

Decarbonising Ireland's Railway

PWI Sheffield Event – 27th April 2023



Paul Hendrick
Director Capital Investments

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(Greater Dublin Area)
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Our Network & Services



>5,000 Train
Services run weekly



Almost **1 million**
passengers carried weekly



629 Carriages
in our fleet



4,400+ Employees

Departure
Howth
09.26

145 Stations served
countrywide

348,000 train km
weekly



2,200 km in our
network



Iarnród Éireann Overview

Each week:

4,915

train
services run

963,000

passengers
carried (pre-COVID)

629

carriages in
our fleet

145

stations served
countrywide

2,200

kilometres in
our network

348,000

kilometres
travelled

>4,400

employees



2,300 km

'Irish Gauge' of 1,600mm (5'3") used

Double track Cork-Dublin-Belfast and around the local Dublin area



5



Network Electrification



Electrified

50 km



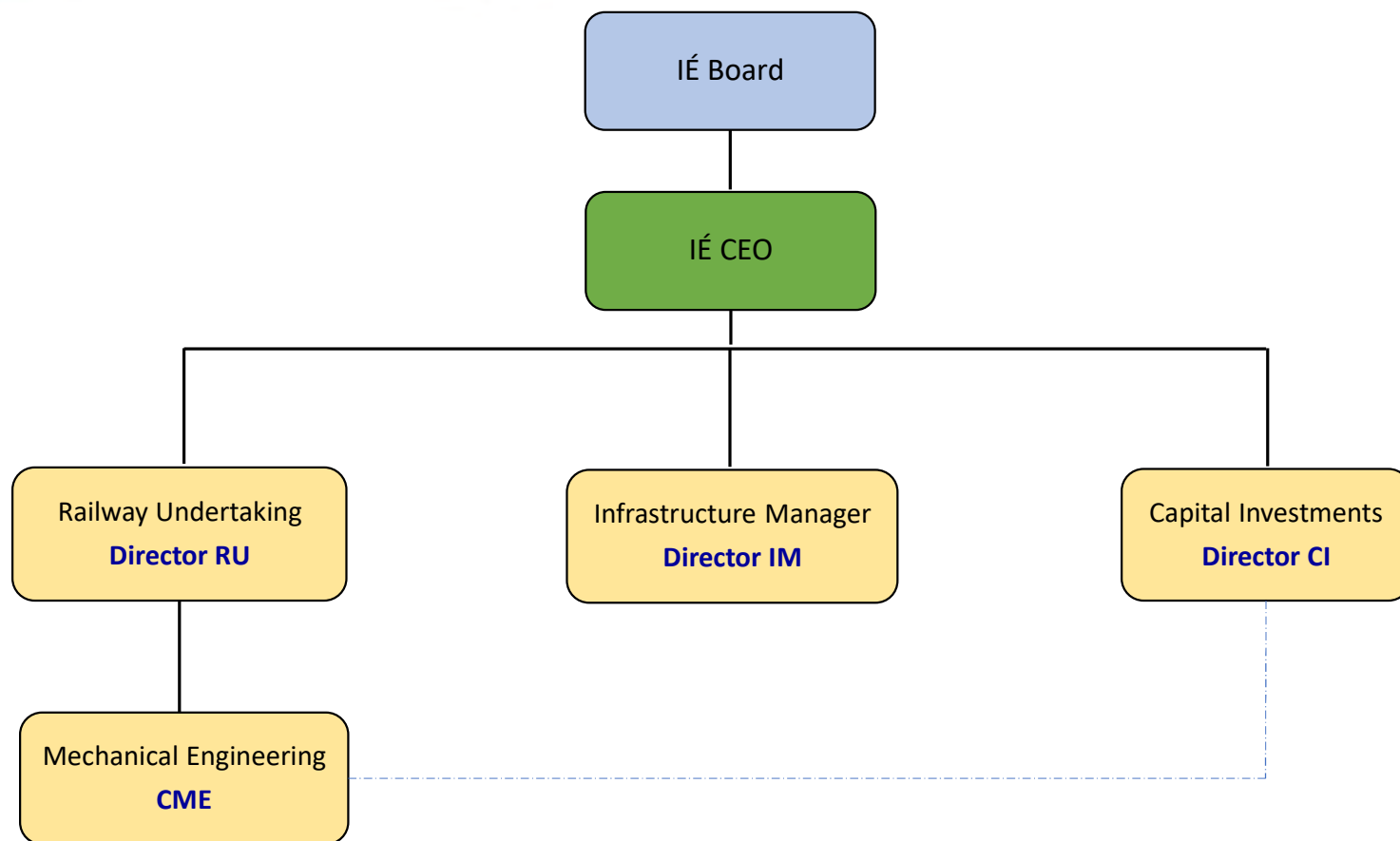
Only section electrified is in the Dublin (DART), along the coast – 1,500v DC

Lowest % electrification in Europe (3%)

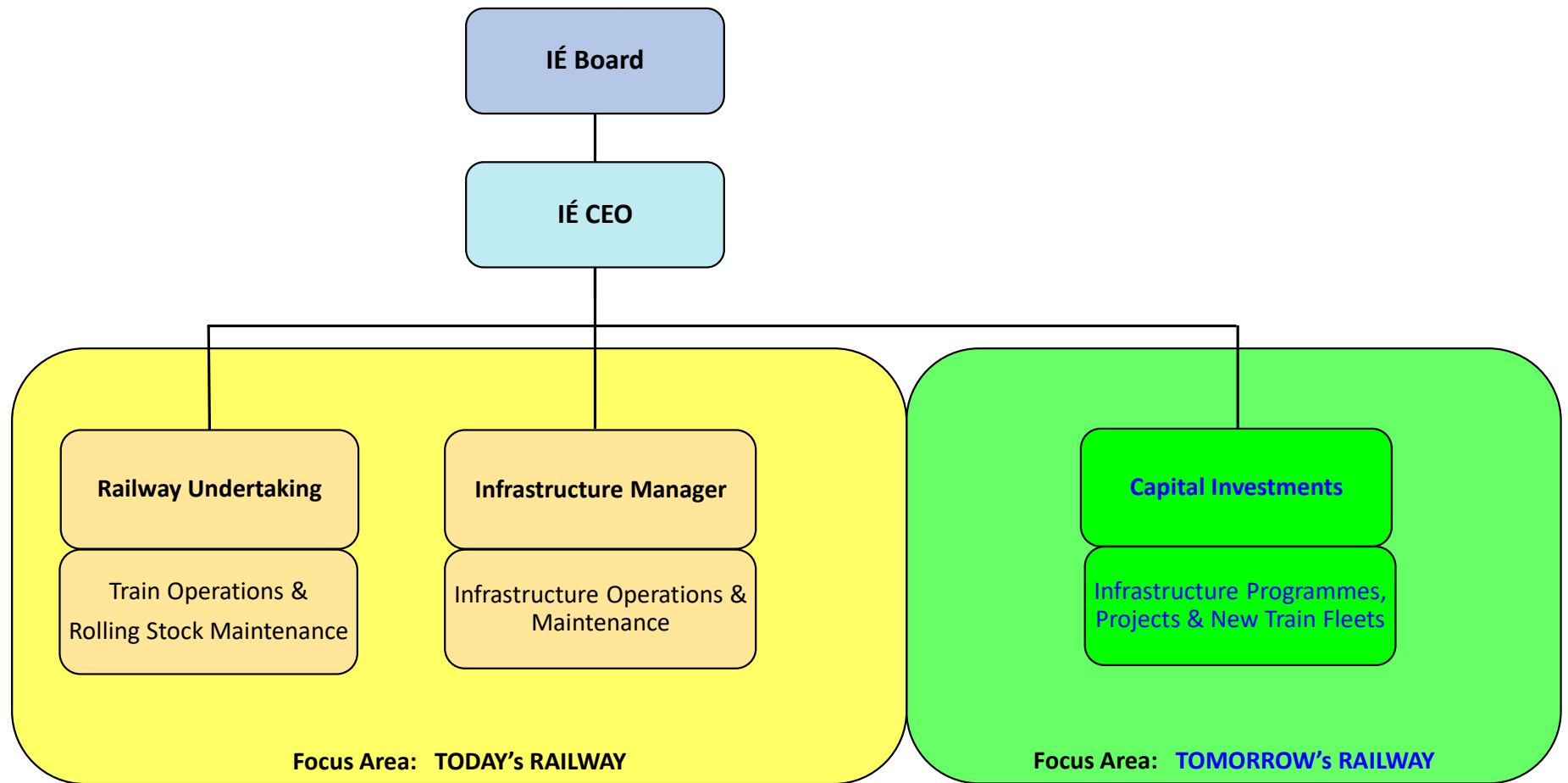
Primarily a DMU railway

Two electrified tram lines in Dublin city (Luas)

IÉ Org Structure

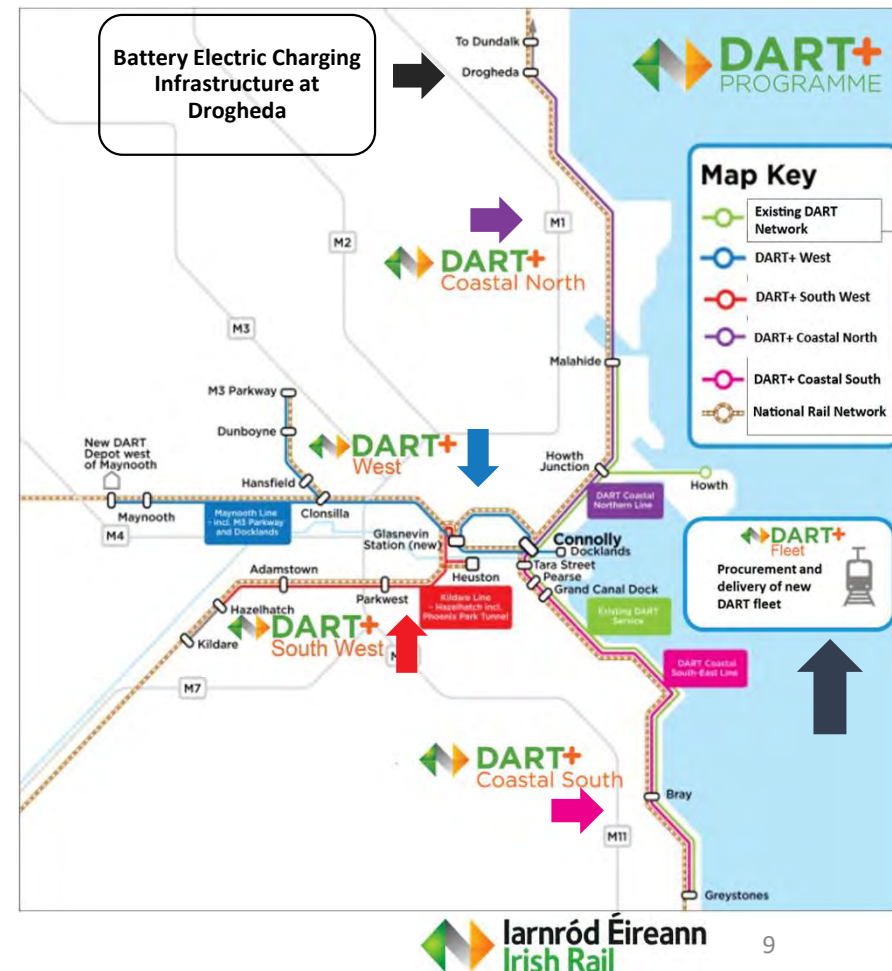


Iarnród Éireann Org Structure



What is the DART+ Programme?

- Largest rail investment scheme (€3 bn + investment value) in the history of the State, providing a transformational increase in capacity and frequency of the existing system between Dublin City Centre and the areas of Drogheda, Maynooth, Dunboyne, Celbridge and Greystones.
- Double passenger carrying capacity from 26,000 pax / hour to 52,000 pax / hour.
- Triples extent of electrified rail network from 50km to 150km of route network.
- Largest & Greenest fleet contract in the history of the State placed as part of this order – 750 Electric / Battery-Electric vehicles (train carriages).
- National significance - Operational capacity on Intercity routes will be enhanced providing benefits nationally.



The DART+ Programme will

- More than double the existing passenger carrying capacity and will bring DART travel with all its benefits to new and existing communities.
- Help to achieve government climate change targets by reducing green house gas emissions and facilitating a societal shift away from private car use and on to public transport.
- See the DART network grow from its current 50km in length to over 150km.
- Deliver frequent, modern, electrified services within the Greater Dublin Area (GDA) and will improve connectivity to regional towns and cities.
- Involve rail improvements from:
 - DART+ West - Maynooth and M3 Parkway to the City Centre
 - DART+ South West - Hazelhatch & Celbridge to the City Centre
 - DART+ Coastal North - Drogheda to the City Centre
 - DART+ Coastal South - Greystones to the City Centre



Increased passenger capacity
for a quality alternative to
private car transport



Additional fleet of electric trains
allowing for a reduction
in CO2 emissions



Rail Improvement programme to
modernise the existing network



Significantly Increase
train frequencies especially
during peak hours



Purchasing additional
DART style trains to support improved
capacity and frequency



Help to alleviate road congestion



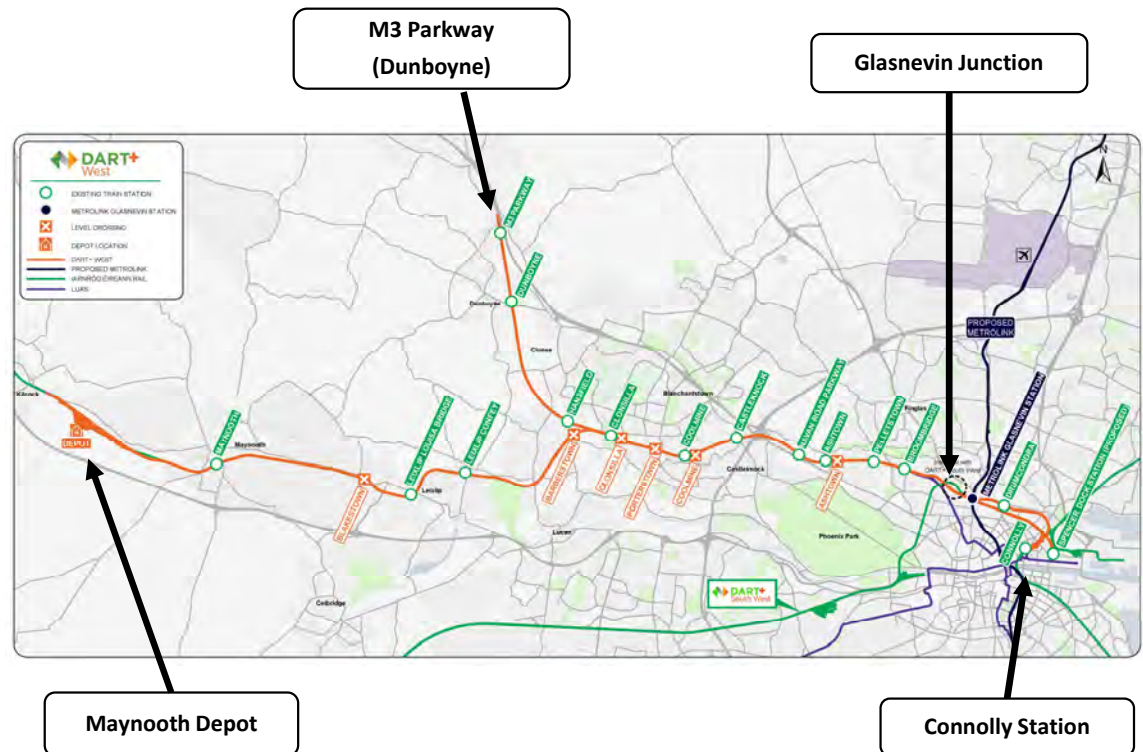
Integration of all heavy rail lines



Integration with the existing and future
public transport network - BusConnects,
Luas and MetroLink

DART+ West

- Overhead Lines Electrification (1,500 Volts) of c. 40 kms of existing railway corridor between Connolly and M3 Parkway (Dunboyne, Co. Meath) and Maynooth (Co. Kildare).
- Increase route capacity from 6 trains / hour to 12 trains / hour / direction.
- New state of the art Maintenance Depot and Stabling Facilities west of Maynooth.
- New Train Station at Spencer Dock.
- Decarbonise diesel commuter train services with new Electric DART+ trains.



DART+ West Overview



40km of Overhead Electrification
& 12 new substations



6 level crossing closures

DART+ West



New Station at Spencer Dock



Enhancements at Connolly Station



6 Bridge reconstructions / modifications

DART+ West



Double track from Maynooth station to a new depot (Maynooth Depot)

New EMU Depot footprint:
36 Hectares

New Maynooth DART Depot

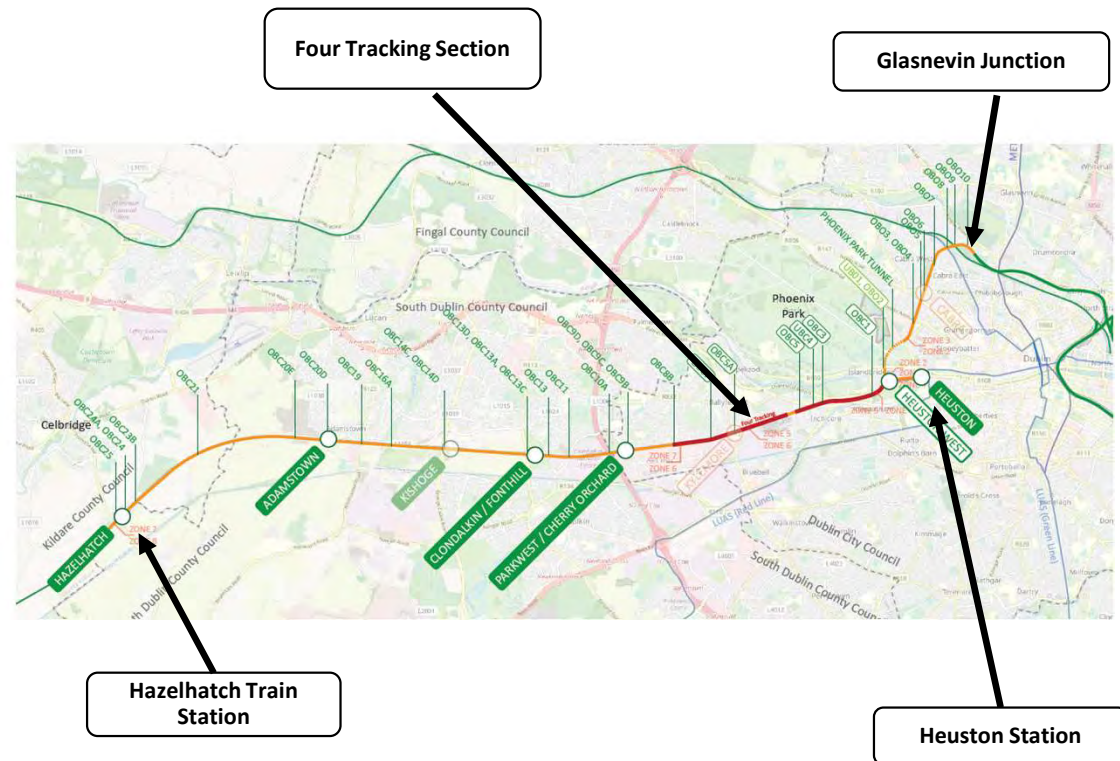
Facing West to Kilcock



DART+ Programme

DART+ South West

- Overhead Lines Electrification (1,500 Volts) of c. 20 kms of existing railway corridor between Glasnevin Junction, through the Phoenix Park Tunnel to Heuston and from Heuston Station to Hazelhatch Station (Celbridge, Co. Kildare)
- Increase route capacity from 6 trains / hour to 12 trains / hour / direction.
- Four tracking the Cork Line between Heuston and Parkwest & Cherry Orchard Train Station.
- New Station at Heuston West.
- Decarbonise diesel commuter train services with new Electric DART+ trains.



DART+ South West Overview



DART+ South West Overview



no. of trains
per hour



passenger
capacity

Current

Capacity increases provided by the
DART+ South West

Completion



no. of trains
per hour



passenger
capacity

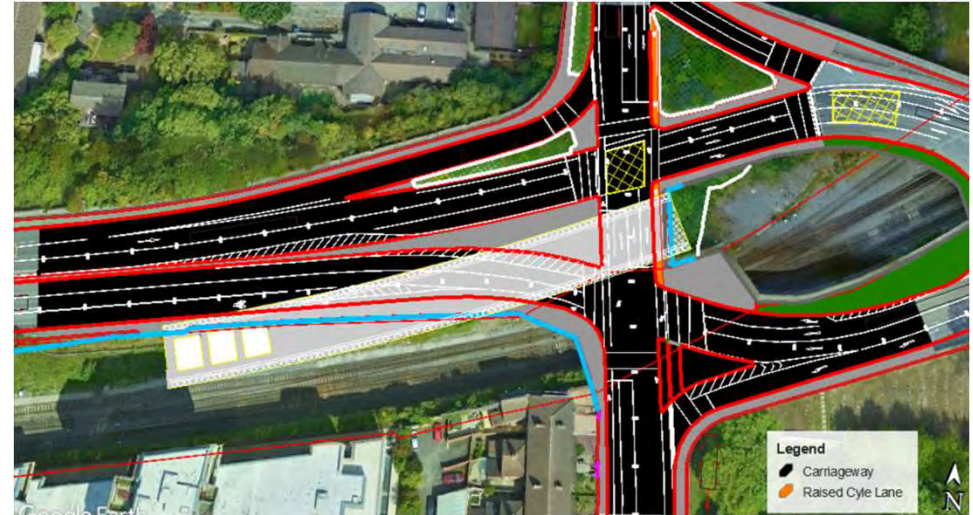


20km of Overhead Electrification
& 6 new substations



Including Electrification of
Phoenix Park Tunnel

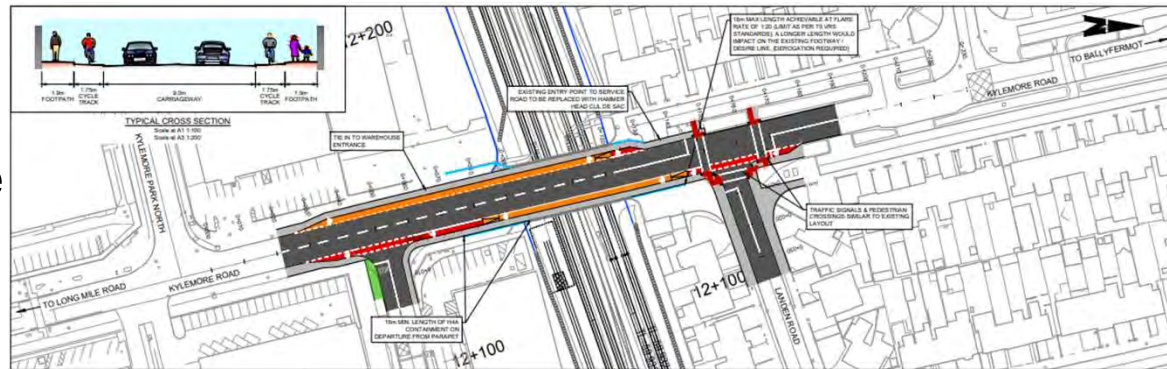
DART+ South West Overview



South Circular Rd bridge

4km of railway corridor widening to provide for 4-tracking – requires 5 bridges to be reconstructed including:

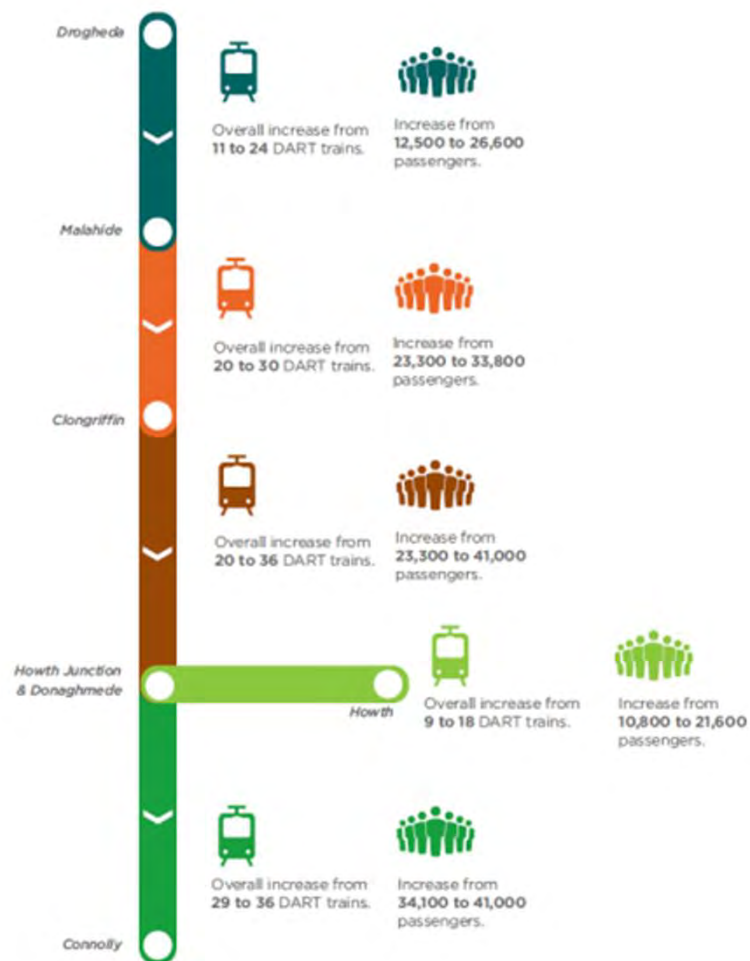
Kylemore Rd bridge



DART+ Coastal North Overview



DART+ Coastal North Overview



37km of Overhead Electrification
& 8 new substations



1 Bridge reconstruction

[illegible]

Enhancements at Drogheda Station

DART+ Coastal South Overview

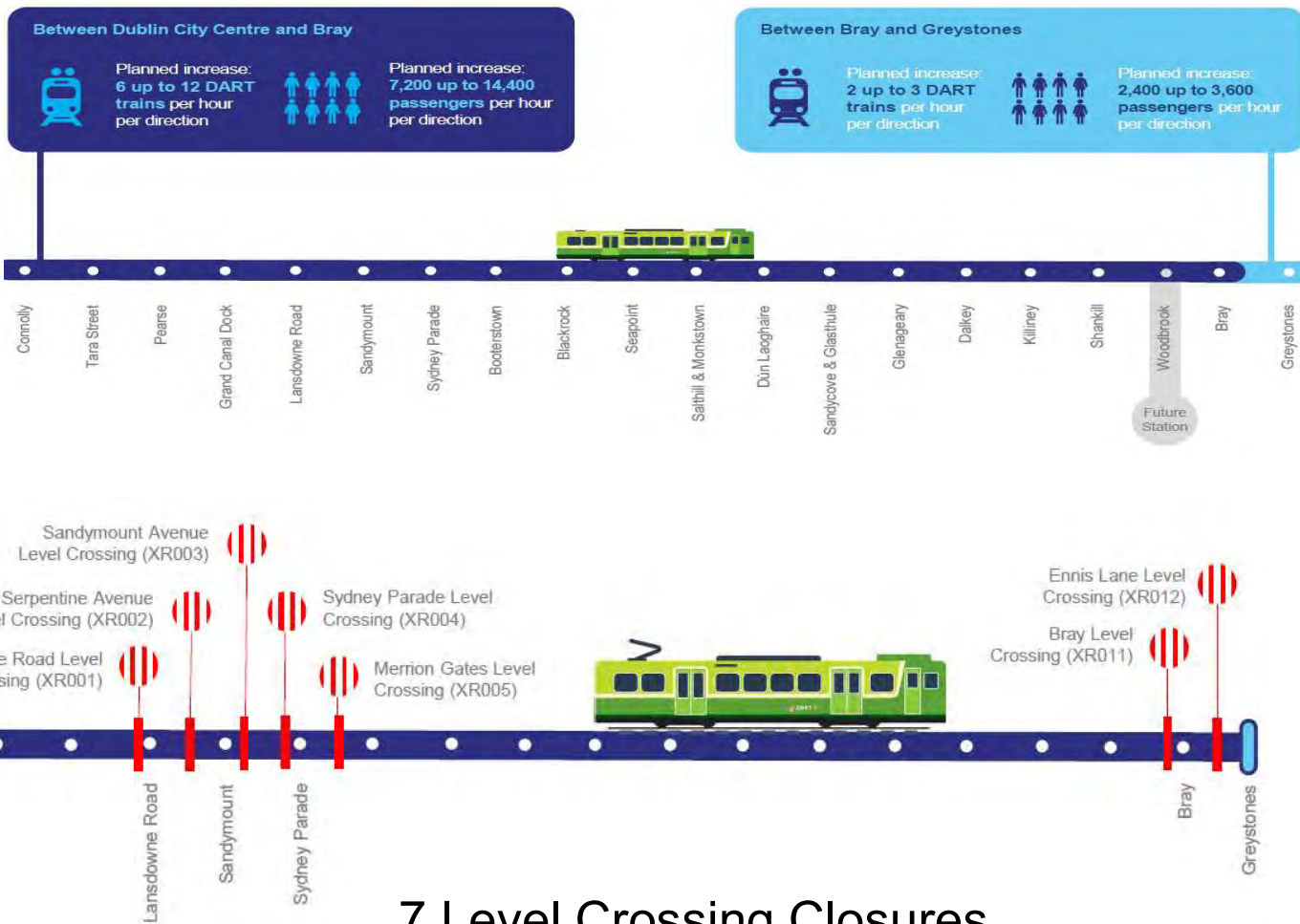
Map Part A



Map Part B



DART+ Coastal South Overview

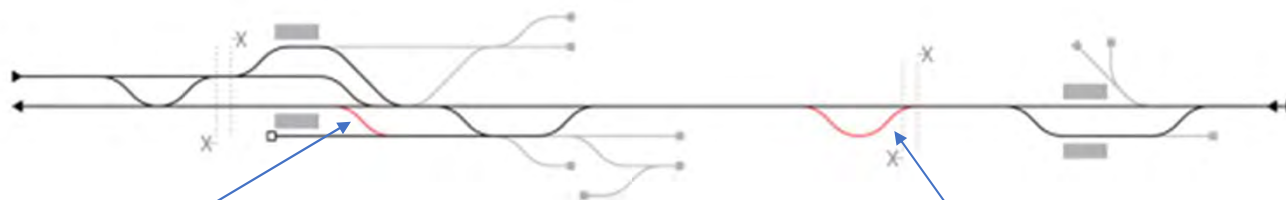


7 Level Crossing Closures

DART+ Coastal South

Bray

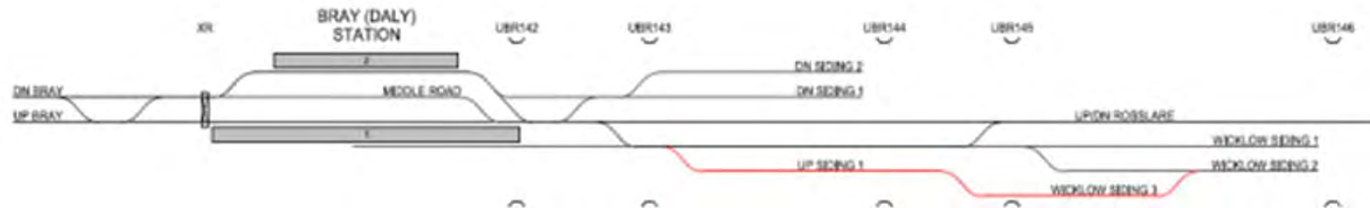
Greystones



Additional Turnback

Additional Track

Additional Stabling at Bray



STATUS UPDATE

MILESTONES		2022					2023					2024					2025					2026																			
		J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O
Programme Wide	Market Consultation																																								
DART + WEST	RO Lodgement	◆																																							
	RO Decision																																								
	Tender Process																																								
	Contract Commencement																																								
DART + SOUTHWEST	RO Lodgement																																								
	RO Decision																																								
	Tender Process																																								
	Contract Commencement																																								
DART + COASTAL NORTH	RO Lodgement																																								
	RO Decision																																								
	Tender Process																																								
	Contract Commencement																																								
DART + COASTAL SOUTH	RO Lodgement																																								
	RO Decision																																								
	Tender Process																																								
	Contract Commencement																																								

New DART+ Train Fleet



New DART+ Train Fleet

Order Status

- 10 year Framework Agreement
- Maximum of 750 vehicles can be ordered in batches over 10 years.
- There is no minimum order quantity
- The 750 vehicles can be ordered in 5-car or 10-car units.
- Trainsets can be ordered as Electric Multiple Units (EMU) or Battery Electric Multiple Units (BEMU).
- 185 carriages have been ordered in two batches so far.
- Initial train delivery to Dublin in Summer 2024 for testing & commissioning with first trains scheduled to enter operational service on the Northern Line between Dublin and Drogheda from Q4 2025.



New DART+ Train Fleet - Design



Plans being implemented

'Decade of Delivery'



DART+ Prog

"The application to An Bord Pleanála for the DART+ West Railway Order marks the beginning of the transformation of our rail network."

Jim Meade, Chief Executive, Iarnród Éireann



Designs progressing at pace, Railway Order Application to be lodged late 2023

DART+ Coastal North
10,500 2020 → 14,000 2027

150 km

1,500v DC electrified

DART+ Coastal South
6,500 2020 → 10,000 2027

Designs advancing, consultation late 2023



DART+ South West - Railway Order Application lodged in 22nd March 2023

DART+ CAPACITY DELIVERY

Passenger capacity increases into city centre (morning peak hour line 2020-2027)

All Lines	26,000 2020	52,000 2027
The future capacity numbers shown are subject to validation on completion of the Programme Business Case		

Rolling Stock Plans

Framework order for 750 new EMU/BEMUs placed with Alstom in December 2021



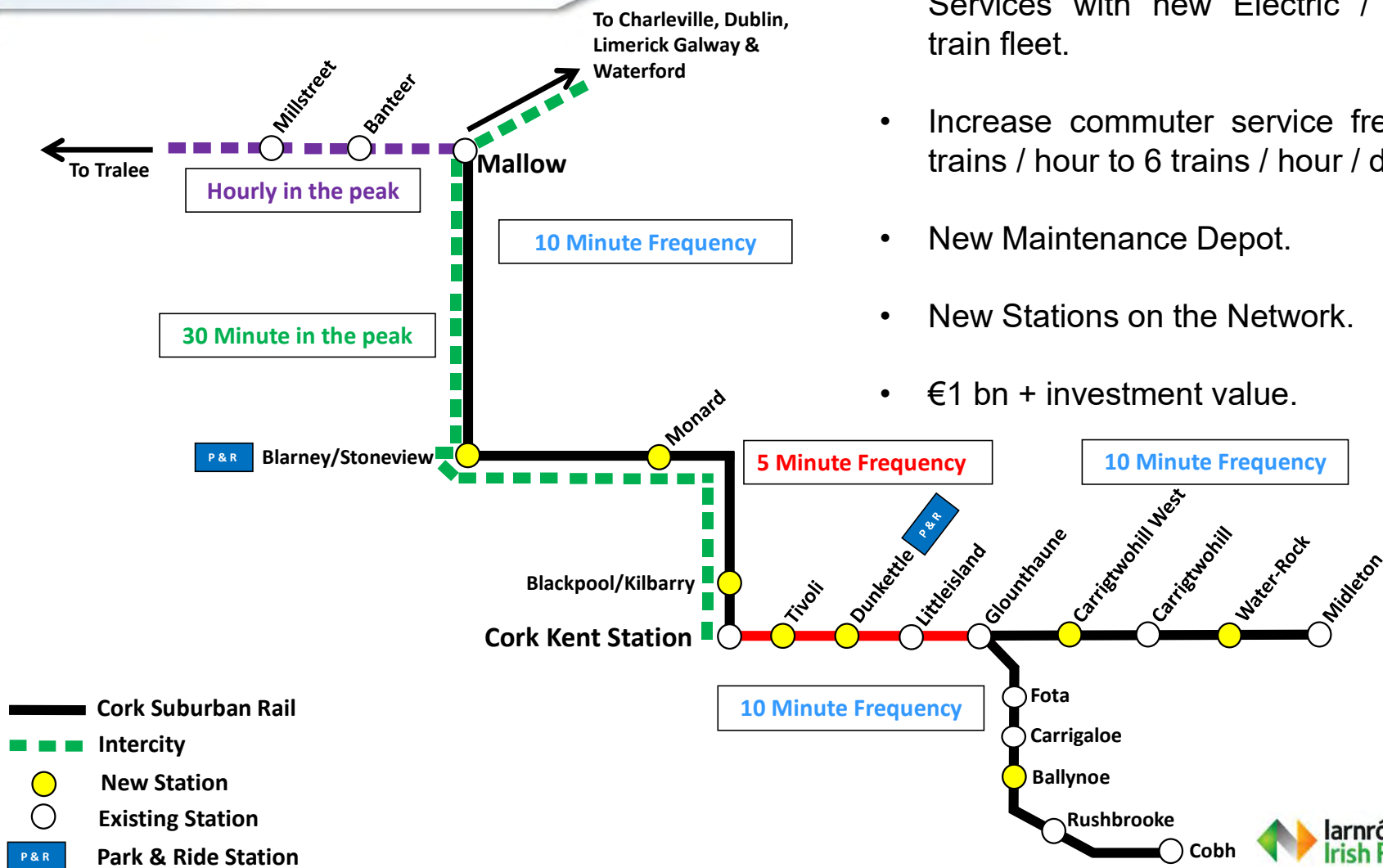
Battery charging infrastructure being implemented as priority

Orders placed for first 185 BEMUs with a further order for EMUs to be placed in 2023. Delivery of BEMUs to commence mid-2024

New Depot included in DART+ Railway Order Application



Cork Area Commuter Rail



- Decarbonise existing Diesel Commuter Services with new Electric / Battery-Electric train fleet.
- Increase commuter service frequency from 2 trains / hour to 6 trains / hour / direction.
- New Maintenance Depot.
- New Stations on the Network.
- €1 bn + investment value.

Cork local area rail enhancements

Application for major Cork rail upgrade to be lodged with An Bord Pleanála

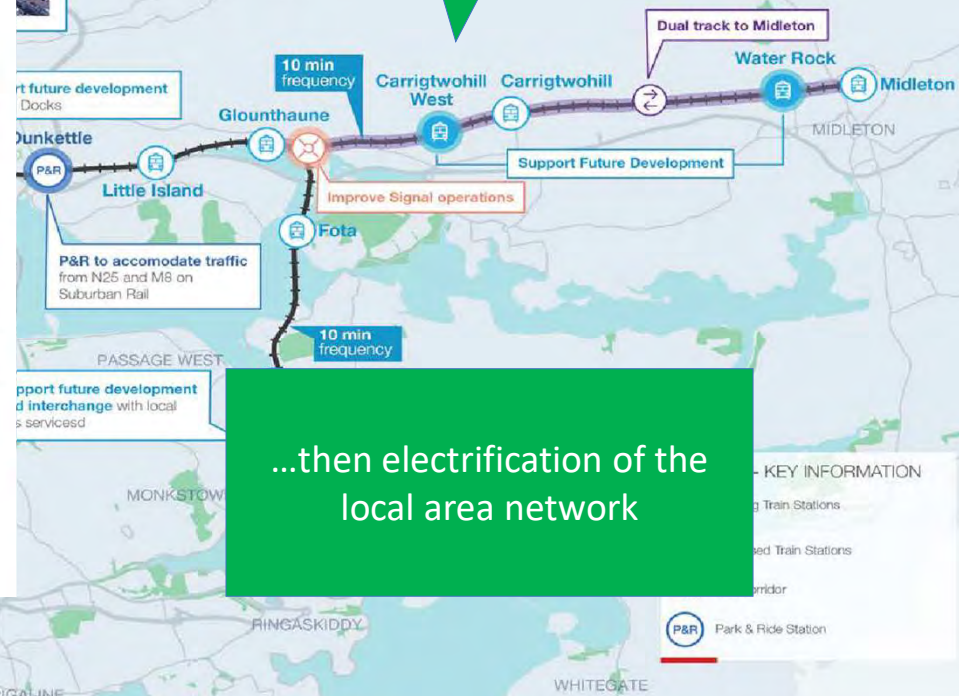
If approved, it is hoped that construction will begin in 2024 for completion in 2026.



AJ Cronin, Programme Delivery Manager, Cork Area Commuter Rail, Iarnród Éireann, Emma Love, Stakeholder and Environmental Manager, Cork Area Commuter Rail, Iarnród Éireann and Ray Foley, Station Manager Cork, Iarnród Éireann

FRI, 04 NOV, 2022 - 08:50

Focus on infrastructure –
double tracking, through
station working and
resignalling first



...then electrification of the
local area network

Transforming the cross border enterprise service

- Vision is a doubling of service frequency to hourly between the two biggest economic centres on the island.
- Dublin-Belfast Enterprise Fleet Replacement Project will be part funded under the SEUPB's PEACE PLUS Programme.
- Replacement of existing De Dietrich fleet required as it nears end of useful life.
- Project development phase is currently under way and tender process for new fleet procurement is scheduled to commence in Spring 2024.



PEACEPLUS Programme Thematic Areas



Special EU Programmes Body
Comhlacht na gClár Speisialta AE
Special EU Skemes Boadie

A new National Train Control Centre



Recently visited by the Minister for Transport Eamonn Ryan

New National Train Control Centre, based at Heuston station Dublin, for control of the national rail network – opening 2024

Climate Action Planning

144K Tonnes p.a. ex Rail

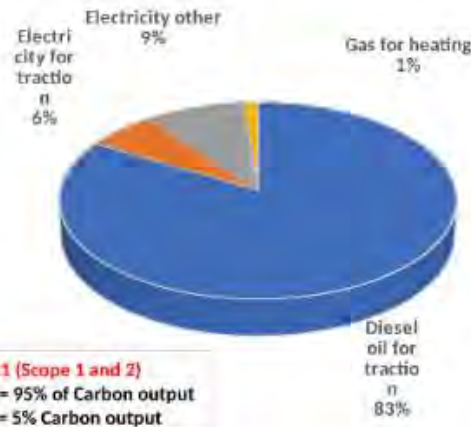
Transport to reduce emissions by 50% by 2030

Diesel traction represents 83% of rail emissions



Major emphasis on Decarbonisation

Source of CO₂e Emissions 2018 - 2021



Climate Action Plan 2021 (CAP21): -
requires a 51% reduction in GHGs
nationally relative to 2018.

Sectorial Emissions ceilings:-

- Transport 50%
- Public buildings 45%

Carbon Budgets annual reductions:-

- 2021 - 2025: 4.8% annually
- 2026 - 2030: 8.3% annually

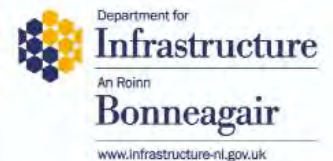
No formal declaration of public
transport (and particularly RAIL)
reduction targets to 2030.

Plans being prepared

Long term plans being prepared by Iarnród Éireann and Governments for Ireland

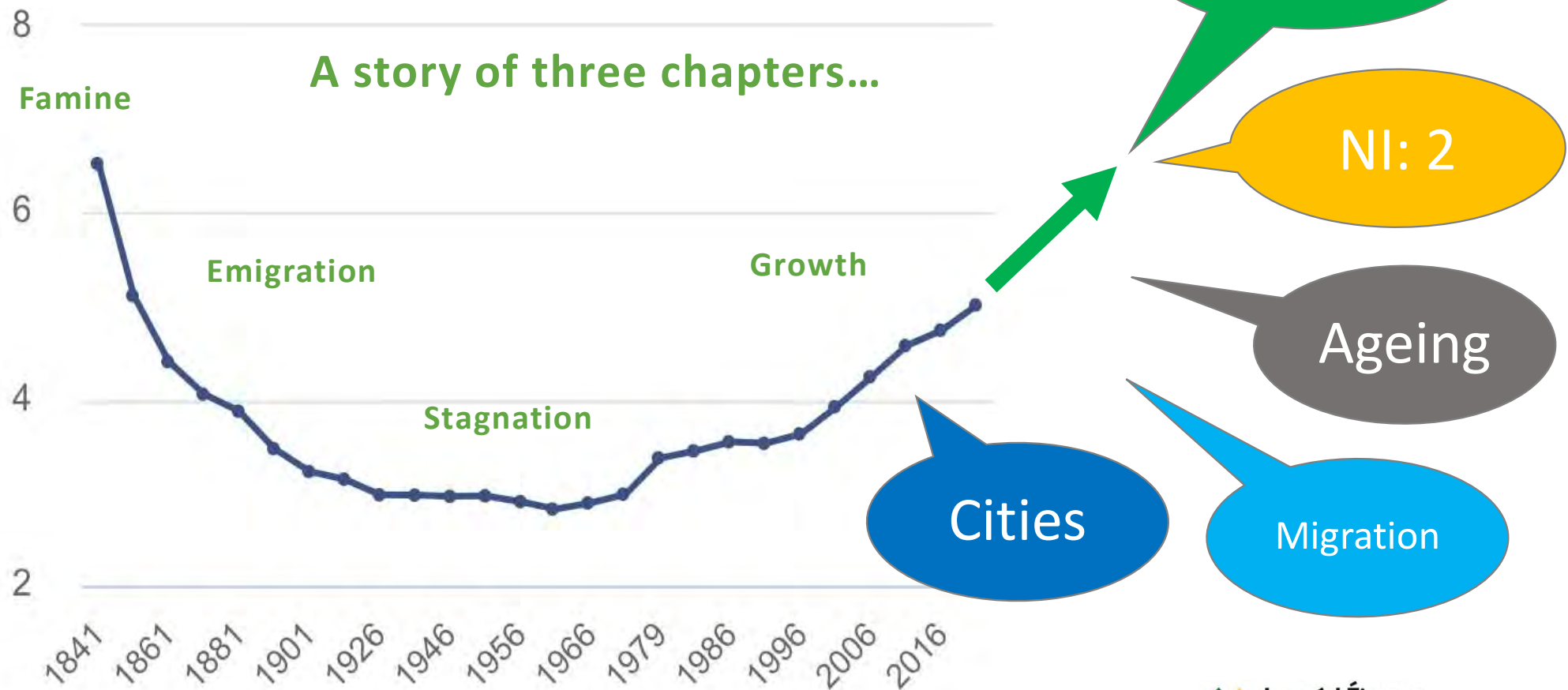


An Roinn Iompair
Department of Transport

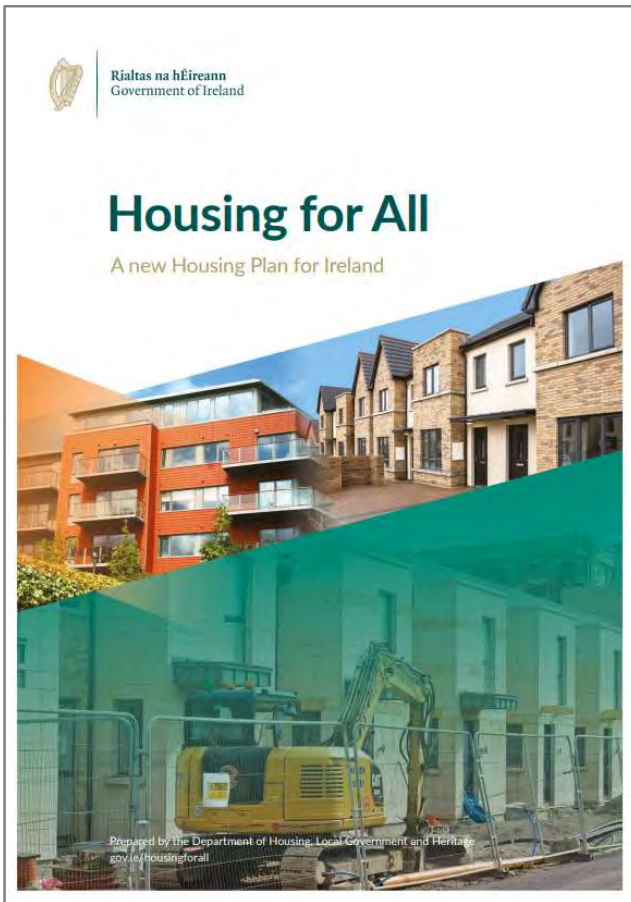


All Island Rail Study

Context - Ireland's population story



Additionally for Ireland

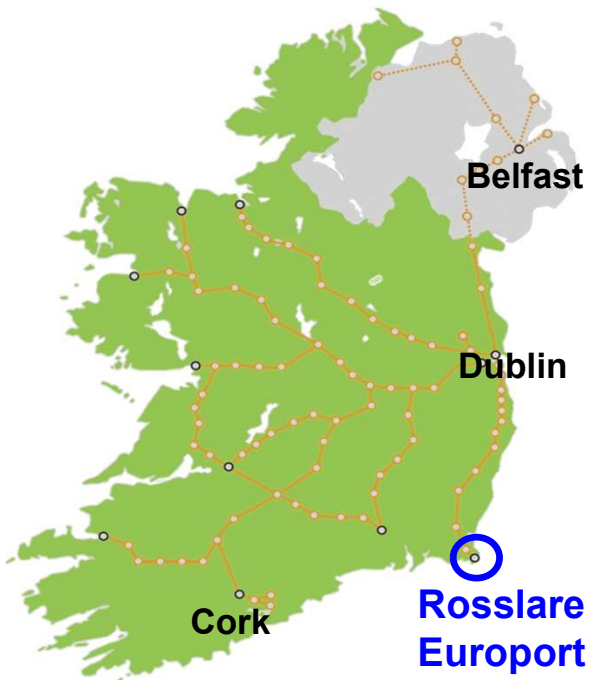


Importance of integrating transport and spatial planning, including Transit Oriented Development

Grand Canal Dock

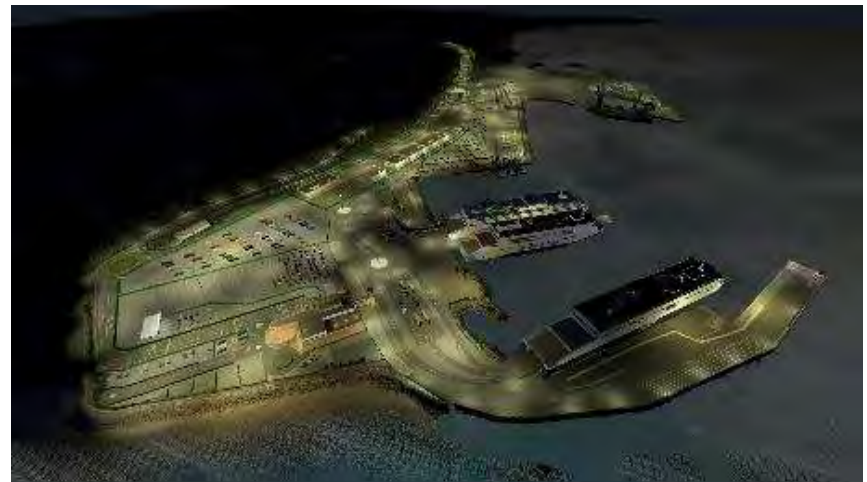


Rosslare Europort IÉ Owner & Operator



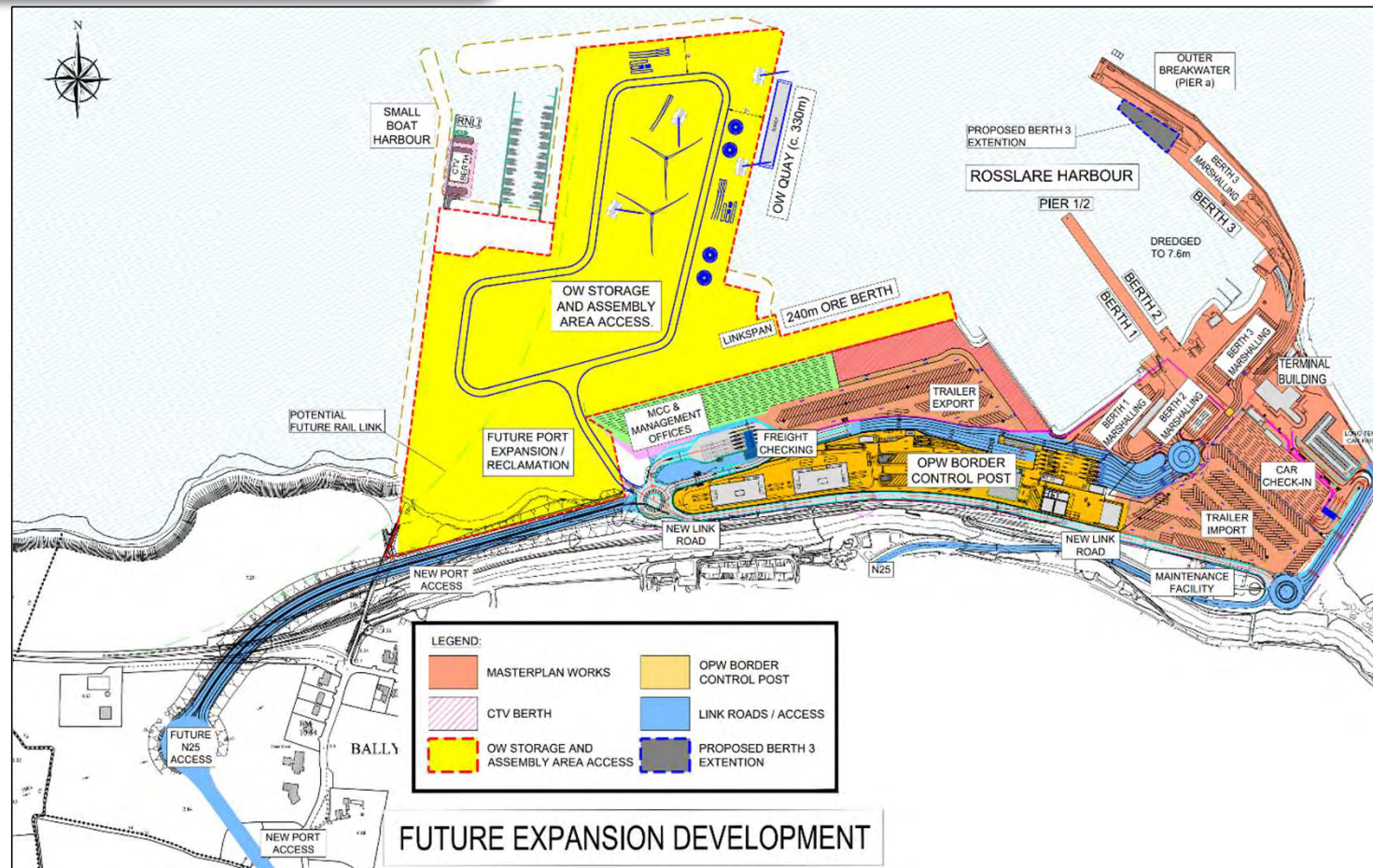
Rosslare Europort Infrastructure Programmes

- Masterplan Programme to enhance the Port Infrastructure facilities.
- Working with OPW (Office of Public Works) to develop new Border Control Post Infrastructure.
- Developing Offshore Renewal Energy Hub at the Port to support future developers in the build-out of future renewable energy wind farms in the Irish & Celtic Seas.



Rosslare Europort

Offshore Wind Energy Hub



Proposed enhancements

Building service frequency to a standard of;

- Half-hourly Dublin – Cork and Belfast
- Hourly from other regional cities
- Two hourly across all other lines



Targeting ambitious
journey times – range of
25% - 35% reductions
across all routes



Addressing bottlenecks

Network interventions include...

Circa 400 klm
of new track



Separate slow from fast

Four tracking Connolly to Malahide

Four tracking Hazelhatch to
Portarlinton

Double tracking Cherryville
Junction to Kilkenny

Double tracking
Portarlinton to Athlone
and Athenry to Galway

Double tracking Limerick
to Limerick Junction

Double tracking
Maynooth to Mullingar



Decarbonising (By 2050)



Electrify all city to city lines

Emerging fuels on
all other lines

Galway – Portarlington

Dublin – Belfast

Limerick – Limerick
Junction

Cherryville Junction to
Waterford



Circa 700 km

Dublin Cork

Ahead of fleet
replacements



Re-building Rail Freight

Enhancing Port connectivity, developing a network of inland multimodal terminals, secure rolling stock and policy supports

Construction to commence on reopening of Limerick to Foynes freight rail link

It is anticipated these works will take about two years to complete, and the route will open for freight services in 2025



Shannon Foynes Port Company (SFPC) chief executive, Jim Heale and chief executive of Shannon Foynes Port Company (SFPC) at the unloading of rail equipment for the Foynes to Limerick Rail line. (Picture: Liam Burke/Press 22)

Ministers welcome EU funding for transport projects in Ireland

Irish Rail has been awarded €2.5 million for supporting studies for the development of a rail freight system connecting Ireland's busiest seaports and establishing transfer points for freight between rail and road

Strategy implementation team now up and running



VISION

'Rail at the centre of Ireland's freight transport system, supporting supply chains, the economy, society and the environment'



Working with Dublin Port to grow rail usage



Rosslare Europort

Consider for enhanced rail connectivity

XPOLogistics

New Ballina – Waterford Port container service



**Iarnród Éireann
Irish Rail**

Emerging Implementation Programme

2022	2030	2040	2050
DUBLIN  URBAN CORK GALWAY LIMERICK WATERFORD	2030 National Development Plan 2022 – 2030	2040 Project Ireland 2040	2050 National target to get to zero emissions
INTERCITY			
REGIONAL			
FREIGHT			

‘Three Decades of Delivery’

Aligned with key national policies

Indicative incremental investment

€20bn

Circa €800m per annum to 2050

Delivers incremental benefit with each initiative implemented, combining for a transformative network-wide impact



Iarnród Éireann
Irish Rail

Thank you

