

**Alexandra Basin Redevelopment Project**  
**A description of operations in Dublin Port**

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## 1. Introduction

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 efficient and cost effective manner.

The type of goods and the manner in which they are transported fall into the following main categories:

- Roll-on Roll-off (Ro-Ro): Road freight, 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), molasses
- Bulk Solid: Including grains, animal feeds, bulk cement, aggregates, petroleum coke, slag, peat moss and scrap metal
- Trade vehicle imports (new and pre-owned cars, trucks and other vehicles)



As well as being the country's largest cargo port, Dublin is also the largest passenger port with a large passenger ferry and cruise business. As a passenger gateway, for example, Dublin Port is larger than 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).

Dublin Port handles 86% 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 16 sailings each day between Dublin and the UK ports of Holyhead, Liverpool and Heysham.

There are also direct Ro-Ro services between Dublin and Continental Europe (Rotterdam, Zeebrugge and Cherbourg).

Some services are freight only; others carry a combination of freight and passengers.



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.

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 recently set 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 2013, more than 0.8m Ro-Ro freight units, nearly 0.4m passenger vehicles and 1.6m passengers passed through Dublin Port.





### 3. Lo-Lo (Lift-On Lift-Off)

Container shipping can generally be divided into two main groups.

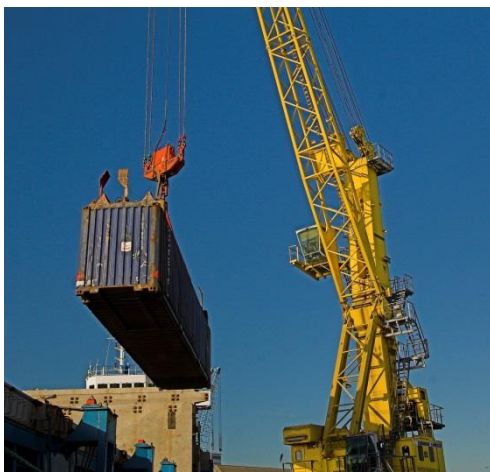
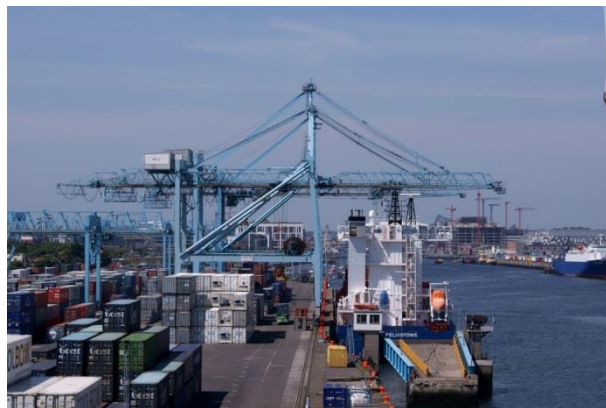
There are the very large ocean going container vessels, carrying up to 18,000 TEU (twenty-foot equivalent units), that operate over long distances between the larger ports of the world, and there are smaller shortsea vessels that connect those larger ports with smaller ports such as Dublin.

The smaller shortsea container ships that call to Dublin link Ireland with ports mainly in northern Europe (including Rotterdam and Antwerp) but also ports in the UK, and the Mediterranean. These ships have a carrying capacity of up to about 1,400 TEU.

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 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 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 2013, Dublin handled 0.3m Lo-Lo units (equivalent to 0.5m TEU).

## Unitised Freight

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 80 per cent of the freight through Dublin Port.

In 2013, there were in excess of 1.1m 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 and, in 2013, in the order of one quarter of all containers that moved through Dublin Port did so on Ro-Ro ships.

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## 4. Bulk Liquid

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

The liquid petroleum products are discharged from tanker ships at four dedicated berths in the north port area of the Port and then pumped through a pipeline system, shared by different operators, to their storage tanks within the Port. 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 involved 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 2013, Dublin Port handled 3.5m tonnes of bulk liquids, nearly two thirds of the country's requirement in the year.



## 5. 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 and scrap metals). 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 0.4m tonnes of lead and zinc ore concentrates from Tara Mines each year) and some is pumped (such as bulk cement) from road tankers.

The total volume of bulk solid goods moved through the port in 2013 was 2.0m tonnes.





## 6. Cruise ships

Cruise ships are an increasingly important part of Dublin Port's business and this sector is projected to grow considerably in the years ahead.

Dublin is the largest cruise destination in the country with 100 cruise ships in 2013 bringing more than 150,000 visitors to the city.

The economic benefits of the cruise business arise from payments made to DPC and, much more significantly, from the direct spending of visitors off cruise ships in the local economy (estimated at €100 per passenger and €63 per crew member).



## 7. Imported Vehicles

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 of open, surfaced ground for parking the vehicles until they are collected by truck for onward delivery to the customer.

In 2013, 61,000 trade vehicles were imported through Dublin.





## 8. Project Cargoes

Numerous “project” cargoes are also handled at 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 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.

The Port is particularly busy currently with the importation of wind turbines for wind farms all around the country.



## 9. Getting Goods to and from Dublin Port

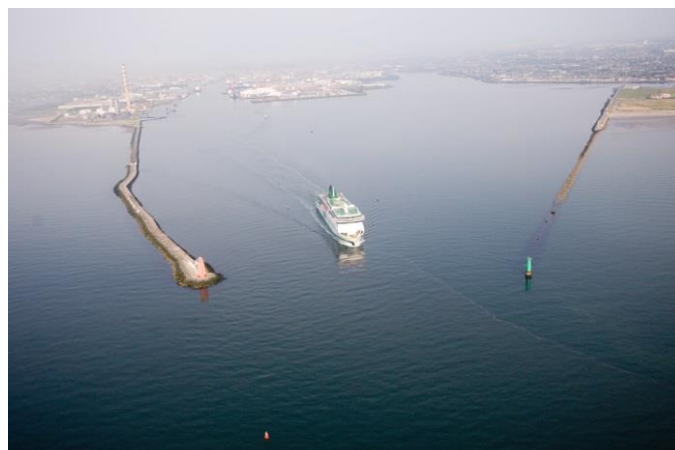
### ***By sea***

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 East Link Bridge.

This is the busiest shipping channel on the island of Ireland with between 40 and 50 ship movements each day. Many of these are grouped around the high water times of the tidal cycle. Others (Ro-Ro ferries on scheduled services) arrive and depart on 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.



### ***By rail***

Although most freight moves in and out of the Port on the landside by road, there is an actively (and increasingly) used rail connection with ten train movements in and out of the Port each day.

There is a direct rail link to Tara Mines in Navan which brings in the order of 0.4m tonnes per annum of export cargo each year.

There is also a daily container train service to Ballina which transports 20,000 TEU annually.





### By road

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

In a typical day, there are 8,000 HGV movements generated by operations in the Port and the majority of these use the tunnel.

Within the Port's 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 tunnel.

