

# Cork Area Commuter Rail Programme

Public Consultation No.2 Project Report

TRJV

15 May 2026

## Index

### Table of Contents

Table Of Acronyms.....	9
Executive Summary.....	11
1. Introduction.....	16
1.1 CACR Programme Description.....	16
1.1.1 CACR Programme.....	16
1.1.2 Current Status of CACR Programme.....	17
1.2 Report Overview.....	17
1.2.1 Format of the Report.....	18
1.2.2 Authors of the Report.....	18
1.2.3 Status of the Report.....	19
2. Need & Strategic Fit.....	20
2.1 Project Objectives.....	20
3. Summary Of Key Work to Date.....	25
3.1 Public Consultation No. 1: Emerging Preferred Option.....	25
3.2 Principal Updates Following Public Consultation No. 1.....	25
3.3 Accelerated Blackpool and Dunkettle Stations Planning Applications.....	26
4. Options Selection Process.....	28
4.1 Transport Appraisal Framework (TAF).....	28
4.1.1 Core Aims.....	28
4.2 Options Assessment / Multi-Criteria Analysis.....	32
4.3 Assessment Methodology.....	32
5. Transportation Analysis.....	34
5.1 Introduction.....	34
5.2 The NTA Southwestern Regional Model.....	34
5.3 Train Service Specification (TSS).....	36
6. Electrification.....	38
6.1 Power and Fleet options assessment.....	38
6.1.1 Options Identification.....	38
6.1.2 Options Assessment.....	38

6.1.3.	Power & Fleet Conclusion.....	39
6.2	Overhead Line Equipment (OHLE).....	40
6.3	OHLE Protection .....	41
6.4	Substations.....	41
6.4.1.	Introduction .....	41
6.4.2.	Substation Locations .....	42
6.5	Electrification Compound.....	44
6.5.1.	Introduction.....	44
6.5.2.	Electrification Compound Layout.....	45
6.6	Signalling .....	45
6.7	Electromagnetic Compatibility (EMC).....	46
7.	CCE Maintenance Compounds.....	47
7.1	Introduction .....	47
7.2	Assessment.....	47
7.3	Description of Options.....	47
7.4	The Preferred Option.....	49
7.4.1.	Mourne Abbey .....	49
7.4.2.	Blarney .....	49
7.4.3.	Monard .....	49
7.4.4.	Blackpool.....	49
7.4.5	Dunkettle.....	49
7.4.6	Water- Rock.....	49
7.4.7	Cobh Area .....	50
8.	Existing Structures.....	51
8.1	OHLE Clearance .....	51
8.2	Clearance Assessment .....	51
8.3	Option Selection .....	51
8.4	Station Footbridges.....	54
8.5	Station Canopies .....	55
8.6	Parapets .....	55
8.7	Viaduct Modifications .....	58
9.	Level Crossing .....	59

9.1.	XC229 Buckley's Level Crossing.....	60
9.2.	XC238 Myrtle Hill Level Crossing .....	60
9.3.	XC249 Fota Estate Level Crossing .....	62
9.4.	XY009 Water-Rock Level Crossing.....	62
9.5.	XY012 Mill Road, R626 Level Crossing .....	63
10.	Permanent Way .....	64
11.	Stations .....	66
11.1	Introduction .....	66
11.2	New Stations .....	66
11.2.1	Station Design Principles .....	66
11.2.2	Accessibility.....	68
11.3	Parking Facilities.....	69
11.4	Mallow Station .....	69
11.5	Cobh Station .....	71
11.6	Blarney Station .....	73
11.7	Monard Station.....	75
11.8	Carrigtwohill West Station .....	77
11.9	Water-Rock Station .....	79
11.10	Ballynoe Train Station.....	81
11.11	Tivoli Station.....	82
12.	Depot.....	85
12.1	Depot Design Development.....	85
12.1.1.	Introduction .....	85
12.1.2.	Depot Layout .....	85
12.1.3.	Stabling Capacity.....	86
12.1.4.	Maintenance activities .....	86
12.1.5.	Service Slab Maintenance Activities .....	87
12.1.6.	Automatic Washing Plant.....	87
12.1.7.	Main Building Maintenance Activities .....	87
12.1.8.	Automatic Vehicle Inspection.....	87
12.1.9.	Architecture .....	87
12.1.10.	Main Building .....	88

12.1.11. Bogie Drop-Off Area .....	89
12.1.12. Drivers Facilities.....	89
12.1.13. Service Slab and Stabling Area .....	89
12.1.14. Access Control Building .....	89
12.1.15. Automatic Washing Plant (AWP).....	90
12.1.16. Automatic Vehicle Inspection System (AVI) .....	90
12.1.17. Sustainability measures .....	90
12.1.18. Trackwork .....	91
12.1.19. Electrification.....	92
12.1.20. Drainage .....	93
12.1.21. Utilities.....	93
12.1.22. Landscape.....	94
12.1.23. Boundary Treatment.....	94
12.2 Depot Access Roads .....	95
12.2.1 Assessment.....	95
12.2.2 Description of Options .....	95
12.2.3 Summary of Assessment.....	96
12.2.4 Depot Access Road Cross-Section.....	98
12.3 Greenway Diversion - Inter-Urban Cycle Route Detour.....	98
13. Construction Compounds.....	102
14. Next Steps .....	104
14.1 Conclusion of Public Consultation No.2.....	104
14.2 Design Development .....	104
14.3 Railway Order.....	104

## Figures

Figure 0-1	CACR Programme Network Scheme Map.....	11
Figure 2-1	CACR Network Scheme Map.....	20
Figure 3-1	Dunkettle Parking provision phasing.....	27
Figure 4-1	TAF MCA Scoring Scale.....	31
Figure 5-1	SWRM Coverage.....	34
Figure 5-2	TSS Options.....	37
Figure 6-1	Sample Image of DART OHLE.....	41
Figure 6-2	Typical layout of Cantilever OHLE.....	41
Figure 6-3	Sample Supply and Traction Substations.....	42
Figure 6-4	Proposed Substation Configuration at Ballygibbon.....	43
Figure 6-5	Proposed Substation Configuration at Ballyrichard More.....	44
Figure 6-6	Electrification Compound – General Layout.....	45
Figure 8-1	OBC394 Rathpeacon Overbridge currently has a clearance deficit of approx. 300mm.....	52
Figure 8-2	OBC409 pedestrian bridge on Lower Glanmire Road.....	52
Figure 8-3	OBC405 N8 / Lower Glanmire Road Bridge is located between Kent Station and the Cork Tunnel	54
Figure 8-4	Carrigaloe Station Footbridge.....	54
Figure 8-5	Kent Station Canopy.....	55
Figure 8-6	Example of Steel or GRP extension to a parapet.....	56
Figure 8-7	Photo of a typical OHLE system assembled on an existing stone railway bridge in Slovenia.	58
Figure 9-1	XC229 Buckley’s Level Crossing.....	60
Figure 9-2	XC238 Myrtle Hill Level Crossing.....	60
Figure 9-3	Myrtle Hill Terrace proposed eastern access.....	61
Figure 9-4	XC249 Fota Estate Level Crossing.....	62
Figure 9-5	XY009 Water Rock Level Crossing.....	62
Figure 9-6	XY012 Mill Road Level Crossing.....	63
Figure 10-1	Rathduff Passing Loop and Crossovers.....	65
Figure 11-1	Artistic impression of new CACR stations.....	67
Figure 11-2	Station scheme.....	67
Figure 11-3	Standard materiality of new stations.....	68
Figure 11-4	Existing Mallow Station.....	70

Figure 11-5	Mallow Proposed Station Upgrade.....	71
Figure 11-6	Proposed Cobh Station Layout .....	72
Figure 11-7	Proposed New Cobh Station Access.....	73
Figure 11-8	Blarney Station and Strategic Park and Ride Location Map.....	73
Figure 11-9	TII M20 proposals - Blarney.....	74
Figure 11-10	Blarney Station and Strategic Park and Ride Car Park Layout.....	75
Figure 11-11	Monard Station and Local Park and Ride Location Map .....	76
Figure 11-12	Monard Station and Local Park and Ride Layout.....	76
Figure 11-13	Location of Carrigtwohill West Station and Local Park and Ride .....	78
Figure 11-14	Carrigtwohill West Station and Local Park and Ride Layout.....	79
Figure 11-15	Water-Rock Station Location Map.....	80
Figure 11-16	Water-Rock Station Layout .....	80
Figure 11-17	Location of Ballynoe Station and Local Park and Ride.....	81
Figure 11-18	Ballynoe Station and Local Park and Ride Layout .....	82
Figure 11-19	Location of Tivoli Station .....	83
Figure 11-20	Proposed Tivoli Station .....	84
Figure 12-1	General layout plan.....	86
Figure 12-2	General View - Main Building, Drivers Facilities and Stabling Area .....	88
Figure 12-3	General View - Service Slab and Stabling Area .....	88
Figure 12-4	Automatic Washing Plant, Northeast View.....	90
Figure 12-5	Automatic Vehicle Inspection, Northeast View.....	90
Figure 12-6	Embedded Rail in Slab .....	92
Figure 12-7	Strail Crossing Units at Road-Rail Interface.....	92
Figure 12-8	Depot location and Options Assessed.....	96
Figure 12-9	Summary MCA Table of Depot Road Access Options .....	97
Figure 12-10	Depot Access Road - Option 7 - Preferred Option .....	97
Figure 12-11	Depot Access Road Cross-Section.....	98
Figure 12-12	(IU-1) Inter-Urban Cycle Route (Extract from Carrigtwohill to Middleton Inter-Urban Cycleway Phase 2 Part 8 Planning Application Report. December 2023).....	99
Figure 12-13	Identified Inter-Urban Cycle Route Detour (Orange Route) .....	100
Figure 12-14	Inter-Urban Cycle Route Detour (Typical Cross-Sections) .....	101

## Tables

Table 1-1	High Level Events Sequencing for Phase 2 Projects .....	17
Table 1-2	Project Report Contributors.....	18
Table 4-1	TAF Criteria, Sub Criteria Indicators, and Data Sources.....	28
Table 5-1	Model Runs – Standard Cases.....	35
Table 5-2	Service Pattern Advantages and Disadvantages.....	37
Table 6-1	Consolidation of MCA Sub-criteria.....	39
Table 8-1	Summary of all overhead structures along the CACR study area that require intervention to accommodate the OHLE.....	53
Table 8-2	Summary of all overbridges likely to require their parapets to be upgraded. ....	57
Table 13-1	Construction Compound Locations and Functions.....	103

## Table Of Acronyms

Reference	Description
AA	Appropriate Assessment
ABP	An Bord Pleanála
BEMU	Battery Electric Multiple Unit
CACR	Cork Area Commuter Rail
CAF	Common Appraisal Framework
CAP25	The Climate Action Plan 2025
CASP	Cork Area Strategic Plan
CBA	Cost-Benefit Analysis
CCE	Chief Civils Engineers Department of IE
CCTV	Closed Circuit Television
CEA	Cost-Effectiveness Analysis
CMA	Cork Metropolitan Area
CMASP	Cork Metropolitan Area Strategic Plan
CMATS	Cork Metropolitan Area Transport Strategy
COMAH	Control of Major Accident Hazards
CPO	Compulsory Purchase Order
DC	Direct Current
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMC	Electromagnetic Compatibility
EMU	Electric Multiple Unit
EN	European Standard
EPA	Environmental Protection Agency
ESB	Electricity Supply Board
EURRF	The European Union Recovery and Resilience Facility
GI	Ground Investigation
GIS Software	Geographic Information System
HV	High Voltage
IÉ	Iarnród Éireann
IM	Infrastructure Manager (IÉ)
IMSAP	Infrastructure Manager Safety Approval Panel
LIDAR	Light Detection and Ranging
LPR	Local Park and Ride
LRT	Light Rail Transit
MCA	Multi-criteria Analysis
MDC	Multi-disciplinary Consultant
MGB	Metropolitan Greenbelt Areas
MV	Medium Voltage

Reference	Description
NDP	National Development Plan
NIAH	National Inventory of Architectural Heritage
NIFTI	National Investment Framework for Transport in Ireland
NPF	National Planning Framework
NRRP	National Recovery and Resilience Plan
NSO	National Strategic Outcomes
NTA	National Transport Authority
OHLE	Overhead Line Equipment
OS	Ordnance Survey
P&C	Points and Crossings
PAR	Project Appraisal Report
PC	Public Consultation
PRAI	Property Registration Authority of Ireland
RRV	Road Rail Vehicle
RC	Reinforced Concrete
RO	Railway Order
RPO	Regional Planning Objectives
RSES	Regional Spatial and Economic Strategy for the Southern Region
SAC	Special Area of Conservation
SAR	Strategic Assessment Report
SDGs	Sustainable Development Goals
SDZ	Strategic Development Zone
SET	Signalling, Electrification and Telecommunications
SPR	Strategic Park and Ride
SWRM	Southwest Regional Model
TAF	Transport Appraisal Framework
TII	Transport Infrastructure Ireland
TMS	Technical Management System
TPH	Trains per Hour
TPHPD	Trains per Hour per Direction
TRJV	TYPASA Roughan & O'Donovan Joint Venture
TSS	Train Service Specification
VDC	Direct Current Voltage
WP	Work Package

## Executive Summary

The Cork Area Commuter Rail (CACR) programme is a major infrastructure investment that forms a core part of the Cork Metropolitan Area Transport Strategy (CMATS) 2040. Developed by the National Transport Authority (NTA) in partnership with Cork City and County Councils and Transport Infrastructure Ireland (TII), this transformative programme aims to modernise and expand the heavy rail network across the Cork region.

The CACR programme will significantly improve connections between Mallow, Cork, Cobh, and Midleton by increasing train capacity and frequency, adding new stations, and enhancing overall service reliability. It also supports the shift towards a more sustainable, low-carbon transport system, encouraging people to choose public transport over private cars.

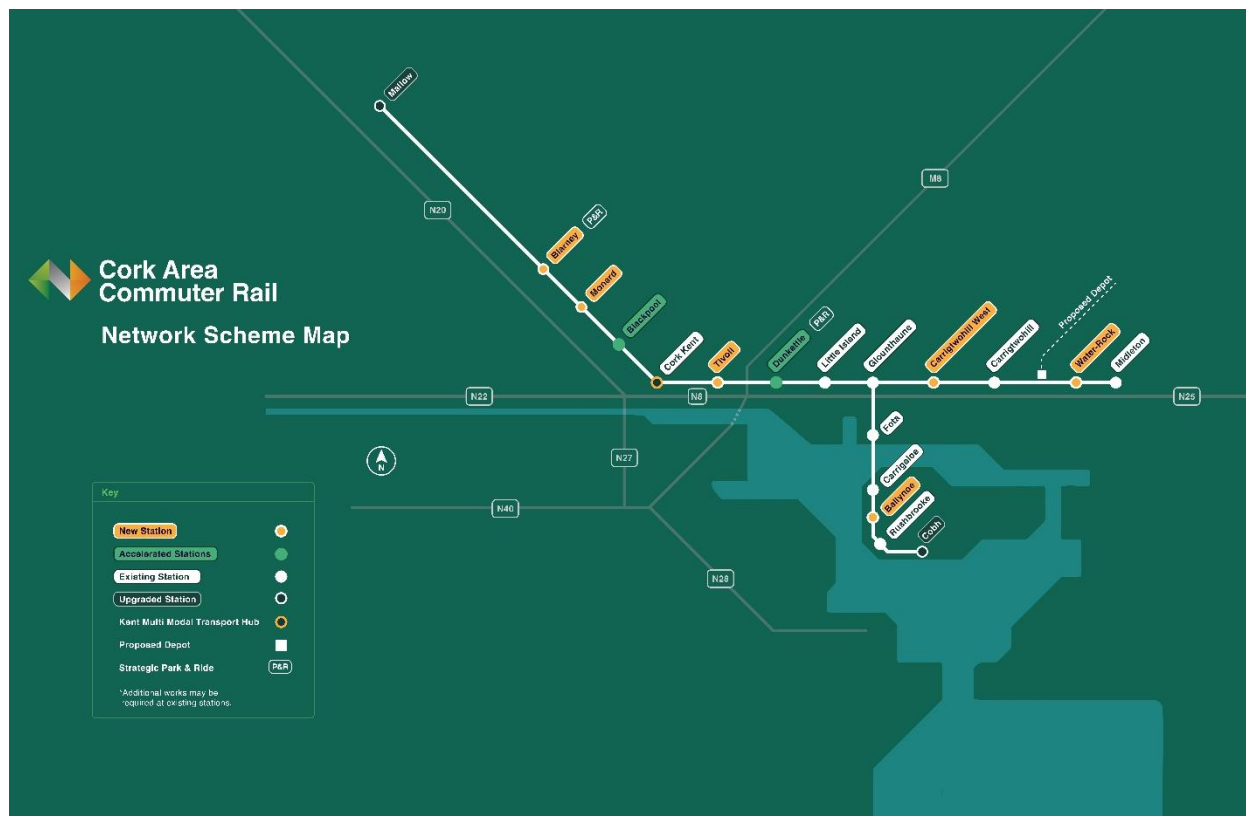


Figure 0-1 CACR Programme Network Scheme Map

The CACR programme is made up of seven packages of work:

- Work Package 1 – Through Platform at Kent Station
- Work Package 2 – Signalling and Communications Upgrade
- Work Package 3 – Twin Track from Glounthaune to Midleton
- Work Package 4 – New Stations, Track Works, Civils and Structures
- Work Package 5 – New Fleet Maintenance Depot
- Work Package 6 – Electrification of the Network
- Work Package 7 – Rolling Stock (new trains)

Work Package 1 has been completed on site. Currently, Work Packages 2 and 3 are progressing through construction on site. This report focuses on Work Packages 4, 5 and 6, which deal with new stations, the fleet Depot, and network electrification.

The aim of this report is to inform the public about the Preferred Option for the CACR network and the process by which this was identified. This information forms part of Non-Statutory Public Consultation No. 2, and the public is invited to review the proposals and provide feedback.

### Key Elements of the CACR Programme

- Eight new train stations across the Cork region;
- Two strategic Park and Ride sites at Dunkettle and Blarney and local Park and Ride sites at the remaining stations (where feasible);
- A new maintenance and stabling Depot for the new electrified fleet.
- Electrification of the rail network;
- Associated signalling and telecommunications systems;
- New trackwork, including sidings, crossovers, a passing loop, turnbacks, and Depot connections;
- Supporting infrastructure, including drainage, earthworks, and other ancillary works.

### Policy and Strategic Context

The importance of CACR is recognised in key national and regional plans, including Project Ireland 2040, CMATS, City and County development plans, and EU green transition goals. The programme is receiving support from the EU Recovery and Resilience Facility.

In July 2023, the Transport Appraisal Framework (TAF) replaced the Common Appraisal Framework (CAF). TAF is now the standard for assessing publicly funded transport projects in Ireland. As part of this update, several elements of CACR Programme including the Power and Fleet Study, Depot Site Selection, and station locations at Tivoli and Ballynoe were re-assessed and these were presented at Public Consultation No.1 on the Emerging Preferred Option. During this stage of the design, further options assessments have been undertaken in relation to the electrification compound, substation site selection, maintenance compounds, existing structures, the Depot access road and the diversion of the Inter-Urban Cycle Greenway. Details of the TAF-based options assessment process are available in Section 4 of this report.

### Electrification

A key part of CACR is the electrification of the rail network. A Power and Fleet Study conducted in Phase 2 initially identified a battery-electric multiple unit (BEMU) fleet as the preferred option. A more detailed study carried out in alignment with the TAF in the current phase of activity concluded that the available BEMU technology could not reliably meet the network's service requirements and identified an overhead line electrification (OHLE) solution as the preferred option for electrification.

To implement OHLE, works will be required along the full route, including bridge modifications. A detailed bridge clearance assessment has been undertaken. The OHLE system will consist of several longitudinal wires per track, which supply power to the electric trains. In order to carry the wires, structural steel supports are necessary. Masts will typically rise to between 6.0m and 8.5m above rail level. A variety of support types will be used, depending on local site conditions and constraints. These may include single track and twin track cantilevers, and portal structures, which span multiple tracks or provide additional support in confined spaces. The exact configurations will be confirmed during design development.

Substations will also be required to power the electrified CACR Network by delivering electricity from the EirGrid National Grid to the OHLE used by the Electric Multiple Unit (EMU) trains. The Project Team has identified two indicative locations for Supply and Traction substations, one at Ballygibbon and the other at Ballyrichard More. The exact locations of the substations will depend on their proximity to existing EirGrid

infrastructure and the findings of ongoing power-supply studies, which will determine the load required at different points along the network. The Project Team is engaging with EirGrid and has submitted connection requests for these substations.

To facilitate the electrification, the clear height of existing structures along the rail network through which OHLE can be installed has been assessed. The project team have undertaken a robust options assessment to determine the correct intervention, considering the structures strategic value or location, its cultural heritage value and the magnitude of the clearance deficit. Of the 34 structures, track lowering has been determined as the preferred option for 24 of them. Raising the existing bridge deck has been determined as the preferred option for an additional four structures. Five structures, which are station canopies and Cork Tunnel infrastructure such as ventilation shaft guards, will need to be modified to address the clearance deficit.

A parapet on a bridge is the protective barrier along the edge that prevents people, vehicles, or objects from falling off the bridge. The installation of OHLE along the railway line means that the structures spanning the railway must adhere to a set of safety requirements aimed at reducing the risk of members of the public accidentally coming into direct contact with the lines. One of these requirements is for parapets to be 1.8m in height. Approximately 44 bridges will need parapet upgrades to keep the public safe. Additionally, the length of some underbridges/viaducts along the railway corridor will likely result in some gantries/masts being connected to the existing viaduct/underbridge structures to facilitate the OHLE infrastructure.

More information can be found in Section 6 of this report.

### **Maintenance Compounds**

To support the maintenance of the CACR rail network, permanent operational maintenance compounds and track-access points are required at several locations. The preferred option for these locations has been determined and detail is provided in Section 7 of this report.

### **Level Crossings**

Level crossings significantly hinder railway operations and present a safety risk to train operations and the public which requires active and ongoing management by Iarnród Éireann. There are five existing level crossings on the CACR Network which the project team have assessed on an individual basis in terms of planned train frequency, road safety and traffic, planned peak hourly closures and accident history. XC229 Buckley crossing is to be formally closed, as well as XC238 Myrtle Hill crossing. Alternative access has been assessed at Myrtle Hill crossing, and preferred option is to provide fully universal access via the eastern end of the terrace, using the access point at Bellevue Terrace, which currently includes a Victorian footbridge and ramped access via the existing road bridge. Refer to Section 9 for more detail.

### **Linear Works**

To deliver an electrified, high-capacity, high-frequency train service, key upgrades will be made to the existing linear rail infrastructure. Permanent Way works will be required at Mallow Station, Rathduff Passing Loop (located between Mallow and Blarney), Blarney Station, Ballyrichard More and Cobh. Further detail is provided in Section 10.

## New Stations

New train stations are planned at the following locations:

- Blarney
- Monard
- Tivoli
- Ballynoe
- Carrigtwohill West
- Water-Rock

The locations reflect long-standing regional development strategies. While the locations of most stations is dictated by their identification within planning policy and local authority integration within planned developments surrounding the proposed station sites, stations at Tivoli and Ballynoe underwent detailed site selection processes to identify the Emerging Preferred Options in alignment with the TAF guidelines. In addition, enhancements at Mallow, and Cobh stations are planned to support greater network capacity. Separate Section 34 planning applications for new Blackpool and Dunkettle Stations are being progressed by Iarnród Éireann (‘the applicant’) to Cork City and Cork County Councils respectively.

Each station will be designed for multi-modal access, offering:

- Secure car parking (where feasible)
- EV charging stations
- Covered Bicycle stands and lockers
- Accessible parking and drop-off areas
- Facilities for buses, taxis, and pedestrians

The Strategic Park and Ride facility at Blarney and the accelerated Dunkettle Stations will have higher capacity to capture long-distance car trips, encouraging early transfer to rail. These will complement local parking available at other existing and new stations.

## Depot

A new Depot is essential to maintain and stable the electric train fleet, especially to meet the planned 10-minute service frequency. A detailed Depot site selection process in Phase 2 was updated in alignment with TAF and identified Ballyrichard More as the Emerging Preferred Option.

Following feedback received as part of non-statutory Public Consultation no.1 and taking account of additional survey information secured during design development, the selection was further reviewed. The updated study confirmed Ballyrichard More as the most suitable location for the proposed CACR Depot.

Further assessment has been undertaken in relation to the new Depot access road, with the preferred option for access utilising the Water-Rock development road and has an offline section of approximately 2.07km. Two junctions on Castle Rock Avenue will require widening to allow large HGVs such as low-loaders to manoeuvre through the existing road radii. These junctions will allow for signalisation for safer non-motorized user crossings. Additionally, due to the location of the Depot, a section of the proposed Inter-Urban Cycle Route (IU-1) between Carrigtwohill and Midleton requires realignment. The original location for the cycleway route runs parallel and alongside the existing rail line where the new Depot is to be located. It is proposed to provide a detour of the cycleway route to the north of the new Depot, with a connection to the Depot access road, where the access road cycle facilities are utilised onwards towards Midleton.

Further detail is provided in Section 12.

### Construction Compounds

Construction compounds are temporary facilities that support delivery of the CACR Phase 2 works. These compounds will be located along the railway to facilitate specific elements of construction and will remain in place only for the duration of the works they support. Not all temporary compounds will be required at the same time. The permanent maintenance compounds at Blarney, Monard and Water-Rock will also operate as construction compounds for some of the required works. Indicative locations of the temporary compounds have been determined. Section 13 of this report provides further information.

### Next Steps

Following the conclusion of Non-Statutory Public Consultation No. 2 (PC2), the Project Team will review and analyse all feedback from the public, stakeholders, and affected landowners. This input will inform the confirmation of the Preferred End-to-End Option for the scheme. In parallel, preliminary design will progress, supported by further technical studies and assessments to refine project elements and inform statutory requirements such as the Environmental Impact Assessment (EIA) and Appropriate Assessment (AA). The Preferred Option may evolve based on this input and continued design refinement. A Railway Order application will then be submitted to An Coimisiún Pleanála.

The Railway Order will include an Environmental Impact Assessment Report (EIAR) outlining the project scope, potential environmental impacts, and mitigation measures. The public will be invited to make submissions, and An Coimisiún Pleanála may hold an Oral Hearing to gather further input.

## 1. Introduction

### 1.1 CACR Programme Description

#### 1.1.1. CACR Programme

The Cork Area Commuter Rail (CACR) Programme represents a once-in-a-generation investment, delivering better travel choices, connecting communities, and unlocking Cork's full potential. It is about protecting the environment, improving quality of life, and creating a greener, more accessible city for everyone. The CACR Programme is fully aligned with Cork's and Ireland's broader plans for sustainable growth and is a central component of the strategic vision set out in the Cork Metropolitan Area Transport Strategy (CMATS) 2040. CACR will play a key role in a future sustainable transport system in the Cork region and nationally. In the context of the State's climate action plans, investment in public transport infrastructure is vital.

CACR will be essential to the reduction in transport emissions: firstly, through the procurement of a low emissions fleet and, secondly, through supporting population and sustainable development through the provision of a quality service facilitating the reduction in emissions from transport sector including road congestion and encouraging and enabling people to choose public transport. CACR will facilitate compact, high-density, transit-oriented, residential and commercial development along its corridors especially adjacent to proposed new rail stations. This will have a dynamic impact on land use and spatial planning for the Cork Region.

CACR provides a transformational upgrade change to the future public transport network in two ways; firstly, through infrastructure improvements, including electrification, a new Depot, new stations, sections of double-tracking and other works, and secondly; through additional rolling stock. Services will increase significantly on the newly electrified lines, so that a consistent, high-frequency timetable can be operated across the whole network. Additional connectivity will also be created through CACR to longer distance Intercity and regional services, bringing connectivity and accessibility benefits across the country, well beyond the CACR network.

Seven distinct yet interrelated proposed work packages (WP) were developed for the CACR Programme as presented below:

- WP 1 – Through Platform Kent Station (Completed)
- WP 2 – Signalling and Communications Upgrade (Construction commenced)
- WP 3 – Glounthaune to Midleton Twin Track (Construction commenced)
- WP 4 – New Stations, Track Works, Civils and Structures
- WP 5 – New Fleet Depot
- WP 6 – Electrification
- WP 7 – Rolling Stock

Each work package contributes towards the overall objectives of the CACR Programme, and each will deliver incremental operational benefits in its own right, for the maximum benefits to be realised the entire programme needs to be delivered. It is a positive characteristic of CACR that benefits will be realised incrementally as each Project is delivered. The National Recovery and Resilience Plan (NRRP) 2021 prioritised WP 1, 2, and 3 (**Phase 1**) for immediate progress via the EU Recovery and Resilience Facility.

The key elements of the CACR Programme to be delivered for **Phase 2** include **Work Packages 4, 5, and 6** and are as follows:

- Electrification.

- New Fleet Depot.
- Accelerated Stations (Blackpool and Dunkettle)
- New Stations (Blarney, Monard, Tivoli, Carrigtwohill West, Water-Rock, and Ballynoe).
- Strategic Park & Ride facility at Blarney (and at the accelerated Dunkettle Station)
- Upgrades at existing stations (Mallow and Cobh).
- All associated Permanent Way, Civil Engineering & Structural Works.

WP 4, 5 and 6 are needed to deliver the expected service frequency and decarbonisation and offer little possibility of phased delivery. The new stations could be introduced on a phased basis, in parallel with progress in land use development.

### 1.1.2. Current Status of CACR Programme

Table 1-1 below gives a high-level sequence of events for the **Phase 2** projects comprising the CACR Programme.

**Table 1-1 High Level Events Sequencing for Phase 2 Projects**

1. Non-Statutory Public Consultation No.1 Emerging Preferred Option	Completed Summer 2025
2. Non-Statutory Public Consultation No.2 Preferred Option	Current Stage
3. Railway Order Application to An Coimisiún Pleanála	Railway Order Application and statutory consultation
4. Commence Construction (subject to planning approval and funding)	Construction commences on a phased basis

## 1.2 Report Overview

The aim of the report is to present the Preferred Option for the works required to provide the Cork Area Commuter Rail Programme high frequency train service. These elements define the end-to-end option for the entire programme. The main components are as follows:

- Electrification, Signalling and Telecommunications (SET)
- Modifications to existing structures
- Level Crossing Closure
- Permanent Way
- New stations and upgrades to existing stations
- New Depot and associated access road and greenway diversion

In some cases, the location of works has been determined by planning policy and technical requirements. In other cases, the proposed works have been subject to an Options Selection Process. This report will outline the Option Selection Process and describe the methodology applied to the process.

This report highlights the key constraints relevant to each project component within their respective study areas, describes feasible options for each aspect, and documents the Multi-Criteria Analysis process that led to the selection of the Preferred End-to-End Option, if applicable.

### 1.2.1. Format of the Report

The Project Report is structured to guide the reader through the different components of the CACR and the selection process of the Preferred Option undertaken to date, which will progress to a Railway Order application to An Coimisiún Pleanála. Section 2 provides the need and the strategic fit of the CACR Programme in terms of planning and policy. The previous studies undertaken to date to support the programme are summarised in Section 3.

Section 4 sets out the options selection process and the methodology of the two-stage Multi-Criteria Analysis (MCA) conducted to identify the Preferred Option where applicable.

Section 5 sets out the transport analysis undertaken in order to support the increase in train frequency required for the CACR Programme.

Sections 6 to 12 detail the Preferred Option and the option selection process where applicable, for the remaining project components and Section 13 outlines the next steps in the process.

### 1.2.2. Authors of the Report

**Table 1-2 Project Report Contributors**

Topic	Contributors	Company	Qualifications	Experience
Chapter 1: Introduction	Thomas Leonard	ROD	BEng (Hons), BE, CEng MIEI	16 years
	Victoria da Silva Pereira	ROD	B.Sc. (Hons)	14 years
Chapter 2: Need & Strategic Fit	Victoria da Silva Periera	ROD	B.Sc. (Hons)	14 years
Chapter 3: Summary of Key Work to Date	Thomas Leonard	ROD	BEng (Hons), BE, CEng MIEI	16 years
Chapter 4: Option Selection Process	Thomas Leonard	ROD	BEng (Hons), BE, CEng MIEI	16 years
	Victoria da Silva Pereira	ROD	B.Sc. (Hons)	14 years
	Mark Kilcullen	ROD	BE (Civil), MSc, CEng MIEI, FConsEI	32 years
Chapter 5: Transportation Analysis	Mark Kilcullen	ROD	BE (Civil), MSc, CEng MIEI, FConsEI	32 years
Chapter 6: Electrification	Ana Gallego	TYPASA	CEng (MIET)	29 years
	Frédéric Andre	TUC Rail	M. Mech Eng	25 years
	Mark Kilcullen	ROD	BE (Civil), MSc, CEng MIEI, FCons EI	32 years
	Thomas Leonard	ROD	BEng (Hons), BE, CEng MIEI	16 years

Topic	Contributors	Company	Qualifications	Experience
Chapter 7: CCE Maintenance Compounds	Ernest Etim	ROD	BEng (Hons), MSc, CEng MIEI	11 years
Chapter 8: Existing Structures	Matthew Ryan	ROD	MSc, BE Hons., C.Eng., M.I.E.I., R.Cons.E.I.	14 years
	Frédéric Andre	TUC Rail	M. Mech Eng	25 years
Chapter 9: Level Crossing	Thomas Leonard	ROD	BEng (Hons), BE, CEng MIEI	16 years
Chapter 10: Permanent Way	Paul Robinson	TYPASA	B Eng (Hons), C Eng MPWI	24 years
Chapter 11: Stations	Pedro Costales	TYPASA	BArch, MSc	32 years
	Thomas Leonard	ROD	BEng (Hons), BE, CEng MIEI	16 years
Chapter 12: Depot	Mark Kilcullen	ROD	BE (Civil), MSc, CEng MIEI, FCons EI	32 years
	Joseba Perez	TYPASA	BEng (Civil), MSc	21 years
Chapter 13: Construction Compounds	Joseba Perez	TYPASA	BEng (Civil), MSc	21 years
Chapter 14: Next Steps	Thomas Leonard	ROD	BEng (Hons), BE, CEng MIEI	16 years
	Victoria da Silva Pereira	ROD	B.Sc. (Hons)	14 years
	Mark Kilcullen	ROD	BE (Civil), MSc, CEng MIEI, FCons EI	32 years

### 1.2.3. Status of the Report

The Project Report is a snapshot of the CACR Programme at this time, to inform Non-Statutory Public Consultation No.2. It is important to note that the information contained within this report is provisional and subject to further stakeholder engagement, assessment, and design modification, which may lead to alterations in the presented content.

The purpose of presenting this Project Report, at this stage, is to inform the public on the status of the project, the location and scope of the works required, describe the options selection process and the process being followed to identify the Preferred Option (where applicable) as presented. As part of the Non-Statutory Public Consultation No. 2 the public are invited to make submissions and observations on the Preferred Option for consideration by the Project Team.

## 2. Need & Strategic Fit

### 2.1 Project Objectives

The primary objective of CACR is ‘Support compact urban growth and contribute to reducing transport congestion and emissions in the Cork Metropolitan Area (CMA) by enhancing the existing heavy rail system, providing a sustainable, safe, efficient, and integrated public transport service that will improve the attractiveness of rail services.’

CACR will have a transformative impact, resulting in a turn up and go, low carbon, mass transit, service across the Cork Region. It will be achieved by electrifying existing lines, through additional rolling stock, re-signalling, and other infrastructure works. CACR services will be integrated with bus services, future light rail services and longer distance intercity and regional rail services. The extent of the CACR programme is shown in Figure 2-1

2-1 CACR Network Scheme Map

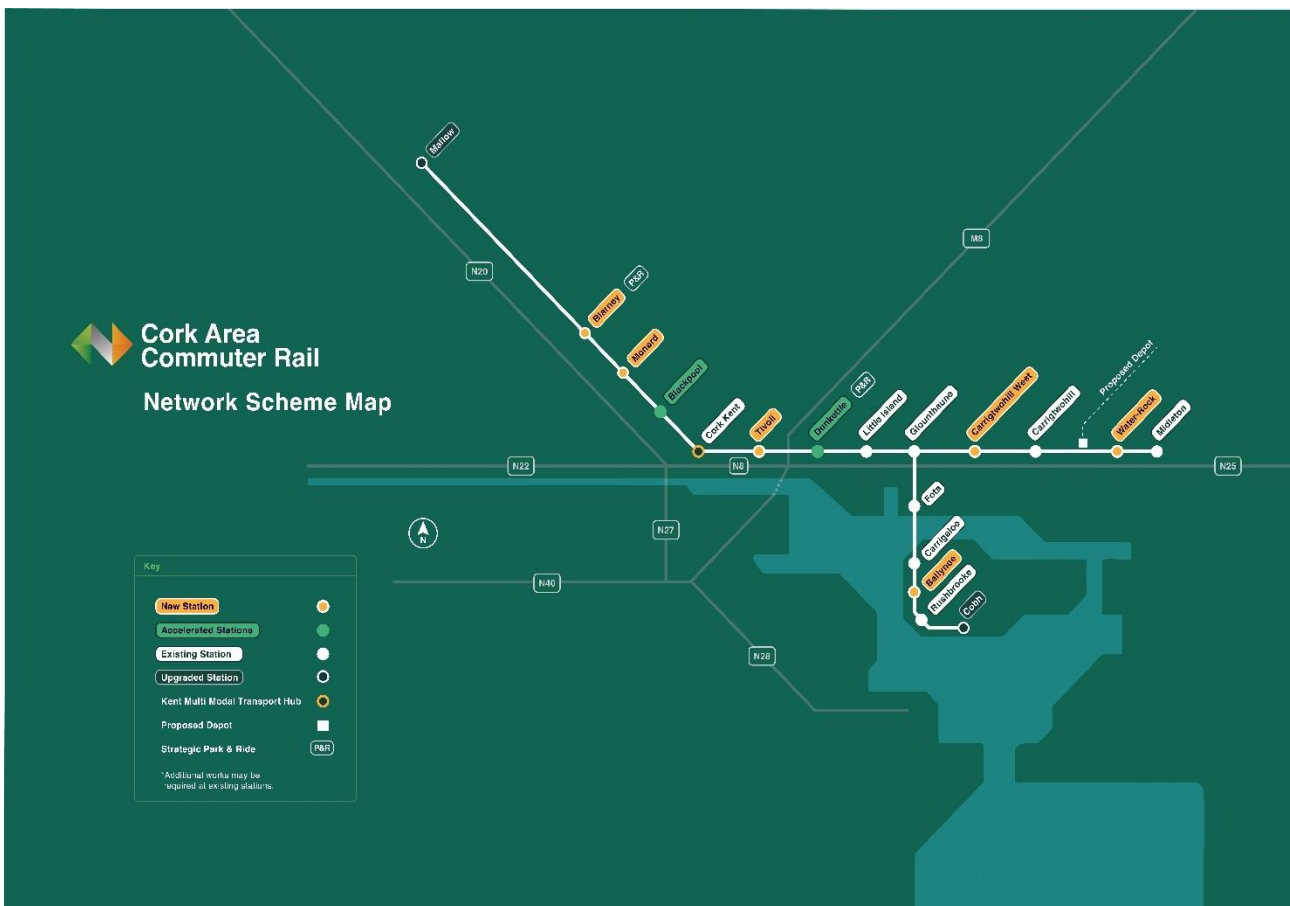


Figure 2-1 CACR Network Scheme Map

Sub-objectives are as follows:

- Cater for existing heavy rail travel demand and support long-term patronage growth along established rail corridors in the CMA through the provision of a higher frequency, higher capacity, electrified heavy rail service which supports sustainable economic development and population growth.

- Develop an integrated suburban rail system improving accessibility to jobs, education and other social and economic opportunities, inter-modal connectivity, and integration with other public transport services.
- Enable consolidation of urban compact growth along existing rail corridors, unlock regeneration opportunities and more effective use of land in the CMA, for present and future generations, through the provision of a higher capacity heavy rail network.
- Deliver an efficient, sustainable, low carbon and climate resilient heavy rail network, which contributes to a reduction in congestion on the road network in the CMA and which supports the advancement of Ireland's transition to a low emissions transport system and delivery of Ireland's emission reduction targets.

There is a strong strategic policy fit between CACR and international, European, national, regional and local policy objectives, which includes: At an international level, the key policy drivers for the CACR Programme include: The *2030 Agenda for Sustainable Development*, which provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its core are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all United Nations Member States. The implementation of the CACR Programme would contribute towards the achievement of at least seven SDGs, namely: SDG 3 Good Health and Well-being, SDG 8 Decent Work and Economic Growth, SDG 9 Industry, Innovation and Infrastructure, SDG 10 Reduced Inequalities, SDG 11 Sustainable Cities and Communities, SDG 12 Responsible Consumption and Production, and SDG 13 Climate Action.

At a European level, the key policy drivers for the CACR Programme include: *The European Union Recovery and Resilience Facility (EURRF)* which aims to make economies and societies more sustainable, resilient and prepared for challenges and opportunities of the green and digital transformations. There are six pillars that encompass the EURRF including green transition, digital transformation; economic cohesion, productivity and competitiveness; social and territorial cohesion; health, economic, social and institutional resilience; policies for the next generation. The CACR programme will contribute by enabling electrification, increasing the capacity of the network and by providing enhanced access via new stations. Given the CACR alignment with the EU's priorities for green transition, it is benefitting from an investment by the EURRF in three of the seven Work Packages that comprise the CACR Programme. The *EU Cities Mission* was produced in order to tackle challenges by bringing concrete solutions and ambitious goals to deliver results through green and digital transformation by 2030. Through the involvement of local authorities, citizens, businesses, investors as well as regional and national authorities, the Cities Mission aims to: Deliver 100 climate-neutral and smart cities by 2030; and Ensure that these cities are examples and innovation hubs for future EU cities to achieve the same by 2050.

Cork City has been identified as one of 100 cities in the EU's Climate-Neutral & Smart Cities Mission with the goal of reducing carbon emissions by 80% and to become climate-neutral by 2030. The CACR Programme is fully aligned with the objectives of the EU Cities Mission for Cork City.

Additionally, at the European level, the CACR Programme is also aligned with the *European Union Transport White Paper (2011)*, the *European Green Deal*, and the *EU Sustainable and Smart Mobility Strategy*.

At a national level, the key policy drivers for the CACR Programme include:

Project Ireland 2040 is the Government's long-term overarching strategy in order to build a more resilient and sustainable future for all. Together, the *National Planning Framework (NPF) – First Revision (April 2025)* and

the *National Development Plan (NDP) 2021-2030 (including the National Development Plan Review 2025)* combine to make *Project Ireland 2040*.

The NPF, initially published in 2018, recently underwent its first revision where it highlights the need to address the national population growth from the 2022 Census and reflect the changes that have been made to Government policy since the NPF's initial publication. The NPF highlights the need for large regeneration and redevelopment projects in Cork, a more compact urban growth form to be facilitated through “well-designed higher density development”. Additionally, there is an increased focus on significant development in areas where the development can be integrated into the existing built-up area of the city and surrounding environs which are serviced by existing or future planned high-capacity public transport, highlighting Transport Oriented Development opportunities.

The NDP sets out the investment strategy and budget for the decade whilst providing an overview of a transport strategy and subsequent strategic investment priorities across each of the ten NPF National Strategic Outcomes (NSOs) with reference to Ireland's Climate Action Goals. The NDP outlines strategic investment priorities and explicitly mentions the CACR Programme under the Regional Cities Commuter Rails, which is as follows: “*Cork Commuter Rail Programme, running from Mallow to Midleton and Cobh, targets a 10-minute all-day frequency on electrified rail services in the Cork metropolitan area. Phase 1 of the Programme will be funded through the European Union's Recovery and Resilience Facility. Phase 2 of the Programme to commence and delivery will continue over the latter period of this NDP.*” The *National Development Plan Review 2025: Transport Sectorial Investment Plan* highlights the investment strategies undertaken in line with the National Investment Framework for Transport in Ireland (NIFTI) intervention hierarchy (Maintain, Optimise, Improve and New). Under Improve, Phase 1 of the Cork Area Commuter Rail Programme and the commencement of Phase 2 starting with new train stations at Blackpool and Dunkettle and initial electrification works and Depot construction will be undertaken over the next five years.

The *National Investment Framework for Transport in Ireland (NIFTI) (2021)* enables delivery of Project Ireland 2040 by guiding the appropriate investment in transport infrastructure. It addresses the importance of decarbonisation in the decades ahead to meet Ireland's climate change goals. NIFTI prioritises maintaining, optimising and improving existing assets over the building of new infrastructure in addition to prioritising active travel and public transport modes over private vehicles. The CACR Programme, aligned with NIFTI investment priorities, will provide new stations and infrastructure, while maintaining, optimising and improving the existing rail network and services to ensure maximum use of the existing assets.

The *Climate Action Plan 2025 (CAP25)* is the third Climate Action Plan to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021. CAP25 outlines what Ireland needs to achieve in 2025, so the nation is prepared to take on the challenges of the second carbon budget period 2026-2030. CAP25 places further emphasis on the need to decarbonise the transport sector. CACR is aligned with CAP25 as the Programme aims to deliver a new fleet of non-carbon-based fuel trains for the network, enhance cross-linkages between land-use and spatial planning and the transport system, enhancement of public transport infrastructure and services, while reinforcing the integral role of local authorities in decarbonising transport through the planning system and promoting public transport-oriented development.

Additionally, at a national level, the CACR Programme is also aligned with the *Department of Transport: Statement of Strategy 2023-2025*, the *National Sustainable Mobility Policy*, the *Five Cities Demand Management Study*, the *National Transport Authority Sustainability Strategy 2024-2030*, the *All-Island Strategic Rail Review*, the *IE Rail Freight 2040 Strategy*, the *Iarnród Éireann Strategy 2027*, the *National*

*Adaptation Framework, the Transport Climate Change Sectoral Adaptation Plan, the Programme for Government 2025 and the Rail Project Prioritisation Strategy 2026-2030.*

At a regional level, the key policy drivers for the CACR Programme include: The *Regional Spatial and Economic Strategy for the Southern Region* (RSES) establishes a high-level strategic framework for the Southern Region that supports the implementation of Project Ireland 2040. The RSES supports investment, strengthening and enhancement of the rail network for the Region and seeks to ensure that rail services meet passenger demand and future growth while providing reliable services to encourage use of sustainable transport. The RSES sets out 'A Transport Vision for the Southern Region' which based on a set of principles to inform the integration of land use and transport planning in the Region. The CACR Programme is considered to be supported by the RSES and in turn aligns with seven 'Regional Policy Objectives' (RPOs), namely: RPO 151 Integration of Land Use and Transport, RPO 152 Local Planning Objectives, RPO 155 Managing the Region's Transport Assets, RPO 160 Smart and Sustainable Mobility, RPO 163 Sustainable Mobility Targets, RPO 164 Metropolitan Area Transport Strategies, and RPO 170 Rail.

The *Cork Metropolitan Area Plan* (CMASP) is a key component of the RSES for the Southern Region, which seeks to make Cork a primary driver of economic population growth in the Region, as aligned with the objectives of the NPF and explicitly supports the CACR Programme.

The Cork Metropolitan Area Transport Strategy (CMATS) was published in February 2020 and is a key driver for the CACR Programme. CMATS presents a coordinated land use and transport strategy for the Cork Metropolitan Area (CMA) but extends out to include Mallow for the rail network, setting out a framework for the planning and delivery of transport infrastructure and services to support the sustainable development of the city region up to 2040, in line with Project Ireland 2040 NPF and the RSES. CMATS outlines an over-arching objective of "enhancing suburban rail services to maximise development opportunities offered by the existing railway line in order to support a greater level of coordination between land use and transport planning." The CACR programme is being progressed to deliver the commuter rail proposals outlined within CMATS.

At a local level, the key policy drivers for the CACR Programme include:

The *Cork County Development Plan 2022-2028* (including the Proposed Variation No.1 NPF Implementation) , in line with national and regional policy objectives, supports the aims and objectives of the CACR Programme as it continues to prioritise the integration of sustainable land use with transportation infrastructure, provides an enhanced public transport network linking the city with surrounding metropolitan areas in order to provide the strategic employment and housing locations with the necessary infrastructure to meet the needs of the population.

The *Cork City Development Plan 2022-2028* delivers on the need for an integrated transportation network that addresses better transportation choices for the population growth envisaged for Cork City. Cork City will continue to work with the NTA on the implementation of CMATS which intends to incrementally deliver the specified transport infrastructure interventions and public transportation services over time in order to align with the continued growth of Cork City and CMA.

Together, the CACR Programme and associated project elements form a vital rail infrastructure development that will aid in achieving the objectives of the Core Strategy and Strategic Vision for both Cork County Development Plan 2022 and the Cork City Development Plan 2022 and is consistent with the objectives of the same while also aiming to enable the proposals in CMATS.

Additionally, at a local level, the CACR Programme is also aligned with the Cork County Climate Action Plan 2024-2029, the Cork City Climate Action Plan 2024-2029, the Port of Cork Masterplan 2050, and the Monard Strategic Development Zone Planning Scheme.

Therefore, there is a robust and strategic policy fit between the CACR Programme and international, European, national, regional and local policy objectives, particularly in relation to sustainable mobility, emissions reductions, compact land use development, and consolidation of population and employment growth along high-frequency transport corridors.

### 3. Summary Of Key Work to Date

#### 3.1 Public Consultation No. 1: Emerging Preferred Option

Non - statutory Public Consultation No. 1 on the Emerging Preferred Option (EPO) for the CACR Phase 2 was held from the 18 June 2025 to 23 July 2025. The Emerging Preferred End to End Option for the following CACR Phase 2 elements were presented to the public:

- Electrification
- New fleet Depot
- New stations (Blarney, Monard, Blackpool, Tivoli, Dunkettle, Carrigtwohill West, Water-Rock, and Ballynoe)
- Strategic Park & Ride facilities (Blarney and Dunkettle stations)
- Upgrades to existing stations (Mallow and Cobh)

A total of 333 submissions were received and recorded by the Project Team. All the submissions were reviewed, identifying key themes reflecting the diversity of concerns and suggestions provided by respondents. The Project Team has progressed with design development , integrating the feedback, concerns, and suggestions raised during Public Consultation No.1. The Public Consultation No. 1 Findings Report documenting the key themes raised as well as Iarnród Éireann's responses has been compiled and has been published as part of Public Consultation No. 2.

#### 3.2 Principal Updates Following Public Consultation No. 1

Following Public Consultation No.1, design development has progressed on the following key elements of the CACR Phase 2 works:

- The traction power configuration for electrification has been determined. The chosen system is a 25kV alternating current system. It requires the implementation of overhead electrified wires along the length of the CACR network;
- To meet the needs of the scheme it has been determined that supply and traction substations with associated infrastructure will be required in Ballygibbon and in Ballyrichard More. The exact positioning and layouts of the proposed electrification infrastructure at these locations has not yet been determined but it has been confirmed that two 110kV substations will be sufficient for the provision of resilient power supply to the proposed electrified network;
- A site adjacent to the proposed Dunkettle Station has been identified for the location of a proposed electrification compound to service the CACR Programme. This compound will host specialised electrification equipment and spares and will provide office and welfare facilities for maintenance personnel;
- Permanent maintenance compounds are proposed to facilitate the storage of permanent way materials necessary for maintenance of the line. These locations will be accessible from the public road and will have direct access to the railway line. There are no permanent buildings proposed on these sites;
- Locations for construction compounds have been determined in order to carry out the proposed works required for the CACR Phase 2 interventions;

- An extensive exercise has been carried out in the examination of the minimum structures clearance envelope necessary to accommodate the overhead electrification cables. The purpose of this is to restrict the impact of the proposed electrification on existing bridges over the railway.
- The preferred options for Ballynoe and Tivoli stations have been confirmed following assessment of contributions received as part of non-statutory Public Consultation no.1.
- The preliminary design of all proposed stations has been advanced and are presented as part of non-statutory Public Consultation no.2.
- The site selection process for the proposed Depot has been reviewed following assessment of contributions received as part of non-statutory Public Consultation no.1 and the Ballyrichard More site confirmed as the preferred site for the proposed Depot. In addition, an option selection process has been resolved in respect of the proposed access to the Depot site.
- The preliminary design of the proposed Depot including access roads has been completed.
- Due to the location of the proposed Depot adjacent to the railway, it is necessary to divert the alignment of the proposed Carrigtwohill to Midleton Inter-urban Cycle Route Phase 2 granted permission under Section 179 of the Planning and Development Act, 2000, in April 2024. The diversion is to be along the northern boundary of the proposed Depot site. The details of the proposed diversion are included in the End to End Drawings for the scheme.

### 3.3 Accelerated Blackpool and Dunkettle Stations Planning Applications

Separate Section 34 planning applications for new Blackpool and Dunkettle Stations are being progressed by Iarnród Éireann ('the applicant') to Cork City and Cork County Councils respectively, for permission for development under the Planning and Development Act 2000 (as amended).

The acceleration of these stations, ahead of the Railway Order is being progressed ahead of the CACR Phase 2 works, maximises the use of existing rail infrastructure and delivers early, cost-effective interventions that support urgent modal shift and climate action objectives supporting compact sustainable development in the Cork City and Metropolitan areas.

The Blackpool station addresses the long-standing need to deliver critical infrastructure that will serve existing communities and commuters in these areas. The stations will act as a catalyst for planned population growth supporting regeneration in the Blackpool/ Kilbarry area and Transit-Oriented Development (TOD).

The Dunkettle station includes a Park and Ride facility (P&R). The Station is strategically located to fulfil a park-and-ride function, situated at a key eastern gateway to Cork City, adjacent to the strategic national road network (east of the Dunkettle Interchange – M8, N40 and N25) and along the Midleton - Cork-Cobh railway corridor. The P&R site allows for the interception of car-based commuter trips before they reach the urban core, thereby reducing congestion, vehicle kilometres travelled and associated transport-related emissions. The accelerated stations will provide an immediate increase in capacity on the existing suburban rail network, serving established, and planned residential and employment catchments.

As the new stations have been progressed through a separate planning application process, the only relevant works that will be included at these locations as part of the Railway Order include:

- Installation of overhead line electrification at both stations.
- increased in parking provision at Dunkettle P&R to approximately 600 parking spaces (+300 additional spaces) to support the planned increase in services associated with the CACR Phase 2 10

minute frequency. Phase 1 shown in the Figure 3-1 below shows the parking included in the Planning Application, with the Phase 2 area that will be included as part of the Railway Order.



Figure 3-1 Dunkettle Parking provision phasing

## 4. Options Selection Process

### 4.1 Transport Appraisal Framework (TAF)

In June 2023, the Department of Transport replaced the Common Appraisal Framework with the Transport Appraisal Framework (TAF), later amended in July 2024. The TAF provides updated guidance for assessing and delivering transport projects, aiming to:

- Support investments that meet societal needs and strategic policy goals
- Ensure value for money
- Align with the Infrastructure Guidelines

The guidance applies immediately and must be followed by Sponsoring Agencies submitting appraisal documents to the relevant Approving Authority. It is now the primary appraisal framework for all publicly funded transport projects in Ireland.

#### 4.1.1. Core Aims

The TAF has six key goals, including:

- Ensuring robust, objective appraisals
- Promoting consistent formats and methods across transport business cases
- Options Appraisal Approach

Business cases must include three key appraisal components:

- Multi-Criteria Analysis (MCA): Incorporating environmental concerns
- Cost-Effectiveness Analysis (CEA)
- Cost-Benefit Analysis (CBA)

Appraisals should reflect different service options and use a consistent method throughout the project. While CEA and CBA may apply at the programme level, individual project elements may rely solely on MCA, supported by comparative cost-benefit insights.

An assessment matrix with a comparative rating mechanism is used to evaluate and score the options.

**Table 4-1 TAF Criteria, Sub Criteria Indicators, and Data Sources**

TAF Criteria	Sub-Criteria	TAF Indicators	TAF Proposed Data Source for Appraisal	CACR Proposed Comparators
Transport User Benefits and Other Economic Impacts	Travel Time	Measure of the direct impact on the amount of time people spend travelling	Travel Time Savings (VTTS) measure	Travel Time Savings (VTTS) measure
	Transport Costs	The impact on transportation costs in terms of fuel costs, other vehicle operating costs or public transport fares	Economic, modelling and customer service analysis, Cost Estimates	Capital Cost Estimates, OPEX Cost Estimates, Demand
	Journey Reliability	The variance in travel times which can be experienced for the same journey type		Not Used

TAF Criteria	Sub-Criteria	TAF Indicators	TAF Proposed Data Source for Appraisal	CACR Proposed Comparators
	Journey Quality	The quality of a journey outside of journey time and cost considerations	SWRM results for the increase on daily trips-include	SWRM results for the increase on daily trips
	Change of Land Value	Impact on land use value, improved accessibility, likely zoning, impact on agricultural land	Change in land values can potentially be included as a monetised benefit or cost in a CBA of a project or programme	Not Used
	Wider Economic Impacts	Agglomeration Effects, Imperfect Competition, Labour Market Imperfections		Not Used
Accessibility Impacts	Impact on passengers	Access to Key Services, Access to Recreational Facilities, Access to Jobs, Access to International Transport Gateways, Freight Access	GIS analysis of number of people within 1km of a high frequency rail line	GIS analysis of number of people within 1km of a high frequency rail line
Social Impacts	Social Impacts	Impact on Socially disadvantaged homes Impact on Mobility impaired, physically and intellectually impaired. Impact on aged, carers Hidden disabilities impact -Autism, dementia Impact on lower income groups Impacts on households without a car Impact on child supporters, those with strollers	Spatial analysis on green spaces and recreational facilities GIS analysis on the number of deprived and the percentage of households with no car ownership within 1km of the rail line	Spatial analysis on green spaces and recreational facilities GIS analysis on the number of deprived and the percentage of households with no car ownership within 1km of the rail line
Land Use Impacts	Change in Quality of Public Realm	Impacts related to changes in public realm, such as streets, footpaths, and public buildings, as a result of a scheme	Extent of alignment with the road network and the local area	Extent of alignment with the road network and the local area
	Existing Transport Network and Service Impact:	Impacts on connectivity with the existing transport infrastructure in an area and with broader national and regional planning policy objectives	Extent of alignment with each public transport mode	Impact of Local Road Network
	Material Assets: Property	Direct and indirect impacts on sensitive agricultural enterprise (e.g., beef or equine farms. Tillage is low	Assessment of Impacts on Agricultural and Non-agricultural Properties	Impact on Agricultural and Non-agricultural Properties

TAF Criteria	Sub-Criteria	TAF Indicators	TAF Proposed Data Source for Appraisal	CACR Proposed Comparators
		sensitivity). Severance of landholding, direct acquisition of farmyards, sheds etc). Indirect impacts due to construction and operation near sensitive Agri enterprises. No. of residential, community and businesses directly impacted by the option (acquisition). Indirect impacts (due to construction and operation activities) on non-agri properties		
	Built Services (Utilities)	Varied impact on existing utilities	Impacts on existing utilities	Estimated Utility Asset diversion
	Soils and Geology (incl. Waste)	Impacts on existing utilities	Impacts on existing utilities	Impacts on existing utilities
	Planning Applications	Planning search: LAs, ABP, EIA Portal Large Scale residential and non-residential planning applications (granted and pending) potentially within the site boundaries	Impact on planned developments	Impact on planned developments
Safety	Collisions & Related Impacts	Estimated impacts on vulnerable users in this context – pedestrians, cyclists, motorcyclists	Collision Statistics	Collision Statistics
	Other Safety Impacts	Impacts on anti-social behaviour, trips, falls, etc	Assessment of Alignment Integration with local urban infrastructure	Assessment of Alignment Integration with local urban infrastructure
Climate Change Impacts	Climate Action Impact	Direct impact on emissions	Updating of train emissions profile in TUBA	Varied Train emissions - TUBA
	Climate Adaption Impact	Impact on Resilience and Robustness of Transport Infrastructure	Comparative Assessment of Options	Empty Running times
Local Environmental Impacts	Biodiversity	Impact on European sites (SAC / SPAs/RAMSAR), nationally designated sites and protected species, ASSIs, AONBs Nature Reserves, Wildlife Reserves. Invasive Species	Environmental constraints assessment of options	Environmental constraints assessment of options
	Water Resources	Impact on surface water, ground waterbodies	Environmental constraints assessment of options	Environmental constraints assessment of options

TAF Criteria	Sub-Criteria	TAF Indicators	TAF Proposed Data Source for Appraisal	CACR Proposed Comparators
	Landscape & Visual Quality	Potential visual impacts from new stations, station, charging points and / or overhead wires along the proposed route	Environmental constraints assessment of options	Visual Impact,
	Cultural Heritage	Impact on protected structures, archaeological sites and cultural heritage sites / features	Environmental constraints assessment of options	Heritage Impacts to Bridges – Significant Disadvantage
	Noise & Vibration	Reduced noise and vibration from commuter rail operations and construction	Transition away from diesel-powered fleet	Local Residences
	Air Quality	Impact on level of human exposure to NO <sub>x</sub> , PM <sub>10</sub> , PM <sub>25</sub>	Overall network emissions from SWRM results	Overall network emissions from SWRM results Impact on level of human exposure to NO <sub>x</sub> , PM <sub>10</sub> , PM <sub>25</sub>

The table above is aligned with the main TAF criteria, sub-criteria, indicators, and data sources, as defined in the published guidance. Supplementary sub-criteria have been included in respect of material assets to ensure these impacts are adequately assessed in the analysis. The influential characteristics listed in the left-hand column can be adjusted to better reflect the most relevant criteria for specific infrastructure elements.

The initial assessment will be unweighted to allow for monitoring of how each comparator performs. A ranked, colour-coded, and numeric scoring system shown in the graphic below is used. The assessment is carried out using a spreadsheet.

The following MCA scoring scale example can be used to sift a longlist of options, or to assess scheme impacts at detailed appraisal stage. Scores should be assigned to options based on their respective impacts on addressing identified issues or opportunities, meeting SMART objectives and probability of impacts occurring. Figure 4-1 below sets out some guidance for assigning scores for impacts and options.

Assessment Ranking	Description
7	<b>High Positive</b> - The option is likely to significantly improve conditions in the relevant criteria.
6	<b>Positive</b> - The option is likely to improve conditions in the relevant criteria.
5	<b>Slight Positive</b> - The option is likely to somewhat improve conditions in the relevant criteria.
4	<b>Neutral</b> - The option will result in no changes to conditions in the relevant criteria.
3	<b>Slight Negative</b> - The option is likely to somewhat worsen conditions in the relevant criteria.
2	<b>Negative</b> - The option is likely to worsen conditions in the relevant criteria.
1	<b>High Negative</b> - The option is likely to significantly worsen conditions in the relevant criteria.

Figure 4-1 TAF MCA Scoring Scale

The options are first assessed based on their absolute impact under each sub-criterion, using the numbered ranking system described above. These sub-criteria scores will then be combined at the criteria level, with each criterion given equal weight. This will lead to the identification of the preferred option.

## 4.2 Options Assessment / Multi-Criteria Analysis

This report presents the options assessment for several key infrastructure components, such as Depot Access Roads, Existing Bridges, Electrification compound and Maintenance compounds

Multi-Criteria Analysis (MCA) is a structured method used to evaluate and compare alternative options that aim to meet multiple objectives. It helps identify preferred options based on a defined set of criteria and objectives. These typically reflect relevant policy goals and factors such as:

- Value for money
- Costs
- Social and environmental impacts
- Equality and inclusion

Unlike methods that focus only on monetary values, MCA allows for the consideration of a broader range of impacts.

The following section outlines the information used to carry out the MCA for this project.

Information Needed	Project Approach
The options that have to be analysed.	Component Options are presented for each.
The evaluation criteria that will be used to analyse the options.	The criteria are broken into sub-criteria each of which are used to carry out a comparative assessment of the options.
The importance of these criteria (that is, the weights).	For individual scheme components either a fully qualitative mechanism without weighting has been used or a weighted mechanism has been adopted dependent on the perceived appropriateness for each component.
The evaluation of the options on the different criteria. These evaluations can be given a numerical or ordinal (comparative) scale.	The evaluations are on the basis of colour coding as described in Table 4-1 above.

Single- or multi-stage MCA (Multi-Criteria Analysis) can be used depending on the number of options and how complex they are to distinguish. A sifting process may also be applied early on to eliminate clearly unfeasible options after an initial review.

## 4.3 Assessment Methodology

The MCA uses an absolute rating approach, meaning each option is evaluated independently against a set of criteria, rather than being directly compared to other options. This ensures a consistent and structured assessment.

The initial assessment will be unweighted, allowing the influence and performance of each criterion to be clearly observed. A ranked, colour-coded, and numeric scoring system will be used, following TAF guidance.

Each option will receive an impact score for every sub-criterion. These scores are then averaged to determine a score for each main criterion. The main criterion scores are then summed to produce the overall score for each option.

The option with the highest total score will be considered the emerging preferred option. The most influential criteria will then be reviewed to confirm the reliability of the result.

The following sections form part of the option selection process for the CACR programme, aimed at identifying the most appropriate solutions for Depot Access Roads, Existing Bridges, Maintenance Compounds and Substations.

## 5. Transportation Analysis

### 5.1 Introduction

This section summarises the transport modelling work carried out for the CACR project. The modelling includes two main components:

- Demand modelling analysis using the NTA Southwest Regional Traffic Model;
- Operational analysis to produce a Train Service Specification (TSS).

The Train Service Specification outlines key details of the proposed train service, including routes, frequency, schedules, and other operational requirements.

### 5.2 The NTA Southwestern Regional Model

The National Transport Authority's (NTA) Regional Modelling System is a set of transport models used to support planning and policy decisions across Ireland. It is divided into regional models such as the Eastern, Western, Southwestern, and Greater Dublin Area models each covering a specific geographic area.

Cork and its surrounding commuter area, which are relevant to this project, are included in the Southwest Regional Model (SWRM). The full extent of the SWRM, in relation to the other regional models, is shown in Figure 5-1.

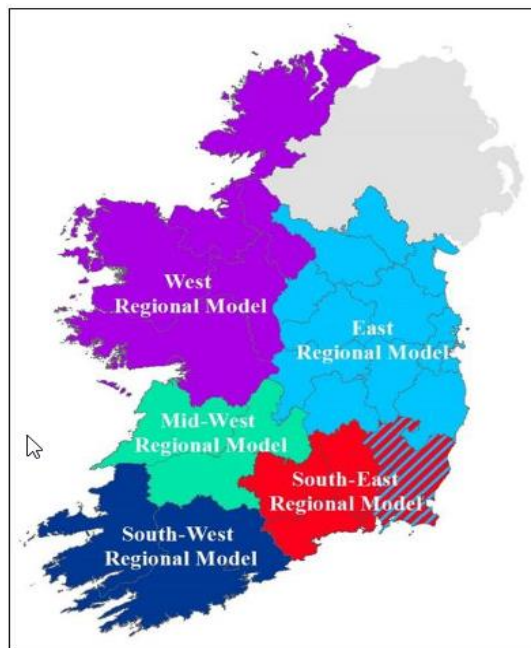


Figure 5-1 SWRM Coverage

The main components of the SWRM are presented below:

- The base year of the model is 2016 as this was also the year that the Census and National Household data sets were produced.
- It should be noted that any future year for which land use and infrastructure provision assumptions can be provided is possible to be represented.

- The modes of transport included are private cars, public transport (i.e. bus, rail, light rail), Park and Ride to/from designated locations, active modes (i.e. walking and cycling) and goods vehicles (including LGV and OGV).
- There are five time periods that are represented within the model. These are the AM Peak period (07:00 – 10:00), Lunch Time Peak (10:00 – 13:00), School Run Peak (13:00 – 16:00), PM Peak (16:00 – 19:00) and Off-Peak period (19:00 – 07:00).

Strategic models like the Southwest Regional Model (SWRM) are valuable tools for assessing how different interventions affect travel patterns. They support informed decision-making by providing insights into:

- Overall modal share
- Boarding and alighting movements at each station
- Impacts on the road network.

In the context of the CACR project, the SWRM offers a solid foundation for evaluating the proposed measures.

As part of this project, Do-Minimum scenarios have been modelled for the years 2030, 2040, and 2045. These scenarios are based on the 2028 and 2043 Reference Cases, which include only transport schemes that are already funded and committed.

The Do-Minimum scenarios serve as a benchmark to compare the impacts of implementing the project against taking no action. A number of model runs were implemented on the basis of a Central Do- something Case configured as follows:

- a. 2030 Standard Do-Minimum plus CACR scheme comprising 15-minute frequency to Mallow, Midleton and Cobh and five new stations at Blarney, Water-Rock, Blackpool, Carrigtwohill West and Dunkettle;
- b. 2040 Standard Do-Minimum plus CACR scheme comprising 15-minute frequency to Mallow, Midleton and Cobh and five new stations at Blarney, Water-Rock, Blackpool, Carrigtwohill West and Dunkettle;
- c. 2040 Standard Do-Minimum plus CACR scheme comprising 10-minute frequency to Mallow, Midleton and Cobh and eight new stations at Blarney, Water-Rock, Blackpool, Carrigtwohill West, Dunkettle, Monard, Tivoli and Ballynoe;
- d. 2045 Standard Do-Minimum plus CACR scheme comprising 10-minute frequency to Mallow, Midleton and Cobh and eight new stations at Blarney, Water-Rock, Blackpool, Carrigtwohill West, Dunkettle, Monard, Tivoli and Ballynoe.

Several alternative Do-something cases were modelled with variations in the level of service and number of stations in operations, assuming incremental delivery of the scheme. Table 5-1 below shows the alternative cases run to assess their impact on the demand.

**Table 5-1 Model Runs – Standard Cases**

Network Assumptions	2030	2040	2050
Do-Minimum	X	X	X
15 – minute frequency to Mallow, Midleton, and Cobh 8 New stations		X	X
10 – minute frequency to Mallow, Midleton, and Cobh 8 New stations		X	X

Network Assumptions	2030	2040	2050
15 – minute frequency to Mallow, Midleton, and Cobh 5 New stations – Blarney, Water-Rock, Blackpool, Carrigtwohill West, Dunkettle	X	X	
10 – minute frequency to Mallow, Midleton, and Cobh 5 New stations – Blarney, Water-Rock, Blackpool, Carrigtwohill West, Dunkettle	X	X	X

In addition to the above, preliminary model runs were carried out to estimate parking demand at each station in the CACR Do-Something scenarios. These runs assumed unlimited parking capacity at each station to identify potential demand levels.

As part of this exercise, two strategic Park and Ride locations were identified at Blarney and Dunkettle.

To assess maximum demand, the following scenarios were tested—reflecting the construction of five and eight new stations, respectively:

- a. 2043 Standard Do-Minimum plus CACR scheme comprising 10-minute frequency to Mallow, Midleton and Cobh and five new stations at Blarney, Water-Rock, Blackpool, Carrigtwohill West and Dunkettle.
- b. 2043 Standard Do-Minimum plus CACR scheme comprising 10-minute frequency to Mallow, Midleton and Cobh and eight new stations at Blarney, Water-Rock, Blackpool, Carrigtwohill West, Dunkettle, Monard, Tivoli and Ballynoe.

Based on the model scenarios representing unrestricted availability of parking, it is evident from the study that a high provision of Park and Ride spaces could be beneficial in the western and central parts of the CACR network (predominantly at Blarney and Dunkettle) as there is significant passenger demand expected at the proposed stations.

### 5.3 Train Service Specification (TSS)

CMATS proposes a rail network with regular 10-minute service intervals on each line, including through-running services and a 5-minute frequency between Glounthaune and Kent. However, maintaining a 10-minute frequency on both the Cobh and Midleton branches cannot directly support a 10-minute frequency on the Blarney/Mallow line. To address this, several Train Service Specification (TSS) options were developed to help deliver the CMATS vision:

TSS1 – Aligned with CMATS Principles:

- The provision of a cross-city service from both Cobh and Midleton through to Blarney and beyond
- Six trains an hour in each direction between Kent and each of the Cobh/Midleton/Blarney branches
- Four commuter (all stations) trains an hour to/from Mallow (plus non-stop Intercity), with two commuter services turning back at Blarney.

TSS2 – Modified for Service Regularity

- Addresses the irregular interval issue between Kent and Blarney
- Provides through services for the Midleton branch only.
- All Cobh services terminate at Kent; passengers transfer for Blarney/Mallow services.

TSS2a – Variation of TSS2

- Reduces Mallow service to two trains per hour
- Four trains per hour turn back at Blarney

Figure 5-2 illustrates the service patterns for each TSS option.

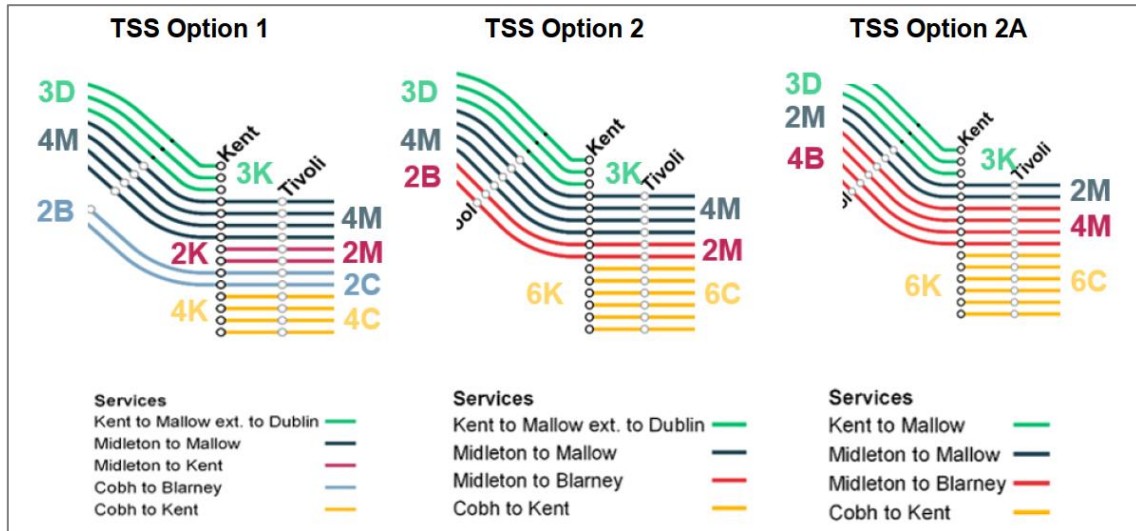


Figure 5-2 TSS Options

The advantages and disadvantages of each service pattern are summarised in Table 5-2 below.

Table 5-2 Service Pattern Advantages and Disadvantages

OPTION	TSS1	TSS2	TSS2a
Positive features	Consistent with CMATS principles (6tph; cross city from Cobh)	Simpler service from Cobh	Simpler service from Cobh Reduced mileage, fleet and operating cost
Negative features	Irregular interval between Kent and Blarney or a wait at Kent	Interchange necessary from Cobh branch to west of Kent	Reduced service to Mallow

Overall, the TSS options performed similarly; however, TSS2 performed slightly better and is recommended as the preferred option. It provides a regular and easy-to-understand service pattern, which better aligns with passenger expectations.

TSS2 also has the highest forecast for rail boardings and delivers the greatest public transport user benefits, as it more effectively meets customer demand despite overall demand forecasts being relatively similar across all options.

## 6. Electrification

### 6.1 Power and Fleet options assessment

A Power and Fleet assessment was carried out as part of the Design Review Stage of the CACR Programme. Following the feasibility stage work, further examination of power and fleet options was carried out which concluded that a single phase 25kV alternating current power supply architecture was most appropriate for the CACR programme network. A battery only solution was considered inviable. Details of the assessment are presented below.

#### 6.1.1. Options Identification

Having completed a detailed review of reports, simulations and train data supplied as part of the study, a selection of options was identified for consideration in the MCA process. They are as follows:

- Option 1 – 25kV AC OHLE Full CACR Network.
- Option 2 – 1500V DC OHLE Full CACR Network.
- Option 3 – BEMU Full CACR Network – Not carried through to MCA as the train service planned for CACR cannot be fully achieved with BEMUs powered only under real operating conditions.
- Option 4 – Dynamic charging or hybrid: 1500V DC OHLE Partial CACR Network – Little Island to Midleton
- Option 5 – Dynamic charging or hybrid: 1500V DC OHLE Partial CACR Network – Kent to Cobh and Glounthaune to Midleton.

A number of partial electrification options were initially considered based on the traction simulations taking an incremental approach to the extent of electrified network and to the resilience of the train service specification. The intermediate options were set aside due to the limited benefits accrued from the extent of additional electrification. Therefore, the assessment only presents options 4 and 5 with partial electrification of the network.

#### 6.1.2. Options Assessment

The options assessment process for Power & Fleet has been aligned with the Transport Appraisal Framework (TAF) guidelines. On completion of the assessment at Sub-criteria level, the results were consolidated to criteria level. This was done by averaging the scores under each criterion. The consolidated detail is presented in Table 6-1 below, with option 1 25kV AC as the preferred option.

**Table 6-1 Consolidation of MCA Sub-criteria**

Parameter Criteria		Option 1 25kV AC	Option 2 1500V DC	Option 4 Hybrid East of Little Island	Option 5 Hybrid East of Kent Station
1	Transport User Benefits & Other Economic Impacts	5.0	5.0	3.7	4.0
2	Accessibility Impacts	7.0	7.0	7.0	7.0
3	Social Impacts	7.0	7.0	7.0	7.0
4	Land Use Impacts	3.8	3.8	4.3	4.3
5	Safety Impacts	2.5	2.5	2.5	2.5
6	Climate Change Impacts	5.5	5.0	4.5	4.5
7	Local Environment Impacts	2.3	2.3	3.3	2.6
Overall Impact Rating		33.1	32.6	32.0	31.9
Progress to Stage 2:		Yes	No	No	No

### 6.1.3. Power & Fleet Conclusion

Option 1 was found to be the most cost-effective option because the fleet size is smaller and the power supply architecture is more efficient than 1500V DC, with fewer substations. The partial electrification options are not financially advantageous due to significant operational costs, particularly for the larger fleet.

For the following reasons Option 1 performed better than other options in the MCA:

- This option is fully aligned with the Objectives of the CACR Programme. This is not the case for the other options;
- It is aligned with future plans for electrification of the Dublin to Cork line with 25kV AC power supply. This is a significant factor as the adoption of 1500V DC OHLE power supply on the CACR network would require the implementation of dual mode intercity trains to accommodate the electrified intercity service, which would imply a higher cost. Implementation of 25kV power supply on the intercity line between Kent Station and Mallow would require further physical intervention on this line following completion of the CACR Programme electrification in respect of Options 4 and 5.
- It provides operational resilience, secured with the OHLE and reliable train technology to ensure the resilient operation of the train service specification. Battery traction associated with Options 4 and 5 is relatively novel.
- The technology associated with this option has already been tried and tested on various European networks.
- It exhibits better Climate Adaption characteristics over hybrid options with the smaller fleet and the absence of battery traction. Such battery packs would need replacement on a 9-year cycle.
- It is the most cost-effective option.

Disadvantages associated with this option are as follows:

- This option requires the development of bespoke new fleet and incurs a premium on the cost of fleet delivery.

- Although all options impact on the clear envelope under heritage structures, this option results in the greatest impact. The assessment concluded that, of 54 structures affected, 25 are heritage bridges (13 protected bridges). This compares to 25 for Option 2 (13 protected bridges), 13 for Option 4 (6 protected bridges) and 18 for Option 5 (10 protected bridges). Subsequent design development has reduced the electrification clearance envelope.
- This option has potential for impacts to affect the Qualifying Interests of the European and Nationally designated sites in the receiving environment, including (but not limited to in the absence of further information) the Great Island Channel SAC, the Blackwater River (Cork/Waterford) SAC, the Cork Harbour SPA, the Great Island Channel pNHA, the Douglas River Estuary pNHA and the Dunkettle Shore pNHA. There are also potential direct and indirect impacts to species and habitats of county or local importance, such as otter, badger, bats, amphibians, breeding birds, coastal, estuarine, grassland and woodland habitats, as well as linear habitats including treelines, hedgerows, rivers and drainage ditches. All options present a risk to EU protected areas east of Cork city. This option presents additional risk over the hybrid options in respect of the Blackwater River (Cork/Waterford) SAC.

From the assessment, Option 1 appeared to exhibit significant tangible advantages over other options. The principal drawbacks of the option appear to focus on the impact on heritage structures and the risk of impact to European and Nationally designated sites, protected species and habitats, issues which affect all options to a lesser but comparable degree. In cognisance of these drawbacks, It was concluded that Option 1 exhibited sufficient advantages over other options to warrant its adoption as the Preferred Power and Fleet option for the CACR Programme.

## 6.2 Overhead Line Equipment (OHLE)

As part of the CACR programme, electrification refers to delivering electrical energy from Eirgrid to the infrastructure needed to operate the Cork Area Commuter Rail (CACR) train fleet. The network will be electrified to accommodate Electric Multiple Unit (EMU) trains. To support EMU operation, the network will require the installation of electrical substations at strategic locations across the Cork area. These substations will supply power to Overhead Line Equipment (OHLE), which will deliver electricity directly to the trains.

The CACR train fleet will be powered by Overhead Line Equipment (OHLE) installed along the entire rail network, including the routes from Mallow to Kent Station, Kent to Cobh, and Glounthaune to Midleton.

The OHLE system will consist of several longitudinal wires per track, which supply power to the electric trains. These wires are supported and tensioned by structural steel supports placed at regular intervals along the track.

A typical OHLE layout and a representative image of the system are shown in Figure 6-1 and Figure 6-2 below. The 25kV AC support configuration will be similar in appearance.

OHLE supports will typically be spaced approximately 50 metres apart along the rail line and will range in height from 6 to 8.5 metres. A variety of support types will be used, depending on local site conditions and constraints. These may include single track cantilever structures, which extend over a single track, twin track cantilevers and portal structures, which span multiple tracks or provide additional support in confined spaces.



Figure 6-1 Sample Image of DART OHLE

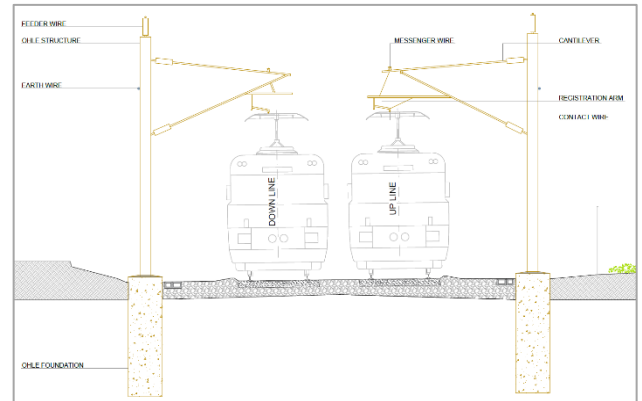


Figure 6-2 Typical layout of Cantilever OHLE

### 6.3 OHLE Protection

The existing rail network in Cork was originally designed for non-electrified services. To ensure the electrified system meets modern safety standards, modifications to some existing structures will be necessary—particularly to reduce the risk of accidental contact with live equipment by members of the public.

Two main protection methods will be used to make infrastructure safe against direct contacts with the live parts of the OHLE:

- Heightening of bridge parapets.
- Installation of safety screens.

Against indirect contacts, all conductive parts around the OHLE will be bonded to the traction earthing system and return circuit.

Each bridge along the electrified route will be individually assessed to determine which treatment is required to comply with the relevant safety regulations.

### 6.4 Substations

#### 6.4.1. Introduction

Substations will play a key role in powering the electrified CACR network by delivering electricity from Eirgrid to the Overhead Line Equipment (OHLE) used by Electric Multiple Unit (EMU) trains. A typical traction substation for a 25kV system is approximately 60m x 80m, with a typical supply substation being 110m x 100m. This footprint allows space for transformers, switchgear, control buildings, and the safety clearances required for high-voltage infrastructure. The exact locations of the substations will depend on their proximity to existing EirGrid infrastructure and the findings of ongoing power-supply studies, which will determine the electrical load required at different points along the network. Study areas have been identified at Ballygibbon and adjacent to the proposed Depot at Ballyrichard More. The Project Team is engaging closely with EirGrid, has submitted connection requests for these locations, and has developed potential substation configurations as part of this process.

Example images of typical substations are shown in Figure 6-3.

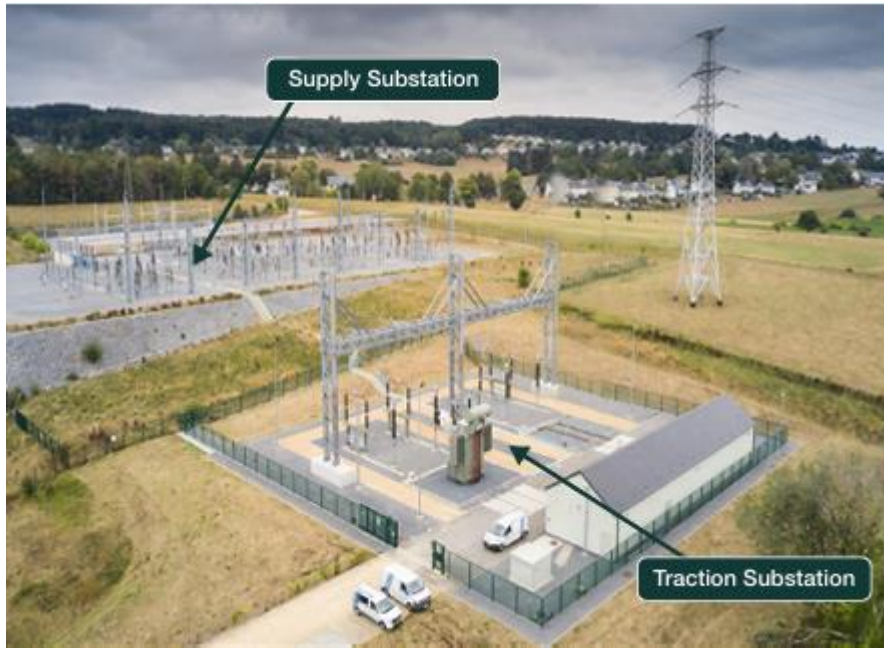


Figure 6-3 Sample Supply and Traction Substations

#### 6.4.2. Substation Locations

According to the current design, two traction substations are required to power the CACR network: one in Ballygibbon and a second adjacent to the proposed Depot in Ballyrichard More. The Project Team are engaging with EirGrid and have developed potential configurations for the substations. They are shown in

Figure

6-4

and

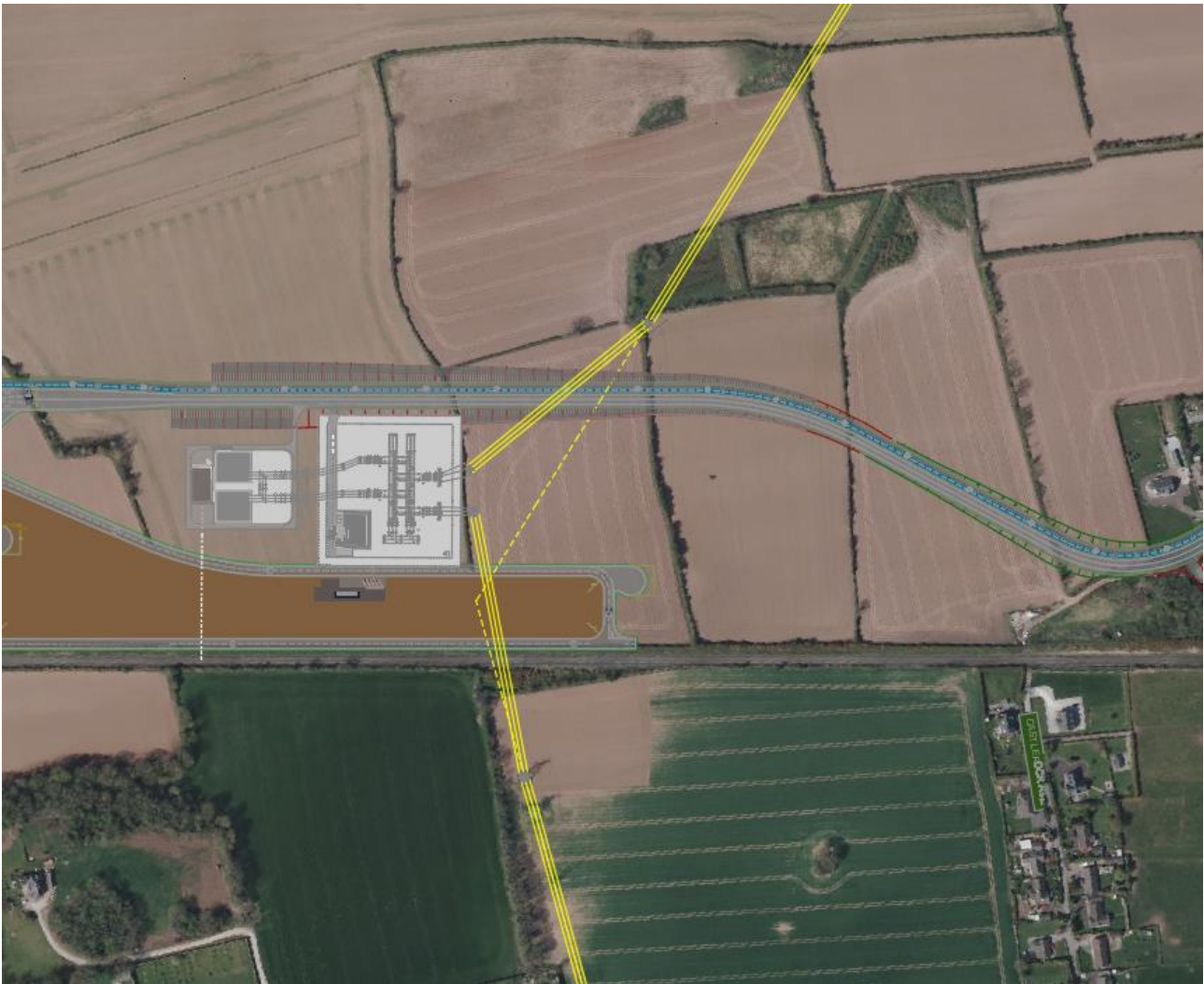


Figure 6-5 below. Engagement with Eirgrid is at an early stage of advancement. The final proposed locations and configurations may be subject to change. Iarnród Éireann will engage with any potential landowners impacted by the proposed substation locations.

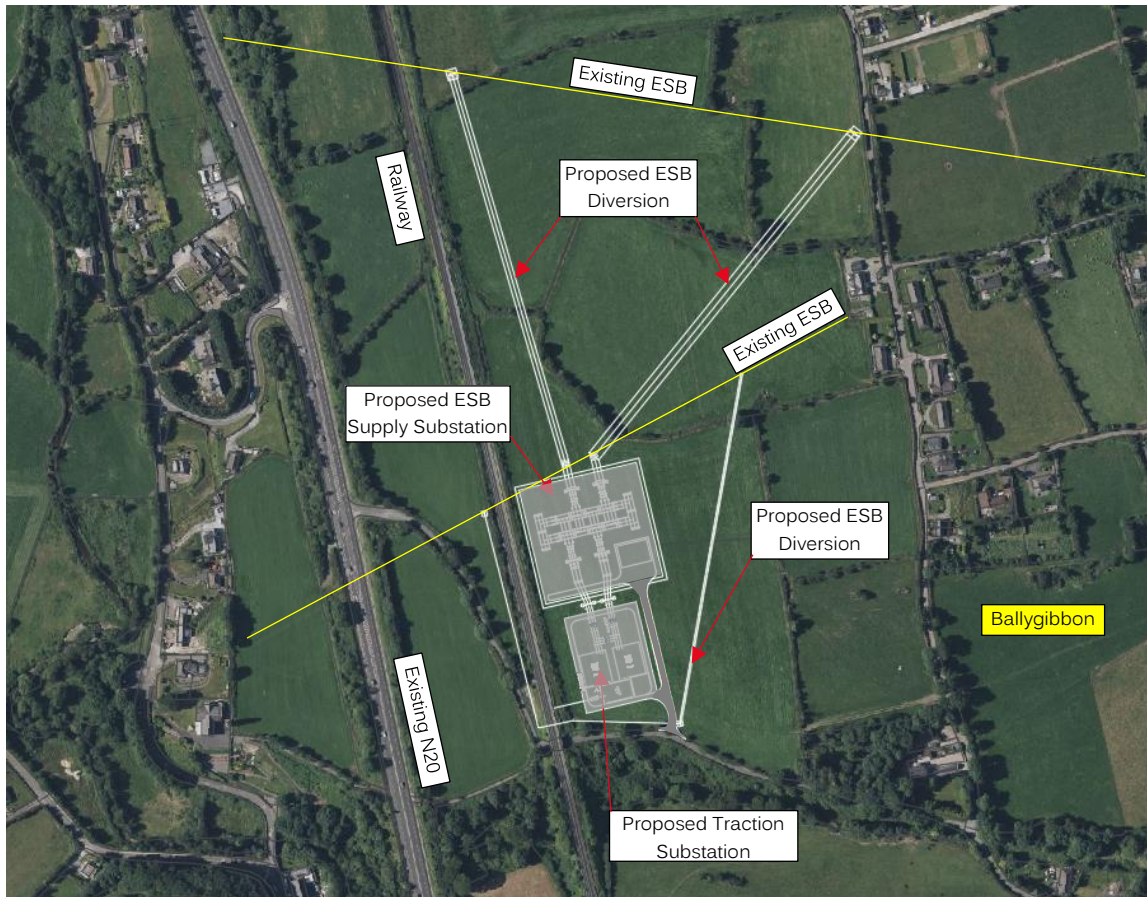


Figure 6-4 Proposed Substation Configuration at Ballygibbon

At Ballygibbon the electrical supply is taken from an existing 110kV overhead supply which is diverted as part of the proposed design to provide supply to the traction substation. It is necessary to implement a supply substation at this location to facilitate the regulation of the supply for use on the railway.

It is also necessary at this location to permanently divert an existing overhead ESB line to accommodate the proposed development. It is envisaged at this time that the diversion will be overhead around the site of the proposed supply and traction substations.

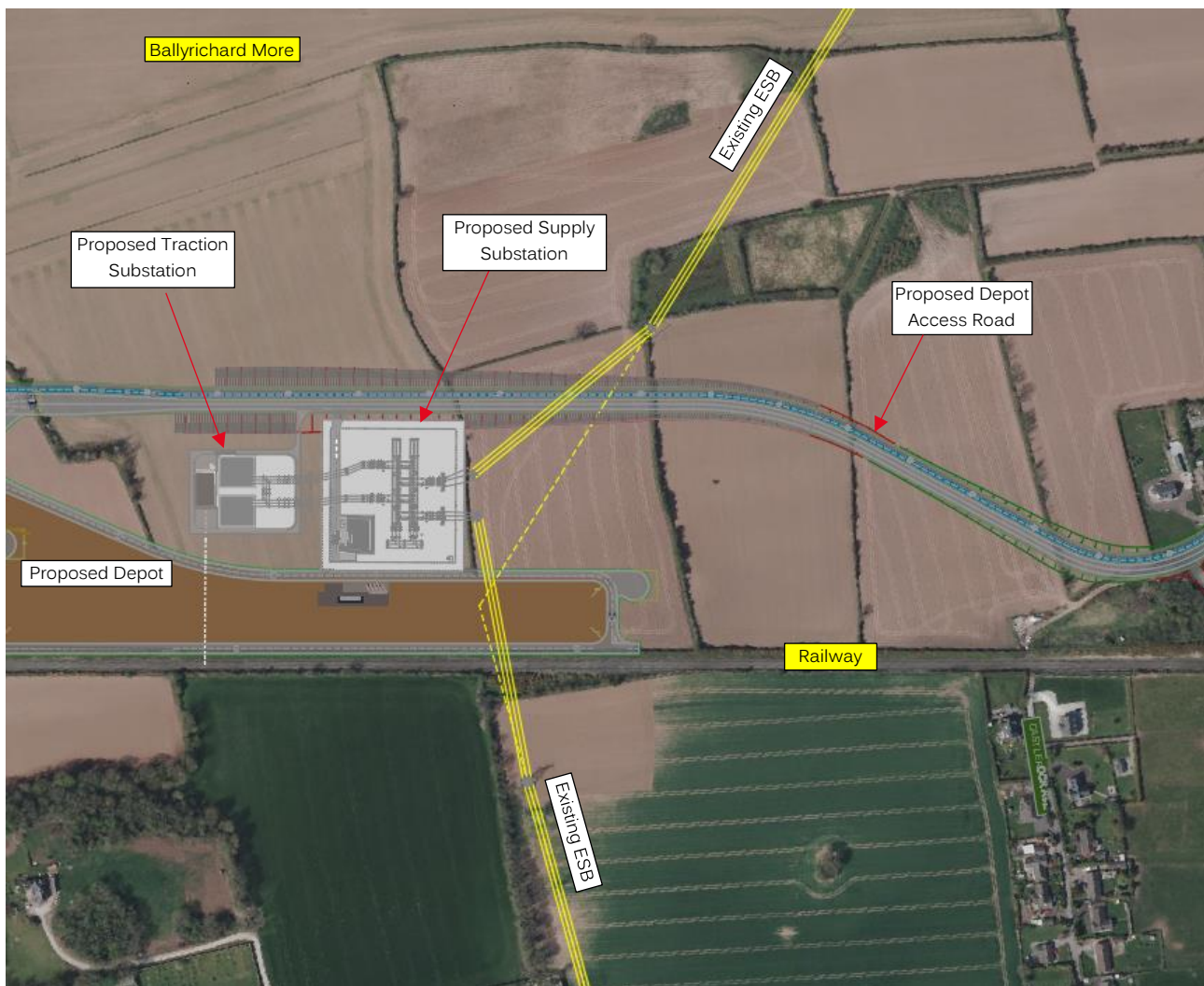


Figure 6-5 Proposed Substation Configuration at Ballyrichard More

It is proposed at Ballyrichard More to draw electrical power from the existing 110kV overhead line just east of the Depot site. The configuration will be similar to that proposed at Ballygibbon comprising a 110kV supply substation and a traction substation. The planned layout is shown in Figure 6-5 above.

## 6.5 Electrification Compound

### 6.5.1. Introduction

An electrification compound will be required as there is currently no electrified railway infrastructure in the area and therefore no existing facility to support the electrified network. The compound will be necessary to facilitate the operation and maintenance of the electrified line.

The preferred location for the electrification compound has been identified on CIÉ lands at the North Esk yard adjacent to Dunkettle Station.

### 6.5.2. Electrification Compound Layout

The works will consist of the construction of a Permanent Maintenance Building and the associated infrastructure. The electrification compound will comprise a two-storey main office building, a storage building, parking facilities for vans and Road Rail Vehicles and a car park.



Figure 6-6 Electrification Compound – General Layout

The main areas of the buildings are:

- Locker rooms and canteen areas for the maintenance staff on the ground floor of the office building.
- Office areas on first floor of the office building.
- Storage area for SET elements: cable drums, catenary parts, spares etc.

The proposed compound location has an existing track access point suitable for road rail vehicle access at the northern area. The carpark has a capacity of 21 vehicles and 20 maintenance vans. Additionally, there is a shelter arrangement for the road rail maintenance vehicles.

## 6.6 Signalling

Signalling systems are essential for the safe and efficient movement of trains. They include trackside signals, interlocking systems, and train protection systems. The current railway network already contains a range of signalling infrastructure, such as underground cables, track-level sensors and switches, and visible signals mounted on posts or gantries that provide instructions to train drivers along the route.

Under Work Package 2 of the CACR Programme, the existing signalling infrastructure is being upgraded and modernised to meet the needs of the planned CACR Programme network. The WP2 infrastructure may require localised modification to accommodate the final configuration of the stations incorporated into WP6.

## 6.7 Electromagnetic Compatibility (EMC)

The proposed project will have to comply with the requirements of the European Directive on Electromagnetic Compatibility (2014/30/EU), and European Standards EN 50121 (Parts 1-5), which address railway Electromagnetic Compatibility (EMC). In addition, all electrical and electronic products placed on the market or taken into service in the European Union must comply with all applicable directives, including the above EMC Directive, the Low Voltage Directive (2014/35/EU) and the Radio Equipment Directive (2014/53/EU). These directives have been transposed into Irish law under the following statutory instruments).

- S.I. No. 145/2016 - European Communities (Electromagnetic Compatibility) Regulations 2016;
- S.I. No. 248/2017 - European Union (Radio Equipment) Regulations 2017.
- S.I. No. 345/2016 - European Union (Low Voltage Electrical Equipment) Regulations 2016.

It is proposed to assess the project's required compliance with the above directives and standards, in addition to guidelines on limiting exposure to electromagnetic fields as published by the International Commission on Non-Ionising Radiation Protection (ICNIRP) and the EU EMF Recommendation (1999/519/EC) when addressing human health effects.

Another important aspect concerning the general public is in relation to implantable medical devices. The immunity levels for these devices have been assessed to 500  $\mu$ T or 0.5 mT. This limit will not be exceeded in public access areas (where the distance is > 2 m from the high current conductors).

Potential impacts from stray currents arising from the operation of the system will also be covered as per European Standard EN 50122-2. Sites with potentially sensitive equipment will be identified as part of the baseline definition through analysis of land use maps, tours of the route and through postal questionnaires to potentially sensitive sites.

## 7. CCE Maintenance Compounds

### 7.1 Introduction

In order to support the maintenance of the CACR rail network, permanent compounds and track access at several locations are required.

The locations identified by IÉ are as follows:

- *Mourneabbey*
- *Monard*
- *Blarney*
- *Water-Rock*
- *New access and compound in the Cobh Area*

Where proposed compounds require acquisition of additional private lands, (outside what is current owned by CIÉ), alternative locations have been explored and assessed to determine the optimum location for the proposed maintenance compounds. As such, various locations along the CACR scheme have been assessed via an options selection process that was undertaken to determine a preferred location for the proposed compound locations and accesses.

These railway civil engineering (CCE) maintenance compounds are designated areas used by Iarnród Éireann (IÉ) infrastructure teams for the storage of materials, maintenance of track equipment, and as bases for staff undertaking work on the railway line. These CCE compounds facilitate infrastructure maintenance, including vegetation control, track replacement, and bridge infrastructure improvements.

### 7.2 Assessment

An options assessment (OA) / multi-criteria analysis (MCA) was carried out as described in Section 4 of this report, in accordance with TAF. The process was developed to facilitate a scoring of each option against a set of defined criteria (see Section 4 of this report). It comprised qualitative and quantitative assessments of the options developed.

To progress the assessment of the maintenance compound options at this phase of the project, certain assumptions have been made, namely:

- New access points to the track will be provided for maintenance where existing access points for compounds cannot be utilised.
- Compounds will be utilised solely for the purpose of maintenance works and related activities.
- Compounds access /access roads will connect to the railway at the rail / station level.
- Compounds follow existing gradient of terrain to maintain natural slopes and drainage.
- Compounds will be secured and fenced.
- Where topography information / 3D models / existing ground levels are not available, cut / fill volumes are estimated at a 2m depth. (This is dependent on the location of the compound option).

### 7.3 Description of Options

The options developed for the various regions considered within the CACR programme range from Do-Minimum, through to Do-Something (Investment) options. The maintenance compound consists of an area of approximately 1250m<sup>2</sup> and generally adopt a 50m length x 25m width unless stated otherwise.

Some existing compounds have been identified within Monard, Blackpool, and Dunkettle locations. These sites have been identified as locations for proposed stations which will incorporate the existing compounds within the overall station footprint. These stations and associated compounds are situated on lands owned by CIÉ or on lands acquired by Iarnród Éireann for the proposed works. As such, these locations will be restricted to an expansion in area for the maintenance compounds except for Dunkettle. This is due to the size of the area considered for the proposed works.

The alignments for the assorted options have been developed / considered using the available topographical information. The options have also considered the proximity to existing access points onto the railway track to accommodate maintenance works as part of the compound requirements.

Based on this information, the existing and proposed options require consideration for the interactions with the planned OHLE works as part of this assessment. Options have considered a minimum horizontal clearance of 6m clearance from the railway tracks for OHLE incorporation, and an overall headroom for new structures over railways where required. To achieve this clearance, the options have been examined, with consideration of the feasibility of achieving the required clearance and thus assessed using the MCA.

It should be noted that there is no “Do Nothing/Do-Minimum” option as it is not considered as an intervention that meets the objectives of the CACR project. This is due to majority of the locations considered lacking existing compounds or access points to the railway. It is also not considered as the maintenance and OHLE clearance shortfall described above mandates that an intervention is required for the following:

→ Do-Something

**Mourne Abbey**

- (three options incorporating proposed compound with tie-ins to existing roads and railway access points also accommodating accesses for wider HGVs manoeuvres)

**Blarney**

- (three options incorporating proposed compound with tie-ins to existing roads and railway access points also accommodating accesses for wider HGVs manoeuvres)

**Monard**

- (one option incorporating proposed compound with tie-ins to existing roads and railway access points also accommodating accesses for wider HGVs manoeuvres)

**Blackpool**

- (one option incorporating proposed compound with tie-ins to existing roads and railway access points also accommodating accesses for wider HGVs manoeuvres)

**Dunkettle**

- (three options incorporating proposed compound with tie-ins to existing roads and railway access points also accommodating accesses for wider HGVs manoeuvres)

**Water-Rock**

- (two options incorporating proposed compound with tie-ins to existing roads and railway access points also accommodating accesses for wider HGVs manoeuvres)

**Cobh Area**

- (four options incorporating proposed compound with tie-ins to existing roads and railway access points also accommodating accesses for wider HGVs manoeuvres)

## 7.4 The Preferred Option

### 7.4.1. Mourne Abbey

The preferred option is to extend the existing compound between Old Mallow Road and the rail further north. Old Mallow Road will serve as the main access onto New Mallow Road for this option. There is an existence entrance that has vehicle access off the Old Mallow Road. This compound option has a configuration of 120m x 10m (length x width) for a total area of 1200m<sup>2</sup> to reach the desired area. This compound option will likely require a retaining wall. This option is 1100m away from the closest existing access point to the railway.

### 7.4.2. Blarney

The preferred option is located to southwest of the railway and is situated to the west of the park and ride. This option is situated within agricultural land and will require a separate access road (off the proposed Station Access Road or off the park and ride). This compound option has a configuration of 50m x 25m (length x width) to achieve the required size of 1250m<sup>2</sup> and would have track access. This option is 160m away from the closest existing access point to the railway.

### 7.4.3. Monard

An existing compound has been identified within Monard. This site has been identified as the location for a proposed station which will incorporate the existing compound within the overall station footprint. This station and associated compound are situated on lands owned by CIÉ or on lands acquired by Iarnród Éireann for the proposed works. This compound is located on agricultural land. The compound will be located north of the platform on the east side of the railway and will be accessible through the park and ride facility. The compound has an area of 1250m<sup>2</sup> and configuration of 50m x 25m (length x width) and will require direct track access. This option is 110m away from the closest existing access point to the railway.

### 7.4.4. Blackpool

An existing compound has been identified within Blackpool. This site has been identified as the location for a proposed station which will incorporate the existing compound within the overall station footprint. This station and associated compound are situated on lands owned by CIÉ. As such, this location will be restricted to an expansion in area for the maintenance compounds as such this location does not require optioneering. The compound will be located northwest of the station car park on the east side of the railway and will be accessible through the parking facility. The compound has an area of 1250m<sup>2</sup> and configuration of 50m x 25m (length x width). This option is situated at the existing access point to the railway.

### 7.4.5 Dunkettle

The preferred option is situated between the railway and the access road to Dunkettle Station Park and Ride facility (south of the railway) on industrial land. The compound is 17.5m x 65m which is not the standard 50m x 25m as it is formatted to fit properly and avoid the existing Eir telecoms in the area. The compound has an area of 1137m<sup>2</sup>. An access off the proposed Dunkettle Access Road to the compound will be required. This option is 10m away from the closest existing access point to the railway.

### 7.4.6 Water- Rock

The preferred option is a 50m x 25m compound south of the railway and the station. The compound has an area of 1250m<sup>2</sup>. Access will be required off Castle Rock Avenue. A temporary access road has been proposed as part of the works for Water-Rock Station to the south of the station. The land is currently in industrial use.

The chainage location is 8+920. This option impacts on existing overhead ESB lines and therefore will require diversion works. This option is 30m away from the closest existing access point to the railway.

#### 7.4.7 Cobh Area

The preferred option is located east of the track and lies between the railway and Oldcourt, south of Marino Point. The compound has an area of 1250m<sup>2</sup> and configuration of 100m x 12.5m (length x width). This option is an existing compound and access already developed. The distance between the railway and road is 17m at the widest point and approximately 12m at its narrowest for this section so the compound will require an extension in length to reach the required compound size. This option is 100m away from the closest existing access point to the railway.

## 8. Existing Structures

### 8.1 OHLE Clearance

In order to facilitate the electrification as part of the CACR scheme, the clear height of existing structures through which Overhead Line Equipment (OHLE) can be installed has been assessed. The CACR study area in which structures were identified is along the rail line from Mallow Station to Cobh Station and from Glounthaune Station to Middleton Station. There are 84 structures crossing over the railway along this route. Based on the required 25kV AC electrification, 34 of these structures were identified as having insufficient clearance for the proposed OHLE. Alterations to the structures are required at approximately 10 of these while track lowering will be undertaken for the remaining 24 structures.

### 8.2 Clearance Assessment

The proposed CACR structures gauge requires a minimum clear height for the proposed 25kV electrification of 4.461m above the rails. This figure is comprised of the sum of the minimum design contact wire height, minimum static clearance and several construction, maintenance and survey tolerances. This gauge has been compared to the existing clearance at every overhead structure along the route. The overhead obstructions where clearance is potentially constrained were identified as all overbridges along the route, as well as any structures which featured overhead elements that may interact with the proposed OHLE, such as station canopies and infrastructure located within the Cork Tunnel such as ventilation guards. The clearance deficit / surplus was determined by overlaying the gauge on existing survey data of each bridge. This level of deficit (where applicable) determines if an intervention is required at each overhead structure.

Details of all overhead structures along the route that do not meet the minimum required clearance requirements are shown in Table 8-1 on the following page. This table includes details of the structure name, location, number, type, its heritage status, relevant local authority and likely intervention measures.

The Project Team identified 34 existing structures that have insufficient clearance for the proposed OHLE. These include 27 existing overbridges, 1 overhead obstruction (tunnel guards), 2 utility pipes and 4 station canopies. Of the 27 overbridges identified, 21 are road bridges and 6 are pedestrian bridges. Of the 21 road bridges, 11 are masonry arch bridges.

Among the 34 structures failing, 21 are listed in the National Inventory of Architectural Heritage (NIAH) and 9 are Recorded Protected Structures (RPS). Consultation with the heritage departments of Cork City Council and Cork County Council is currently underway with regards to the proposed interventions to these structures.

The interventions proposed to facilitate the OHLE generally consists of the following:

- Localised lowering of the railway track underneath the structure. This is not feasible at every location, for example at stations or areas prone to flooding or undermining of nearby foundations.
- 'Jacking' i.e. raising of the existing deck. This is not feasible for every structure such as masonry arch bridges for example.
- Deck reconstruction. This involves partial demolition of the existing bridge and reconstruction with a new deck at a raised level.
- Complete new structure. This may be 'online' at the existing structure location or 'offline' i.e. located away from the existing structure.

### 8.3 Option Selection

To determine the optimum intervention for the structures that have insufficient clearance for the OHLE, Option Selection Reports (OSRs) were undertaken at a number of key structures, the choice of which was usually dictated by the structures strategic or heritage value, by the magnitude of the clearance deficit, or where the choice of intervention was limited. Each option of each OSR was assessed using the single phase Multi Criteria Analysis (MCA) described in Section 4 of this report. This was carried out in accordance with the provisions of the National Transport Authority's (NTA) Transport Appraisal Framework (TAF). The structures having undergone this process is as follows:

- **OBC355 Mourné Abbey Bridge:** A single span masonry arch bridge carrying the L1216. Located in the townland of Mourné Abbey approx. 5km south of Mallow, this bridge is listed in the NIAH and has a significant clearance deficit for the proposed OHLE. The OSR for this bridge has identified track lowering as the preferred intervention.



Figure 8-1 OBC394 Rathpeacon Overbridge currently has a clearance deficit of approx. 300mm

- **OBC394 & OBC395 Rathpeacon Bridges:** Two single span masonry arch bridges located approximately 1km away from each other 5km north of Cork City, these bridges are both listed in the NIAH, carry the L2782 'Old Mallow' road and have significant clearance deficits. The OSRs for these bridges have identified track lowering as the preferred intervention.
- **OBC399 Kilnap Overbridge:** A single span prestressed beam and slab deck carrying an access road on the northern outskirts of Cork City, the OSR for this structure has identified track lowering as the preferred intervention. Though not of heritage significance, this structure has a large enough clearance deficit to warrant an OSR.

- **OBC405 Lower Glanmire Road / N8 Overbridge:** This is a single span wrought iron composite bridge located between Kent Station and the Cork Tunnel. This structure is of both heritage and strategic significance, carrying the busy N8 Lower Glanmire Road. Track lowering is not possible here due to the proximity of the Kent Station platform. The OSR for this structure has identified raising or 'jacking up' the existing deck as the preferred intervention.



Figure 8-2 OBC409 pedestrian bridge on Lower Glanmire Road

- **OBC409 & OBC410 Lower Glanmire Road Footbridges:** Located approx. 1km east of Kent Station, these are cast iron pedestrian bridges supported by masonry abutments. Listed in both the NIAH and RPS, their heritage significance has warranted an OSR despite their relatively small clearance deficits. The preferred intervention for these structures is track lowering.

Table 8-1 Summary of all overhead structures along the CACR study area that require intervention to accommodate the OHLE.

Preliminary Overbridge OHLE Assessment (All routes)									Proposed Intervention for OHLE
Bridge Details									
Bridge ID	Bridge Name	Road Over	Local Authority	Structure Type	Structure Sub Type	Ch.	Protection Status		
							NIAH Listed	RPS Protected	
CK00A	Cork Tunnel Ventilation Guards	Multiple	Cork City Council	Tunnel	Guard	264.46	N	N	Replace
CK01A	Kent Platform Canopy	N/A	IE	Station	Canopy	265.90	Y	Y	Modify
CK02	Cobh Station Canopy	N/A	IE	Station	Canopy	284.42	Y	Y	Modify
CK03	Mallow Platform Canopy	N/A	IE	Station	Canopy	232.41	Y	Y	Modify
CK03A	Mallow Station Canopy	N/A	IE	Station	Canopy	232.41	Y	Y	Modify
OBC343A	Quartermtown Upper Pipe	N/A	Cork County Council	Pipe (Utility)	Pipe (Utilities)	235.18	N	N	Track Lowering
OBC355	Mourne Abbey	L1216	Cork County Council	Overbridge	Masonry Arch	240.00	Y	N	Track Lowering
OBC366	Rathduff Station	L2768	Cork County Council	Overbridge	Masonry Arch	248.14	Y	N	Track Lowering
OBC374	Ballymartin	Undesignated Access Road	Cork County Council	Overbridge	Concrete Arch	252.15	N	N	Track Lowering
OBC388	Station Road Blarney	Station Road	Cork City Council	Overbridge	Masonry Arch	256.49	Y	N	Track Lowering
OBC394	Rathpeacon	L2782	Cork County Council	Overbridge	Masonry Arch	260.01	Y	N	Track Lowering
OBC395	Rathpeacon II	L2782	Cork County Council	Overbridge	Masonry Arch	260.95	Y	N	Track Lowering
OBC398	Kilnap	Undesignated Access Road	Cork City Council	Overbridge	RC Beam & Slab	262.74	N	N	Track Lowering
OBC399	Kilnap II	Undesignated Access Road	Cork City Council	Overbridge	RC Beam & Slab	263.15	N	N	Track Lowering
OBC399A	ESB Footbridge	Undesignated Access Road	Cork City Council	Overbridge	RC Beam & Slab	263.37	N	N	Replace
OBC405	Lower Glanmire Road	N8	TII	Overbridge	Steel-Composite	265.77	Y	N	Raise bridge deck
OBC409	Footbridge O'Regan's	N/A	Cork City Council	Overbridge	Historic Footbridge with Masonry Supports	267.09	Y	Y	Track lowering
OBC409A	O'Regan's (The Foley Bridge)	Bellevue Villas	Cork City Council	Overbridge	Tied Arch	267.08	N	N	Track Lowering
OBC410	Footbridge Murphyn's	N/A	Cork City Council	Overbridge	Historic Footbridge with Masonry Supports	267.20	Y	Y	Track lowering
OBC416	Barry's Bridge	N40 Slip	Cork County Council	Overbridge	RC Beam & Slab	271.32	N	N	Track Lowering
OBC417	Little Island Station Footbridge	N/A	Cork County Council	Overbridge	Historic Footbridge	273.02	Y	N	Raise footbridge
OBC418	Glounthane	Undesignated Access Road	Cork County Council	Overbridge	RC Beam & Slab	274.40	N	N	Track Lowering
OBC421A	Fota Station Footbridge	N/A	Cork County Council	Overbridge	Historic Footbridge	277.29	Y	N	Raise footbridge
OBC422A	NET Bridge	Undesignated Access Road	Cork County Council	Overbridge	RC Beam & Slab	279.10	N	N	Track Lowering
OBC426	Carrigaloe Station Footbridge	N/A	Cork County Council	Overbridge	Historic Footbridge	280.42	Y	N	Raise footbridge
OBC432	R624 Overbridge	R624	Cork County Council	Overbridge	RC Beam & Slab	282.88	N	N	Track lowering
OBC433	Gasworks Road Bridge	Pebble Beach	Cork County Council	Overbridge	Masonry Arch	283.05	Y	Y	Track lowering
OBC435A	Pipe	N/A	Cork County Council	Pipe (Utility)	Pipe (Utilities)	283.21	N	N	Track Lowering
OBC436	Cobh	Whitepoint Drive	Cork County Council	Overbridge	Masonry Arch	283.49	Y	Y	Track lowering
OBC437	Footbridge	N/A	Cork County Council	Overbridge	Historic Footbridge with Masonry Supports	283.70	Y	Y	Track lowering
OBY2	Maly's Bridge, Killacloyne	Killahora	Cork County Council	Overbridge	Masonry Arch	1.97	Y	N	Track lowering
OBY4	Wise's Bridge	Maple Lane	Cork County Council	Overbridge	Masonry Arch	3.24	Y	N	Track Lowering
OBY6	Carrigtwohill Heritage Bridge	Station Road	Cork County Council	Overbridge	Masonry Arch	4.28	Y	N	Track Lowering
OBY8	Ballyadam House	Undesignated Access Road	Cork County Council	Overbridge	Masonry Arch	6.50	N	N	Track Lowering

- **OBC432 Overbridge:** A single span beam and slab bridge carrying the R624, this bridge is located just south of Rushbrooke Station. Though not of significant heritage value, its importance in carrying a busy public road as well as the extent of its clearance deficit has warranted an OSR. The preferred intervention for this structure is track lowering.
- **OBC433 & OBC436 Overbridges:** Two single span masonry arch bridges located in close proximity to each other just west of Cobh Station, these bridges are of significant heritage value, being listed in both the NIAH and RPS. Track lowering has been identified as the preferred intervention for both overbridges.
- **OBC437 Footbridge:** Located west of Cobh Station, OBC437 is a two span cast iron truss pedestrian bridge. This bridge is of significant heritage value, listed in both the NIAH and RPS. The preferred intervention for OBC437 is track lowering.
- **OBY2 Malys Overbridge:** A single span masonry arch bridge carrying a local access road over the Middleton line, this bridge is located 2km west of Carrigtwohill Station. Its NIAH heritage status, magnitude of clearance deficit and road value means that it required an OSR. The OSR for this bridge has identified track lowering as the preferred intervention.



Figure 8-3 OBC405 N8 / Lower Glanmire Road Bridge is located between Kent Station and the Cork Tunnel

## 8.4 Station Footbridges

There are three pedestrian bridges of heritage value located at stations that have insufficient clearance for the proposed OHLE. They are:



Figure 8-4 Carrigaloe Station Footbridge

- OBC417 Little Island Station Footbridge.
- OBC421A Fota Station Footbridge.
- OBC426 Carrigaloe Station Footbridge.

Options for intervention at these bridges are limited. Track lowering is not possible due to the need to maintain the level of the existing platforms over the rails. Consultation is ongoing with the heritage department of Cork County Council and it has been decided to try and raise these bridges to the required height for OHLE whilst retaining the structures in their current position.

## 8.5 Station Canopies

Other structures that currently do not meet the required OHLE clearance include the station canopies at Mallow, Cobh and Kent Stations. These are all protected structures with significant clearance deficits. Similar to the station footbridges, options for intervention are limited. Track lowering is not possible due to the need to maintain the level of the existing platforms over the rails. Consultation is ongoing with the heritage department of Cork City Council and County Council and it has been decided to try and modify the canopies by curtailing the protruding ends of them that intersect with the OHLE gauge. If this is not possible, then an alternative option will be to raise them on new plinths. Either of these options will allow them to retain most of their existing form and function whilst retaining them in their original position, thus protecting their heritage value.



Figure 8-5 Kent Station Canopy

## 8.6 Parapets

The installation of OHLE along the railway line means that the structures spanning the railway must adhere to a new set of safety requirements aimed at reducing the risk of members of the public accidentally coming into direct contact with the lines. Irish Rail standard CCE-TMS-410 states that:

- Parapets shall be a minimum of 1.8m high with no handholds, and;
- Parapets must have a 45 degree symmetrical steeply coping.

These requirements are intended to minimise the risk of an individual scaling the parapets. In addition to the above, CCE-TMS-410 states that parapets on footbridges, station buildings and access walkways are either solid or perforated. For the CACR scheme, it is a requirement that the lower 1.2m of these parapets shall be solid, with the remaining 0.6m perforated, with a minimum perforation rating of IP2X.

There are currently estimated to be approx. 44 bridges that will need to have their parapets upgraded to meet the above requirements. Consultation is ongoing with the heritage departments of Cork City Council and Cork County Council in relation to modifying parapets at structures with heritage value. However, they can be broadly categorised as follows:

- Station footbridges at OBC417 (Little Island Station), OBC421A (Fota Station), OBC426 (Carrigaloe) and OBC431 (Rushbrooke): Current parapets are estimated to be approx. 1.25m high and unacceptably open i.e. too highly perforated. These will likely be retrofitted with 1.8m high 'architectural' steel panels, positioned on the inside face of (and structurally separate from) the existing parapets. These will extend down the stairs also.
- Cobh footbridges OBC437 & OBC438: Current parapets are estimated to be approx. 1.2m high and unacceptably open. Similar to the station footbridges, these will likely be retrofitted with 1.8m high 'architectural' steel panels, positioned on the inside face of (and structurally separate from) the existing parapets. As these are long spanning structures, the parapet requirements do not need to extend over the structures full length, as CCE-TMS-410 states that the parapet requirements extend for a distance of at least 1.5m from the cess rails.

- Lower Glanmire Road Footbridges OBC409, OBC410 & OBC411: Current parapets are estimated to be between 1m high and 1.4m high and unacceptably open. These will likely be retrofitted with 1.8m 'architectural' high steel panels, positioned on the inside face of (and structurally separate from) the existing parapets. These will extend down the stairs also.
- Masonry Arch Bridges. There are 14 masonry arch bridges along the route, 10 of which are likely to need their parapets raised to 1.8m. In order to preserve the heritage nature of these bridges, they will likely be retrofitted with 1.8m high 'architectural' steel panels, positioned on the inside face of (and structurally separate from) the existing parapets. In the event that this leads to an unacceptable reduction in the adjacent footpath width, the alternative will be to mount these panels on top of the existing parapet in order to make up the total 1.8m required height.
- OBC405 and OBC409A. Though the existing parapets at these two bridges are already 1.8m high, they are entirely perforated. It is proposed either to: (a) attach solid panels to the inside face of the existing parapets for the bottom 1.2m height, or; (b) replace the entire existing parapets with new ones.
- Remaining road overbridges: The remaining non-compliant bridge parapets generally consist of either masonry blockwork or concrete walls. It is proposed that these be retrofitted with steel panels to make up the remaining required height. An example of this is shown in Figure 8-6 above.



Figure 8-6 Example of Steel or GRP extension to a parapet

A full list of bridges likely requiring parapets to be upgraded is shown in Table 8-2 below.

Table 8-2 Summary of all overbridges likely to require their parapets to be upgraded.

Bridge Details								Existing Parapet	Proposed Intervention
Bridge ID	Structure Name	Traffic Type	Road Type	Structure Type	Local Authority	Crossing Over / Under	NIAH / RPS Listed	Composition	
OBC343	Pike Bridge	Vehicle	Local Road	Masonry Arch	Cork County Council	Undesignated Access Road	N	Masonry	Retrofit 'architectural' parapet to inside face.
OBC344	R638 Overbridge	Vehicle	Regional Road	RC Beam & Slab	Cork County Council	R638	N	Reinforced Concrete	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBC347A	Farm Bridge	Vehicle	Local Road	RC Beam & Slab	Cork County Council	Undesignated Access Road	N	Steel	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBC355	Mourne Abbey	Vehicle	Local Road	Masonry Arch	Cork County Council	L1216	Y	Masonry	Retrofit 'architectural' parapet to inside face.
OBC359	Burnfort	Vehicle	Local Road	Masonry Arch	Cork County Council	L2770	N	Masonry	Retrofit 'architectural' parapet to inside face.
OBC365A	Level Crossing Project	Vehicle	N/A	RC Beam & Slab	Cork County Council	N/A	N	Steel	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBC366	Rathduff Station	Vehicle	Local Road	Masonry Arch	Cork County Council	L2768	Y	Masonry	Retrofit 'architectural' parapet to inside face.
OBC369	Glanam	Vehicle	Local Road	RC Beam & Slab	Cork County Council	Undesignated Access Road	N	Masonry	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBC369A	N20 Overbridge	Vehicle	National Road	RC Beam & Slab	TII	N20	N	Masonry	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBC374	Ballymartin	Vehicle	Local Road	Concrete Arch	Cork County Council	Undesignated Access Road	N	Reinforced Concrete	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBC375	Ballynarah (Farm Overpass)	Vehicle	Local Road	Masonry Arch	Cork County Council	Undesignated Access Road	N	Steel	Retrofit 'architectural' parapet to inside face.
OBC382	Ballygibbon	Vehicle	Local Road	RC Beam & Slab	Cork County Council	Undesignated Access Road	N	Masonry	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBC386	Ardmadane (Farm Overpass)	Vehicle	Local Road	Concrete Arch	Cork City Council	Undesignated Access Road	N	Reinforced Concrete	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBC388	Station Road Blarney	Vehicle	Local Road	Masonry Arch	Cork City Council	Station Road	Y	Masonry	Retrofit 'architectural' parapet to inside face.
OBC392	Monard (Farm Overpass)	Vehicle	Local Road	RC Beam & Slab	Cork County Council	Undesignated Access Road	N	Reinforced Concrete	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBC394	Rathpeacon	Vehicle	Local Road	Masonry Arch	Cork County Council	L2782	Y	Masonry	Retrofit 'architectural' parapet to inside face.
OBC395	Rathpeacon II	Vehicle	Local Road	Masonry Arch	Cork County Council	L2782	Y	Masonry	Retrofit 'architectural' parapet to inside face.
OBC398	Kilnap	Vehicle	Local Road	RC Beam & Slab	Cork City Council	Undesignated Access Road	N	Masonry	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBC399	Kilnap II	Vehicle	Local Road	RC Beam & Slab	Cork City Council	Undesignated Access Road	N	Masonry	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBC404A	R635 North Ring Road Overbridge	Vehicle	Regional Road	RC Beam & Slab	Cork City Council	R635	N	Masonry	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBC405	Lower Glanmire Road	Vehicle	National Road	Steel-Composite	TII	N8	Y	Steel	Mesh in place already. Replace bottom 1.2m with solid panel and remainder IP2X.
OBC408	Footbridge (Beale's Hill)	Pedestrian	N/A	RC Beam & Slab	Cork City Council	N/A	N	Concrete Blockwork	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBC409A	O'Regan's (The Foley Bridge)	Vehicle	Local Road	Tied Arch	Cork City Council	Bellevue Villas	N	Steel	Mesh in place already. Replace bottom 1.2m with solid panel and remainder IP2X.
OBC409	Footbridge O'Regans	Pedestrian	N/A	Historic Footbridge with Masonry Supports	Cork City Council	N/A	Y	Steel	Retrofit 'architectural' parapet to inside face.
OBC410	Footbridge Murphyn's	Pedestrian	N/A	Historic Footbridge with Masonry Supports	Cork City Council	N/A	Y	Steel	Retrofit 'architectural' parapet to inside face.
OBC411	Woodhill Terrace Footbridge	Pedestrian	N/A	Historic Footbridge with Masonry Supports	Cork City Council	N/A	Y	Steel	Retrofit 'architectural' parapet to inside face.
OBC412	Tivoli Public Road Bridge	Vehicle	National Road	Steel-Composite	TII	N8	N	Steel	Replace with new parapet.
OBC417	Little Island Station Footbridge	Pedestrian	N/A	Historic Footbridge	Cork County Council	N/A	Y	Steel	Retrofit 'architectural' parapet to inside face.
OBC418	Glounthane	Vehicle	Local Road	RC Beam & Slab	Cork County Council	Undesignated Access Road	N	Reinforced Concrete	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBC420A	N25 Overbridge	Vehicle	National Road	RC Beam & Slab	TII	N25	N	Reinforced Concrete	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBC421A	Fota Station Footbridge	Pedestrian	N/A	Historic Footbridge	Cork County Council	N/A	Y	Steel	Retrofit 'architectural' parapet to inside face.
OBC424A	Marino Point	Vehicle	Local Road	RC Beam & Slab	Cork County Council	Old Court	N	Steel	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBC426	Carrigaloe Station Footbridge	Pedestrian	N/A	Historic Footbridge	Cork County Council	N/A	Y	Steel	Retrofit 'architectural' parapet to inside face.
OBC431	Rushbrooke Station Footbridge	Pedestrian	N/A	Historic Footbridge	Cork County Council	N/A	Y	Steel	Retrofit 'architectural' parapet to inside face.
OBC432	R624 Overbridge	Vehicle	Regional Road	RC Beam & Slab	Cork County Council	R624	N	Reinforced Concrete	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBC433	Gasworks Road Bridge	Vehicle	Local Road	Masonry Arch	Cork County Council	Pebble Beach	Y	Masonry	Retrofit 'architectural' parapet to inside face.
OBC435	Cobh	Vehicle	Local Road	RC Beam & Slab	Cork County Council	Undesignated Access Road	N	Reinforced Concrete	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBC436	Cobh	Vehicle	Local Road	Masonry Arch	Cork County Council	Whitepoint Drive	Y	Masonry	Retrofit 'architectural' parapet to inside face.
OBC437	Footbridge	Pedestrian	N/A	Historic Footbridge with Masonry Supports	Cork County Council	N/A	Y	Steel	Retrofit 'architectural' parapet to inside face.
OBC438	Cobh Station Footbridge	Pedestrian	N/A	Historic Footbridge with Masonry Supports	Cork County Council	N/A	Y	Steel	Retrofit 'architectural' parapet to inside face.
OBY1	Killacloyne Bridge	Vehicle	Local Road	RC Beam & Slab	Cork County Council	L3004	N	Reinforced Concrete	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBY5D	Carrigtwohill Station Footbridge	Pedestrian	N/A	Steel	Cork County Council	N/A	N	Steel	Mesh in place already. Replace bottom 1.2m with solid panel and remainder IP2X.
OBY8B	Waterrock	Vehicle	Local Road	RC Beam & Slab	Cork County Council	Undesignated Access Road	N	Reinforced Concrete	Extend with steel panel. Bottom 1.2m to be solid. Remainder IP2X.
OBY13	Midleton Station Footbridge	Pedestrian	N/A	Steel	Cork County Council	N/A	N	Steel	Mesh in place already. Replace bottom 1.2m with solid panel and remainder IP2X.

## 8.7 Viaduct Modifications

The proposed OHLE requires support gantries/masts to be constructed along the entire railway route for the CACR scheme. As the approx. spacing between the gantries is between 40m and 60m, the length of some underbridges / viaducts on the route will likely result in some of these gantries being connected to the existing viaduct / underbridge structures. There are six underbridges/ viaducts that will likely be impacted by the proposed new OHLE masts and associated assembly. The structures impacted are:

- Blackwater Viaduct (UBC341), a 159.51m long 10-span steel girder plate bridge located on the Mallow to Cobh line near Mallow town and crossing the River Blackwater alongside the New Mallow Road (N20).
- Monard Viaduct (UBC391), a 107m long 7-span brickwork masonry bridge located on the Mallow to Cobh line crossing the Blarney River.
- Kilnap Viaduct (UBC397), a 123m long 8 span stonework masonry bridge located on the Mallow to Cobh line in Mallow crossing the Glennamought River alongside the Old Mallow Road.
- Railway Bridge (UBC406), a 35.97m long single span steel truss bridge located on the Kent to Little Island line in Cork city crossing the Lower Glanmire Road (N8).
- Railway Viaduct (UBC421), a 127.2m long 8 span steel girder plate bridge located on the Glounthaune to Cobh line crossing the Slatty Water. The viaduct connects Harpers Island with Fota Island.
- Railway Viaduct (UBC422), a 57.60m long 5 span steel truss bridge located on the Glounthaune to Cobh line crossing the Slatty Water connecting Fota Island with Marino Island, overlooking towards Lough Mahon.

These existing structures will be inspected / assessed for suitable locations to connect the masts and gantries. In order to minimise additional load on the bridge, connections to the supporting piers / columns will be prioritised where possible. Following assessment of the existing structures and identification of suitable locations for the masts, bespoke connections will be designed based on the structures condition



Figure 8-7 Photo of a typical OHLE system assembled on an existing stone railway bridge in Slovenia

and form. Given the length and number of spans highlighted in the above bridges, it is envisaged that between 2 to 4 masts / gantries will be attached to each of the 6 bridges above with the exception of UBC406, the length of which it may be possible to construct the masts / gantries away from the bridge. However, UBC406 does have cross beams which may need to be modified to accommodate the OHLE wires. An example of an OHLE system connected to an existing stone viaduct is shown in Figure 8-7.

## 9. Level Crossing

The CACR Project primarily seeks to enhance train frequencies and boost passenger capacity on the Cork Railway Network. Level crossings significantly hinder railway operations and present a safety risk to train operations and the public which requires active and ongoing management by Iarnród Éireann.

There are five existing level crossings on the CACR network. Three of the crossings are on the Mallow to Cobh line and two are on the Glounthaune to Midleton branch line. They are as follows:

- XC229 Buckley, un-used accommodation level crossing;
- XC238 Myrtle Hill, CCTV controlled level crossing;
- XC249 Fota Estate, user worked level crossing;
- XY009 Water-Rock CCTV controlled level crossing;
- XY012 Mill Road, R626 CCTV controlled level crossing.

As part of the project, the appropriateness of removal of level crossings has been examined. In preparation of this report the following are noted:

- Planned train frequency – For CACR, a nominal 10 minute frequency of trains is planned in both directions is proposed across the network. Trains on the existing DART network operate at this nominal frequency through level crossings on the Dublin to Rosslare line today. Between Kent Station and Glounthaune Station, the planned frequency of trains increases to a nominal frequency of 5 trains per hour per direction (24 trains pass the level crossing in the peak hour). It is considered impracticable to operate level crossings safely with such a high train frequency. XC238 Myrtle Hill level crossing is located along this section of railway. It is consequently proposed to close XC238 as part of the project. All other level crossings are located on lower frequency parts of the network.
- CCTV control for level crossings is considered the safest mechanism for operation of level crossings in use in Ireland today. It is typically implemented on level crossings on public roads and where road or rail traffic intensities are high. Three of the level crossings on the existing CACR network are under CCTV control. The total periods in the peak hours during which the level crossings are closed to road traffic is summarised below:
  - XC238 Myrtle Hill, closed to road traffic for 52 minutes in the peak hours;
  - XY009 Water-Rock, closed to road traffic for 31minutes, 12 seconds in the peak hours;
  - XY012 Mill Road, closed to road traffic for 30 minutes in the peak hours.

The potential for closure of level crossings on the network is considered on an individual basis with the decision dependent on issues such as:

- The accident history of associated with the level crossing;
- The planned train frequency;
- The levels of road traffic using the level crossing;
- The safety of the road approaches to the level crossing;
- The planned peak hourly closure period users;
- The operational configuration of the level crossing;
- The practicality of providing replacement access for users of the level crossing.

Each of the level crossings have been examined in respect of the appropriate treatment of them as part of the CACR Programme. The following treatments are proposed in each instance.

- XC229 Buckley crossing to be formally closed

- XC238 Myrtle Hill, a CCTV controlled level crossing – to be formally closed and new access to Myrtle Hill Terrace to be provided from OBC409A O'Regan's Bridge;
- XC249 Fota Estate, to be maintained;
- XY009 Water-Rock CCTV controlled level crossing to be maintained;
- XY012 Mill Road, R626 CCTV level crossing to be maintained.

Consideration of each of the level crossings summarised below.

### 9.1. XC229 Buckley's Level Crossing



Figure 9-1 XC229 Buckley's Level Crossing

This level crossing is an accommodation type crossing which is no longer in use. It is proposed to remove this crossing from the network formally as part of the CACR Programme.

### 9.2. XC238 Myrtle Hill Level Crossing



Figure 9-2 XC238 Myrtle Hill Level Crossing



### 9.3. XC249 Fota Estate Level Crossing



Figure 9-4 XC249 Fota Estate Level Crossing

This crossing is an uncontrolled crossing into Fota Castle and estate. It is located immediately north of Fota station. The crossing serves a road onto a peninsula which is for private/residential use only.

The site is severely constrained in terms of opportunity to provide an alternative access or to provide a grade separation of the crossing without impacts to the adjacent station, wildlife park and estate grounds. It is therefore proposed that this crossing remains open. Measures local to the level crossing will be examined as part of design development to enhance safety in use.

### 9.4. XY009 Water-Rock Level Crossing



Figure 9-5 XY009 Water Rock Level Crossing

This is a CCTV controlled level crossing located west of the proposed Water-Rock train station. A twin track configuration is being implemented as part of Glounthaune to Midleton Twin Track construction contract on site at the time of preparation of this report. An updated risk assessment has been completed by IÉ and the risk to the exposed groups has been assessed as increasing from Very Low to Low as a result of the proposed increase in train passings (assuming 150 train passings per day). It is proposed to retain the level crossing in its current form.

#### 9.5. XY012 Mill Road, R626 Level Crossing

This is an automatic CCTV level crossing located to the west of Midleton station on an existing section of double track.



Figure 9-6 XY012 Mill Road Level Crossing

Based on the assessment of planned road closure times at this level crossing is proposed it be retained in its current operational configuration. An updated risk assessment has been completed by IÉ and the risk to the exposed groups, based on future frequency, has been assessed as low as a result of the proposed increase in train passings (assuming 150 train passings per day). It is also considered that no significant alteration is necessary to the road facilities at the level crossing.

## 10. Permanent Way

Permanent way is the railway terminology that refers to the track and its components. It includes rails, sleepers, ballast and special trackwork such as the points and crossings, which permit trains to switch from one track to another. The route included in the project is from Mallow to Cobh (WP4), with the branch from Glounthaune to Midleton having already been designed by others (WP3).

There are specific requirements for the track to deliver the CACR Programme:

- Straight, level track through the new platforms (subject to site constraints, where the requirement may have to be relaxed but remain within the design limits allowed).
- Track realignment through existing stations, where required to improve sub-standard alignments. This is often carried out in conjunction with copers adjustments – where the coping stones at the platform edge are adjusted to ensure that the stepping distance and clearance between the train and tracks are within the correct tolerances.
- Additional trackwork – crossovers, sidings, passing loops (Rathduff) and platform lines (Mallow, Ballynoe and Cobh) – that are required to enable the necessary train movements. The new trackwork also forms part of the stabling strategy, in conjunction with the new Depot, to accommodate the new fleet.
- Rail corridor widening, where necessary, to install new trackwork and also provide space for new overhead electrical structures.
- Track lowering, in conjunction with bridge reconstructions, to provide the necessary vertical clearances for the installation of overhead line electrification equipment throughout the network.
- Provision of a new Depot in order to stable and maintain the new fleet of trains. This is described in detail in the relevant section of the report. Suffice to say it includes the provision of new P&C to permit trains to enter/exit the Depot from the Up and Down lines at the proposed Ballyrichard More location; this section of track is part of the WP3 design (Glounthaune to Midleton twin-tracking).

A key aspect of the permanent way is where intervention is required, e.g., track lowering at a bridge location, as it has knock on issues extending beyond the area of intervention of the bridge location itself, with implications for track alignment, road levels on adjoining roads, drainage, underline structures, ground formation and other structures and bridges.

Interfaces with existing utilities, boundary treatments (including new retaining walls), drainage works, vegetation management and other ancillary works will be required along the length of the Project. This will be particularly impactful where track lowering is undertaken and where the existing track corridor needs to be widened to accommodate new trackwork (passing loops, sidings) and new OHLE structures.

The following are the locations where new trackwork will be provided:

- Mallow Station – new platform tracks and turnout connections
- Rathduff (located between Mallow and Blarney) – new passing loop and crossovers, to facilitate passing moves in support of the Operational Requirements introduced for the proposed TSS
- Blarney Station (new) – new Platform 3 loop line and associated cross overs
- Ballyrichard More – new turnouts and crossovers to access new Depot
- Cobh – new platform track and crossover connection

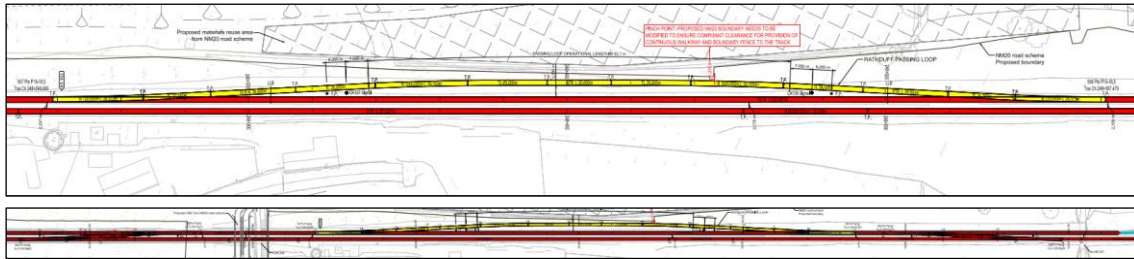


Figure 10-1 Rathduff Passing Loop and Crossovers

Where other new stations are provided along the route then the existing trackwork is assessed for its horizontal and vertical alignment, as ideally it should be straight and on level gradient for these locations:

- Monard
- Blackpool
- Tivoli
- Dunkettle
- Ballynoe

The two possible outcomes at each location are to either realign the existing track (dependent on the magnitude of realignment that is required and whether the track is in sufficiently good condition to do so) or renew the track.

Note that the WP3 trackwork (, currently under construction), between Glounthaune and Midleton, accommodates the new stations proposed at Carrigtwohill West and Water-Rock.

## 11. Stations

### 11.1 Introduction

The CACR Programme provides for eight new stations and upgrades to existing stations to support the growth of the Greater Cork Area, facilitate an increased frequency commuter rail service and decarbonise the Cork rail service. As discussed in Section 3.3., two of these stations (Blackpool and Dunkettle) have been progressed via separate planning applications.

The following enhancements to the existing network are proposed in this element of the CACR Programme:

- Upgrade works at Mallow Station;
- Upgrades to the platform area at Cobh Station;
- New station at Blarney;
- New station at Monard;
- New Station at Tivoli.
- New station at Ballynoe.
- New station at Carrigtwohill West;
- New station at Water-Rock.

In addition, works have recently been completed at Kent Station in Work Package 1 to provide a new through platform to facilitate through running services from Mallow to Cobh / Midleton. This will support the development of the commuter network with increased frequency and capacity across the CACR.

### 11.2 New Stations

The new stations are to be provided to increase access to the CACR commuter rail services, the primary objective of which is 'Support compact urban growth and contribute to reducing transport congestion and emissions in the CMA by enhancing the existing heavy rail system, providing a sustainable, safe, efficient, and integrated public transport service that will improve the attractiveness of rail services'.

The stations design development has embraced these principles in the implementation of external accessibility, enhancement of transport interchange opportunities and landscape integration.

#### 11.2.1 Station Design Principles

All new stations will be provided with a standard and consistent design to provide a specific identity and uniformity across all of the new stations allowing ease of use by passengers. An artistic impression of the proposed stations is provided in Figure 11-1 below.

The standardised design will provide a practical and clear layout to facilitate wayfinding and decision making to optimise the passenger experience. All circulation areas will be sized to provide a safe and comfortable experience for passengers moving through the stations.



Figure 11-1 Artistic impression of new CACR stations

The standard station layout will include platforms either side the railway line with movement between platforms being facilitated by a footbridge or underpass where applicable with accessible steps and lifts. Refer to Figure 11-2 below.

The new station platforms will be 4m wide and 94m in length and include provision for sheltered waiting areas. The footbridge will generally be located at the centre of the platforms unless desire lines at specific stations necessitate a different orientation. The station entrance areas will include stairways and accessible lift access, new passenger information displays and accessible ticket machines with a view to reducing clutter on the platform areas. Main circulation areas such as the station entrance, lift waiting areas, stairs and footbridges will be provided with covers to provide shelter from the weather.

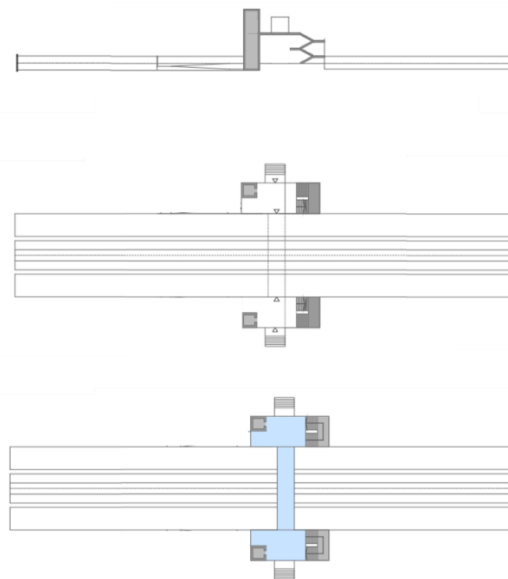


Figure 11-2 Station scheme

The standardisation will provide a recognition of corporate identity in the design, materiality, finishes, signage, and colours. The designs will have clear identity which will be integrated according to context, heritage references and existing facilities relevant to the location.

While the station layouts will be standardised, two distinct material palettes have been selected to reflect the differing built heritage between the Mallow–Kent line and the Kent–Cobh/Midleton lines. The Mallow–Kent line predates the railway lines east of Kent and is distinguished by its use of cut masonry stone in station buildings. In contrast, the built heritage of the stations to the east is generally characterised by red brick architecture, including buildings and associated infrastructure such as footbridges.

To reflect the differing built heritage, the two station finish palettes proposed under the CACR programme are illustrated in Figure 11-3. Stations on the Mallow–Kent line will use a grey/silver façade or cladding to blend with the existing stone-built infrastructure. For stations east of Kent, a red-brick finish is proposed. In both cases, the specific materials will be confirmed during later design stages.”



Materiality – Mallow to Kent



Materiality – Kent east

Figure 11-3 Standard materiality of new stations.

### 11.2.2 Accessibility

A key design principle for the new stations is ensuring universal access of all passengers in accordance with current guidance, standards and in consultation with disability user groups. The design will facilitate universal access for the elderly, mobility and visually impaired and disabled through:

- The provision of ramps, stairs including handrails and lifts strategically located to allow ease of access.
- Car parking, vehicles drop-off near the station’s entrances.
- Tactile paving to direct and warn visually impaired users.
- Contrasting colours and textures where applicable.
- Flush thresholds between platform and train interfaces reducing the gap between the platform and train entrance.
- Integration of signs and audible information, electronic machines interfaces, communication devices.

The proposed stairs and footbridges will be a minimum of 3m wide with a minimum clear width of 1.6m between handrails. Steps and handrails will be provided with colour contrasts and braille and tactile as required. The proposed lifts will be IÉ standard specifications large enough for standard wheelchair users to perform a turn within the lift car.

### 11.3 Parking Facilities

CACR will provide parking facilities, offering secure, managed parking to enable motorists, cyclists, and pedestrians to access the CACR rail network for onward travel to Cork City Centre and the wider national rail network. These facilities will supplement the parking already available at existing stations.

The parking provision is grouped into two facility types: Strategic Park and Ride (SPR) and Local Park and Ride (LPR). The Strategic Park and Ride sites at the proposed Blarney and Dunkettle Stations will provide large-capacity parking at major multimodal interchanges, supporting modal shift from longer-distance car trips to the CACR network at the earliest opportunity. Local Park and Ride facilities will be smaller in scale and serve their immediate catchment areas.

Strategic Park and Ride sites will typically provide 600 spaces, including mobility-impaired, age friendly and family parking close to station entrances, standard car parking, motorcycle spaces, and bicycle parking with secure lockers. Charging facilities for electric cars and e-bikes will also be included.

The capacity of Local Park and Ride facilities will vary depending on location and function.

### 11.4 Mallow Station

Mallow Station is located to the west of Mallow Town, north to the River Blackwater. The station is bound by the N20 to the East and the N72 to the south. The main station building is located on the east side of the railway tracks in the southern section of the station, with access via the N20.

Mallow Station serves Intercity and Regional train services throughout the day on the main Dublin to Cork line. To maintain operational flexibility and ensure a safe operation of the rail network, it is necessary to provide a new platform and footbridge at Mallow Station to cater for additional passengers which will allow the CACR service to dwell for a period at Mallow without impacting the mainline Intercity and Regional services.

Car parking is provided to the east and north of the station building with access to and from the N20. Refer to Figure 11-4 below.

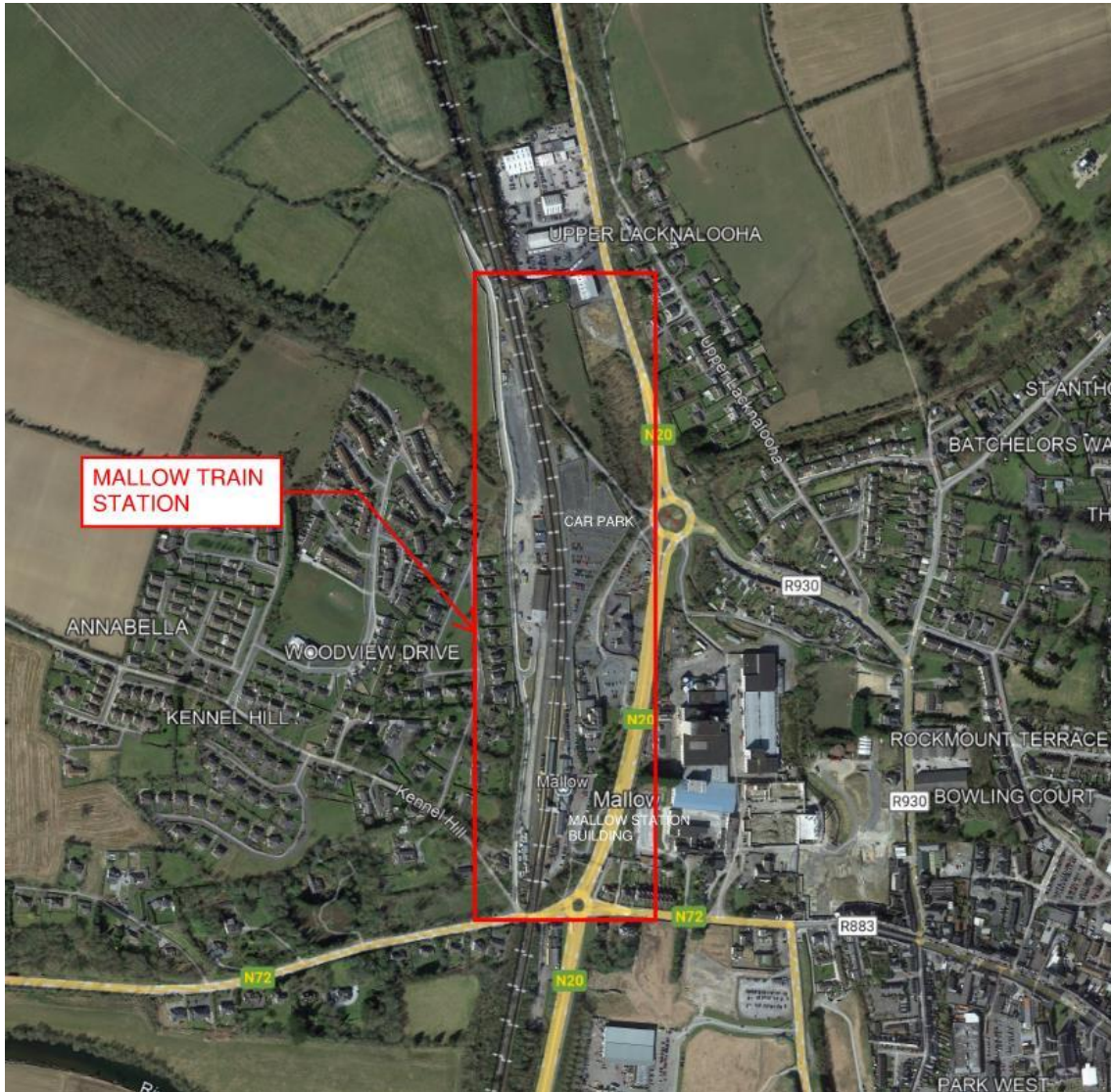


Figure 11-4 Existing Mallow Station

The station currently has three platforms: Platform 1 (P1), a side platform adjacent to the station building, and Platforms 2 and 3 (P2 and P3), which form an island platform to the west. An existing footbridge with covered stairs and lifts at each end provide access to the platforms.

To facilitate the operation of the station, access and interchange between different train services stopping at Mallow (Intercity Kent-Dublin; Tralee-Mallow; CACR services), the CACR project proposes to provide a new island platform (Platforms P4 and P5) and new pedestrian footbridge with stairs and lifts which will connect all platforms. Please refer to Figure 11-5 below.

The current access to Mallow Station is located to the south of the main station building. A new access point is under consideration to the north (near the proposed bridge on Platform 1 (P1)) to include stairs and a lift for universal access. A new station entrance will be provided at the western boundary on the adjacent link road off the N72 at Kennel Hill to increase ease of access for passengers arriving from the west. The proposal will include a set-down area, station entrance with a lift and stairs to provide access to the footbridge. The new station design also includes provision for welfare facilities (public toilets).

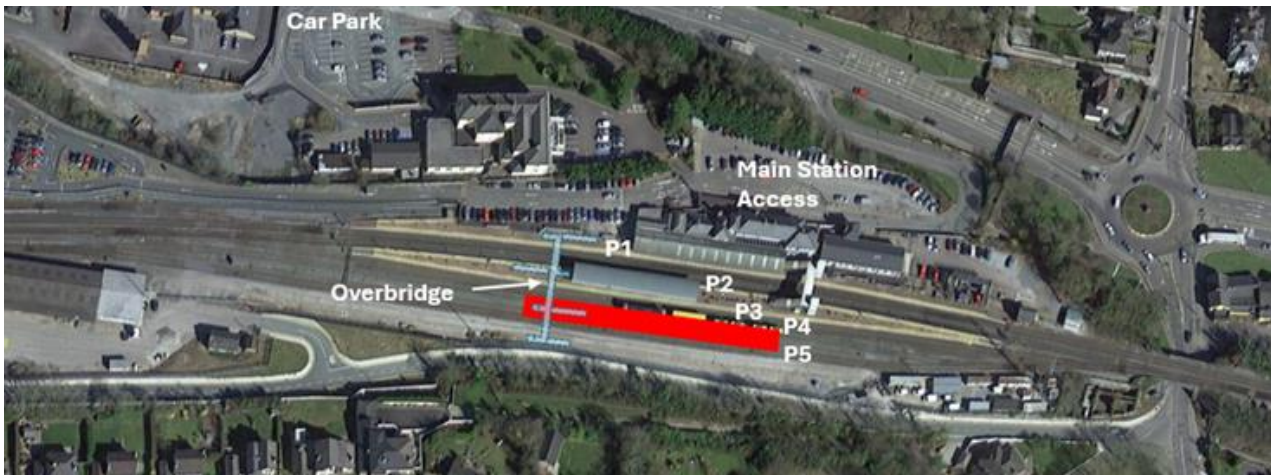


Figure 11-5 Mallow Proposed Station Upgrade

## 11.5 Cobh Station

Like Mallow, Cobh Station will be a terminus (end of line / service) station for the future proposed CACR service. Cobh Station currently operates with a single platform, which limits the station's operational flexibility. To provide additional capacity and operational resilience for a high-frequency commuter service, a second platform will be constructed. This will also create additional capacity for managing special events at Cobh (e.g., cruise ship arrivals) refer to Figure 11-6 below.

The existing platform and track will be extended westward to the boundary of the Cobh Garda Station, along with a new pedestrian overbridge as part of the scheme. To create a second operational platform, the eastern section of the existing platform will be widened into the area currently occupied by the northern track.

The southern track will be extended eastward to the end of the platform. It is proposed that the western end of the extended platform will form Platform 2 (P2), while the widened eastern end will form Platform 1 (P1). New track crossovers will be provided west of the station, allowing trains to arrive and depart from either P1 or P2 to improve the service flexibility.

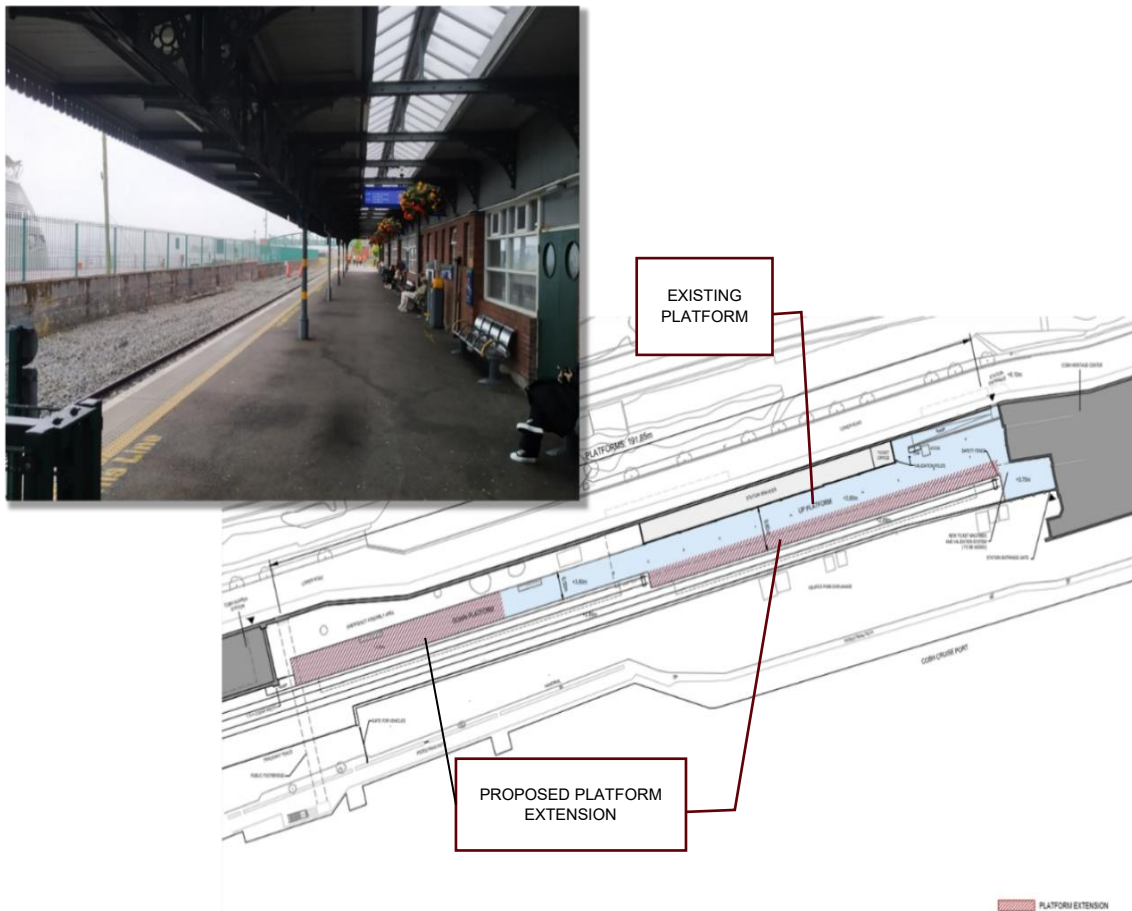


Figure 11-6 Proposed Cobh Station Layout

The station is currently served a single access point from the public roadway located to the north of the station on Lower Road, adjacent to parking, bus stops, and taxi set-down areas. A second access point is provided from the Port of Cork Cobh Cruise Terminal, offering level access to the eastern side of the platform directly from the dockside. The second access point is controlled by Port of Cork and is generally not open to the public.

A new access point is to be provided from Lower Road to the west of the station adjacent to Cobh Garda Station, refer to Figure 11-7 below. The new entrance will be fully accessible with steps and lifts to bring passengers down from Lower Road to platform level. The entrance point will be provided with ticket machines, validation poles for ease of access and CCTV for security. The access point will be provided with gates to secure the station outside of operational hours. The new station design also includes provision for welfare facilities (public toilets).

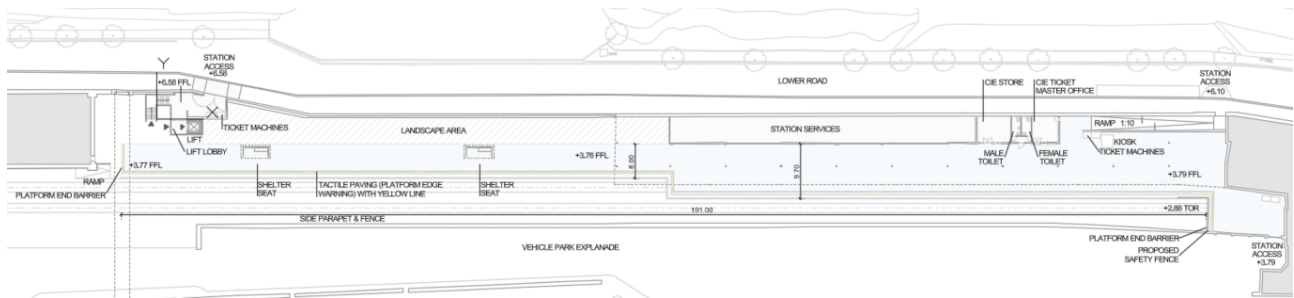


Figure 11-7 Proposed New Cobh Station Access

## 11.6 Blarney Station

The proposed Blarney Station is located on the east side of Station Road adjacent to the N20 northeast of Blarney Town in the general area of the Old Blarney Train Station as shown in Figure 11-8 below.

The location of the proposed station has been identified given its strategic position on the Dublin to Cork Railway line and its proximity to lands identified for the expansion of Blarney Town and was identified in CMATS and CASP, the Cork City Development. The station is proposed to be a Strategic Park and Ride location as defined in CMATS. Refer to Section 11.3 for further information in relation to parking facilities.

Blarney Station will feature three platforms connected by a pedestrian footbridge with ramps, stairs and accessible lifts. The station will be accessible from both sides of the railway line however it is envisaged the northern access will only become operational with the development of the proposed future Stoneview lands.

Blarney Station will be provided with a 220m platform, as opposed to the standard 94m length, for future use as an Intercity service stop where required. Refer to Section 11.2.1 for further information in relation to the layout of the proposed station.



Figure 11-8 Blarney Station and Strategic Park and Ride Location Map

The proposed station is to be located on existing agricultural and industrial land located between the N20 and the Cork to Dublin rail line. The station and car park will be accessed via new link road which will connect to Station Road and Blarney Business Park. It is envisaged that local residents will access the train station via Station Road and long-distance vehicular travellers on the N20 via the existing Blarney Business Park connection to the N20.

The proposed new station at Blarney will be located between the existing overbridge OBC388, and underbridge UBC389 based on the consideration of the available lands, track geometric constraints, the local area plan designations, the potential site for Park and Ride as well as the integration of the station and parking with the local and national road network.

The N20 is due to be upgraded by TII to the M20 motorway with the proposals to be submitted for planning in 2025, refer to Figure 11-9 below. TII propose to widen the existing N20 on its existing alignment in the vicinity of the proposed Blarney Train Station. The proposal intends to close the existing link to Blarney Business Park and upgrade the existing interchange to the southeast. In addition, an active travel route will be provided to the north of the new motorway. This section of the active travel proposal as envisaged, will be incorporated into the proposed Blarney Station access roads subject to planning approval for CACR and TII M20.

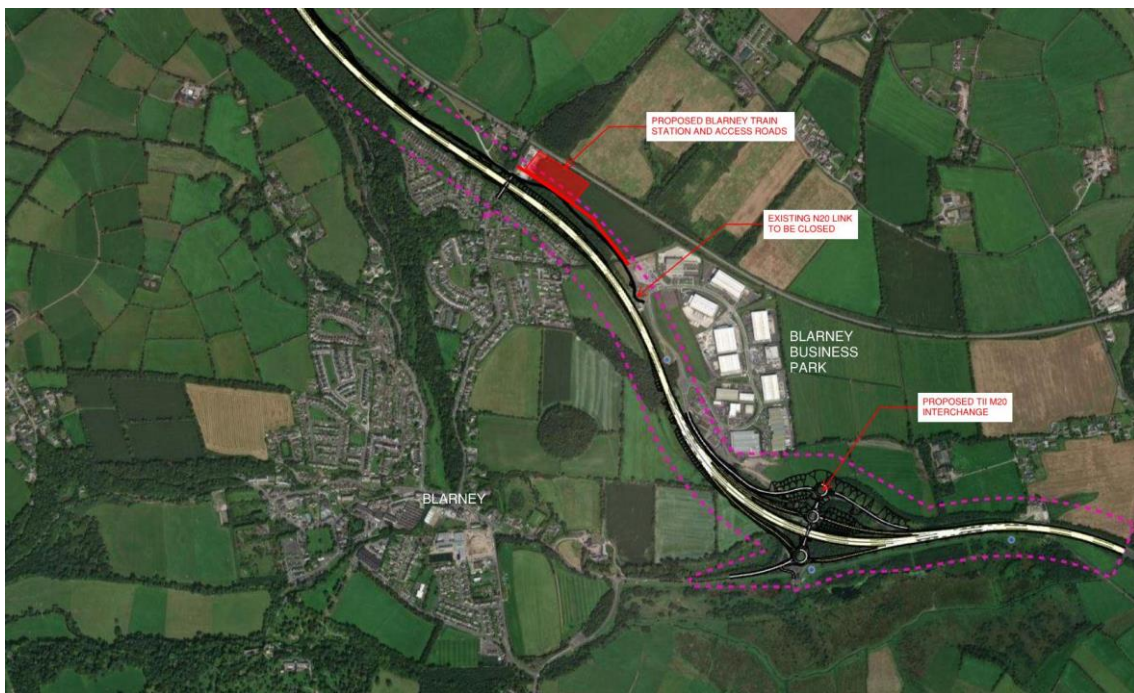


Figure 11-9 TII M20 proposals - Blarney

The access roads to the station and car park will be provided from Station Road to the west and Blarney Business Park to the east. The proposed link road is to be 6m wide with segregated one-way cycle facilities and footpaths (each 2m in width) on both sides.

Following consultations with TII in relation to the M20 upgrade the southern cycle track may widen to approximately 4m to facilitate the proposed two-way active travel route associated with the M20. The link road will be provided with an un-signalised priority junction with Station Road.

To the west, the connection to the Blarney Business Park will be provided as an additional arm to the existing roundabout.

Access to the car park and station will be provided from the proposed link road via a priority junction which will not be signalised. Further traffic modelling will be undertaken to determine if un-signalised or a signalised junctions are preferable following the completion of demand modelling. Refer to Figure 11-10 below.



Figure 11-10 Blarney Station and Strategic Park and Ride Car Park Layout

The parking facilities will provide set-down areas for private vehicles, taxis, and bus services, along with public bus stops to support future integration with the wider bus network. Mobility-impaired parking spaces will be located close to the station entrance, with some designated as electric-vehicle charging bays.

Standard parking bays will be provided with electric car charger bays. Appropriate and dedicated parking spaces for motorcycles will also be provided. In addition to vehicular parking, significant bicycle parking will be provided to promote sustainable travel to the train station.

It is intended that bicycle parking spaces will be provided with provision for bicycle lockers, standard Sheffield bike stands and electric bike charging facilities. The new station design also includes provision for welfare facilities (public toilets).

## 11.7 Monard Station

The proposed station is located within the Monard Strategic Development Zone (SDZ). The SDZ provides for up to 5,850 new homes, a town centre focused on the railway station, a target population of approximately 13,000, four primary schools and one secondary school, with lands south of the railway zoned as green belt. In line with CMATS and CASP, the Cork County Development Plan outlines the provision of a new station at Monard to support the SDZ vision which is to *“create a new rail based metropolitan town between Blarney and Cork City centre with good access to the Cork Suburban Rail Network.”*

The proposed Monard Station is located immediately west of Rathpeacon Bridge (OBC 394). The lands to the south of the railway are zoned green belt. The local park and ride facilities south of the station occupy a land strip currently used by IÉ for storage and track maintenance.

The proposed station is intended to be provided at the latter end of the CACR works programme or as development in the area progresses.

The station and car park are located along the L2782 Old Mallow Road, as shown in Figure 11-11 below.



Figure 11-11 Monard Station and Local Park and Ride Location Map

The main station entrance and car parking facilities are to be provided to the south of the railway line with access from the L2782 as shown in Figure 11-12.

The station is to be located partially on existing Irish Rail land with additional land take required to the south. The proposal for the new station includes two platforms on either side of the railway, connected by a pedestrian footbridge with stairs and accessible ramps.

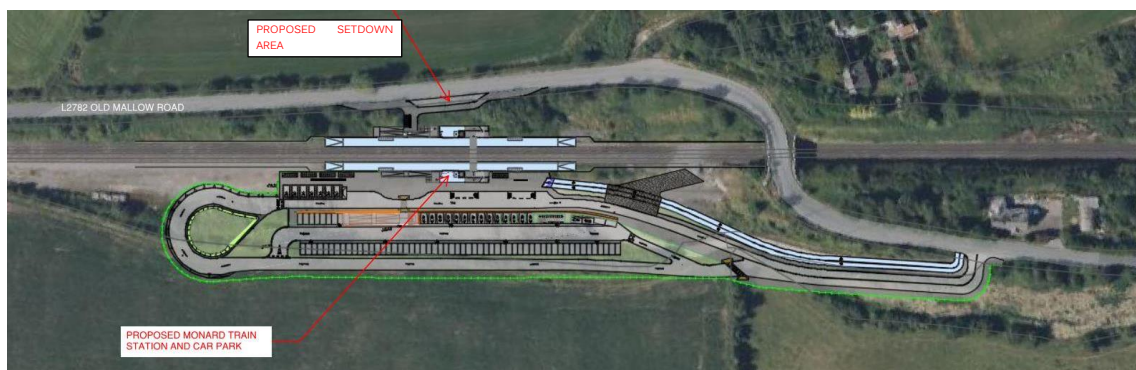


Figure 11-12 Monard Station and Local Park and Ride Layout

The main access to the station and car park is from the southern side of the railway, through the L2782 (Old Mallow Road). This new access road on the south side of railway connecting the L2782 (Old Mallow Road) with the station and carpark consists of active travel facility, a shared path of 4m width comprising of two-way cycle path and footway to provide access for the non-motorised users to the station. The station and car park would be designed to serve local access needs with provision for bus integration and active travel. A

one-way system for bus access is proposed within the car park to provide decreased risk at pedestrian crossing points and set down areas. Bus stop with shelter is provided to the station along the south side of the station with set down area provided directly outside the station entrance. A one-way traffic system, similar to that provided for buses, is implemented for cars and motorcycles entering and exiting the car park. An additional access to the station platform is provided on the north side of the station, incorporating a set-down area for private cars and coaches. Dedicated lifts, staircases, and ramps have been provided on both sides of the station to facilitate access to the platform from the southern car park and the northern set-down area.

A maintenance compound of 50m x 25m is situated to the south of the station platform on the back of the Monard carpark to facilitate related railway maintenance works.

## 11.8 Carrigtwohill West Station

Carrigtwohill West Station is outlined in CMATS 2040 as a new railway station to support sustainable growth along an enhanced railway corridor. The train station is located within Fota Retail & Business Park (north of Junction 3) on the N25. This station will provide support for future significant commercial and industrial development. The proposal for the new station is coordinated with the future development of the Carrigtwohill West Retail Park (Fota Retail Park).



Figure 11-13 Location of Carrigtwohill West Station and Local Park and Ride

The station includes platforms on either side of the mainline with access between platforms provided by a pedestrian footbridge, with stairs and lifts to ensure accessibility for all passengers.

The main access to the station is proposed on the south side of the railway where parking facilities will be included. Access to the station will also be provided from the north via the existing road network. The active travel facilities are proposed to integrate with the recently developed Interurban Greenway project. The connectivity between the station and the greenway route is intended to be incorporated via a ramped access linking the north and south side of the station.

The station will be accessed from the L3004 via the existing road network. The existing road will be upgraded to provide a 4m shared active travel route to the east of the access road and a 2m footpath and vegetated strip to the west. The road layout is provided to allow further expansion of the business park to the west. The footway and active travel route crossings of the roadway will be controlled with Zebra crossings.

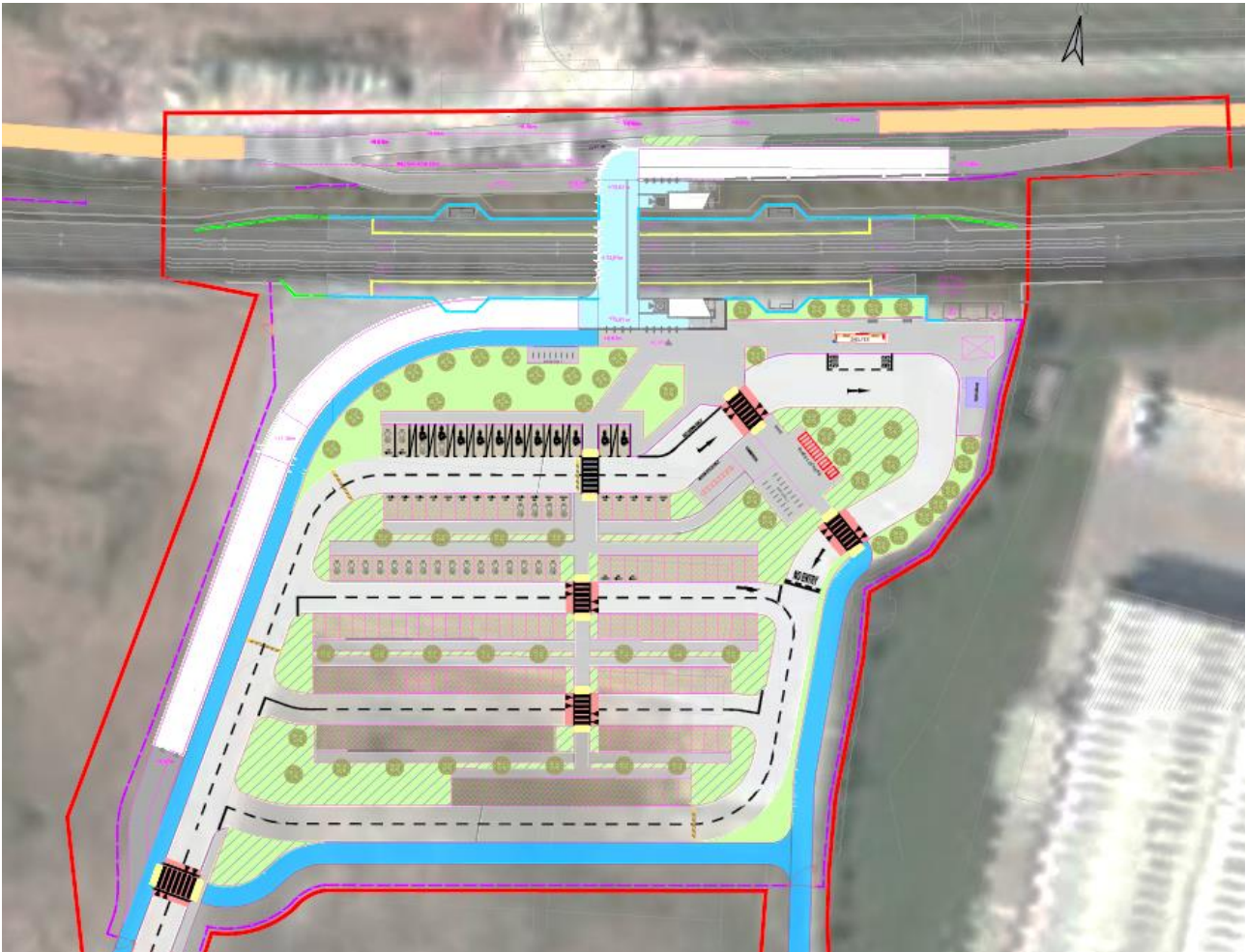


Figure 11-14 Carrigwohill West Station and Local Park and Ride Layout

The parking provision will include mobility-impaired spaces located conveniently close to the station entrance, two of which will be equipped with electric-vehicle charging. Standard car parking spaces will also be provided, along with several additional electric-vehicle charging bays. Dedicated motorcycle parking will be included. In addition to vehicular parking, substantial bicycle parking will be provided to promote sustainable access to the station.

### 11.9 Water-Rock Station

Water-Rock was proposed as a new station in CMATS 2040 between Carrigwohill and Midleton to support sustainable growth along the railway corridor. The delivery of the station has been an objective of Cork County Council, and they originally proposed the station adjacent to Water-Rock Crossing.

The station location is positioned to serve the developing residential areas to the north of the railway line. Cork County Council envisage a development area which is dominated by sustainable transport links through the provision of pedestrian and cyclist infrastructure which is linked to sustainable mass public transit.

Refer to Figure 11-14 below for the current layout of the proposed station at Water-Rock.

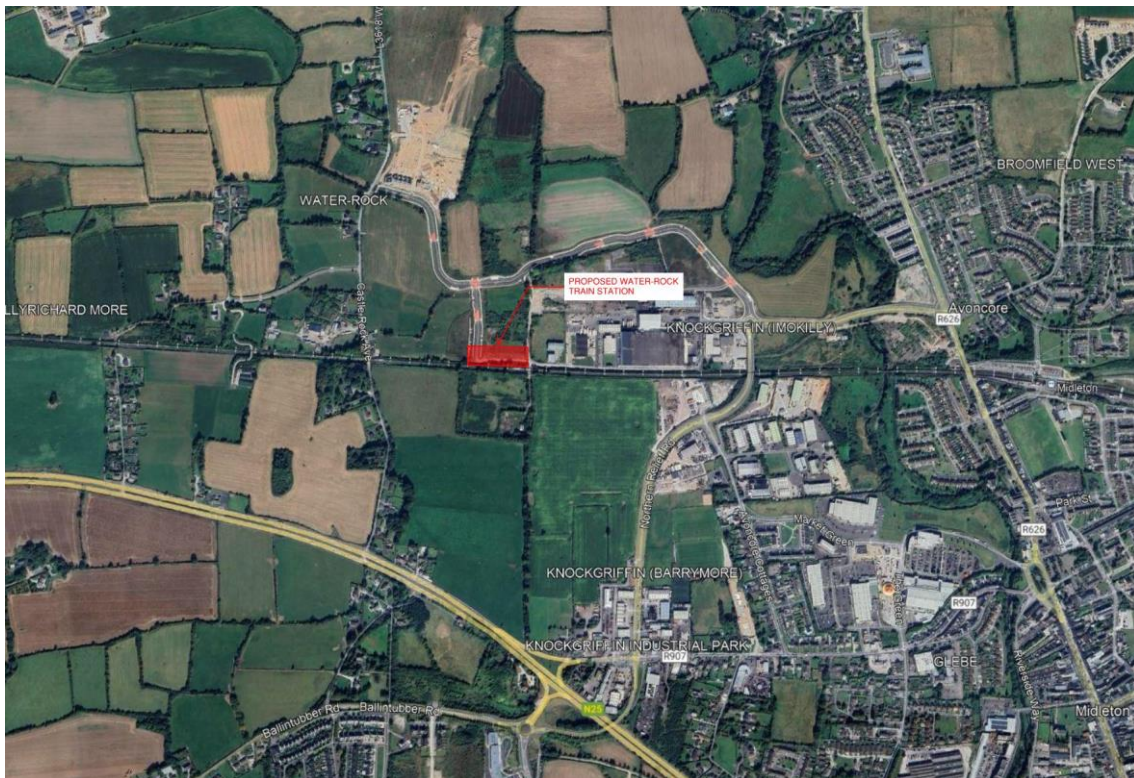


Figure 11-15 Water-Rock Station Location Map

The station includes platforms on either side of the mainline with access between platforms provided by a pedestrian footbridge with stairs and lifts connecting both platforms. The train station will be accessed from the north via the recently constructed road network (Middleton Relief Road) developed to allow the provision of residential housing. An emergency access is also proposed south of the railway line to provide access from Water Rock Road (Castle Rock Avenue).

Facilities will include designated set-down areas to accommodate private vehicles, taxis and small buses. Due to spatial constraints within the station site, the proposed parking spaces does not include provisions for public bus circulation or a dedicated bus stop. Instead, public bus stop facilities would need to be located approximately 170 metres north of the station, integrated into the newly constructed road network. Other parking available includes ten covered bicycle stands, eight bicycle lockers, two bicycle charging stands, three standard electric vehicle spaces, four mobility impaired parking spaces (one of which is designated for disabled electric vehicles).

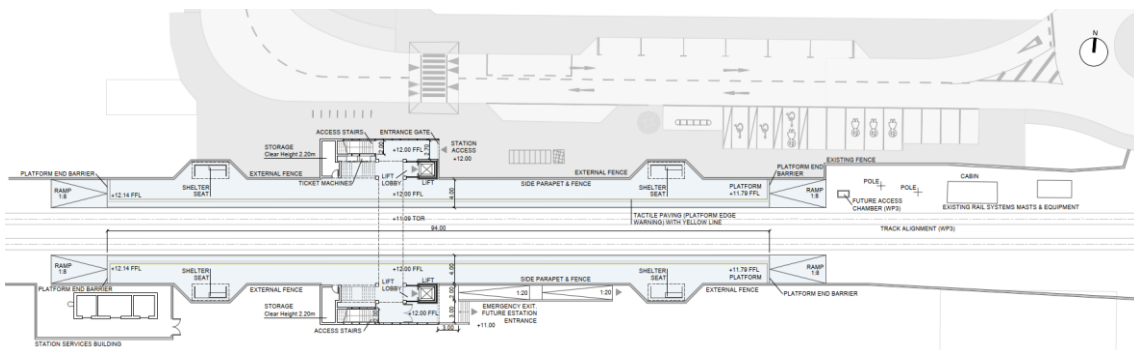


Figure 11-16 Water-Rock Station Layout

## 11.10 Ballynoe Train Station

The proposed Ballynoe Station is bound by the R624 and Ballynoe Road. The need for this station is driven by a lack of available parking at existing stations and future planned development alongside the existing transport corridor in the Ballynoe Urban Expansion Area, northwest of Cobh.



Figure 11-17 Location of Ballynoe Station and Local Park and Ride

The station includes platforms on either side of the mainline with access between platforms provided by a pedestrian underpass, with stairs and lifts to ensure accessibility for all passengers. The western access will be provided with dual lifts to provide additional capacity due to the elevation difference. Parking facilities accommodating various modes of transport, along with pedestrian access routes, are proposed adjacent to the station on land between the railway line and the R624 and on the opposite side of the R624. The eastern access will provide pedestrian and bicycle access only with bicycle parking provided. Steps and lifts will be provided to bring passengers down to platform and underpass level.

The two car parks located on either side of the R624 will be connected via a signal-controlled pedestrian crossing. Signalisation of vehicular traffic at this crossing is also implemented to ensure the safe movement of pedestrians across the R624. As there is currently no formal footpath along the northbound lane of the R624 (in front of a second proposed car parking area), a new footpath with a desirable minimum width of 2.0m is proposed to accommodate pedestrian movements between both parking areas and facilitate access to the station entrance.

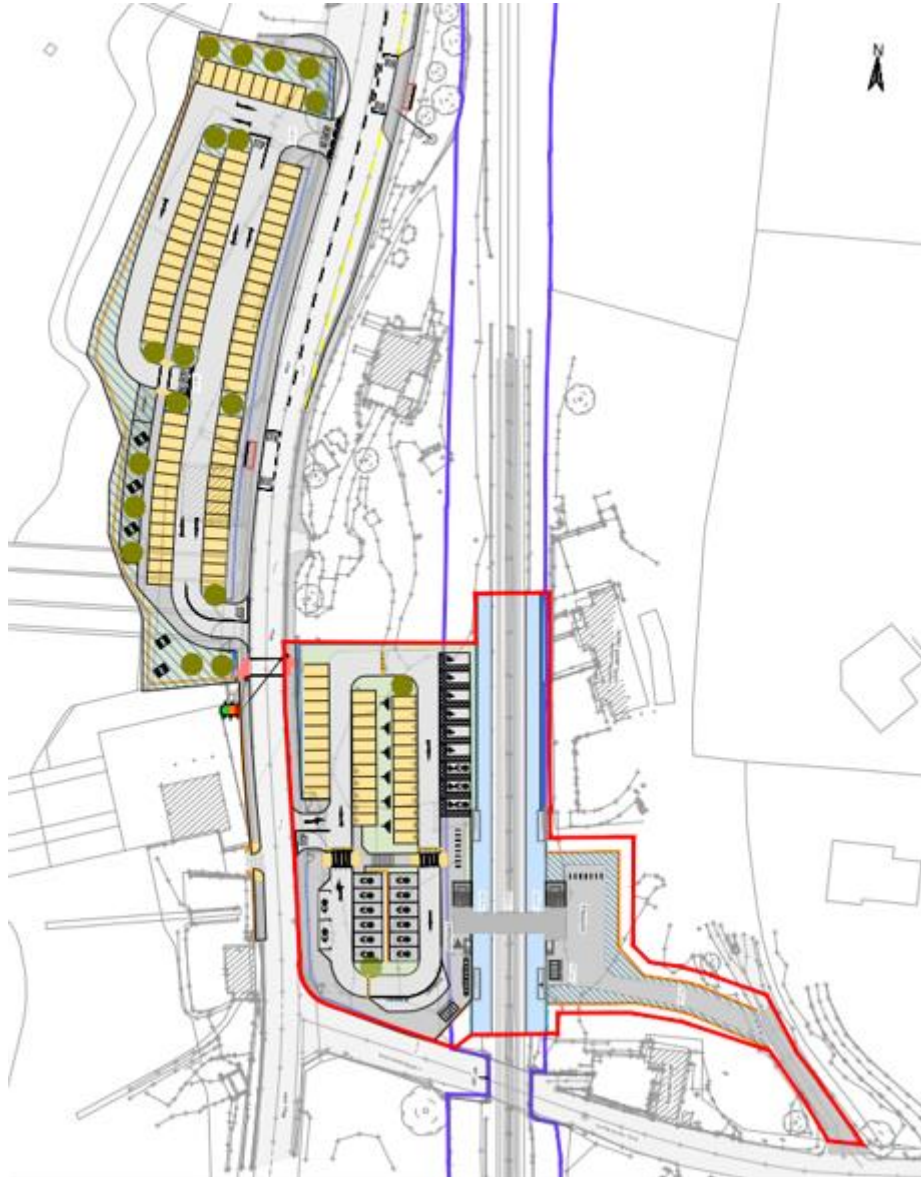


Figure 11-18 Ballynoe Station and Local Park and Ride Layout

### 11.11 Tivoli Station

The proposed station, as supported by the Port of Cork's masterplan, is strategically located near the Lee Estuary, East of Cork City, in an area north of Port of Cork operations and is situated between the Tivoli Estate Industrial Road and the N8. The Port of Cork Masterplan intends to develop the lands into a high density sustainable residential and commercial area promoting sustainable and public transport.



Figure 11-19 Location of Tivoli Station

The proposal for the new station includes two platforms on either side of the railway, connected by a pedestrian footbridge with stairs and accessible ramps. On the southern side of the station, a planned 4m wide active travel route will run parallel to railway to provide access for non-motorised users (NMUs) to the station. The active travel route, Glanmire to City Centre Cycle Route, is currently at advanced design stages and to be delivered by Cork City Council in the coming years. Dedicated staircases and ramps have been provided on both sides of the station to facilitate access to the platforms. The existing local road will serve as access road on the south side of railway and facilitates the active travel commuter cycle infrastructure. This requires alterations to the existing roundabout which has been modified to provide priority to vehicles travel south into the Tivoli industrial area. A T-junction will be provided to allow vehicular access to the east. A turn-back facility is to be provided to the east of the station to allow vehicles to set down, drop off, access to mobility impaired parking and turn back to the west to re-join the N8. A raised (table-top) configuration has also been incorporated at the modified T-junction to provide decreased risk at pedestrian crossing points and set down areas.

The proposed station will provide facilities to allow access to the station from the north however this will not be operational. With the current road configuration, it is not possible to provide safe set down for vehicles intending to drop passengers along the N8. While it would be beneficial to allow access from the existing footpath it is not possible to mitigate the risk of illegal stopping with the potential to result in traffic accidents. Discussions are ongoing with stakeholders

Due to the constrained nature of the station design, limited parking has been provided to accommodate various modal transit to the station. The parking provisions have been provided to include for eight covered

bike stands, eighteen bike lockers and three disabled parking spaces as well as a set down area within the southern section of the station.

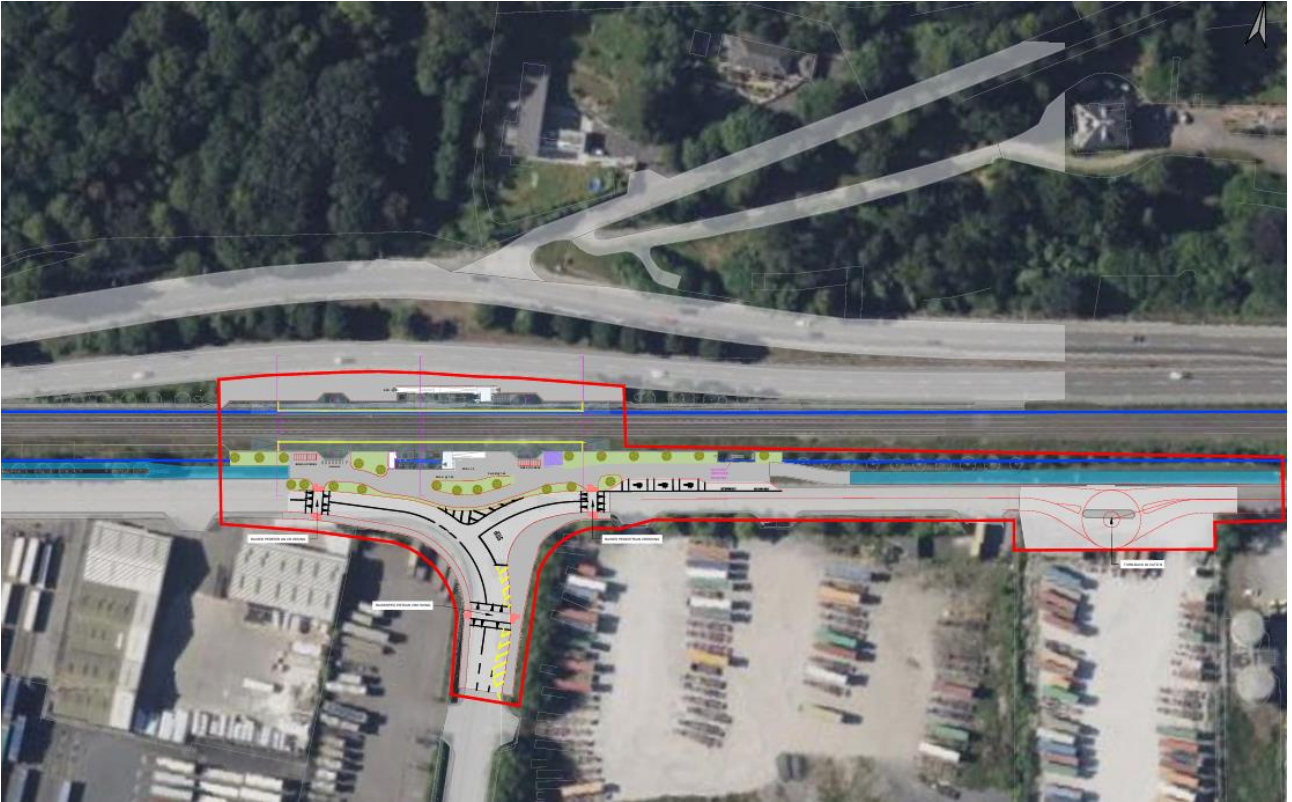


Figure 11-20 Proposed Tivoli Station

## 12. Depot

### 12.1 Depot Design Development

#### 12.1.1. Introduction

The CACR Programme will require an increase and renewal of the fleet with the procurement of new electric trains, hence a new Depot for train maintenance is necessary for the new fleet since the current facilities are insufficient to cater for future needs.

The proposed Depot development for maintaining the new fleet is situated between Carrigtwohill to Midleton at Carrigane and Ballyrichard More and covers an area of approximately 26.8 hectares (including the access road). The site was selected following a multi-criteria analysis aligned with the Transport Appraisal Framework guidance for options selection.

The lands are currently under agricultural use, with large arable fields bounded by managed hedgerows. The lands are free-draining and are gently sloped from c.16.5m OD along the southern boundary to c. 28.5m OD along the northern boundary of the site.

The key features of the Depot are:

- Area 26.8 Ha
- Length 1.45 km
- Maximum width 260 m

#### 12.1.2. Depot Layout

The Depot complex comprises a set of buildings and auxiliary installations designed to accommodate maintenance, operational, and service activities related to the transport system. The main components of the facility are described below:

1. The Main Building integrates the following functional areas
  - Maintenance Shed (Preventive and Corrective Maintenance, Deep cleaning and Paint repairs)
  - Wheel Lathe
  - Workshop Area
  - Storage Area
  - Offices Area
  - Welfare Area
  - Building Services Area
2. Drivers' Facilities
3. Service Slab and Stabling Area, comprising:
  - Cleaners' Area
  - Combined Service Slab and Stabling Area
  - Building Services Area
  - Storage
4. Access Control and Security
5. Automatic Washing Plant (AWP)
6. Automatic Vehicle Inspection (AVI)

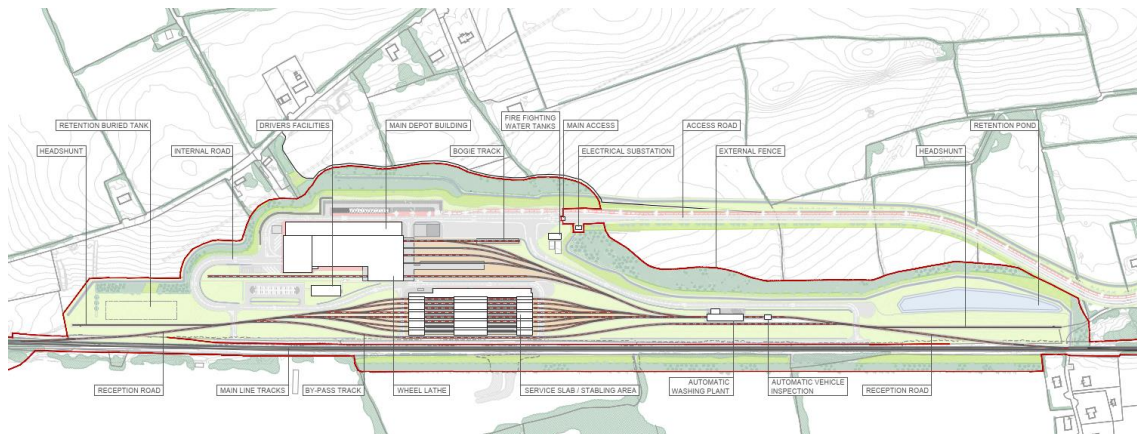


Figure 12-1 General layout plan

The Depot track configuration is influenced by the internal distribution of the Depot facilities and the connections to the mainline.

The internal roads have been designed to accommodate larger Heavy Goods Vehicles (HGVs) as required for the nature of works within the Depot. Multi-modal transport facilities (footpaths, cycle tracks) are segregated to provide added safety and separation of Motorised / Non-motorised Road Users. Consideration has been given to special HGVs required to transport rolling stock around the Depot. Road access will be provided to all facilities for servicing and maintenance.

The Depot shall be provided with a car park for staff and visitors. To determine the number of parking spaces required, the shift with the highest number of employees working simultaneously has been taken into consideration. There are two car parks: one located outside the main building, providing space for 105 vehicles, and another beside the drivers' building with 46 parking spaces.

The current topography of the site ranges in elevation from approximately c. 16.5 m OD along the southern boundary to c. 28.5 m OD along the northern boundary. Consequently, the Depot is split into two levels to minimise earthwork volumes and achieve a better balance between cut and fill, while also tying into the existing railway levels at the eastern and western extents of the site. The levels of each platform are as follows:

- Service Slab / Stabling yard: +16.595 m (southern half)
- Main Building: +18.372 m (northern half)

The surplus soil generated from these activities has been incorporated into the landscaping around the Depot's perimeter, forming mounds that can later be reforested to provide visual screening for the facility.

### 12.1.3. Stabling Capacity

The Depot will have the capacity to stable 16 Electric Multiple Unit (EMU) trains from the fleet on a daily basis.

### 12.1.4. Maintenance activities

CACR trains are scheduled to return to the Depot on a daily basis for maintenance and servicing. The following fleet maintenance tasks will be carried out in the Depot:

- Daily Maintenance
- Preventive Maintenance
- Corrective Maintenance
- Deep Cleaning facility activities
- Paint repairs

- Unscheduled activities

#### 12.1.5. Service Slab Maintenance Activities

The daily maintenance of the electric train fleet includes a series of basic tasks to ensure operational readiness and cleanliness.

Each day, visual inspections are carried out, water and other essential fluids are refilled, and key systems are checked. The interior of the trains is also cleaned, including waste collection, window cleaning, light seat cleaning, and thorough floor cleaning.

All these activities take place in the Depot area where the trains are stabled when they are not in operation.

#### 12.1.6. Automatic Washing Plant

In addition, the trains go through an automatic exterior wash that cleans the sides and roof.

#### 12.1.7. Main Building Maintenance Activities

The train maintenance program is designed to keep the fleet safe, reliable, and operating efficiently. It is based on scheduled inspections carried out at specific mileage intervals, along with additional work when needed.

There are three main types of preventative (planned) maintenance:

- Light maintenance: These activities include inspections, system checks, and the replacement of everyday components such as brake pads or lighting elements.
- Heavy maintenance is carried out less often but involves more extensive work. These activities may include lifting the train to carry out major repairs, such as work on the wheel assemblies (bogies).
- Wheel maintenance (wheel lathing): This process reshapes the wheels to maintain proper performance and ride quality.

In addition to planned maintenance, corrective maintenance is carried out whenever unexpected faults or incidents occur during service.

The Depot also includes facilities for deep cleaning and minor paint repairs. These activities include removing dirt from hard-to-reach areas, cleaning graffiti, carrying out special cleaning after incidents, replacing exterior vinyl coverings, and performing small paint touch-ups.

#### 12.1.8. Automatic Vehicle Inspection

Remote vehicle monitoring and automatic inspection systems will play a key role in the maintenance approach. Using sensors, cameras and lasers and other monitoring equipment these systems collect data on train condition as they enter into the Depot. This information allows maintenance teams to adjust inspection schedules based on real operating data.

#### 12.1.9. Architecture

##### Site & Design

The architectural and volumetric design of the buildings has been developed to ensure compatibility with the existing landscape context. The architectural design has been developed in adherence to Cork County Council's guidance on visual obtrusiveness.

## Architectural Image

All buildings within the complex will share a unified material and design specification, ensuring visual coherence and reinforcing the corporate identity of the facility. Singular architectural elements and auxiliary structures will adhere to the same design principles, contributing to a consistent and representative image across the site.

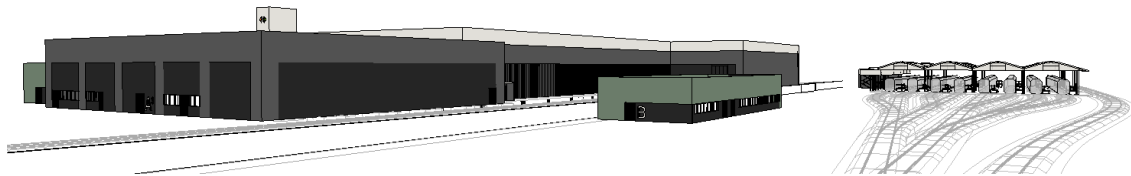


Figure 12-2 General View - Main Building, Drivers Facilities and Stabling Area

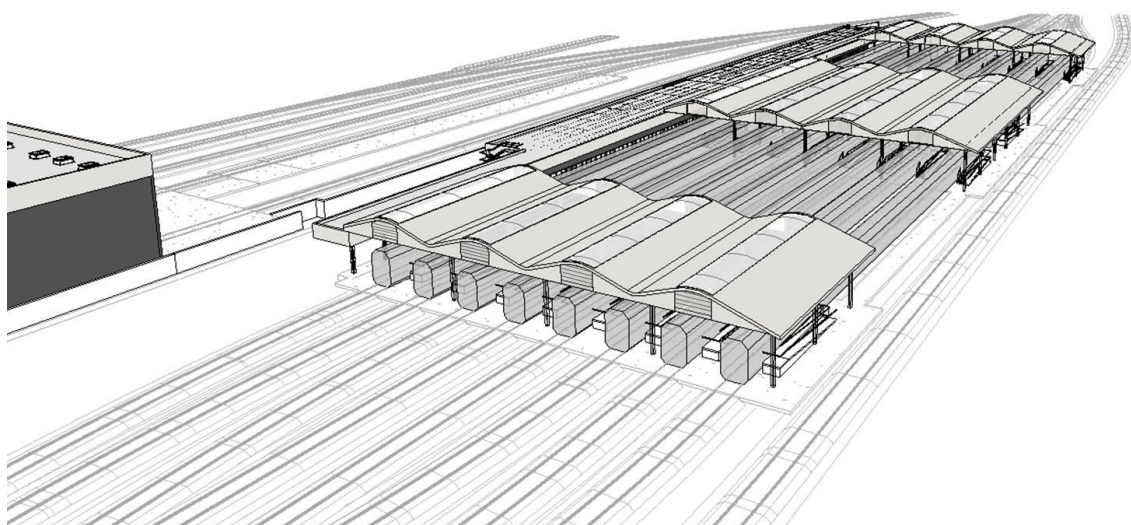


Figure 12-3 General View - Service Slab and Stabling Area

### 12.1.10. Main Building

The Main Building will serve as the principal and most technically complex facility within the CACR maintenance Depot. It will accommodate administrative, operational, and maintenance activities, and will house the Depot operation room, which will oversee vehicle movement, control, and safety across the Depot.

The building will have an overall footprint of 168 meters in length by 81 meters in width, with a maximum height of 11.2 meters. Its internal layout has been designed to include a series of dedicated functional zones:

- Maintenance shed
- Workshops
- Storage
- Welfare facilities
- Building services
- Office

#### Outdoor Storage Areas:

- Waste yard: Located on the west side of the building.
- Secondary Storage: Located on the west side.
- Large-Format HM Material Storage: Located on the east side of the main building, divided into 50% covered and 50% uncovered areas.

#### 12.1.11. Bogie Drop-Off Area

The Bogie Drop-Off Area is located outside on the eastern side of the building. It comprises a dedicated bogie storage track, connected to the maintenance shed northern track.

The layout includes:

- A train unloading section on the storage track.
- A bogie delivery track, positioned under a protective canopy.

#### 12.1.12. Drivers Facilities

The Drivers' Facilities are housed in a standalone building designed to accommodate up to 50 drivers, located on the southwest side of the Main Building. The facility is positioned at the same elevation as the Stabling Area, allowing direct and efficient access for operational staff.

The building has an approximate footprint of 41 meters in length and 15 meters in width, with a maximum height of 6.60 meters.

#### 12.1.13. Service Slab and Stabling Area

The Service Slab Building and the Stabling Area are located to the south of the Main Building and to the east of the Drivers' Facilities, within the Depot premises. Both zones are accessible via the internal road network, allowing entry for delivery trucks and service vehicles. They are connected by an external covered corridor, which provides direct access to the circulation zones at the train cab end.

The Service Slab Building is a single-volume structure designed to accommodate the required facilities for cleaning and service slab staff. The building has an approximate footprint of 136 meters in length and 8 meters in width, with a maximum height of 6.60 meters.

The Stabling Area is located directly south of the Service Slab building, comprising of eight parallel sidings that can accommodate up to 16 HLUs. These tracks are served by three lateral aprons—two at the ends and one in the centre—to provide weather protection to the maintenance and cleaner's staff. They are connected via a longitudinal covered corridor that links the train ends.

Both train ends and the central section of the stabling area are covered by a wave-shaped roof which includes linear skylights to provide natural daylight across the tracks.

#### 12.1.14. Access Control Building

The Access Control Building is planned to be located adjacent to the main entrance gate of the Depot, serving as a dedicated facility for managing and securing access to and from the Depot premises.

The control room will be designed with extensive glazing to ensure optimal visibility of the entrance area and surrounding site, facilitating continuous surveillance and operational oversight.

To ensure controlled access for both pedestrians and vehicles, the immediate surroundings of the building will be equipped with:

- A boom barrier for vehicular control,
- A full-height turnstile for pedestrian access regulation.

#### 12.1.15. Automatic Washing Plant (AWP)

The Automatic Washing Plant (AWP) is located at the track entrance to the Depot, immediately following the AVI (Automatic Vehicle Inspection) system along the mainline access.

Key dimensions:

- Total length: 50 m
- Width: 8.90 m
- Internal height: 8.05 m

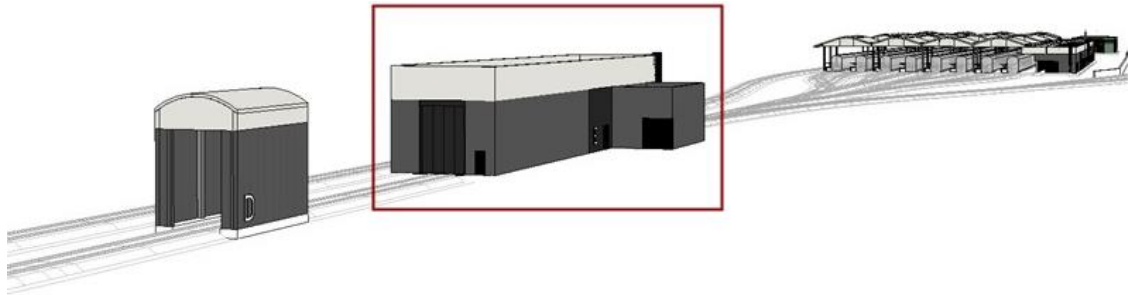


Figure 12-4 Automatic Washing Plant, Northeast View

#### 12.1.16. Automatic Vehicle Inspection System (AVI)

The Automatic Vehicle Inspection System (AVI) will be housed in a single-volume structure with approximate dimensions of 9.40 m in length and 6.10 m in width, positioned immediately after the reception track within the Depot layout.

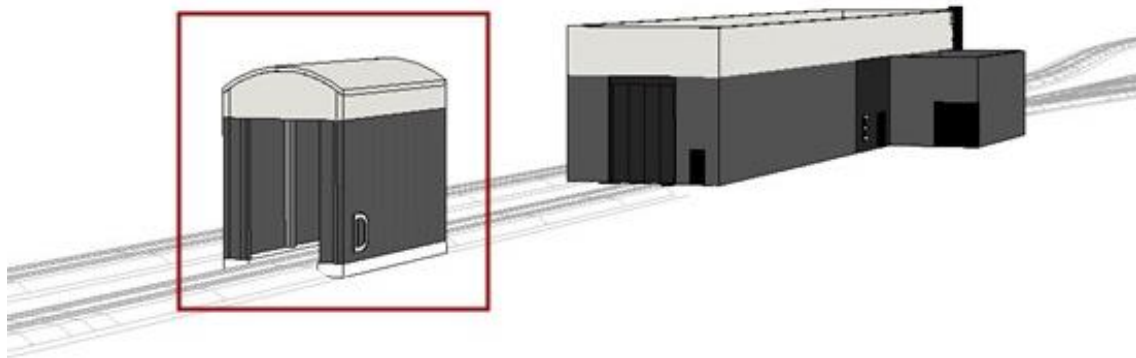


Figure 12-5 Automatic Vehicle Inspection, Northeast View

#### 12.1.17. Sustainability measures

The design has been developed to deliver a functional, energy-efficient and comfortable facility while minimising environmental impact. The building is designed to achieve Nearly Zero Energy Building (nZEB) standards and EXEED certification, incorporating high-efficiency HVAC systems, renewable-ready technologies, heat recovery, water recycling and intelligent building controls.

##### Renewable Energy and Heat Recovery

**Solar Photovoltaic (PV) Integration:** The design includes the installation of high-efficiency solar PV modules on the roof of the Main Building for on-site self-consumption.

Heat Recovery Units (HRUs): Dedicated outdoor air units will feature heat recovery systems. These units use the thermal energy of extracted stale air to pre-condition incoming fresh air, significantly reducing heating and cooling costs.

System-Wide Heat Recovery: The project proposes transferring heat evacuated from technical equipment to other systems that demand heat, such as winter room heating or domestic hot water production.

#### High-Efficiency HVAC Strategies

Heat Pump Technology: The primary HVAC strategy utilizes air-source heat pumps (ASHP) for heating, cooling, and domestic hot water, focusing on water-based systems to minimize fossil fuel dependency.

#### Building Management System (BMS)

A centralised BMS provides remote monitoring, control, fault detection and performance logging. The BMS ensures energy optimisation, operational efficiency, and lifecycle performance monitoring across all building services.

#### Electrical System Efficiency

Lighting Controls: The Depot will utilize high-efficiency LED luminaires integrated with automatic controls, including motion detectors, occupancy sensors, and daylight dimming. External lighting will be managed by astronomical timers linked to sunrise and sunset.

EV Infrastructure: The design supports future sustainability by providing ducting for electric vehicle (EV) charging for 20% of parking spaces.

#### Water Conservation and Recycling

Rainwater Harvesting: Rainwater from the Main Building roof will be collected, treated, and stored to supplement non-potable water requirements, such as WC flushing and the automatic train wash.

Consumption Monitoring and Control: Sub-meters will be provided for all building areas to monitor consumption. To prevent waste, all toilet and shower areas will feature PIR-operated proximity control devices to isolate the water supply when the rooms are not in use.

#### **12.1.18. Trackwork**

In general, the track will be constructed as a ballasted track, although there are localised areas where a different trackwork system has been proposed.

Embedded rail zones, including the Bogie Drop and the shunting area located in front of the maintenance shed, comprising rails embedded in a concrete slab.



Figure 12-6 Embedded Rail in Slab

For the roads where it crosses the tracks there will be Strail units (or similar proprietary rubberised, cill-mounted rail crossing panels).



Figure 12-7 Strail Crossing Units at Road-Rail Interface

#### 12.1.19. Electrification

The complete electrification of the CACR Network, including the Depot, will be by means of Overhead Line Equipment (OHLE). Electrification will consist of 25kV AC.

The OHLE shall consist of single-track cantilevers, portal structures, or head spans in outdoor areas, as appropriate to the specific site conditions and operational requirements.

### 12.1.20. Drainage

#### Foul Drainage

It is proposed to construct a new foul sewer network within the Depot site to serve the various buildings and the train wash facility that are part of the development proposal. Foul discharge from the site will discharge to the existing 225mm dia. public foul gravity sewer located along Castle Rock Avenue, approximately 1km east of the Depot site. A pumping station will be constructed within the Depot site to pump wastewater from the Depot to the existing foul sewer network at Castle Rock Avenue along the proposed access road via a proposed foul rising main.

#### Surface Water Drainage

As part of the development, a number of different SuDS measures are proposed to minimise the impact on water quality and water quantity to the receiving water environment. The proposed development will be served by a new surface water drainage network comprising of the following components:

- Conveyance swales;
- Porous asphalt / paving;
- Detention basins;
- Perforated pipes (track ballast drainage);
- Earthworks interceptor ditches;
- Channel drains;
- Attenuation tank and;
- Surface water carrier pipes.

The SuDS management proposed will provide treatment via the following processes:

- Filtration of silt and the attached pollutants;
- Biodegradation of organic pollutants, such as petrol and diesel within the pavement construction;
- Adsorption of pollutant due to a suitable texture of the surface and;
- Settlement and retention of solids.

### 12.1.21. Utilities

Available utility records were submitted by service providers and reviewed along the Proposed Scheme. These records have assisted with informing the Proposed Scheme design. Utility records were received from the following service providers:

- Uisce Éireann;
- Gas Networks Ireland (GNI);
- Electricity Supply Bord (ESB);
- Eir Grid;
- Eir;
- Virgin Media;
- BT;
- Vodafone;
- Enet;
- Aurora;
- Cork City & County Councils.

Consultation meetings are ongoing with ESB, Eir Grid, Gas Networks Ireland, Uisce Éireann and Eir. The Depot proposals will be outlined to the utility providers and scenarios where utility infrastructure will be diverted will be outlined.

In the current proposal Telecommunications, water, and gas services are planned to be routed via the new access road and connected to the existing networks at the eastern end of the road. The medium-voltage supply will be connected to the existing medium-voltage line that crosses the Depot.

#### 12.1.22. Landscape

The landscape design seeks to protect important landscape features and develop a natural, biodiverse, resilient and low maintenance landscape environment for the proposed new development, which also comply with Irish Rail's Standard for the management of vegetation. It places a high priority on biodiversity, sustainable water management and visual mitigation.

Key features of the landscape mitigation plan include:

- Protection of retained remaining trees and hedgerows during construction;
- Natural and site-specific boundary treatments such as mounding, paired with mixed native woodland screen planting around the perimeter of the development with native scrub/low canopy and hedge planting;
- The planting will include a mixture of native deciduous and evergreen trees;
- A selection of larger 'standard' and advanced standard trees (up to 3-3.5m tall) will be used to give a more immediate impact. Advanced Pine trees (2-2.5m tall) will be planted in groups around the site to augment visual screening of the built development;
- Integrated sustainable surface water management, including swales, permeable paving, detention basin and other associated drainage infrastructure;
- Internal landscape areas, outside of train stabling/track areas will include native grass seed/wildflower mix that is hard wearing but slower growing to reduce frequency of grass cutting. These species will also capture and store more carbon in their root network than standard amenity grass seed mixes, and;
- A range of biodiversity enhancement measures will be incorporated in the landscape of the Depot, which will be developed with the project ecologists, including provision of species rich grasslands, wet meadow/swale areas/detention/attenuation pond, bee-scrapes, and nesting boxes for birds and bats.

#### 12.1.23. Boundary Treatment

The security of the railway and Depot against trespass is an essential aspect of the project which requires that fencing be provided where feasible.

The future electrification of the railway as part of the CACR programme also requires the placement of additional fences at locations where they do not currently exist to increase safety near the track. This applies to the Depot where works with heavy duty plant and machinery as well as the movement of parts as well as materials by HGVs transit requires safe manoeuvring.

## 12.2 Depot Access Roads

The Depot requires an access road for freight and staff access to the Depot from the local road network.

### 12.2.1 Assessment

An options assessment (OA) / multi-criteria analysis (MCA) was carried out as described in Section 4 of this report, in accordance with TAF. The process was developed to facilitate a scoring of each option against a set of defined criteria (see Section 4 of this report). It comprised qualitative and quantitative assessments of the options developed.

### 12.2.2 Description of Options

The options developed for the Depot Access Road range from Do-Management, through to Do-Something (Investment) options. The analysed options located in the Ballyadam area are approximately 1.3km west of the proposed Water-Rock Station and 1.9km to the east of the existing Carrigtwohill Station.

Eight options have been developed / considered using the available topographical information. Based on this information, the existing and proposed alignments require consideration for the interactions with the planned OHLE works as part of this assessment. Options which require the inclusion of bridging over the railway will, as a result, require a minimum clearance envelope for overhead electrification lines, and an overall headroom for new structures over railways. To achieve this clearance, the options have been examined, with consideration of the feasibility of achieving the required clearances and thereafter assessed using the MCA.

The options developed are as follows:

- Do-Management (Mgmt.) – Options 1, 2 and 3
  - (Three options utilising existing roads with access to the Depot via connection off Ballyrichard More Road to accommodate low-loaders)
- Do-Something – Options 4, 5, 6, 7 and 8
  - (Five options incorporating proposed roads with tie-ins to existing roads also accommodating low-loaders and wider cross-section for active travel/greenway integration)

A “Do Nothing/Do-Minimum” option is not considered as an intervention that meets the objectives of the CACR project as the location of the Depot does not have an existing access that meets the needs of the project and, is considered infeasible.



Criteria	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8
<i>Sub-Criteria Consolidation</i>								
1 Transport User Benefits and Other Economic Impacts	4 - Neutral Impact	4 - Neutral Impact	4 - Neutral Impact	4 - Neutral Impact	4 - Neutral Impact	5 - Slightly Positive Impact	5 - Slightly Positive Impact	5 - Slightly Positive Impact
2 Accessibility Impacts	1 - Highly Negative Impact	3 - Slightly Negative Impact	3 - Slightly Negative Impact	2 - Negative Impact	4 - Neutral Impact	5 - Slightly Positive Impact	5 - Slightly Positive Impact	6 - Positive Impact
3 Social Impacts	2 - Negative Impact	3 - Slightly Negative Impact	3 - Slightly Negative Impact	2 - Negative Impact	5 - Slightly Positive Impact	4 - Neutral Impact	5 - Slightly Positive Impact	6 - Positive Impact
4 Land Use Impacts	3 - Slightly Negative Impact	3 - Slightly Negative Impact	3 - Slightly Negative Impact	3 - Slightly Negative Impact	4 - Neutral Impact	4 - Neutral Impact	4 - Neutral Impact	4 - Neutral Impact
5 Safety Impacts	2 - Negative Impact	2 - Negative Impact	2 - Negative Impact	2 - Negative Impact	5 - Slightly Positive Impact	6 - Positive Impact	6 - Positive Impact	6 - Positive Impact
6 Climate Change Impacts	3 - Slightly Negative Impact	4 - Neutral Impact	3 - Slightly Negative Impact	3 - Slightly Negative Impact	3 - Slightly Negative Impact	3 - Slightly Negative Impact	3 - Slightly Negative Impact	4 - Neutral Impact
7 Local Environment Impacts	3 - Slightly Negative Impact	3 - Slightly Negative Impact	3 - Slightly Negative Impact	3 - Slightly Negative Impact	3 - Slightly Negative Impact	3 - Slightly Negative Impact	2 - Negative Impact	3 - Slightly Negative Impact
<i>Criteria Consolidation</i>								
Overall Ranking	3 - Slightly Negative Impact	2.6 - Slightly Negative Impact	3.2 - Slightly Negative Impact	2.7 - Slightly Negative Impact	4 - Neutral Impact	3.3 - Slightly Negative Impact	4.1 - Neutral Impact	4.3 - Slightly Positive Impact
Emerging Preferred Option	No	No	No	No	No	No	Yes	No

Figure 12-9 Summary MCA Table of Depot Road Access Options

Option 7 performed better than other options in the following:

- The scale of works associated with Option 7 is smaller than other Do-Something Options. There is no bridge construction associated with this option.
- This option provides for widened carriageway along an existing route with provision for non-motorised access.
- The impact on 110kV overhead lines significantly lower for Option 7 than for other options;
- The smaller quantities of earthworks materials associated with Option 7 mean the soils and geology impacts associated with this option are lower than for other options.
- Option 7 facilitates the implementation of planning Cork County Council objectives MD-U-02, 07 and 08.

Option 7 also has neutral impact on Flood Risk whereas other options are rated more negatively.

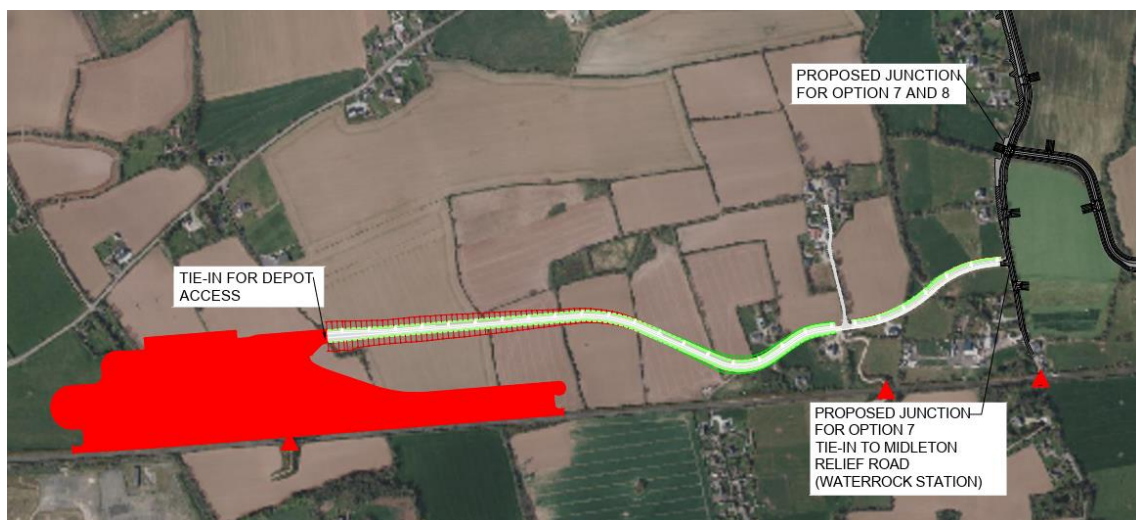


Figure 12-10 Depot Access Road - Option 7 - Preferred Option

### 12.2.4 Depot Access Road Cross-Section

The Depot access road has been designed to adopt a Type 2 Single Carriageway with active travel facilities. A segregated cycle track and footpath have been provided along the eastbound lane (towards the Depot) between the access gate and the junction tie-in to Castle Rock Avenue (L3618) which provides connectivity with the proposed Water-Rock development road infrastructure. This provides continuity of NMU and active travel infrastructure. The cross-section adopts two (3.5m wide) lanes for bi-directional movement of vehicles.

The access road cross-section is modelled to accommodate larger Heavy Goods Vehicles (HGVs) as required for the nature of works within the Depot. Multi-modal transport facilities (footpaths, cycle tracks) are segregated to provide added safety and separation of Motorised / Non-motorised Road Users (MUs / NMUs).

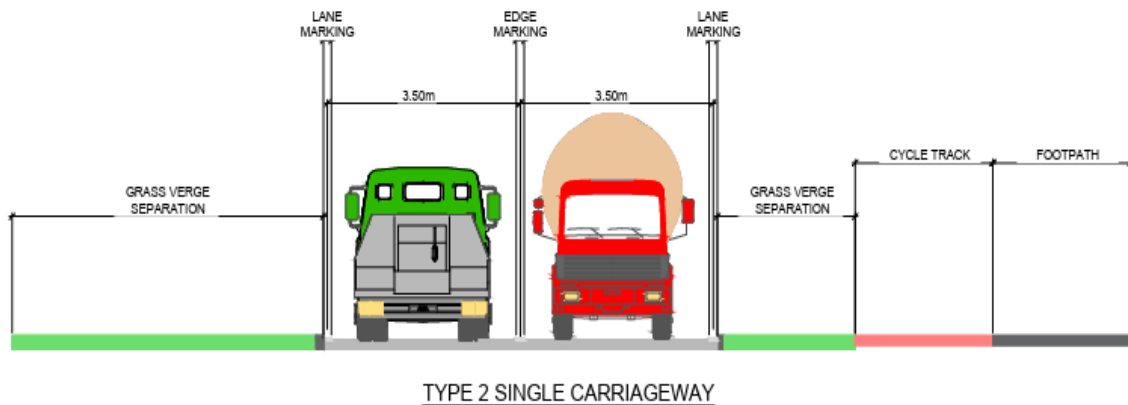


Figure 12-11 Depot Access Road Cross-Section

The design has incorporated segregated cycle tracks along the full length of the access road. The physical segregation ensures that cyclists are protected from motorised traffic as well as independent of vehicular congestion, thus improving cyclist safety and reliability of journey times for cyclists.

The cross-section template developed for the Depot access consists of cycle tracks, providing vertical segregation from the carriageway to the cycle track and vertical segregation from the cycle track to the footway. The principal source for guidance on the design of cycle facilities is the Cycle Design Manual (CDM) published by the National Transport Authority.

The desirable minimum width for a single-direction raised-adjacent cycle track is 2.0m. This arrangement allows for two-abreast cycling. The Depot access road facilities have been developed to accommodate a detour route for the Interurban cycleway connectivity. Pedestrian crossings have also been incorporated into the access road design to allow for safe crossing arrangements for Non-Motorised Users (NMUs) and Vulnerable Road Users (VRUs).

Due to the location of the Depot, the proposed interurban cycleway requires realignment. The original location for the cycleway route was run parallel and alongside the existing rail line where the Depot is located. The proposed location of the cycleway is to provide a detour route to the north of the Depot with a connection to the Depot access road where the access road cycle facilities are utilised onwards towards Midleton.

### 12.3 Greenway Diversion - Inter-Urban Cycle Route Detour

The Inter-Urban Cycle Route (IU-1) between Carrigtwohill to Midleton is within the planned Midleton to Dunkettle IU-1 Inter-Urban Cycle Network connecting Midleton to Dunkettle. This section received Part 8

planning approval by Full Council in April 2024. The IU-1 is included in the wider East Cork Sustainability Corridor that will connect Cork to Waterford.

A detour route has been identified for the impacted section of the Inter-Urban Cycle Greenway (section 3 in Figure 12-12 below) which is located within the open fields in which the Depot is located.

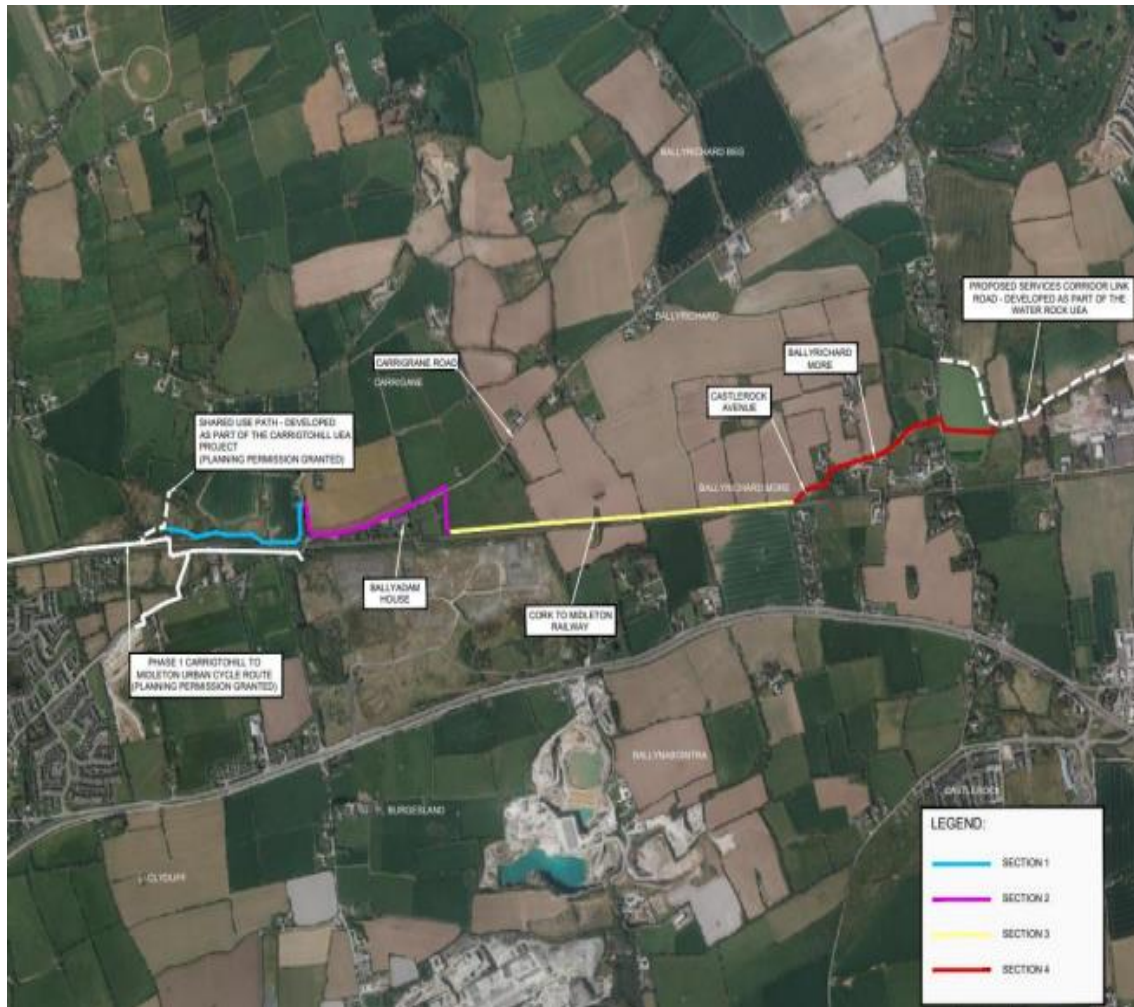


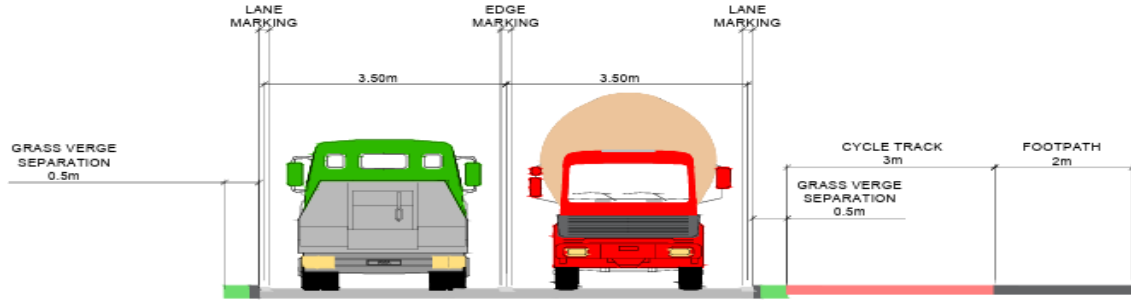
Figure 12-12 (IU-1) Inter-Urban Cycle Route (Extract from Carrigtwohill to Midleton Inter-Urban Cycleway Phase 2 Part 8 Planning Application Report. December 2023)

The greenway detour involves utilising a section of the existing road (Ballyrichard More) of length 0.9km and offline section of 3.54km which runs through fields to the north of the Depot and allows for a connection to Depot access road cycle infrastructure to progress eastward to original tie-in point. (Majority of this detour option will require offline works with a minor section of online widening and road realignment).

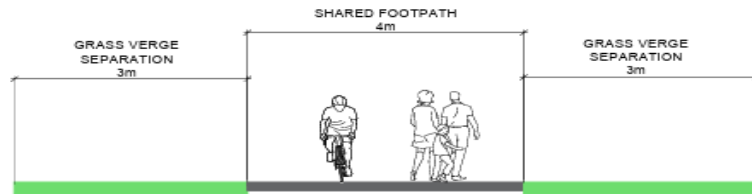


Figure 12-13 Identified Inter-Urban Cycle Route Detour (Orange Route)

The cross-section for the offline sections from 2023-Part 8 Planning Application have been adopted while accommodating a segregated cycle and pedestrian infrastructure for the online element of the detour route.



**SECTION 2 INDICATIVE CROSS-SECTION**



**SECTION 1,3A & 4 INDICATIVE CROSS-SECTION**

Figure 12-14 Inter-Urban Cycle Route Detour (Typical Cross-Sections)

The greenway detour route provides a reduction / minimisation of steep gradients, connectivity / access to segregated NMU facilities along Depot access road, reduced impact on residents and facilitates the implementation of planning Cork County Council objectives MD-U-02, 07 and 08 while having a neutral impact on Flood Risk.

### 13. Construction Compounds

The construction compounds are temporary facilities that support the construction of the different elements of the project. Construction compounds are required at specific site locations, such as at new stations, or structure modification works. Compounds will also be distributed along the railway for linear works (mainly OHLE installation) to allow tasks to be performed.

Initial site clearance and establishment activities for the construction compounds include:

- Form the site entrances and exits.
- Clear the site as required.
- Install the site hoarding or fencing and gates to ensure that the site is secure.
- Install general site lighting.
- Carry out any necessary levelling.
- Strip topsoil and form the site haul roads.
- Lay down areas of hardstanding for material storage.
- Perform all the necessary connections to mains water sewage, power and communications.
- Install the site office and welfare facilities.
- Install site security facilities, goods received checking area, unloading and loading areas and wheel-washing facilities.
- Establish segregated pedestrian and vehicle routes to the working areas with clear, designated crossing points and establish areas for materials and waste storage.
- Establish power and water distribution and wastewater collection.
- Construct the agreed lorry holding area for each site.

The activities that will take place on these sites include:

- Material unloading, storage and loading.
- Erection of prefabricated sections for construction.
- Use of welfare and on-site office space.
- Personnel and machinery access to the railway.
- Parking space for personnel and work vehicles.
- Lifting of material/precast elements, especially in the compounds corresponding to modification of existing overbridges and erection of buildings.
- Assembling of catenary cantilevers only in the SET compounds (the cantilevers consist of metallic bars that are connected by means of bolts).
- Heavy Goods Vehicles (HGV) and usual construction machinery movement.
- Staff vehicles movement.
- Installation and maintenance of Road-Rail Vehicles (RRV) access to track at the dedicated points set up for this purpose.
- Construction traffic on the access routes for the material/equipment supply by HGV.

Each Construction Compound will require to remain operational for the duration of the works with which it is associated. This is dictated by the construction programme and varies for each compound, ranging from several weeks (in the case of the overbridge modifications) to several years (for instance, those servicing line wide works or the Depot).

Construction Compounds will often be set up to be operational 24 hours per day, 7 days per week, especially where they are supporting works to be undertaken during track possessions. For much of this time construction plant and materials will be delivered, marshalled, and delivered along the project, with both road and rail vehicles involved. Temporary lighting will be installed to facilitate works during hours of darkness, and new utility connections may be required to service the compounds. Where activities are happening at compounds outside core working hours these will be coordinated with the local authorities and in consultation with the local community.

The below table sets out the indicative Construction Compound Locations and respective functions.

**Table 13-1 Construction Compound Locations and Functions.**

Function	Construction Compound Locations
Multi-disciplinary	Depot
Stations	Mallow, Blarney, Monard, Tivoli, Carrigtwohill West, Water-Rock, Ballynoe, Cobh
SET	Mallow Station, UBC342, UBC350, OBC360, Rathduff, OBC374, Blarney Station, Monard Station, Blackpool Station, Dunkettle Station, Elm Tree Pub, Carrigtwohill Station, IFI Plant, Marino Point
Permanent Way	Rathduff Passing Loop
Structures	Mallow Station, UBC341 Mallow Viaduct, OBC343A Quarters town Upper, OBC355 Mourne Abbey Bridge, OBC366 Rathduff Overbridge, OBC374 Ballymartin Overbridge, OBC382 Accommodation Overbridge, OBC388 Station Road Blarney Overbridge, OBC394 Rathpeacon Overbridge, OBC399 Kilnap II Overbridge, OBC404A North Ring Road Overbridge, Kent Station, Lower Glanmire Road / Myrtle Hill, OBC411 / OBC412, OBC416 Overbridge, Little Island Station, OBC418 Overbridge, Glounthaune Station, Fota Station, OBC422A Overbridge, Carrigaloe Station, Rushbrooke Station, OBC437 Footbridge, Cobh Station, West of UBY1B, UBY5C, Depot, Middleton Station
Level Crossing	Myrtle Hill level crossing
Substations	Depot, Ballygibbon

## 14. Next Steps

### 14.1 Conclusion of Public Consultation No.2

Non-Statutory Public Consultation is undertaken to present the preferred option for the project to the general public, stakeholders and impacted landowners. Following conclusion of the consultation period the project team will analyse comments received and take account of the contributions in confirming the preferred end to end configuration of the scheme. A Non-Statutory Public Consultation No.2 Findings Report will be produced and published as part of the Statutory Consultation facilitated by An Coimisiún Pleanála

### 14.2 Design Development

Following completion of the Non-Statutory Public Consultation No.2 the project team will engage in further studies and design tasks for the project elements which will culminate with the confirmation of the Preferred Option and a complete understanding of the impacts of the project on the receiving environment. This allows specialists designers to undertake the statutory assessment, such as Environmental Impact Assessment (EIA) and Appropriate Assessment (AA), required for the project to meets all legal and environmental standards.

### 14.3 Railway Order

While the implementation of selected stations may be staged in alignment with adjacent land development strategies, permission for the remaining Phase 2 CACR Programme elements will be under a single Railway Order application.

The application for a Railway Order to An Coimisiún Pleanála is governed by the Transport (Railway Infrastructure) Act 2001 (as amended). An Environmental Impact Assessment Report (EIAR) will be prepared in support of the proposed Railway Order and will:

- Detail the nature and extent of the proposed project
- Identify and describe potential environmental impacts
- Outline measures to avoid, reduce and monitor these impacts

Once the Railway Order application is submitted, the public will be invited via public notices to make submissions, which An Coimisiún Pleanála will consider. An Coimisiún Pleanála may decide to hold an Oral Hearing, where the public can have further opportunity to provide a submission on the Railway Order application.

Any individual or organisation may submit observations on the Railway Order application, including the EIAR and compulsory purchase land requirements.