

Dublin Port Post 2040 Dialogue – Paper 5

THE CONUNDRUM OF PLANNING FOR LONG-TERM GROWTH

28th September 2020

If a new port is to be built on the east coast of Ireland, there needs to be a good reason to do it.

Some argue that a new port should be built in order to allow the lands of the existing Dublin Port to be redeveloped for other purposes, notably for housing.

Dublin Port Company does not accept this argument and believes that a new port should only be built if there is a demonstrable demand for port infrastructure that cannot otherwise be met.

Whether a larger or a smaller new port might be built by 2040, one of the key things to be determined is its size in relation to the demand for port infrastructure many years from now. Given the length of time it will take to build a new port and given its operating lifetime of many decades, if not centuries, it is necessary to form a view of demand very far into the future to at least 2080 and possibly as far out as 2100.

This very long time horizon is required because a decision needs to be taken in the coming years on the size of breakwaters required to enclose the new harbour. Breakwaters such as those in Dublin Port, Dun Laoghaire Harbour, Howth Harbour and Rosslare Harbour last for centuries.

Dublin Port Company’s approach to date in dealing with the unavoidable uncertainties of projecting future volumes in Dublin Port has been to make what appears to be a reasonable assumption for the foreseeable growth to 2040 (now only 20 years away) based on what has happened over past decades.

In doing this, we have looked at average annual growth rates over periods of 30 years since 1950 and, in each year, we considered the average volume over the previous five years in the same way Isaac John Mann did when, in 1881, he analysed the impact of the completion of the North Bull Wall on Dublin Port’s volumes over the 70 years to 1875.

The basic assumption in Masterplan 2040 is that growth rates similar to those seen over the 60 years from 1950 to 2010 will continue for 30 more years to 2040. Where the average annual growth rate from 1950 to 1980 was 3.2% and from 1980 to 2010 was 4.7%, Masterplan 2040 is premised on a growth rate of 3.3% to 2040.

1950	2.9m		
1980	7.3m		3.2%
2010	28.9m		4.7%
2040	77.7		3.3%

If this growth rate of 3.3% materialises, then the overall growth rate over the 90 years from 1950 to 2040 will have been 3.7%.

We are now one third of the way into the 30 year period from 2010 to 2040 and, by end 2019, the average annual growth rate over the nine years since 2010 has been 2.5%. Given that these nine years included the five years of recession after 2008, this is a high rate of growth. At an average annual rate of growth of 2.5%, volumes would double in 28 years; at 3.3%, a doubling would take just 21 years.

The country has now rapidly fallen into recession in a matter of months, and without knowing how long the recovery period might be, the 3.3% growth rate may turn out to be on the high side. However, as a figure for planning the capacity required 20 years from now, it is undoubtedly better to plan on the high side and to be ready to construct projects as and when they are required even if this turns out to be later than assumed at the outset.

Whereas the 3.3% growth rate seems to be a reasonable figure for planning purposes over the remaining 20 years to 2040, it is entirely implausible that compounding growth at such a high level can continue indefinitely.

For example, if the level of growth we have seen in the 69 years from 1950 to 2019 continued for another 69 years to 2088, then Dublin Port would need to have the capacity to handle 456m tonnes. This is almost equal to the 469m tonnes handled by Europe’s largest port, Rotterdam, in 2019.

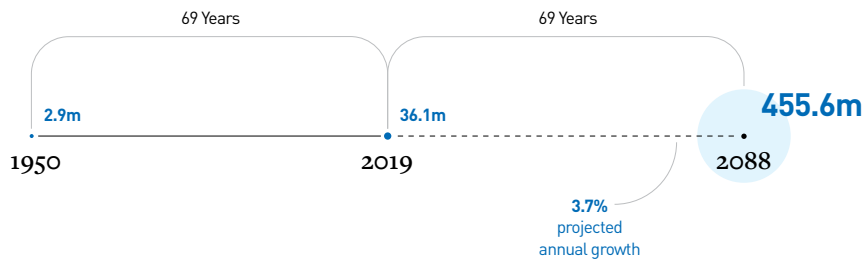
Even more implausibly, if the projected growth over the 90 years to 2040 continued for another 90 years beyond that out to 2130, then volumes would rise to 2,076m tonnes, more than four times Rotterdam’s 2019 volumes.

Considering growth rates over very long periods is an academic exercise until decisions have to be made on the scale of port projects to be built. There comes a point in any large infrastructure project where the decision has to be made to build it, or not.

Dublin Port Company believes that the longer we can put off the decision to build a new port, the better. The implausibility of the continuation of historically high levels of growth long into the future suggests that there will come a time when there will be a decoupling of growth in port volumes from economic growth. At this point, port volumes will plateau or grow only very slowly over time.

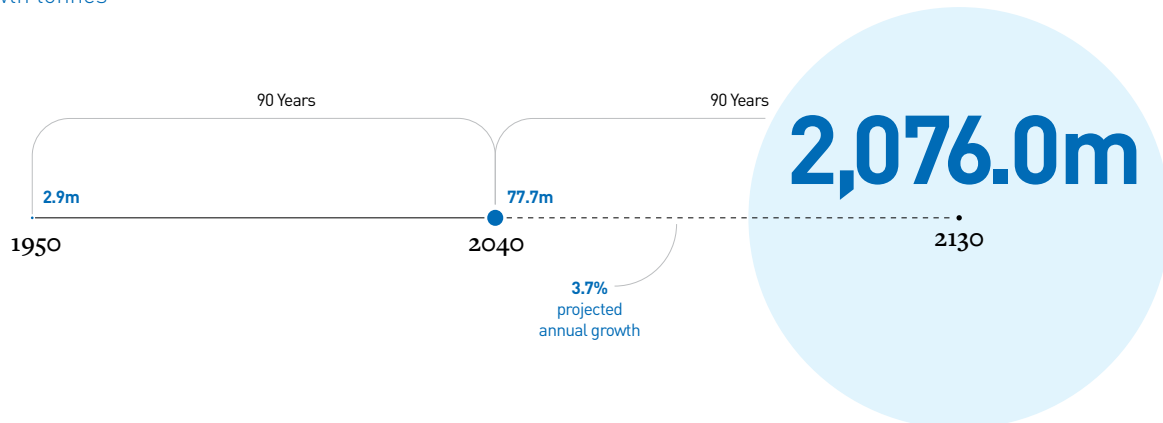
If historic growth from 1950 to 2019 were to continue for the next 69 years ...

Growth tonnes



If the Masterplan projections over the 90 years from 1950 were to continue for another 90 years into the future

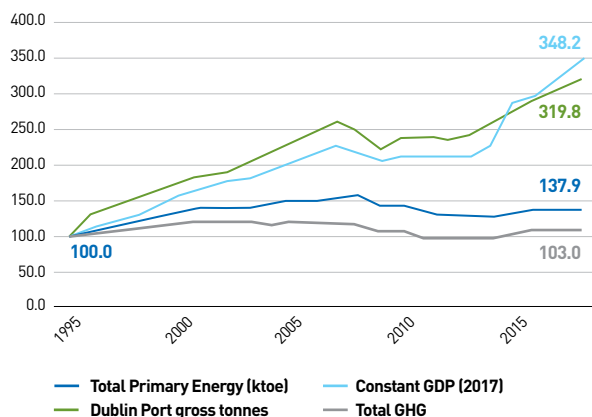
Growth tonnes



Where in decades past, there was an inexorable link between growth in energy consumption and economic growth, this link has very considerably weakened in recent years. For example, the size of the economy as measured by real GDP (however unreliable GDP has become as a measure in recent years) increased by 248% between 1995 and 2018, while energy consumption increased by only 38%. Over the same period greenhouse gas emissions were almost flat, increasing by just 3% in 23 years.

In stark contrast to energy and greenhouse gases, the volume of cargo through Dublin Port grew by 220% between 1995 and 2018 equivalent to an average annual growth rate of 3.5%.

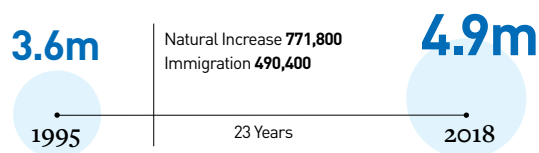
Comparison of trends in Dublin Port with selected national trends, 1995 to 2018



There is a plausible argument that cargo volume growth will slow down because future economic growth will be driven far more by trade in services than by trade in goods. However, we have had a high value and low volume pharma sector, a burgeoning ICT sector and a large aviation leasing sector for many years already, all contributing significantly to economic growth, and yet cargo volumes through Dublin Port have continued to grow at a high rate. This is because Ireland produces little of what it consumes and domestic demand drives large volumes of imports. Domestic demand is itself driven by population and Ireland’s population has increased substantially in recent decades.

For example, over the 23 years from 1995 to 2018, the population of the country grew by 35% from 3.6m in 1995 to 4.9m in 2018. This growth came both from natural increase (61%) and net immigration (39%).

Population growth in Ireland (1995 to 2018)



With population growth projected to continue to at least 2040, it is entirely possible that the level of volume growth projected in Masterplan 2040 may yet materialise, notwithstanding the 2008 and 2020 recessions.

This points to the conundrum at the core of planning long lead time projects to deliver port infrastructure. How can you reliably forecast demand levels far into the future to allow you to determine the scale of what is to be built? It is all too easy to get it wrong.

This conundrum is faced not only by Dublin Port Company but also by those who propose that a new port should be built in order to make Dublin Port’s 260 hectares of land available for redevelopment.

Dublin Port Company’s approach to long-term planning is to be prepared to build the infrastructure required for projected future volumes but only to commit to major construction projects closer to the time of need when there is less uncertainty about the level of future demand. The longer major projects can be deferred, the better.

If a new port is to be built by 2040, what size should it be?

We have termed the suggested replacement port DP2.0 and have estimated its required scale as follows.

The throughput projected in 2040, which Masterplan 2040 seeks to provide capacity for, is 77m gross tonnes. This target capacity is driven by the assumed annual average growth rate of 3.3% over 30 years.

Based on the belief that volume cannot grow indefinitely at such a rate, we have assumed that the unitised modes of Ro-Ro and Lo-Lo continue to increase at the lower rate of 1.5% per annum for the 40 years from 2040 to 2080 and that non-unitised modes plateau with zero growth from 2040 to 2080. This would suggest that DP2.0 should have a capacity to handle 134m gross tonnes.

Long term projections by cargo mode: 2040, 2080 and 2100

	2010 '000 gross tonnes	Growth rate 30 years	2040 '000 gross tonnes	Growth rate 40 years	2080 '000 gross tonnes	Growth rate 20 years	2100 '000 gross tonnes
Ro-Ro	16,403	4.1%	54,287	1.5%	98,478	0.75%	114,351
Lo-Lo	6,317	3.0%	15,270	1.5%	27,700	0.75%	32,165
Bulk liquid	4,009	0.0%	4,000	0.0%	4,000	0.0%	4,000
Bulk solid	2,054	0.0%	3,500	0.0%	3,500	0.0%	3,500
Break bulk	96	0.1%	100	0.0%	100	0.0%	100
Total	28,879	3.3%	77,157	1.4%	133,778	0.71%	154,116

We have designed a port with this capacity at each of two locations – Arklow and Bremore – and have estimated the construction costs at 2020 prices. The costs are eye watering.

Because we believe that there is no case to undertake a megaproject such as DP2.0, we have also looked at the possibility of building a smaller port at these same locations. This smaller port is referred to as DP1.5.

DP1.5 has been sized with a lesser capacity of 60m gross tonnes based on the following logic:

- Total demand by 2080 will be 134m gross tonnes.
- 77m gross tonnes will continue to be handled at Dublin Port leaving 57m gross tonnes to be handled elsewhere.
- 40m gross tonnes would be handled at DP1.5 with the additional 17m gross tonnes being handled at other east coast ports such as Greenore, Rosslare and Waterford¹.
- DP1.5 would be designed with capacity sufficient to accommodate additional annual growth from 2080 to 2100 of 0.75% in the unitised modes.
- By 2100, total demand would be 154m gross tonnes with 77m continuing to be handled at Dublin Port, 17m being handled at other east coast ports and 60m gross tonnes at DP1.5.

DP2.0 or DP1.5 would take 20 years to build and planning for either option needs to start in 2020 if a new port is to be available in 2040.

Although less than half the size of DP2.0, the project to build DP1.5 would still be a megaproject and its costs, although lower, would also be eye watering large.

Whichever port project is considered, there is enormous uncertainty underpinning the projection of what capacity might be needed in 20 years time to handle volume growth for many decades after that. In particular, it seems inevitable that the decoupling of growth in port volumes from economic growth must occur at some point. However, it is impossible to predict when this might happen.

Dublin Port Company's preferred approach is to plan for the construction of the much smaller DP1.5 (with an annual throughput capacity of 60m gross tonnes) and hope that, in the intervening years, before construction would have to commence, a combination of factors would obviate (or at least defer) the need to build the new port. These factors include:

- Completion of all of the development options for Dublin Port envisaged in Masterplan 2040
- The decoupling of growth in port volumes from economic growth
- Provision of additional capacity at other east coast ports (such as Greenore, Rosslare and Waterford)
- The generation of demand to use other ports (such as Cork and Shannon Foynes) as a result of more balanced regional development in the country.

From the perspective of proper planning and sustainable development, Dublin Port Company believes that the best future outcome is that DP1.5 ends up not having to be built at all and that future volumes of cargo can be handled at a combination of Dublin Port and other existing east coast ports for many decades past 2040.

However, such is the conundrum of planning for long-term growth, it is prudent to plan to build DP1.5. Or, put differently, it would be negligent not to plan for this possible eventuality.

¹ 17m gross tonnes is equivalent to 700,000 Ro-Ro units or 1.75m TEU of Lo-Lo. To put these figures into context, the 2018 throughput of Rosslare Harbour was 128,414 Ro-Ro units and the throughput of the Port of Waterford was 43,943 TEU.