Cork Area Commuter Rail Programme

Project Report

TRJV

18/06/2025

Index

Table of Contents

Figures

Tables

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

Reference	Description
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 Rapid Transport
MCA	Multi-criteria Analysis
MDC	Multi-disciplinary Consultant
MGB	Metropolitan Greenbelt Areas
MV	Medium Voltage
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

Reference	Description
PAR	Project Appraisal Report
PC	Public Consultation
PRAI	Property Registration Authority of Ireland
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	TYPSA 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.

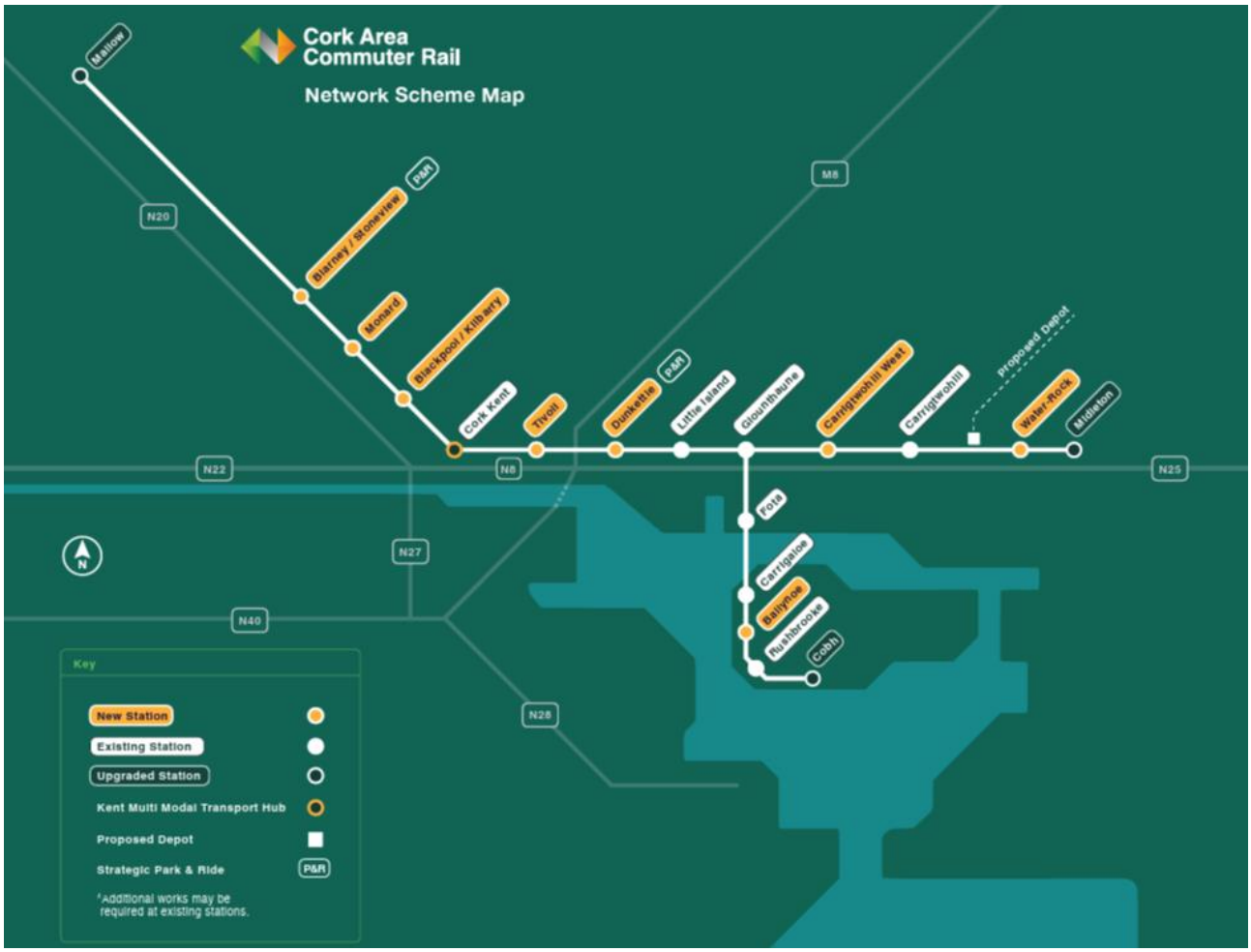


Figure 0-1: CACR Programme Network Scheme Map

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)

Currently, Work Packages 1–3 are progressing through various stages of design and construction. 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 Emerging Preferred Option for the CACR network and the process by which this was identified. This information forms part of Non-Statutory Public Consultation No. 1, 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 six local Park and Ride sites at the remaining stations.
- 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.

The CACR programme has passed through the National Transport Authority's appraisal process, moving from the 2021 Strategic Assessment Report (Phase 1) to Phase 2, which included preparation of the Scheme Feasibility Report and Options Selection Report. A review was also carried out to ensure alignment with updated guidelines.

In July 2024, 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 reassessed. 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. However, a more detailed study in the current phase concluded that BEMU technology could not reliably meet the network's service requirements. As a result, overhead line electrification (OHLE) is now proposed.

To implement OHLE, works will be required along the full route, including bridge modifications. A detailed bridge clearance assessment is underway. The configuration of the electrification system, including substation locations, is being developed in the preliminary design phase. More information can be found in Sections 8, and 10 of this report.

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 identified Ballyrichard More as the Emerging Preferred Option.

In the current phase, this selection was reviewed under the new TAF guidelines and expanded to include 11 potential sites (up from 6). The updated study confirmed Ballyrichard More as the most suitable location. Further detail is provided in Section 7.

New Stations

New train stations are planned at the following locations:

- Blarney / Stoneview
- Monard
- Blackpool / Kilbarry
- Tivoli
- Dunkettle
- Ballynoe
- Carrigtwohill West
- Water-Rock

The locations reflect long-standing regional development strategies. Stations at Tivoli and Ballynoe underwent detailed site selection processes to identify the Emerging Preferred Options, following TAF guidelines. In addition, enhancements at Mallow, Midleton and Cobh stations are planned to support greater network capacity.

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

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

Strategic Park and Ride facilities at Dunkettle and Blarney 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.

For more information on stations and Park and Ride facilities, see Section 6.

Next Steps

Following the conclusion of Non-Statutory Public Consultation No. 1 (PC01), 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). A Findings Report summarising PC01 outcomes will be published for the next consultation phase.

Non-Statutory Public Consultation No. 2 (PC02) will present the Preferred End-to-End Option in greater detail, alongside updated information including the PC01 Findings Report. Public feedback will again be sought to shape the final design and support the environmental assessment process for the Railway Order. The Preferred Option may evolve from the Emerging Preferred Option based on this input and continued design refinement.

A Railway Order application will then be submitted to An Bord Pleanála. This 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 Bord 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 Cork Area Commuter Rail 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. Transport influences how cities grow, making CACR vital to sustainable future population and economic growth.

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, albeit at a sub-optimal level until the entire Programme is delivered. This 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.

- New Stations (Blarney/Stoneview, Monard, Blackpool/Kilbarry, Tivoli, Dunkettle, Carrigtwohill West, Water-Rock, and Ballynoe).
- Strategic Park & Ride facilities as Blarney/Stoneview and Dunkettle Stations.
- Upgrades at existing stations (Mallow, Midleton 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	Current stage
2. Non-Statutory Public Consultation No.2 Preferred Option	Further consultation on the Preferred Option
3. Railway Order Application to An Bord 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 Emerging Preferred Options 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:

- Power and Fleet
- New Stations and upgrades to existing stations
- Signalling, Electrification and Telecommunications (SET)
- Permanent Way
- New Depot
- Structures
- Level Crossings

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, develops feasible options for each aspect, and documents the Multi-Criteria Analysis process that led to the selection of the Emerging 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 Emerging Preferred Option undertaken to date, which will remain open to change and modification through the design development process. 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 Emerging 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. Section 6 provides the description and outcome of the Power and Fleet Study undertaken to determine the optimal electrification option required to provide a robust and reliable train service to the Cork area required for the increase of train frequency and capacity.

Sections 5 to 11 detail the Emerging Preferred Option and the option selection process where applicable, for the remaining project components and Section 12 outlines the next steps in the process.

1.2.2 Authors of the Report

Table 1-2 Project Report Contributors

Topic	Specialist Contributors	Company	Qualifications	Experience
Chapter 1: Introduction	Thomas Leonard	ROD	BEng (Hons), BE, CEng MIEI	16 years
	Victoria da Silva Pereria	ROD	B.Sc. (Hons)	14 years
	Mark Glaysher	ROD	B.Sc., M.Sc., PGrad Cert, PGrad Dip	24 years
Chapter 2: Need & Strategic Fit	Frances O'Kelly	ROD	MSc, BSc, MIPI	16 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 Pereria	ROD	B.Sc. (Hons)	14 years
	Mark Kilcullen	ROD	BE (Civil), MSc, CEng MIEI, FConsEI	32 years
Chapter 5: Transportation Analysis	Victoria da Silva Pereria	ROD	B.Sc. (Hons)	14 years
Chapter 6: Stations	Pedro Costales	TYPSA	Barch, MSc	32 years
	Thomas Leonard	ROD	BEng (Hons), BE, CEng MIEI	16 years
Chapter 7: Depot	Mark Kilcullen	ROD	BE (Civil), MSc, CEng MIEI, FCons EI	32 years
	Joseba Perez	TYPSA	BEng (Civil), MSc	21 years
Chapter 8: Electrification	Ana Gallego	TYPSA	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
Chapter 9: Permanent Way	Paul Robinson	TYPSA	B Eng (Hons), C Eng MPWI	24 years

Topic	Specialist Contributors	Company	Qualifications	Experience
Chapter 10: 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 11: Level Crossings	Thomas Leonard	ROD	BEng (Hons), BE, CEng MIEI	16 years
Chapter 12: Further Work	Thomas Leonard	ROD	BEng (Hons), BE, CEng MIEI	16 years
	Victoria da Silva Pereria	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.1. It is important to note that the information contained within this report is provisional and subject to further studies, assessments, and design modifications, 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 Emerging Preferred Option (where applicable) as presented. As part of the Non-Statutory Public Consultation No. 1 the public are invited to make submissions and observations on the Emerging Preferred Option for consideration by the Project Team.

2. NEED & STRATEGIC FIT

2.1 Project Objectives

CACR will comprehensively upgrade the existing railway services in the Cork region. 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.

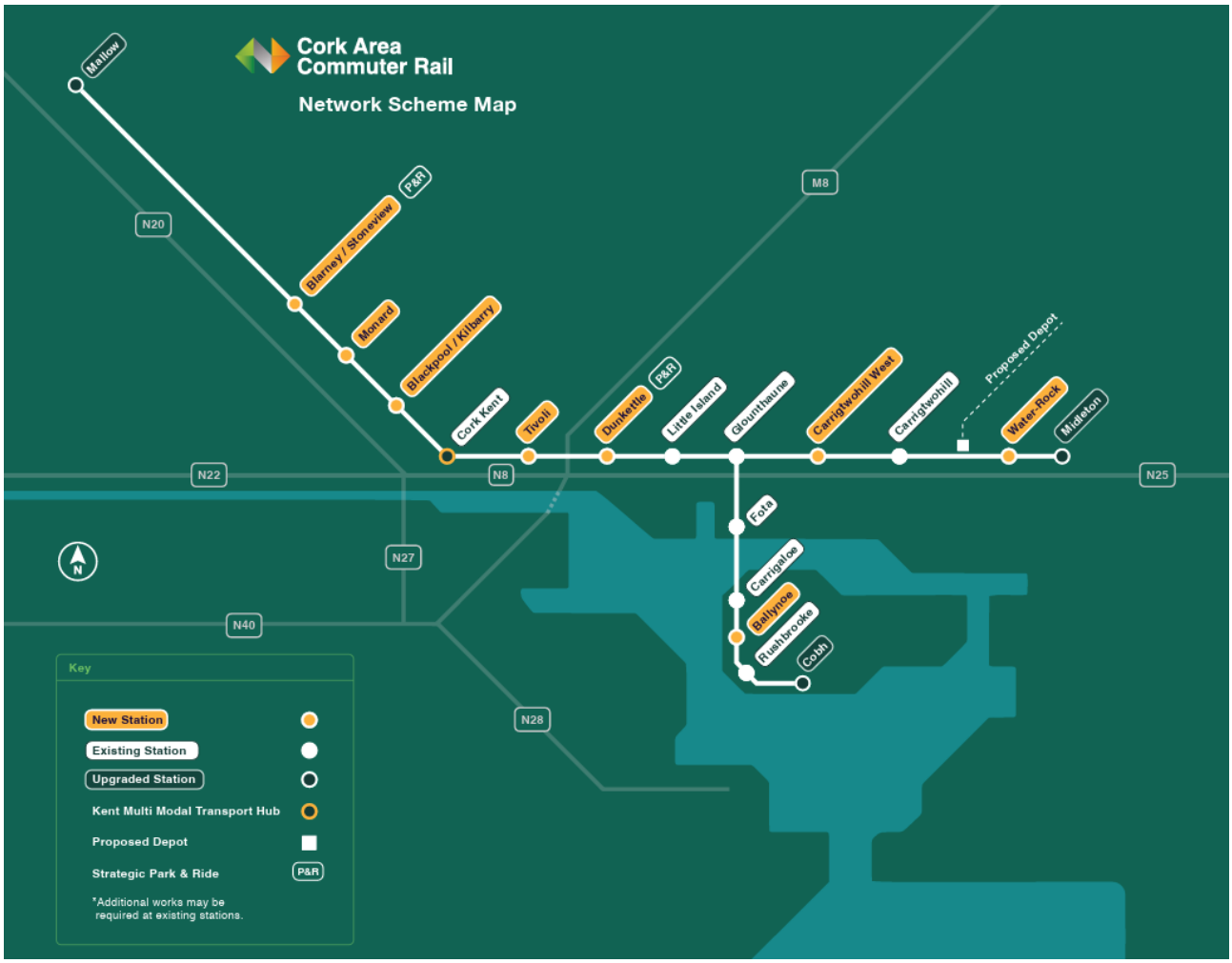


Figure 2-1: CACR Network Scheme Map

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.

2.2 Project Specific Need

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 EURFF 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)* and the *National Development Plan (NDP) 2021-2030* 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 Orientated 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 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 *IÉ Rail Freight 2040 Strategy*, the *Iarnród Éireann Strategy 2027*, the *National Adaptation Framework*, the *Transport Climate Change Sectoral Adaptation Plan*, and the *Programme for Government 2025*.

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, 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.

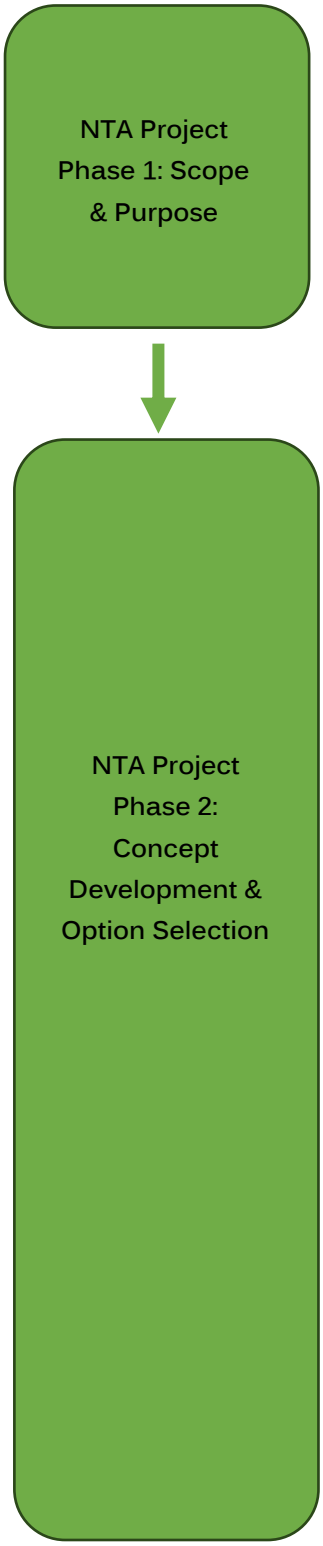
Additionally, at a local level, the CACR Programme is also aligned with the Cork County Climate Action Plan 2024-2029, the Cork City Climate Action Plan 2024-2029, the Port of Cork Masterplan 2050, and the Monard Strategic Development Zone Planning Scheme.

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

Strategic Assessment Report (SAR)

The Strategic Assessment Report (SAR), produced in December 2022, is a Phase 1 deliverable, and the first deliverable of the Department of Public Expenditure and Reform's (DPER) Public Spending Code (PSC) lifecycle and decision gate process. The purpose of the Strategic Assessment stage is to critically examine the rationale for the programme proposed and ensure the strategic fit of it with Government policy, particularly the Project Ireland National Development Plan (NDP) and National Planning Framework (NPF). The SAR describes the scale of the intervention required and allows for early scrutiny of the objectives of the programme, along with the early introduction of potential performance indicators, preliminary demand analysis, and identification of risks. The SAR also identifies a long-list of potential options for delivering the proposed scheme.



Scheme Feasibility Report (SFR)

The Scheme Feasibility Report (SFR), was produced in February 2023, describes the requirements, constraints, and feasible solutions for delivery of the CACR programme, providing the rationale upon which the options can be assessed, it sets out the process to identify and consider the requirements for the proposed interventions, and the feasible engineering and delivery solutions for each intervention. The SFR is a Phase 2 Concept Design deliverable in the National Transport Authority's (NTA) Project Approval Guidelines process, following from the Phase 1 Strategic Assessment Report (SAR). The SFR sets out the process to identify and consider the requirements for the proposed interventions, and the feasible engineering and delivery solutions for each intervention and informs the subsequent Options Selection Report.

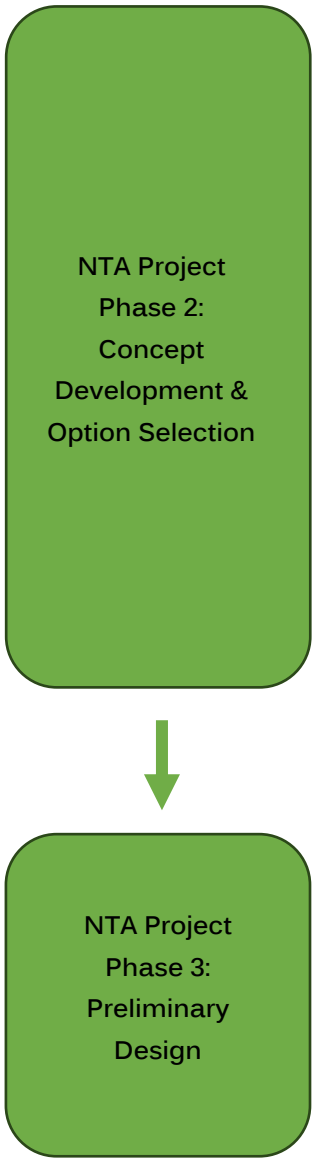
Option Selection Report (OSR)

In accordance with the NTA Project Approval Guidelines, the Option Selection Report, was produced in February 2023, is a Phase 2 deliverable that follows the Scheme Feasibility Report. Its purpose is to examine the proposed options emerging from the Scheme Feasibility Report for delivery of the CACR Programme through a robust and systematic selection approach to determine an Emerging Preferred Option which will fulfil the business needs and project objectives. This report assessed the available options against the baseline for the identification of the Emerging Preferred Option. The Emerging Preferred Option formed the basis for the further development of the project and was progressed for assessment within the Project Appraisal Report.

Project Appraisal Report (PAR)

The purpose of the Project Appraisal Report (PAR), was produced in January 2024, is to document the case for change, project objectives, options selection, and initial appraisal of the preferred option to demonstrate that there continues to be merit in the project. The submission of the PAR represents a Phase 2 Hold Point under the National Transport Authority (NTA) Project Approval Guidelines, developed in accordance with the DPER Guidelines and the DOT Common Appraisal Framework. The PAR is the second deliverable in the lifecycle appraisal process (following the Option Selection Report) and builds upon the preferred option assessed and identified within the Option Selection Report. The project base case and option selection, definition, comparative evaluation and initial appraisal of the preferred option are critical activities

underpinning the Preliminary Business Case to be developed in Phase 3 for the preferred option. Consequently, the objective of the Project Appraisal Report is to document those activities and demonstrate that there continues to be merit in the project.



Phase 2b Design Review

The purpose of the Design Review is to review and analyse previous work undertaken to develop the CACR Programme and to identify any potential gaps in information or risks to a successful planning outcome. The Design Review report substantiated the fundamentals of the concept designs as set out in the Scheme Feasibility Report and clarified or suggested areas of change or optimisation. The Design Review stage of services also included review, assessment and update in respect of selected elements of the programme including the following:

- Phase 2 Power and Fleet Options Assessment
- Proposed upgrade works at Mallow Station
- Proposed Strategic Park & Ride Facilities
- Proposed location for Tivoli Station
- Option Selection for Ballynoe Station

The Design Review comprises of a review of the previous work completed in respect of each of the previously mentioned project elements, supplementary options selection activity is presented in separate reports for each item.

Phase 3 Preliminary Design

Following completion of the Design Review the project team commenced preliminary design which includes further studies and design tasks for the project elements which will culminate with the determination of the Preferred Option and a complete understanding of the impacts of the project on the receiving environment to be assessed for the EIAR.

Please refer to Section 12 for a description of Further Work to be done.

4. OPTIONS SELECTION PROCESS

4.1 Introduction to the Transport Appraisal Framework (TAF)

In July 2024, the Department of Transport replaced the Common Appraisal Framework with the Transport Appraisal Framework (TAF). 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 TAF Structure

The framework consists of 10 modules and supporting templates:

- Module 1: Introduction (Feb 2025)
- Module 2–5: Project lifecycle documents (July 2024)
- Module 6: Final Business Cases (June 2023)
- Module 7–8: Appraisal techniques and parameters (July 2023–2024)
- Module 9: Implementation and evaluation (July 2024)
- Module 10: Key definitions and resources (July 2024)
- Templates: NIFTI (June 2023), TAA (July 2024)

4.1.2 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 will be 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
	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

TAF Criteria	Sub-Criteria	TAF Indicators	TAF Proposed Data Source for Appraisal	CACR Proposed Comparators
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
	Zoned Land, Land Use Planning and Spatial Planning	Impacts on strategic land–use planning at a national, regional, or local level,	Extent of alignment with other government policies and objectives	Impact on Land Use
	Material Assets: Agricultural properties	Direct and indirect impacts on sensitive agricultural enterprise (e.g., beef or equine farms. Tillage is low sensitivity). Severance of landholding, direct acquisition of farmyards, sheds etc). Indirect impacts due to construction and operation near sensitive Agri enterprises.	Assessment of Impacts on Agricultural properties	Impact on Agricultural Properties
	Material Assets: Non-Agricultural properties	No. of residential, community and businesses directly impacted by the option (acquisition). Indirect impacts (due to construction and operation activities) on non-Agri properties	Assessment of Impacts on Non-Agricultural properties	Impact on Non-Agricultural Properties
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

TAF Criteria	Sub-Criteria	TAF Indicators	TAF Proposed Data Source for Appraisal	CACR Proposed Comparators
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 & Soil Quality	Impact on surface water, ground waterbodies, land, soils and geological heritage sites.	Environmental constraints assessment of options	Environmental constraints assessment of options
	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 NOx, $PM_{10,}$ PM_{25}	Overall network emissions from SWRM results	Overall network emissions from SWRM results Impact on level of human exposure to NOx, $PM_{10,}$ PM_{25}

The table above outlines the main TAF criteria, sub-criteria, indicators, and data sources, as defined in the published guidance. 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 will be used. The assessment will be 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	**High Positive** - The option is likely to significantly improve conditions in the relevant criteria.
6	**Positive** - The option is likely to improve conditions in the relevant criteria.
5	**Slight Positive** - The option is likely to somewhat improve conditions in the relevant criteria.
4	**Neutral** - The option will result in no changes to conditions in the relevant criteria.
3	**Slight Negative** - The option is likely to somewhat worsen conditions in the relevant criteria.
2	**Negative** - The option is likely to worsen conditions in the relevant criteria.
1	**High Negative** - The option is likely to significantly worsen conditions in the relevant criteria.

Figure 4-1: TAF MCA Scoring Scale

The options will first be 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 emerging preferred option.

4.2 Options Assessment / Multi-Criteria Analysis

This report presents the options assessment for several key infrastructure components, such as The Train Service Specification, Power and Fleet, Depot location and Tivoli and Ballynoe Train Station locations.

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 describes in Table 4-1.4 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 train service specification, power and fleet options, Depot location and station locations at Tivoli and Ballynoe.

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*.

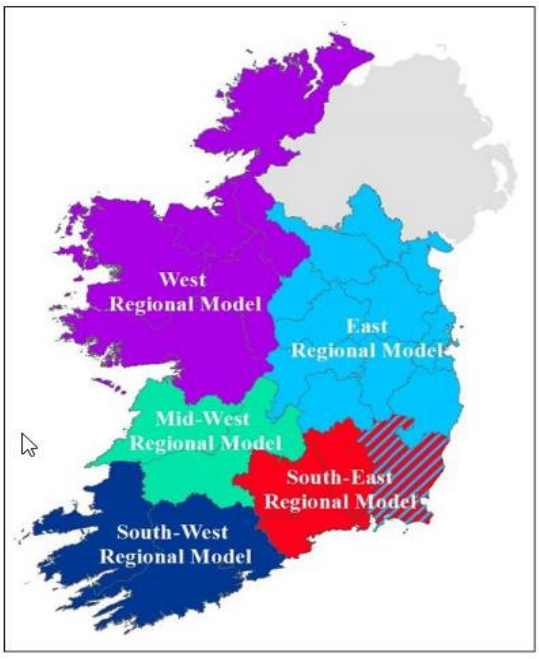


Figure 5-1: SWRM Coverage

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, Kilbarry/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, Kilbarry/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, Kilbarry/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, Kilbarry/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
15 – minute frequency to Mallow, Midleton, and Cobh 5 New stations – Blarney, Water-Rock, Kilbarry/Blackpool, Carrigtwohill West, Dunkettle	X	X	
10 – minute frequency to Mallow, Midleton, and Cobh 5 New stations – Blarney, Water-Rock, Kilbarry/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, Kilbarry/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, Kilbarry/Blackpool, Carrigtwohill West, Dunkettle, Monard, Tivoli and Ballynoe.

Based on unrestricted availability of parking, it is evident from the study that a high provision of Park and Ride spaces could be provided in the western and central parts of the CACR network (predominantly at Blarney and Dunkettle) as there is significant passenger demand at the proposed stations. Please refer to **Section 7.3** for a detailed breakdown of the proposed parking at new 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.*

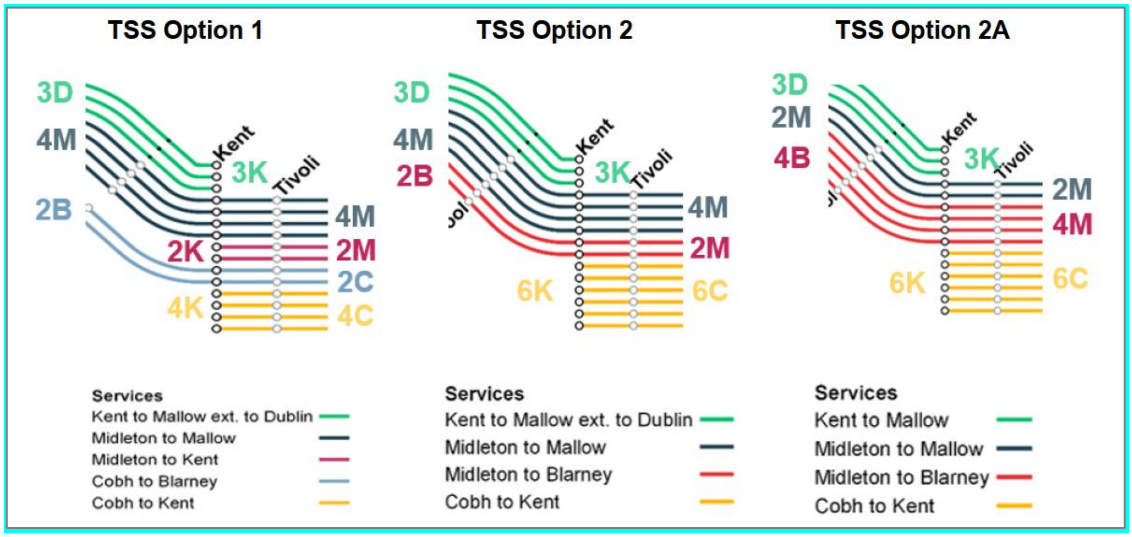


Figure 5-2: TSS Options

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

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

Table 5-2: Service Pattern Advantages and Disadvantages

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. STATIONS

6.1 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. 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/Stoneview;
- New station at Monard;
- New station at Blackpool/Kilbarry;
- New Station at Tivoli.
- New station at Dunkettle;
- New station at Ballynoe.
- New station at Carrigtwohill West;
- New station at Water-Rock.

The location of the Tivoli and Ballynoe Stations were subject to an Option Selection Process. Further details are provided in Section 6.12 and 6.13 respectively.

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.

6.2 New Stations

The eight 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.

6.2.1 Station Design Principles

All new Stations will be provided with a standard consistent design with 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 6-1 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 6-1: 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 which will be accessible by steps and lifts, refer to Figure 6-2 below. The new station platforms will be 4 metres 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 stair and accessible lift access, new passenger information displays and accessible ticket machines etc. 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.

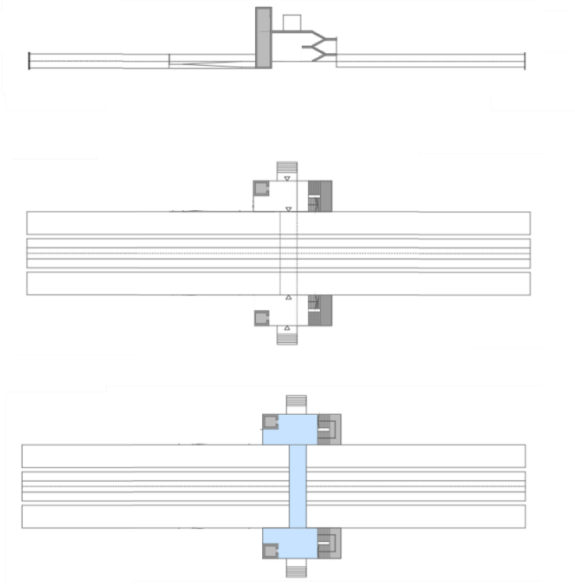


Figure 6-2: Station scheme

The standardisation will provide for recognition of corporate identify in the design and materiality, finishes, signage, and colours. The designs will have clear identity but be smoothly integrated according to context,

heritage references and existing facilities. While the station layouts will be standardised two distinct materialities have been chosen to recognise the difference in built heritage between the Mallow to Kent Line and Kent to Cobh and Midleton lines. The Mallow to Kent line predates the railway lines east of Kent and is distinct in the materiality of the buildings being cut masonry stone. The built heritage of the stations to the east are generally characterised by the use of red brick in buildings and infrastructure such as footbridges. To recognise this built heritage the CACR programme will provide two different finishes to the station as shown in Figure 6-3 below. The stations on the Mallow to Kent line will be finished in a grey/silver colour façade or cladding to blend in with the existing infrastructure. For the stations east of Kent it is intended to provide red brick finishes. In both cases the material to be used will be decided in later design stages.

Materiality – Mallow to Kent

Materiality – Kent east

Figure 6-3: Standard materiality of new stations.

6.2.2 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 2000mm wide with a clear width of 1600mm 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.

6.3 Parking Facilities

CACR will provide parking facilities at each of the eight new stations to provide secure managed parking allowing motorist, cyclist and pedestrians to access the CACR rail network for onward travel to Cork City Centre and wider national rail network. These parking facilities will supplement the parking facilities provided at existing stations on the network.

The parking facilities have been grouped into two distinct facility types, Strategic Park and Ride (SPR) and Local Park and Ride (LPR). The Strategic Park and Ride will provide large capacity parking facilities located at major multimodal interchanges to facilitate modal shift from long-distance car trips to the CACR rail network at an early opportunity. Local Park and Ride facilities will consist of a smaller capacity and serve the local catchment areas.

The capacity of the two Strategic Park and Ride facilities will be in the range of 400 – 600 spaces which will include Mobility Impaired Parking located close to the station entrance, standard car parking, motorcycle parking and bicycle parking including secure bicycle lockers.

Charging facilities for cars and electric bicycles will be provided within the provision. The capacity of the Local Park and Ride facilities will vary depending on the location and function.

6.4 Mallow Station

The need to upgrade Mallow station to support the CACR programme and cater for the growth of Mallow and surrounding areas has been outlined in CMATS, CASP, and the Cork County Development Plan as discussed in Section 2. Under CACR, Mallow Station is intended to be a terminus end of line station for the commuter rail service.

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

Mallow Train Station is located to the west of Mallow Town, north to the River Blackwater. The Station is bounded 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.

Car parking is provided to the east and north of the station building with access to and from the N20. Refer to Figure 6-4 below.

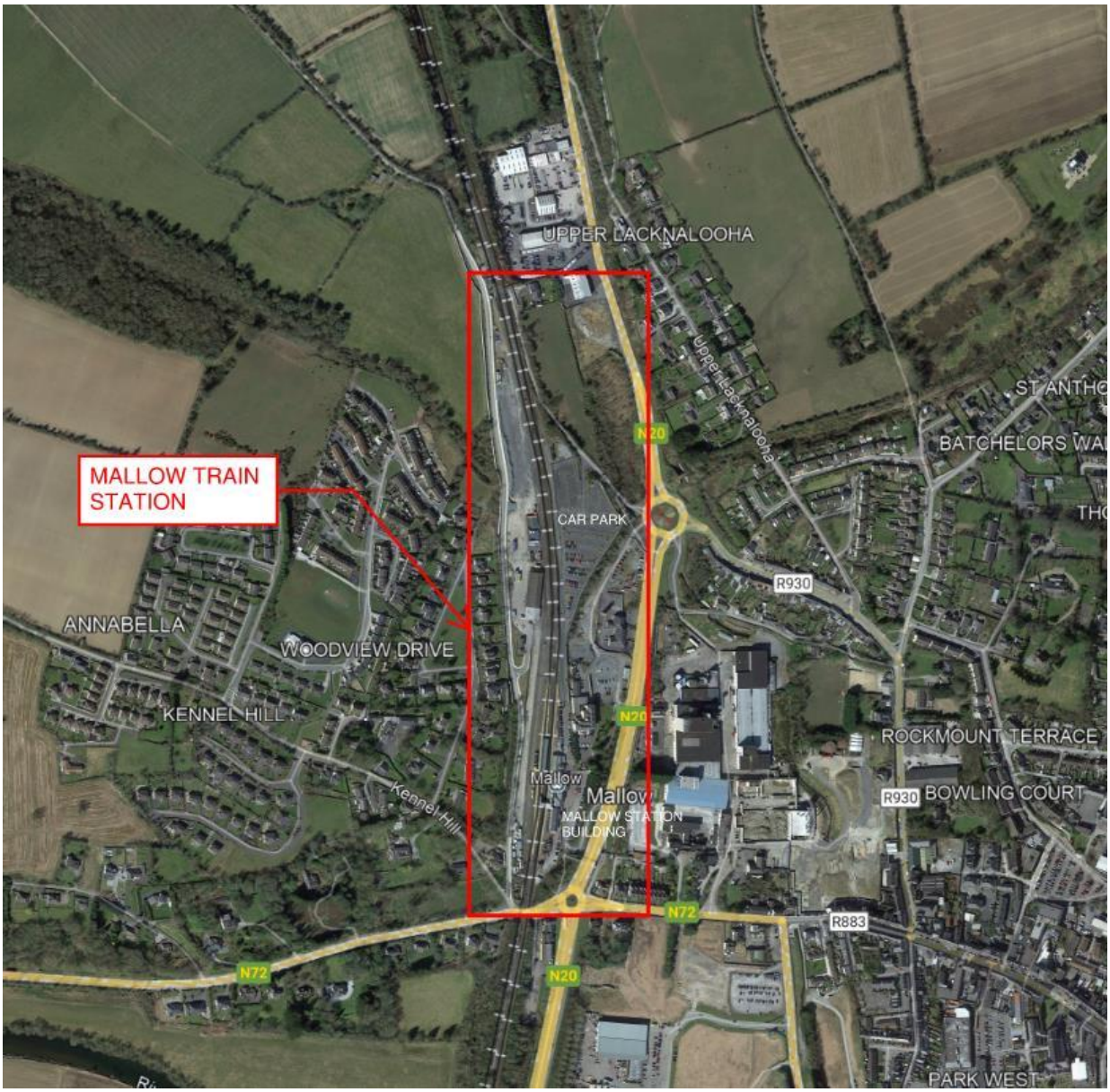


Figure 6-4: Existing Mallow Station

The station 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 provides access to the platforms. On the Downside track (east side, adjacent to the car park), sidings stable trains overnight. On the Up Side track (west side), the siding north of the existing buildings is used for ballast loading, while the remaining sidings south of the buildings accommodate occasional OTM or engineering trains.

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 and new pedestrian footbridge with stairs and lifts which will connect all platforms, refer to 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). This new access would include stairs and a lift for universal access. To increase ease of access for passengers arriving from the west, a new station entrance will be provided at the western boundary on the adjacent link road off the N72 at

Kennel Hill. The proposal will include a set-down area, station entrance with a lift and stairs to provide access to the footbridge.

Figure 6-5: Mallow Proposed Station Upgrade

6.5 Cobh Station

Similar to Mallow, Cobh Station will be a terminus end of line station for the CACR commuter service. Cobh station currently only has one platform which constrains the operation of the station. To provide additional capacity and operational resilience for a high frequency commuter service a second platform will be added. This will also provide additional capacity for potential future train stabling and special events at Cobh (e.g., cruise ship arrivals) refer to Figure 6-6 below.

It is proposed to extend the existing northern platform westward to the boundary with the Garda station and pedestrian overbridge. The eastern portion of the platform is to be widened into the area currently occupied by the down line to create a second operational platform.

The up-line track would 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.

The station is currently served by two access points. The main access point from the public roadway is located to the north of the station from Lower Road adjacent to parking and bus and taxi set down areas. A second access point is provided from the Port of Cork Cobh Cruise Terminal. This access point provides level access to the east of the platform directly from the dockside.

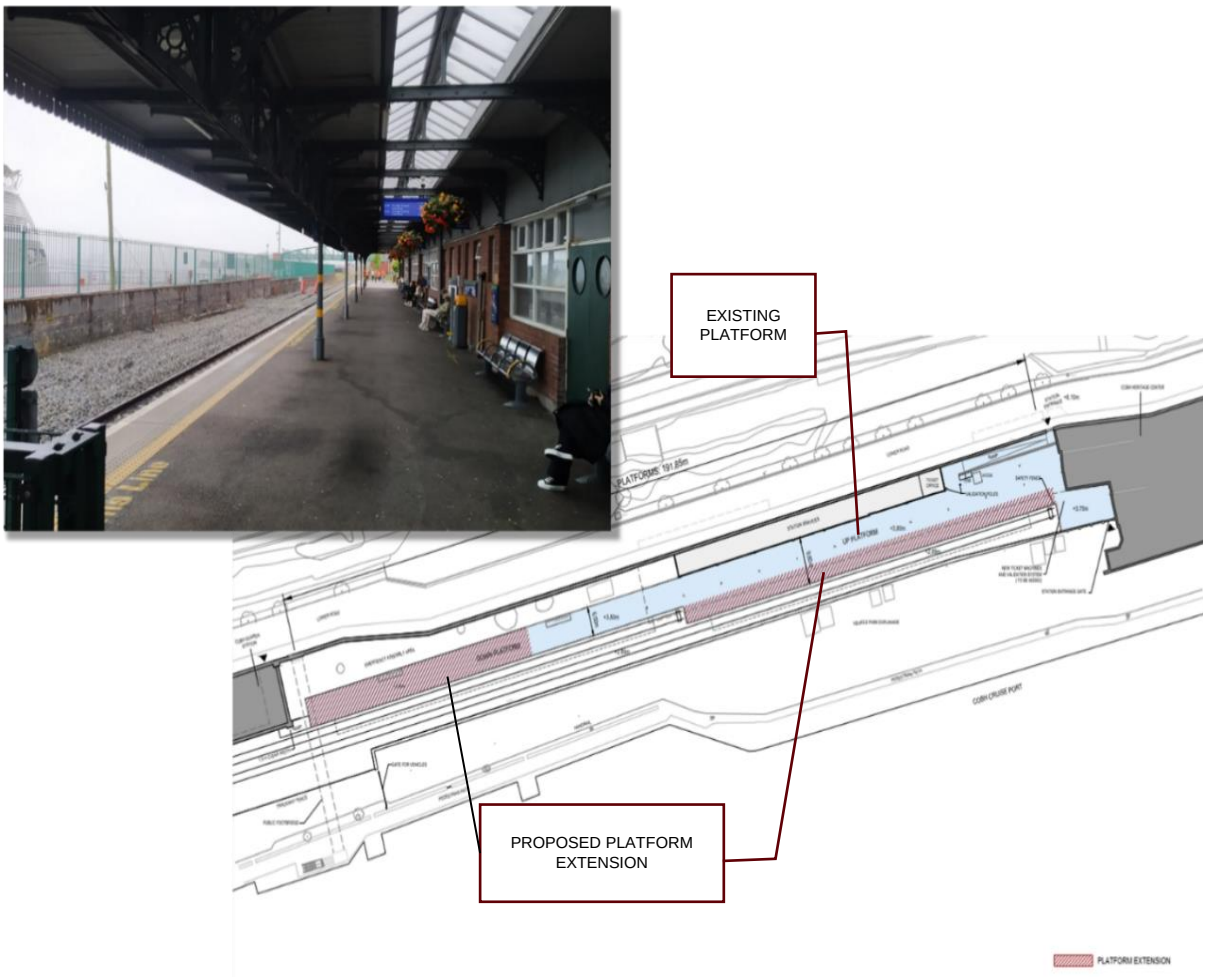


Figure 6-6: Proposed Cobh Station Layout

6.6 Blarney / Stoneview 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 6-7 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 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 6.3 for further information in relation to parking facilities.

The 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 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 if required. Refer to Section 6.2.1 for further information in relation to the layout of the proposed station.

Figure 6-7: Blarney Strategic Park and Ride Location Map

The proposed station is to be located on existing agriculture 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 resident 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 site has sufficient additional adjacent are to allow further expansion if required subject to discussion with landowners.

The proposed new station at Blarney is therefore to 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 and 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 6-8 below. TII propose to widen the existing N20 on its existing alignment in the vicinity of the proposed Blarney Train Station. The proposals intend 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. It is intended that the section of the active travel route will be incorporated into the proposed Blarney Train Station access roads subject to planning approval for CACR and TII M20.

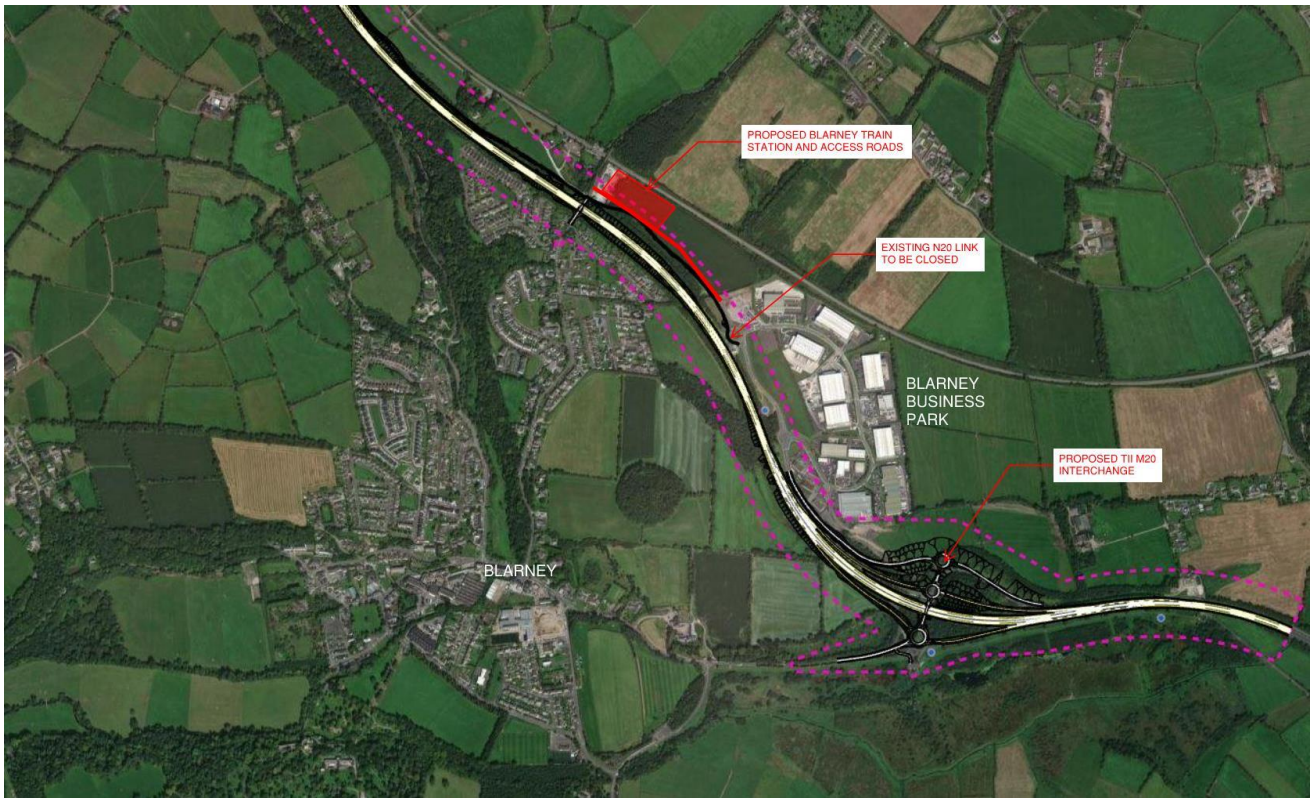


Figure 6-8: TII M20 proposals - Blarney

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 6 metres wide with segregated one-way cycle tracks and footpaths on either side. The proposed cycle track and footpath is to be 2 metres each.

Following further 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 unsignalized priority junction. Further traffic modelling will be undertaken to determine if unsignalized or a signalised junctions are preferable following the completion of demand modelling. Refer to Figure 6-9 below.

Figure 6-9: Blarney Strategic Park and Ride Car Park Layout

The parking facilities will be provided with set down areas for private vehicles/Taxis and bus services in addition to public bus stops for future integration into the public bus network. Mobility impaired parking spaces will be conveniently located close to the station entrance some of which will be electric car 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.

6.7 Monard Station

The proposed station is located within the Monard Strategic Development Zone (SDZ). 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 Station is intended to be provided at the latter end of the CACR works programme or as development in the area comes to realisation.

The Station and car park are located along the L2782 Old Mallow Road, as shown in Figure 6-10 below.

Figure 6-10: Monard 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 6-11.

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 lifts.

The main vehicle and pedestrian access are proposed on the southern side of the station, along with parking facilities. To the north, there will be a secondary entrance from Rathpeacon Road, allowing for a set down for vehicles and cycle park provisions.

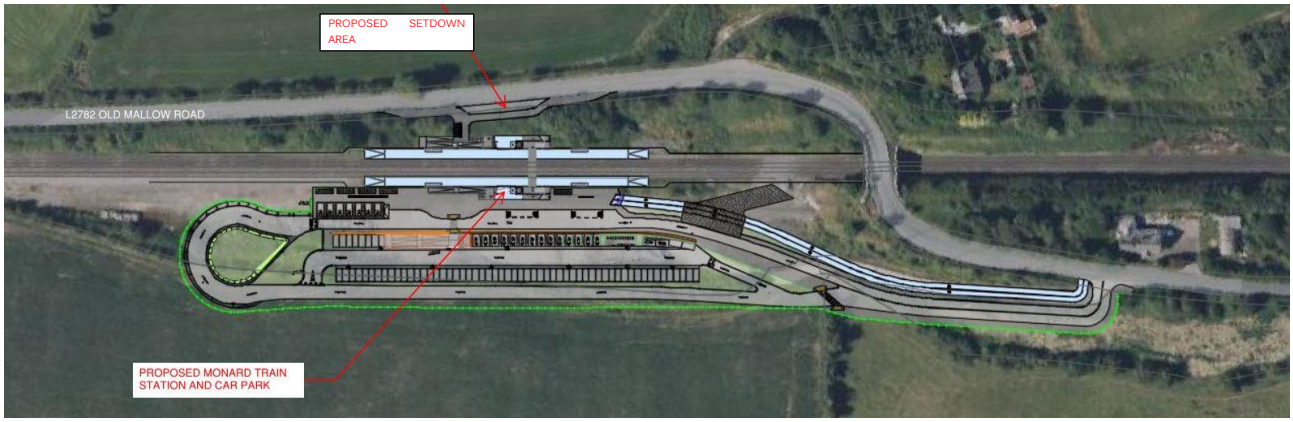


Figure 6-11: Monard Park and Ride Car Park Layout

The Station will be accessed via an uncontrolled priority junction directly to the L2782. The proposed link road is to be 7 metres wide with segregated two-way cycle track to the north and footpaths on either side. The proposed footpath is to be 2 metres each. The are of existing Irish Rail land is relatively level however the grade falls away at a steep gradient to the south of this area. To reduce the quantity of imported fill material it is intended that the car park will be a one- way system split level car park. Vehicles will enter along the road to the south and travel to the upper level via the partial roundabout to the west. The main body of the standard parking spaces will be provided at the lower level. Disability parking, motorcycle and bicycle parking will be provided at the upper level to provide convenience. Set down and bus stops will also be provided at the upper level. Motorists will be provided with steps and accessible ramps from the lower level to the station entrance. In addition, a drop off/ set down area will be provided to the north of the station to allow ease of drop off.

6.8 Blackpool/Kilbarry Station

In line with CMATS and CASP, the Cork City Development Plan outlines the provision of a new station at Blackpool/Kilbarry in order to support the regeneration of Blackpool and to support development intensification. Blackpool Train Station will be provided with a Local Park and Ride intended to serve the local catchment and urban centre. The proposed site for the new Blackpool/Kilbarry station features a significant elevation difference between the residential area on the east side, which is situated higher than the tracks and platforms, and the commercial area on Redforge Road, approximately 17 meters below platform level.

Figure 6-12: Blackpool/Kilbarry Park and Ride Car Park Layout

The station proposal includes two platforms on either side of the railway, connected by a pedestrian footbridge equipped with stairs and accessible ramps. The main access to the station is to be via the Dublin Hill Road to the east of the station. A new signalised pedestrian crossing will be provided across the Dublin Hill Road to provide connectivity and enhance safety. On the southwestern side, a pedestrian access point

will provide to platform level from Redforge Road facing to the Blackpool shopping centre. Access will be provided with a lift and steps to allow for the elevation difference.

The parking provision will consist of mobility impaired parking spaces which will be conveniently located close to the station entrance some of which will be electric car charging bays. Standard car parking space are to be provide with a number of 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.

6.9 Dunkettle Station

In line with CMATS and CASP, the Cork County Development Plan outlines the provision of a new station and Strategic Park & Ride facilities at Dunkettle (North Esk). The Station is strategically located at the Dunkettle Interchange with access from the M8, N25, N8 and N40 Southern Ring Road as shown in Figure 6-13 below. The Station is located on Irish Rail lands in North Esk which is currently in use as a container storage yard. The station and parking facilities will be accessed via the existing access road located to the west of the station which connects to the North Esk Link Road. This provides access to the L3004 to the north and N25 to south and Dunkettle interchange (M8) to the west.

Figure 6-13: Dunkettle Strategic Park and Ride Location Map

The proposal for the new station includes two platforms on either side of the railway, connected by a pedestrian footbridge with stairs and lifts. The main station entrance and parking facilities will be provided to the south of the railway line as shown Figure 6-14 below.

The station will also be accessible from the north with set down areas and a new signalised crossing provided across the L3004.

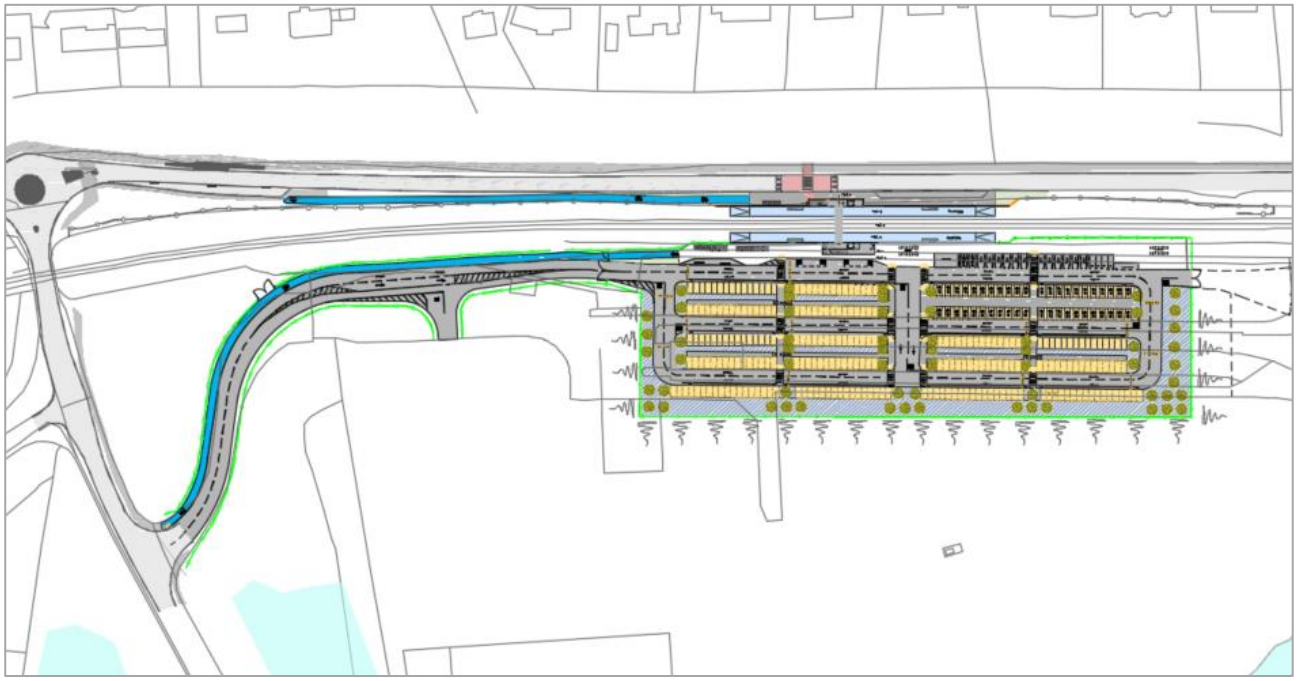


Figure 6-14: Dunkettle Strategic Park and Ride Car Park Layout

The existing access road will be upgraded to provide a shared activity travel path on the northern side of the road vertically segregated from the carriageway. This will provide connectivity to the existing cycle and pedestrian facilities provided on the North Esk Link Road and L3004 to the north. The existing roadway will be widened to 7m, providing two 3.5m traffic lanes. The widened traffic lanes will be required to cater for container traffic as the container yard will remain operational in the short term. A new minor junction will be provided west of the car park entrance to allow access to the container yard. It is intended that the area within the IE lands, to the east of the station and car park will operate as a railway maintenance yard for the new CACR Network infrastructure, exact details are subject to further study and design.

The parking facilities will be provided with set down areas for use by private vehicles/Taxis and bus services in addition to public bus stops for future integration into the public bus network. Mobility impaired parking spaces will be conveniently located close to the station entrance some of which will be electric car charging bays. Standard parking bays will be provided some of which will include 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.

6.10 Carrigtwohill West Station

Carrigtwohill West station is outlined in CMATS 2040 as 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 or hi-tech industrial development. The proposal for the new station is coordinated with the future development of the Carrigtwohill West Retail Park (Fota Retail Park).

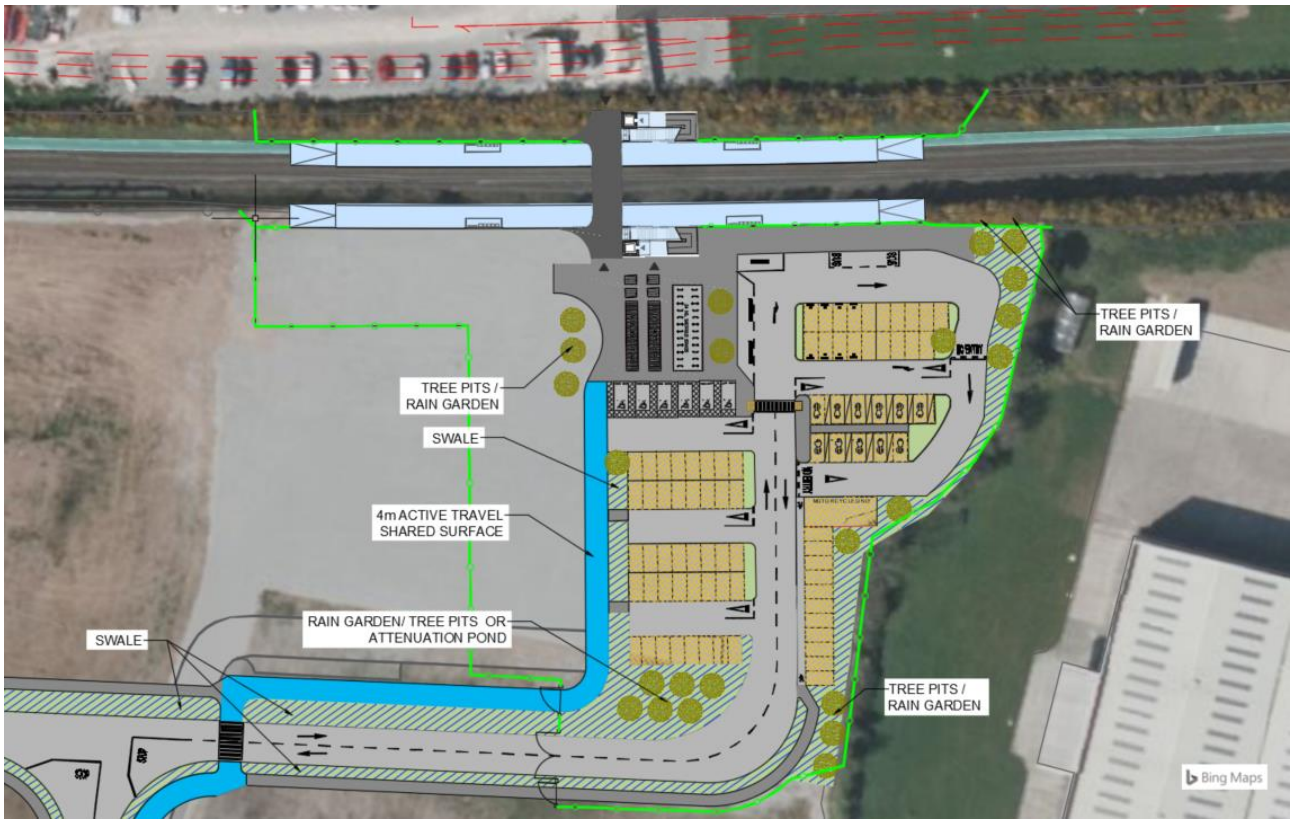


Figure 6-15: Carrigtwohill West Local Park and Ride Car Park Layout

The Station includes platforms on either side of the mainline with access between platforms provided by a pedestrian footbridge with stairs and accessible ramps connecting both platforms. The main access to the station is proposed on the south side of the railway, with parking facilities included. Access to the station will also be provided from the north from the existing road network. Further design work is required to ensure integration with the recently developed Greenway development of a set down area and public access bridge linking the north and south side of the railway line.

The Station will be accessed from the L3004 via the existing internal road network. The existing road will be upgraded to provide a 4-metre shared active travel route to the east of the access road and a 2-metre 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.

The parking provision will consist of Mobility impaired parking spaces conveniently located close to the station entrance two of which will be electric car charging bays. Standard car parking space are to be provide with several 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.

6.11 Water-Rock Station

Water-Rock was proposed as a new station in CMATS 2040 between Carrigtwohill 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 6-16 below for the current layout of the proposed station at Water-Rock.

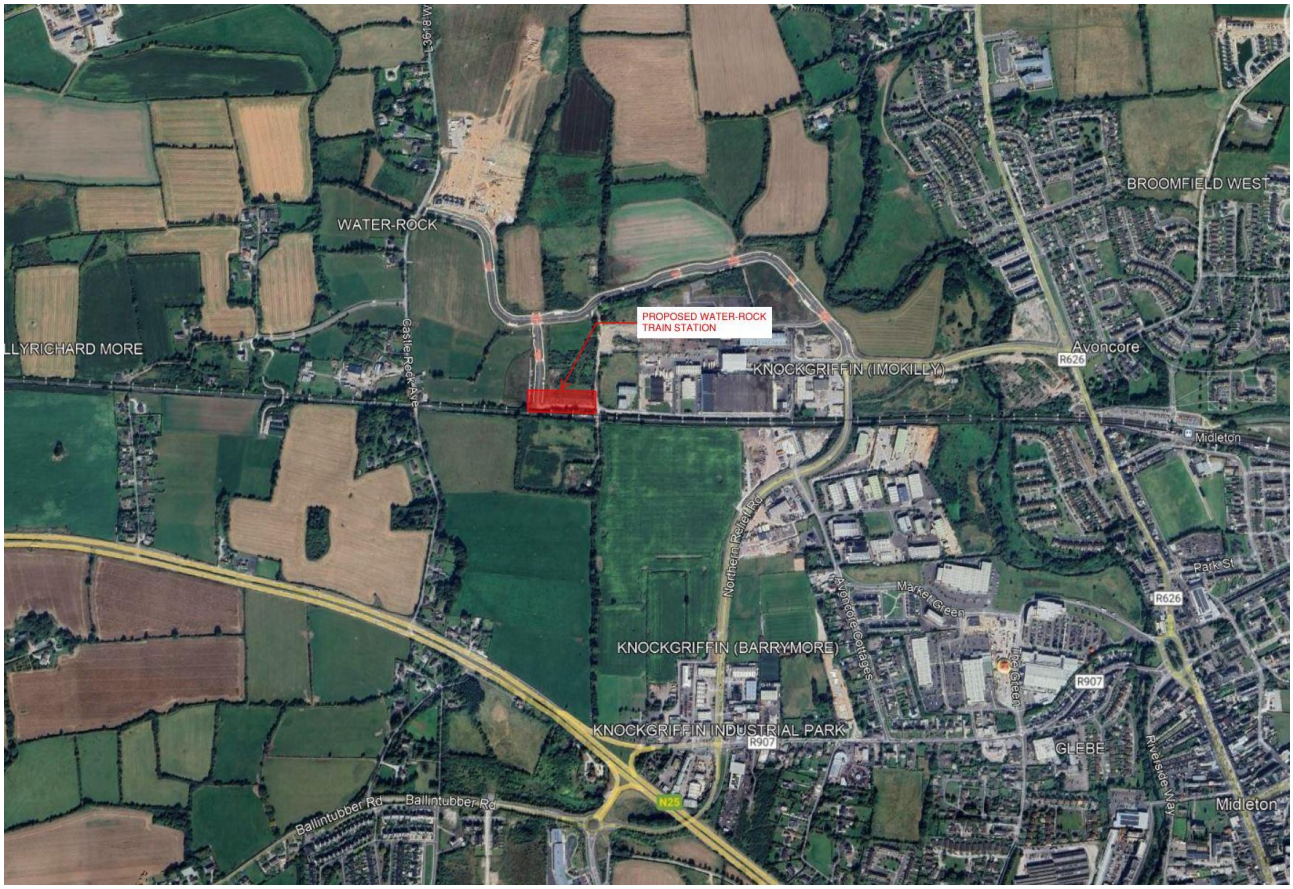


Figure 6-16: Water-Rock Park and Ride Location Map

The Station includes platforms on either side of the mainline with access between platforms provided by a pedestrian footbridge with stairs and accessible ramps connecting both platforms. The Train Station will be accessed from the north via the recently constructed road network developed to allow the provision on residential housing. Parking facilities will be provided with set down area to allow private vehicles/taxi and small bus set down. Due to spatial constraints the proposed car park does not have facility for public bus circulation and bus stop. Bus stop facilities have been provided 170m north of the station on the newly constructed road network.

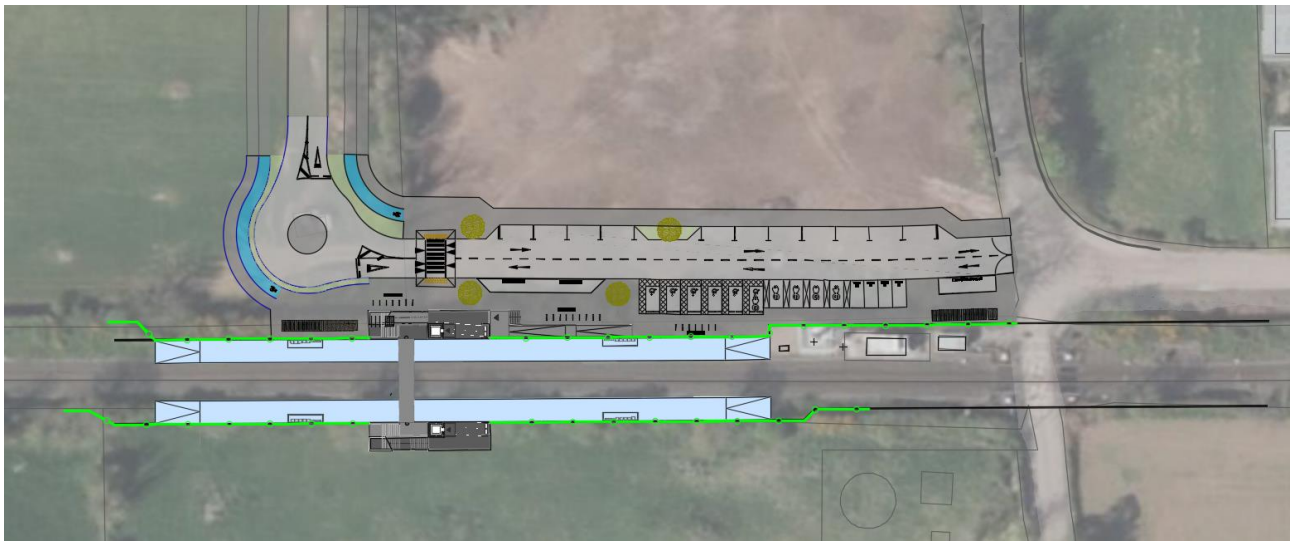


Figure 6-17: Water-Rock Park and Ride Car Park Layout

6.12 Ballynoe Train Station

6.12.1 Introduction

The Phase 2 Feasibility Report identified the need for an additional train station along the Kent to Cobh railway line on Great Island and provided a recommendation for the location. The location of the proposed station was reviewed as part of the current phase of the project and subjected to an Option Selection Process to bring the process in line with recently updated TAF guidelines. To determine the optimum location for the new train station, options were developed and assessed by Multi Criteria Analysis aligned with the provisions of the Transport Appraisal Framework as described in above Sections 4.

This need 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. There is an approximately 2.2-kilometre section of the rail network between Carrigaloe Train Station and Rushbrooke Train Station without a train station to serve existing rail passengers or future need. The Phase 2 reports identified a 500m section of railway that was determined to be the optimal location for the new train station, as shown in Figure 6-18 below.

Figure 6-18: Ballynoe Train Station Study Area

The option locations were identified based on several technical criteria such as the availability of relatively straight track to allow a platform, nearby access from the public realm and sufficient space to provide adequate parking facilities. From the initial technical assessment, six options were developed as described below. The location of the options is shown in Figure 6-19 below.

Figure 6-19: Ballynoe Train Station Options Locations

6.12.2 Options Description

Option 1

Option 1 is located appropriately 200 metres north of Ballynoe Road junction adjacent to the Passage Ferry Crossing. The station proposal includes two platforms on either side of the railway, with the west platform situated on an existing embankment. The platforms are connected by a pedestrian underpass below the tracks at level +4.4m, with stairs and lifts providing access due to the steep terrain, which makes ramps an unfeasible option. Pedestrian access is proposed from the west side only, along with the car park facilities, which will be located in the Boatyard area opposite the station entrance.

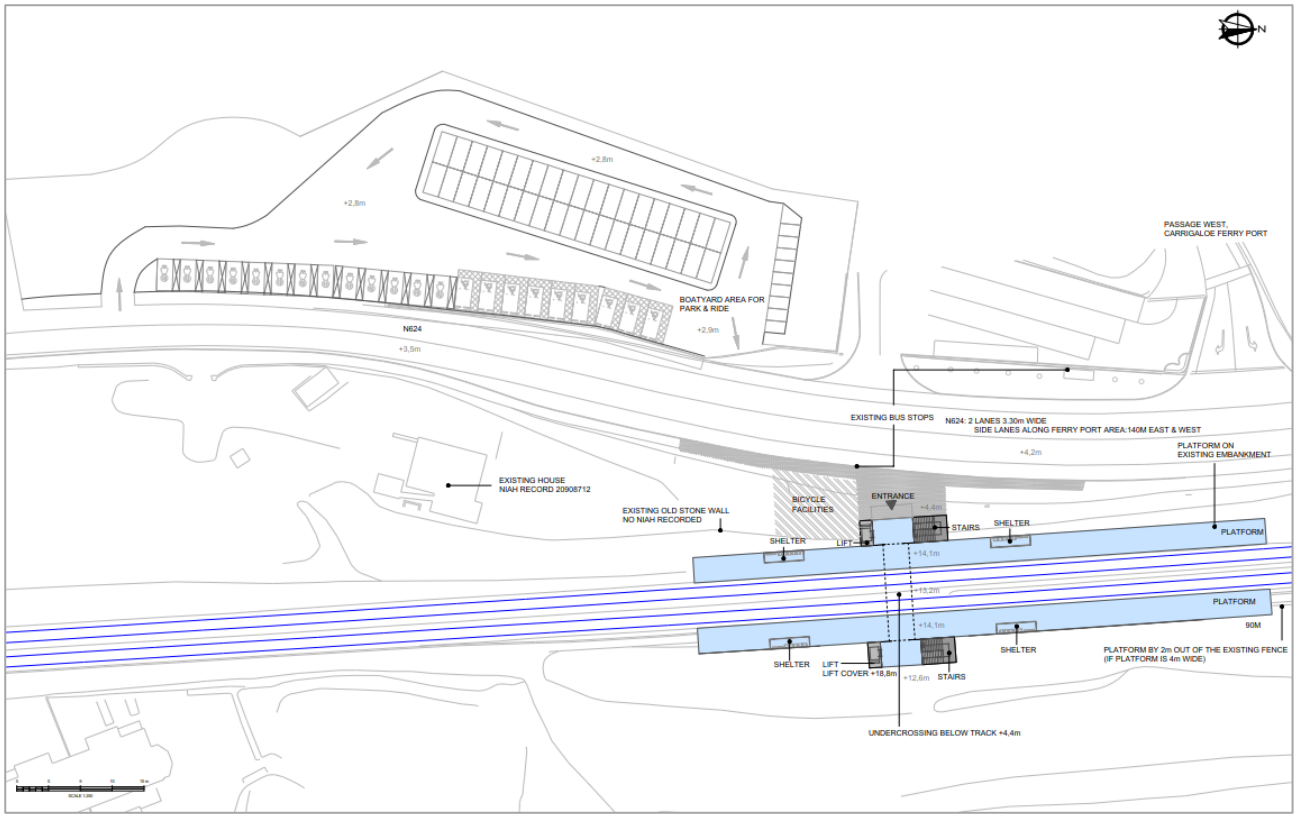


Figure 6-20: Option 1 Plan Layout

Option 2

Option 2 is located adjacent to the Ballynoe Road immediately north of UBC 428. The site has a significant elevation difference between the N624 road and the railway, which is positioned on a high, partially retained embankment, with residential rural properties to the east and northwest. Due to this steep gradient, ramps are not considered a feasible access option.

The proposal includes two platforms on either side of the railway, connected by a pedestrian underpass at level +5.2m, located below the track.

Additionally, there is a pedestrian access point on the east side of the railway. The proposal suggests providing this station access level as possible to platform to facilitate accessibility.

This pedestrian access will connect to the Ballynoe Road west of UBC 428 and run through private lands adjacent to private residents.

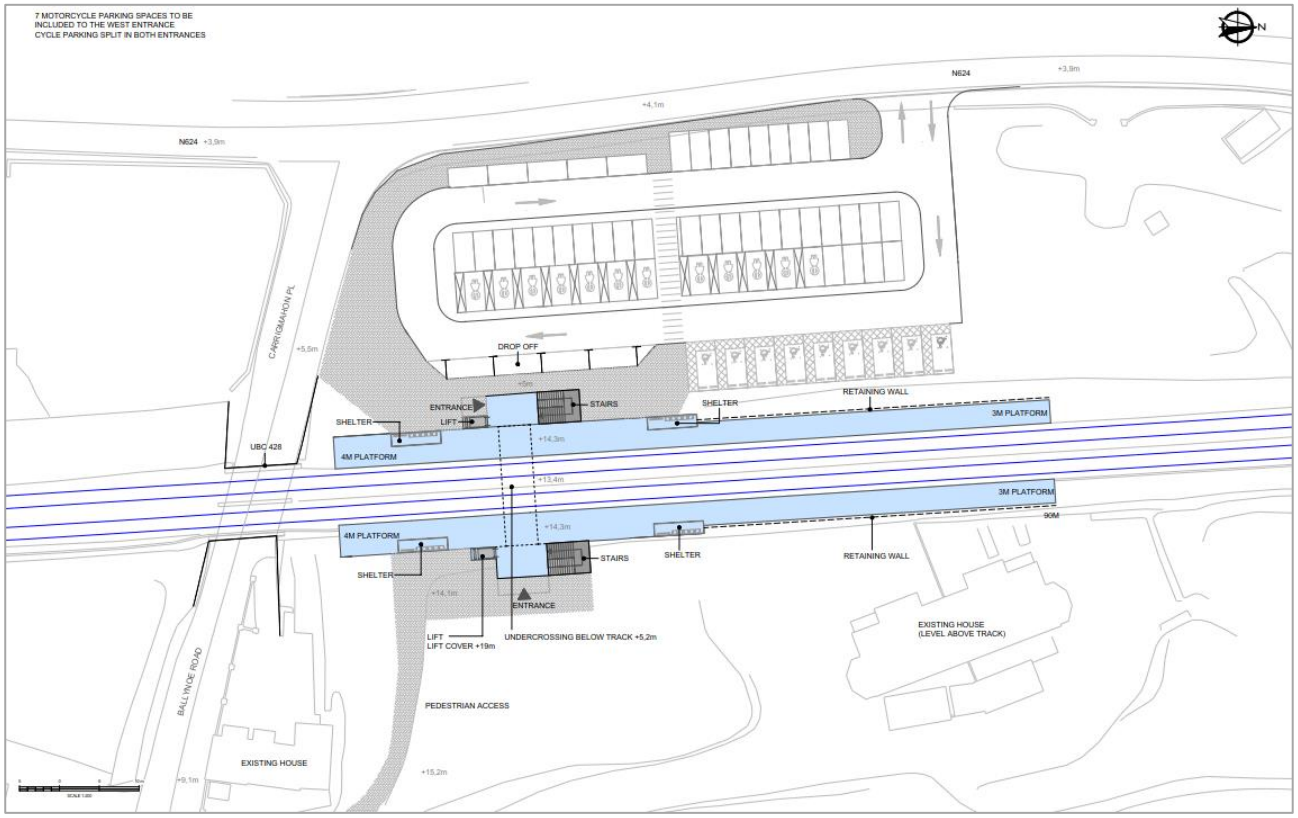


Figure 6-21: Option 2 Plan Layout

Option 3

Option 3 is located adjacent to Ballynoe Road immediately south of UBC 428. Option 3 includes two platforms positioned on the existing embankments. Pedestrian access to the station is provided on both sides of the platforms, which are connected by an underpass below the tracks, with lifts and stairs to reach the above platform level.

On the western side of the station, there is potential to accommodate bicycle/ motorcycle parking facilities. On both the east and west side, soft and hard landscaping feature.

Car parking is proposed on the north of UBC 428 as provided in Option 2. An on demand signalised pedestrian crossing will be provided to allow safe universal access from the car park to the station entrance.

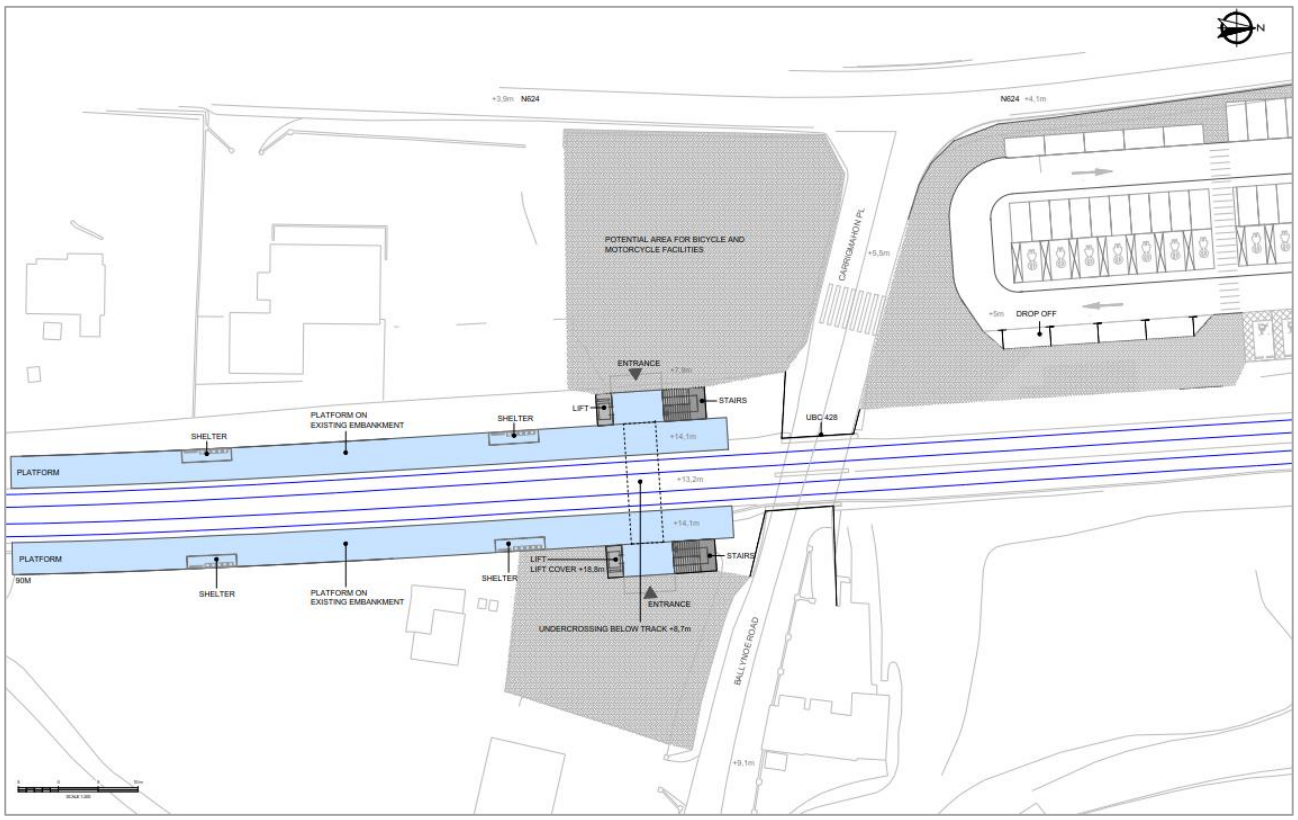


Figure 6-22: Option 3 Plan Layout

Option 4

Option 4 is located at UBC 428 which spans the Ballynoe Road. Option 4 proposes to provide two platforms on the west and east which are incorporated into a reconstructed UBC 428. At both sides, platform level is reached by means of stairs and lift.

A pedestrian crossing is provided west of UBC 428 to avoid the need for a footbridge or underpass within the station. The reconstruction of UBC428 proposes to upgrade the existing roadway to provide for two-way traffic and a pedestrian footpath on the southside of the roadway.

This design provides separate access to both platforms. The station access on the east side of the railway will be located to the south of Ballynoe Road like Option 3. Bicycle parking and soft and hard landscaping will be provided to a welcoming station entrance.

The station access on the west side will be provide north of the Ballynoe Road from the proposed parking facilities which will be similar to Option 2 and 3.

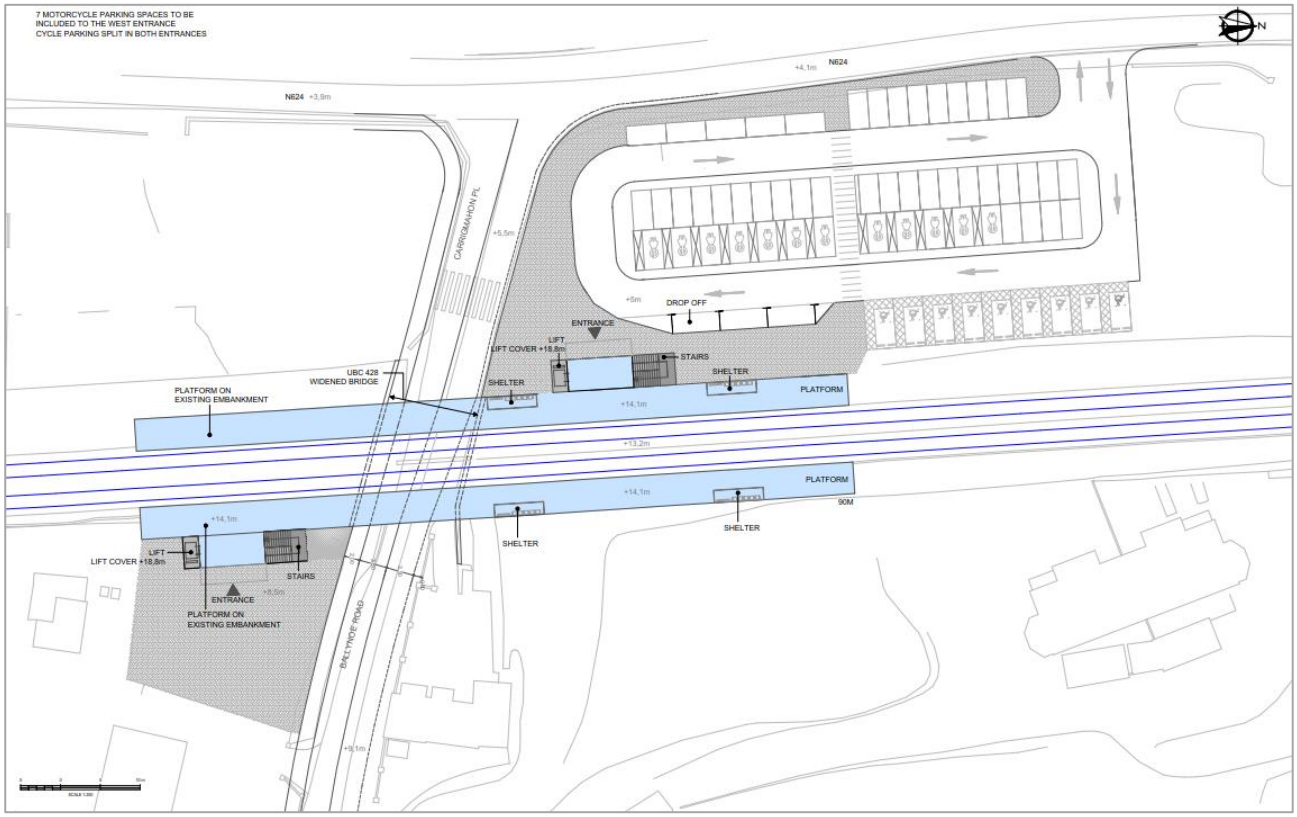


Figure 6-23: Option 4 Plan Layout

Option 5

Option 5 is located approximately 240 metres south of Ballynoe Road, with platforms positioned on a curve, south of an existing road underpass (UBC 429) which is a private access to several private houses. The proposed station is adjacent to the R624 to the west, which requires a high retaining wall to the same roadside. Pedestrian access to the platform on the west side of the railway is provided through stairs and a lift.

To the east the existing terrain has a lower elevation to platform level, where the access road and parking facilities for the station are planned. Pedestrian access to the platform on this of the railway is provided through ramps and stairs, which are integrated into the parking layout. The underpass bridge (UBC 429) requires to be enlarged to facilitate a two-lane access to the east of the car park. This option is outlined in the Scheme Feasibility Report, the current proposal in this assessment includes the following adjustments:

- The underpass bridge (UBC 429) could be enlarged some more to facilitate pedestrian crossing.
- The above describe crossing facilitate separate access to both platforms, not being necessary to provide a footbridge or underpass within the station, which is removed from the scheme.

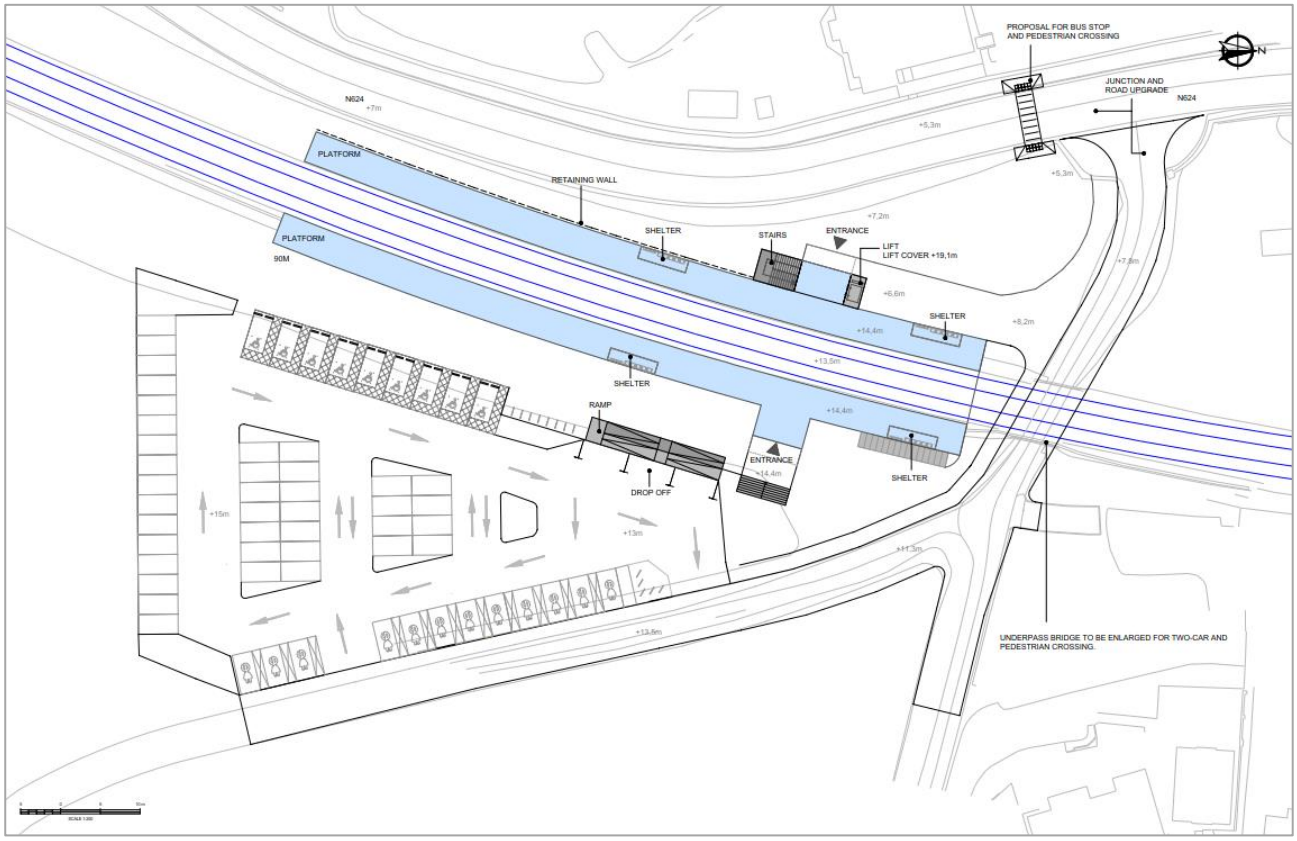


Figure 6-24: Option 5 Plan Layout

Option 6

Option 6 is located 560m south of Ballynoe Road, south of Chandlers residential estate. The car park is located east of the rail line within grassed area east of Chandlers Way. The car park access road connects to the Chandlers Way which provides access to Rushbrooke Park Road and the wider road networks.

The proposed car park area is a ground which is elevated above the entrance to the stations. A pedestrian ramp is required to bring passengers down the station entrance and platforms.

The station will have only access from east. To the west there are several residential houses at the toe of the rail embankment. A footbridge and lifts are to be provided to give passengers access to the western platform.

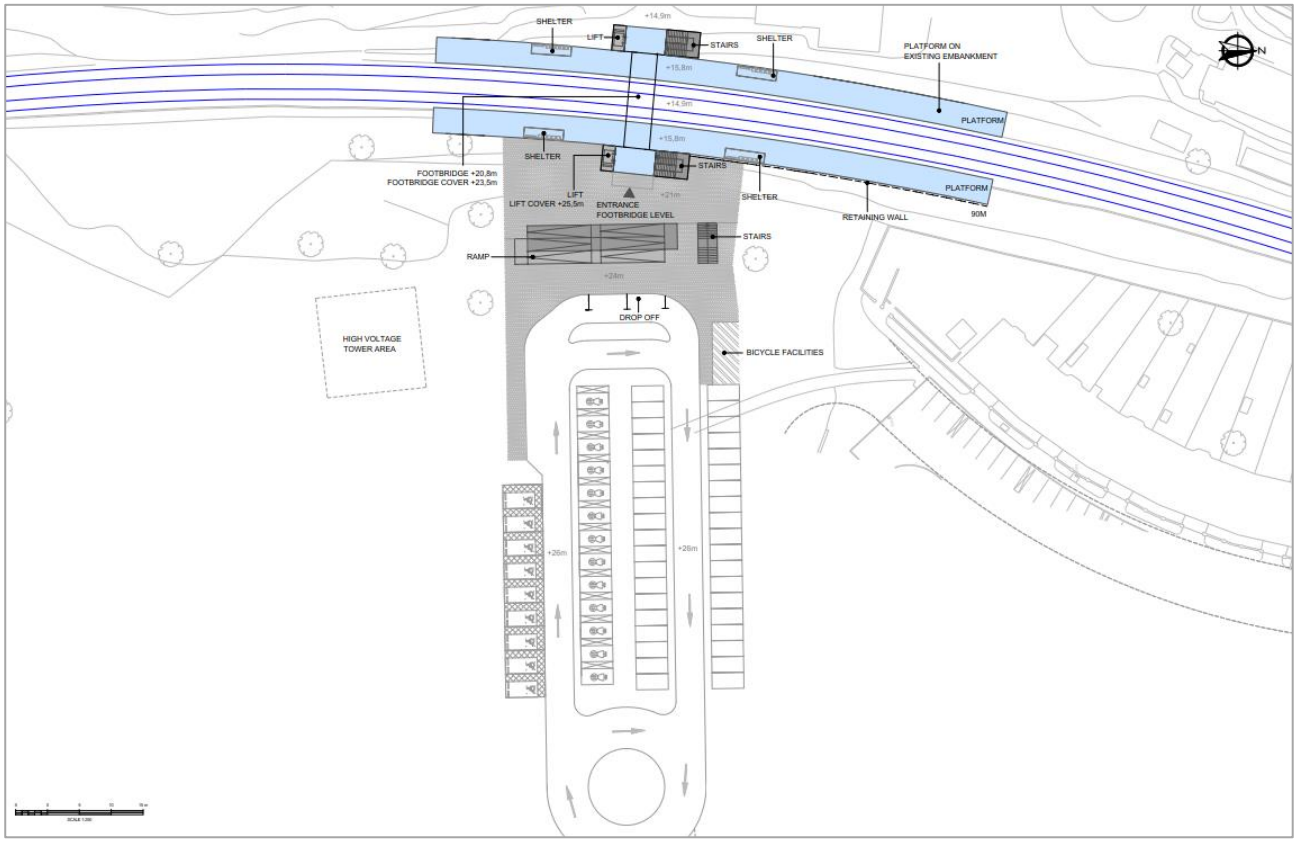


Figure 6-25: Option 6 Plan Layout

6.12.3 Emerging Preferred Option

Each of the options were accessed in accordance with the TAF MCA the outcome of which is presented in Table 6-1 below. Option 2 was determined to be the Emerging Preferred Option following the assessment. Each of the options located at the Ballynoe Road score higher than others due to their relative proximity to other transport links i.e. The ferry port, bus stop and the local road network. Option 2 is well placed to serve planned development northeast of the site. From the perspective of the risk in roads routes and crossings for pedestrians, the route is longer through Ballynoe Rd underbridge (no walkway) and along N624, and there is a road crossing between car park and station. The proposal will provide footpaths on the western side of the carriageway adjacent to the car park increasing road safety for

The station location will directly impact two existing private residents, to the north and southeast of the station location. The eastern access for the proposed station is proposed to connect to Ballynoe Road and run adjacent to one of the properties. Permanent land take will be required to facilitate the eastern station access point. The western access point and car park will be located on a vegetated area between the rail line and N624. The proposed station will not impact any protected structures, several sensitive receptors are within range of the proposed station location which may result in a slightly negative impact during construction and operation which is similar across most of the options.

Option 2 and Option 4 scored similar in the assessment. Option 4 was marked down slightly mainly due to the lack of an internal footbridge and impact on mobility impaired users. It is recommended that Option 2, a new station at Ballynoe Road be adopted as the Emerging Preferred Option for public consultation.

Table 6-1 Summary MCA Table: Ballynoe Station

Sub-Criteria Consolidation	Do Nothing	Do Minimum	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6
Transport User Benefits and Other Economic Impacts	3 – Slightly Negative Impact	5 – Slightly Positive Impact	5 – Slightly Positive Impact	5 – Slightly Positive Impact	5 – Slightly Positive Impact	5 – Slightly Positive Impact	5 – Slightly Positive Impact	5 – Slightly Positive Impact
Accessibility Impacts	1 – Highly Negative Impact	2 – Negative Impact	6 – Positive Impact	7 – Highly Positive Impact	7 – Highly Positive Impact	7 – Highly Positive Impact	3 – Slightly Negative Impact	3 – Slightly Negative Impact
Social Impacts	2 – Negative Impact	3 – Slightly Negative Impact	5 – Slightly Positive Impact	5 – Slightly Positive Impact	5 – Slightly Positive Impact	5 – Slightly Positive Impact	6 – Positive Impact	6 – Positive Impact
Land Use Impacts	3 – Slightly Negative Impact	3 – Slightly Negative Impact	4 – Neutral Impact	4 – Neutral Impact	5 – Slightly Positive Impact	5 – Slightly Positive Impact	4 – Neutral Impact	3 – Slightly Negative Impact
Safety Impacts	4 – Neutral Impact	5 – Slightly Positive Impact	5 – Slightly Positive Impact	5 – Slightly Positive Impact	5 – Slightly Positive Impact	4 – Neutral Impact	3 – Slightly Negative Impact	4 – Neutral Impact
Climate Change Impacts	4 – Neutral Impact	4 – Neutral Impact	2 – Negative Impact	3 – Slightly Negative Impact	3 – Slightly Negative Impact	3 – Slightly Negative Impact	3 – Slightly Negative Impact	3 – Slightly Negative Impact
Local Environmental Impacts	4 – Neutral Impact	3 – Slightly Negative Impact	3 – Slightly Negative Impact	3 – Slightly Negative Impact	2 – Negative Impact	3 – Slightly Negative Impact	3 – Slightly Negative Impact	3 – Slightly Negative Impact
Criteria Consolidation	3 – Slightly Negative Impact	4 – Neutral Impact	4 – Neutral Impact	**5 – Slightly Positive Impact**	5 – Slightly Positive Impact	5 – Slightly Positive Impact	4 – Neutral Impact	4 – Neutral Impact

6.13 Tivoli

6.13.1 Introduction

The Phase 2 Scheme Feasibility Report identified the location of a new train station at Tivoli Docklands at the western end of the Docklands area as shown in Figure 6-26 below but highlighted that this should be reviewed on conclusion of the Port of Cork Masterplan Study. This masterplan study was concluded in the intervening time and plans to transform the existing port area into an urban mixed-use quarter is being developed by the Port of Cork and Cork City Council. It is envisaged that a minimum of 3,000 new housing units will be provided with a new train station being fundamental to the masterplan of a sustainable transport community.

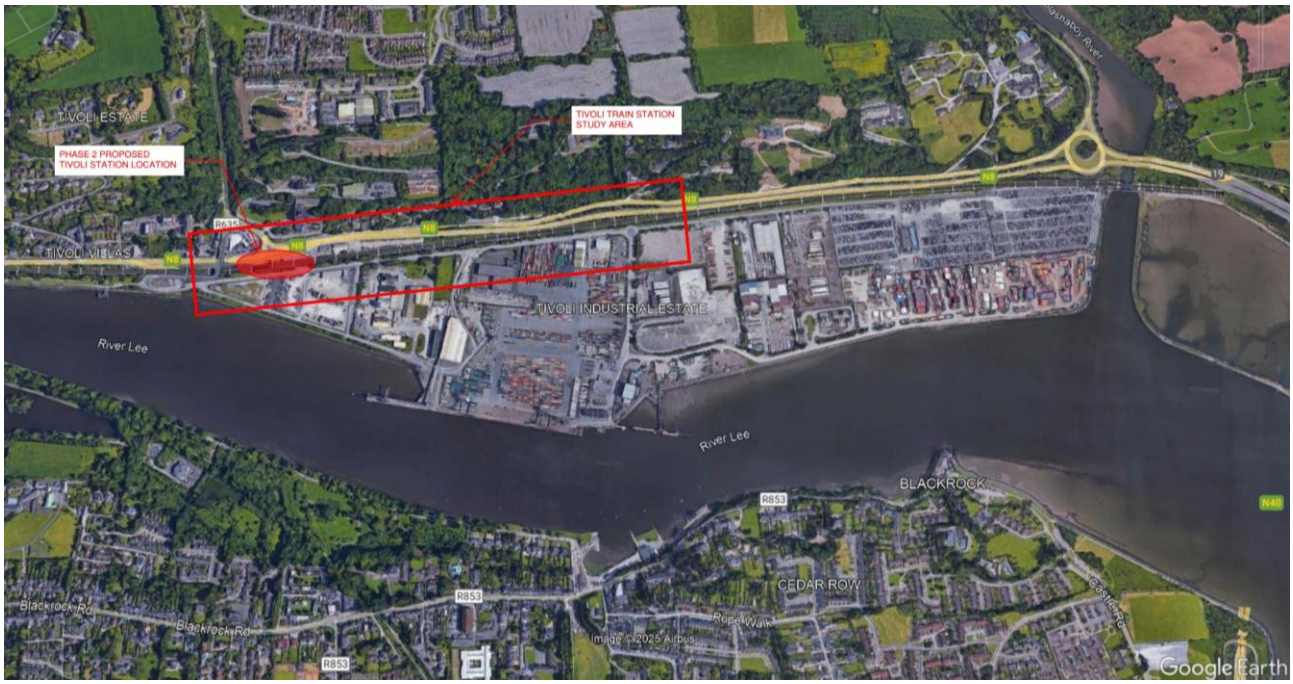


Figure 6-26: Tivoli Train Station Study Area

The Phase 2 Scheme Feasibility Study determined that the optimum location for the new train station was directly west of structure OBC413A at the western extent of the docklands area, as shown below in Figure 6-27. The Port of Cork's Masterplan proposes to locate the train station more centrally on the Docklands area to allow ease of access by foot or bicycle from all proposed residential units.

The study described in the following Sections was undertaken in the current phase of the project to review, assess and update the previous studies to determine the optimum location for the new Tivoli train station being cognisant of the Port of Corks Masterplan.

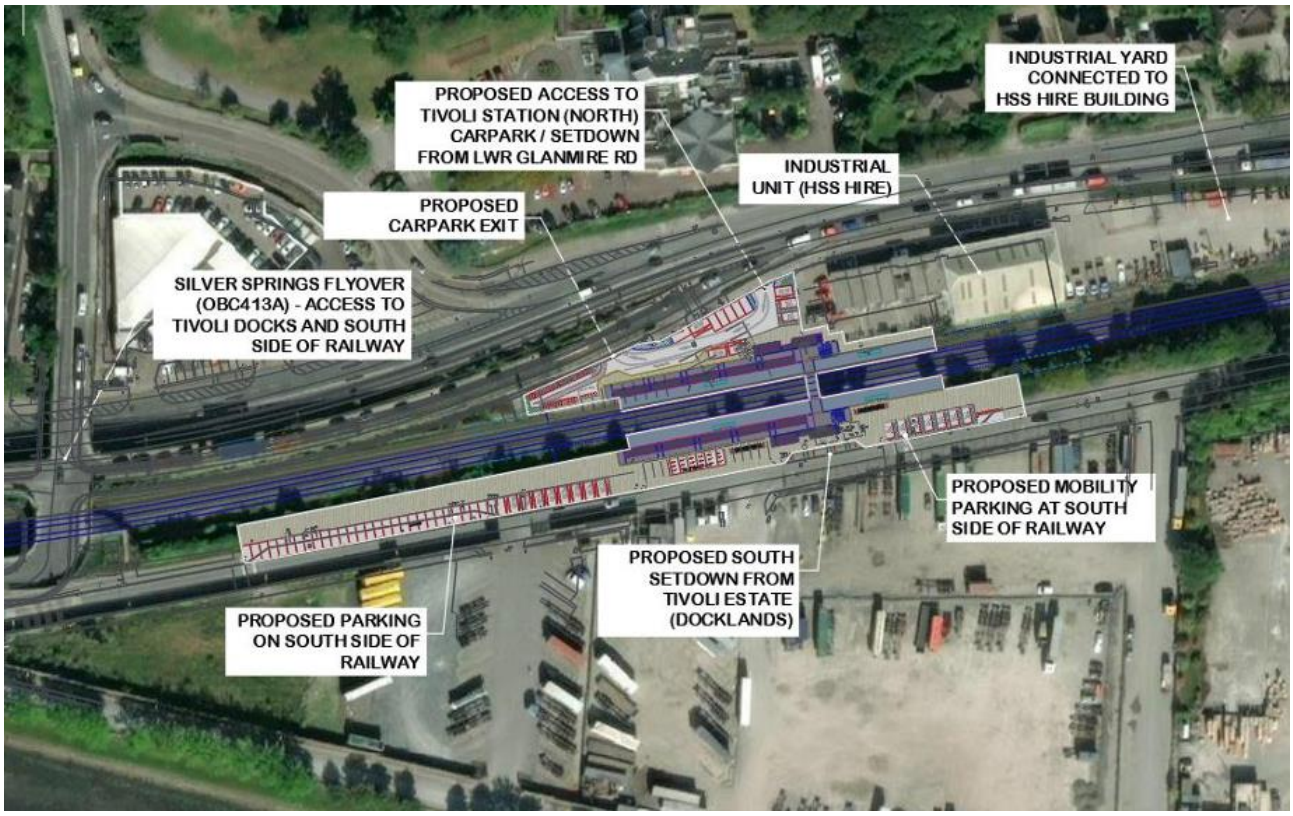


Figure 6-27: Phase 2 Proposed Tivoli Train Station Location

6.13.2 Options Description

Option 1

Option 1 is located to the east of the Silver Springs flyover (OBC413A) at the same location proposed in the Phase 2 Feasibility Report, as shown in Figure 6-28 below. Access to the station is provided from the south via the industrial road and north via a set down are from the N8 Silver Springs off ramp. The proposed station will be accessible from the north and south by pedestrians and cyclists. A footbridge within the station, accessed by stairs and lifts, will be provided to allow movement of passengers between the north and south platform.

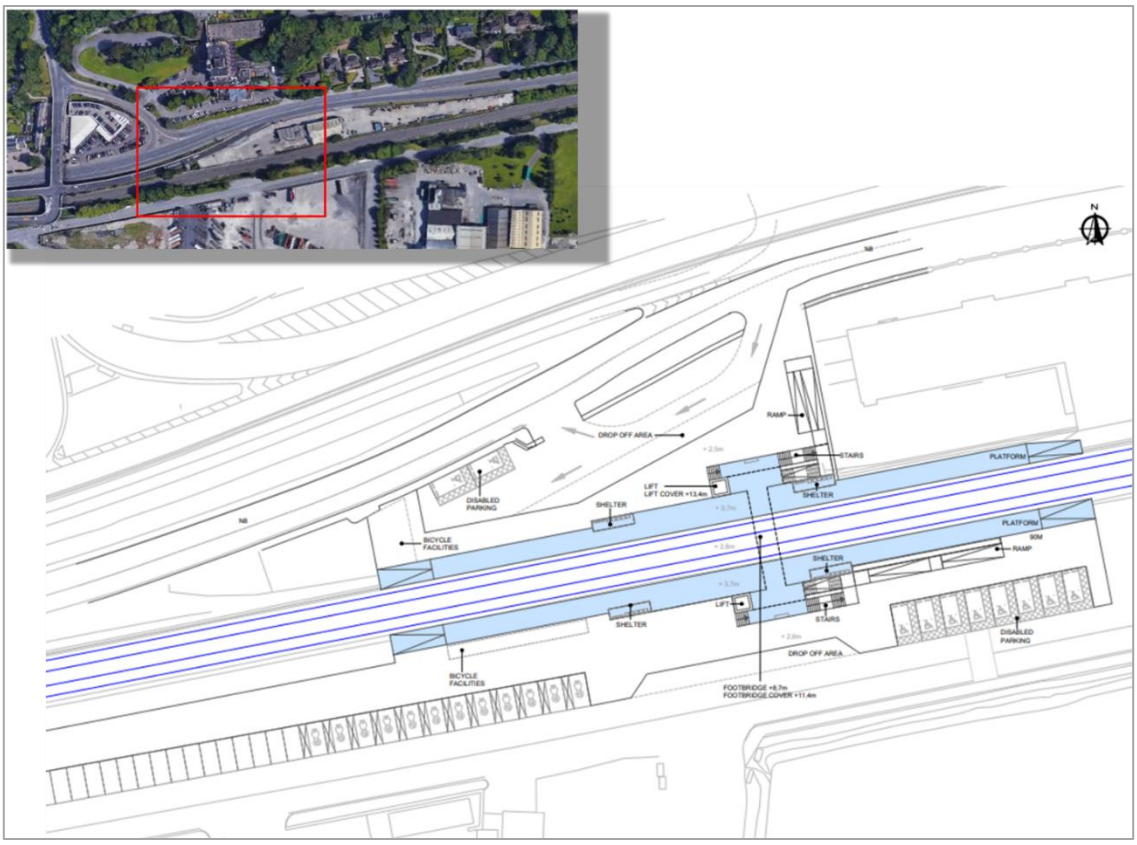


Figure 6-28: Option 1 Plan Layout

Much of the parking provided is located along the Tivoli Industrial Road with two mobility impaired spaces provided in the northern set down area. The northern station set down and entrance area is proposed to be in the eastern section of yard/parking area of the existing commercial property accessed via the N8 Silver Springs off ramp. The remainder of the existing buildings and the large east yard with the commercial property are unaffected.

From a track perspective the existing alignment comprises a horizontal straight situated on a shallow vertical gradient (less than the maximum permissible 1 in 400), so is compliant from a geometric point of view. As a consequence, the constant alignment geometry through the proposed station area will be easy to maintain.t

Option 2

Option 2 is located approximately 400 metres east of Silver Springs flyover (OBC413A), as shown in Figure 6-29 below. Similar, to Option 1, Option 2 will be accessible from the south via the industrial road and north via a set down area from the N8. The proposed station will be accessible from the north and south by pedestrians and cyclists. A footbridge within the station, accessed by stairs and lifts, will be provided to allow movement of passengers between the north and south platform. The main parking facilities will be provided to the south of the station along the Tivoli Industrial Road with a small number of mobility impaired parking spaces provided to the north. The northern station set down and entrance area will be located in the eastern section of the existing commercial property yard area.

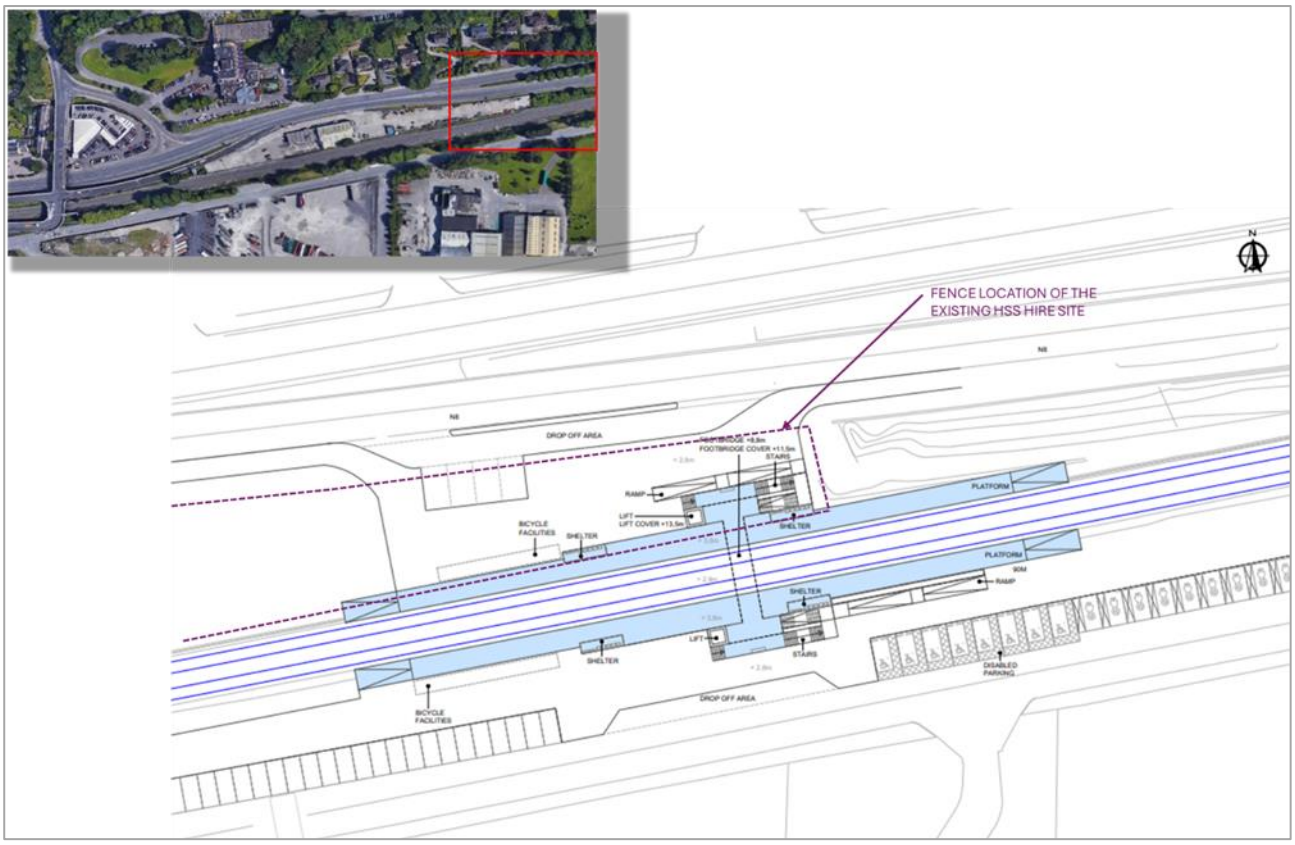


Figure 6-29: Option 2 Plan Layout

From a track perspective the existing alignment comprises a horizontal straight situated on a shallow vertical gradient (less than the maximum permissible 1 in 400), so is compliant from a geometric point of view. As a consequence, the constant alignment geometry through the proposed station area will be easy to maintain.

Option 3

Option 3 is located approximately 880 m east of Silver Springs flyover (OBC413A0. Option 3 is located centrally on the Tivoli Docklands area in line with the Port of Cork Master Plan. Similar to other options, the main parking area will be located to the south of the rail line, accessible via the Tivoli Industrial Road. A set down and station entrance will be provided to the north of the rail line where the verge of the N8 widens. The proposed station will be accessible from the north and south by pedestrians and cyclists. A footbridge within the station, accessed by stairs and lifts, will be provided to allow movement of passengers between the north and south platform.

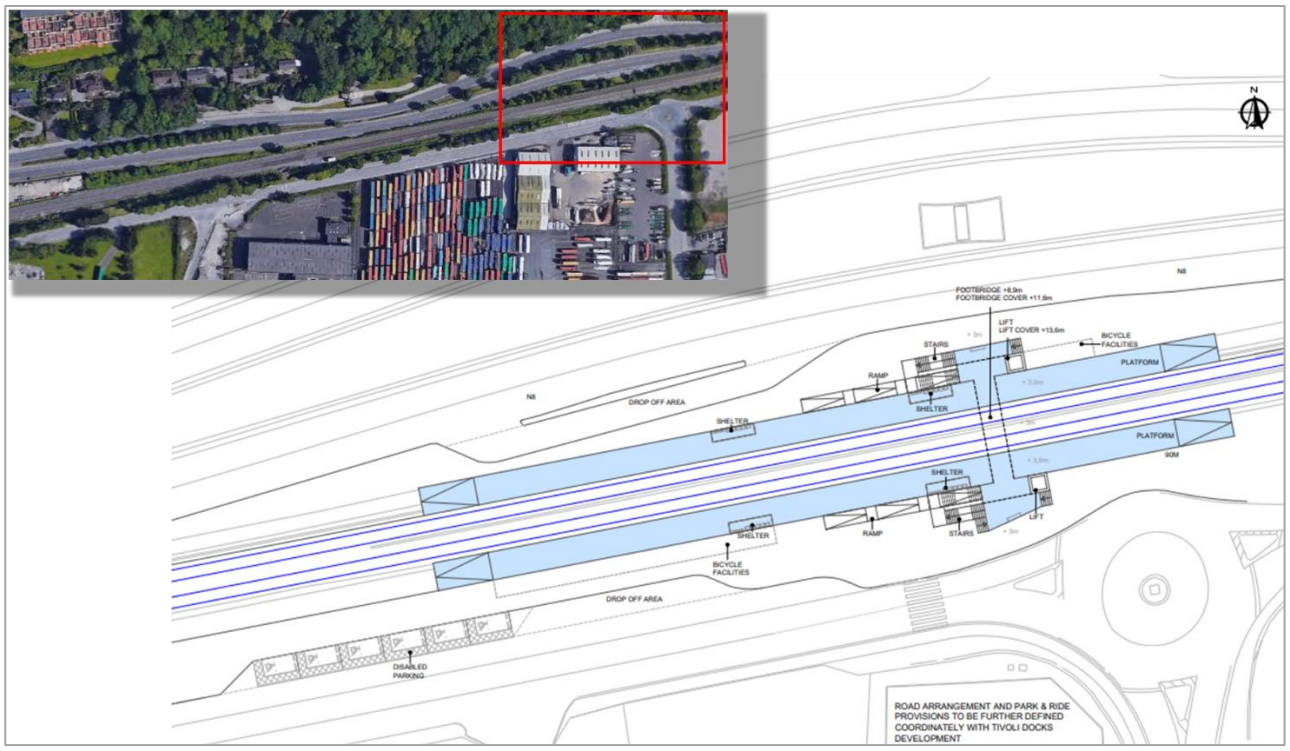


Figure 6-30: Option 3 Plan Layout

A positive aspect of the platforms in this option is that it is feasible to provide additional emergency exits to platforms as required by Life Safety reference Codes, such as BS9992, as there are no privately used land around the station.

From a track perspective the existing alignment comprises a horizontal straight situated on a shallow vertical gradient (less than the maximum permissible 1 in 400), so is compliant from a geometric point of view. As a consequence, the constant alignment geometry through the proposed station area will be easy to maintain.

6.13.3 Emerging Preferred Option

Each of the options were accessed in accordance with the TAF MCA the outcome of which is presented in **Table 6-2** below. Option 3 was determined to be the Emerging Preferred Option following the assessment. Option 1 and Option 3 scored similar in the assessment; however, Option 1 is not consistent with the Port of Cork Masterplan which intends to upgrade the existing Silver Springs overbridge and approach ramps to provide enhanced pedestrian and cyclist facilities.

Option 1 would create a constraint to the development in the future. While Option 1 would provide easier access to the station from public areas in the short term, Option 3 is more centrally located within the future development to provide ease of access.

Table 6-2 Summary MCA Table: Tivoli Station

Sub-Criteria Consolidation	Option 1	Option 2	Option 3	Option 4
Transport User Benefits and Other Economic Impacts	3 – Slightly Negative Impact	5 – Slightly Positive Impact	5 – Slightly Positive Impact	5 – Slightly Positive Impact
Accessibility Impacts	1 – Highly Negative Impact	6 – Positive Impact	6 – Positive Impact	7 – Highly Positive Impact
Social Impacts	1 – Highly Negative Impact	7 – Highly Positive Impact	6 – Positive Impact	5 – Slightly Positive Impact
Land Use Impacts	3 – Slightly Negative Impact	6 – Positive Impact	5 – Slightly Positive Impact	6 – Positive Impact
Safety Impacts	5 – Slightly Positive Impact	6 – Positive Impact	6 – Positive Impact	6 – Positive Impact
Climate Change Impacts	6 – Positive Impact	5 – Slightly Positive Impact	5 – Slightly Positive Impact	5 – Slightly Positive Impact
Local Environmental Impacts	7 – Highly Positive Impact	4 – Neutral Impact	5 – Slightly Positive Impact	5 – Slightly Positive Impact
Criteria Consolidation	4 – Neutral Impact	5 – Slightly Positive Impact	**5 – Slightly Positive Impact**	5 – Slightly Positive Impact

6.14 Midleton

Midleton Station will be a terminus end of line station for the CACR commuter service serving the eastern section of the network. To facilitate the increased frequency, train turn around and possible stabling minor works will be required to the track layout within the station. It is envisaged works will include new sidings and crossovers. Further design of these elements will be undertaken in Preliminary Design phase. No new platforms will be required at Midelton station.

7. DEPOT

Early options selection activity was undertaken in the Phase 2 Options Selection Report and Feasibility Report. A fully independent assessment was carried out as part of the current phase of the project aligned with the Transport Appraisal Framework guidance for options selection. The following sections provide a summary of this study. Further details can be found in the Depot Options Selection Report provided as part of the Public Consultation material. The approach sought to take an even-handed approach to the process across the full extent of the network while taking account of the work done previously.

Initially an exercise was carried out to clarify the customer requirements in respect of a proposed depot for the CACR Programme. This process was used to distil the minimum requirements of a potential site to facilitate site identification.

A study area was identified which included the full 63km extent of the CACR Programme network contiguous with the railway and a zone approximately 5km beyond the extents of the network. It was noted from the outset that the section of the network from Glounthaune to Cobh was unsuitable for the location of a depot site due to the challenging topography of this section of the railway and the coastal characterisation of the line.

Furthermore, it was perceived that the alignment between Kent and Mallow offered few locations which may suit the location of a depot. Given the substantial expanse of lands between Kent and Mallow, this section was examined in detail with a view to testing this perception.

In addition to the 6No. sites identified in earlier studies; five further sites were added to the longlist of sites to be considered as part of a sifting exercise to determine a proposed shortlist of options.

After the characterisation was undertaken in the previous phase, a group of sites were sifted out of the analysis for not complying with the minimum requirements. A number of additional criteria were used in the sifting process. The full list of criteria is as follows:

- Size (the candidate site needs to be sufficiently large to house facilities. This applied to area, length and width. 5No. sites sifted out);
- Overt Heritage Impacts (The site which exhibits most overt impact on heritage sites is Stoneview, however this is not considered sufficient to warrant sifting out);
- Direct Impact on European Sites. 1No site, the Former Sugar Beet Factory, has direct impact on the Blackwater SAC.;
- Lands Zoned for Strategic Development. The site at Stoneview includes a substantial strategic residential development zone;
- Protection of White Space (Network downtime for regular maintenance) Deployment Activity preservice cannot affect the network maintenance hours 01.00 to 05.00) None of the sites exhibit this issue.

Consideration was given to using a number of further sifting criteria. They include the following:

- Flood risk – Five of eleven sites exhibit flood risk. All of those exhibiting flood risk sift out for other reasons.;
- Impact on Recorded and Heritage Structures. Most sites have some impact on recorded monuments. This is therefore considered as part of the multi-criteria analysis;
- In-direct impact on European Sites. Only one site exhibits direct impact on a European Site, three others exhibit indirect impacts, all of which are sifted out for other reasons;
- Site Gradient. This has been set aside as a sifting criterion as the impacts on sites vary distinctly. This is instead assessed as part of the multi-criteria analysis.

It was decided however that these should be considered as part of the multi-criteria analysis of the options shortlist.

The outcome of this sifting process is as follows:

- Size (the candidate site needs to be sufficiently large to house facilities. This applied to area, length and width): 5No. sifted out as listed in Figure 7-1.

Option 7: Quarterstown Upper was sifted out due to a number of significant issues associated with the site as follows:

- The topography across the site would result in significant embankment works to accommodate the shallow gradients needed across the site.
- The short interface with the mainline (800m) is constrained for the accommodation of two accesses to the site and facilitating by directional access to the site.
- The site is located in the floodplain of the Clyda River.

Option 11, the Stoneview Site was sifted out due to the zoning of the lands within the Blarney Masterplan.

The Longlist of sites has been sifted, with the result that four (4) sites are selected for further characterisation and assessment using multi-criteria analysis. The four (4) sites include: Site Option 2 Rathpeacon / Monard, Site Option 6 Ballyrichard More, Site Option 9 Dromsligo and Site Option 10 Kilmona Lower.

The four (4) site locations were progressed to multicriteria analysis with a view to carrying out a detailed evaluation of the options across a spectrum of economic, environmental and social impact criteria.

Each of the principal criteria are considered in turn below with an explanation of how options performed against one another in each instance. We then provide a statement of the principal reasons the emerging preferred option performed as it did.

Consolidation of Criteria Outcomes

Consolidation of the outcome of the assessment was carried out on an averaging basis as contemplated with the Transport Appraisal Framework. Although the ranking range is narrow – 3.3 to 3.5 average. The sum of averaged ratings provides greater distinction between options. In this regard Option 6 has a higher total than other options and appears to warrant consideration as the emerging preferred option.

Examination of the principal distinguishing characteristics associated with Option 6 appears to reinforce this suggestion. They are as follows:

- The main habitats that have the potential to be lost as a result of this option include cultivated land and built land. Compared with other options, this option is considered to have the least negative impact on biodiversity due to the existing environment and the lack of connectivity to designated sites;
- The site is not subject to flood risk,
- The site is comparatively close to the city centre reducing empty running time.
- It is low lying and relatively flat reducing construction cost and simplifying the layout;
- The site is located within the extent of the electrified CACR network;
- All options perform equivalently in respect of the Customer Requirements Specification;
- The site is closely located to the N25 dual carriageway.

Challenges associated with the site include the presence of Karst in the area and the need to construct access infrastructure from the N25.

Conclusion

Following the application of a multi-criteria analysis to site options identified following a rigorous appraisal of the network wide study area, it is proposed that Option 6 Ballyrichard More be adopted as the proposed site for the development of a proposed depot for the CACR programme. An Aerial image of the proposed site location is shown in Figure 7-1 below.

Figure 7-1: Proposed Ballyrichard More Depot Site

8. ELECTRIFICATION

As part of the CACR programme, electrification refers to delivering electrical energy from the ESB National Grid 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.

8.1 Power and Fleet

In Phase 2 of the project, a Power and Fleet Study was undertaken to identify the most suitable electrification approach. Initially, static charging of a Battery Electric Multiple Unit (BEMU) fleet at terminal stations and the depot was identified as the emerging preferred option, subject to further design development and assessment.

However, a recent review of the Phase 2 work identified a number of limitations in the earlier study:

- It did not adequately consider realistic operating conditions across the network.
- It failed to address degraded operating scenarios, which are likely during real-world use.
- The Train Service Specification (TSS) routes and depot access movements were not fully developed.
- It did not evaluate the impact of service disruptions on charging times or their effect on TSS delivery, nor did it propose effective solutions.

A follow-up study was carried out to address these gaps. This analysis focused on:

- Verifying fleet requirements for both OHLE and BEMU electrification options to deliver the preferred Train Service Specification (TSS2). See Section 5.3 for further detail.
- Confirming infrastructure requirements at each station, specifically examining BEMU charging needs across the full network.
- Assessing platform and charging occupancy rates under both normal and degraded operating conditions for BEMU trains.
- Evaluating the overall feasibility of BEMU service patterns, identifying critical infrastructure constraints, and testing long-term viability.

The results of this updated study concluded that BEMU electrification is not feasible for the CACR network, as the required TSS cannot be reliably delivered within the performance limits of BEMU technology.

As a result, full OHLE-based electrification has been confirmed as the preferred and feasible solution. This decision enables the deployment of EMU trains across the network, ensuring robust service delivery and long-term operational efficiency.

8.2 Substations

Substations will play a key role in powering the electrified CACR network by delivering electricity from the ESB National Grid to the Overhead Line Equipment (OHLE) used by Electric Multiple Unit (EMU) trains. The exact locations of the substations will depend on the proximity to existing ESB infrastructure and the results of ongoing power studies that will determine the electrical load needed at different points along the network.

In addition to substations, the network will require the installation of Autotransformers electrical devices used to regulate voltage and improve power efficiency positioned along the length of the CACR network. Like the substations, their final locations will be determined through further technical analysis.

If it is determined that private land is needed to host substations or autotransformers, an optioneering process will be undertaken to identify the most suitable locations, balancing technical feasibility with environmental and land use considerations.

An example layout of proposed substation locations is shown in Figure 8-1.

Substation

Autotransformer

Figure 8-1: Example of Substation and Autotransformer

8.3 Overhead Line Equipment (OHLE)

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 consists of four 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 8-2 and Figure 8-3 below.

OHLE supports will typically be spaced 40 to 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 cantilever structures, which extend over a single track, and portal structures, which span multiple tracks or provide additional support in confined spaces.

The CACR Trains will be powered by OHLE along the entire network from Mallow to Kent, Kent to Cobh and Glounthaune to Midleton. OHLE consist of four longitudinal wires for each track. Structural Steel supports are required to carry and tension the wires. A typical layout of OHLE and a sample image are provided in Figure 8-2 and Figure 8-3 below.

Figure 8-2: Sample Image of DART OHLE

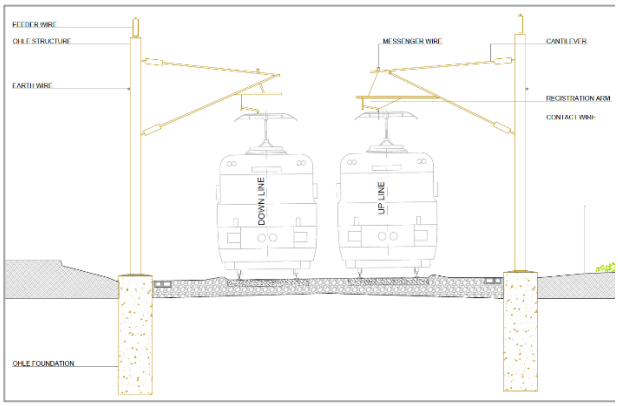


Figure 8-3: Typical layout of Cantilever OHLE

8.4 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:

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

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

8.5 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 support the increased frequency and capacity planned across the network. Once the Preliminary Design phase for Work Packages 4, 5, and 6 is complete, the project's design teams will review the locations of signalling infrastructure and make any necessary modifications to ensure compatibility with the updated network layout and operational requirements.

9. PERMANENT WAY

Permanent Way is the railway terminology that refers to the track and its componentry. 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, excluding Cork Station (which is a separate project under development).

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 coper adjustment – 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 and platform lines (Midleton) – 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.
- Potential 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 next 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, other bridges etc – and hence the need for a solution to be considered more holistically.

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 – new passing loop and crossover
- Blarney Station (new) - new passing loop and crossovers
- Ballyrichard More – new turnouts and crossovers to access new Depot
- Cobh – new platform track and crossover connection

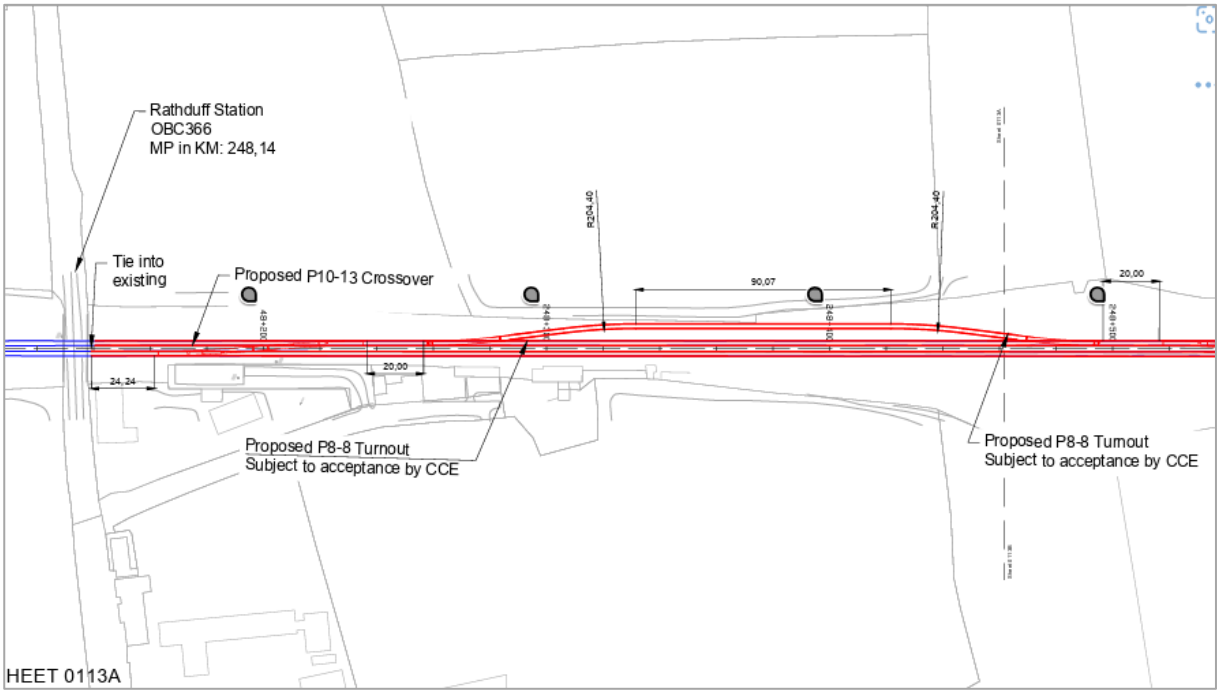


Figure 9-1: Phase 2 Concept Rathduff Pass Loop and Crossover

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 magnitude of realignment that is required and whether the track is in sufficiently good condition to do so) or renew the track.

10. EXISTING STRUCTURES

10.1 Clearance Assessment Overview

In order to determine the feasibility of electrification as part of the CACR scheme, the clear height of existing structures through which Overhead Line Equipment (OHLE) can be installed must be 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 Midleton station. The minimum required clear height has been compared to the existing clearance at every overhead obstruction along the route. The overhead obstructions where clearance is potentially constrained were identified as all overbridges along the routes, as well as any structures which featured overhead elements that may interact with the proposed OHLE. The existing clearance is the most restrictive soffit level at these locations and was measured by overlaying a profile encompassing all minimum structural clearance requirements on existing survey data of each bridge. The difference between these figures is the clearance deficit/surplus at each overhead obstruction. This deficit/surplus figure determines if an intervention is required at each overhead obstruction.

10.2 Minimum Required Clearance

A minimum required clear height of 5000mm has been adopted for this assessment. A pantograph horizontal clearance profile has also been developed which demarcates the area in which the rolling stock pantograph will operate. A value of 2150mm has been adopted for this.

The required vertical and horizontal clearances, as well as the structures gauge have been collated into an OHLE clearance profile which has been used in the determination of the clearance surplus/deficit. This profile is illustrated in Figure 10-1 below.

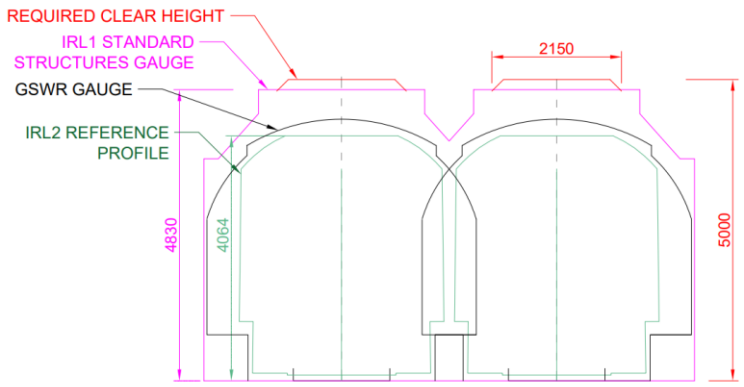


Figure 10-1: Required Clearance Profile for OHLE

10.3 Results

As an output from the preliminary OHLE bridge assessment, it is evident that a number of existing overbridges and overhead structures present a challenge for the implementation of the overhead electrical catenary system, due to reduced available gauge.

There are 80 no. overbridges and overhead structures on the scheme from Mallow to Cobh and Glounthaune to Midleton that require assessment for OHLE. Based on the assessment methodology outlined above and the current survey data, 54 no. of these structures fail the assessment and will require some level of intervention. The following tables provide an overview of the structures on the scheme that fail the assessment, broken down by structure type and region. A more detailed breakdown is provided overleaf.

Table 10-1 Summary of structures assessment

Route	No. of Structures	Failing OHLE Clearance
Mallow to Kent	29	21
Kent to Little Island	16	8
Little Island to Glounthaune	5	4
Glounthaune to Cobh	17	12
Glounthaune to Midleton	13	9
Total	80	54

Table 10-2 Summary of structures assessment – by structure type

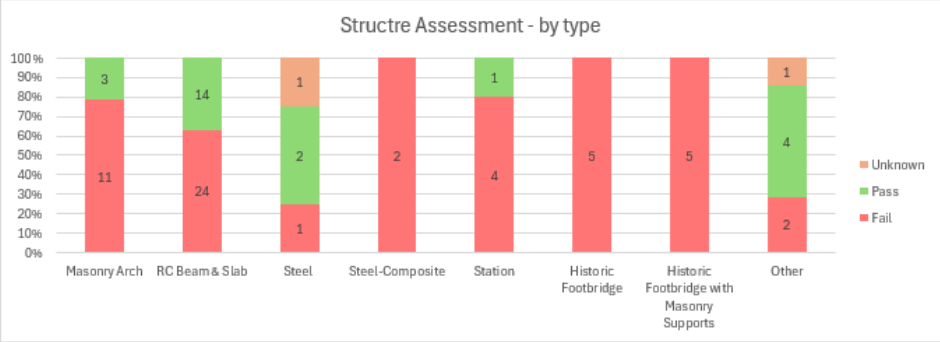
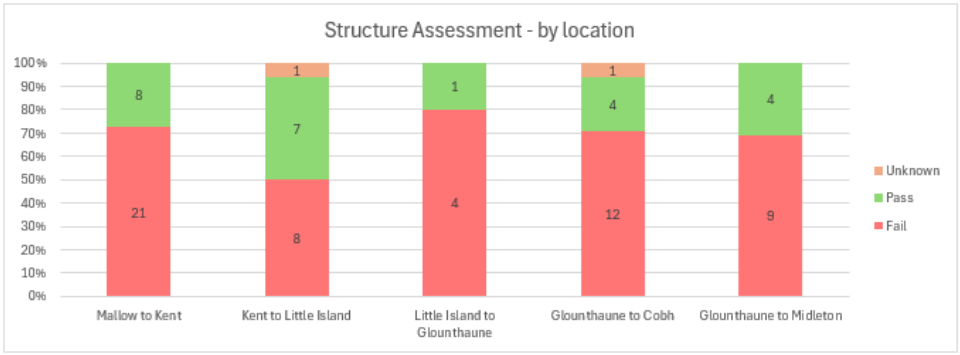


Table 10-3 Summary of structures assessment – by location



10.4 Other Works – Parapet Modifications

When constructing a bridge over a railway, a parapet height of 1.8m is generally required, according to both TII Publication DN-REQ-03034 and Irish Rail Standard CCE-TMS-310. Additionally, vehicle parapets used on new national road structures, including those crossing railways, must comply with IS EN 1317 standards. Many of the existing overbridges on the CACR scheme have parapets consisting of masonry walls or non-compliant steel or aluminium parapets. All existing overbridge parapets will need to be assessed, and, if necessary, modified, raised or reconstructed to meet current standards.

11. LEVEL CROSSINGS

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 presents a safety risk to train operations and the public. Increased train frequencies will result in additional level crossing closures and subsequent increase in delays to level crossing users. For these reasons it is intended to close Level Crossings along the network where appropriate. Alternative access infrastructure is to be provided where necessary at level crossings which are closed.

As part of the proposed increase in service frequency under the CACR programme, the level crossing at Myrtle Hill Terrace is planned to be closed due to safety concerns and limited accessibility. As part of CACR Programme train frequency passing the Myrtle Hill level crossing is intended to be at 5-minute intervals. This will result in the level crossing being closed for a significant amount of time heavily restricting access to residents. It is intended that a new alternative access point to the east will be provided to allow unrestricted and improved access and safer access for all users.

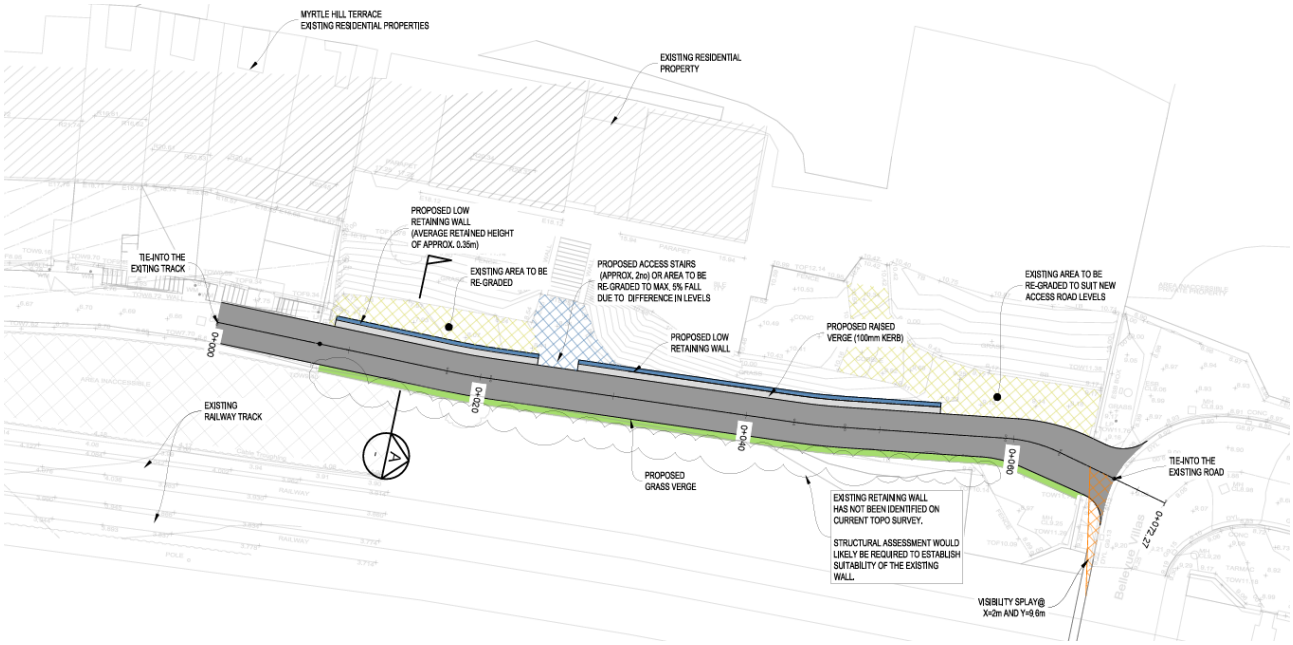


Figure 11-1: Myrtle Hill Terrace proposed eastern access

12. FURTHER WORK

12.1 Conclusion of Public Consultation No.1

Non-Statutory Public Consultation is undertaken to present the emerging 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.1 Findings Report will be produced and published as part of the information material provided to the public for Non-Statutory Public Consultation No.2.

12.2 Preliminary Design

Following completion of the Non-Statutory Public Consultation No.1 the project team will engage in further studies and design tasks for the project elements which will culminate with the determination 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.

12.3 Non-Statutory Public Consultation No.2

In Non-Statutory Public Consultation No.2, information material, including the Non-Statutory Public Consultation No.1 Findings Report, outlining the preferred option will be published to inform the public of the CACR Project. Again, we will gather feedback from the public to help shape the final project and guide the further development of the design. During PC02, the Preferred End-to-End Option will be presented in greater detail than was provided at PC01. This increased level of detail will help the public better understand the potential impacts and benefits of the project and will support the environmental assessment required for the Railway Order submission to An Bord Pleanála.

It is important to note that the Preferred End-to-End Option may differ from the Emerging Preferred Option as a result of public feedback from PC01 and ongoing design refinement. This document will be updated accordingly for PC02, and feedback from PC02 will help inform the design that progresses to the Railway Order stage.

12.4 Railway Order

While the implementation of selected stations may be staged in alignment with adjacent land development strategies, permission for Phase 2 CACR Programme elements will likely be under a single Railway Order application, but that some standalone elements of the programme being delivered earlier under a separate simple planning process if deemed appropriate in the course of the next stage of the design development.

The application for a Railway Order to An Bord 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 Bord Pleanála will consider. An Bord 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.