freight service between Ballina and Dublin started operation in September 2009:
  - 2 trains per week initially with plans to rise to 3 later
  - 9' high containers initially increasing to 9' 6" later (50/50 split between 9' and 9' 6" needed)
  - Same customer (Atlantic Industries) and operator (DFDS) as Ballina -Waterford service which will not be affected.

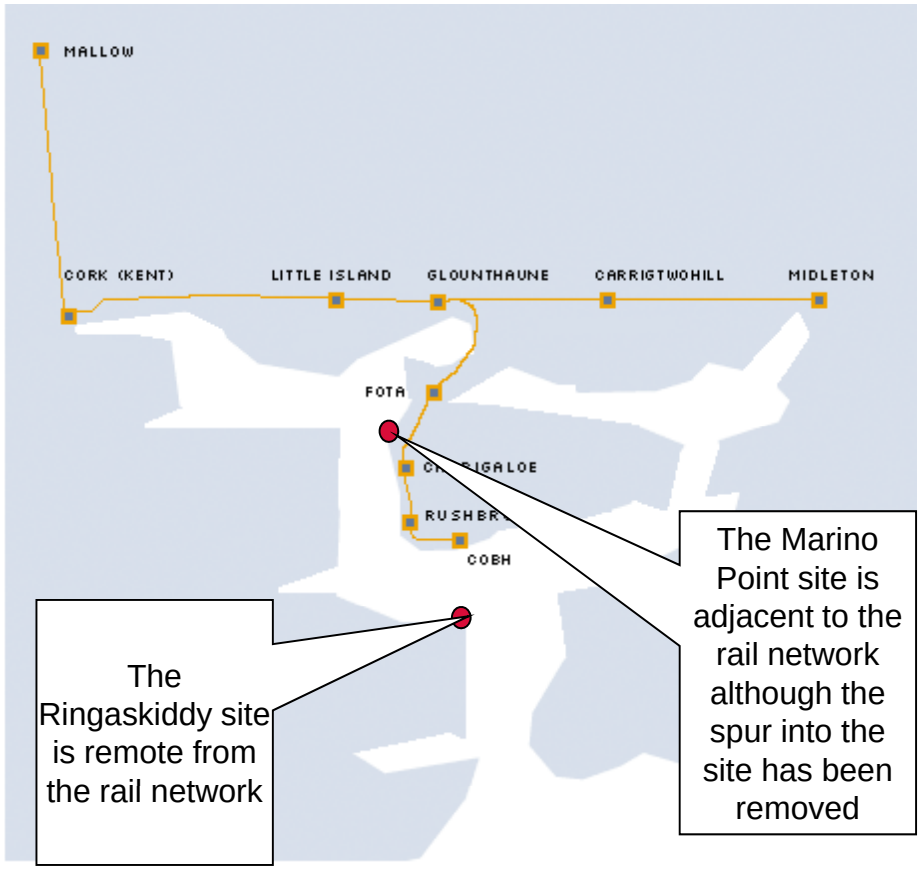
* Source: Inter TradeIreland, 2007, Freight Transport Report for the Island of Ireland
** Source: Booz analysis based on railway timetable data

The national rail network is mainly radial, centred on Dublin. Locally, there is a local line between the City and Cobh/Midleton

National Rail Network

Rail network in the Port of Cork's hinterland

Local Cork - Cobh /Midleton Line



The Ringaskiddy site is remote from the rail network

The Marino Point site is adjacent to the rail network although the spur into the site has been removed

For many years, passenger operations have been Iarnród Éireann's primary business, and the existing rail infrastructure reflects this

- The Dublin – Cork and Cork – Cobh routes are double tracked:
  - – €700m of track renewal work is required on the Dublin-Cork line but this is not yet programmed
  - – 4-tracking of the Dublin - Cork line between Dublin and Kildare is underway at present.
  - – The remainder of the network is single line, except the DART line and the Dublin-Belfast Line
- The signalling system is Centralized Traffic Control (CTC) for the most part but routes that are not highly used for passenger traffic tend to have mechanical signalling i.e Kilmastulla (Birdhill) – Castlemungret (Limerick), Ballina through to Knockcroghery, Drogheda to Navan.

Cork Rail Tunnel

Source: Iarnród Éireann, Booz & Company analysis
Note :It was reported at the Rail Freight Meeting arranged by Trade Facilitation Ireland on 17th April that Iarnród Éireann was to assess the implicaitons of clearing the Portarlington - Dublin line

The current height and weight restrictions are also reflective of a primarily passenger network

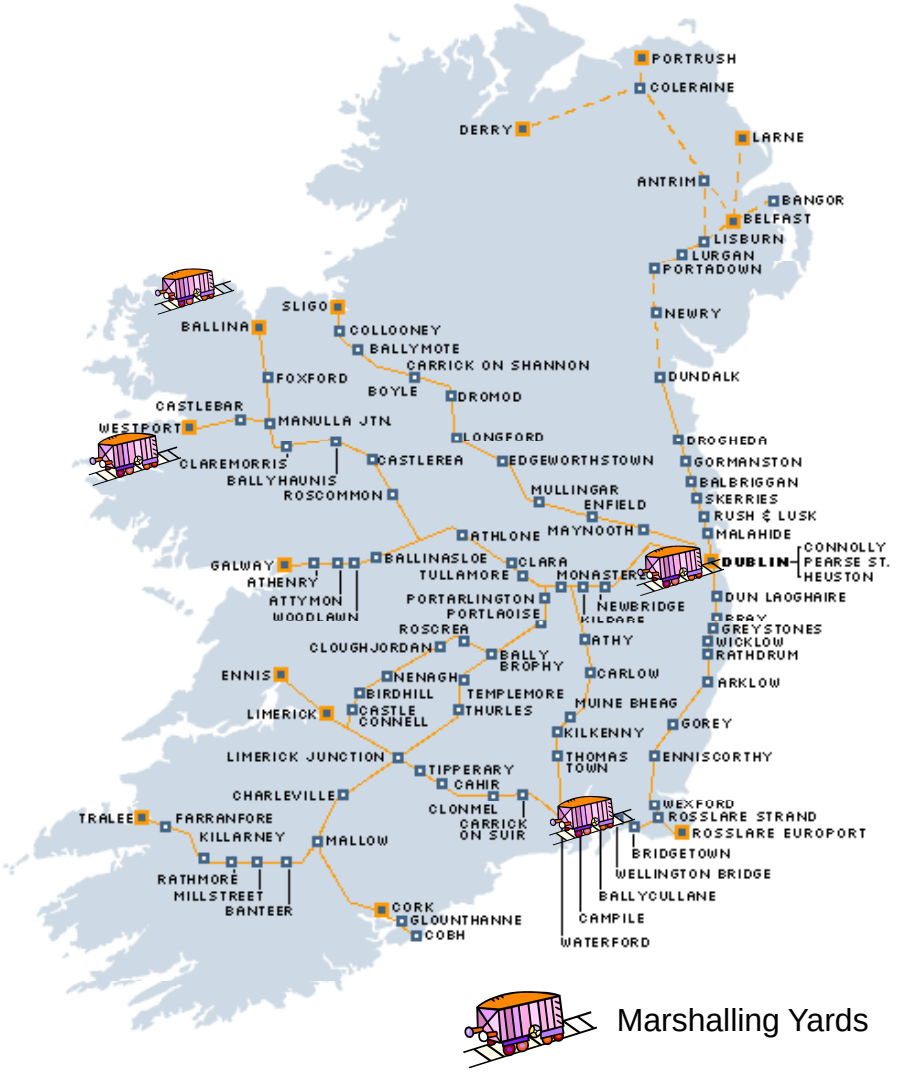
- Weight clearance:
  - The current network is cleared for an axle loading of 15.75 T
  - This axle loading is not a key issue/constraint for passenger traffic; however, internationally, rail freight networks are gradually increasing their axle loadings well past 18T and are stretching to 22T-25T
- Height clearances:
  - The Ballina – Waterford line is cleared for 9' 6" high containers. The Belfast and Sligo lines are cleared for 8'6" containers and the remainder of the network for 9' containers.
  - On the Dublin - Cork Line, height clearance is only an issue north of Kildare, except at the Cork Rail Tunnel on the Cork-Dublin Line immediately to the north of Kent Station.

Options for getting clearance

- In discussions, IÉ reported that axle loadings are constrained by the current rolling stock and loadings could be taken past 20T with new rolling stock.
- The height clearance required at the Cork Rail Tunnel is minimal. It can be gained either by:
  - Lowering the level of the tracks - but this would cause major disruption to existing services; or
  - Procuring new rolling stock.
- Iarnród Éireann are currently undetaking an assessment of the Cork Rail Tunnel to understand what might be required to achieve clearance for 9ft 6in containers

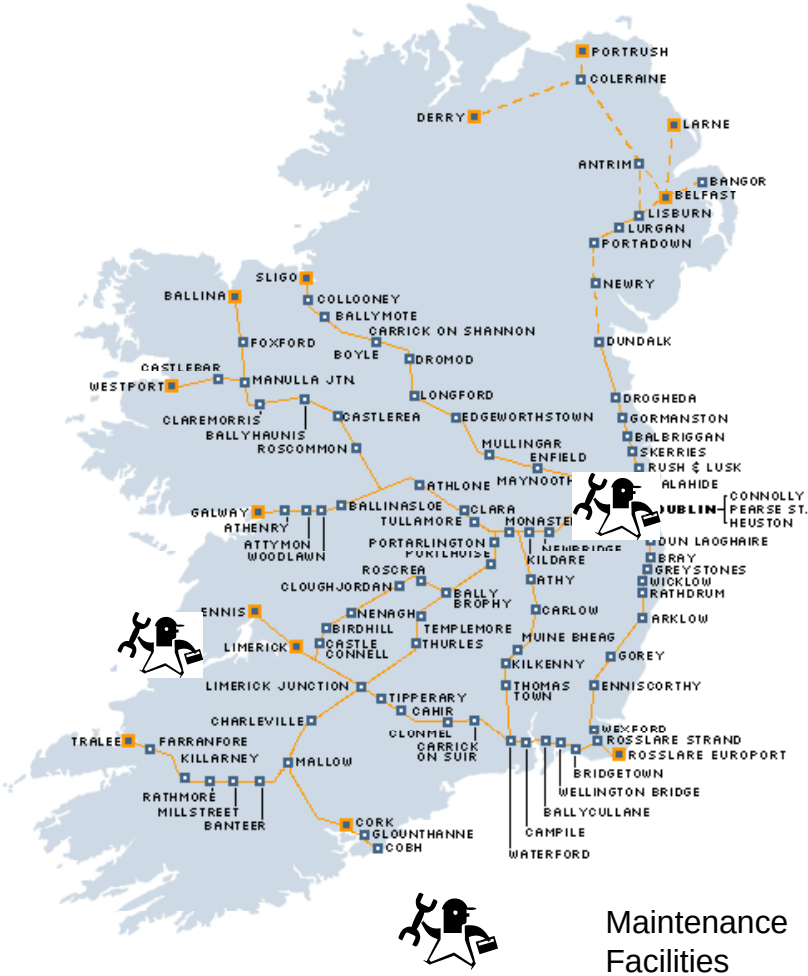
Freight traffic is now all in full trains loads, therefore there is little reliance on marshalling yards

- As most of the freight traffic is in full train loads there has been no need to retain marshalling yards
- Marshalling yards are traditionally retained if operators still shunt wagons and make up trains of (in many cases) single loads of cargo going to multiple areas
- Marshalling yards exist in North Wall (Dublin), Ballina, Westport and Waterford
- In the Cork area:
  - Mallow Freight Depot was closed in 2004 but is still in IÉ ownership
  - The rail connection to Cork's existing container terminal at Tivoli Docks has not been used since the 1990s and is no longer intact
  - The North Esk Freight Yard, Little Island, Cork, is no longer used by Iarnród Éireann and was disconnected from the network in November 2008 as part of the recent track and signalling upgrading on the Cork-Cobh line. IÉ confirmed that the depot can be re-connected at any stage in the future if viable rail freight traffic arises.



The ability to maintain freight rolling stock is located primarily in Dublin and in Limerick

- Freight maintenance capabilities are concentrated in Dublin (Inchicore and North Wall) and to a lesser extent in Limerick
- Rolling stock for any future freight services in Cork would need to travel a distance to be maintained, be that planned maintenance or unplanned maintenance. This would have cost and operational implications.
- As the fleet has only about 10 years remaining life, planned regular maintenance will be important and it is likely that unplanned maintenance will need to happen on a more regular basis



IÉ has rolling stock available, but estimates that this fleet has only 10 years remaining life, so new rolling stock would be needed

Overview of current rolling stock use

Current Fleet	Likely demand on current freight services	Remaining fleet availability
12X50T Bulk cement wagons	Cement (Drogheda - Tullamore)	Captive?
27X54T ore wagons	Shale/Tara Mines	Captive?
26X39T ore wagons	Shale/Tara Mines	Captive?
▪200X42ft 9 in long container flats ▪60X47ft 9 inch long container flats ▪40X 60ft long container flats ▪Total 300 wagons	▪Waterford – Ballina container service –18 TEU –Max. required is two rakes of 12 Container flats = 24 Container flats ▪Ballina/ Westport – Waterford timber service –Assume same, 24 Container Flats	Remaining capacity 250 Container flats

Comparing this data with the Strategic Rail Review (2003), there has been a 66% decrease in rolling stock from 2002 to 2009

- IÉ reported at the recent Rail Freight Meeting on 17th April that investment in new wagons would be needed for the proposed Ballina-Waterford service if the business proved to be sustainable

IÉ anticipates that existing locomotives will be available for the foreseeable future but that additional drivers would be needed

- IÉ has a fleet of 32 recently refurbished Class 201 locomotives which were bought in 1994. These should last until at least 2014, although further refitting and refurbishment will be needed in future
- Of these, IÉ require 10 for passenger operations on the Dublin-Cork service and 3 for the Dublin-Belfast service
- The number of locomotives that would be available and the performance of this fleet would affect the cost of operations
- IÉ has advised that it would not have sufficient driver resources for a new rail freight service, proposals should allow for driver costs.
- IÉ's restrictions on Class 201 locomotives do would not appear to prevent their use for freight

Refurbished Class 201 Locomotives
In use on Dublin-Cork Line

IÉ's proposal to remove the loop line at Kent Station would prevent freight operating through the station in future

- At Kent station, a loop line just outside the south wall of the existing passenger station allows through trains to bypass the passenger platforms, where passenger trains are often standing for substantial periods.
- The loop line also provides access to a number of operational areas which currently lie on the railway land to the south of the station area.
- The development plans for the station involve the transfer of all the land to the south of the loop line to a private developer.
- The development proposals allow for new facilities to be provided for through running of suburban passenger services between Mallow and Cobh.
- Iarnród Éireann has confirmed, while they do not have a property development partner at present, the loop line will be removed to develop the site. This would make freight operations through Kent Station difficult, if not impossible, as the other lines would be busy with passenger operations

Existing Loop Line at Kent Station

In summary, there are many infrastructure and rolling stock constraints for rail freight operations in the Cork area

Summary of Infrastructure and Rolling Stock Issues

	Status/Description	Implications
▪ Railway network coverage at sites being considered	▪ Marino Point site is adjacent to Cork - Cobh Line, which connects to Cork - Dublin Line at Kent Stn ▪ Ringaskiddy is remote from railway	▪ Connecting Marino Point to the railway would be reasonably straightforward. A Ringaskiddy connection would involve a major infrastructure project
▪ Network connectivity	▪ IÉ plan to remove the loop line at Kent Station, preventing future through running for freight	▪ The loop line exists at present. There may be a case for its safe-guarding, despite IÉ's proposals to remove it.
▪ Track and signalling	▪ Good quality twin track on Cork - Cobh line with recent investment in track and signalling ▪ Cork - Dublin line is due for renewal	▪ Cobh line is a valuable asset - freight may be an opportunity realise its full potential ▪ Existing track condition may be a constraint on Dublin line
▪ Height clearance	▪ Clearance for 9' containers only at Cork Rail Tunnel	▪ Potentially expensive to clear for 9'6" containers ▪ Could possibly be resolved with new rolling stock
▪ Weight and length clearance	▪ 15.75 tonne axle weight limit - equivalent to 36 TEU maximum train length	▪ It appears that in practice this limit could be increased significantly with new rolling stock.
▪ IÉ freight yards	▪ North Esk Freight Depot disused and disconnected ▪ Mallow Freight Yard closed	▪ Reactivation of North Esk is possible, albeit with investment. There may be a case for its safe-guarding ▪ No other obvious sites for freight depots of any description
▪ Customer connectivity	▪ Network covers little of the Port's hinterland ▪ No customers have railheads	▪ Grants to provide railheads for customers near rail ▪ Distribution centre could serve a regional concentration
▪ Rolling stock	▪ IE's existing freight wagons near life-expired ▪ Locomotives available but no drivers	▪ IE advise that proposals should allow for wagons and drivers but that locomotives are available

There are other obstacles to developing a rail freight business, the most significant being the highly competitive road freight market

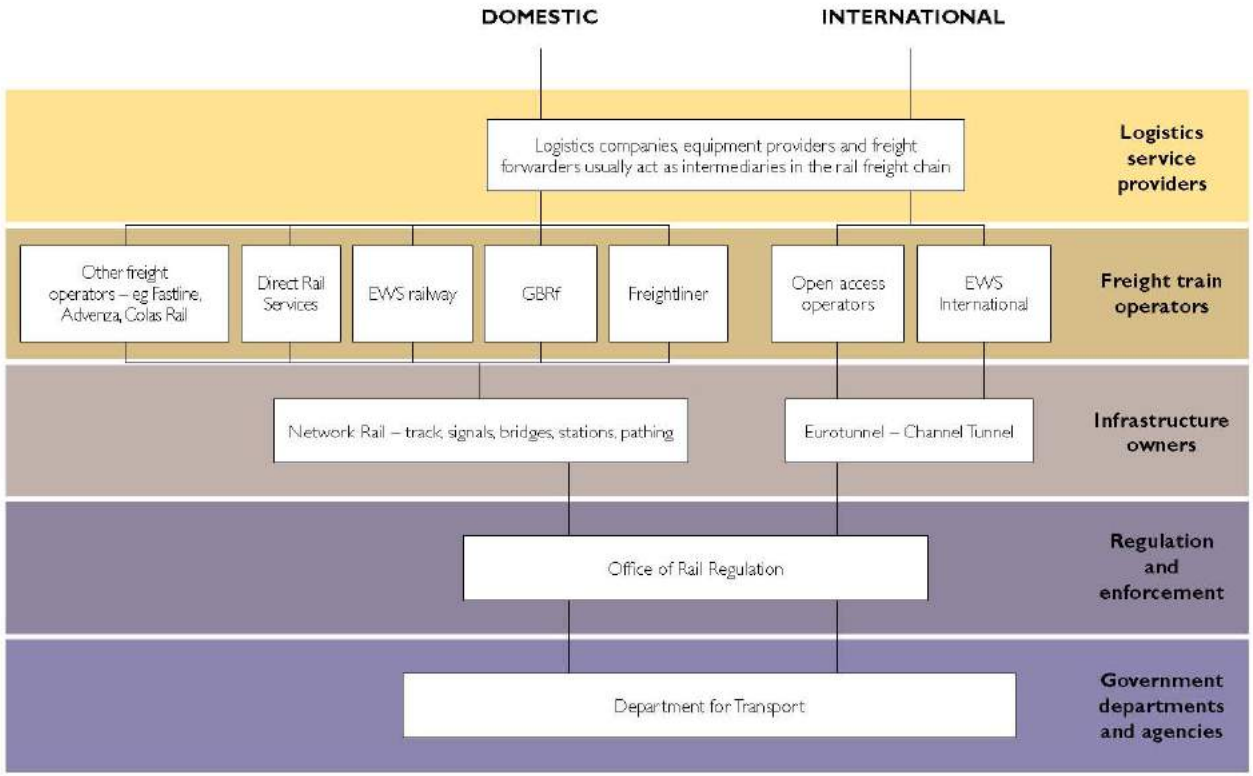
Potential Obstacles	Considerations in Overcoming	
▪ Daunting competitive landscape: – Good road network, generally free to use – Highly competitive road haulage sector	▪ A package of incentives and penalties could shift traffic from road to rail but there would be very significant issues about acceptability, practicability and cost ▪ The benefit of shifting from road to rail would depend on the level of congestion on the road network	Difficult to see rail competing with road in the Cork area for the foreseeable future
▪ Fixed ideas which may or may not apply: – Rail freight only suited to large low cost bulk goods carried over long distances – Rail freight costs more than road	▪ Regular, frequent rail operations over short distances can also work ▪ Containerised rail freight has overtaken bulk commodities in the UK ▪ In congested road conditions, rail can be cheaper and more reliable than road transport	Road congestion not expected to the extent that would advantage rail
▪ Current railways arrangements (besides infrastructure and rolling stock): – Iarnród Éireann focus on passenger operations – Whilst the railway market is in theory open to competition, in practice Iarnród Éireann has a monopoly	▪ The Department of Transport confirms that by 2011 it will have a revised legal and institutional framework in place such that private specialist rail freight operators could enter the market ▪ Whether the private operators would be attracted is uncertain as yet - no market testing has been undertaken	Emerging IÉ/Port/Freight Forwarder partnerships may be more likely model

Some of these obstacles have been overcome in recent years in the UK

Recent Growth in UK Rail Freight

- In the UK, rail freight declined in use between the 1950s and the mid-1990s, but since then there has been 66% increase
- FTA/Rail Freight Group are forecasting that rail freight use will double by 2030
- Rail freight is a commercial service operated by private freight train operating companies for private freight customers, sometimes through intermediary logistics services providers
- Government grants exist for:
  - Building infrastructure (Freight Facilities Grant)
  - Ongoing running costs (Rail Benefits Procurement Scheme)

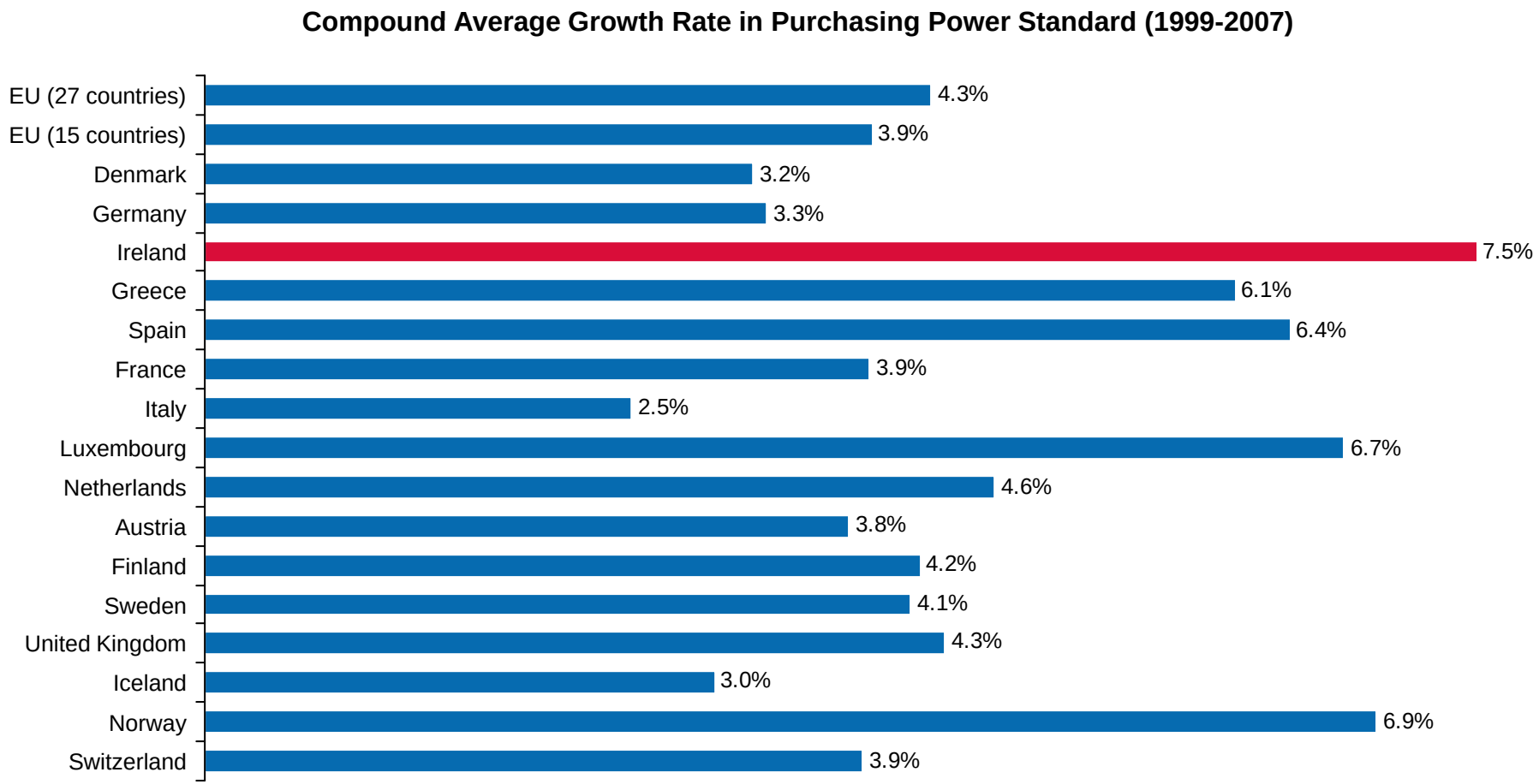
The structure of the rail freight industry in Great Britain



Source: "Marking use of rail - a guide for shippers", Freight Transport Association, February 2009

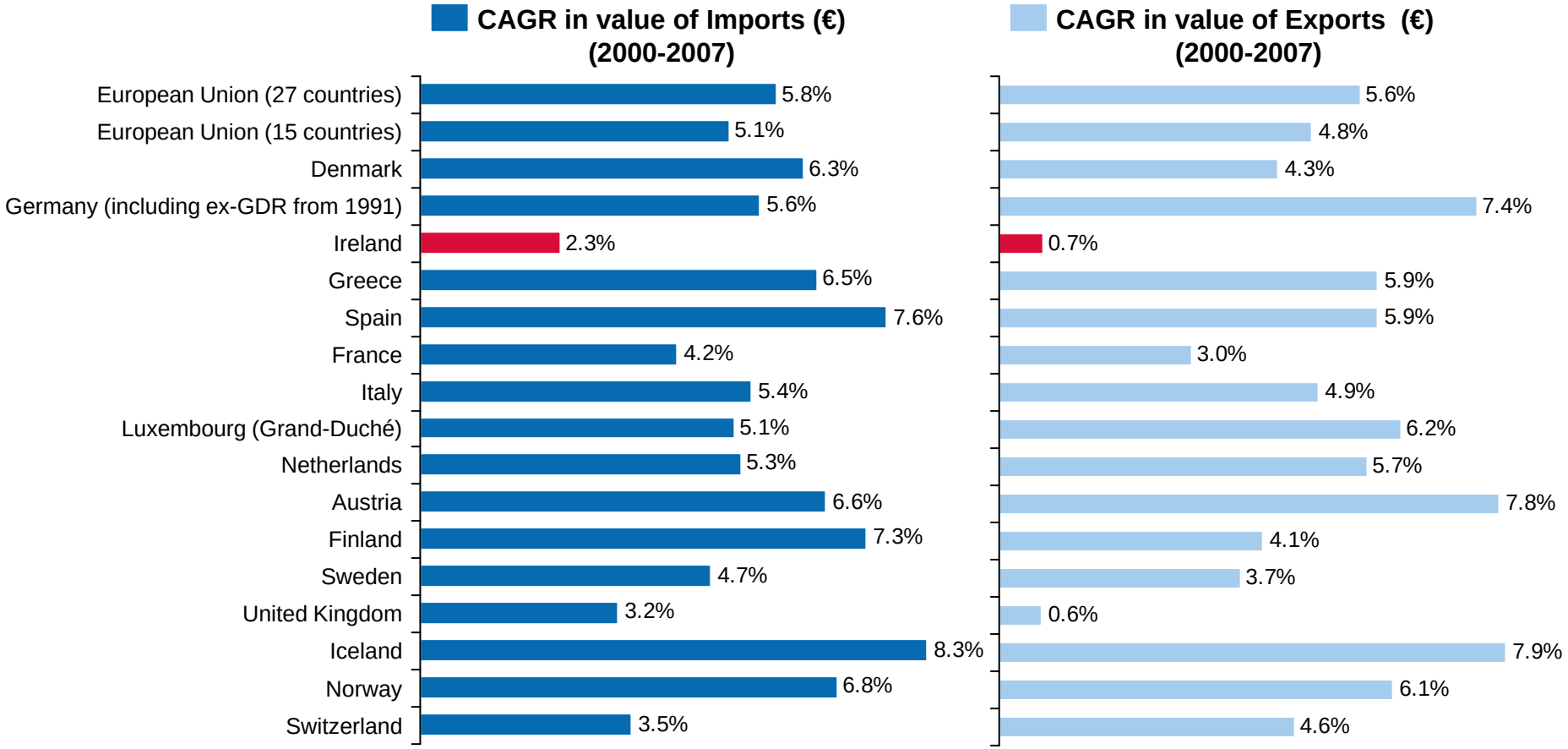
Chapter 1	Context
Chapter 2	Policy Background
Chapter 3	Rail Freight Baseline
Chapter 4	**Demand to Transport by Rail**
Chapter 5	Future Scenario with Rail
Chapter 6	Rail Connection Options
Chapter 7	Socio Economic Evaluation
Chapter 8	Other Options
Chapter 9	Conclusions and Next Steps

Ireland has experienced one of the highest GDP growth rates of the developed countries in Europe over the past decade



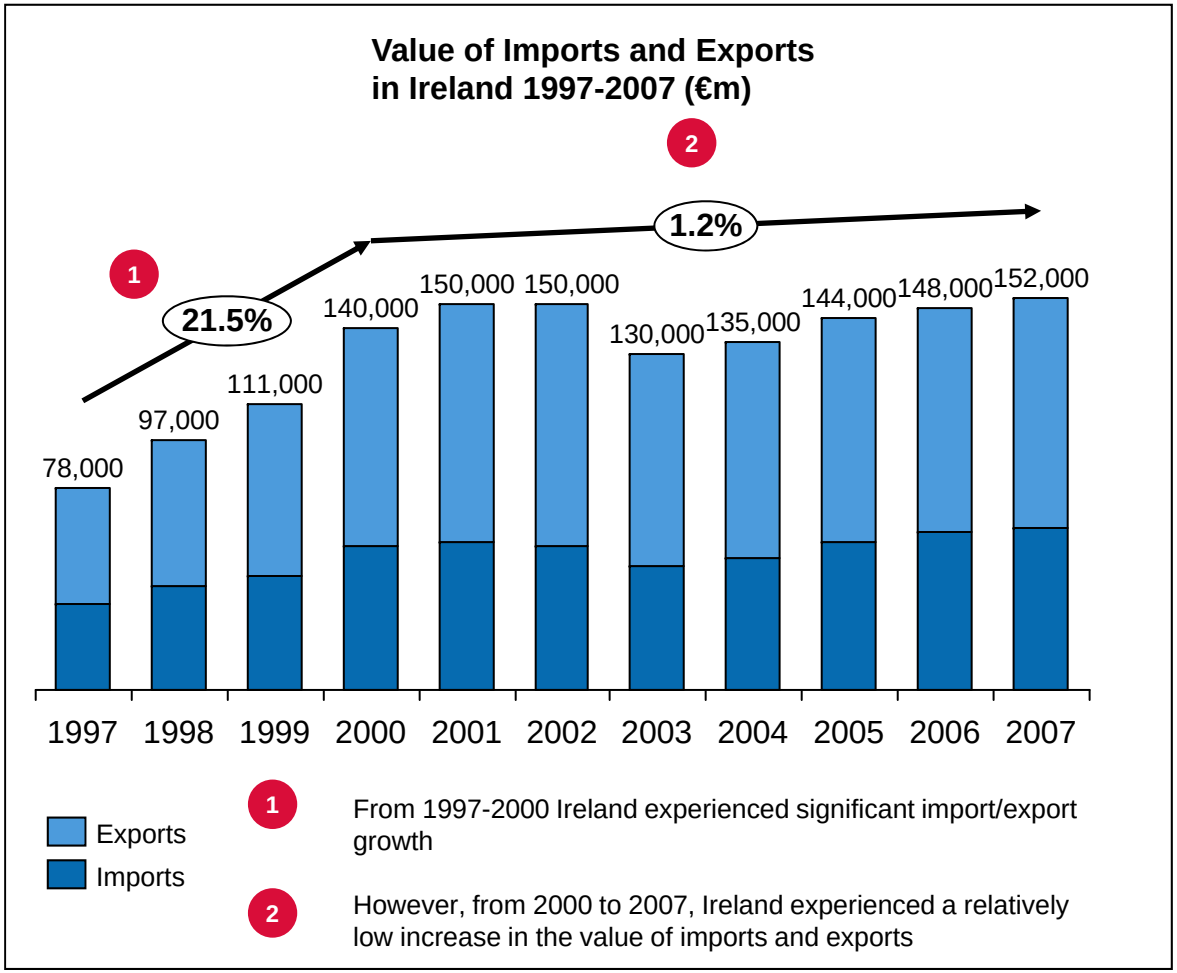
Source: Booz & Company analysis based on Eurostat data. Available online at http://www.epp.eurostat.ec.europa.eu

However, the growth in Ireland's import & exported goods, by value, is amongst the lowest of the developed countries in Europe



Source: Booz & Company analysis based on Eurostat data. Available online at http://www.epp.eurostat.ec.europa.eu

The value of Irish imports & exports has not increased significantly since 2001



Key Points

- In 2007, Ireland had a trade surplus of €26,000m
- Which has been in a state of slow decline since 1997
- Total import and export trade in 2007 was €152,000m
  - Exports accounted for € 89,000m
  - Imports accounted for € 63,000m

Main Exports (by value)

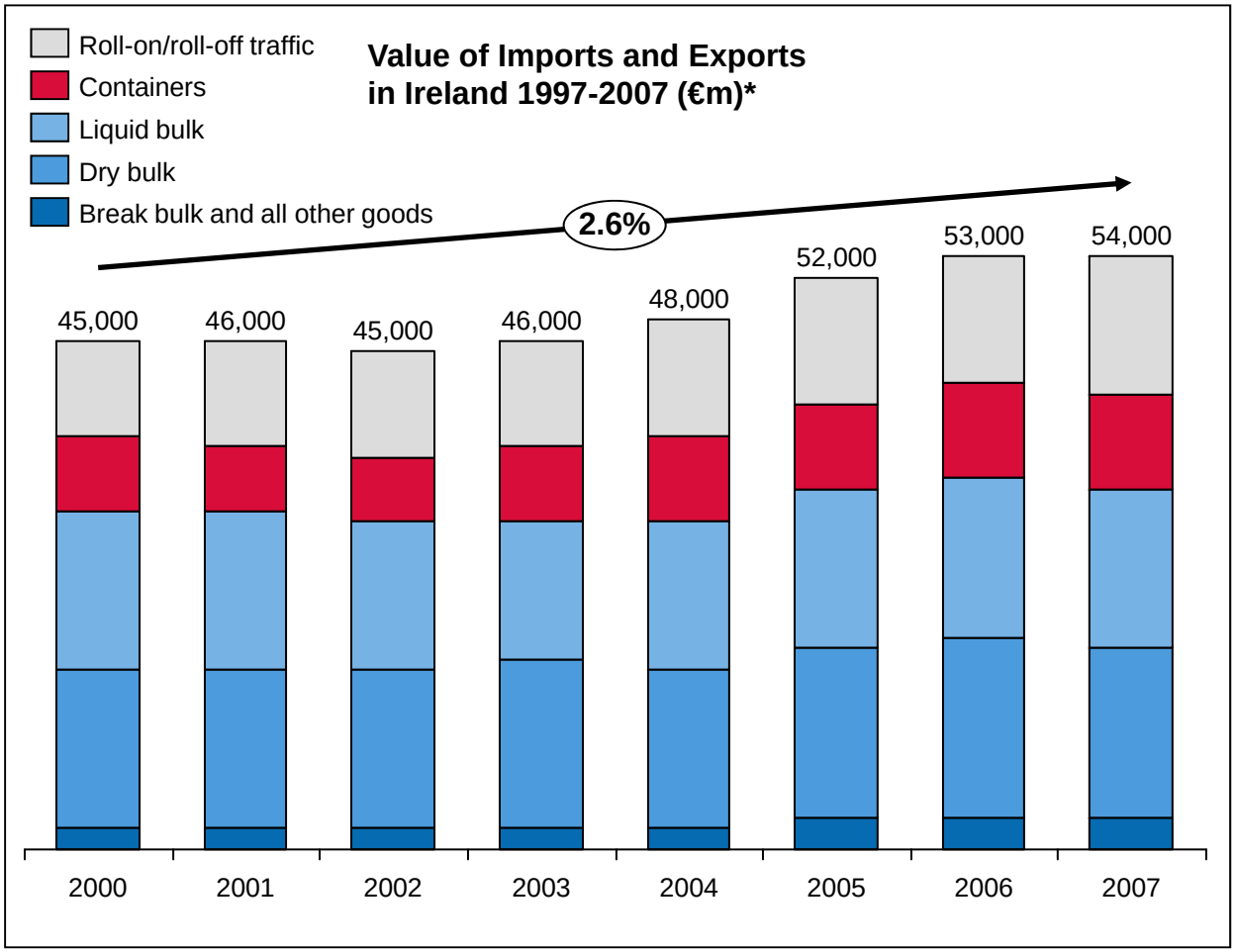
- Chemicals
- Machinery
- Other manufactured goods

Main Imports (by value)

- Machinery
- Chemicals
- Other manufactured goods

Source: Booz & Company analysis based on http://www.cso.ie

Despite the low value growth, in tonnage terms, Ireland's imports & exports grew at 2.6%pa since 2000, driven by containerised cargo



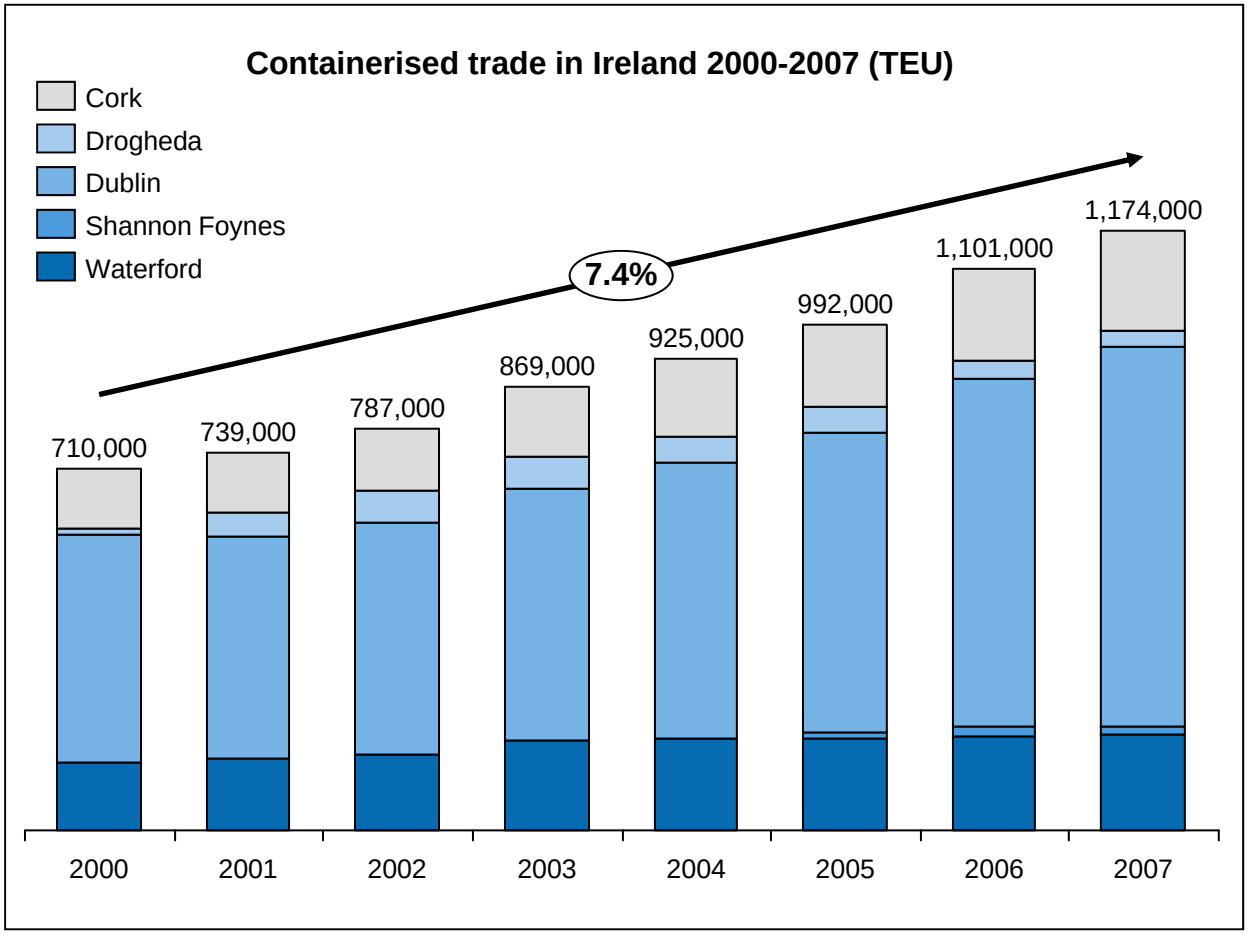
Compound Annual Growth Rate (CAGR) of tonnage in Ireland's imports and exports (%)

▪ Containerised tonnage	7.4%
▪ Ro-Ro tonnage	4.9%
▪ Liquid bulk tonnage	0.3%
▪ Dry bulk tonnage	1.3%
▪ Break bulk tonnage**	6.9%

* Source: Booz & Company analysis based on http://www.cso.ie

**: Although break bulk tonnage has the highest CAGR of cargo types, its growth is off a low base and comparative to total volume, it remains small.

Containerised trade has grown at 7.4% per annum in Ireland since 2000, driven primarily by growth at the Ports of Dublin & Cork



Cork is Ireland's second largest container port

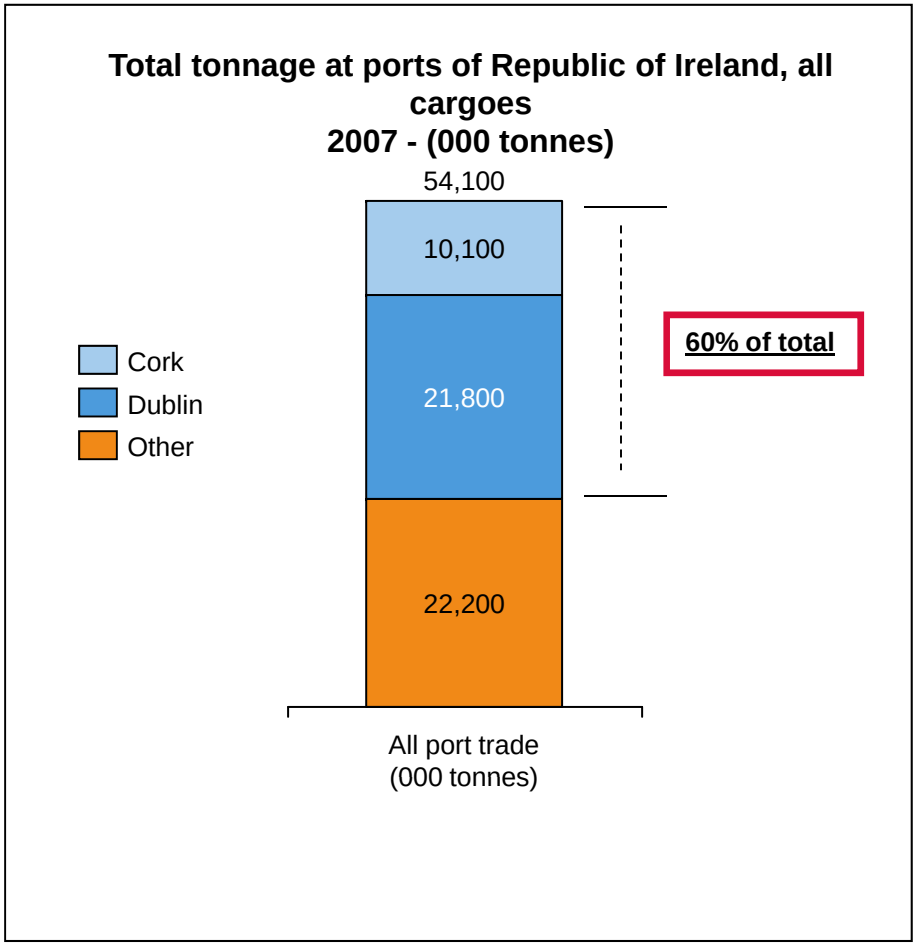
- In 2007, Dublin, Ireland's largest port, shipped 744,000 TEU in containers, Cork shipped 196,000 TEU and Waterford 185,000 TEU
- The CAGR at Dublin over the period 2000-2007 was 7.4% (roughly equal to the average growth)
- The CAGR at Cork over the same period was 7.2% (slightly lower than the average)

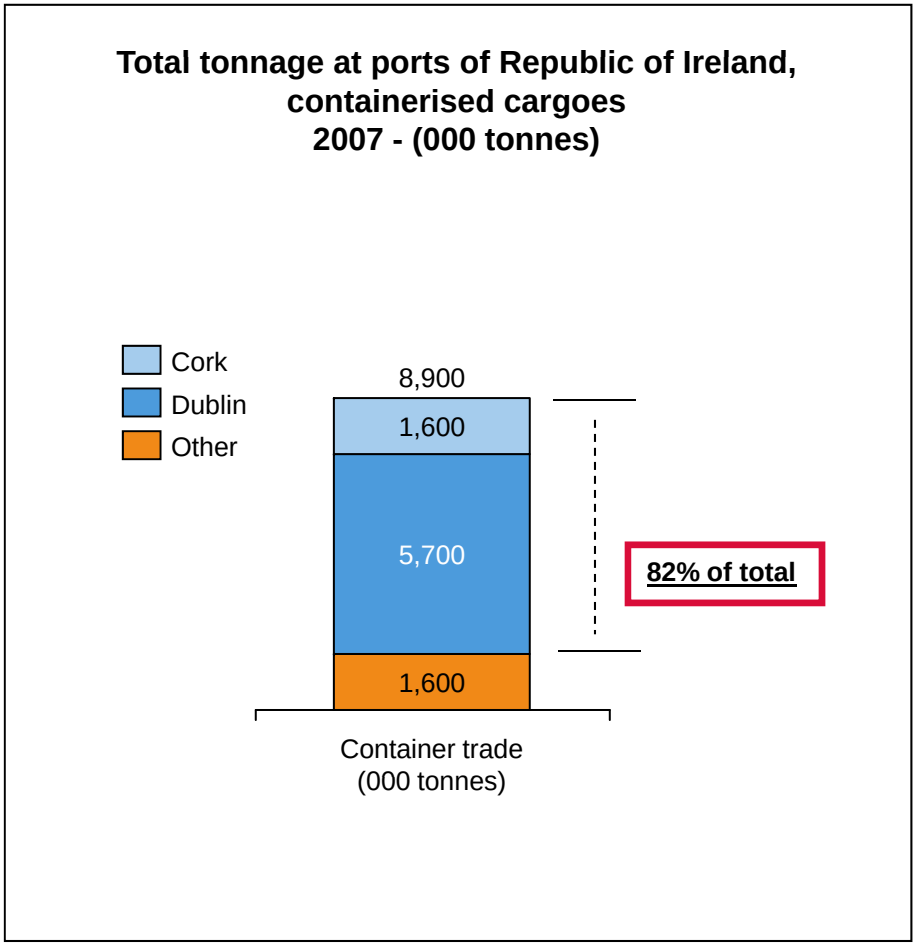
Ports have focused on natural growth

- The market share of the major ports has remained relatively static over the period 2000-2007. With less than 1% change in market share between Dublin and Cork over the period 2000-2007

Source: Booz & Company analysis based on http://www.cso.ie

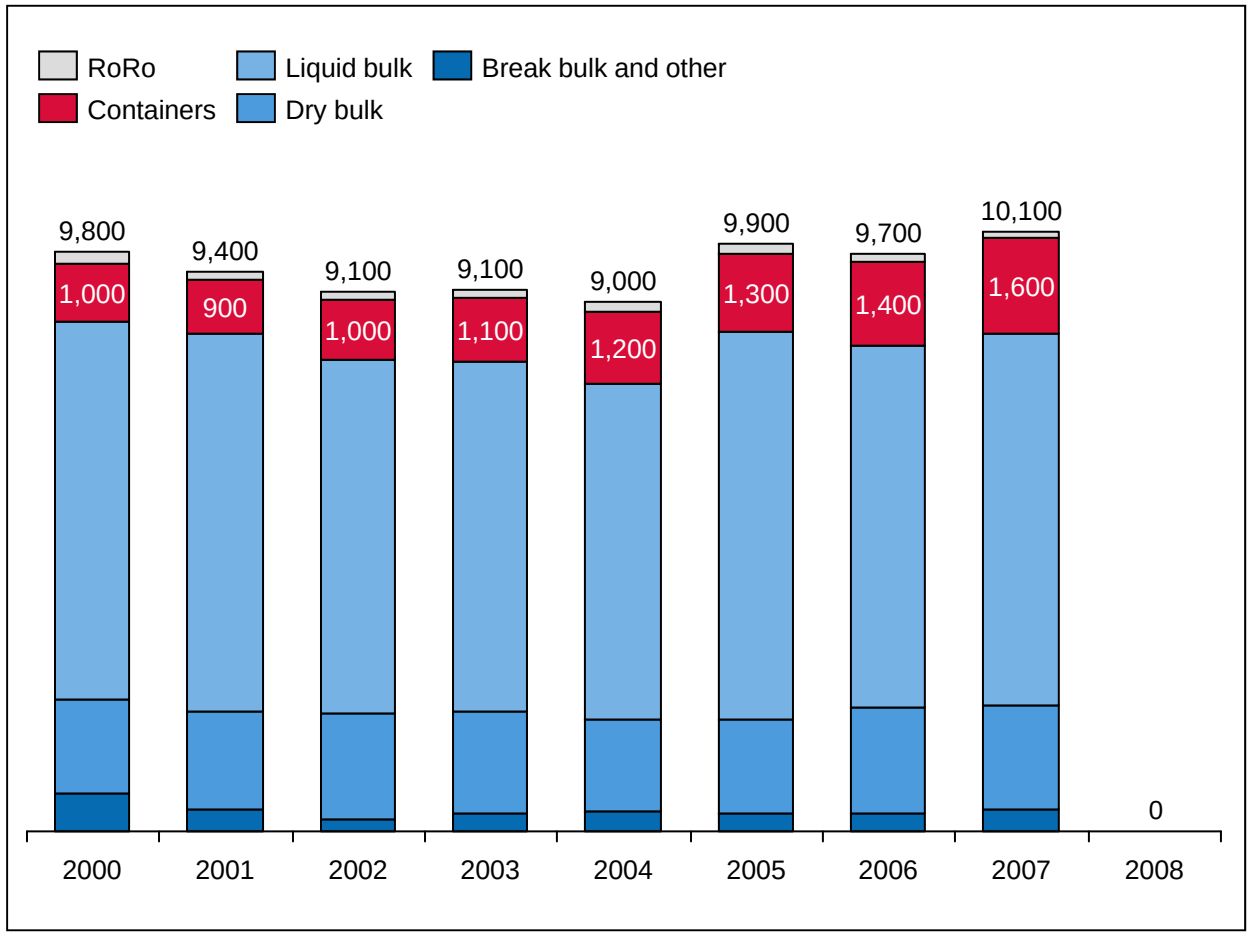
Dublin Port and Port of Cork are the largest ports in Ireland, by tonnage. Together, they accounted for 60% of total tonnage in 2007





* Source: Inter TradeIreland, 2007, Freight Transport Report for the Island of Ireland

The Port of Cork's growth has primarily been driven by growth in containers and liquid bulk



CAGR

- CAGR of Containers over the period (2000-2007) was 6.9%
- Liquid bulk declined slightly in volume over the period 200-2007;however, since 2004, it has grown at a rate of 3.2%

Main Cargoes at Cork

Ranked imports by tonnage:

- Crude and refined oil, animal feedstuff, fertiliser, and timber

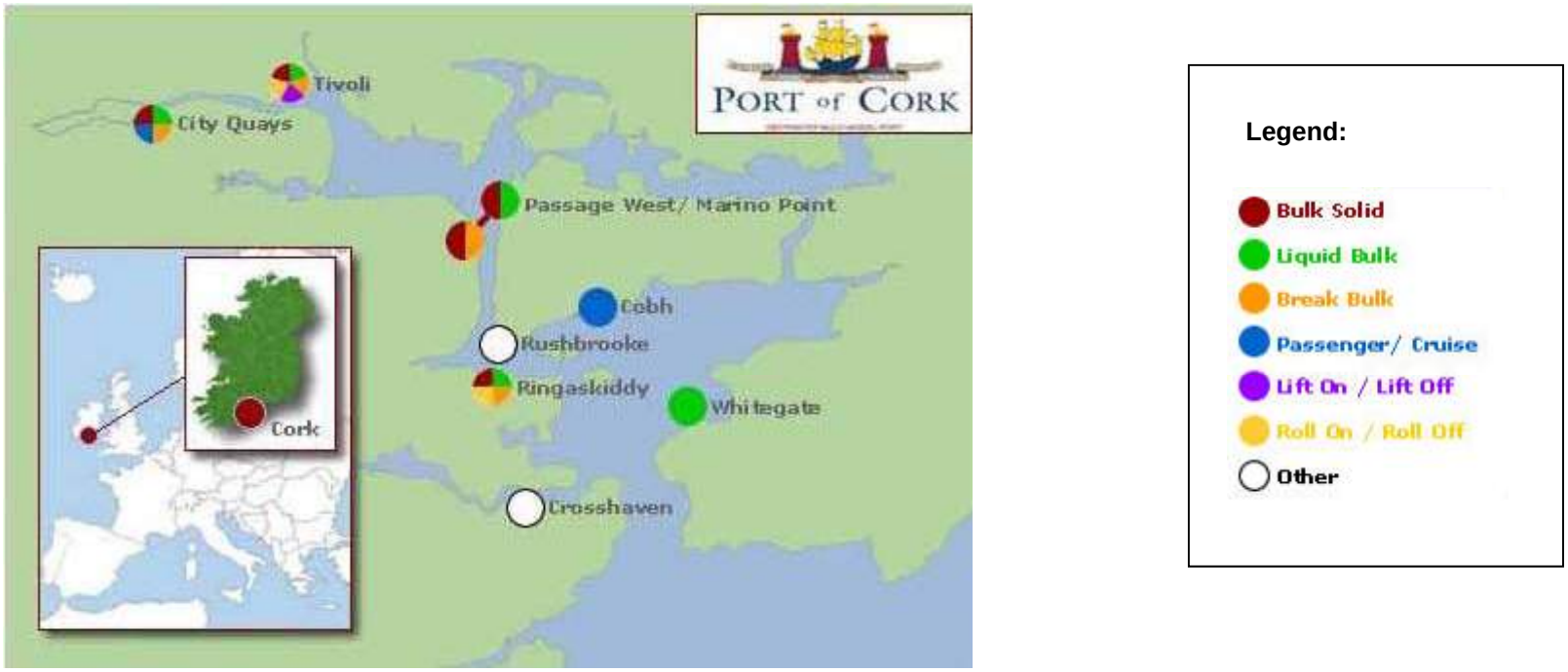
Ranked exports by tonnage

- Refined oil, containers, milk powder

Source: Booz & Company analysis based on http://www.cso.ie

The Port of Cork is made up of a number of terminals/facilities at different locations in the harbour. Each terminal imports and exports a varying amount and type of cargoes

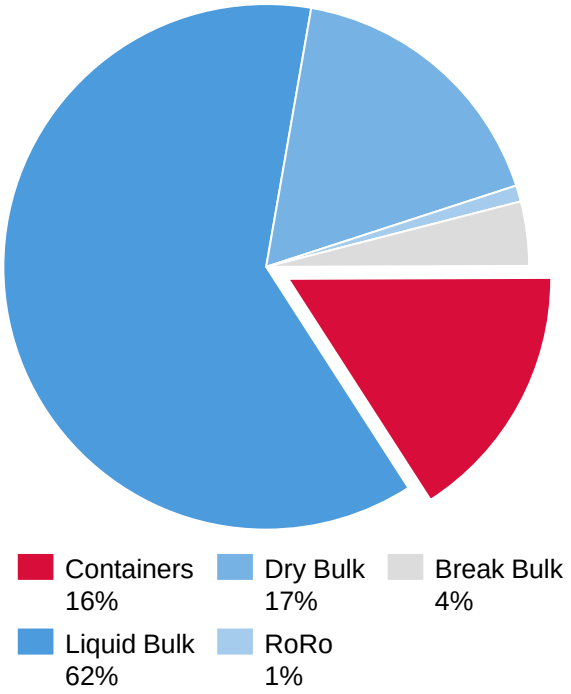
Overview of facilities at Port of Cork, by cargo type



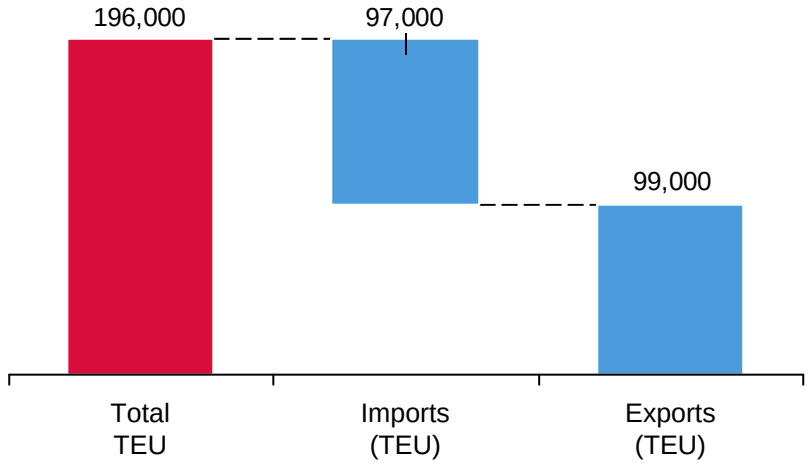
Source: Port of Cork website http://www.portofcork.ie/:

Containerised cargo (2nd largest cargo[1]) at Tivoli Docks accounted for 16% of total port tonnage, or 196,000 TEU, in 2007

Percentage of total tonnage, by category, at Port of Cork - 2007



Containerised Cargo at Port of Cork (TEU) - 2007[2]



Approximately:

- 3770 TEU per week (total)
- 1870 TEU per week (imported)
- 1900 TEU per week (exported)

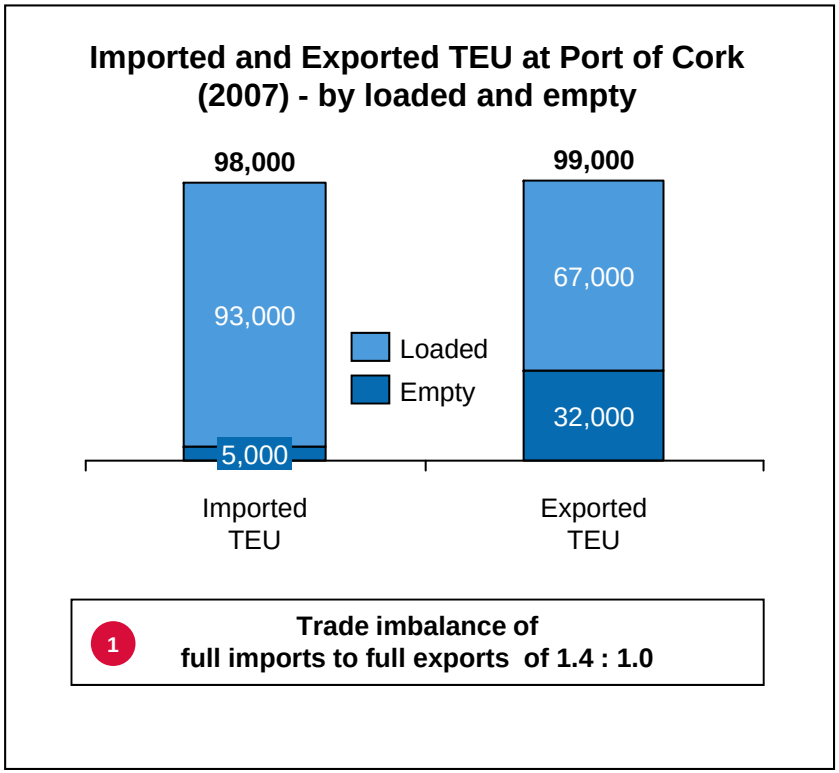
Source: Booz & Company analysis based on http://www.cso.ie

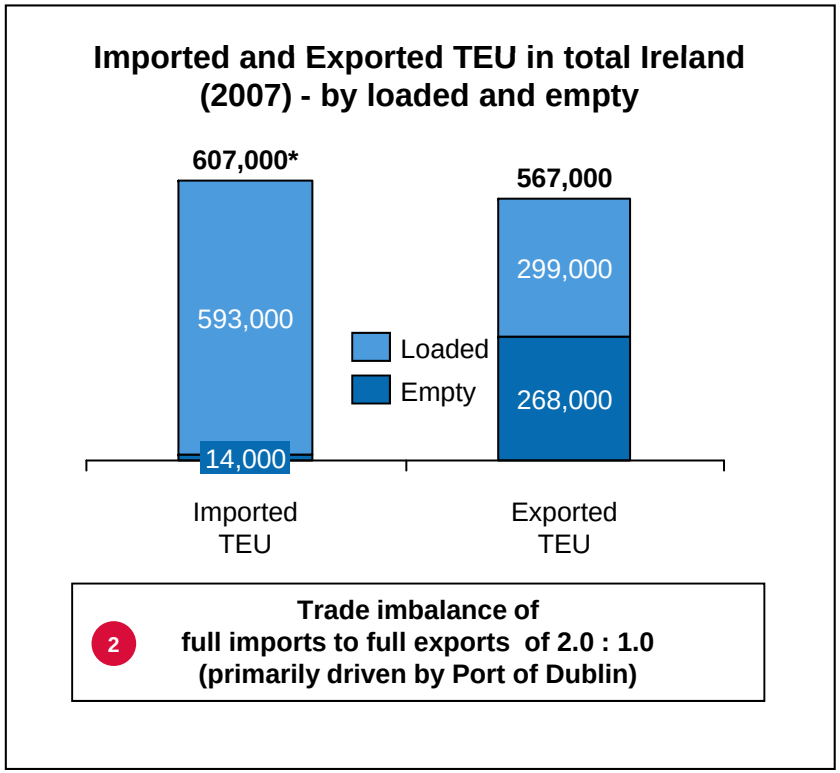
** Notes:

1 Liquid bulk to/from Whitegate Refinery accounts for 62% of exports& imports at the Port of Cork and is therefore the largest cargo

2. The number of containers entering and leaving port of cork are roughly matched; however, there is a significant difference in total weight of containers imported/export: due to empty imbalance and type of goods being imported versus type of goods being exported (see overleaf)

The trade imbalance of containers at Cork is lower than the Irish average - an attractive proposition for shipping companies





The lower trade imbalance of full import versus full export containers at Port of Cork presents itself as an attractive commercial proposition for shipping lines, which generally receive higher revenue for loaded containers.

Source: Booz & Company analysis based on http://www.cso.ie

In 2007, the main containerised exports were dairy products and waste paper. The main imports were for the building industry

Main Containerised Exports in 2007

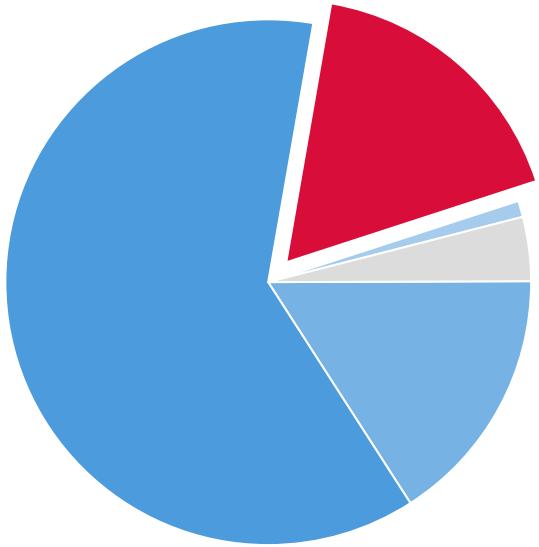
	Tonnes
Meat	24,000
Dairy	126,000
Drinks	92,000
Chemicals	53,000
Plastics	23,000
Caesin and other chemicals	29,000
Waste Paper for Recycling	152,000
Refractory Materials, glass bottles	47,000

Main Containerised Imports in 2007

	Tonnes
Sugar	33,000
Drinks	80,000
Computers and machinery	84,000
Chemicals	79,000
Timber and timber products for building	130,000
Salts, minerals, stones etc	37,000
Furniture	33,000
Tiles, etc	76,000
Metal Products	33,000
Plastics	34,000

In 2007, dry bulk at Port of Cork accounted for 17% of port tonnage, comprising timber, agricultural products & zinc ores

Percentage of total tonnage, by category, at Port of Cork - 2007

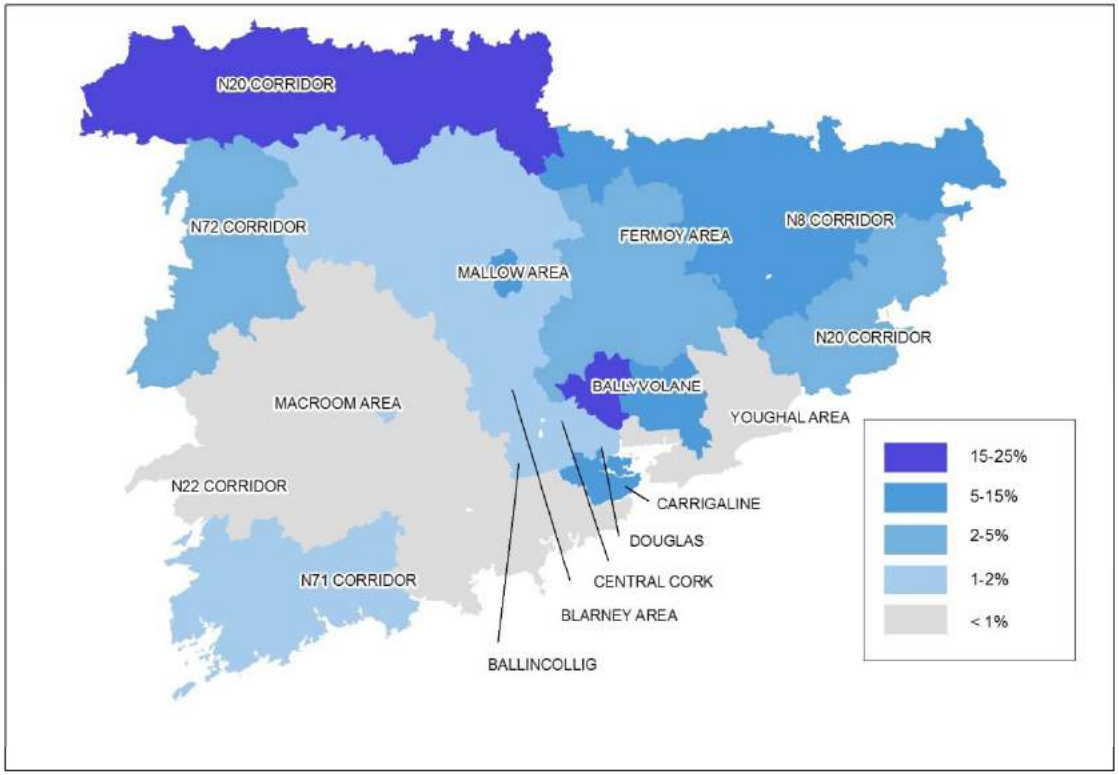


Main bulk products at Port of Cork

	Tonnes
Imports	
▪ Timber	230,000
▪ Agricultural products & supplies	580,000
▪ Coal	58,000
▪ Cereal	170,000
Exports	
▪ Timber	14.000
▪ Ore from Lisheen Mine	370,000
▪ Scrap metal	120,000

Source: Booz & Company analysis based on http://www.cso.ie
* Note: 'Other' accounts for more than 50% of total exported tonnage at Port of Cork. However, it is unclear from published data what this category includes.

All imported containers at Cork are carried by road, most of which have destinations in the N20 Corridor and north of the City



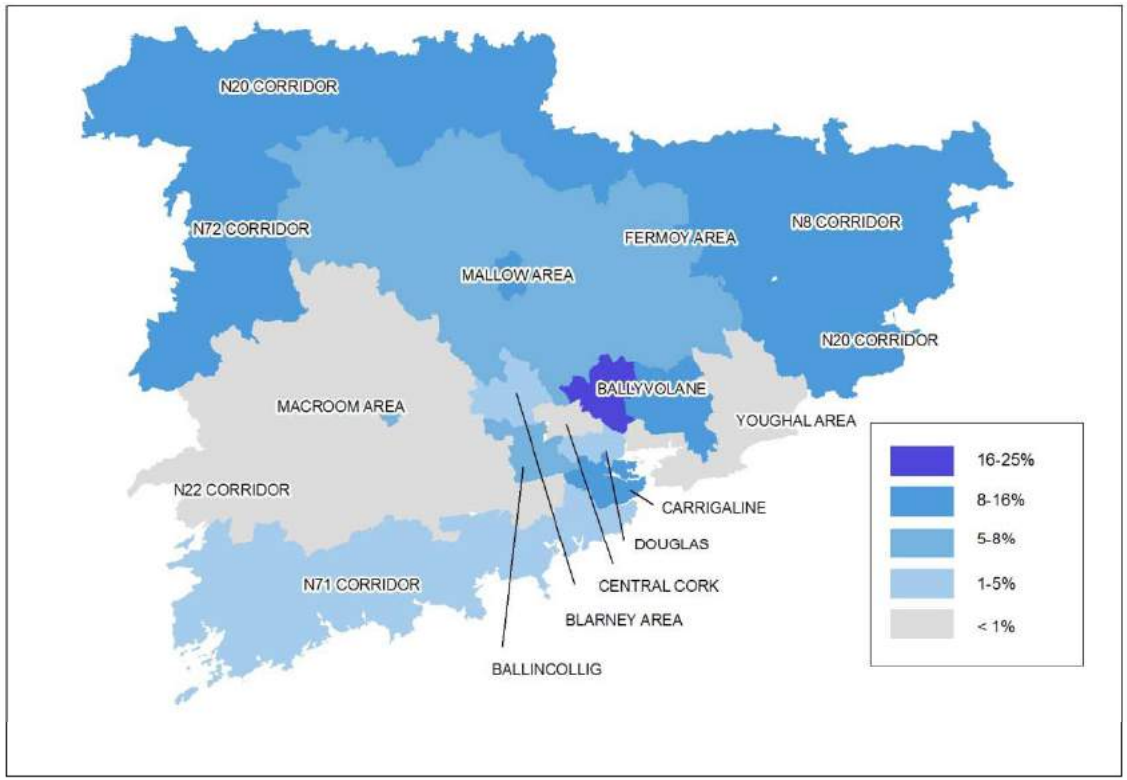
Area	% Truck Departures from Tivoli
Cork City	11%
Douglas	2%
Midleton	5%
Carrigaline	8%
Ballincollig	2%
Blarney	2%
Ballyvolane	15%
Youghal	0%
Bandon	1%
Kinsale	1%
Macroom	1%
Mallow	7%
Fermoy	5%
Cork Harbour	0%
N71 Corridor	1%
N22 Corridor	0%
N20 Corridor	23%
N8 Corridor	8%
N25 Corridor	4%
N72 Corridor	4%
	100%

Source: Proposed Development at Oyster Bank Environmental Impact Statement.

Notes:

1. The data presented within the Oyster Bank EIS was compiled from general truck surveys. The data was recorded at a high level and this map is therefore to be used for illustrative purposes only.
2. The Oyster Bank EIS, noted that drivers to/from Kerry and Tivoli or Ringaskiddy favour the N20 and N72 routes, rather than the N22 which is usually regarded as the main route to Kerry. This accounts for the low showings for Macroom and N22 Corridor
3. The destination refers to the first point of deconsolidation

Similar to imports, exported containers at Cork are carried by road, and are primarily sourced from the N20 Corridor/North City



Area	% Arrivals at Tivoli
Cork City	8%
Douglas	1%
Midleton	5%
Carrigaline	7%
Ballincollig	2%
Blarney	1%
Ballyvolane	15%
Youghal	0%
Bandon	0%
Kinsale	1%
Macroom	3%
Mallow	7%
Fermoy	6%
Cork Harbour	0%
N71 Corridor	1%
N22 Corridor	0%
N20 Corridor	22%
N8 Corridor	8%
N25 Corridor	8%
N72 Corridor	5%
	100%

Source: Proposed Development at Oyster Bank Environmental Impact Statement.

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3. The destination refers to the first point of consolidation

In summary, the Port of Cork's role is regional, it does not handle goods coming/going long-distance across the country….

Assumed Origin/Destination	Arrivals (%)	Departures (%)	All Trips (%)
South 'West	63.7	65.9	64.8
Mid West Region	29	30.1	29.5
South East Region	7.3	4	5.7
Total	100	100	100

Source: Goodbody Economic Consultants, Statement to Oysterbank Oral Hearing, April 2008

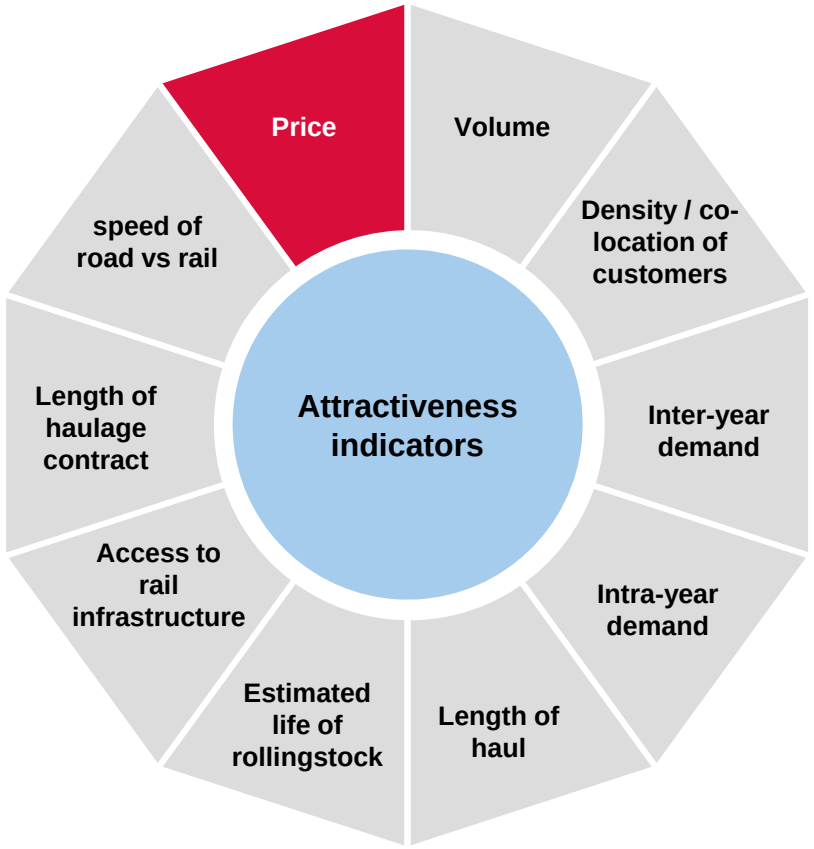
Surveys carried out in 2009 have confirmed that the 2005 findings still apply

- Some 65% of all trips to or from Port of Cork are from the South West Region
- Nearly 95% of all trips are to or from the South West or Mid-West Region
- In other words, the Port's trade is drawn from its immediate hinterland and there is very little competition with the Port of Waterford, its nearest competitor
- Although there are no hard and fast rules about the distances over which rail freight is a viable option[1], the distances within the Port of Cork's hinterland are rather short

[1] Monitoring Development of the Rail Network - COM(2007) 609 suggests rail compete with road on cost grounds at distances over 150k, however, while the financial cost of shipping by rail may be greater than by road, there may still be a socio-economic benefit

…. and, at first sight, transfer of any of the Port's main trades to rail is unlikely

Although price is typically the driver of mode choice decisions, there are a number of key factors that influence a shipper's mode choice decision:



9 factors applied to the Port of Cork

- **Price:** this is always the main determinant. All containerised and dry bulk traffic currently is transported by road to and from the Port of Cork. Road haulage costs are highly competitive in Ireland and the road network is dense and high quality, so rail will not compete on price without government support.
- **Volume:** with a few exceptions, volumes are rather low in the normal context of rail transport
- **Density/co-location of customers:** customers are dispersed but concentrated regionally
- **Inter-year demand:** rail freight needs demand which is stable from year to year, to justify the capital and operational investment
- **Intra-year demand:** Similarly, highly seasonal trades do not provide the steady demand required
- **Length of haul:** no hard rules, but the most of the customers are well within 150km of the port. EC research shows road transport will cost less over these distances (see Page 15 of this report).
- **Estimated life of rolling stock:** IÉ has some locomotives available but wagons are nearly life-expired
- **Access to rail infrastructure:** At present, there is no working rail freight terminal at Tivoli, Ringaskiddy and Cork's other terminals, and none of the customers are rail connected.
- **Length of haulage contract:** because of the level of investment required, the rail operator would need a reasonably long contract - we understand that the road haulage industry does not enjoy this security
- **Speed of road v rail:** rail can be faster and more reliable than road in congested urban networks

However, this does not preclude an analysis of what cargoes are more suited than others to rail transport at the Port of Cork

- A high level analysis of the Port of Cork's larger cargoes was undertaken to asses if any would be suited to rail transport if a working rail terminal were to be constructed at Ringaskiddy or Marino Point.

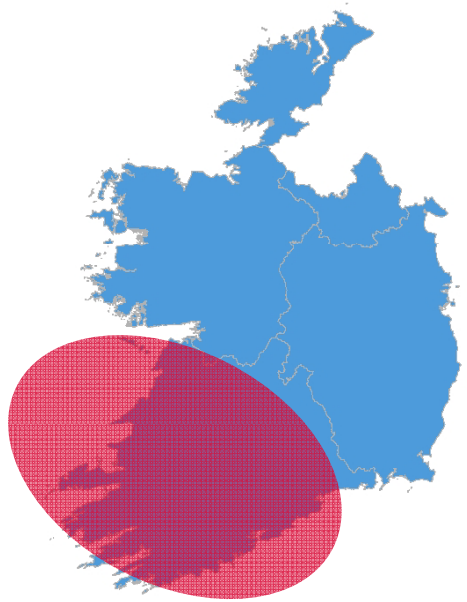
- The following slides in this section analyse the main containerised and non-liquid bulk cargo flows at the Port of Cork against the criteria on the previous page. This is done in order to determine the attractiveness of rail to transport each cargo to and from the port (compared to road).

Imported animal feedstuff is not suited to rail transport given its dispersed customer base and unstable volumes

Cargo type	Animal feed
Haulage type	Bulk
Current mode	Road
Import / export	Imported to locations throughout the South-West region
Main customer	Coops in North, East and West Cork and in Kerry

Indicator	Road		Rail
High volume	M		M
High density	L		H
Inter-year demand	H		L
Intra-year demand	M		M
Length of haul	H		L
Estimated remaining life of rail rollingstock	H		L
Access to current rail infrastructure	H		L
Length of haulage contract	H		L
Road versus rail speed	H		L
Overall	**H**		**L**

Illustration of traffic flow:



Comments:

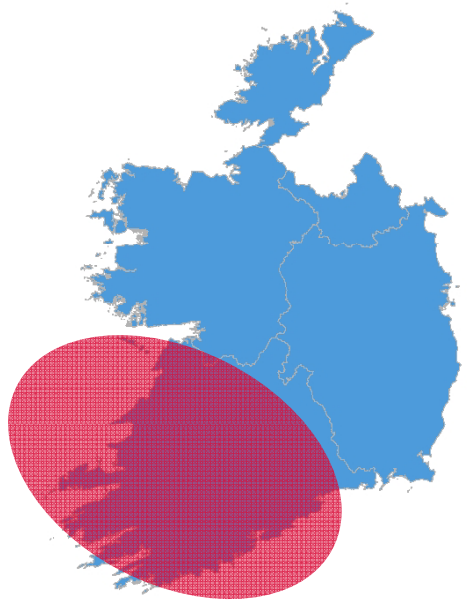
- Given the variability in volume of imported animal feedstuffs over the past few years, and the dispersed customer base, it is unlikely, in the absence of a central distribution facility that animal feedstuff would be suited for rail transport.

Timber is imported in large volumes but is not suited to rail transport given its dispersed customer base and unstable volumes

Cargo type	Timber
Haulage type	Bulk and containers
Current mode	Road
Import / export	Imported to locations throughout the South-West region
Main customer	Builders and builders' suppliers in North, East, West Cork and Kerry

Indicator	Road		Rail
High volume	M		M
High density	L		H
Inter-year demand	H		L
Intra-year demand	M		M
Length of haul	H		L
Estimated remaining life of rail rollingstock	H		L
Access to current rail infrastructure	H		L
Length of haulage contract	H		L
Road versus rail speed	H		L
Overall	**H**		**L**

Illustration of traffic flow:



Comments:

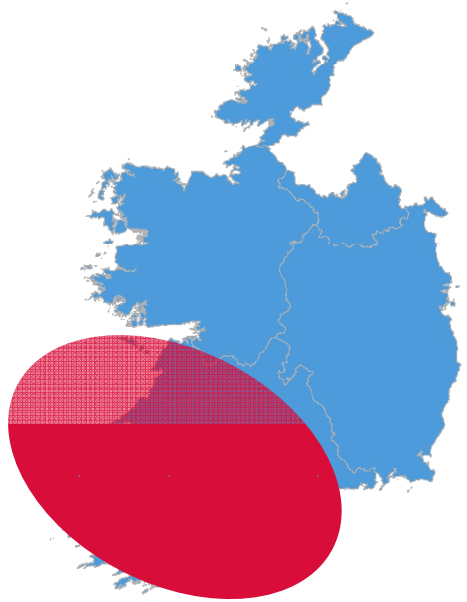
- Given the variability in demand for building materials, and the dispersed customer base, it is unlikely, in the absence of a central distribution facility that timber would be suited for rail transport.

Grain imported in large volumes but is not suited to rail transport given its dispersed customer base and seasonal nature volumes

Cargo type	Grain
Haulage type	Mainly bulk
Current mode	Road
Import / export	Imported to locations throughout the South-West region
Main customer	Oldums, breweries, various mills throughout the region

Indicator	Road		Rail
High volume	M		M
High density	L		H
Inter-year demand	H		L
Intra-year demand	M		M
Length of haul	H		L
Estimated remaining life of rail rollingstock	H		L
Access to current rail infrastructure	H		L
Length of haulage contract	H		L
Road versus rail speed	H		L
Overall	**H**		**L**

Illustration of traffic flow:



Comments:

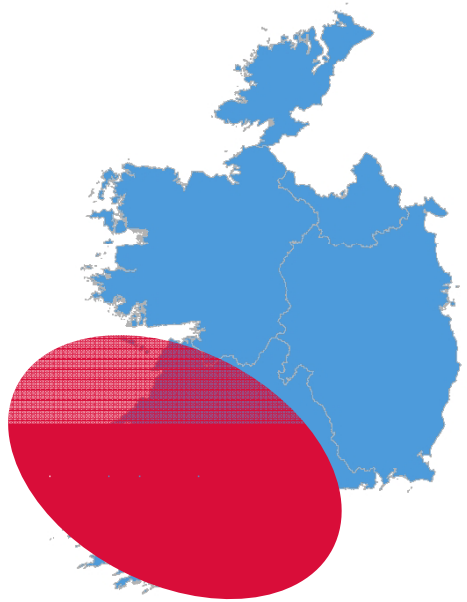
- Demand is not sufficiently well concentrated to suit rail operations

Drinks products are imported and exported in reasonably large volumes but through numerous companies each relatively small

Cargo type	Drinks -
Haulage type	Containers
Current mode	Road
Import / export	Both
Main customer	Numerous exporters and importers

Indicator	Road		Rail
High volume	M		M
High density	L		H
Inter-year demand	H		L
Intra-year demand	M		M
Length of haul	H		L
Estimated remaining life of rail rollingstock	H		L
Access to current rail infrastructure	H		L
Length of haulage contract	H		L
Road versus rail speed	H		L
Overall	**H**		**L**

Illustration of traffic flow:



Comments:

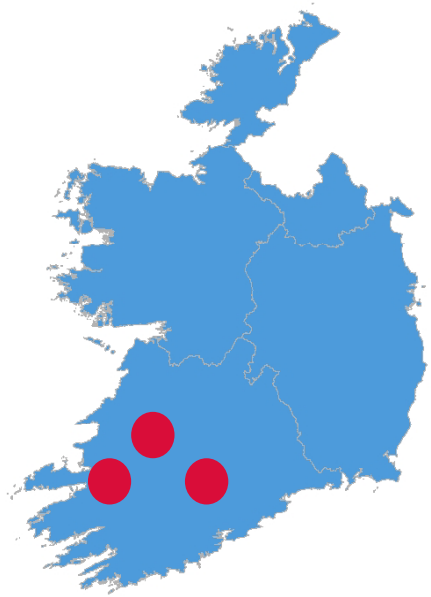
- Although the overall volumes of drinks imported and exported are reasonably large, there are numerous customers. Exporters include the local breweries, Irish Distiller in Midleton, Clonmel drinks producers, spring water producers. Importers are also distributed around the region, dealing in beers, spirits, spring waters, soft drinks etc.

Exported milk powder is suited for rail transport given its stable demand base but the customers are not on the network

Cargo type	Milk Powder
Haulage type	Bulk
Current mode	Road
Import / export	Exported from Limerick (Askeaton), Kerry (Listowel) and North Cork (Mallow/Mitchelstown)
Main customer	Wyeth (Baby food), Kerry Group and Dairygold

Indicator	Road		Rail
High volume	M		M
High density	L		H
Inter-year demand	M/H		L/M
Intra-year demand	L		H
Length of haul	M		M
Estimated remaining life of rail rollingstock	M/H		H
Access to current rail infrastructure	H		L
Length of haulage contract	M/L		M/H
Road versus rail speed	M/H		L/M
Overall	**M**		**M**

Illustration of traffic flow:



Comments:

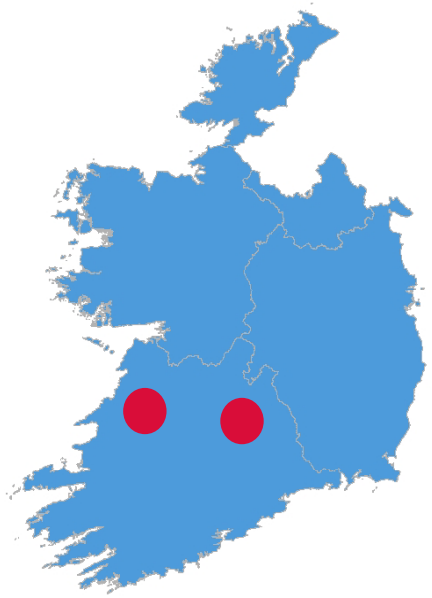
- Milk powder is an ideal candidate for rail transport given its relatively stable intra-year demand, if it could be consolidated into viable train loads. However, currently road is the more attractive option due to the lack of rail facilities at production centres and port and relatively small volumes.

Exported dairy products are not suited to rail transport given the distance of producers from railheads

Cargo type	Butter
Haulage type	Bulk
Current mode	Road
Import / export	Exported from Kerry and Cork
Main customer	Dairygold (Mallow, Mitchelstown), Kerry Group (Listowel)

Indicator	Road		Rail
High volume	H		L
High density	L		L
Inter-year demand	M		M
Intra-year demand	M		M
Length of haul	H		L
Estimated remaining life of rail rollingstock	H		L
Access to current rail infrastructure	H		L
Length of haulage contract	M/H		L/M
Road versus rail speed	H		L
Overall	**H**		**L**

Illustration of traffic flow:



Comments:

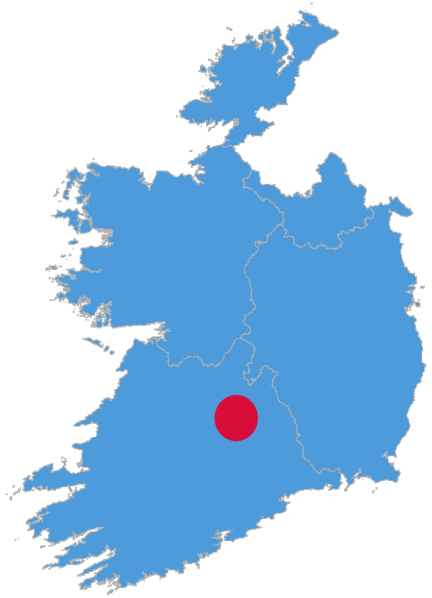
- There are three main butter flows: (1) The Kerry Group are located in Listowel, and are not located near a rail head. Dairygold are located in two places: (2) Mallow (which is on rail) and (3) Mitchelstown (which is not on rail).
- Given the relatively low volumes and close proximity of the exporter in (2), it is unlikely that this freight task is suited to rail. Also, given that (1) + (3) are not located near a railhead, it is unlikely that this product would be suited for rail.

Exported zinc would be an ideal candidate for rail transport if incentives for rail facilities were provided at the mine

Cargo type	Zinc
Haulage type	Bulk
Current mode	Road
Import / export	Exported from Lisheen Mines through Port of Cork
Main customer	Lisheen mines

Indicator	Road	Rail
High volume	L	H
High density	L	H
Inter-year demand	M/H	L/M
Intra-year demand	L/M	M/H
Length of haul	L/M	H
Estimated remaining life of rail rollingstock	H	L
Access to current rail infrastructure	H	L/M
Length of haulage contract	M	M
Road versus rail speed	M	M
Overall	**L/M**	**M/H**

Illustration of traffic flow:



Comments:

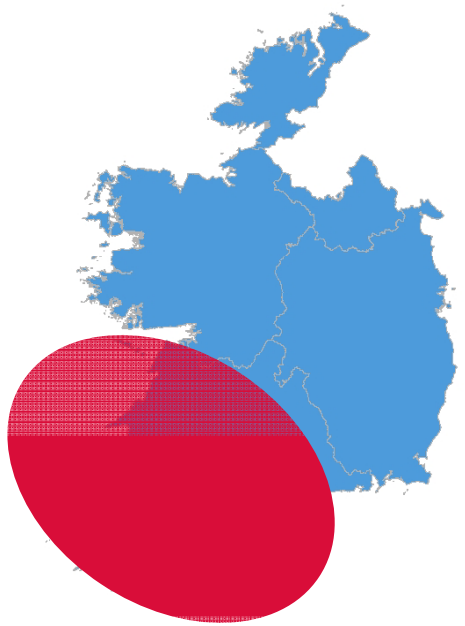
- If rail facilities were operational at both port and mine-site, exported zinc is likely to be a candidate for rail transport given its comparatively high volumes and single point of origin/destination. However, the large variability in year to year demand and the short life left at Lisheen Mines (due to be exhausted by 2014) make investment in rail unattractive at this stage but if a similar opportunity arose at a new mine, for example, Pallas Green, it probably could be served by rail.

Exported waste paper for recycling meets many criteria but the trade is too fragmented to suit rail

Cargo type	Waste paper
Haulage type	container
Current mode	Road
Import / export	Exported from all major towns throughout the South-West Region
Main customer	Various waste disposal companies and shippers

Indicator	Road		Rail
High volume	M/H		L/M
High density	H		L
Inter-year demand	L/M		M/H
Intra-year demand	H		L
Length of haul	H		L
Estimated remaining life of rail rollingstock	H		L
Access to current rail infrastructure	H		L
Length of haulage contract	H		L
Road versus rail speed	M		M
Overall	**H/M**		**L**

Illustration of traffic flow:



Comments:

- Export of waste paper is a major cargo at Port of Cork, but it is fragmented across the various shipping lines and waste disposal companies, all of which tend to consolidate at the big towns in the region and not centrally.

In conclusion, none of the existing trades are suitable for transfer to rail for various reasons. Above all, they are not rail-connected

Summary of Reasons why the Existing Market is hard to serve by Rail

- None of the customers are rail connected i.e. the do not have rail access into their sites and many of them are remote from the railway network
- Most of the customers do not generate sufficient volumes to run full train loads
- Customers are dispersed throughout the region, not concentrated
- Most of the customers are well within the distance where road is more cost effective than rail
- Road haulage companies provide a competitive service

- Any solution will need to overcome these problems

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The most obvious possibility for a radical change in the situation would be if Cork took significant business from other ports

Major Growth Scenario

- Port of Cork Company pursues an active strategy to take significant volumes of traffic away from competing ports such that its business grows by a factor of two or three (say), giving it the "critical mass" for a rail operation
- This could be successful in the case of:
  - Other ports down-sizing or no longer being competitive for some reason (e.g. rising costs, industrial unrest, traffic congestion, etc.); and/or
  - Cork is somehow designated a leading national port and receives State support to develop accordingly; and/or
  - Some other unforeseen situation

Disadvantages of this Scenario

- No realistic prospect of the competitive position of the other ports changing to this extent as the State favours a competitive ports regime. This is unlikely to change
- No environmental benefit in goods currently going by ship (i.e. straight into Dublin Port) being transferred to rail (although it would be better than road), making the case for this scenario difficult to construct
- Does not help identify a specific demand around which to construct a case
- Situation remains where customers have no railheads and national rail freight infrastructure is lacking and to assess the national infrastructure needed would be a big task

This does not produce a Best Case Scenario upon which to develop and assess rail connection options

Distribution Centres overcome the need for customer railheads and provide the scale needed to justify rail operations

Distribution Centre - How it could work

- recognises that, except for certain bulk trades, few traffics can complete their entire journey by rail alone
- can serve a twofold purpose when import and export volumes are well balanced, as they are in Cork
- exports from all over the region would be taken by road and then gathered into full train loads before being taken by train to the port.
- imports would be taken from the port to the distribution centre before being taken by truck to individual destinations throughout the region.
- operated by a logistics company who can provide an end to end service for their clients regardless of the mode (i.e. whilst a container may be picked up by a truck, put on rail and then collected by a truck at the other end the customer must not feel this) and other services e.g. container power supply or management of bonded cargoes
- Distribution activities (i.e number of staff, train time arrivals etc.) would be focussed around when customers want their goods, normally between 0700-0900 in the morning

Distribution Centre

Port

Pros and Cons

- Pros
  - Overcomes argument that customers are small, dispersed and without railheads
  - Provides sufficient density to justify rail operations
  - Contains capital investment requirements locally and to extent which can be roughly quantified
  - Takes significant numbers of trucks of the roads
  - Commonplace and successful internationally
  - Efficient, integrated, operator can transport containers by the most effective mode
- Cons
  - Double-handling, resulting in additional costs
  - Reduced flexibility/speed
  - The level of Government capital and revenue support funding needed to encourage/incentivise its use might be large

Hypothesis

A Distribution Centre located to the North-West of the City with a shuttle rail freight service linking to the port is the Best Possible Scenario upon which to build a case.
If there is no case under this scenario, there is no point in looking further.

The Distribution Centre concept lends itself well to the Cork situation and will form the basis for our options

- Underlying the concept of shifting containers to rail is the idea that a Distribution Centre will be established somewhere near or slightly north of Mallow (No site has been identified. IÉ has land at Mallow station, the potential of which would need to be clarified but which is not likely to be sufficient)
- This concept has underpinned our assumptions discussed previously as we have identified all traffic going north from the container terminal (wherever that might be) to be transferred to rail
- This Distribution Centre would:

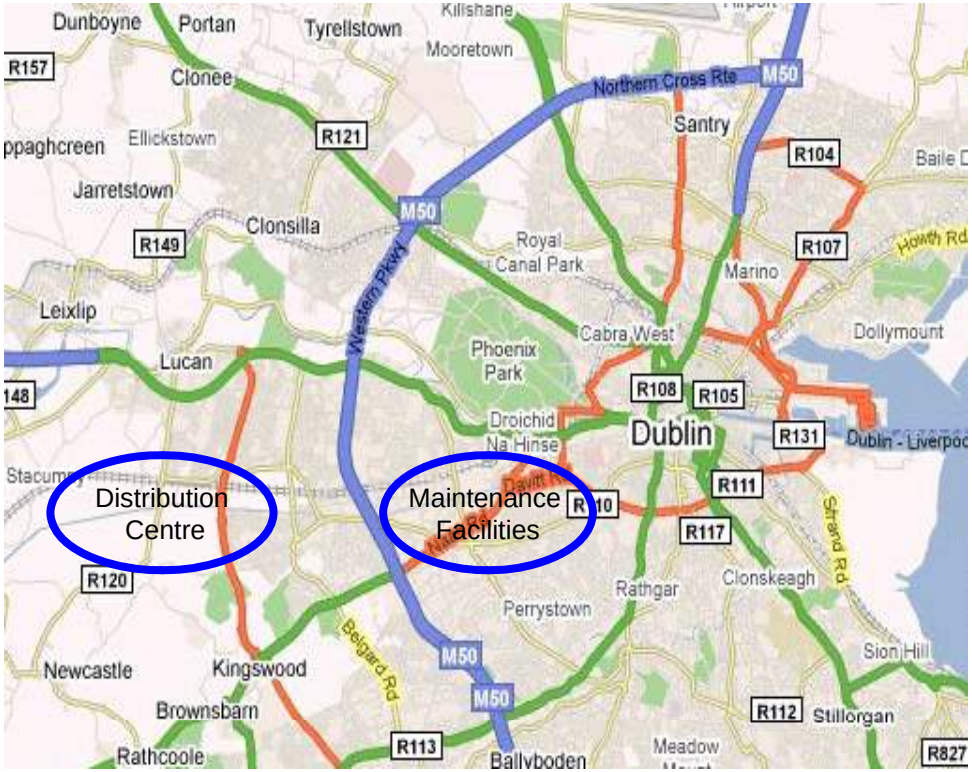
  - Receive all export containers which will be forwarded on rail to the point they are loaded onto a ship

  - Receive all imported containers which will be transferred from rail onto road and distributed to customers.
- Appendix A contains information on how distribution centres work in New Zealand

As a long term aspiration, the Distribution Centre concept could be extended beyond the Cork area/South West Region

- Cork could position themselves to be the “Port of Choice” on the east coast and establish a Distribution Centre near Dublin
- This would allow goods to be distributed in and around Dublin, relying on rail to line-haul the products and road to finish the final leg
- The site would best be located outside of the immediate city area
- Close to the strategic road network and connected into rail, the site would best be in a relatively low density area
- Ideally the site would be located close to the industrial area of Dublin, where large retailers have their own distribution centres
- There is no such site currently in railway ownership
- It would be difficult to identify benefits arising from the situation where If freight currently taken into Dublin by ship were to be taken to Cork instead and taken by rail to Dublin

Indicative Distribution Centre location



There would be no financial reason to transport via a Distribution Centre at present or in the foreseeable future - subsidy required

Direct Road v. Distribution Centre

- We examined the cost of transporting containers by rail to three locations where the port has customers of a reasonable size[1]
  - Askeaton, Co. Limerick
  - Listowel, Co. Kerry
  - Mitchelstown, Co. Cork
- Trucks to Listowel were assumed to route on the N20, as indicated by the 2005 surveys
- Costs by rail to North Kerry/Limerick are 25-30% or around €70/container higher than by road
- Costs to Mitchelstown are estimated to be over 70% higher, or €100/container, by rail
- Obviously, the customer would not choose to transport via the Distribution Centre (DC) unless the costs and overall service were comparable with a direct road service.
- It is envisaged that the DC would be run by a private sector operator and part funded by the State on the basis that there is value in doing so. IE or another operator would run the trains.
- Chapter 7 evaluates whether there would be sufficient value in the proposition to justify support

[1] These customers do not generate sufficient volumes for full train loads. There could be delays associated with the assembly and disassembly of trainloads, and with waiting for trains to arrive/depart. However, it can be assumed that an integrated logistics provider would send time-critical containers by the most appropriate mode, be it road or rail

	Askeaton	Listowel	Mitchelstown
Distance from Port - Distribution Centre (km)	50	50	50
Distribution Centre - Customer (km)	75	130	30
Customer - Port (km)	130	180	60
Distribution Centre Option			
Lift from ship to rail	729	729	729
Rail fixed cost	2000	2000	2000
Rail variable cost	493	493	493
Lift from rail to truck	324	324	324
Road haulage costs	1755	3042	702
Total per train load (18 x 40ft or 45ft containers)	5301	6588	4248
Cost per container	295	366	236
Direct Road Option			
Lift from ship to quayside	729	729	729
Lift from quayside to truck	324	324	324
Road haulage costs	3042	4212	1404
Total per train load (18 x 40ft or 45ft containers)	4095	5265	2457
Cost per container	228	293	137
Increase in cost	67	74	100
% increase in cost	29%	25%	73%

Source: Cost data from Goodbody Economic Consultants, June 09 (not validated against Booz cost model)
Booz & Company analysis

To understand how much traffic could go by rail from any site, the existing container terminal traffic distribution was examined

- Existing Container Terminal Traffic Distribution

Source: Origin destination surveys undertaken by Port of Cork in November 2005 and presented in Oysterbank EIS. Surveys undertaken in 2009, subsequent to this analysis, indicated that the distribution remains the same as in 2005.

Note that imports and exports appear well balanced

Area	% HGV Arrivals	% HGV Departures	% HGV Total
Cork City	8%	11%	9%
Douglas	1%	2%	1%
Midleton	5%	5%	5%
Carrigaline	7%	8%	8%
Ballincollig	2%	2%	2%
Blarney	1%	2%	2%
Ballyvolane	15%	15%	15%
Youghal	0%	0%	0%
Bandon	0%	1%	0%
Kinsale	1%	1%	1%
Macroom	3%	1%	2%
Mallow	7%	7%	7%
Fermoy	6%	5%	6%
Cork Harbour	0%	0%	0%
N71 Corridor	1%	1%	1%
N22 Corridor	0%	0%	0%
N20 Corridor	22%	23%	22%
N8 Corridor	8%	8%	8%
N25 Corridor	8%	4%	6%
N72 Corridor	5%	4%	5%

Source: RPS O-D Surveys, November 2005

100%

Distribution of Trucks to/from Tivoli

Detailed zones aggregated

Area		% Total HGV
Cork City		9%
Ballyvolane		15%
Blarney		2%
Ballincollig		2%
South	*Douglas, Carrigaline, Bandon, N71, Kinsale*	11%
East	*Midleton, Youghal, N25*	11%
West	*Macroom, N22*	2%
North West	*Mallow, N20, N72*	34%
North	*Fermoy, N8*	14%

- Assumes imports and exports balanced

100%

Assumptions were then made about which traffic is best suited for possible transfer to rail

Assumptions

- Containers to/from Cork City and areas to the east and south would not use a distribution centre in the Mallow area
- Some traffic from the Ballyvolane, Blarney and Ballincollig areas may use it
- A Distribution Centre in the Mallow area would be most attractive for traffic to/from the west, northwest and, at the margins, to/from the north
- In keeping with our agreed approach to consider the best possible scenario under which Port of Cork could be rail connected, an assessment was made based on the maximum possible transfer of 50%
- An assessment was also undertaken assuming 25% of the port's traffic went via the DC. Although more realistic, this would still mean a major change in behaviour and it would be a challenging target.

Area		% Total HGV	Use DC at Mallow?	What proportion?
Cork City		9%	No	0%
Ballyvolane		15%	Maybe	25%
Blarney		2%	Maybe	50%
Ballincollig		2%	Maybe	25%
South	*Douglas, Carrigaline, Bandon, N71, Kinsale*	11%	No	0%
East	*Midleton, Youghal, N25*	11%	No	0%
West	*Macroom, N22*	2%	Yes	90%
North West	*Mallow, N20, N72*	34%	Yes	90%
North	*Fermoy, N8*	14%	Yes	90%
Absolute maximum to use Distribution Centre				**50%**
Target to use Distribution Centre				**25%**

Source: RPS O-D Surveys, November 2005, Booz Analysis. Surveys undertaken in 2009, subsequent to this analysis, indicated that the distribution remains the same as in 2005.

As proposed, the Distribution Centre implies an inherently efficient railway operation

- The railway operation would be a shuttle service operating continuously between the port and the Distribution Centre, 6 days a week, during business hours, roughly
- Drivers, locomotives and freight wagons would therefore be fully utilised and never idle
- Full train lengths are assumed i.e. the Distribution Centre operator would charter 18-wagon trains from IÉ (or possibly another train operator in future, if that is an option) and take the risk for filling them
- Additional trainsets (locomotive and wagons) would not be purchased unless worthwhile, even if that meant some freight had to go by road
- As the trips are short and local, there is no need for trains and drivers to spend nights away from their base, which removes the need for accommodation elsewhere which is a feature of long haul freight operations
- Our assessment captures these efficiencies. If the Distribution Centre does not have sufficient “critical mass”, these would be lost. We estimate that around 25% of total port traffic (see page 78) is required to go through the DC for a single trainset and crew to operate efficiently.

Potential TEUs to be carried by rail were then calculated for each phase of the container terminal development

Potential TEUs to be carried by Rail

	Phase 1	Phase 2	Phase 3	Longer Term
Capacity (TEU per annum)	250,000	300,000	400,000	600,000
Load factor 85%				
Total TEU per annum	212,500	255,000	340,000	510,000
Total TEU by rail 50%	106,250	127,500	170,000	255,000
25%	53,125	63,750	85,000	127,500

Notes
1) TEU for each phase as described in Oysterbank Financial and Economic Appraisal, Goodbdy, 2007
2) Booz & Co. have not adjusted capacity requirements in line with recent economic downturn
3) 85% load factor Booz & Co. assumption

Container Flat Wagon

- Containers would be carried on Container Flat Wagons (CFT) similar to that shown above.
- Each CFT can accommodate two 20ft containers or one 40ft or 45ft containers
- IÉ currently only operate full train loads of 18 container flat wagons and have a limit of 36 TEU per train.
- IÉ have advised that the weight limit could be increased with new rolling stock

Understanding the container carrying capacity of rolling stock and the length of trains is another important consideration

Considerations in Rail Freight Operations

- One of the biggest considerations in a rail freight environment is the capacity of a single train
- That capacity defines the:
  - number of TEU that can be transported in one trip
  - infrastructure needed i.e. signalling and passing loops
  - horsepower of the locomotives needed for each train.
- Our assumed container size split is based on conversations with shipping companies.
- IÉ's theoretical limit is 36 TEU/18 CFT per train. In discussions, they noted that 40ft and 45ft containers are both treated as 2 TEU, so our figure of 38.25 TEU is not a problem. Furthermore, the limits are set by the existing rolling stock and would not apply if new rolling stock were bought, which would be the case.

Train Makeup

Container flat wagons and carrying capability

	Container size split	No. CFT per train carrying each size container	TEU for each container size	Containers on each CFT	TEU per train	Containers per train
45ft containers	50%	9	2.25	1	20.25	9
40ft containers	30%	5	2	1	10.80	5
20ft Containers	20%	4	1	2	7.20	7

Total CFT per train (IE limit)	18
Total TEU per train	38.25
Total Containers per train	22

Train frequency then is defined by the number of CFTs and subsequent containers the train can carry

Train frequency
For a 18 CFT Train

50% to rail

	Phase 1	Phase 2	Phase 3	Long term
TEU to rail	106250	127500	170000	255000
TEU each train	38	38	38	38
Trains per annum	2778	3333	4444	6667
Trains per week (48 weeks)	58	69	93	139
Trains per day (6 days)	10	12	15	23

25% to rail

TEU to rail	53125	63750	85000	127500
TEU each train	38	38	38	38
Trains per annum	1389	1667	2222	3333
Trains per week (48 weeks)	29	35	46	69
Trains per day (6 days)	5	6	8	12

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A container terminal at Ringaskiddy or Marino Point could be directly or indirectly connected to the rail network

Direct and Indirect Connections from Marino Point* and Ringaskiddy* to Rail Network

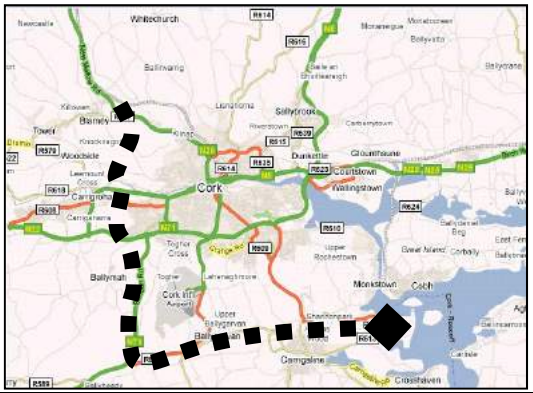
	Site	Option for Connection	Initial Assessment
Direct	**Marino Point**	▪ Spur to adjacent Cork-Cobh line	▪ Although not the preferred location for a container terminal, it has a direct connection ▪ Worth investigation
	Ringaskiddy	▪ Bridge to Cork-Cobh line	▪ The shortest link to the network but difficult given the gradients and the need to cross the West Passage ▪ Highly unlikely but needs to be scoped out and assessed
		▪ New link to Cork - Dublin line	▪ A considerably longer link but over easier terrain and avoiding issues at Kent station ▪ Highly unlikely but needs to be scoped out and assessed
		▪ New link to Kent Station	▪ Would have to be in tunnel and therefore even more difficult than the above options. ▪ Not worth further consideration at this stage.
Indirect	**Marino Point**	▪ By road to an existing railhead (North Esk)	▪ Short distance, minimal investment ▪ Suitable option for niche customers that can provide railheads and full trainloads ▪ A useful option if Marino Point is developed by Port of Cork, whether for a container terminal or another facility
	Ringaskiddy	▪ By road/ferry/barge to an existing railhead	▪ Long distance from Ringaskiddy to any railhead, say in the Rathpeacon area, makes this unattractive but not impossible if a customer materialised with large volumes ▪ Not worth further consideration
		▪ By ferry/barge to a new spur at Marino Point	▪ Major barging operation between Ringaskiddy/Oysterbank and Marino Point would interfere with port operations, so suited for a small or occasional operation ▪ Worth considering if Marino Point is developed

* This analysis is considering these two sites only

Three Distribution Centre-based options for a direct connection to the railway network were evaluated

Summary of the Three Infrastructure Options Evaluated

Considered at a conceptual level appropriate for a high level socio-economic evaluation, each would require substantial feasibility work

Option 1	Option 2	Option 3
▪ Containers are unloaded from ships at Marino Point ▪ A railhead at Marino Point is constructed ▪ A distribution centre is built near Mallow. ▪ Height clearance at Cork Rail Tunnel is obtained. ▪ Kent Stn bypass retained.	▪ Containers are unloaded from ships at Ringaskiddy. ▪ A railhead is built at Ringaskiddy ▪ 10.5km of new railway is built to Marino Point to connect to the existing railway, via a substantial bridge over the estuary. ▪ A distribution centre is built near Mallow. ▪ Height clearance at Cork Rail Tunnel is obtained. ▪ Kent Station Bypass is retained.	▪ Containers are unloaded from ships at Ringaskiddy. ▪ A railhead is built at Ringaskiddy ▪ 30km of new railway is built by-passing the Cork metropolitan area to the south and west, joining the existing railway to the NW of Cork City. ▪ A distribution centre is built near Mallow. ▪ Height clearance on the existing railway between the connection point and the distribution centre is not an issue.
		

All the direct options involve some significant "end of the line assumptions"

- The underlying premise is that all container traffic goes to a Distribution Centre (DC) and is distributed from there.
- The DC would require a site:
  - capable of handling up to 500,000 TEU
  - located around or north of Mallow
  - approximately 40 hectares in area to accommodate growth
- The DC would need to operate 24 hours a day, 6 days a week
- At Kent Station:
  - The Loop Line would need to be retained
  - Height clearance gained at the tunnel either through infrastructure work or investment in new freight wagons
- With the increase in traffic on this line there may also be a need for increased signalling
- Maintenance activities may also need to change because increased train frequency will increase the wear and tear on the infrastructure and also reduce opportunities to take track possession for maintenance purposes

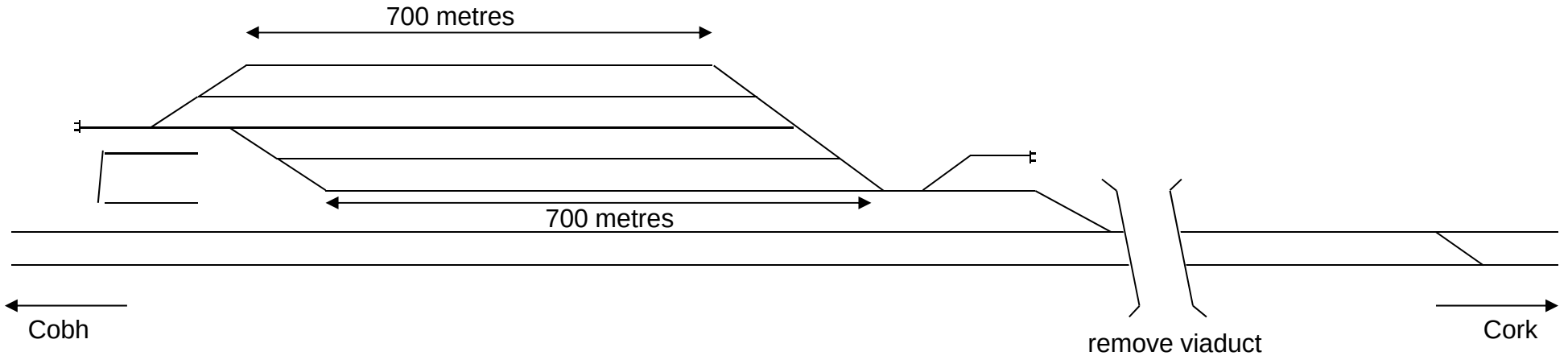
Rail Tunnel North of Kent Station
Line cleared for 9' at present

Kent Station
Through running is essential for the DC operation

A rail spur and freight yard would be needed at the container terminal and the Distribution Centre

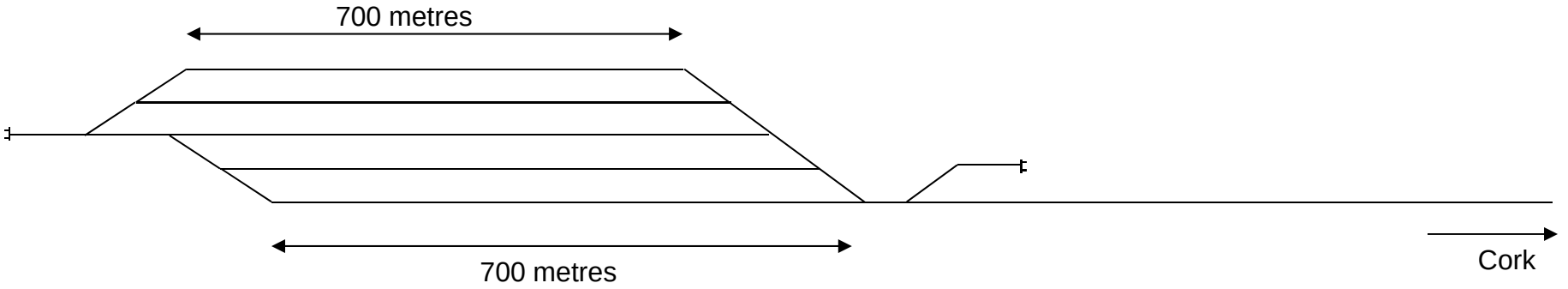
Yard at Marino Point (Option 1)

five tracks (track width 8.12m) with an effective length of 700 m plus two loco tracks



Yard at Ringaskiddy (Option 2 and 3)

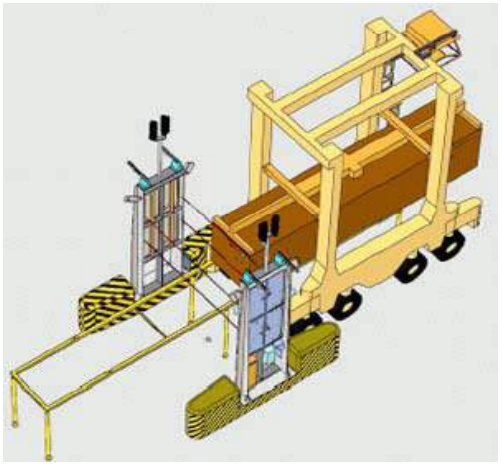
five tracks (track width 8.12m) with an effective length of 700 m plus two loco tracks



Managing trains into and out of container yards would largely be controlled by technology

- Signaling should allow trains off and onto the mainline from and within the Container Yard
- If there are likely to be any movements (i.e push backs) within the Container Yard a pilot will be necessary (i.e someone who can guide the train)
- The train berths on the line
- The loco is uncoupled and is run round onto another rake of wagons (if one is ready)
- The rake of wagons is unloaded, containers are grounded and gridded
- Loading is a more complex operation, because train assembly needs to take into account where the containers are going, even if they are all going to the same Distribution Centre. Cargo assembly is therefore a key aspect of yard planning

How the terminal operates will depend on the moveable infrastructure adopted



- If straddle carriers are adopted consideration will need to be given to the vertical spacing on the railway lines so the straddle carriers can run over a rake of wagons.

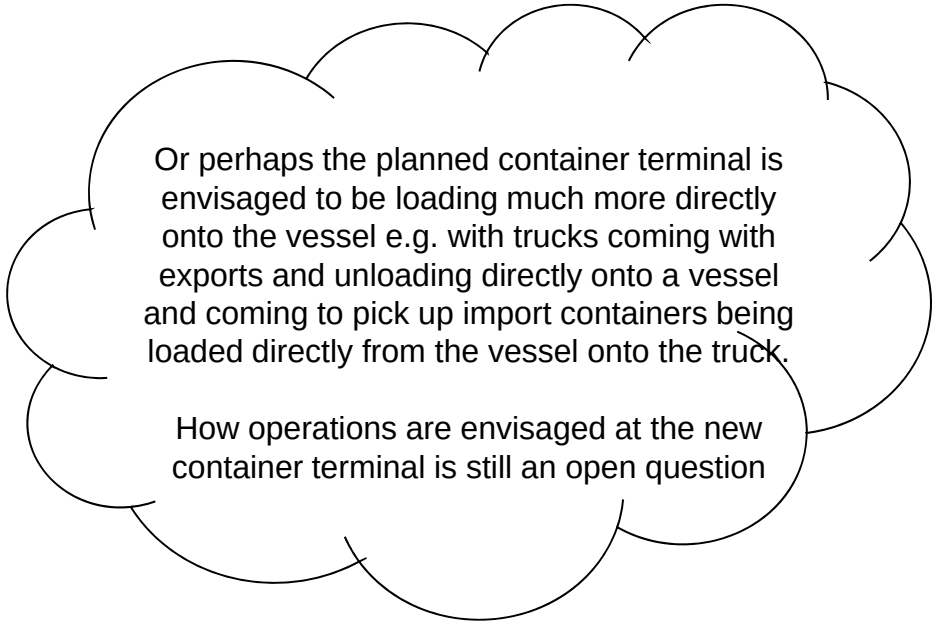
The rail terminal would need to have a loading/unloading rate for rail comparable to a road setup so as not to compromise terminal efficiency. It must be competitive against road.

The space required between and around the rail will depend on method of operation and the moveable infrastructure

- Conversely, something like a reachstaker will run parallel to a rake of wagons, reachstakers can typically pick containers up to two rakes deep (i.e reach over a container on a railway line and get the one behind it)

Container storage would not differ greatly for a rail based rather than road based transport system

- Typically a freight train comes into a container terminal and containers are grounded and gridded according to shipping schedules
- Once the ship is in the harbour the containers are transferred to the ship
- In some cases rail can go wharfside i.e. onto the wharf allowing more direct rail ship loading
- While rail unloading occurs in generally the same manner as truck unloading, loading is more complex as it involves assembling a train full of containers, rather than just 1 truck.
- Train assembly needs to consider where the cargo goes (does it all end up at the same place in one Distribution Centre?).



1

Spur to existing line from Marino Point to Cork (Cobh Line)

Having vessels call at Marino Point offers a significant rail opportunity

- The Marino Point site was served by rail freight until 2002
- If it were selected as a suitable site for a container terminal, a spur to the existing Cork-Cobh line could be provided and containers loaded onto freight trains
- With investment for bulk handling facilities, break bulk could also be managed at Marino Point

Option 1 - Rail Connection

1 Use existing line from Marino Point to Cork (Cobh Line)

There is an double track line adjacent to Marino Point, but the spur is now gone

Rail Line at Marino Point
Looking north from Overbridge

Rail Line at Marino Point
Looking South from Overbridge

Rail line at Marino Point
Looking north from old Marshalling Yard

Rail Line at Marino Point
Looking South from old Freight Yard

1 Use existing line from Marino Point to Cork (Cobh Line)

Port of Cork envisage Marino Point as a general cargo facility but use as a container terminal is being re-examined

- Port of Cork envisage the City Quays functions being relocated to a new general cargo facility at Marino Point.
- Under this vision, the Marino Point facility would be capable of handling occasional container ships.
- Since the planning decision, Port of Cork is reviewing the suitability of Marino Point for a container terminal.
- As reported in PoC's previous site selection process, Marino Point has many other disadvantages which suggest that gaining planning approval for a container terminal would not be straightforward.
- Road access to Marino Point is currently poor. It would be improved by the County Council plan's for a new road to Great Island and Cobh. These plans are as yet uncommitted.

Existing Jetty at Marino Point

- The analysis of Option 1 assumes that the container terminal is located at Marino Point. The aim is to assess if there is a case for a rail operation under this scenario. Bulk operations have not been considered.

1 Use existing line from Marino Point to Cork (Cobh Line)

Although Marino Point was rail connected until recently, capital investment would be needed

Overview of Option 1 Capital Investment

Rail Infrastructure
Capital investment necessary to establish a rail link between the existing Cobh – Cork line and the terminal at Marino Point The location of the previous spur is not optimal
Existing tunnel will need to be cleared for 9'6" containers either by infrastructure work or investment in new freight wagons
Additional signalling will need to be added to the new rail spur and the current rail infrastructure between Marino Point and Cork
Additional signalling on the Cork – Cobh line will be required and this is discussed later

Rolling stock and terminal facilities
Marino Point will require terminal facilities necessary for the handling of containers and possibly break bulk. There may be opportunities to relocate terminal equipment from Tivoli.
Given the short remaining life of IÉ's fleet, there will need to be investment in more CFT's. this may enable the tunnel problem to be overcome without infrastructure work
There may be an opportunity to use some of the Class 201 locomotives from IÉ's fleet. However it is likely there will need to be further locomotive expenditure. Between 3-4 Locomotives will be required. In a push-pull operation between 6-8 would be necessary.

1 Use existing line from Marino Point to Cork (Cobh Line)

The rail operation itself will require significant operating and maintenance resources

Overview of Option 1 Operating and Maintenance Costs

Operations and Maintenance
Maintenance activities will need to be increased on the existing rail network due to the increased frequency of traffic
Additional staff will be required to drive and shunt trains.
Additional staff will be required to maintain the rolling stock (locomotives and wagons). Given the volume of traffic it may be necessary to have some form of maintenance depot close to Cork.
It may be foreseeable that Terminal staff would simply relocate from Tivoli where they are currently located

*25 additional CFT with stanchions capable of carrying timber if this import traffic is transferred to rail

2

Bridge from Ringaskiddy to Marino Point

Option 2 requires some 10km of new track, including a bridge over the West Passage

- Option 2 assumes the container terminal is located at Ringaskiddy
- Freight would be put on rail at Ringaskiddy
- Operationally, Option 2 is similar to Option 1
- The rail line would include a bridge over the West Passage
- The rail line would join the Cork-Cobh line at some point near to Marino Point
- The site at Marino Point would not necessarily be required, but land in the area would be needed
- If Option 2 were to be examined in detail in future, use of the new rail link for passenger services and/or the inclusion of a road crossing with the railway bridge may be worth consideration

Option 2 - Rail Connection

2 Bridge from Ringaskiddy to Marino Point

A high level assessment of the capital works required was undertaken

Substantial feasibility work would be needed in event of this scheme being promoted

Overview of Option 2 Capital investment

Rail Infrastructure	Rolling stock and terminal facilities
Capital investment necessary to build 10.5km of new rail line to the east of the West Passage linking the new line as close as is practical to Marino Point The new line would include a bridge, which would allow for navigation. Derailment provision will need to be considered for the bridge.	Assuming Ringaskiddy's current terminal facilities are a given, the trains would be fully loaded and would simply join to Cobh – Cork line.
Existing tunnel will need to be cleared for 9'6" containers either by infrastructure work or investment in new freight wagons	Given the short remaining life of IÉ's fleet, there will need to be investment in more CFT's. this may enable the tunnel problem to be overcome without infrastructure work
Crossings will need to be established over the Mavian Tce, N28, R610, near Ballymot, between Monkstown and Rathanker and possibly at the R624 once the bridge gets to the other side of the passage	There may be an opportunity to use some of the Class 201 locomotives from IÉ's fleet. However it is likely there will need to be further locomotive expenditure.

*25 additional CFT with stanchions capable of carrying timber if this import traffic is transferred to rail

2 Bridge from Ringaskiddy to Marino Point

Rail operations for Option 2 would be similar to Option 1

Overview of Option 1 Operations

Operations and Maintenance
As this is a new railway line it may be that IE will need additional staff to maintain it. Maintenance activities will need to be increased on the existing rail network due to the increased frequency of traffic
Additional staff will be required to drive and shunt trains.
Additional staff will be required to maintain the rolling stock (locomotives and wagons). Given the volume of traffic it may be necessary to have some form of maintenance depot close to Cork.

*25 additional CFT with stanchions capable of carrying timber if this import traffic is transferred to rail

Signalling opportunities need to be considered for any options which use the rail line at Marino Point (Options 1 and 2)

Cork - Cobh	Cobh - Cork
05:20	05:50
06:30	07:00
07:00	07:30
07:30 x Mallow	08:00
07:55 x Mallow	08:25
08:30	09:00
09:00 x Mallow	09:30
10:00	10:30
11:00	11:30
12:00	12:30
13:00	13:30
14:00	14:30
15:00	15:30
16:00	16:30
16:30	17:00
17:00 x Mallow	17:30
17:30	18:00
18:00 X Mallow	18:30
18:30	19:00
20:00	20:30
21:30	22:00
22:30	23:00

PEAK HOURS

This is the current timetable. Our analysis allows for the future Cork - Midleton service

Source: IE timetables

- The Cork – Cobh is double line, but the section from Glounthaune Junction to Cobh is a single block section (i.e one train at a time). This will need to be signaled to allow for freight trains from Marino Point
- With regard to the Glouthane Junction – Cork section of the railway line, signalling spacing should reflect the Cobh – Cork and planned Midleton – Cork service
- The timetable between Cobh and Glounthaune with the appropriate signalling certainly suggests capacity for freight trains although consideration may need to be given to keeping them out of the peak hours.

For Options 1 and 2, safety considerations need to be taken into account when mixing passenger and freight traffic on Cork-Cobh

- Current arrangements allow for mixed passenger and freight operations, but given that there is very little mixed traffic on the existing network, the Railway Safety Commission and/or Iarnród Éireann and/or a third party operator might need to consider some of the issues which are often raised in mixed traffic operations, if rail freight volumes increased substantially

- The Railway Safety Act 2005 obliges any railway undertaking to submit a safety case, this is typically required for new lines and/or changes to the method of operation on existing lines. Introducing new rolling stock and new signalling technology are two examples of how an operation has changed and that their must be a supporting safety assessment of the change.

- Typically a major effort is needed to re-write rules and regulations for a new line or changed method of operation, and to gather evidence on safety targets such as mean time between failure of the new system or sub-systems.

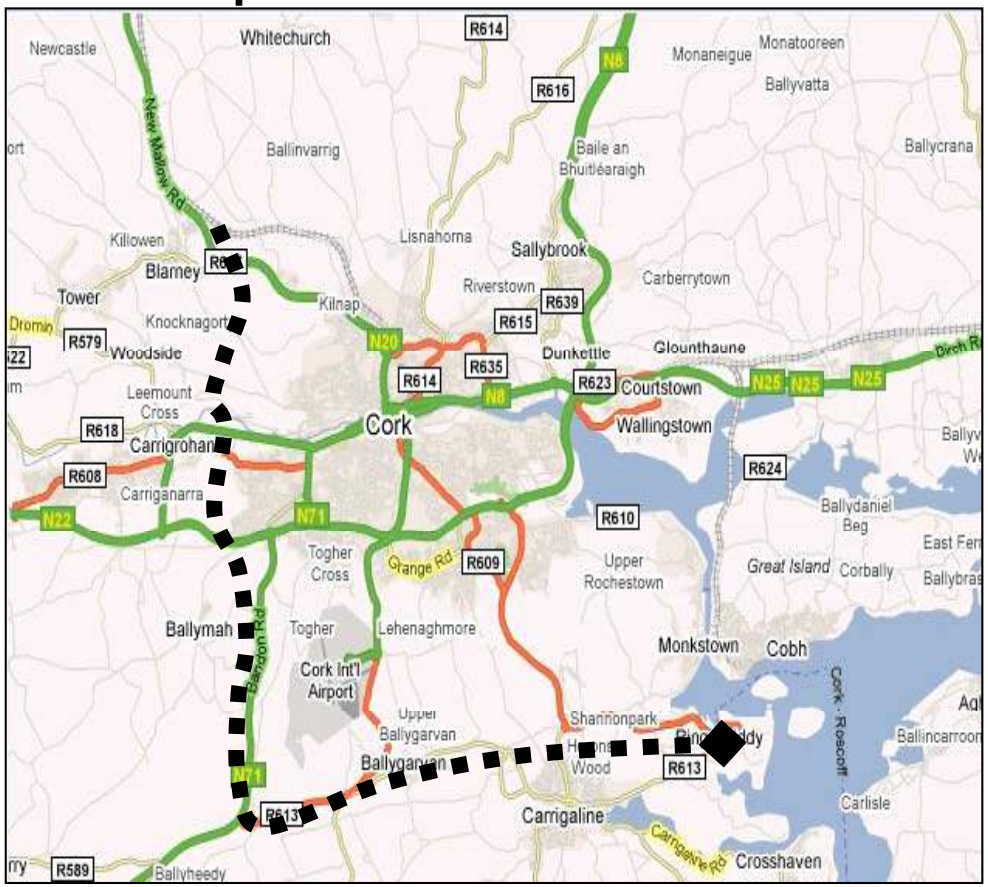
3

New Line from Ringaskiddy to Cork-Dublin Line

Option 3 would involve a completely new rail line some 30km in length

- Option 3 assumes that the container terminal would be located at Ringaskiddy
- Freight would put on rail at Ringaskiddy
- Operationally, Option 3 is not significantly different from Options 1 and 2
- The new line would join the Dublin-Cork line somewhere north of the city, possibly in the Blarney area
- It is envisaged as a purely freight line with no stations, single track, low speed
- It has the merit of avoiding Kent Station and the tunnel
- The alignment does not offer much, if any, potential for passenger services to be developed later

Option 3 - Rail Connection



3 New Line from Ringaskiddy to Cork-Dublin Line

Although longer than the bridge, a completely new freight line may cost less

Substantial feasibility work would be needed in event of this scheme being promoted

Rail Infrastructure
Capital investment necessary to build 30km of new rail line which will link it into the network north of Cork. This line should be single track with at least two passing loops.
The new line will be designed for 9'6" containers
10 crossings will need to be established over the N28, N27, N71, N22, N20, R617, R608, besides minor roads
Where the N22 and the River Lee meet there will need to be a substantial bridge.

Rolling stock and terminal facilities
Ringaskiddy will need terminal facilities, lifting cranes, establishment of an area which can hold containers etc - these are assumed to be existing or included in future proposals
Given the short remaining life of IÉ 's fleet, there will need to be investment in more CFT's.
There may be an opportunity to use some of the Class 201 locomotives from IÉ's fleet. However it is likely there will need to be further locomotive expenditure.

*25 additional CFT with stanchions capable of carrying timber if this import traffic is transferred to rail

3 New Line from Ringaskiddy to Cork-Dublin Line

Further considerations for this new line offer challenges and opportunities

- In the safety case guidelines The Railway Safety Act 2005 states that ". *With some railway operations, very simple forms of train operation and signalling systems may be satisfactory. Where the railway operates at a relatively low speed and safety of operation can be ensured by a system of driving on-sight, no signalling system, as such, may be required*"* This means that if the line is initially constructed as freight only then the signalling system can be fairly basic.

- Passing loops should be designed to optimum length, typically 1500m is considered the minimum length. The total length of the train under the much less than this, but passing loops must be long enough to enable trains to keep as close as possible to line-speed at exit and entry.

* RSC-G-005 4.1.1.4

Capital cost estimates were calculated for the three options

Capital Cost Assumptions

- Options were costed using unit costs from the Booz railway cost database and uplifted to allow for design costs, detailed design costs, project management costs, contingency, provision of work sites, client organisation costs and contractor profit.
- The total costs estimated were validated against the cost of IÉ projects underway or planned, and shown to be within range.
- Cost includes, for the new railway sections and the freight yards, trackwork, structures, signalling, CTC, land, height clearance on existing track.
- Costs do not allow for lifting equipment and other non-railway infrastructure at the freight yards in the container terminal
- Rolling stock costs have been included as lease costs within the railway operations costs, not as capital costs
- Further details of the cost assumptions are provided in Appendix B.

Note: All costs in € million, 2009 prices
Source: Booz & Company analysis

Central Cost Estimate
€m, 2009 prices

Option	Infrastructure	Distribution Centre	Total
1	15	10	25
2	510	10	510
3	250	10	260

Capital Cost Range
€m, 2009 prices

Option	Capital Cost Range
1	€ 25m to €40m*
2	€250 to €750**
3	€150 to €400**

* Allows for work to Cork Rail Tunnel
** +/- 50% on Central Cost Estimate

Chapter 1	Context
Chapter 2	Policy Background
Chapter 3	Rail Freight Baseline
Chapter 4	Demand to Transport by Rail
Chapter 5	Best Possible Scenario Rail
Chapter 6	Connection Options
Chapter 7	**Socio Economic Evaluation**
Chapter 8	Other Options
Chapter 9	Conclusions and Next Steps

A socio-economic evaluation of the 3 options under the Best Possible Scenario was undertaken

Benefits

- Benefits of removing trucks from the road network:
  - Reduction in accidents
  - Reduction in noise
  - Reduction in air pollution
  - Reduction in road wear and tear
  - Reduction in traffic congestion
  - Improved reliability and reduced journey times
  - Better conditions for walking and cycling
- Truck operating cost savings

Capital Costs

- Trackwork
- Structures
- Signalling

On-going Costs

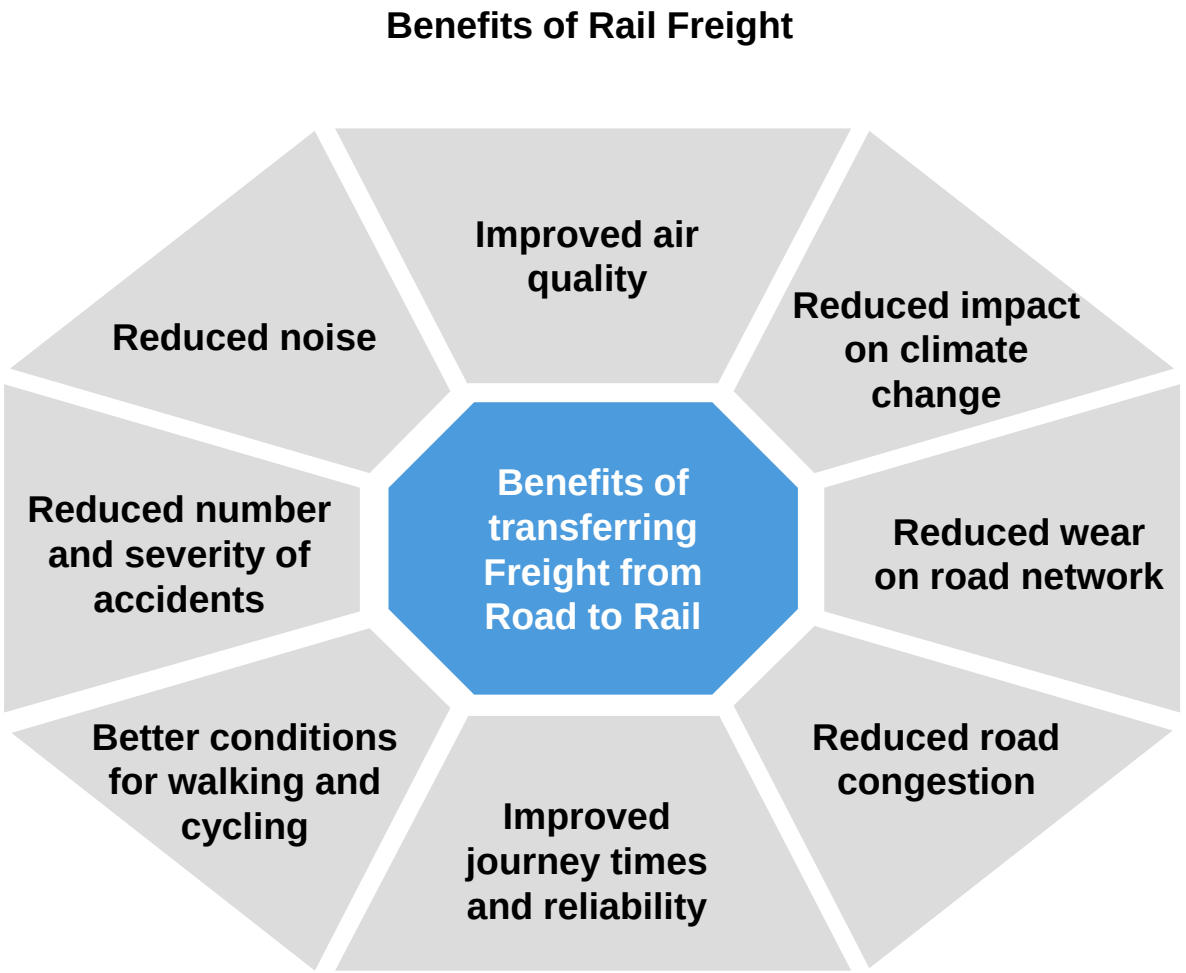
- Railway operating costs
- Infrastructure maintenance costs
- Rolling Stock Costs

- Benefit / Cost Ratio

- Appendix B contains more detailed information on the cost benefit analysis assumptions

The benefits associated with rail freight result from the removal of trucks from the road network

- There is global benefit in reducing vehicle-km irrespective of local problems
- Some benefits may only be locally significant in networks where one or more of the following problems exist:
  - HGV-related accidents are a problem
  - Air quality is poor
  - Noise is a problem
  - The road network is congested
  - Businesses/hauliers are seeking to improve the speed and reliability of deliveries
  - The environment for walking and cycling is poor due to the presence of HGVs
- The UK “Sensitive Lorry Miles” approach addresses this issue and is the basis for the evaluation of proposals for rail freight schemes, to assess eligibility for the Freight Facilities Grant (capital costs) and/or the Rail Benefits Procurement Scheme (running costs)



Benefits were calculated using the Sensitive Lorry Miles approach which is used to evaluate rail freight proposals in the UK[1]

Sensitive Lorry Miles Values

Category	p/mile[2]
Accidents	3.8
Noise	2
Pollution	3.9
Climate Change	2.4
Infrastructure costs	11.2
Road Congestion	45.8
Unquantified[3]	21.5
Taxation[4]	-29
Rail costs[5]	-8.8
Total	52.8

Socio-Economic Benefits of Removal of Lorries from Roads between Port and Distribution Centre

€ m per annum (2009 prices)

	Phase 1	Phase 2	Phase 3	Longer Term
50% on rail	3.0	3.6	4.8	7.2
25% on rail	1.5	1.8	2.4	3.6

1) Sensitive Lorry Miles, Strategic Rail Authority, 2003, http://www.dft.gov.uk/pgr/freight/railfreight/slmp
2) Values are available for several categories of road. Some categories such as motorways and roads in major conurbations have sub-categories for different levels of congestion. The "Rural and Urban Truck and Principe Road category is the most appropriate for the Cork Area network Values are given in GBP 2003, and were converted to Euros 2003 and rolled forward to 2009 at Irsih GDP
3) Represents benefits such as reduction in driver frustration/stress, fear of accidents, restrictions on cycling and walking, upstream and downstream effects, community severance and visual intrusion
4) Fuel and vehicle excise duty are subtracted from the benefits (this is UK Appraisal practice)
5) Rail freight also has negative impacts on society including noise, pollution and climate change. These are lower per unit of freight than road, hence the social benefits of the modal transfer.

The evaluation was based on the container terminal demand forecasts/phasing proposals for the Oysterbank scheme

Container Terminal Phasing and Capacity Assumptions

	Phase 1	Phase 2	Phase 3	Longer Term
Timing under low economic growth	2011 to 2014	2014 to 2019	2019 to 2029	Post 2029
Timing under medium economic growth	2011 to 2013	2013 to 2017	2017 to 2024	Post 2024
Capacity in terms of Total TEU per annum (import + export)	250,000	300,000	400,000	600,000
For purpose of this study, assume on average over each Phase, port operating at 85% of capacity Total TEU per annum	212,500	255,000	340,000	510,000

The cost benefit analysis has assumed low economic growth, nevertheless the 2007 projections will be optimistic given the economic downturn. Port of Cork will revise its capacity projections in due course

Note: Appendix A contains more detailed information on the cost benefit analyses assumptions
Source: Oysterback Financial and Economic Appraisal, Goodbody, 2007, Booz & Company analysis

All options are based on a "best-case" operational and demand concept of a railway shuttle to and from a Distribution Centre

Operational Assumptions

	Phase 1	Phase 2	Phase 3	Longer Term
50% of Containers to rail (TEU)	106,250	127,500	170,000	255,000
Optimum trains per day	10	12	15	23
Train-sets required	2	3	4	6
25% of Containers to rail (TEU)	53,125	63,750	85,000	127,500
Optimum trains per day	5	6	8	12
Train-sets required	1	1	2	3

- To provide a rationale for moving container traffic by rail, and sufficient density to justify operation, our base assumption is that part of the container traffic of the port will be moved by rail to and from a new container distribution centre, which can be located on the existing railway line near Mallow, with good road access. This will be a suitable location for the majority of container traffic that travels beyond the Cork city area.
- It will be served by a shuttle service. Shuttle trains will comprise a locomotive and 18 CFT wagons carrying either one 40ft or 45ft container or two 20ft containers.
- The port is assumed to operate at 85% load factor across each of the growth phases. Rail is assumed to take a 50% share of the container freight market, the rest either being local, or else delivered to a direction not suited to the distribution centre.
- Volumes of containers going to rail are assumed to be balanced, with equal quantities going to the depot and returning to the port. We assume a train has 6 days of operation and 48 weeks of operation, the remaining time being allowed for maintenance. No spare trains are kept. A train can do 4 trips per day. The table shows the number of trainsets that would be used. In some cases, an additional train is not worth purchasing and some trips will be shed (this happens in Phase 1 in the described scenario).

Annual operating and maintenance costs were estimated for each option for each year of the appraisal period

Phase 1 Annual Costs

€ million per annum, 2009 prices

		Railway Operating Costs[1,2]	Rolling Stock Hire Costs[3]	Infrastructure Maintenance Costs[4]	Truck Operating Costs Saved[5]	Total
50% by Rail	**Option 1**	7.1	0.8	1.9	-4.1	5.6
	Option 2	7.5	0.8	2.1	-4.1	6.2
	Option 3	7.8	0.8	2.3	-4.1	6.7
25% by Rail	**Option 1**	4.4	0.4	0.9	-2.0	3.7
	Option 2	4.5	0.4	1.1	-2.0	4.0
	Option 3	4.7	0.4	1.2	-2.0	4.2

1) Based on Booz IE Freight Operating Cost Model, derived for Strategic Rail Review, 2003, updated to 2009
2) Distribution Centre and port rail freight operations estimated at €1.5 million per annum
3) Although Iarnród Éireann buys rolling stock and does not hire it, use of rolling stock hire costs most accurately captures the rolling stock life-cycle costs for the purpose of this appraisal
4) Based on IÉ infrastructure maintenance cost model derived for Strategic Rail Review in 2003 and updated to 2009
5) Truck operating costs (fuel and non-fuel) derived from DoT Capital Appraisal Guidelines (May 2007)

Source: Booz & Company models, Strategic Rail Review, Project Appraisal Guidelines (DoT May 2007)

A cost benefit analysis was undertaken for several scenarios

List of Tests Undertaken

	Title	Comments
1	Central Case	Most likely cost estimates "Realistic" but ambitious target for rail use (25%)
2	50% by rail	Most likely cost estimates. Best possible rail demand scenario
3	+50% in capital costs	Cork Rail Tunnel is a risk - height clearance should be achieved through new rolling stock but infrastructure work may be needed. For Options 2 and 3, +/- 50% applies to the capital cost.
4	+25% in rail running costs	A 25% increase in forecast operating costs would not be unreasonable
5	- 25% in rail running costs	With greater involvement of private logistics operators and possibly train operators, cost efficiencies would be expected; however the envisaged operation as modelled is already a highly efficient one
6	+25% in road operating costs	Road operating costs will increase as congestion grows, which is likely in the long term.
7	-15% in road operating costs	Road operating costs are already very competitive and it is difficult to envisage further reductions; however a sensitivity test with a 15% reduction was considered.
8	Best operating scenario	-25% rail operating costs, +25% road operating costs
9	Best demand and operating scenario	50% by rail, -25% rail operating costs, +25% road operating costs

Comparing the present value of costs and benefits over 30 years and 60 years under the Central Case shows no case for any option

Test 1: Central Case

Central Estimates, 25% by Rail via Distribution Centre

Option	**1**	**2**	**3**		**1**	**2**	**3**		**1**	**2**	**3**		**1**	**2**	**3**
Economic Scenario	Low	Low	Low		Medium	Medium	Medium		Low	Low	Low		Medium	Medium	Medium
Appraisal Period (years)	30	30	30		30	30	30		60	60	60		60	60	60
Capital Cost	(13)	(295)	(153)		(13)	(295)	(153)		(14)	(330)	(172)		(14)	(330)	(172)
Rail Operating Costs	(58)	(60)	(62)		(61)	(63)	(65)		(79)	(82)	(85)		(81)	(85)	(88)
Rolling Stock Hire	(10)	(10)	(10)		(11)	(11)	(11)		(13)	(13)	(13)		(13)	(13)	(13)
Infrastructure Maintenance	(13)	(15)	(16)		(14)	(16)	(17)		(18)	(20)	(22)		(18)	(21)	(23)
Truck Operating Costs Avoided	34	34	34		37	37	37		47	47	47		50	50	50
Present Value of Costs	(60)	(346)	(208)		(60)	(347)	(209)		(76)	(398)	(244)		(77)	(399)	(245)
Present value of Benefits	36	36	36		40	40	40		61	61	61		64	64	64
BCR	60%	10%	17%		66%	11%	19%		79%	15%	25%		84%	16%	26%
PV Costs exc. Capital	(47)	(51)	(55)		(48)	(52)	(56)		(62)	(68)	(73)		(63)	(69)	(74)
BCR exc. Capital	77%	70%	66%		83%	76%	71%		97%	90%	84%		102%	94%	87%

- Even over a 60 year appraisal period, no option has a BCR greater than one, so there is no case for any option
- With medium growth, Option 1 might cover its running costs over a 60 year period

If 50% of containers went via the Distribution Centre, there is a weak case for Option 1 over a 60 year period

Test 2: 50% by Rail

Central Estimates, 50% by Rail

Option	**1**	**2**	**3**		**1**	**2**	**3**		**1**	**2**	**3**		**1**	**2**	**3**
Economic Scenario	Low	Low	Low		Medium	Medium	Medium		Low	Low	Low		Medium	Medium	Medium
Appraisal Period (years)	30	30	30		30	30	30		60	60	60		60	60	60
Capital Cost	(13)	(295)	(153)		(13)	(295)	(153)		(14)	(330)	(172)		(14)	(330)	(172)
Rail Operating Costs	(97)	(102)	(106)		(103)	(108)	(112)		(133)	(140)	(145)		(139)	(145)	(151)
Rolling Stock Hire	(16)	(16)	(16)		(18)	(18)	(18)		(21)	(21)	(21)		(23)	(23)	(23)
Infrastructure Maintenance	(26)	(29)	(32)		(28)	(31)	(35)		(35)	(40)	(44)		(37)	(42)	(46)
Truck Operating Costs Avoided	68	68	68		75	75	75		94	94	94		101	101	101
Present Value of Costs	(84)	(374)	(240)		(86)	(377)	(243)		(110)	(437)	(288)		(112)	(440)	(291)
Present value of Benefits	72	72	72		80	80	80		121	121	121		129	129	129
BCR	86%	19%	30%		92%	21%	33%		110%	28%	42%		115%	29%	44%

PV Costs exc. Capital	(71)	(80)	(87)		(73)	(82)	(90)		(96)	(107)	(116)		(98)	(109)	(119)
BCR exc. Capital	101%	91%	83%		108%	97%	89%		127%	114%	104%		132%	118%	108%

- Over 60 years, Option 1 has a BCR slightly greater than one, so there would be a weak case, if 50% to rail were achieved
- Over 60 years, all Options would cover their running costs, and Option 1 might over 30 years.

A 50% increase in capital costs only slightly further weakens the case, suggesting the case is not highly sensitive to capital cost

Test 3: +50% on Capital Costs

Central Estimates, +50% on Capital, 25% by Rail

Option	**1**	**2**	**3**		**1**	**2**	**3**		**1**	**2**	**3**		**1**	**2**	**3**
Economic Scenario	Low	Low	Low		Medium	Medium	Medium		Low	Low	Low		Medium	Medium	Medium
Appraisal Period (years)	30	30	30		30	30	30		60	60	60		60	60	60
Increase in capital costs	**50%**														
Present Value of Costs	-66	-493	-285		-67	-494	-286		-84	-563	-330		-84	-564	-331
Present Value of Benefits	36	36	36		40	40	40		61	61	61		64	64	64
Benefit Cost Ratio (BCR)	55%	7%	13%		60%	8%	14%		73%	11%	18%		76%	11%	19%

- There is no case for any of the Options if capital costs increase.

The case is sensitive to changes in rail operating costs - if they were 25% less, Option 1 appears viable in the long term

Tests 4 & 5: +/- 25% on Rail Operating Costs

Central Estimates, +/- 25% on Rail Operating Costs, 25% by Rail

Option	**1**	**2**	**3**		**1**	**2**	**3**		**1**	**2**	**3**		**1**	**2**	**3**
Economic Scenario	Low	Low	Low		Medium	Medium	Medium		Low	Low	Low		Medium	Medium	Medium
Appraisal Period (years)	30	30	30		30	30	30		60	60	60		60	60	60
Increase in rail current costs.	**25%**														
Present Value of Costs	-80	-367	-230		-82	-369	-233		-104	-427	-274		-105	-429	-276
Present value of Benefits	36	36	36		40	40	40		61	61	61		64	64	64
BCR	45%	10%	16%		49%	11%	17%		59%	14%	22%		61%	15%	23%
Decrease in rail current costs	**-25%**														
Present Value of Costs	-40	-325	-186		-39	-325	-186		-49	-369	-214		-49	-369	-214
Present value of Benefits	36	36	36		40	40	40		61	61	61		64	64	64
BCR	91%	11%	19%		102%	12%	21%		123%	16%	28%		132%	17%	30%

- If operating costs increase by 25%, which is reasonably likely situation, the BCR for all options is significantly reduced.
- If operating costs were 25% lower, perhaps by finding greater efficiencies, Option 1 appears viable over a 60 year period.

A 25% increase in truck operating costs would bring Option 1 close to having a case in the long term

Tests 6 & 7: + 25%/ -15% on Road Operating Costs

Central Estimates, + 25%/ - 15% on Truck Operating Costs, 25% by Rail

Option	**1**	**2**	**3**		**1**	**2**	**3**		**1**	**2**	**3**		**1**	**2**	**3**
Economic Scenario	Low	Low	Low		Medium	Medium	Medium		Low	Low	Low		Medium	Medium	Medium
Appraisal Period (years)	30	30	30		30	30	30		60	60	60		60	60	60
Increase in truck operating costs.	**25%**														
Present Value of Costs	-51	-338	-200		-51	-338	-200		-65	-386	-233		-64	-386	-233
Present value of Benefits	36	36	36		40	40	40		61	61	61		64	64	64
BCR	70%	11%	18%		78%	12%	20%		94%	16%	26%		100%	17%	28%
Decrease in truck operating costs	**-15%**														
Present Value of Costs	-65	-351	-213		-66	-353	-215		-84	-405	-251		-85	-406	-253
Present value of Benefits	36	36	36		40	40	40		61	61	61		64	64	64
BCR	56%	10%	17%		60%	11%	19%		73%	15%	24%		76%	16%	25%

- If truck operating costs increase by 25%, perhaps through congestion or taxes, the BCR for all options is significantly improved.
- If operating costs were 15% lower, although they are already very competitive, BCR is significantly reduced for all options.

If rail operating costs came down and road costs increased, the case for Option 1 begins to look robust, at least in the longer term

Test 8: -25% on Rail Operating Costs and +25% on Road Operating Costs

Central Estimates, -25% on Rail Operations, +25% on Road Operations, 25% by Rail

Option	**1**	**2**	**3**		**1**	**2**	**3**		**1**	**2**	**3**		**1**	**2**	**3**
Economic Scenario	Low	Low	Low		Medium	Medium	Medium		Low	Low	Low		Medium	Medium	Medium
Appraisal Period (years)	30	30	30		30	30	30		60	60	60		60	60	60
Best operating cost scenario:															
Decrease in rail current costs	-25%														
Increase in truck costs	25%														
Present Value of Costs	-31	-316	-178		-30	-315	-177		-37	-358	-203		-36	-356	-202
Present value of Benefits	36	36	36		40	40	40		61	61	61		64	64	64
BCR	116%	11%	20%		134%	13%	23%		162%	17%	30%		178%	18%	32%

- It is not inconceivable that, in the long term, road congestion would increase such that the costs of road operations increase significantly.
- It is also possible that, in the long term, road user charges would be placed upon trucks to encourage modal shift and recover costs
- It is also possible that, with a bigger and more competitive rail freight industry, efficiencies would be realised, despite the fact that whoever operates the service will need to buy/lease rolling stock.

In the Best Possible Scenario with 50% by rail, reduced rail costs and increased truck costs, there is a robust case for Option 1 only

Test 9: Best Possible Demand and Operating Scenario

Central Estimates, -25% on Rail Operations, +25% on Road Operations, 50% by Rail

Option	**1**	**2**	**3**		**1**	**2**	**3**		**1**	**2**	**3**		**1**	**2**	**3**
Economic Scenario	Low	Low	Low		Medium	Medium	Medium		Low	Low	Low		Medium	Medium	Medium
Appraisal Period (years)	30	30	30		30	30	30		60	60	60		60	60	60
Best possible demand and operating scenario:															
Decrease in rail current costs	-25%														
Increase in truck costs	25%														
50% by rail															
Present Value of Costs	-32	-321	-184		-30	-319	-183		-39	-364	-212		-37	-362	-211
Present value of Benefits	72	72	72		80	80	80		121	121	121		129	129	129
BCR	223%	23%	39%		263%	25%	43%		310%	33%	57%		347%	36%	61%

- It is difficult to imagine the circumstances where the Distribution Centre would be so heavily used

In summary, under expected circumstances there is no socio-economic case for any of the three options

- Options 2 and 3 are too costly to build. Costs would far exceed benefits.
- The capital costs for Option 1 are modest by comparison but the total costs of Option 1 outweigh its benefits in the Central Case. There is no socio-economic case for its development under our central estimates or nearly all of the sensitivity tests undertaken. There is a set of circumstances under which there could be a socio-economic case to develop Option 1, as follows:
  - The growth of the Port took place broadly in line with the forecasts made for the Oysterbank proposal.
    New port forecasts are beyond the scope of this assessment; however, given the economic downturn, the pace of growth might be slower than previously forecast
  - The container terminal were located at Marino Point.
    While Port of Cork is reassessing the suitability of this site, previous work has shown this is not the preferred location for a container terminal, for numerous reasons beyond the scope of this assessment.
  - At least 25% of containers travelled by rail between the port and a distribution centre in the Mallow area
    Incentives would be required to make this happen
  - Significant cost efficiencies in rail freight operations occur, beyond which are currently envisaged
    The distribution centre concept envisaged is already efficient, operating costs are as likely to rise as to reduce
  - Truck operating costs increase significantly, through congestion and/or pricing interventions
    Significant road congestion in the Cork Area is not currently forecast. There are no plans to introduce charges on trucks or other traffic in the Cork Area or elsewhere in Ireland. In the long term, this might change but policies which may disadvantage one region against another are unlikely to be introduced.
  - The Loop Line at Kent Station is retained
    IE currently plan to dispose of this facility when it sells part of the site for redevelopment

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It may be possible for a container terminal located at either Marino Point or Ringaskiddy to be indirectly connected to the railway

Indirect compared with Direct Options

- Options 1 to 3 all assume that rail freight is actively promoted by the provision of a Distribution Centre and associated policies
  - These assumptions enable a rail freight operation to be designed at a high level for the purpose of identifying issues and costing
  - The Distribution Centre model overcomes the inherent problems with the port's market (small dispersed customer base with no rail connections) and uses its opportunities (customers are all within the region, mainly to the north west)

- The indirect options consider a passive provision for rail where goods can get to and from a railway and thereafter the issues lie with the customer or operator
  - they cannot be assessed in the same way as the direct options which are based on an entirely new vision
  - They are valuable options nevertheless

- There is an existing example at Waterford where timber is taken by rail from Coillte at Ballina to Sally Park (a distance of over 200km) and onward by truck to Belview, a distance of some 4 km

Site	Option for Connection	Initial Assessment
Marino Point	▪ By road to an existing railhead (North Esk)	▪ Short distance, minimal investment ▪ Suitable option for niche customers that can provide railhead and full trainloads ▪ A useful option if Marino Point is developed by Port of Cork, whether for a container terminal or another facility
Ringaskiddy	▪ By road/ferry/barge to a railhead	▪ Long distance from Ringaskiddy to any railhead makes this unattractive but not impossible if a customer materialised with large volumes
	▪ By ferry/barge to a new spur at Marino Point	▪ Major barging operation between Ringaskiddy/Oysterbank and Marino Point would interfere with port operations, so suited for a small or occasional operation ▪ Worth considering if Marino Point is developed

In the case of Ringaskiddy, Rathpeacon may be a suitable location for a rail head for containers

Indirect Concept for Ringaskiddy

- Import containers are put on trucks at Ringaskiddy and taken to a railhead at Rathpeacon and then put on a train in full trainloads to go to a customer railhead.
- Export containers are taken from a customer railhead by rail in full trainloads to Rathpeacon where they are put on trucks and taken to Ringaskiddy.
- Customer meets IÉ's requirements for 18 CFT minimum train load/length; and has a railhead

Advantages

- Provides an option for containers to be taken by rail;
- No need to build any new railway line;
- Avoids any possible issues with the Cork Rail Tunnel;
- Avoids the need to retain the Bypass Loop at Kent Station;
- Avoids the Distribution Centre concept – it is based on assumption that customer would have a rail connection; and
- Could provide a easier entry into the rail market, providing a basis for further investment in future if it were successful.

Disadvantages

- Does not remove trucks from the road network in the vicinity of the port ;
- Does not alter the port's dependency on road;
- There is currently no customer or concentration of customers that has a railhead and sufficient demand. Without a specific customer, this concept is difficult to scope and assess; and
- Capital investment to establish railhead at Rathpeacon (and at the customer end).

Evaluation of the indirect option via Rathpeacon for a hypothetical customer in the outer parts of the Port's catchment showed no case

Assumptions

- For purpose of concept testing, the customer, or concentration of customers, is based in the Tralee area which is reasonably near rail and a reasonable distance from the Port. (There is no evidence that such a customer or concentration of customers exists in this area).
- Freight trains can be operated between the Cork and Tralee lines through Mallow. (There is no chord for this movement, so this will involve some operations which are less than ideal. The existing track, switches and signalling have not been assessed and we cannot judge what work may be required. No cost has been assumed for work at Mallow).
- Railhead and yard will be provided at Rathpeacon and similarly at the customer. It is assumed both are feasible, although no locations are identified. A cost has been allowed, similar to the cost for the railworks at the port and distribution centre in the other options examined.
- Work may be required to obtain height clearance for 9ft 6inch containers. There are around 42 bridges crossing the line between Rathpeacon and Tralee. It has been assumed that these need no work, but this would need confirmation.
- One train in each direction would operate per day, 5 days a week, 46 weeks a year. In the longer term (Phase 4), this would rise to two trains per day, per direction.
- Rail operating costs, maintenance costs and infrastructure maintenance costs have been assessed as for the other options.
- Truck operating costs saved and the benefits of removal of trucks from the roads have been assessed as for the other options.

Outcome of Evaluation

- Costs exceed benefits with benefit/cost ratios in the region of 50%-75%
- Sensitivity tests around costs do not change the outcome
- North Esk option would not perform any better (see next page)

In the case of Marino Point, North Esk may be a suitable location for a rail head for containers

Indirect Concept for Marino Point

- Import containers are put on trucks at Marino Point and taken to a railhead at North Esk and then put on a train in full trainloads to go to a customer railhead.
- Export containers are taken from a customer railhead in full trainloads by rail to North Esk where they are put on trucks and taken to Marino Point.
- Customer meets IÉ's requirements for 18 CFT minimum train load/length; and has a railhead

Advantages

- Provides an option for containers to be taken by rail
- IÉ report that North Esk could readily be reconnected to the rail network
- North Esk is very close to Marino Point, so trucks would be removed from parts of the strategic network where traffic congestion may be an issue.
- Goes some way towards reducing the port's dependency on road
- Avoids the Distribution Centre concept – it is based on assumption that customer would have a rail connection; and
- Could provide a easier entry into the rail market, providing a basis for further investment in future if it were successful.

Disadvantages

- Does not remove trucks from the road network in the immediate vicinity of the port
- There is currently no customer or concentration of customers that has a railhead and sufficient demand. Without a specific customer, this concept is difficult to scope and assess; and
- New rolling stock would be required to the necessary height clearance through the Cork Rail Tunnel
- The Kent Station Bypass Loop would need to be retained.

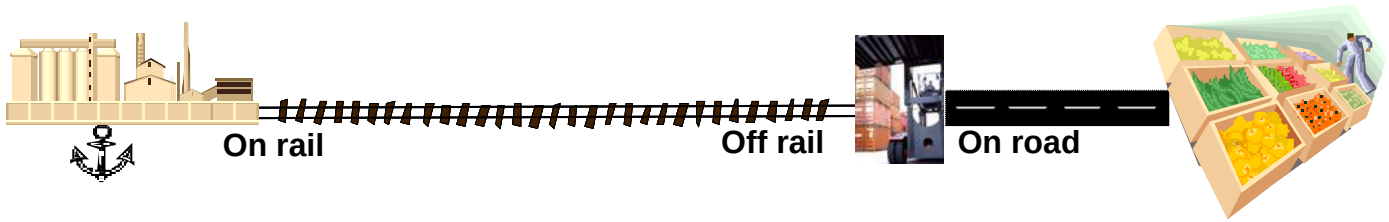
A barge could provide indirect access between the deep water facilities at Ringaskiddy and Marino Point

- Containers would be barged from the container terminal at Ringaskiddy to a rail facility at Marino Point
- The rail capital investment and operations would be the same as direct option Option 1
- Additional investment in the barging operation would be required
- Barging sub-options are:
  - Load on/load off the barge at each end
  - Roll on/roll off using Mafi type carriers which can take 2 containers at a time
  - Roll on/roll off using regular trucks (which could then drive to any rail head, but only Marino Point is being considered for the purpose of this exercise)
- The Port of Cork would not favour any barging activity that was big enough to interfere with operations

Barge route from Ringaskiddy to Marino Point

The extra handling associated with the barging option and possible impact on port operations makes it unappealing

- The risk lies in potential delays and handling damage due to the increased complexity and number of times the product is handled
- Road/rail transfers clearly introduce risks too which are only countered if the overall multi-modal trip is less risky than a trip solely on the road, which may be the case in heavily congested road networks or those with measures to restrict HGV movement
- The barging option is unattractive as a strategy, but a helpful fall-back option for occasional use



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The proposed rail options are high cost, which outweigh any benefits. Circumstances where it may be feasible are unlikely

Market

- Poor market conditions: none of the customers are rail-connected and they are dispersed throughout the region. The volumes shipped are generally low and the distances relatively short for a rail operation.

Best Possible Market Scenario for Rail

- A distribution centre or "inland port" located to the northwest of the City, connected by a rail shuttle to the container terminal, would provide sufficient density to justify rail operations and allow containers to travel by road between it and the customers.

Rail connection options

- Marino Point would require a spur off the existing Cork-Cobh line, signalling, rolling stock and the retention of the existing Loop Line. Estimated capital cost €25m - €40m (excluding rolling stock).
- Ringaskiddy would be best served by a new freight only line connecting to the Dublin - Cork line in the Blarney area. Estimated capital cost €260m ± 50%

Evaluation

- A socio-economic evaluation and series of sensitivity tests show that, for both options, the life-cycle costs of the scheme outweigh the benefits, even over 60 years
- The emerging policy landscape suggests no policy objectives that would justify curtailment of the port's development on the basis of not having the ability to connect to rail

Under what circumstances would a rail connection be feasible?

- Rail to a container terminal at Marino Point would be viable, in socio-economic terms, if an inland port operation was established with a distribution centre and rail shuttle, run by a commercial logistics provider and subsidised by government. The distribution centre would need to handle at least 25% of all the port's containers, preferably more. The rail operating costs would need to be significantly lower than forecast while road haulage costs would need to rise above forecasts. At Kent Station, a height clearance issue at the tunnel would need to be solved without capital works and the Loop Line would need to be retained.

Other options

- One option is to take containers by road to a railhead at North Esk or elsewhere and onwards by rail. Costs would include height clearance, railheads, other infrastructure and operating costs. Assessment of costs for a hypothetical customer in the Tralee area showed they would outweigh benefits.
- If Marino Point were to operate as a general cargo terminal, and the right bulk customer emerged, for example, one like the current Lisheen Mines, it might be worth serving it by rail.

Polices are developing to support the Port of Cork's relocation to Ringskiddy and to close out the rail issue

- Many of the parties have already moved to express a more definitive position on the relocation of the Port of Cork's container terminal, and others are in the process of doing so. So far, none have a priority policy that looks for the Port of Cork's container terminal to have a rail connection.

- In most urban areas, if there were a push for a rail connection, it would probably come from the local authorities wishing to reduce the amount of lorries on the roads, but in this case their priorities are around retaining a viable and competitive port in Cork and relocating the port from the City Quays and Tivoli to release land for redevelopment. Issues with excessive truck movement resulting from the port are not being articulated in local policies.

- National sustainable transport policy prioritises reducing the demand for passenger travel, which accounts for most of transport-related emissions. Freight-related emissions are less and there is much to be done to reduce them through management measures before there would be investment in rail. Although there is no sign of it now, it is not unreasonable to conjecture that at some future point, Government may consider moving from the current position of not funding rail freight to a policy to part-fund rail freight proposals that have a justifying socio-economic case; however, affordability and prioritisation with respect to other proposals would also need to be taken into account. In this case, there is no socio-economic case. Even if there were, affordability is a major issue at present. Also, a new rail scheme would not be prioritised ahead of those already in planning.

In summary, an evaluation of latest policies does not show any policy objective to support a rail connection to the Port of Cork

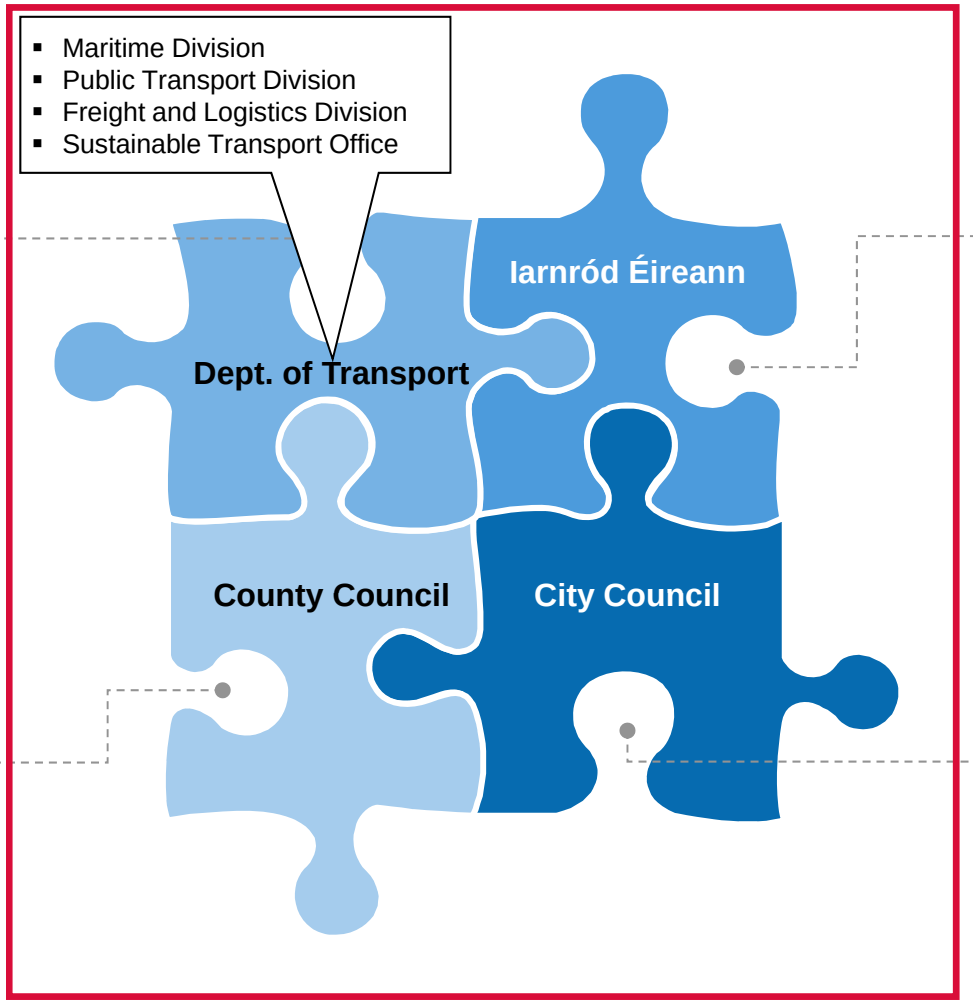
Policy Level	Main Interests
Local & Regional Authorities	•Viable local/regional port •Efficiently operating road network •Best possible local environment •Specifically, the City and County Development Plans: •Support the redevelopment of Docklands/relocation of port •Support a container terminal at Ringaskiddy •Contain no stated objective to get trucks off the roads in the Cork City area •Forthcoming Regional Planning Guidelines expected to align with Development Plans •Forthcoming local area plans provide an opportunity to state specific policies for the two sites under consideration
National Government	•Sound socio-economic case for State investment (DoT/DoF) •Affordability (DoT/DoF) •Efficient provision of transport services (DoT/DoF) •Despite the recommendations of the Strategic Rail Review and the National Spatial Strategy, no specific rail freight policy has been developed (DoT/DoE) •*Smarter Travel : A New Transport Policy for Ireland 2009 - 2020* commits to addressing the national deficit in freight policy, has no explicit objective to shift freight from road to rail but commits to exploring the realistic potential for rail freight (DoT) •Support for the container terminal to relocate to Ringaskiddy (Forfas, Jan 2009)
EU	•Shift of freight from road to rail desirable but policy should optimise the potential of each mode. Competitive transport markets are key •Irish Government usually granted derogations in relation to EU rail policy

- Local and National Policy has developed since the ABP decision against the Oysterbank proposal
- Local policies support the relocation of the container terminal at Ringaskiddy
- National policies support the relocation to Ringsaskiddy
- Explicit support for rail freight has yet to emerge nationally or regionally

A round of stakeholder engagement showed no disagreement with the study findings

- Study findings recognised
- Strong regional and local policies are needed to support the port's development

- Need for integrated policies recognised



- Study findings and assumptions broadly accepted
- No plans to remove loop line

- Study findings recognised
- Retaining the Loop Line still enables the Vision for Docklands to be met.

In conclusion, for optimal future sustainability, local and regional policies need to support the Port's future development

- The Kent Station Loop Line must be retained or an alternative provided when site developed. Discussions with Iarnród Éireann indicated that this would not be a problem as there is no longer a plan to remove it. The City Council are aware of this and recognise it will be taken into account in plans to redevelop the station to turn to face the river
- If the Port is not allowed to develop its container handling capability, it will become increasingly uncompetitive. More goods will be taken to and from the Port of Cork's catchment via other ports. The result will be longer truck trips than at present with a subsequent increase in negative impacts
- Having a competitive regional port will therefore provide for a sustainable future for the region. It follows that the port should relocate to the site which best meets its business needs, providing the best competitive advantage
- This study shows that there is no socio-economic case for a rail operation to the Port of Cork under expected circumstances. Even at the Marino Point site, which is close to the railway, there is no robust case for a rail operation for transporting containers. The circumstances under which the railway opportunity might be taken up are unlikely
- Given these findings, whether or not the site for a future container terminal is near to a railway should not be given undue weighting in decision making. It would be undesirable and ultimately unsustainable to encourage the port to select a railway-oriented site if it does not make business, operations, economic or environmental sense and if the limitations of that site constrained the port's potential competitive advantage
- The Regional Planning Guidelines, in expressing objectives in relation to the region's port, should clarify the strategic regional development, competitiveness and sustainability issues
- The Local Area Plans that cover the Ringaskiddy and Marino Point sites should support the Port's Strategic Development Plan

Appendix 1

Distribution Centres in New Zealand

Distribution Centres overcome the need for customer railheads, recognising that few freight journeys can be by rail alone

- Distribution Centres
  - recognise that, except for certain bulk trades, few traffics can complete their entire journey by rail alone
  - are widely used in New Zealand and can serve a twofold purpose when import and export volumes are well balanced
  - work best when services can provide an end to end service for their clients regardless of the mode (i.e. whilst a container may be picked up by a truck, put on rail and then collected by a truck at the other end the customer must not feel this)

Port of Christchurch Example

Well balanced import and export volumes

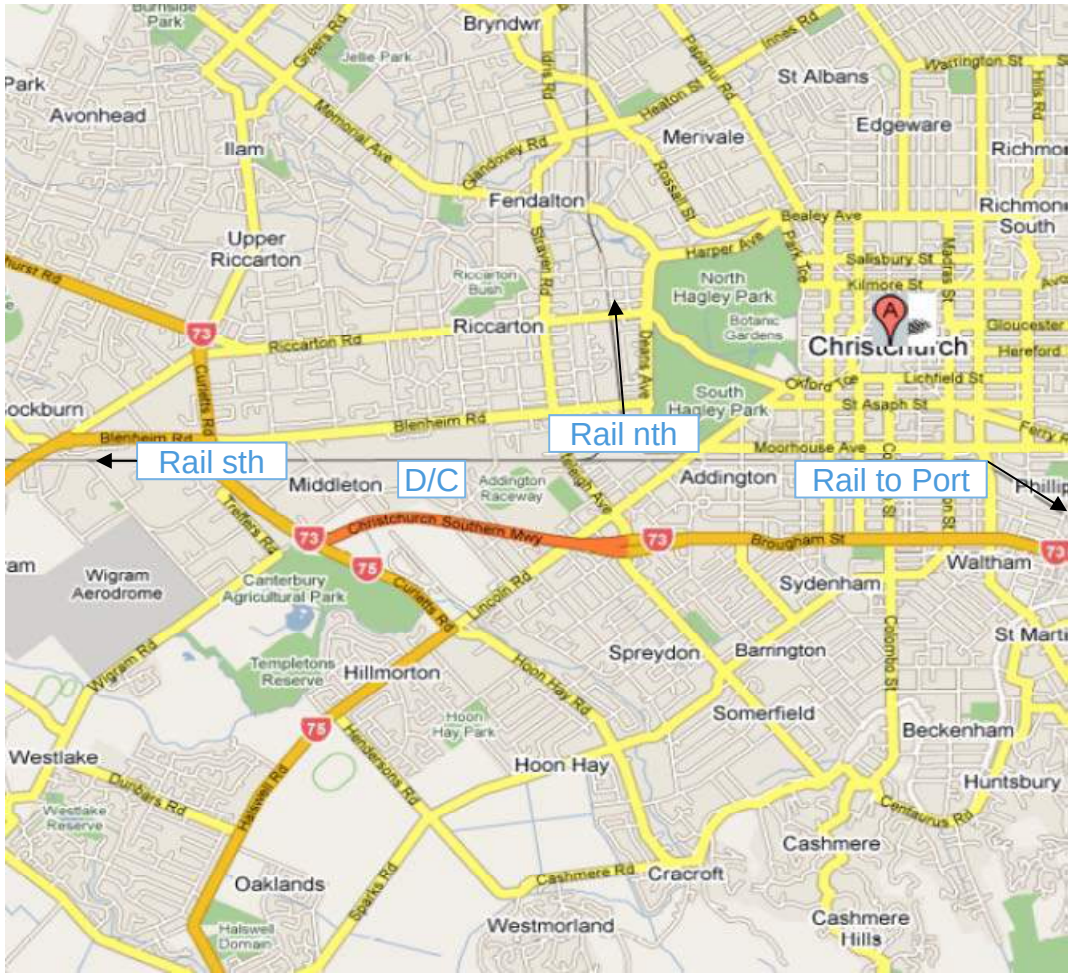
Imports	Exports
▪ Imports are taken by rail into Christchurch Distribution centre from Ports (in Christchurch) and further south and north ▪ Imports are be grounded before being picked up by road to be taken on their final leg of the journey to the customer ▪ Distribution Centre activities (i.e number of staff, train time arrivals etc.) are focussed around when customers want their goods, normally between 0700-0900 in the morning	▪ Export traffic (mainly diary and meat) is taken by rail into the Christchurch Distribution Centre from a factory or abattoir (1) ▪ From here these containers are forwarded by rail to Ports further north or to the Port in Christchurch ▪ Other value services are offered such as under-bond cargo management and power supply for containers ▪ Return trips from the Port of Christchurch bring empty containers which are then taken to container parks for repositioning

1) Refrigerated containers that need to be on power are powered by a generator attached to the train. This traffic is generally long distance i.e between the South and North Island where exports are being taken to a different Port apart from Christchurch. Christchurch serves a rich export hinterland and most frozen product does not need to be on power whilst it is in transit. They can then be powered up again before being railed to the Port, railed directly to the Port to go on power there.

Christchurch Distribution Centre is well suited in terms of location to rail and road and its proximity to the Port

Key Facts about Christchurch

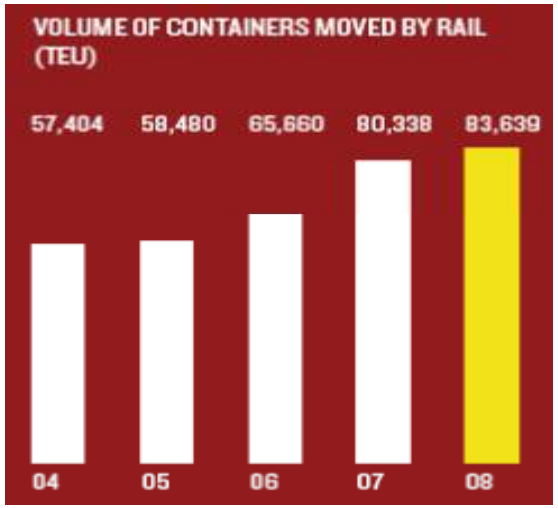
- Christchurch population 331,400
- Distribution Centre located close to the industrial area of Christchurch and within a few km of Christchurch centre
- Distribution centre well located in terms of rail (north, south and east) and road access
- The distance from the Distribution Centre to the Port is 15km
- The benefits of the Distribution Centre are:
  - Improved journey times and reliability as a result of avoiding road congestion
  - Reduced HGV traffic on roads and associated environmental benefits
  - Reduced case for road building

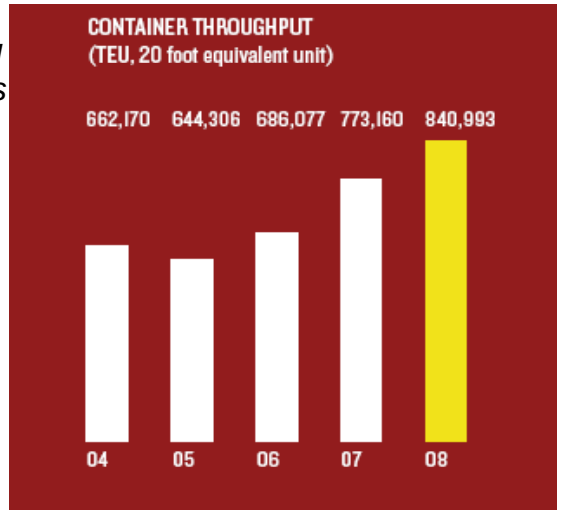


Recognizing the benefits of rail, Ports of Auckland are developing a new inland port at Wiri, 25 km from Auckland Central

Ports of Auckland recognizes that efficiency is just as important outside the Port gates as it is inside. The development of a short-haul rail service between the Auckland seaport and Wiri Inland Port in South Auckland is one mechanism the Company is pursuing to improve Auckland's supply chain. The solution is a prime example of an integrated, multi-modal approach to transport planning, where road, rail and sea transport all work together to create a leaner and greener supply chain. The project includes an upgrade of the rail sidings and the construction of a hardstand adjacent to the Company's Wiri Inland Port, which borders the North Island Main Trunk Line. The resulting service will enable a large portion of Auckland's import containers to be moved by rail to Wiri, and then trucked to local businesses. We plan to have the rail service up and running midway through 2009. Once up to speed it is forecast to save 100,000 truck trips in and out of Auckland's CBD per annum – or up to 2.5 million truck kilometers per year.

Taken from the Ports Of Auckland 2008 annual review





Policy to shift from Road to Rail

- Auckland (pop 1.2m) has two competing international seaports: Auckland and Tauranga
- The Port of Tauranga and KiwiRail jointly operate an inland "metroport" where businesses deliver and collect their freight as if it were the actual port
- Wiri is Port of Auckland's response to the Tauranga challenge
- The Ports of Auckland only have about 10% of their total TEU moved by rail at present - establishing the inland ports is a way of addressing that
- The environmental benefit is widely accepted - an unpopular proposed urban motorway became harder to justify once traffic congestion was eased by the rail freight link

This approach demonstrates that freight for local distribution can be sent a short distance via rail to a point to be distributed from

DESTINATION AUCKLAND

NEARLY 80% OF AUCKLAND-BASED EXPORTS AND IMPORTS COME FROM, OR GO TO, PREMISES LOCATED SOUTH OF THE CBD, INCLUDING WIRI AND EAST TAMAKI. AXIS INTERMODAL FACILITATES THE BEST CONTAINER FREIGHT SUPPLY CHAIN FOR THESE GOODS.

THE AUCKLAND AXIS CONTAINER TERMINALS ARE:

- → In the best location to access the Auckland market. The Seaport is all-weather, connected 24/7 to business by motorway and rail.
- → Highly efficient. Container shipping lines say Auckland is the top port in Australasia and up with the best in the world.
- → Future proofing. A deepened shipping lane, extended main container terminal and investment in new equipment ensures the Seaport has the capacity and capability to handle the next generation larger container ships.

AXIS WIRI INLAND PORT IS:

- → A 16-hectare site in a great location. It's bounded by rail and within kilometres of SH1 and the new SH20.
- → A 24-hour extension of the Seaport, with all the road, yard (including empties), e-commerce, MAF/Customs functions of the Seaport.

AXIS EAST TAMAKI INLAND PORT IS:

- → A successful small-site Inland Port, in operation since 2002.
- → An essential part of the Auckland container freight supply chain for customers Fisher & Paykell and Panasonic, streamlining their logistics and delivering to their bottom line.

Taken from the axis intermodal inland Port website

Appendix B

Cost / Benefit Model Assumptions