3FMProject

Bringing
Dublin Port
To 2040

Planning Report

Appendix A:
Description of Port Operations

COMHLACHT CHALAFORT ÁTHA CLIATH
DUBLIN PORT COMPANY

RPS
A TETRA TECH COMPANY

Third & Final
Masterplan
Project

COMHLACHT CHALAFORT ÁTHA CLIATH
DUBLIN PORT COMPANY

3FM Project

A description of operations in Dublin Port

17 July 2024

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1. Introduction

The 3FM Project is the final of three Strategic Infrastructure Development projects which, between them, will deliver the vision of Dublin Port's Masterplan 2040. This vision sees Dublin Port being developed to its maximum and ultimate capacity by 2040. At that point, cargo throughput will have risen from 30.8m gross tonnes in 2018 to 73.8m in 2040.

This description of operations at Dublin Port has been prepared to facilitate an understanding of the 3FM Project application for permission. The description covers all port operations including those not directly affected by the 3FM Project.

Dublin Port is the largest port on the island of Ireland and is an essential link for the country's international trade and transport requirements.

Dublin Port is owned and operated by Dublin Port Company (DPC).

DPC's main function is to facilitate the movement of goods and people in an safe, efficient and cost effective manner.

The type of goods and the manner in which they are transported fall into five cargo modes:

- ***Roll-on Roll-off (Ro-Ro)***: Freight trailers, containers, vans, passenger cars, coaches, car imports
- ***Lift-on Lift-off (Lo-Lo)***: Containers carrying all types of goods
- ***Bulk Liquid***: Refined petroleum products of different types (including petrol, diesel and aviation fuel) and other liquid commodities such as molasses
- ***Bulk Solid***: Including grains, animal feeds, bulk cement, aggregates, petroleum coke, slag, peat moss and scrap metal
- ***Break bulk and other goods***: Loose products such as timber paper, steel and project cargoes (such as rail carriages, wind turbine components and large components for construction projects)

In addition Dublin Port's throughput includes passengers primarily on multipurpose ferries (i.e. both freight and passengers) in cars, on coaches or as foot passengers but also on smaller cruise ships. As a passenger gateway, Dublin Port is nearly as large as Shannon Airport.

2. Ro-Ro (Roll-on Roll-off)

Ro-Ro refers to shipping services and activities where vehicles are driven on and off ferries or other specialised ships (such as car carriers).

In 2023, Dublin Port handled 83% of Ireland's Ro-Ro freight traffic. This traffic consists of freight vehicles, freight trailers, containers, coaches, passenger cars, trade vehicles and specialist trailers.

Dublin Port handles some of the largest Ro-Ro vessels in the world, with a total of 122 sailings in a typical week between Dublin and UK ports and between Dublin and Continental European ports. UK Ro-Ro destinations are Holyhead, Liverpool and Heysham, and the Continental European Ro-Ro destinations are Rotterdam, Zeebrugge, Bilbao, Cherbourg, and Santander. On the latter routes, many of the Ro-Ro vessels are significantly larger than on UK routes.

On a typical day in early July 2024, nine ferries arrived from Holyhead carrying accompanied and unaccompanied Ro-Ro trailers as well as passengers and cars:

Arrival time*	Operator	Ship
05.30	Stena Line	Stena Adventurer
05:55	Irish Ferries	Ulysses
12:10	Stena Line	Stena Estrid
13:00	Irish Ferries	Dublin Swift
17.40	Irish Ferries	Ulysses
18:00	Stena Line	Stena Adventurer
19:10	Irish Ferries	Dublin Swift
23:00	Irish Ferries	Norbay
23:50	Stena Line	Stena Estrid

** Arrival times at berth as per DPC's port management information system*

Another six ferries arrived from Liverpool / Heysham carrying unaccompanied Ro-Ro trailers.

Arrival time	Operator	Ship
00:50	CLdN	Celandine
02:00	Stena Line	Bore Song
04:30	Seatruck	Seatruck Precision
10:10	Seatruck	Seatruck Pace
12:30	Seatruck	Seatruck Progress
18:30	Seatruck	Seatruck Power

Between the Holyhead and Liverpool ferries, up to 9,000 lanemetres of Ro-Ro trailers can arrive in a 90 minute period every morning. Nearly half of this volume goes straight out the Dublin Port Tunnel before the morning rush hour.

Ship	Operator	Lanemetres[1]	Arrival
Seatruck Precision	**Seatruck**	**2,166**	**04:30**
Stena Adventurer	**Stena Line**	**3,400**	**05:30**
Ulysses	**Irish Ferries**	**4,100**	**05:55**

1 Source: Sea-web Ships

In addition to Ro-Ro services between Dublin Port and British ports, there are also direct Ro-Ro services between Dublin and Continental Europe (Rotterdam, Zeebrugge, Santander and Cherbourg):

- Irish Ferries' *W.B Yeats* (2,800 lanemetres) operates three roundtrips per week to Cherbourg.
- CLdN operates seven sailings into Dublin Port from Zeebrugge, Rotterdam, and Santander each week on large dedicated freight-only ferries. The largest of these, the MV Celine and the MV Delphine, each has a capacity of 8,100 lanemetres.

Ro-Ro freight is transported either "*accompanied*" or "*unaccompanied*".

- "*Accompanied*" refers to trailer units to which the cab is attached at all times and the driver accompanies the vehicle on the Ro-Ro ferry.
- "*Unaccompanied*" refers to freight trailers that are delivered and collected from the compound adjacent to the vessel. These trailers are driven on and off ships by dock workers using tractor units.

The main difference in the two operations is the amount of land needed to service the units.

In the case of accompanied freight, the units drive off the vessel and leave the port immediately.

DPC has targets for land utilisation of 40,000 units per hectare per annum for accompanied Ro-Ro and 20,000 units per hectare per annum for unaccompanied Ro-Ro.

In 2023, approximately 1m Ro-Ro freight units[1], 0.5m passenger vehicles, and 1.75m passengers were handled on Ro-Ro ferries in Dublin Port.

[1] Freight units are typically 13.6 metre long trailers of varying types including refrigerated units, curtain-sided trailers, flat trailers and car transporters. There are also smaller freight units including non-articulated trucks and vans.

3. Lo-Lo (Lift-on Lift-off)

Container shipping can be divided into two categories.

There are the very large ocean going container vessels, carrying up to 24,000 TEU (twenty-foot equivalent units[2]), that operate over long distances between the larger ports in the world, and there are smaller shortsea vessels that connect those larger ports with smaller ports such as Dublin.

The smaller shortsea container ships that call to Dublin link Ireland with ports mainly in northern Europe (including Rotterdam, Antwerp and Le Havre) but also ports in the UK, and the Mediterranean. A typical large container ship in Dublin Port would have a carrying capacity of about 1,000 TEU.

Lo-Lo container ships are the workhorses for moving goods between Ireland and Continental European ports such as Rotterdam, Antwerp and Le Havre. Although containers move to and from Continental Europe on Ro-Ro ferries (such as CLdN's *Celine*), most (about 80%) move on container ships such as Eucon's *Elbtrader*. This is typical of the container ships operating in and out of Dublin Port and has a capacity of 924 TEU or about 450 units. To carry the same amount of freight, a Ro-Ro freight ferry would need about 6,300 lanemetres of capacity.

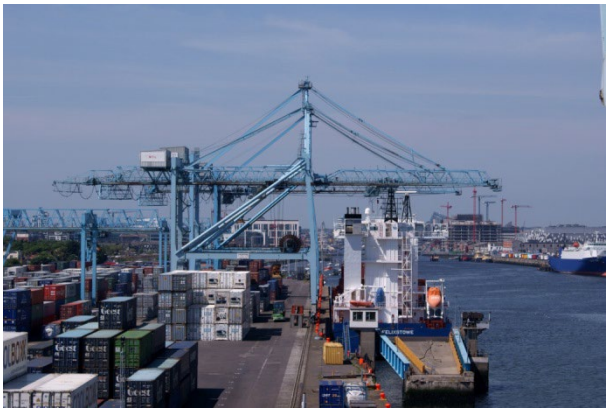
The shortsea container ships carry containers originating from or destined for locations in Europe. They also carry containers trans-shipped from the large ocean going container ships

[2] Containers vary in length and are mostly 20', 40' or 45' long. A small proportion are 30' long. The storage capacity of container ships and of container terminals is specified in terms of how many 20' containers they can store where one forty foot container is equivalent to 2.0 TEU

which operate services to the Far East, the Americas and beyond. In this latter role, shortsea container ships are referred to as *feeder ships*.

The cargo handling equipment for containers is divided into two main groups: *primary handling equipment* and *secondary handling equipment*.

Primary handling equipment refers to cranes of different types used to load and unload containers on and off the ship. There are two main types of crane in use in Dublin Port, rail mounted ship to shore gantry cranes and dock mobile cranes.



Secondary handling equipment refers to the equipment (usually gantry cranes of one type or another) used to store containers in back areas in large stacks.

In Dublin, there are rubber-tyred gantries (RTG's) and rail mounted gantries. The largest RTG's can store containers in stacks up to six containers high and seven wide. These stacks occupy large areas of port land and DPC has a utilisation target of 40,000 TEU per hectare per annum for the port's container terminals.

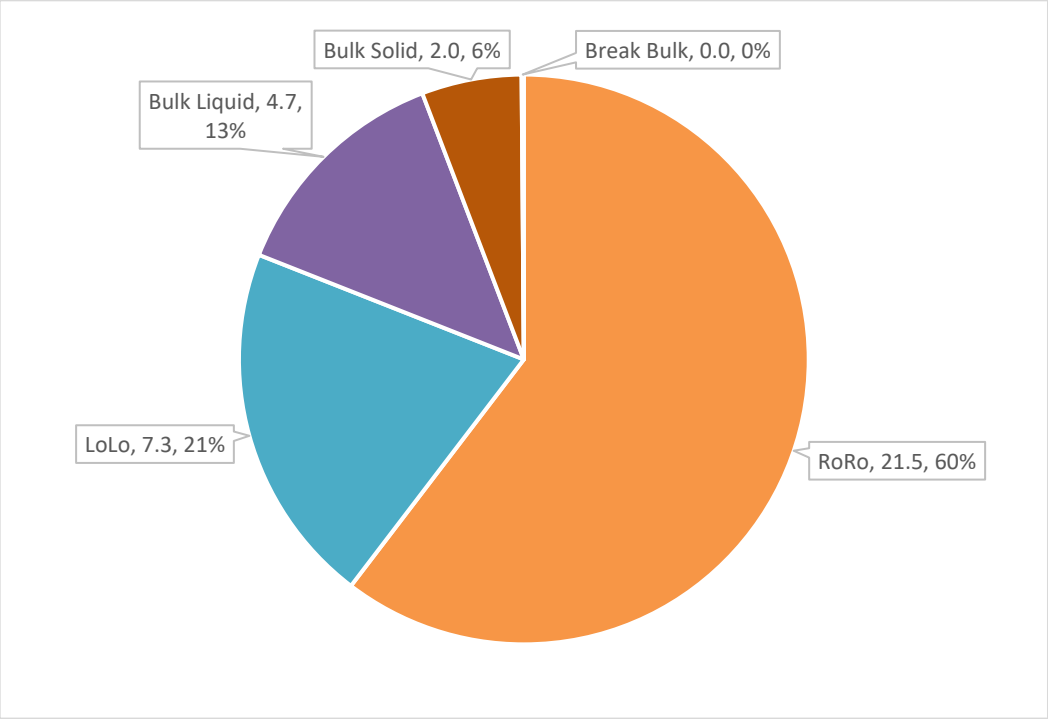
Containers are moved between the stacks and the quay side cranes by special heavy duty truck and trailer combinations or by reach stackers.

In 2023, Dublin handled 443,000 Lo-Lo units (equivalent to 796,000 TEU).

4. Unitised cargo

Ro-Ro and Lo-Lo, combined, are jointly referred to as *unitised* as the freight is carried in "units" i.e. containers or road trailers.

Unitised cargo makes up 81% of the freight through Dublin Port, as shown in the breakdown of 2023 cargo modes below.



In 2023, there were in excess of 1.4m unitised loads moved through Dublin Port.

Within unitised freight, there is now a large degree of intermodal mobility of containers between Lo-Lo and Ro-Ro.

5. Impact of Brexit on Ro-Ro freight

Since Brexit, there has been a shift towards more direct routes to Continental Europe as evidenced by the increases in direct Ro-Ro services to ports such as Zeebrugge and Rotterdam. There has also been a lessening of the use of the UK landbridge for the movement of unitised freight between Ireland and Continental Europe. In 2020, GB routes accounted for 64% of unitised freight at Dublin Port, whereas that figure had decreased to 55% of unitised freight in 2023.

Due to the length of sea crossing, direct Ro-Ro routes to Europe are based on unaccompanied Ro-Ro, whereas services to UK are a mix of accompanied and unaccompanied Ro-Ro. By its nature, unaccompanied Ro-Ro requires large freight yards to store trailers, whereas accompanied Ro-Ro simply drives on and off a ship. One consequence of the post Brexit increase in direct Ro-Ro routes to Europe is therefore an increased need for land areas to service that Ro-Ro freight.

There has also been a loss of 14 hectares of port lands to State Services for Brexit check facilities. DPC anticipates that 7 hectares of this land will ultimately be returned for use as Ro-Ro freight yards, but that there will be a permanent loss of the remaining 7 hectares. The impact of the loss of these lands has led to a reduction in projected 2040 capacity of 3.38m tonnes, so reducing the original Masterplan 2040 (reviewed 2018) port capacity from 77.2m tonnes to 73.8m tonnes.

6. Bulk Liquid

Dublin Port handles many different bulk liquid products including petrol, diesel, kerosene and bitumen but also non-petroleum liquids such as molasses.

The liquid petroleum products are discharged from tanker ships at four dedicated berths in the north area of the Port and then pumped through a pipeline system, shared by different operators, to their storage tanks within the Port. On average, there are four oil tanker arrivals every three days. Storage capacity for in excess of 300,000 tonnes of oil products is available within the Port.

Oil products are delivered by road from the Port to the many distribution centres and filling stations outside the Port.

A good example of the short supply chain for petroleum products is the supply of aviation fuel to Dublin Airport. The relatively small storage capacity at the airport means the ongoing operations and supply of aircraft fuel to the airport is heavily dependent on continuing efficient operations at Dublin Port.

Molasses is handled in the south port area and the product is discharged through a dedicated pipeline to storage tanks at the customer's site for onward distribution by road.

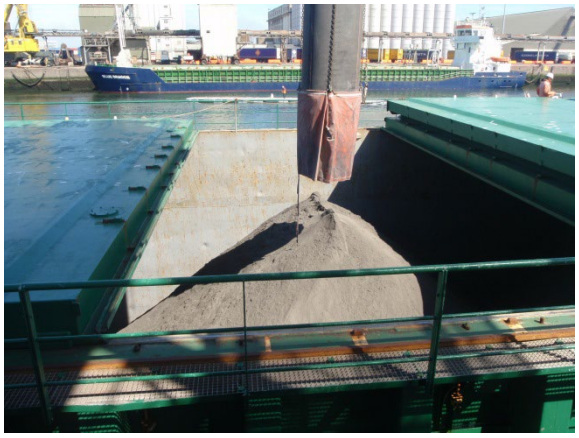
In 2023, Dublin Port handled 4.7m tonnes of bulk liquids, including nearly two thirds of the country's petroleum requirements in the year.

7. Bulk Solid

Bulk solid refers to the materials that are handled in bulk (such as grain, animal feeds, fertilizer, peat moss, cement, petroleum coke, furnace slag, scrap metals, contaminated soil and incinerator waste). Such commodities are handled on both the north and south sides of the Port. As the name implies, these materials are in loose form and not contained in bags, containers or other forms of packaging.

The materials are mostly loaded and discharged by grabs operated by dock mobile cranes. However, some is loaded by conveyor (such as the 0.29m tonnes per annum of lead and zinc ore concentrates from Tara Mines before the temporary cessation of such operations in summer 2023) and some is pumped (such as bulk cement) from road tankers.

The total volume of bulk solid goods moved through the port in 2023 was 2.0m tonnes.



8. Cruise ships

Due to the pressures on available berthage since Brexit, largely arising from the significant increase in direct Ro-Ro services to Continental Europe, the number of cruise ships being accommodated at a Dublin Port berth has decreased since Covid/ Brexit. Whilst the port still receives smaller and intermediate size cruise ships on North Wall Quay, larger cruise ships now anchor in Dublin Bay, with tender transfer to Dun Laoghaire. There were 33 cruise ship visits to the port's berths in 2023. There were an additional 73 large cruise ship arrivals to the Dublin Port anchorage in Dublin Bay.

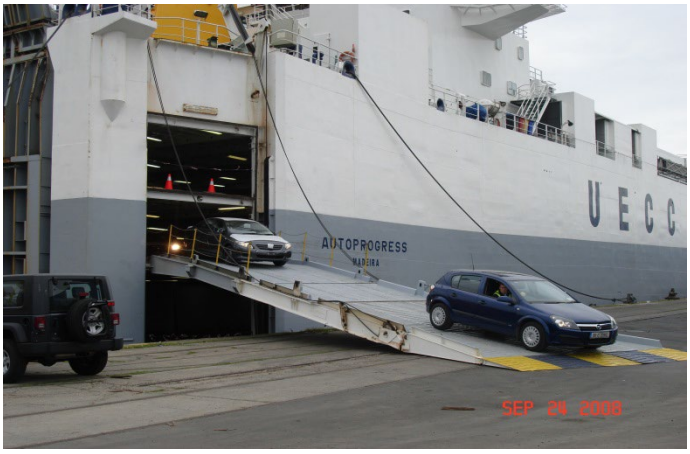
9. New vehicle imports

Dublin Port handles large numbers of imported cars, vans and trucks.

These vehicles are transported both on specifically designed large Ro-Ro ships and (increasingly) on Ro-Ro freight ferries alongside other freight (such as trailers and containers).

The importation of vehicles requires large areas for staging the vehicles for 1-3 days until they are collected by truck for onward delivery to the customer.

In 2023, 113,000 trade vehicles were imported through Dublin.



10. Break bulk and other goods

Break bulk comprises loose products such as timber, steel and paper. Such commodities have all but disappeared in Dublin Port and are now handled in smaller ports. However, loose shipments of, for example, project cargoes continue to come through Dublin Port.

For example, the structural components for the Aviva Stadium were brought in through the Port, as was the Samuel Beckett Bridge.

Other major cargoes in recent years have included mainline and suburban rail carriages. Large items of plant and machinery for power stations, large factories or major construction projects have also passed through the Port.

In recent years, the Port was particularly busy with the importation of wind turbines for wind farms around the country. Such cargoes require large land areas for storage, and because of pressure on space wind turbine shipments are no longer accommodated.

11. Getting goods to and from Dublin Port

By sea

The approach channel for ships into Dublin Port is approximately 10km long and is split into two halves.

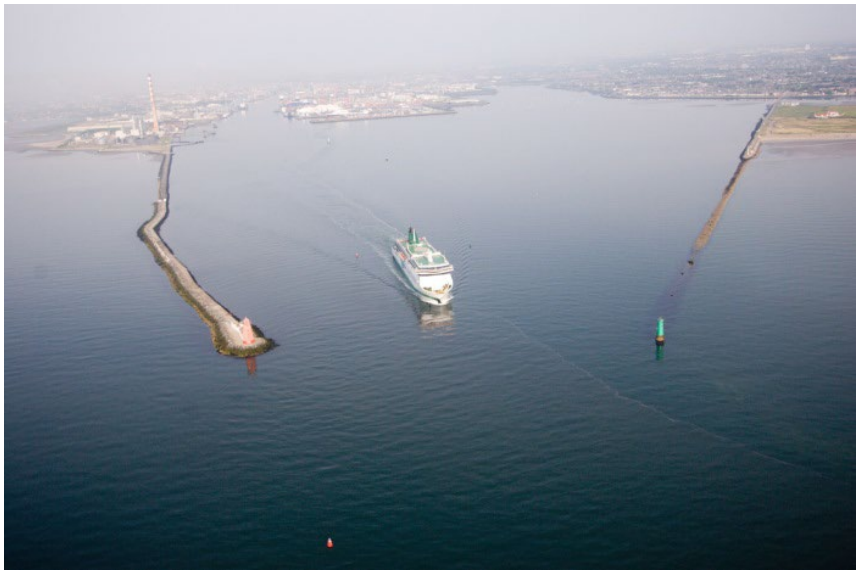
The first 5km of a ship's passage into the Port from the Dublin Bay Buoy to the Poolbeg Lighthouse is along a dredged channel through the sand bar in front of the Port's entrance. The second 5km is the fairway stretching from Poolbeg Lighthouse to the Tom Clarke Bridge.

This is the busiest shipping channel on the island of Ireland and a busy channel by international standards with between 40 and 50 ship movements each day. Many of the larger vessels movement times are grouped around the high water times of the tidal cycle. Others (Ro-Ro ferries on scheduled services) arrive and depart at the same fixed times each day.

The safe management of this shipping channel and especially the narrow section between the Poolbeg Lighthouse and the North Bull Lighthouse is a core responsibility for DPC. This responsibility and the wider obligation to control the movement of shipping in Dublin Bay requires the 24 x 7 availability of the Port's Vessel Traffic Services (VTS) , pilot service and tug service.


DPC BODDER


BEAUFORT
SHACKLETON



DPC is deepening the Port's 10km channel in five stages from -7.8m at chart datum[3] (CD) to -10.0m CD. The first four stages have been completed, with the final stage planned for 2025/26.

By rail

Although most freight moves in and out of the Port on the landside by road, there are active rail connections :

- Boliden Tara Mines : 0.29m Tonnes of lead/ zinc ore per annum, with on average 10 trains per week (before the service was suspended due to the temporary cessation of mining operations in summer 2023).
- Ballina Route : 0.16m Tonnes of container freight per annum, with on average 5 trains per week.

DPC has been in extended discussions with Iarnrod Eireann about the potential to expand rail freight services using their North Wall Freight Depot to serve all of the port's container terminals.

[3] DPC reckons water depths in Dublin Port by reference to Chart Datum. Chart Datum in Dublin is 2.51 metres below Ordnance Datum Malin.

By road

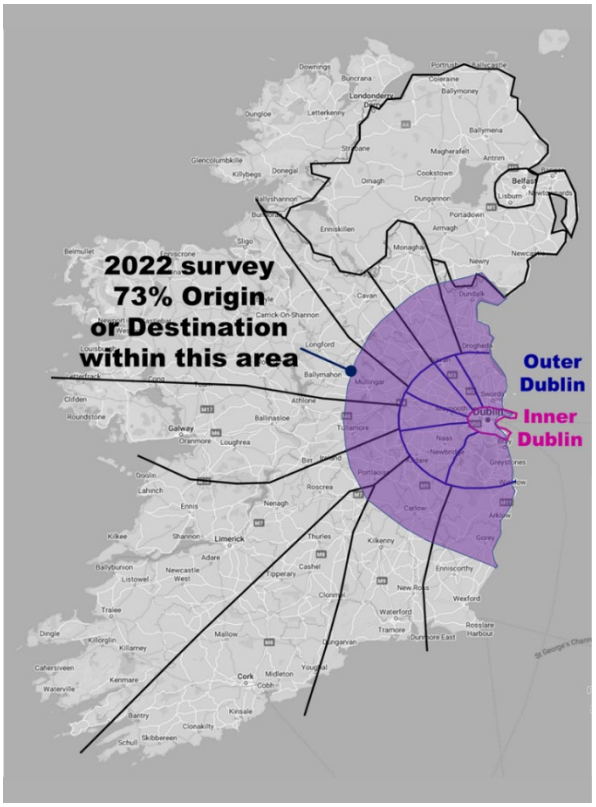
Dublin Port benefits from its direct connection to the national motorway network through the Dublin Port Tunnel.

In 2022, Dublin Port's consultants, RPS, undertook an extensive Origin-Destination survey of freight movements to and from the port. This involved surveying c. 35% of all HGVs and was an update on previous surveys conducted in 2001 and 2011.

Key findings of the survey were:

- 73% of the port's HGVs have an origin or destination within 90km of Dublin Port
- 61% of the HGVs have an origin or destination within 40km of Dublin Port

Percentage of Dublin Port HGVs having an origin or destination within 90km of the port



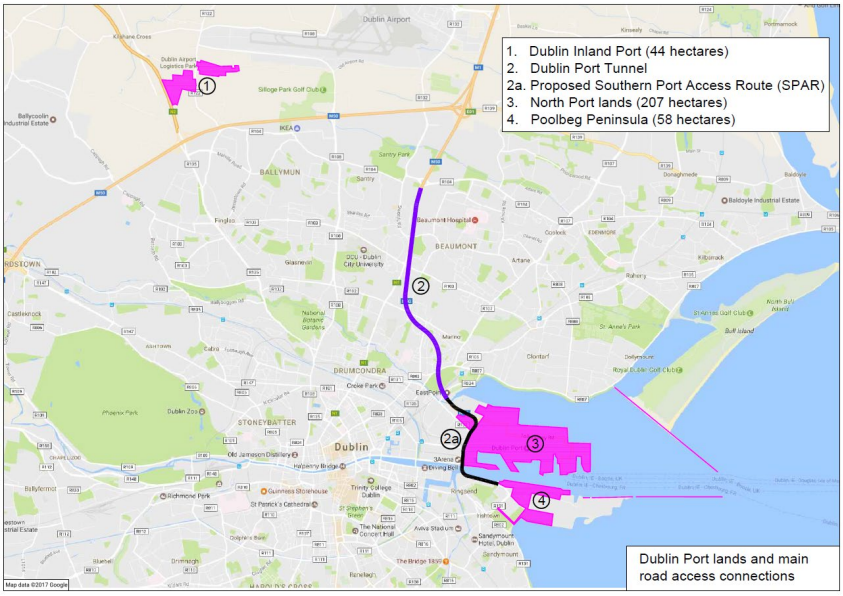
In 2023, Lo-Lo containers made up 21% of all tonnage handled at Dublin Port. Accordingly, of the 27% of HGV movements outside the 90km radius from the port, approximately 6% will be for Lo-Lo containers.

The level of detail in the 2022 Origin-Destination survey was such that RPS were able to estimate how port related HGV traffic develops across the M50 as it heads to and from the Dublin Port Tunnel. Using the data, and TII's 2022 published network data for the M50, it was estimated that, across the length of the M50 from Junction 17 (M11) to Junction 3 (M1), HGV traffic to and from the port makes up 1.7% of total vehicle numbers. To put this in some context, vehicle numbers of all types on the M50 reach c. 150,000 per day at the busiest point on the network.

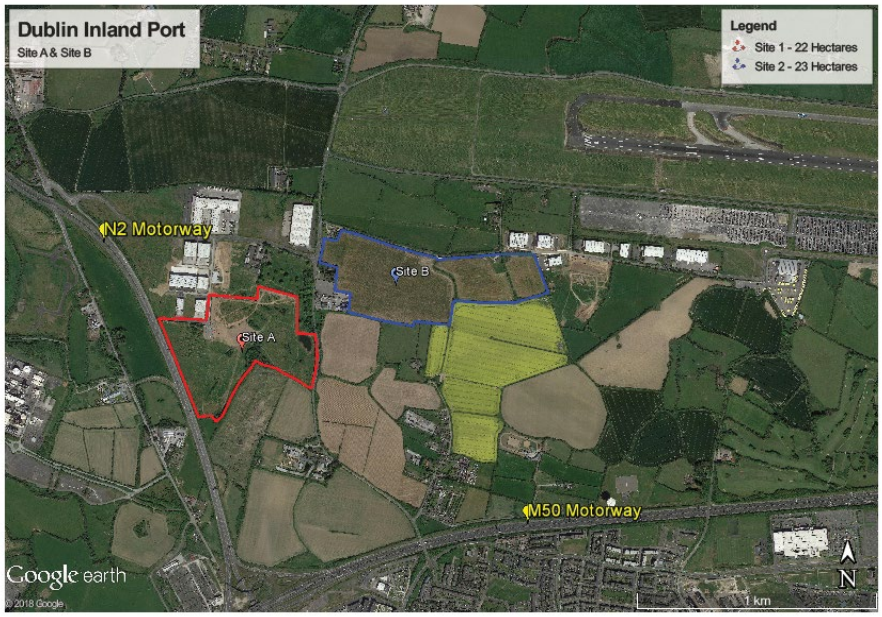
Within the Port's own 260 hectare estate, DPC is responsible for the building and maintenance of a large road network which links the Port's many cargo handling facilities to the Dublin Port Tunnel. This road network is being upgraded to provide capacity to handle the Port's ultimate volume of 73.8m gross tonnes by 2040.

12. Dublin Inland Port

In addition to the port estate of 260 hectares, DPC is developing Dublin Inland Port. This is a 44 hectare estate located 14km from Dublin Port as shown below.



Dublin Inland Port comprises two separate but adjacent sites, each 22 hectares in extent.



Development of Site A is substantially progressed, with two of its large component sites now is use for storage of empty containers. The overall envisaged development comprises empty storage depots, haulier facilities and warehousing facilities earmarked for existing operators in Dublin Port who will be reallocated from Dublin Port to Dublin Inland Port as DPC implements the Franchise Policy, 2014 in order to deliver its Masterplan 2040 targets. DPC envisages developing **Site B** of Dublin Inland Port to provide capacity to support operation of the Port's three container terminals.