1 INTRODUCTION

1.1 Definition and objectives

This Report is an independently produced, factual, assessment of the freight **capacity** currently available to carry Ireland's international RoRo and container trade, assessed as a whole and also broken down and analysed over four market sectors. Hisorical development is tracked and known and potential developments in 2017 and 2018 are 'signposted'.

Constant change and development in the Irish Freight RoRo and LoLo market sector, following on from the rapid increases in the amount of Irish trade shipped by unitised mode over the last two decades, with more recent contraction as a result of economic recession, now with signs of recovery, highlight the value of this report in quantifying market scale, development and indicative utilisation.

This is the fourth edition of the report but it identifies changes in market size and market share that have arisen over the last seventeen years on the Irish Sea and over the last nine years on direct Ireland / Continent services.

Information has been obtained mostly direct from port and shipping service management, but also from company web sites and printed literature, port handbooks and other commonly used maritime reference books. Descriptions of the route sectors and a definition of the measurement of capacity are given below.

The report is not a record of cargo shipped but an analysis of the overall vessel capacity available in which to ship accompanied and unaccompanied trailers, containers and other 'unitised loads' (with certain exclusions). A complete database has been built containing details for all unit load services and the Irish ports that handle the services. The databases are presented as a simple series of spreadsheet tables in the Appendices to the report. It is a perfect source of reference for all involved in the unit load sector. The end result is an overview of the shipping capacity available and being handled at the ports, with a comparison between the capacity provided by the service operators and handled at the ports within each market sector.

Movements in capacity share have been tracked and the events leading to change are given authoritative comment.

Service identification and capacity assessment provide a market 'benchmark' by which indications of the numbers of freight units carried, obtained from a range of sources, can be confirmed and assessments of capacity utilisation made. PRB Associates regularly undertakes assignments to assess market size, capacity utilisation and market development, using the Capacity Report as the starting point.

1.2 Scope

The Irish market is broken down into four sub-sectors in the Report, defined according to mode (RoRo or LoLo) and the overseas port destinations served (UK or Continent), coded as follows:

- UK mainland RoRo – **GBR:** RoRo services connecting Ireland (Northern Ireland and Republic of Ireland) and UK mainland
- UK mainland LoLo – **GBL:** Container feeder and door-to-door services connecting Ireland (Northern Ireland and Republic of Ireland) and UK mainland
- Continent RoRo – **CR:** Direct RoRo services between Ireland (Northern Ireland and Republic of Ireland) and European Continent and Scandinavia
- Continent LoLo – **CL:** Direct Container feeder and door-to-door services connecting Ireland (Northern Ireland and Republic of Ireland) and European Continent and Scandinavia

For services with multiple port calls the capacity is split proportionately between Irish ports, in the first instance, and market sectors, if overseas port calls are located in different geographical sectors (i.e. UK mainland and Continental port calls).

The port information collected and presented in Appendix 7.4 comprises the following:

- Port name
- Port ownership
- Terminal names
- Entrance (i.e. lock, harbour, river etc.)
- Number of RoRo berths (specific for stern and bow ramp vessels)
- Number of fixed (and dedicated mobile) container handling cranes
- Vessel acceptance dimensions (draft, loa, beam, DWT, tide situation)
- Restricting factors
- Open storage
- Covered storage
- Number of electrical points
- Terminal operator
- User restrictions

The types of shipping service considered to be providing unit load freight capacity, for the carriage of goods in accompanied and unaccompanied trailers, containers and other 'unitised' modes are defined below:

- RORO - Pure freight carrying RoRo vessels with passenger accommodation for a maximum of 12 drivers
- ROPAX - Freight RoRo vessels with passenger accommodation for up to 250 people (drivers) designed to carry accompanied truck and trailer units
- PAX - RoRo ferries with sufficient free height space to accommodate trailers but with dual car carrying design and perhaps hanging car decks and dedicated car decks for passenger cars. Also with passenger capacity for more than 250 people
- LOLO - Pure container carrying vessels
- LORO - Vessels with RoRo access to the main deck but with access only by crane to the weather deck
- STORO - Vessels with RoRo access to the main deck, but also with side door access and lifts to upper and lower decks for loading palletised cargo to deck
- LO-CON - Mixed container and conventional cargo vessels

The information held in the database for each service and presented in full in Appendix 7.2 is as follows:

- Irish port of call
- Name of operator
- Agent
- Irish port Terminal used
- Overseas port destination(s)
- Service type (as above)
- Market sector (coded as above)
- Usual weekly number of sailings from Ireland
- Names of vessels in service (see below)
- Annual unit capacity
- Helpful notes

Freight carrying capacity first depends on the characteristics of the vessels used on each service and the individual vessel capacities. There is therefore an additional list of information for every vessel in use, found in Appendix 7.3. Details for each vessel include:

- Name of operator
- Name of vessel
- Route (from/to)
- Owned or chartered
- Year of build
- Type of vessel
- Capacity - lane metres (for RoRo)
- Capacity - teu (for LoLo)
- Capacity - 'raw' units (as defined below)
- Capacity - cars (dedicated car space only)
- Capacity - 'optimum' units (as defined below)
- Capacity - passengers
- Number of freight carrying decks (with deck height sufficient to carry trailers and/or containers, including weather deck if it has RoRo access, but not if weather deck is for crane loading only)
- Main deck height
- Number of internal lifts
- Number of internal ramps
- Length overall, beam and draft
- Deadweight, Gross tonnage and Net tonnage

1.3 Exclusions

There are a number of types of service that could be confused with the RoRo ferry and container services under consideration. It is important to understand that the following services are excluded from the analysis because they do not provide the desired unitised freight capacity for general intra-European trading and deep sea feedering.

- Pure Forest Product services
- Pure Car carriers
- Domestic services (i.e. Isle of Man)
- Car and passenger only services

1.4 Report structure

In Section 2 of the report the unit of capacity and the basis for calculating annual service capacity are defined, along with an explanation of assumptions made.

Section 3 provides a short overview of the whole market and the leading ports and service operators involved. It also sets the scene with the latest market developments and strategic moves.

Sections 4 and 5 give short 'bullet point' details of key service and port developments that have taken place since 2014 (the last Report) and pending developments known and scheduled to be taking place in 2017 and 2018. Market sector details are expanded upon and capacity implications quantified and qualified in Section 6.

In Section 6 each of the market sectors is examined and analysed in more detail. A commentary and analysis of each sector is enhanced by graphs, pie charts and tables depicting the market shares, capacity provision and capacity development for the services involved and Irish ports served. The development of market size, in each sector, is presented in simple but effective bar-graph format.

The bulk of the detailed reference information is contained in the Appendices, in Section 7. There are four appendices, the second of which is a full summary of all the current unitised services operating from Irish ports. The range of information for each service is described in Section 1.2 and the information itself is presented in geographical order of Irish port served, from Larne in the north round the east and south coasts to Cork.

The first Appendix (7.1) incorporates tables of port to port distances for Ireland / UK mainland and Ireland / Continent and Scandinavia port combinations with corresponding port to port sailing times at a range of service speeds (15, 20 and 25 knots). These tables provide for easy estimation of possible round trip schedule timings.

The third Appendix contains a list of every vessel currently in service in the defined market sectors, with capacity and dimension particulars. Vessels are grouped by operator and listed in alphabetical order according to operator name.

Further port details, including the number of RoRo berths and container cranes available, are listed in the fourth and final Appendix ordered according to a ‘clockwise’ geographic sequence of ports ranging from Londonderry around to Shannon Foynes, via the north, east and south coasts of Ireland.

2 CAPACITY AND UNIT DEFINITION

2.1 Basis for calculation

The total unit capacity calculated to be available on each service is based upon the regular number of sailings offered each week, multiplied by two, to take account of the equal number of sailings in both directions, multiplied by the 52 weeks in a year. Total sailings are then multiplied by the average unit capacity available on the vessels in service, with some account taken for seasonal schedule variations.

The basic freight unit is defined according to the type of vessel, but in summary should be described as the basic 'FEU', or 'forty foot equivalent unit', although trailer and container lengths have increased beyond 'forty foot' in recent years. 13.6 metres for trailers and 45ft for containers are now the norm and the unit of capacity measurement takes this into account. In general therefore, vessel capacity is defined in the following way, for three distinct vessel service types, taking into account either verifiable data from operators and/or realistic capacity taking account of gaps in stowage:

- ✓ Freight RoRo vessels - RORO: Equal to the lane metre capacity divided by 14.6 to take account of the unaccompanied trailer unit and the longitudinal space between units 'in stow'.
- ✓ Passenger and Ropax vessels - PAX/ROPAX: Equal to the lane metre capacity divided by 16.5 to take account of the trailer, accompanying tractor unit and the longitudinal space between units 'in stow'.
- ✓ Container vessels - LOLO: Unit capacity generally equal to the published 'teu' (twenty foot equivalent unit) capacity, divided by two.

2.2 Assumptions

Several further assumptions have been made to discount space not necessarily available for carrying freight and to account for additional capacity not specified by simple division of lane metre area. There are two fundamental adjustments to the unit capacities defined above.

For RoRo vessels with a main deck height over 6.0 metres it is possible to stow containers stacked two high on mafi trailers and cassettes. This effectively doubles the unit capacity in the main deck on these types of vessels. However, deck heights might not be uniform throughout and main deck area and do not form the same consistent proportion of total deck space in all ships. In addition the increasing size (height) of containers from 8’6” to 9’6”, as standard, is leading to growing constraints.

In the absence of detailed vessel particulars for all the RoRo ships in service two simple escalators are applied (as opposed to one 30% escalator applied in previous Surveys on all vessels with deck height exceeding 6.0 metres) to ships with deck height in the range 6.0m to 6.5m (15%) and over 6.5m (30%) respectively. The impact of this one-off change was to reduce overall capacity in 2009 by 93,059 units (2.3%), with impact specific to three services only, Norfolkline’s Belfast / Heysham service (-14,706), P&O Ferries’ Larne / Cairnryan service (-66,685) and P&O Ferries’ Dublin / Liverpool service (-11,668).

Another, non-service adjustment, recognised in 2010 was a more realistic freight unit capacity for Stena Line’s two HSS vessels operating from Stranraer and Holyhead. Instead of assuming a capacity for 50 trailer units the recommendation from Stena management was for a capacity of 30 trailer units. The one-off impact of this adjustment in 2010 was to reduce market capacity by 29,840 units.

On passenger RoRo ferries the deck space available for carrying freight is compromised by the operator's varying seasonal requirements to carry passenger cars. Therefore on these vessels the basic unit capacity is reduced by 40% to reflect the average demand for this space from passenger cars.

For LoLo vessels the limitation posed by deadweight restrictions (nominal capacity) is not taken into account. The assumption is that the cargo is distributed evenly and there will generally be a mixture of loaded and empty containers that will keep the average weight per container down to acceptable levels.