COMHLACHT CHALAFORT ÁTHA CLIATH
DUBLIN PORT COMPANY

Dublin Port Masterplan

Internal Report #1

Analysis of Ro-Ro Requirements

27th September 2011

Introduction

The central objective of the Masterplan is to show how Dublin Port might handle 60.0m tonnes by 2040. This figure and this date are merely benchmarks to allow DPC to produce a planning framework from which actual projects will be drawn in future years in response to market demand as and when it emerges.

The largest component of the Port's traffic currently is Ro-Ro freight and we believe that this will continue to be the case over the coming decades. Indeed, we believe it likely that the proportion of our trade in the Ro-Ro mode will grow from 57% in 2010 to almost 70% by 2040 as shown below.

	'000 Tonnes		AAGR		% by Mode			Growth 2010 to 2040	
	2010	2040			2010	2040		'000 tonnes	%
Ro-Ro	16,403	41,920	3.2%		56.8%	69.9%		25,517	82.0%
Lo-Lo	6,317	10,480	1.7%		21.9%	17.5%		4,163	13.4%
Bulk Liquid	4,009	4,000	0.0%		13.9%	6.7%		- 9	0.0%
Bulk Solid	2,054	3,500	1.8%		7.1%	5.8%		1,446	4.6%
Break Bulk	96	100	0.1%		0.3%	0.2%		4	0.0%
Total tonnes	**28,879**	**60,000**	**2.5%**		**100.0%**	**100.0%**		**31,121**	**100.0%**
Ro-Ro ('000 units)	701	1,791	3.2%					1,090	

This belief is based on two factors.

- Firstly, there is the continuing strength of Ireland's trading relationship with Britain.
- Secondly, there is the commencement of Ro-Ro freight services in recent years to locations beyond GB including Continental Europe (Rotterdam and Zeebrugge) and Africa (Lagos in Nigeria and Takaradi in Ghana).

Ro-Ro service types

There are three different segments to the Port's Ro-Ro trade:

- Firstly, there is accompanied Ro-Ro. All but a small proportion of this segment is carried on shortsea services operating between Dublin and Holyhead. From the Port's perspective, accompanied Ro-Ro has the potential to achieve very high levels of land utilisation[1] because

[1] In Dover, for example, there are more than 2.0m Ro-Ro freight movements per annum through a land area of less than 30 hectares. This is possible given the short sea crossings to Calais (90 minutes) and Dunkirk (two hours) which allow ferry operators to attain much higher levels of ship utilisation than is possible on the longer (3¼ hours) sea crossing between Dublin and Holyhead.

imported units leave the port immediately upon discharge and export units tend to stay in the terminal for no more than an hour or two before being loaded.

- Secondly, there is unaccompanied Ro-Ro which is the predominant way Ro-Ro trailers are handled on longsea routes to and from ports such as Liverpool and Heysham. Unaccompanied units occupy greater terminal area as their dwell time tends to be greater than for accompanied Ro-Ro, typically anything from two or three hours up to a day or more.
- Thirdly, there are double stacked containers. This is the dominant way Ro-Ro freight is handled between Dublin and Continental Europe. Dwell times tend to be similar to those for unaccompanied trailers. However, land utilisation tends to be better than for unaccompanied Ro-Ro as export containers are stacked two high and import containers are stacked up to six high (alongside Lo-Lo containers in RTG stacks).

How might Ro-Ro develop from now to 2040?

The shape of the Port's trade today is very different from 30 years ago. However, given that we have seen the containerisation revolution during this period, it appears reasonable to assume that there will not be an analogous development over the next 30 years which will cause a further fundamental change to the way goods are transported by sea. That being the case, the major planning uncertainty faced by the Port relates to the levels of growth that will emerge for Ro-Ro and Lo-Lo.

We have argued elsewhere that Dublin Port should be able to cater for any conceivable levels of growth in Lo-Lo within the existing footprint of the Port.

This reduces our planning uncertainty to trying to project the future volume of Ro-Ro and how this volume might be split among the three segments identified above.

If the split of the putative 1.79m units of Ro-Ro in 2040 among the three segments were to reflect the split as of mid-2011, then the volumes of each type of Ro-Ro in 2040 would be as follows.

Segment	**# units in 2040**	**%**
GB longsea	914,864	51.1%
GB shortsea	696,814	38.9%
Europe	178,841	10.0%
Total	**1,790,518**	**100.0%**

How much land might be needed for Ro-Ro by 2040?

Just as we have argued in the case of Lo-Lo, the key factor in determining the scale of development for Ro-Ro will be the utilisation that can be attained for Port land.

Given the scale of Dublin Port's existing Ro-Ro business, we have a good understanding of what levels of utilisation we should be targeting for accompanied and unaccompanied Ro-Ro units[2].

The table below shows the intensity of land utilisation achieved in each segment in 2010.

	Terminal Land Area	**# units 2010[3]**	**Units per hectare p.a.**
Unaccompanied	21.4 ha	368,580	17,257
Accompanied	12.9 ha	245,372	18,981
	34.3 ha	**613,952**	**17,907**

In the case of unaccompanied, we believe that the current intensity of land utilisation could be increased somewhat and have identified a level of utilisation of 20,000 units per hectare per annum for planning purposes. We believe that this is realistically achievable.

In the case of accompanied Ro-Ro (primarily on the Dublin-Holyhead route), there are currently six departures daily from two terminals. As and when market demand increases, there is considerable scope for increased throughputs through these terminals if the existing (or new) operators add more services such that the Dublin-Holyhead route took on some of the characteristics of the Dover-Calais/Dunkirk routes.

In particular, we believe that land utilisation could increase to 40,000 units per hectare per annum.

In summary, our high-level land utilisation planning parameters are as follows:

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[2] For the balance of this analysis, we have ignored the land requirement for containers carried on Ro-Ro ships based, primarily, on the large headroom of Lo-Lo capacity that exists to handle containers imported by Ro-Ro.

[3] The figures shown are actually for GB longsea and GB shortsea respectively rather than for unaccompanied and accompanied. However, given the dominance of unaccompanied on the GB longsea and of accompanied on the GB shortsea, we have chosen to equate GB longsea with unaccompanied and GB shortsea with accompanied for simplicity sake.

Units per hectare p.a.	Current	Target
Unaccompanied	17,257	20,000
Accompanied	18,981	40,000

Applying these target planning parameters to the putative 1.79m Ro-Ro units by 2040 generates the following estimates of land requirements.

	# units in 2040	Area needed	Current	Difference
Unaccompanied	914,864	45.7 ha	21.4 ha	24.4 ha
Accompanied	696,814	17.4 ha	12.9 ha	4.5 ha
Containers	178,841			
Total	**1,790,518**			

Conclusions

1. The greatest challenge facing the Port to provide capacity to cater for 60m tonnes by 2040 lies in the Ro-Ro mode.
2. There are three segments within the Ro-Ro mode:
    - Accompanied
    - Unaccompanied
    - Containers
3. In the case of the accompanied and container sectors, we believe that the Port will be able to cater for considerable increases in volumes over the next 30 years through existing land areas.
4. An additional 4.5 hectares has been identified as possibly being necessary for accompanied Ro-Ro. This can be readily provided on the Port's existing footprint.
5. However, if existing trends continue, the Port could face a considerable challenge to provide sufficient land to handle unaccompanied Ro-Ro. In particular, it appears possible that an extra 24.4 hectares might be needed to handle putative volumes by 2040. This additional land will need to be relatively close to the Ro-Ro berths (i.e. not more than about 600m distant at the most extreme points).
6. Whereas the Port would lose some existing Ro-Ro capacity if the proposed cruise berths are built on North Wall Extension, this can be more than compensated from existing lands. Ultimately, however, some level of new land (i.e. reclamation) is likely to be required over the period of the Masterplan to meet the contribution it is anticipated that Ro-Ro will make to the growth towards 60m tonnes by 2040.