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OCSC

O'CONNOR · SUTTON · CRONIN
MULTIDISCIPLINARY CONSULTING ENGINEERS

W383: THE SOUTH – NORTH ACCESS ROAD

PRELIMINARY DESIGN REPORT

For
Kilkenny County Council

9 September 2024

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1 INTRODUCTION

Kilkenny County Council has appointed OCSC for the services of an engineer-led multi-disciplinary consultant team to advance the preliminary design, detailed design, statutory planning requirements, enabling and procurement, construction, and handover to complete the South-North Access Road (Abbey Road to Belmont Road), including PSDP Consultancy Services along with the procurement of specialist services and all other services as prescribed to advance the Scheme.

1.1 PROJECT BACKGROUND AND STUDY AREA

The proposed development location is in Ferrybank within the Municipal District of Piltown in South Kilkenny. The Ferrybank area is located to the north of the river Suir and bounds Waterford City and has a population of approximately 6,000 people. The existing road network needs to be built upon to facilitate the continuing development of zoned lands as a key objective as well as the provision of enhanced sustainable transport infrastructure and connectivity to the Southeast Greenway.

Presently the nearest access from the Abbey Road (LP3412) area to the Belmont Road (R711) is via the existing R711/LP3412 Junction at Ferrybank, located within the Waterford City & County Boundary. This is a signal-controlled junction which, since its installation several years ago, has facilitated improved pedestrian safety and capacity in comparison to its former priority-controlled junction layout.

The proposal to be developed will provide an additional new access road and improved connectivity between the R711 Belmont Road (Old N25) and the L3412 Abbey Road.

Whilst facilitating the opening up of zoned lands for development, the proposed infrastructure will also facilitate active travel with improved pedestrian & cycling infrastructure and connectivity within the Ferrybank area. The pedestrian and cycling facilities shall also provide a direct connection point to the Southeast Greenway which is complete in sections with the remainder currently under construction. Provision for a bus stop on both sides of the access road within the extent of the road shall also be provided.

It has been noted on the on-site walkover that some invasive species have been observed in proximity to the scheme and this shall need to be considered. The lands immediately to the north and south of the Southeast Greenway are in the ownership of private developers.

The study area for the scheme is shown in the figure overleaf.



Figure 1-1: South-North Access Road Study Area (Source: Google Earth)

The development comprises of:

- Construction of a new road, the South – North Access Road, approximately 940m in length, from the end of the existing access road serving the Clover Meadows Housing Estate to the end of the existing access road serving the Abbeygate Housing estate/Abbeygate Shopping Centre. This to create a continuous road link between the existing Belmont Road Roundabout on the Belmont Road (R711) to the existing Abbeygate Roundabout on the Abbey Road (LP3412);
- Provision of a Traffic Signal controlled crossroads junction on the access road approximately 270m north-east of the existing Abbeygate Roundabout on the Abbey Road (LP3412);

- Provision of a Traffic Signal controlled cross roads junction on the access road approximately 430m south-east of the Belmont Roundabout on the Belmont Road (R711);
- Provision of a new road overbridge over the existing Greenway;
- Minor upgrades to the existing Clover Meadows and Abbeygate access roads being tied into to provide improved pedestrian and cycle facilities and provide additional fencing where required.
- Provision of cyclist and pedestrian facilities along the new access road;
- Provision for 2 No. future bus-stops to both sides of the new road;
- Provision of a new carpark for the Greenway accommodating c.172 no. parking spaces and 2 no. coach parking spaces along with toilets (with water supply and waste water treatment), bicycle parking, accessible car parking spaces (10No.) and car parking spaces of which 20% are provided for e-cars with associated charging facilities;
- Provision of a link from the South-North Access Road footpath to the existing Greenway via a ramped shared surface (pedestrians and cyclists) with stepped access also provided;
- Public lighting along the full length of the South - North Access Road and to the Greenway carpark;
- The installation of road markings and signage throughout;
- Provision of a surface water drainage system to include Sustainable Drainage Systems (SuDS), attenuation storage both above and below ground and flow restrictors to maintain discharge of surface water to greenfield runoff rates. This also includes an outfall along the adjacent Greenway;
- Hard and soft landscaping including boundary treatments throughout.

1.2 NEEDS AND OBJECTIVES

1.2.1 PROJECT NEED

The statutory objective underpinning the delivery of this Scheme is provided for in the Ferrybank- Belview Local Area Plan 2017, extract provided hereunder:

10.8 *Transport Objectives*

10F *To provide a link northward across the New Ross railway line/Southeast Greenway at the Ross Abbey housing development to connect through to the Belmont Road (R711) and to Clover Meadows development.*

This objective is also restated in the Kilkenny City & County Development Plan 2021-2027.

12S *Develop the Link Road from the Abbey Road to the Belmont Road.*

1.2.2 PROJECT OBJECTIVES

The objectives of the scheme are as follows:

- To facilitate the orderly development of the zoned lands.
- To provide a car park for the Southeast Greenway with both pedestrian/cyclist and vehicular links to the proposed access road and to create a pedestrian/cyclist link from the car park to the Southeast Greenway.
- To prioritise the needs of Vulnerable Road Users and facilitate the implementation of public transport and active travel solutions.
- To create a road to link the Abbey Road and Belmont Road.
- To create a suitable streetscape in accordance with the requirements of the Design Manual for Urban Roads and Streets (DMURS).
- To facilitate as far as reasonably practicable the inclusion of SUDS technologies and limit the discharge of surface water to the receiving environment.

2 OPTIONS ASSESSMENT PROCESS

The route option selection process is set out in detail in the stand-alone Option Selection Report, with a summary of same set out following.

2.1 CONSTRAINTS

As referred to previously, the proposed scheme will cross the Southeast Greenway which has been partially completed with sections of the overall route still presently under construction along the former railway line under the control of Iarnród Éireann. Irish Rail have confirmed in writing to Kilkenny County Council that the route will not revert to use as a railway line at any point in its future.

There are several existing masonry arch bridges over the proposed Southeast Greenway in the vicinity of the site, but these are not deemed fit for purpose to accommodate an access road to the required standards and thus a new bridge structure will form part of the proposed scheme.

On the southern side of the Southeast Greenway, a pond feature has developed over the past 10-15 years. This is located in a low-lying area and was discovered to have been supplemented by leakage of drinking water from failed watermain infrastructure. The pond encompassed a wide area but since the leak has been addressed, it has shrunk but not been eliminated given surface water will naturally gravitate towards this lower-lying area from the areas surrounding, considered to be as a result of changes to local hydrogeology. It has also been observed that some seepage of water is evident in the Southeast Greenway cutting to the northwest of the pond. The pond as it has developed over recent times has become a quasi-habitat and as per the initial ecological assessment, is considered to be of environmental value.

Under previously granted residential and commercial planning permissions the following infrastructure was provided by private developers:

- R711 Belmont Road Roundabout and a section of Link Road from the Belmont Road Roundabout passing the southern entrance into the Clover Meadows development;
- L3412 Abbey Roundabout and a section of the Link Road from Abbey Roundabout within the Ross Abbey/Abbeygate development.

The existing cross-sections for these respective roads, which have the potential to form part of the proposed Link Road, are shown in the table overleaf.

Table 2-1: Existing Link Road Cross-Sections

Location	Element	Left-Hand Side	Right-Hand Side
Ross Abbey /Abbeygate - Existing Cross-section	Verge	1m - Varies	1m - Varies
	Footpath (Conc.)	1.80m	1.80m
	Cycle track (DBM)	1.50m	1.50m
	Verge	1.20m	1.20m
	Carriageway	3.00m	3.00m
Clover Meadows - Existing Cross-section	Verge	1m - Varies	0m - 1m - Varies
	Footpath (Conc.)	1.80m	1.80m
	Cycle track (DBM)	1.50m	1.50m
	Verge	1.20m	1.20m
	Carriageway	3.25m	3.25m

The total length of the existing roadway provided either fully or partly completed is approximately 400m. The length of the new road and bridge structure required is approximately 950m.

Junctions will be required to be positioned along the extent of proposed roads to facilitate access to the zoned lands and the Southeast Greenway car park.

2.2 STAKEHOLDER CONSULTATIONS

2.2.1 NON-STATUTORY PUBLIC CONSULTATION

A public consultation was conducted for this scheme, with a total of 14 no. submissions received. A summary, as well as a response to each submission, is shown in the table below.

Table 2-2 Non-Statutory Public Consultation

No.	1 - Resident		
Date Received	Thursday 21 September 2023		
Submission	I think that the road connecting Abbey Road with Belmont Road in Ferrybank is a great idea, and I support it. I live with my family on Fiodh Mór.		
Response	Support for the scheme is noted.		
No.	2 - Resident		
Date Received	Friday 22 September 2023		
Submission	Will the crossing over the old railway will be keeping our wildlife in mind in this area?		
Response	The design will include the appropriate environmental and ecological considerations.		
No.	3 - Resident		
Date Received	Friday 22 September 2023		

Submission	The new road is very welcome and badly needed, however, Option 4 (Orange Route) is a concern. This option cuts into the Abbeylands Business Park. Construction will impact the businesses in the area. The option will also run adjacent to an elderly couple's property, which might impact them negatively. Is there a possibility for Abbey Road to be resurfaced as part of this scheme?
Response	The multi-criteria analysis has indicated that Option 4 is not the preferred option. The existing Abbey Road is outside of the scope of works for this project.
No.	4 - Resident
Date Received	Tuesday 26 September 2023
Submission	Options 1, 2, 5 and 6 (Green, Red, Blue, and Yellow) are the only realistic options. Option 4 (Orange) will go straight through the Abbey Business Park and border an elderly couple's home. Option 3 (Purple) goes through Abbeygate Housing Estate which poses a danger to the children playing in the estate. The existing road to which the route will connect is also not sufficient for heavy traffic.
Response	Option 2 has been identified as the Preferred route as per the multi-criteria analysis.
No.	5 - Resident
Date Received	Wednesday 27 September 2023
Submission	Route 4 (Orange) is preferred as it is a shorter distance and will have a lower impact on the environment.
Response	The multi-criteria analysis has indicated that Option 4 is not the preferred option.
No.	6 - Whitebox Property Developments Ltd.
Date Received	Monday 2 October 2023
Submission	Option 1 (Green) - supported as the preferred option. It will connect and carry the Southeast Greenway at the appropriate location and via the open space and wetlands area. It will also ensure an urban feel and align best with the masterplan for the site which it traverses. Option 2 (Red) - second preferred option. It accords with all aspirations as set out above. Would prefer to work the route through the wetlands as it is a great transitional area between the urban development and the Southeast Greenway. Option 3 (Purple) - this route is not a preferred option as it will traverse through an existing housing estate and through phases of planned development. Option 4 (Orange) - this route is not a preferred option as its traversal through an industrial estate will present difficulties. Option 5 (Blue) - third preferred option as it pushes the new urban road away from the heart of the urban village and proposes a difficult crossing point to the Southeast Greenway. Route 6 (Yellow) - this route is not a preferred option as its alignment will be invasive to the users of the Southeast Greenway.
Response	Option 2 has been identified as the Preferred route as per the multi-criteria analysis which is noted as a preferred option of this submission.
No.	7 - Fewer Harrington & Partners
Date Received	Monday 2 October 2023
Submission	Option 1 (Green) - supported as the preferred option. It provides clear alignment between the existing main roundabouts and best aligns with our client's masterplan for the lands. Option 2 (Red) - there are serious concerns about this route once it crosses the Southeast Greenway to the north and enters our client's lands. The alignment would be detrimental to the masterplan and affect the potential of the site. The route could potentially be realigned to curve around the wetland and cross the Southeast Greenway at the same point as Option 1, enhancing green space and benefitting pedestrians and cyclists. Option 3 (Purple) - not a preferred option as it traverses a granted planning permission in Abbeygate and would impact the existing layout. It would be detrimental to the overall masterplan and affect the potential of the site. Option 4 (Orange) - second preferred option. This route aligns with our client's masterplan and could create a beautiful transition space with the wetlands area between the urban developments and the Southeast Greenway. Option 5 (Blue) - least preferred option. This route would be the most detrimental to our client's lands as it dissects the land diagonally. It would be detrimental to the overall masterplan and affect the potential of the site.

	Route 6 (Yellow) - there are serious concerns about this route once it crosses the Southeast Greenway to the north and enters our client's lands. The alignment would be detrimental to the masterplan and affect the potential of the site. It also appears to be a long and tortuous route with straights and sharp changes.
Response	Option 2 has been identified as the Preferred route as per the multi-criteria analysis. As noted, the routes represent corridors subject to further design development. Due consideration will be given to the potential to accommodate the issues raised in this submission as part of stakeholder consultation and detailed design at the next stage of the project.
No.	8 - Resident
Date Received	Monday 2 October 2023
Submission	I am against the construction of a road in close proximity to the Clover Meadows Estate as it would impact the safety of children in the area, increase noise levels and lower house prices.
Response	The objective of this project is to provide a link from Abbey Road to Belmont Road. The Clover Meadows access road was always intended to operate as a through route and is facilitated by a large capacity junction on Belmont Road. This section of road has good quality pedestrian and cycle infrastructure, which will be reviewed and upgraded as part of the subsequent stages of this project as appropriate and is external to the adjacent housing estate.
No.	9 - Resident
Date Received	Tuesday 3 October 2023
Submission	I am in favour of the scheme but concerned about the potential impact on the Clover Meadows Estate. If the road was on the outside of the current fence (field area), it could be a huge benefit to the residents for a number of reasons, such as increased security for residents, no impact on the harmony and privacy element or property valuations of the estate, etc. Two roads should be considered, one for estate residents only and another for the through road. I believe the best option would be the road arriving at the Abbey Park roundabout.
Response	The objective of this project is to provide a link from Abbey Road to Belmont Road. The Clover Meadows access road was always intended to operate as a through route and is facilitated by a large capacity junction on Belmont Road. This section of road has good quality pedestrian and cycle infrastructure, which will be reviewed and upgraded as part of the subsequent stages of this project as appropriate and is external to the adjacent housing estate.
No.	10 - Resident
Date Received	Tuesday 3 October 2023
Submission	All route options will be close to the Clover Meadows Estate's two green areas which are used as a play area for kids. The road would create a safety risk in this regard. Several houses are adjacent to this road and their safety and noise exposure will also be compromised. There is also a concern regarding the smells originating from trucks destined for the ABP meat factory which will impact residents living adjacent to the road. The increased traffic and how cars will enter the housing estates along the road is also a concern.
Response	The objective of this project is to provide a link from Abbey Road to Belmont Road. The Clover Meadows access road was always intended to operate as a through route and is facilitated by a large capacity junction on Belmont Road. This section of road has good quality pedestrian and cycle infrastructure, which will be reviewed and upgraded as part of the subsequent stages of this project as appropriate and is external to the adjacent housing estate. Appropriate measures will be considered to ensure the integrity and safety of the estates green spaces is maintained through stakeholder consultation at the next project stage.
No.	11 - Resident
Date Received	Saturday 30 September 2023
Submission	We would object to the road proposed at Newtown Glen and the Purple Route as this proposed road would be detrimental to us due to the noise, petrol fumes and pollution.
Response	The multi-criteria analysis has indicated that Option 3 is not the preferred option
No.	12 - Resident
Date Received	Wednesday 4 October 2023

Submission	I would like to submit an objection to all routes aside from Route 3 (Purple) as this route is the most direct. The other routes will affect the natural lay of the land relating to wildlife.
Response	The multi-criteria analysis has indicated that Option 3 is not the preferred option, in part due to the impact on the existing and permitted residential access roads it aligns with which would have a negative impact on residents and/or limit the potential provision of high-quality pedestrian cycle infrastructure. The preferred option (Option 2) scored the highest under the environmental section of the multi-criteria analysis.
No.	13 - Resident
Date Received	Wednesday 4 October 2023
Submission	The road alignment will impact the safety of children playing in the area of Clover Meadows as it will lead to an increased traffic flow over our estate. I would appreciate it if the road connection could start from Maxol Petrol station and connect to Abbey Road, which will not affect our estate.
Response	The objective of this project is to provide a link from Abbey Road to Belmont Road. The Clover Meadows access road was always intended to operate as a through route and is facilitated by a large capacity junction on Belmont Road. This section of road has good quality pedestrian and cycle infrastructure, which will be reviewed and upgraded as part of the subsequent stages of this project as appropriate and is external to the adjacent housing estate. Appropriate measures will be considered to ensure the integrity and safety of the estates green spaces is maintained through stakeholder consultation at the next project stage.
No.	14 - Trans-stock Warehousing and Cold Storage Ltd.
Date Received	Thursday 5 October 2023
Submission	We welcome the development of the access road as it will greatly assist access to the area for heavy goods vehicles.
Response	Support for the scheme is noted.

2.2.2 LANDOWNER ENGAGEMENT

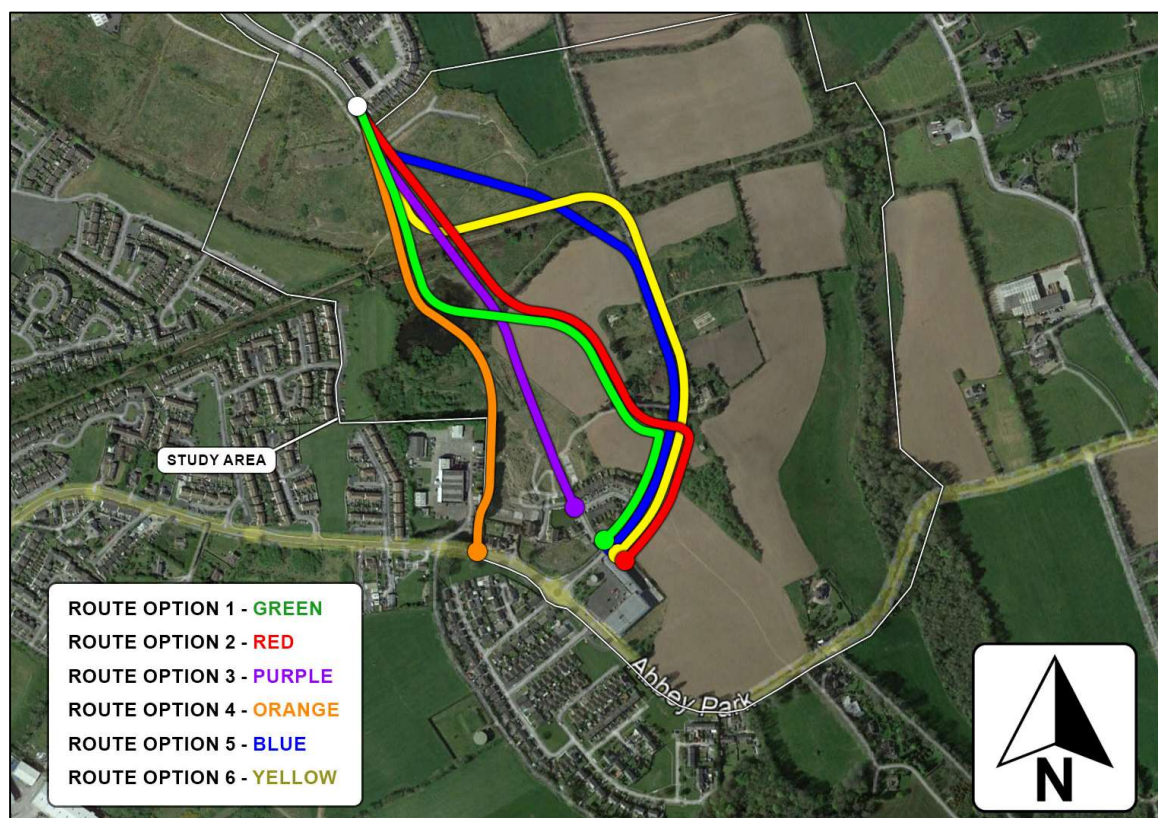
The lands directly affected by the works are predominantly owned by three entities, 2 no. private landowners and Kilkenny County Council. Initial consultation was held with the respective landowners in June 2023 at the concept design stages and prior to the route option selection process to advise each of the project and agree matters such as access for site investigation and surveys etc. Subsequent meetings were held in February and March, subsequent to the completion of the Route Option Selection Process to facilitate refinement of the preferred alignment and the location of the respective signalised junction to optimise same with respect to the development potential of the adjacent zoned lands. Their comments have been taken into account in the development of the design that is being brought forward to planning stage now.

2.3 ROUTE OPTION SELECTION PROCESS

A total of 6 no. routes were considered as part of the option selection and assessment along with the Do-Nothing scenario. These routes are shown following. Each route was assessed under the following criteria:

- Economy
 - Transport Efficiency and Effectiveness

- Wider Economic Impacts
- Funding Impacts
- Safety
 - Collision Reduction
 - Security
- Environmental
 - Air Quality & Climate
 - Noise
 - Waste
 - Biodiversity (Flora and Fauna)
 - Agriculture
 - Non-Agricultural Properties
 - Architectural Heritage
 - Archaeological & Cultural Heritage
 - Landscape & Visual (including light)
 - Soils and Geology
 - Hydrology
 - Hydrogeology
- Accessibility & Social Inclusion
 - Deprived Geographical Areas
 - Vulnerable Groups
- Integration
 - Transport Integration
 - Land Use Integration
 - Geographical Integration
 - Other Government Policy Integration: Regional Balance
- Physical Activity
 - Health
 - Recreation

Figure 2-1: Route Options Considered

2.4 PREFERRED ROUTE

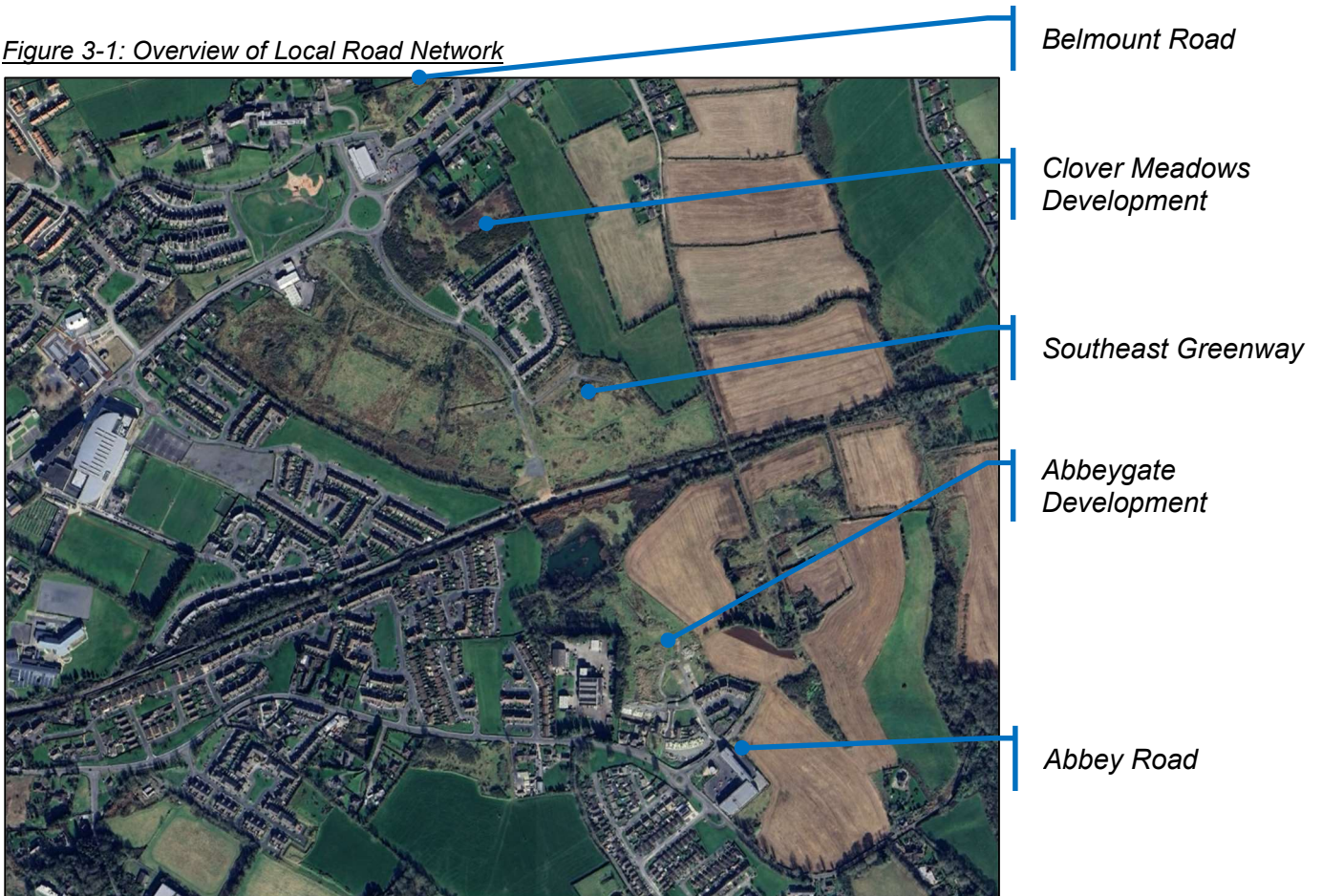
Based on the Multi-Criteria Analysis (MCA) detailed in the previous section, the Emerging Preferred Option (EPO) is the Red Route. This route scored higher on average than all the other routes. The alignment begins as a continuation of the existing Clover Meadows access road and continues south in a direct manner, bridging over the Southeast Greenway east of and avoiding the existing pond feature. It turns east and then south again via a number of bends and junctions before turning south to link to link with the existing section of the Abbeygate access road which is external to the estate itself.

3 EXISTING TRANSPORT NETWORK

3.1 ROAD NETWORK

The development site is located between the Abbey Road (LP3412) to the south and the Belmont Road (R711) to the north.

Figure 3-1: Overview of Local Road Network



Belmont Road is the key link in the area, facilitating access to nearby Waterford City to the southwest and the N29 to the northeast and ultimately to the N25/M9 to the west. It would be considered an arterial link as per DMURS as a result with a 50kph speed limit. Belmont Road is a good quality link with single traffic lanes in each direction and a central ghost island to facility a number of residential and commercial entrances along its length, particularly in the urban area. As a result, its cross section is in excess of 9m, and public lighting is provided along its length.

Belmount Road links with the Clover Meadows access road via a large approximately 80m diameter roundabout with 4 no. arms. Each arm flares on approach to the roundabout to provide 2 lane entry with 2 circulatory lanes provided within the roundabout.

The Clover Meadows access road is a link road with a single lane in each direction. The cross section varies along its length but is generally around 6.5m. At present its sole function is to facilitate access to the Clover Meadows residential development to the east, with undeveloped lands surrounding it to the south and west. Public lighting is provided along its length.

Abbey Road is the other main road artery in the area and links to the Belmount Road to the west while continuing east to the N29 just north of Belview Port. It is classed as a link road as per DMURS, with a larger number of direct accesses to residential and commercial properties along its length and a 50kph speed limit. It has single lanes in each direction and an approximate cross section of just over 7m. Public lighting is provided along its length.

Abbey Road links to the Abbeygate access road via a 3-arm roundabout with an approximate 30m diameter. All approaches are single lane with a single circulatory lane provided.

The Abbeygate access road is a simple link road with single lanes in each direction and an approximate 6.5m carriageway. At present its sole function is to facilitate access to the Abbeygate residential development and the Ross Abbey Town Centre commercial development. A section of the road was completed continuing north past these development through undeveloped lands, but this is not currently open to the public. Public lighting is provided along its length.

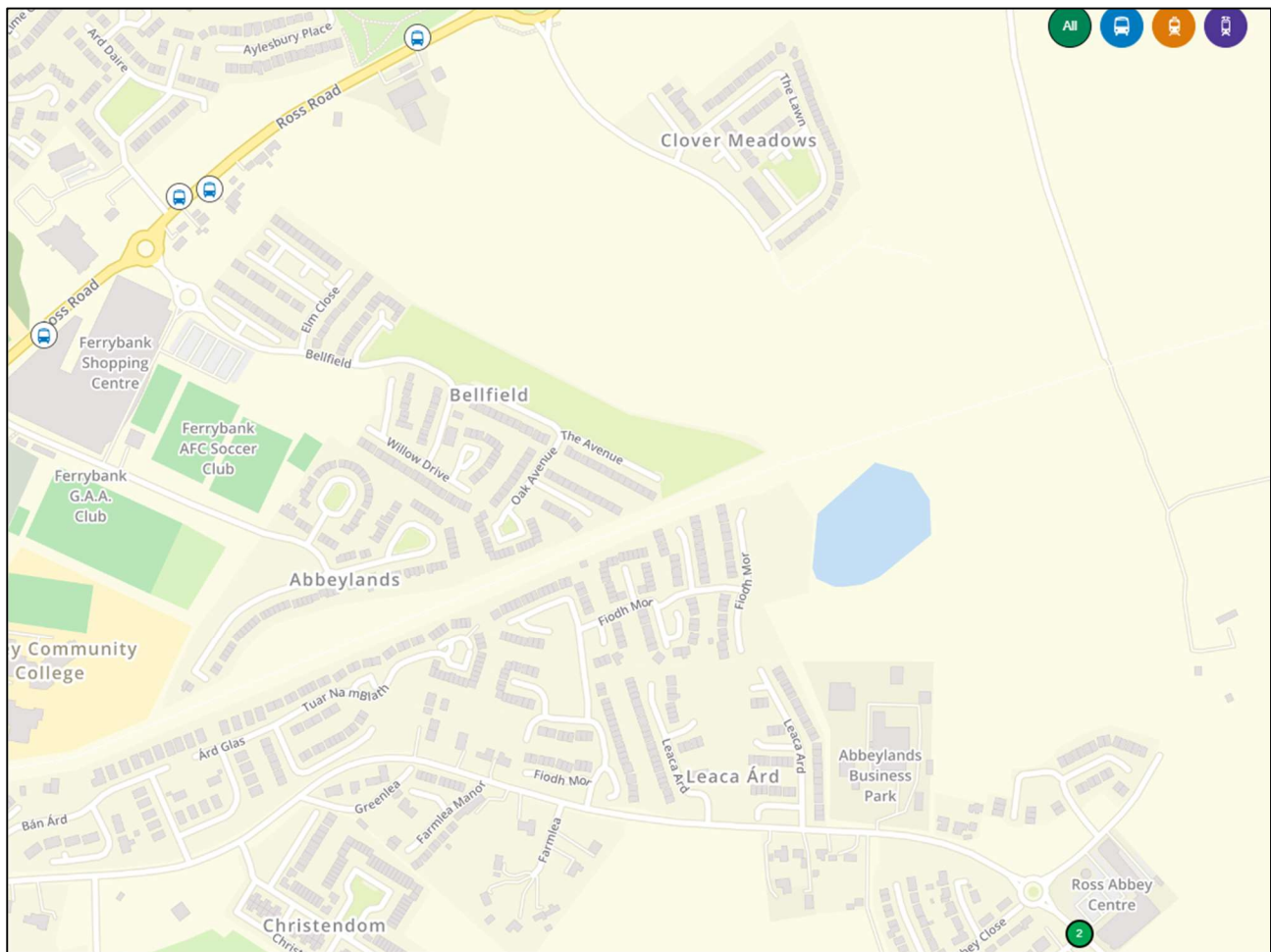
There are no other roads within the study area, with the new road proposed to link the Clover Meadows and Abbeygate access roads.

3.2 COLLISION HISTORY

The Road Safety Authority (RSA) has a remit to report on collisions across the country. However, at the time of writing, the RSA is in the process of reviewing their road traffic collision (RTC) data sharing policies and procedures. As a result, record-level RTC data is not available until this review is complete.

3.3 BUS STOPS

There are existing bus stops located on Abbey Road and Belmount Road as indicated in the following extract from the Transport for Ireland mapping service. Routes serving these stops are operated by JJ Kavanagh between Abbey Park and Ardkeen and between Slieverue Ferrybank and Ballygunner.

Figure 3-2: Local Bus Services

The Abbey Road bus stop is an offline stop with a shelter provided as shown following.

Figure 3-3: Abbey Road Bus Stop



The Belmont Road stops are informal in nature with no bays or shelters provided.

3.4 PEDESTRIAN AND CYCLIST FACILITIES

Both Abbey Road and Belmont Road have existing footpaths along their length. The Belmont Road footpaths are of a good quality along both sides of the carriageway. A signalised crossing is provided to the west nearer the centre of Ferrybank and drop kerb crossings with tactile paving are provided at the large diameter roundabout with the Clover Meadows access road with refuge islands also provided on each arm.

Abbey Road has less consistent footpaths, with intermittent sections missing in places. Drop kerb crossings with tactile paving are provided at the roundabout with the Abbeygate access road with refuge islands also provided on each arm.

Both the Clover Meadows and Abbeygate access roads provide good quality footpaths and cycle facilities. The former provides 1.5m footpaths and cycle tracks along both sides, with the cycle tracks linking to the carriageway in advance of the roundabout. Drop kerb crossings with tactile paving are provided at junctions. The Abbeygate access road has a similar provision but with a cycle track on the west side only.

The site is bisected by the Southeast Greenway, a former railway line which is being repurposed as an active travel and recreational facility approximately 3m wide. This facility connects New Ross to Waterford across a 24km length, with Phase 1 currently opened between New Ross and Glenmore. The section passing through the site is expected to open in 2025. It is a key objective of this project to facilitate access to and from this Southeast Greenway.

4 DESIGN APPROACH

4.1 APPLICABLE TECHNICAL STANDARDS

The route is being designed in accordance with the Design Manual for Urban Roads and Streets (DMURS) and the following standard documents:

- DMURS (Sept 2023);
- Cycle Design Manual (Sept 2023);
- DN-GEO-03060 – Geometric Design of Junctions (May 2023)
- DN-REQ-03034 The Design of Road Restraint Systems (Vehicle and Pedestrian) for Roads and Bridges (May 2019);
- Traffic Signs Manual (Oct 2021);
- DN-PAV-03021 Analytic Pavement & Foundation Design (Aug 2022);
- Greater Dublin Strategic Drainage Study (GDSDS);
- Greater Dublin Code of Practice for Drainage Works;
- The SUDS Manual CIRIA 2007;
- The Flood Studies Report (1975) and Supplementary Reports;
- PE-PMG-02001 (HD 19) Road Safety Auditing
- DN-STR-03020 The Structural Design of Road Structures

The table below summarises the principle geometric parameters of the link design.

Figure 4-1: Principle Geometric Parameters

Road Type	Design Speed (km/h)	Minimum Curve Radius (m) without Superelevation	Minimum Curve Radius (m) with 2.5% Superelevation	Minimum Longitudinal Gradient (%)	Maximum Longitudinal Gradient (%)	Minimum Sag Curve Value (K)	Minimum Crest Curve Value (K)
Urban 30 km/h	30	26	-	0.5	5	2.3	N/A
Urban 50 km/h	50	104	82	0.5	5	6.4	4.7
Urban 60 km/h	60	178	136	0.5	5	9.2	8.2

4.2 ROAD CLASSIFICATION

The road will be classified in accordance with table 3.1 of DMURS the South – North Link Road will be classed as a Link Road.

Figure 4-2: Terminology used within DMURS and Other Key Publications

DMURS Description	Roads Act/NRA DMRB	Traffic Management Guidelines	National Cycle Manual
Arterial	National	Primary Distributor Roads	Distributor
Link	Regional (see note 1)	District Distributor Local Collector (see Notes 1 and 2)	Local Collector
Local	Local	Access	Access

Notes

Note 1: Larger Regional/District Distributors may fall into the category of *Arterial* where they are the main links between major centres (i.e. towns) or have an orbital function.

Note 2: Local Distributors may fall into the category of *Local* street where they are relatively short in length and simply link a neighbourhood to the broader street network.

Table 3.1: Terminology used within this Manual compared with other key publications.

4.3 ACCESSABILITY FOR MOBILITY IMPAIRED USERS

The proposed CBC Infrastructure Works will include the provision of enhanced walking and cycling infrastructure along the route of the Proposed Scheme.

The design process has included an Accessibility Audit of the existing road corridor environment, which is enclosed in Appendix I. The audit provided a description of the key accessibility features and potential barriers to mobility impaired people based on good practice, and identified the following issues to be addressed in the design process:

- Accessible Parking (within the carpark) – Disabled Parking Space layout should be to the appropriate standard, with dropped kerb access between the parking space and footpath;
- Access Routes on Footpaths – Width of footpaths should be clear of clutter, such as street furniture, and allow unimpeded access for the mobility impaired, and in doing so, meet the minimum standards for widths;
- Drainage – All footpaths should have sufficient cross-fall for drainage purposes but without affecting the ability of mobility-impaired people to move safely along the corridor;
- Guardrails – Guardrails should be located only where needed for safety purposes – and care should be taken not to create narrow spaces which create difficulties for movement;

- **Pedestrian Crossing Points** – Pedestrian crossing points should be laid out in accordance with standards and make it convenient and safe for mobility impaired users to negotiate crossing of carriageways;
- **Controlled and Uncontrolled Crossings** – Controlled and Uncontrolled Crossings should have tactile paving laid out correctly to provide tactile and visual assistance to mobility-impaired users approaching crossing points;
- **Changes in Level** – Any changes in level should be addressed in the design process to ensure that all changes in level, where practicable, comply with standards;
- **Shared pedestrian/cyclist areas** - Shared pedestrian/cyclist areas should be well laid out, with clear visual and tactile elements included, to ensure that these areas are safe for mobility-impaired users, pedestrians and cyclists;
- **Surface Material** - Footpath materials should be selected to ensure surfaces are free of undulations, with no trip hazards where there is a transition between surface materials – or where the Proposed Scheme ties into the existing infrastructure; and
- **Street Furniture** - All poles for signs and street lighting should be carefully located to minimise the effect on the safe and convenient passage of pedestrians and cyclists, with due cognisance to the safe movement of mobility impaired users.

4.4 DESIGN SPEED AND SPEED LIMITS

As outlined in DMURS 'Design speed is the maximum speed at which it is *envisaged/intended that the majority of vehicles will travel under normal conditions*. Therefore, the design speed proposed for urban roads is aligned with the proposed speed limit. For the South – North Link Road the existing speed limits on both adjoining roads are 50kph. These will be retained and the design speed for the road will be 50kph. The speed selected is in compliance with Table 4.1 of DMURS.

Figure 4-3: Design Speed Selection Matrix

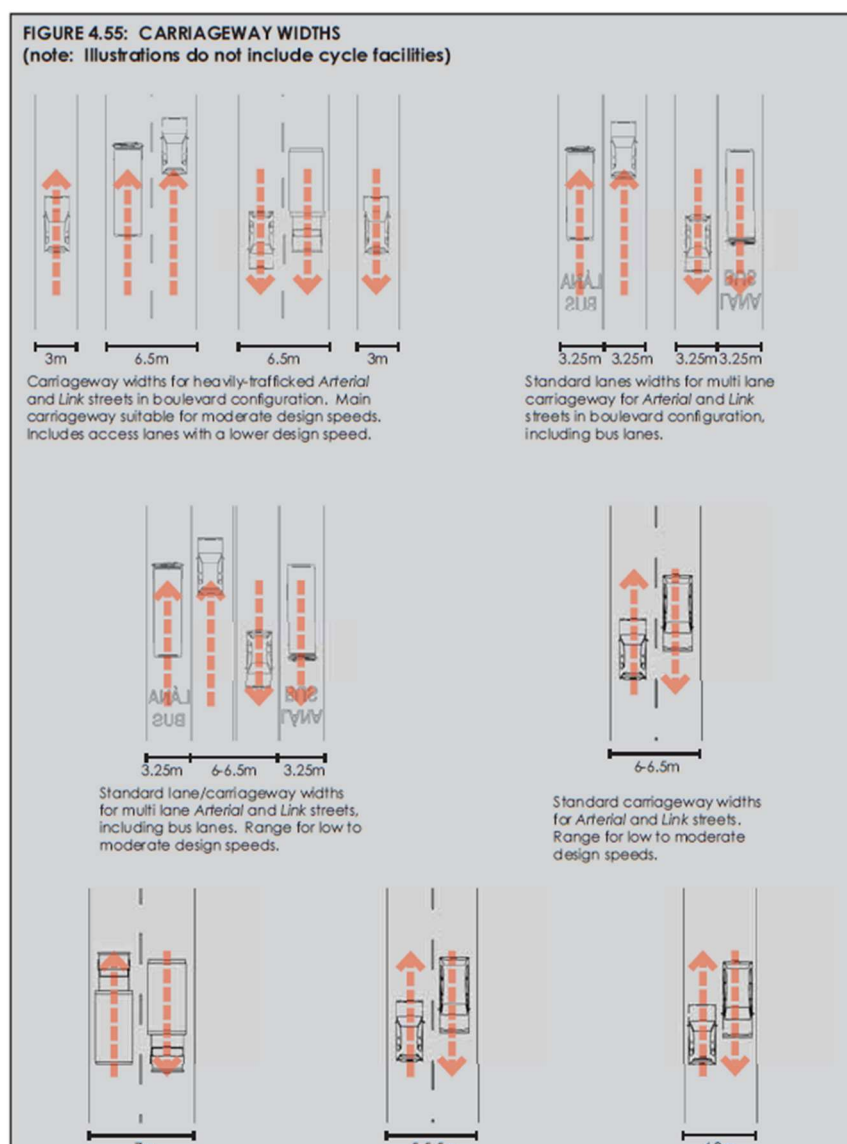
		PEDESTRIAN PRIORITY		VEHICLE PRIORITY	
FUNCTION	ARTERIAL	30-40 KM/H	40-50 KM/H	40-50 KM/H	50-60 KM/H
	LINK	30 KM/H	30-50 KM/H	30-50 KM/H	50-60 KM/H
	LOCAL	10-30 KM/H	10-30 KM/H	10-30 KM/H	30-50 KM/H
		CENTRE	N'HOOD	SUBURBAN	BUSINESS/ INDUSTRIAL
		RURAL FRINGE			
		CONTEXT			

Table 4.1: Design speed selection matrix indicating the links between place, movement and speed that need to be taken into account in order to achieve effective and balanced design solutions.

4.5 ROAD CROSS SECTIONS

The carriageway cross-section will be 6.5m (DMURS 4.4.1) as the road will be a link road where frequent access for larger vehicles is required as it is envisaged that the link will form part of a bus route in the future. No median will be used in this design. This carriageway width is selected from Figure 4.55 of DMURS.

Figure 4-4: Carriageway Width Selector



The width of the footpaths is determined by reference to DMURS Section 4.3.1. The road is defined as suburban in character and as such a 1.8m wide footpath on either side of the carriageway is appropriate. The width of cycle facilities will be determined on the basis of the Cycle Design Manual (Sept 2023) bearing in mind

current and planned cycle provisions in the Ferrybank area and the AADT of the proposed route. DMURS design philosophy seeks to keep the kerb-to-kerb width of roads to a minimum and puts a preference on raised cycle facilities. As such the cycle facilities on this scheme will not be at grade.

Verge and rear strip widths will be determined from DMURS Section 4.3.1. Verges and strips may be combined with SuDS measures. This will be developed as part of the design of the drainage system.

4.6 JUNCTION DESIGN

The primary principle in the design of junctions along the route will be to provide junctions that are safe and consistent with existing layouts in order to present a uniformity of approach to drivers. In addition, junctions will have sufficient capacity to accommodate design year peak traffic flows thus optimising network capacity. The primary junction strategy objectives will be:

- To optimise road safety by ensuring adequate visibility and consistency;
- To ensure capacity for the design year;
- To function as traffic calming measures;
- To provide safe crossing facilities for pedestrians and cyclists;
- To provide an economic solution, so that the cost of implementing the design will be, to the maximum possible extent, offset by the economic benefits derived;
- To optimise road construction costs;
- To minimise environmental impacts, such as air pollution and engine noise, by minimising fuel consumption through reductions in the number of speed changes and the number of stop/starts required.

Intermediate junctions will be created at points along the link road appropriate to promote proper development of the zoned land to the east and west of the link road. In accordance with DMURS 4.4.1 these roads will all have lane widths of 3.0m except for the Southeast Greenway Carpark Access Road which will have a lane width of 3.5 to accommodate turning buses.

A number of junction surveys were commissioned in order to obtain the base traffic numbers. Additionally, ANPR surveys were conducted as identified points to determine the potential redistribution of traffic upon completion of the access road.

The analysis considers the full buildout of all zoned lands in the area which are likely to use the access road in future. The Trics database was used to obtain a trip generation rate for the zoned lands using sites with similar characteristics in terms of public transport access and likely parking rates. These trips were then

distributed on the proposed road network using a Vissim micro-simulation model.

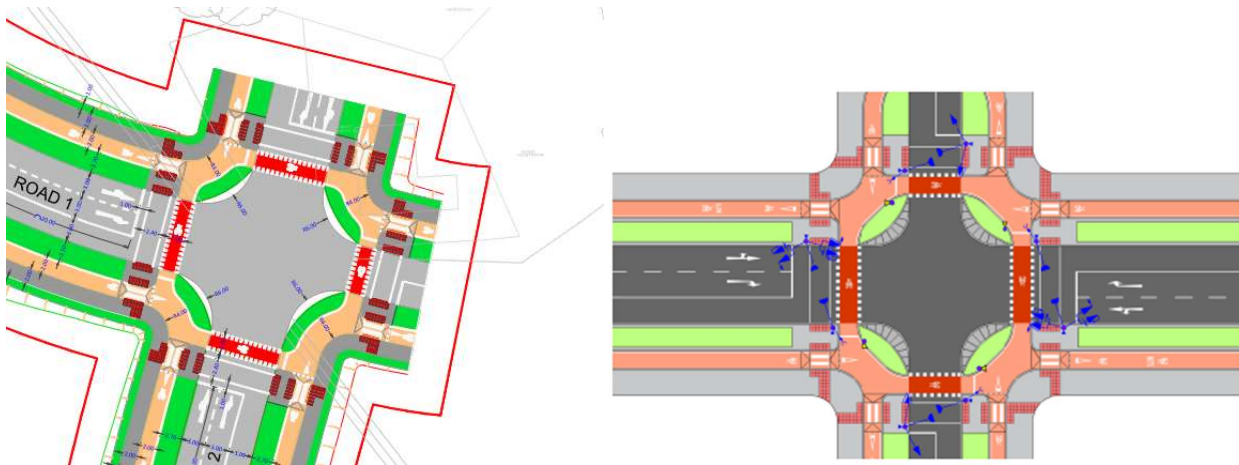
The following conclusions can be drawn from the outcome of the Vissim modelling:

- The access road will have sufficient link capacity to accommodate the estimated trips with a high amount of reserve capacity available;
- Based on the functionality and demand at the two main junctions located along the access road, it is proposed that both junctions should operate by means of traffic signal control;
- Based on the estimated volumes at the northern junction (Junction 5), the following layout is proposed:
 - Single-lane roads on the eastern and western approaches due to lower volumes; and
 - Single-lane roads on the northern and southern approaches with 20m right-turn bays to prevent turning vehicles from blocking the through movements.
- Based on the estimated volumes at the southern junction (Junction 6), the following layout is proposed:
 - Single-lane Road on the eastern approach due to lower volumes; and
 - Single-lane roads on the northern, southern, and western approaches with 20m right-turn bays to prevent turning vehicles from blocking the through movements.
- Using these layouts, both junctions will perform with acceptable delays and queue lengths during both peak hours.

It can therefore be concluded that the proposed access road, the junction control, and layouts, will be sufficient to accommodate the future buildout of the zoned lands in the area, with reserve capacity available.

The junction typology selected is in accordance with TL 501 of the Cycle Design Manual. In the image below we can see the project specific design of southern signalised junction compared to the exemplar design of a TL501 junction in the Cycle Design Manual

Figure 4-5: Southern Junction design with TL501 of the CDM



Given the scale of the Southeast Greenway Carpark it will only require a simple priority junction to ensure access and egress. The Southeast Greenway Carpark access has been designed with a Zebra Crossing to facilitate pedestrian and cyclist priority in crossing the Link Road to access and egress the Southeast Greenway.

4.7 BUS STOPS

All bus stops on the scheme have been designed as layby bus stops. This will give good flexibility to the network and will allow passenger coaches which would have a longer dwell time to use the stops efficiently. The bus shelters provide an important function in design of bus stops. The shelter will offer protection for people from poor weather, with lighting to help them feel more secure. Seating will be provided to assist ambulant disabled and older passengers and accompanied with Real Time Passenger Information (RTPI) signage to provide information on the bus services. The locations of the bus shelters are presented on the General Arrangement drawings. The optimum configuration that provides maximum comfort and protection from the elements to the travelling public is the 3-Bay Reliance 'Mark' configuration with full width roof. This shelter is a relatively new arrangement which has been developed by JCDecaux in conjunction with the NTA. roof beams. Figure 4.8 below provides an example image of the preferred full end panel shelter arrangement. The shelter consists mainly of a stainless-steel structure with toughened safety glass and extruded aluminium.

Figure 4-6: Example of a 3-Bay Reliance full end panel bus shelter (Source: JCDecaux)



4.8 DRAINAGE

4.8.1 DRAINAGE OVERVIEW

The general principals behind the drainage design are as follows:

- The proposed road will cross over an existing drainage ditch in one location. This crossing will be designed to cause minimal interference with the existing drainage regime.

- Existing overland flows which the proposed road crosses and may block, will be intercepted and discharged to a suitable outfall.
- The drainage of the proposed road will be designed such that surface water drainage and sub-grade drainage will be provided for the new road corridors. This discharge will be directed to an existing watercourse and will outfall at a rate not exceeding the greenfield runoff rate.
- The design will aim to maintain or, where possible, improve the quality of the existing drainage network.
- Sustainable Drainage Systems (SuDS) design will be applied to the surface water drainage system where possible.

The road and carpark drainage for the project has been designed in accordance with the *Greater Dublin Sustainable Drainage Scheme (GDSDS)*. The elements of the drainage to be constructed will be built in accordance with the *Greater Dublin Regional Code of Practice for Drainage Works (GDR COP)*. Any SuDS elements incorporated into the scheme will be designed in accordance with The SuDS Manual (published by CIRIA, 2007). The design has been carried out with regard to the *Kilkenny County Development Plan (2021-27)*.

Surface water attenuation will be used to control rainwater runoff from all hard surfaces in accordance with the GDSDS. The rate of discharge from the attenuating ponds provided will be controlled by means of a flow restricting device at the outfall. The quantity of discharge will be restricted to that of the natural catchment runoff and the remainder of the flow will be attenuated upstream of the flow control device. The size and volume of storage facilities will in general be based on the 1-in-100-year storm event, appending a 10% increase to allow for climate change (*per GDR COP & Kilkenny Co. Dev. Plan*). For all flows up to this intensity, attenuated runoff will be detained within the ponds provided.

Due to the sensitivity of proximate watercourses (the River Suir with its contributing ditches and streams), SuDS measures have been incorporated to inhibit runoff and maximise natural treatment of the surface water. Cutoff-swailes have been provided on the uphill side of roads to direct field runoff back to natural pre-existing ditches. Where this was not possible the swales direct surface water to the drainage network and on to the attenuation ponds. Two grass verges on either side of the road corridor aid in filtering out particulate matter. Filtration is also carried out by use of permeable paving. All parking spaces provided in the carpark are underlaid with a permeable buildup and surface material. Due to the intended vehicular usage of all areas, bypass fuel separators have been provided prior to the outfall into the attenuation ponds. These have been preceded by silt traps for ease of maintenance and longevity of the separators. Finally, the attenuation ponds themselves are designed to maximise opportunity for natural infiltration of minor storm events while allowing settlement of particulate matter during storage of larger events. Finally flow control devices at the outfalls will restrain the outflow to greenfield runoff rate (Q_{BAR}).

4.8.2 TABULAR SUMMARY OF DRAINAGE DESIGN PARAMETERS

Table 4-1: Drainage Design Parameters

PARAMETER	VALUE
Annual Average Rainfall (AAR) Value	1008 mm
Rainfall 'M5-60' Value	18.2 mm
Rainfall 'M5-2D' Value	68.5 mm
Ratio 'r'	0.27
Impermeability Factor for paved areas	1.0
Impermeability Factor for permeable paved areas	0.7
Impermeability Factor for landscaped / undisturbed green areas	0.3
Summer C_v	0.75
Winter C_v	0.84
Time of Entry	5 minutes
Maximum Time of Concentration	30 minutes
Maximum Rainfall	50 mm/hr
Smallest Pipe Diameter used for carriageway drainage	225 mm
Pipe Roughness Coefficient (k_s (mm) / n)	0.6
Minimum Velocity	1.0 m/s (self-cleansing)
Maximum Velocity	3.0 m/s
Percentage increase in rainfall for climate change	10%
Minimum cover for pipework (without concrete protection)	1200 mm
Pipework connection alignment	Soffits aligned
Return Period for drainage design and on-site storage	5, 30 & 100 years

4.9 PUBLIC LIGHTING

The lighting design has been developed with the following principal considerations:

- Provide adequate illumination to contribute towards the safe use of the link road and adjoining car park access/feeder road and adjoining footpaths by both vehicles, cycles and pedestrians.
- Provide adequate illumination to junctions.
- Provide the required illumination with minimum energy use.
- To control the lighting to prevent energy wastage.
- Light fittings will be fitted with low intensity, horizontal cut-off LED light fittings employing a narrow directional light or cowled light. This will avoid the effect of light spill arising.
- No light spill into biodiversity areas. In particular there will be no light spill onto the pond area to the west of the development;
- The lighting includes dimming the 4m poles by 30% post curfew hours;

All lighting within the area is to be powered from the metered landlord supply via sub-distribution boards as required and to comply with IS:10101 National Rules for Installation. The lighting is designed to comply with the Kilkenny Lighting Design Specification. The design achieves a Lighting Class of P2 for the main spine road where all poles are 8m tall.

Table 4-2: Link Road Lighting Standard

Road Type	Lighting Class	Maintained Average Illuminance, lx LED	Maintained minimum illuminance, lx LED	Uniformity Emin/Eav
Roads where - Night-time public use likely to be high - Or the crime risk likely to be high - Or the traffic usage is likely to be high	P2	10.0	2.0	0.2

The car park requires separate lighting requirements shown below and all poles here are 6 meters. A medium traffic car park type has been selected as the key design parameter due to the adjacent light levels being achieved from the main spine road. This way the uniformity of light between the car park and main road remains similar to each other.

Table 4-3: Car Park Lighting Standard

Car park Type	Maintained Average Illuminance	Uniformity U0
Light traffic, parking for shops, terraced and apartment houses, amenity car parks etc.	5	0.25
Medium Traffic, parking for department office buildings, sports arenas etc.	10	0.25
Heavy Traffic, parking for schools, churches, major sports and building complexes	20	0.25

4.10 PAVEMENTS

This section covers the preliminary design for the following pavement assets:

- General traffic lanes;
- Bus bays;
- Cycle lanes; and
- The Carpark

The preliminary design of pavement assets is based on the following standards:

DN-PAV-03021 (Dec. 2010) – Pavement and Foundation Design;

DN-PAV-03023 (Oct. 2020) – Surfacing Materials for New and Maintenance Construction for use in Ireland;

PE-SMG-02002 (Dec. 2010) – Traffic Assessment;

CC-SPW-00600 (Mar. 2013) – Specification for Road Works Series 600 – Earthworks;

CC-SPW-00700 (Jan. 2016) – Specification for Road Works Series 700 – Road Pavements – General;

CC-SPW-00800 (Oct. 2023) – Specification for Road Works Series 800 – Road Pavements – Unbound and Cement Bound Mixtures; and

CC-SPW-00900 (Oct. 2023) – Specification for Road Works Series 900 – Road Pavements – Bituminous Materials.

This section identifies the proposed pavement strategy, setting out the design development considerations for the pavement works in current and future design stages. It also outlines the key elements for consideration for future testing requirements, and consideration for the valorisation of reusable and recyclable materials in new pavement materials in the detailed design stage.

The Link Road:

Traffic Loading: traffic loading of the link road pavement is calculated using the MSA identified through the traffic analysis and the % HGV using growth factors as set out in the traffic modelling report.

The Bus Bays:

Consideration in the detailed design is to be given to the construction of the bus bays in reinforced concrete due to its resistance to rutting and the limited maintenance requirements. This will have to be confirmed as appropriate based on the detailed services design for the route.

The Carpark:

The carpark spaces will be porous precast concrete paving with underlying porous layers as a SUDs measure to reduce total run off and to act as a polishing material reducing the hydrocarbons reaching the bypass separator in the storm water drainage design. The circulating carriageway within the carpark is assessed to have a reduced thickness to account for the significantly lower traffic volumes that are anticipated in this area.

4.11 STRUCTURES

Principal Structures are defined as those that require technical approval following the processes outlined in TII Publication DN-STR-03001. Whilst this road will not form part of the national road network the processes and standards associated with a national road structure will be followed.

There is one significant structure to be designed and constructed as part of this scheme. The proposed bridge to be built over the Southeast Greenway. The form of the structure will be precast concrete bridge deck simply supported at the abutments at each end with an in-situ concrete deck. The structure will be integral at the abutment bank seats and have a clear span of approximately 16m, a depth of circa. 0.85m is anticipated. It is noted there are multiple cross section options available from the various precast manufacturers and the most appropriate will be chosen during detailed design stage.

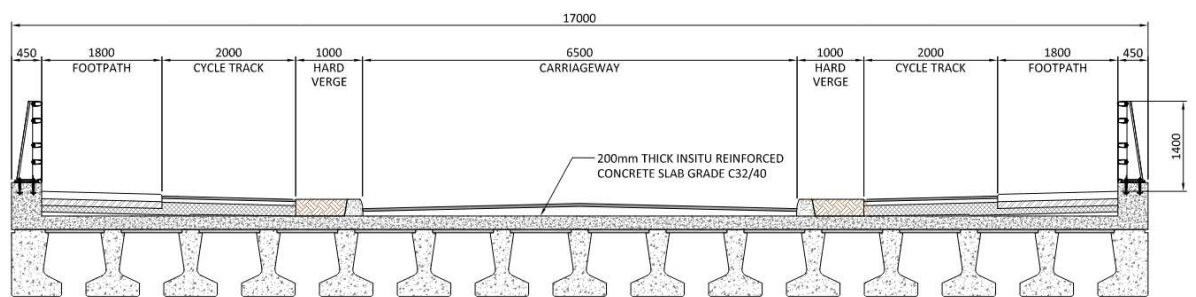
The advantages of this option are:

- Concrete will require minimal future maintenance over the Southeast Greenway.
- Falsework and formwork are largely reduced in comparison to an in-situ option, and depending on the precast option chosen could be entirely removed.
- Quality control is factory controlled.
- Steel fixing and shuttering on-site is significantly reduced, as are the hazards and risks associated with the works, and access to construction at height.
- The available span lengths for precast products are well within the span of the bridge, allowing standard products to be used.

The disadvantages of this option are:

- Heavy lifting of prefabricated elements
- Transportation of long elements may require special licence.

Table 4-4: Precast Concrete Bridge Deck



4.12 SERVICES

As part of the preliminary design a full array of services has been detailed in the preliminary design drawings. The services to be included in the project are based on linking the networks that already exist in the area and

4.13 EXISTING SERVICES STRATEGY

A full services search has been conducted for the scheme and the service locations have been compared with the design. At this stage however it has been decided that slit trenches would not be carried out. It is accepted that these will be required for the scheme to progress to Tender and construction stage. It is therefore recommended that a selection of slit trenches is procured during the detailed design phase.

The following utilities have services within the study area:

- Uisce Eireann
 - o existing water mains present in Abbeygate 150mm and 200mm.
 - o existing watermains present in Clover Meadows 200mm.
 - o existing wastewater gravity in Clover Meadows
- Kilkenny County Council
 - o Storm water drainage on the Clover Meadow Road (300mm)
- Eircom
 - o Existing underground ducting is present in the western footpath on both the north and south tie in locations.
- GNI
 - o Existing 180 PE is present in the north tie in location and 125PE is present in the south tie in location.
- Virgin
 - o Existing underground ducting with Fibre on the Clover Meadow Road.
- ESB Networks
 - o Existing underground MV ducting is present in the western footpath on both the north and south tie in locations.
 - o Existing overhead MV in the fields crossing the Relief Road at Newpark Mill Ch700 on Road 1

4.14 PROPOSED SERVICES

As part of the Preliminary Design Stage of the scheme two full rounds of consultation took place with all of the utilities present in the study area and all of the Utilities on the NTA National Utilities Contact List. The following new services have been allowed for:

- A 200mm diameter SDR17 PE 100 butt fusion welded water main along the length of the road.
- A six-way duct network for telecommunication ducting.
- A six-way duct network for ESNB Power Ducting
- A proposed public lighting two-way duct network.
- Wastewater outfall pipework from the Southeast Greenway Carpark

4.15 LAND TAKE

It is estimated that approximately 5.12 Ha of permanent land take will be required to construct the scheme including the new Southeast Greenway carpark. As part of the preliminary design phase of the scheme Kilkenny County Council identified the owners of all the Land along the scheme. There are three known landowners along the scheme. One of these is Kilkenny County Council. All of the landowners have been approached and the discussions entered into with a view to purchase the land by CPO. This is the strategy which has been adopted and will be pursued further through the detailed design phase of the scheme. Land acquisition drawings have will be produced to reflect the requirements for the scheme.

4.16 ACCOMMODATION WORKS

Proposed accommodation works. It is proposed at this stage that the accommodation works required for the landowners will be as follows:

- Existing undeveloped zoned lands. The project traverses through existing undeveloped zoned land. It is proposed that this land is provided with a simple post and tension mesh fence as per TII/SCD/300/20. A suitable hedge row with exact species mixes to be agreed with the landowner will be planted at the fence.
- The detention basin will be fenced with an TII/SCD/300/18 (or similar approved coated security fence).
- The boundary to the Southeast Greenway will be fenced with a simple post and tension mesh fence as per TII/SCD/300/20. A suitable hedge row with exact species mixes to be agreed with KCC will be planted at the fence.

- The Car Park boundaries to the new link road will consist of a low wall and railing to TII/SCD/2400/05. A suitable and generous landscaping plan is to be developed for the Southeast Greenway boundary and carpark as part of the detailed design.

5 SCHEME BENEFITS

5.1 PEDESTRIANS

The scheme will provide pedestrians with good quality linkages from Abbey Road to Belmont Rd. The scheme will also provide pedestrians with direct access to the Southeast Greenway. The scheme would provide two-metre-wide footpaths throughout for pedestrians, which good crossing opportunities through controlled crossing to allow for a high degree of permeability and catering for pedestrians of all mobility levels. The scheme will also provide the final link required to fulfil a 4.1-kilometre walking loop in the area.

5.2 CYCLISTS

The scheme will provide cyclists with good linkages from Abbey Road to Belmont Rd. The scheme will also provide cyclists with direct access to the Southeast Greenway and parking facilities adjacent to the Southeast Greenway to allow for tourists and cycling enthusiasts from further afield to utilise this high-quality cycle facility. All crossing facilities for pedestrians will also incorporate facilities for cyclists. This will lead to very good permeability for cyclists in-line with requirements as set out in the Cycle Design Manual.

5.3 PUBLIC TRANSPORT

Within the scheme, design provision has been made for bus pull in bays. On the link road, these bus pull in bays are expected to serve the developments on the zoned lands with high quality public transport options. The Southeast Greenway car park has been designed to facilitate coaches and larger vehicles entering the car park and allowing for those users to utilise the Southeast Greenway facilities.

5.4 VEHICULAR TRAFFIC

Vehicular traffic will use the New South North Link Road to access the zoned lands adjacent to the link road. Access the car park and hence the Southeast Greenway. And it will also provide. Good linkage from. Abbey Road through to Belmont Rd. This linkage will be required for proper permeability and good planning.

5.5 OTHER SCHEME BENEFITS

Other scheme benefits are detailed within the summary table (Table 7-1: Emerging Preferred Route - PABS) of the emerging preferred in section seven of the Route Selection Report.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

Having completed the preliminary design of the scheme, the following conclusions can now be made:

- The need for the scheme has been established. The scheme is a stated aim of the Kilkenny County Development Plan 2021 (MASP 12S)
- The need for the scheme has been established as a method to join the communities in the Abbey Road and Belmont areas.
- The scheme will also allow for the proper development of the zoned land through which the route passes in a controlled manner without exacerbating the pressure on the existing network.
- The scheme will bring a reduction in the frequency and severity of road collisions
- The nature of the scheme is such that it should not be constructed in phases.
- The design of the scheme has been carried out in accordance with DMURS.
- It will not be necessary to purchase any private residences to construct the scheme.

6.2 RECOMMENDATIONS

It is recommended that the South North Link Road as described in this Preliminary Design Report be approved by Kilkenny County Council so that it will form the basis for the CPO, detailed design and construction of the Link Road.

7 VERIFICATION

This report was compiled and verified by:

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