MOTT MACDONALD

Cork Area Commuter Rail Glounthaune - Midleton Twin Track

Project Description for Preliminary Public Consultation

July 2022

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1 Introduction

1.1 Cork Area Commuter Rail

In early 2020, the National Transport Authority (NTA), in partnership with both Cork City and County Councils and Transport Infrastructure Ireland (TII), finalised the ambitious Cork Metropolitan Area Transport Strategy (CMATS) 2040. The heavy rail network is a central component of this strategic vision which will ensure an integrated local and regional transport network for the future of Cork city and its surrounds. CMATS will support compact urban growth in a more sustainable way, facilitating modal shift out of the private car and on to public transport. A more efficient, sustainable, low carbon and climate resilient heavy rail network will reduce road congestion and support Ireland's transition to a low emissions transport system helping us achieve emission reduction targets.

The strategy for heavy rail includes the following:

Development of the three existing railway corridors in the Cork area providing a high frequency north-east connection through the city;
Multi-model integrated transport hub at Kent Station to promote model shift from the private car;
Additional rolling stock to meet existing and future demand.
New stations and Park & Ride interchange points

1.2 Cork Area Commuter Rail Programme

The Cork Area Commuter Rail (CACR) programme is the heavy rail element of CMATS and is a transformative rail improvement programme for the Cork Rail Network. Delivering increased train capacity and frequency, providing for more connected communities and a more sustainable transport network, the project represents the largest ever investment in the Cork Rail Network.

The programme involves developments and enhancements to the rail network from Mallow through Cork to Cobh and Midleton and will include the delivery of new rail infrastructure and electrification and re-signalling across the 3 main lines of Mallow, Cobh and Glounthaune to Midleton.

The CACR Programme is being progressed through several separate but interrelated projects

- **Kent Station Through Platform**
  The construction of a new platform at Kent Station to facilitate through running services from Mallow to Cobh/Midleton. This will provide for increases in capacity and frequency across the CACR network. The project is currently in preliminary design and is expected to progress to construction in early 2023.

- **Signalling and Communications Upgrade**
  Signalling and Communications Upgrade to facilitate the proposed capacity and service frequency increases across the CACR network. The preliminary design of the project is well advanced, and the implementation stage is scheduled to commence in 2023.

- **Glounthaune to Midleton Twin Track**
  Upgrading of the Glounthaune to Midleton line to a twin track configuration. Public Consultation is now live for this project and more information can be view here.
  www.irishrail.ie/gmtt

- **New Stations, Track Works, Civils and Structures**
  Additional works to support the planned increased services including track reconfigurations, station upgrades and proposed new stations at Blarney/Stoneview, Monard, Blackpool/Kilbarry, Tivoli, Dunkettle, Carrigtwohill West, Water Rock, and Ballynoe. Some of the new stations will also incorporate Park and Ride facilities to accommodate growing passenger demand. This project is at an early design stage and will be developed further in the coming years.

- **New Fleet Depot**
  A new train stabling and maintenance depot to cater for an electrified fleet will be built. This project is at an early design stage and will be developed further in the coming years.

- **Electrification**
  The CACR network will be electrified. Whether this involves construction of overhead power lines and the use of electric units or installation of battery charging infrastructure and the use of battery/electric hybrid units, or the use of alternatively fuelled trains is still to be decided. This project is at an early design stage and will be developed further in the coming years.

- **Rolling Stock**
  A new fleet will be required to provide the planned increase in train services. This project is at an early design stage and will be developed further in the coming years.

The National Recovery and Resilience Plan (NRRP) 2021 has prioritised the Kent Station Through Platform, Signalling & Telecommunications Upgrade and the Glounthaune to Midleton Twin Track projects for immediate progress via the EU Recovery and Resilience Facility. These are currently being progressed in tandem by the project team.

1.3 Glounthaune to Midleton Twin Track Project (This Project)

Iarnród Éireann plans to upgrade the existing rail line between Glounthaune and Midleton to enhance commuter services into Cork city. The Glounthaune to Midleton Twin Track project covers the area of the network from Cobh Junction to Midleton Station, a total distance of approximately 10km, and will see the upgrading of the existing line to twin track over its entire length.

The Twin Tracking of the Glounthaune to Midleton railway will be part of the first packages of work undertaken by the National Transport Authority (NTA) and Iarnród Éireann as part of the Cork Metropolitan Area Transport Strategy (CMATS) 2040.

The project will help facilitate an ultimate tripling of service frequency along the line. Along with the completion of the new Kent Station Through Platform, the Proposed Signalling and Communications upgrades and the delivery of a new fleet, Twin Tracking between Glounthaune to Midleton will facilitate a tripling of service frequency along the line while also ensuring a more reliable service for commuters and other rail users to and from the city.

What are the benefits for rail users?

This project will see a second rail track installed along the existing Glounthaune to Midleton line. The delivery of this project along with the completion of the new Kent Station Through Platform, the Proposed Signalling and Communications upgrades and the delivery of a new fleet will facilitate:

- Operation of a higher frequency service up to a 10-minute service from the current 30-minute service
- Increased capacity, better connectivity, and enhanced reliability of the suburban rail network
- Shorter wait times

What works are required?

The main element of the Glounthaune to Midleton Twin Track project consists of the provision of a second track over the full extent of the line. These works will largely be contained withing the existing railway corridor and will include the following:

- Addition of 2nd track over the full extent of the line;
- Addition of sidings/turn back facilities at Midleton;
- Modification/replacement of bridges and level crossings to facilitate the twin tracking
- Associated signalling upgrades and alterations;
- All associated civil works (retaining walls, boundary treatments, etc.).

All works completed as part of the project will be compatible with future electrification of the Cork Area Commuter Rail network.

While there will be some disruption to services during construction of the new track, this will be kept to a minimum.

1.4 Background

This Project intends to improve the railway capacity between Glounthaune and Midleton in East Cork. Figure 1.1 below illustrates the location of the railway line.

Figure 1.1: Site Location

Source: Mott MacDonald

The existing railway line runs from Glounthaune station between the Lee estuary and the L3004 road for ca. 850m. It then runs between the L3004 and open ground to the south for ca. 910m before crossing the L3004 and then follows the L3616 for ca. 2.5km passing between the IDA Industrial Estate and Fota Retail and Business Park before reaching Carrigtwohill station. The line continues along mostly open ground for approximately 6km before terminating at Midleton train station.

1.5 Existing Railway Infrastructure

The proposed development is located along the existing single railway track from Glounthaune to Midleton station and sidings in Co. Cork.

There are three stations along the route, at Glounthaune, Carrigtwohill and Midleton. These stations are currently functioning. Midleton train station building is a protected structure. No works are proposed to the existing station buildings.

There are 3 no. of level crossings along the route.

1.6 Current Railway Line Usage

There are currently 31 trains daily between Cork and Midleton from Monday to Friday and 31 trips returning from Midleton to Cork, with stops at Cork, Little Island, Glounthaune, Carrigtwohill and Midleton. On a Saturday there are 18 trips from Cork to Midleton and 18 trips returning from Midleton to Cork. On a Sunday there are nine trips from Cork to Midleton and nine trips returning from Midleton to Cork.

The design speed of the railway line is 100 km per hour, and this will be maintained for the future operations.

2 Design

2.1 Scope

The Glounthaune - Midleton Twin Track project covers the area of the network from Cobh Junction to Midleton Station turn back sidings, a total distance of approximately 10km.

The scope of the Glounthaune - Midleton Twin Track project consists of:

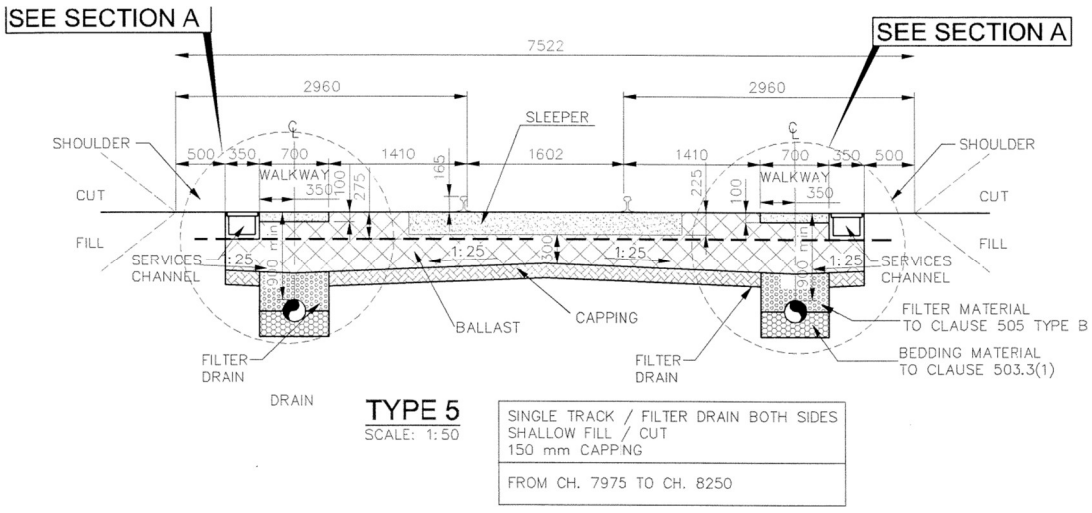
- Twin tracking of the single-track sections between Glounthaune and Midleton.
- Reconfiguration of the operational track layouts, as required.
- Modification/replacement of existing bridges and level crossings to facilitate the twin tracking
- Provision of sidings/turn back facility at Midleton, as required.
- Provision of new cable containment routes from Glounthaune to Midleton to facilitate the signalling upgrades and alterations.
- Associated signalling upgrades and alterations
- All associated works (drainage, retaining walls, boundary treatments, etc.).

2.2 Reconfiguration of the operational track layouts

Where there is single track, the project proposes to install a second track parallel. In some cases, there will be a need to adjust the existing track alignment, so that the new twin track fits as well as possible into the existing landscape.

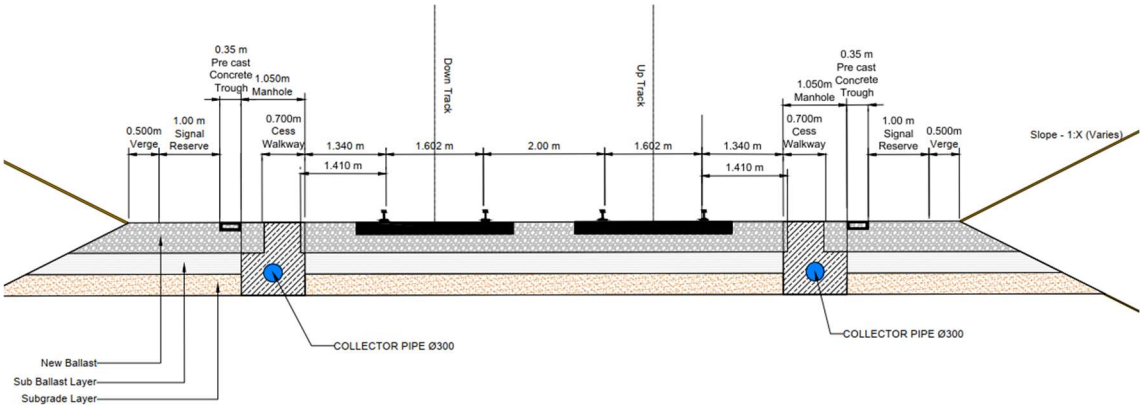
The existing cross sections of the current railway are typically as follows;

- Single track (sleeper and track with 1602mm gauge)
- 1410mm clearance
- 700mm width walkway above filter drainage each side
- 350mm Cable troughing also called “Services Channel”
- 500mm Shoulder and then tie-in to a ditch or directly into the adjacent land.
- Ballast layer and Capping Layer
- Buried Filter Drain

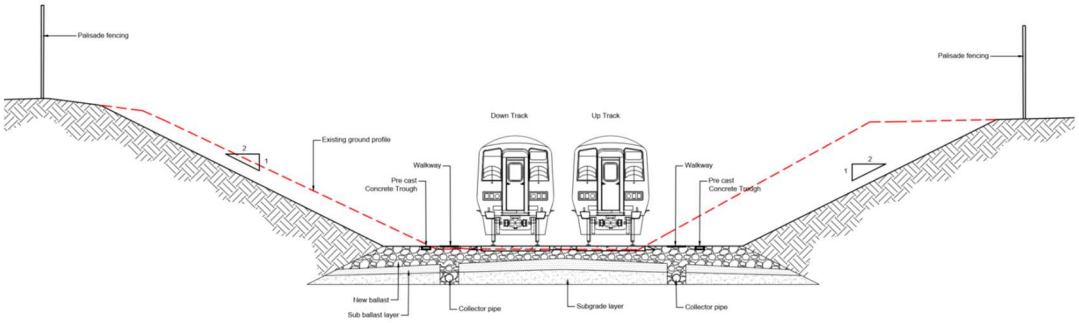


Typical Earthworks Sections 011274-49-DR-0650 (Construction Drawings from 2005 Project)

The new typical cross-section of the twin track is show in Drawing …PW-0050, as per below.



An example of the twin track and adjacent embankment and fencing is shown below:



Section @ Ch 3000

2.2.1 Description of the New Track Alignment

There are two sections where a second track will be installed, and existing track moved.

The first section of works is located between Glounthaune to Carrigtwohill stations. The section of works begins just after the Glounthaune/Cobh points until 200m before Carrigtwohill Station. The length of this section is approximately 3km. [refer to C745-WP3_03-XX-XX-XXX-DR-MMD-PW-0001 TO PW-0010]

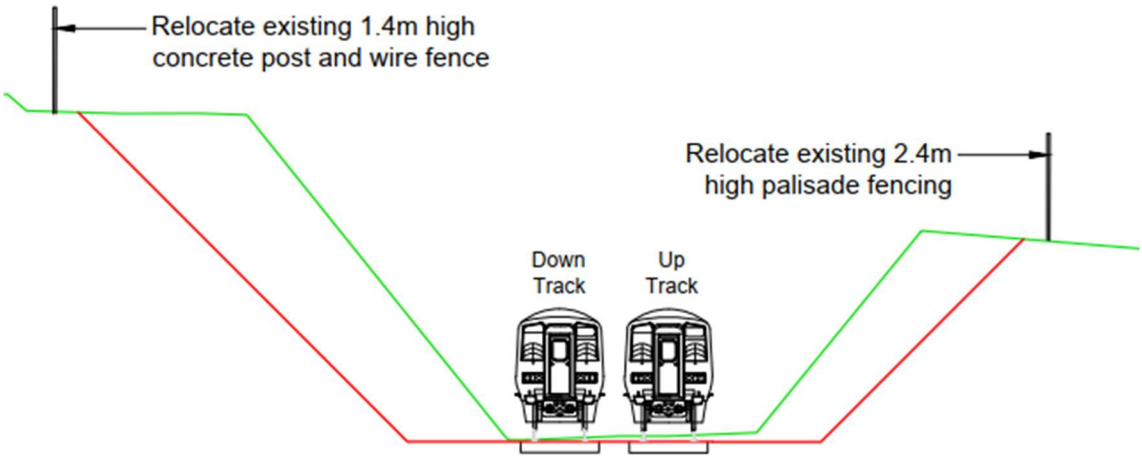
The second section of works is located between Carrigtwohill to Midleton stations. The section begins before Ballyadam Bridge and local road L3617, up to Owenacurra River Bridge. The length of this section is approximately 4.5km. [refer to C745-WP3_03-XX-XX-XXX-DR-MMD-PW-0015 TO PW-0026]

2.2.2 Alignment and Property

In most locations along the route, it has been possible to accommodate the second track within the current railway corridor.

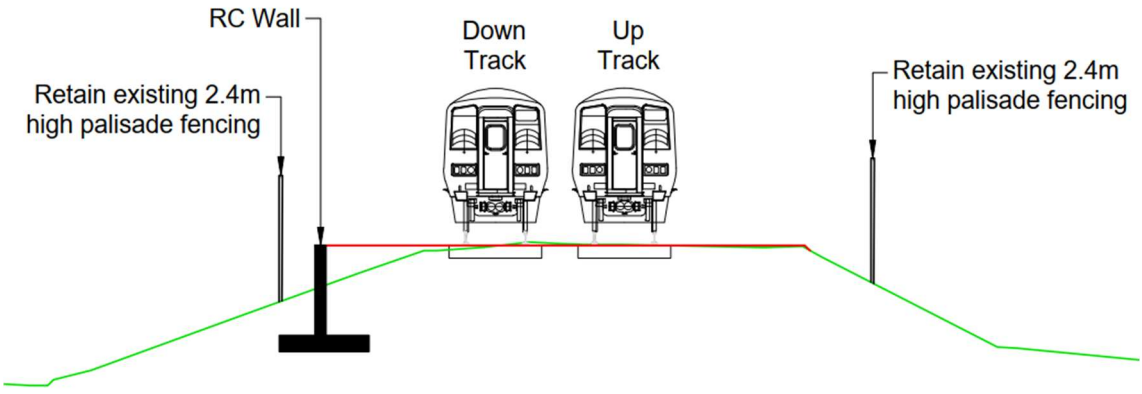
There are some locations where the full typical cross section cannot be accommodated within the existing railway corridor and additional lands will be required to provide the proposed second track. The project team is currently assessing all these locations and studying ways to minimise impact on adjacent landowners.

For example, in the cross section below, the existing profile is green, and the proposed new ground profile is red. The track is in a cutting, and if the cutting is widened, as shown there will be a potential impact on the property boundaries.



As each location has different circumstances, the design team will aim to produce a safe and practical design, that minimises permanent land take requirements on adjacent landowners.

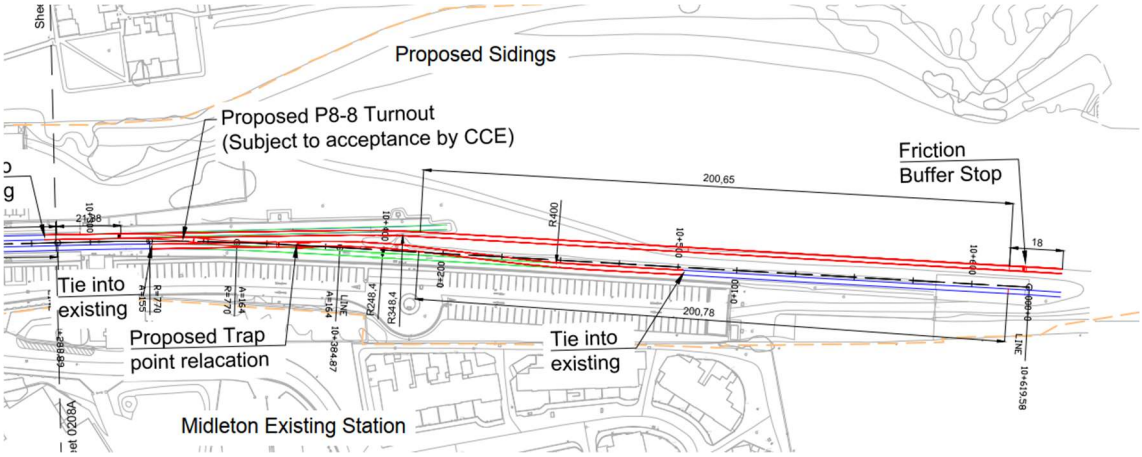
One way to reduce impact on adjacent landowners, is to construct a retaining wall, which holds in the soil and thus avoids the need for a wider embankment. An example of this design is shown below, where the existing property boundaries have been retained, due to the addition of a reinforced concrete wall (RC) on the down track.



2.3 Provision of sidings/turn back facility at Midleton

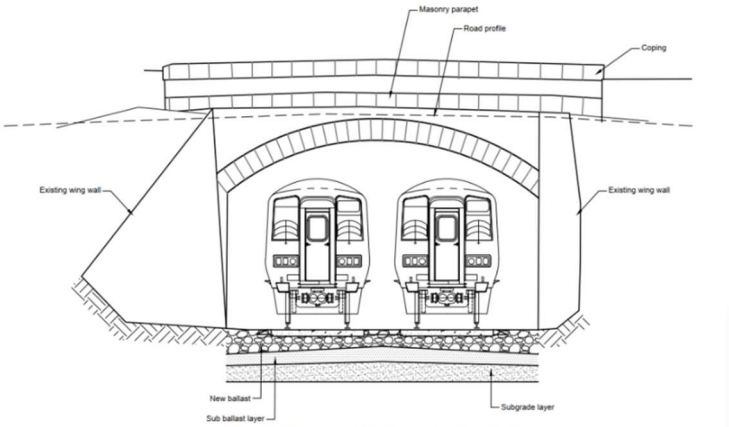
There will be some changes to the siding configuration at Midleton sidings. A new set of points will be installed, and the siding lengths adjusted. [refer to C745-WP3_03-XX-XX-XXX-DR-MMD-PW-0027 TO PW-0028]

The current preferred design is for a second siding to be installed beside the current siding. The length of the track works for the second siding will be approximately 300m



2.4 Modifications to Bridges

In some areas, there is a single track going under a bridge. The project has reviewed the track route and by adjustments to the existing track, it has been possible to fit both tracks through the existing bridges. This results in a design as per the below cross section.



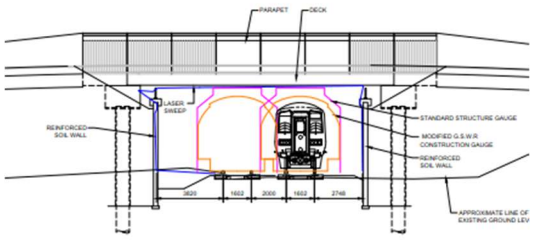
OBY2 West Elevation Ch 1970 - Proposed

One single overbridge (OB8 at Ballyadam House) will be removed, this is because it is not in use and would present an unjustifiable safety risk if it were retained. The following section identifies bridges where there may have been a need to modify them, and where the preferred solution is shown.

2.4.1 Harper's Island Bridge (OBY1A)

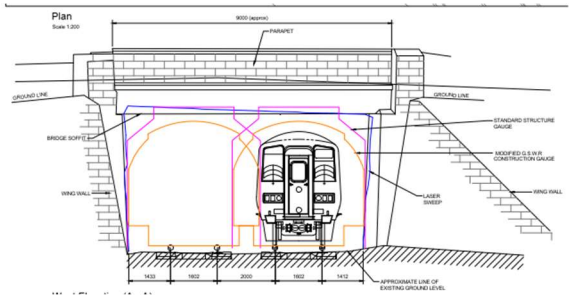
Access Road to Harpers Island

With limited track adjustment, the existing bridge can be retained.

Aerial View of Existing Bridge	Retain Bridge
	

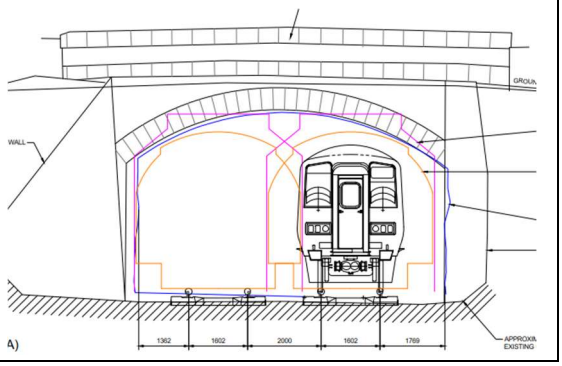
2.4.2 Killacloyne Bridge (OBY1)

L3004 local road which structure carries over rail line is heavily trafficked. With some track adjustment, the existing bridge can be retained.

Aerial View of Existing Bridge	Retain Bridge
	

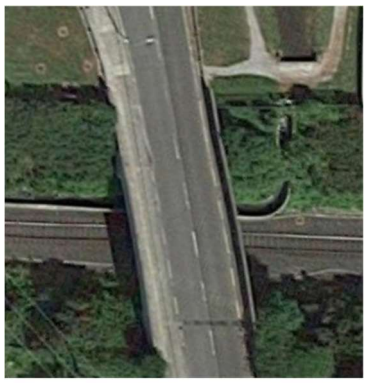
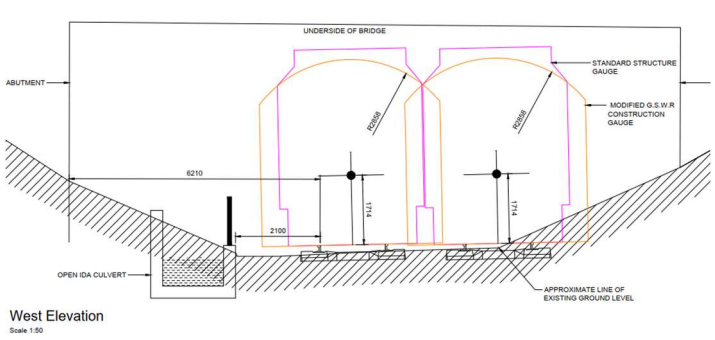
2.4.3 Haly's Bridge (OBY2)

L3005 local road which structure carries over rail line is used to access Springhill Business Park and is heavily trafficked by HGVs. With some track adjustment, the existing bridge can be retained.

Aerial View of Existing Bridge	Retain Bridge
	

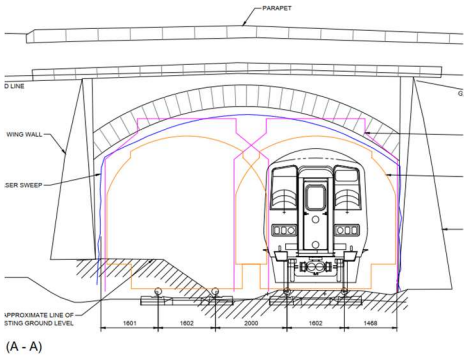
2.4.4 IDA Bridge (OBY3A)

The bridge forms a link between the IDA parks north and south of the tracks. With some track adjustment, the existing bridge can be retained.

Aerial View of Existing Bridge	Retain Bridge
	

2.4.5 Wise's Bridge (OBY4)

L3616 local road which structure carries over rail line follows an s-shaped bend profile south of structure. With some track adjustment, the existing bridge can be retained.

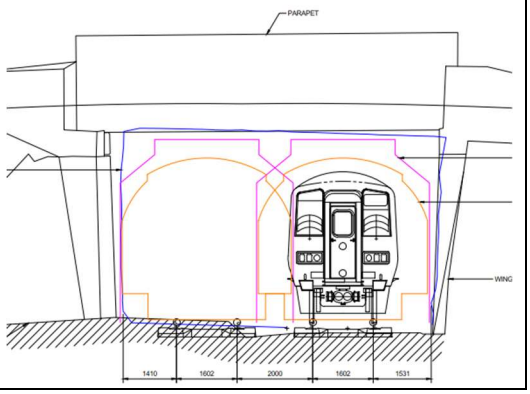
Aerial View of Existing Bridge	Retain Bridge
	

2.4.6 Carrigtwohill Station Footbridge and Heritage Bridges (OBY5D and OBY6)

These two bridges are in a twin track area already, as they are at the station, and no modifications are foreseen.

2.4.7 Ballyadam Bridge (OBY7)

L3006 local road which structure carries over rail line follows s-shaped bend profile where the road crosses the rail line. With some track adjustment, the existing bridge can be retained.

Aerial View of Existing Bridge	Retain Bridge
	

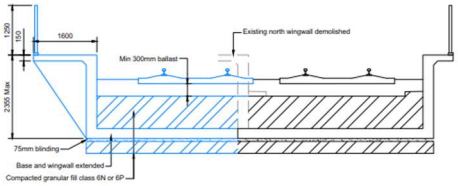
2.4.8 Ballyadam House Bridge (OBY8)

There is a single case, of Ballyadam House Bridge (OBY8), where the bridge is no longer used. This bridge was formerly an “accommodation” bridge, for private use, which connected land on both sides of the track. The land on each side is now in separate ownership and the bridge is no longer used. As this redundant bridge has a maintenance cost and safety risk associated with it, the preferred option is to remove the bridge.

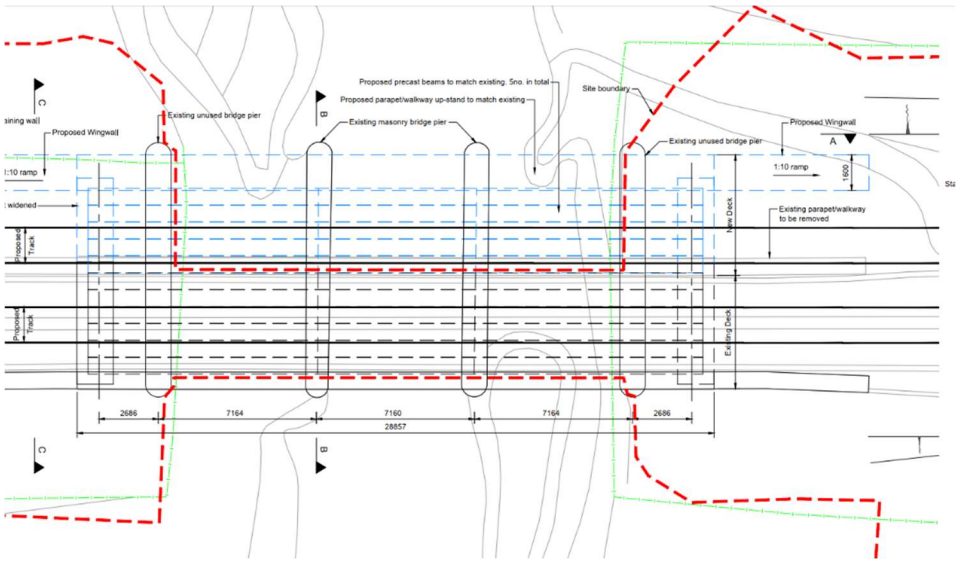
Aerial View of Existing Bridge	Remove Bridge
	

2.4.9 Owenacurra River Bridge (UBY11)

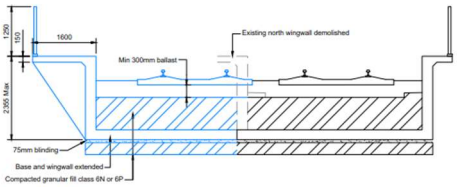
Where the track crosses the Owenacurra River, the project will need to construct a widened bridge deck, on top of the existing bridge pier. As the pier is already in place, the disruption will be limited. This project will feed into the proposed flood relief scheme for Midleton, although it is not expected that this project will impact the flood relief designs adversely.

Aerial View of Existing Single Track across Piers at Owenacurra River Crossing	Extend (Widen) Bridge
	

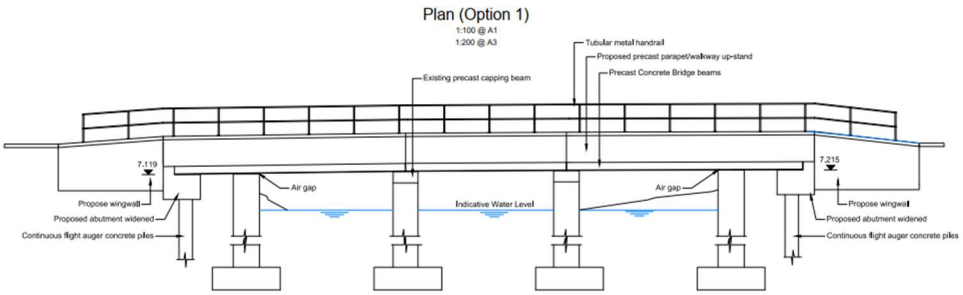
It is proposed to extend the deck to the North to support the second track.



The Cross Section shows the existing in black and the proposed in blue.



The elevation drawing below shows the view from the river.



2.5 Modifications to Level Crossings

There are three (3) existing Level Crossings.

Waterrock (XY009) Waterrock Level Crossing is at single track section and will need to be widened.

Figure 6.1: Level Crossing XY009

Ford (XY010) There is a disused LC ("Ford LC") behind an Industrial Estate. This is on a short private road, has not been used for several years, and it is proposed to extinguish this LC.

Midleton (XY012 Mill Road). The third Level crossing XY012 is located on the R626 road at Mill Road, in Midleton, and is at a section of existing twin track, and does not need to be widened.

Figure 6.2: Level Crossing XY012

2.6 Modifications to Stations

There are three stations along the route, at Glounthaune, Carrigtwohill and Midleton. These stations are currently functioning. Midleton train station building is a protected structure. No works are proposed to the existing station buildings.

There will be some changes to the siding configuration at Midleton sidings. A new set of points will be installed, and the siding lengths adjusted.

3 Construction

The proposed works embrace civil engineering, permanent way and signalling works to enable the installation of a second running line along the length of the existing railway between Glounthaune Junction and Midleton to allow the introduction of a significantly increase frequency of train operation.

To minimise disruption to the current railway operations it is proposed to undertake the construction works over an extended period utilising both day and night-time working. Night-time working is required to deliver works on or affecting the operational railway in a safe manner with regards to both the safety of the railway and the safety of those delivering the works. A disruptive blockade will be utilised to undertake the operational tie ins between the new and existing works and to test and commission the new signalling control systems.

Because of the new signalling control works being part of a significantly wider scheme, the works and commissioning dates have been planned around that programme.

The works will take place in a long narrow corridor, 10km in length and of varying width (generally 15 to 30m).

The works are due to commence in 2023 and continue for 2-3 years.

4 Outcome

It is planned to complete the Glounthaune to Midleton Twin Track Project, including the associated signalling, in 2026.

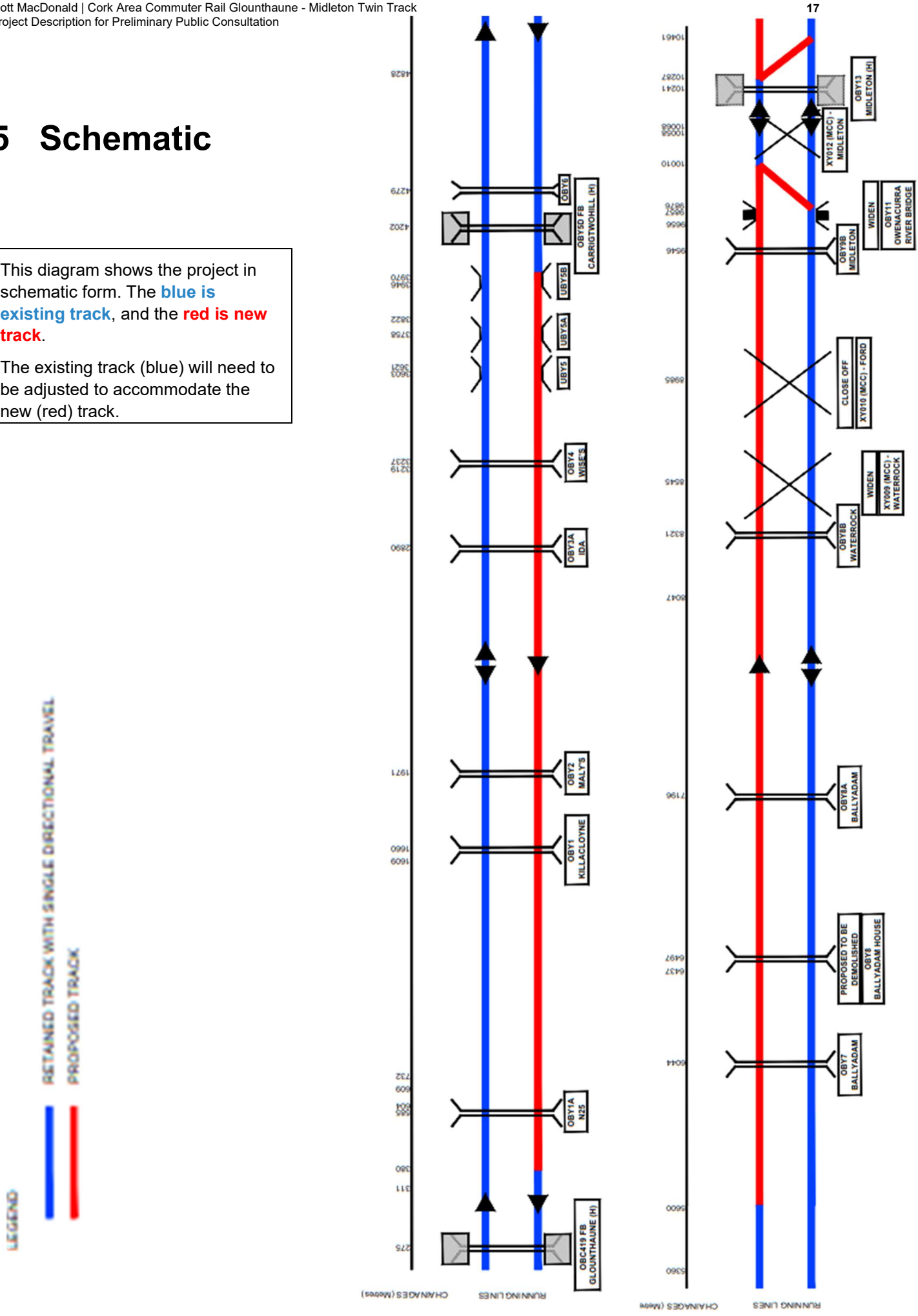
At this time, the railway section between Glounthaune and Midleton **will have the capacity to support a 10-minute frequency service each way**.

Iarnród Éireann will need to upgrade the signalling from Mallow-Kent-Cobh, and increase the number of operational trains, and once this is done then the 10min service can be introduced.

5 Schematic

This diagram shows the project in schematic form. The **blue is existing track**, and the **red is new track**.

The existing track (blue) will need to be adjusted to accommodate the new (red) track.



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