Clifton Scannell Emerson Associates

Preliminary Options Assessment Report

Newtown Bridge, Balheary Road
Active Travel Scheme

Comhairle Contae Fhine Gall
Fingal County Council

Client: Clifton Scannell Emerson Associates

Date: 29th March 2023

Job Number: 22_110C

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Document Control Sheet

Project Name:	Fingal Active Travel Projects - Newtown Bridge Balheary Road
Project Number:	22_110C
Report Title:	Newtown Bridge, Balheary Road Scheme - Preliminary Options Report
Filename:	RPT-22_110C-002

Issue No.	Issue Status	Date	Prepared by	Checked by
1st	Preliminary	March 2023	SP	MC

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1 Introduction

This Options Report has been prepared by Clifton Scannell Emerson Associates (CSEA) on behalf of the Fingal County Council (FCC), to document the options development and selection process for the proposed Newtown Bridge, Balheary Road Active Travel Scheme.

The Balheary Road to the north of Swords, Co. Dublin is a busy rural road which has a constrained width at a bridge crossing of the Broadmeadow River. This constraint results in a hazardous location for the movement of vulnerable road users. This is an issue for those wishing to travel across the bridge to the Swords Celtic Football Club and for those wishing to follow the river walkway which crossed Balheary Road immediately to the south of the Bridge.

The purpose of this report is to evaluate options to resolve these issues and as a result to promote active travel. The report will consider a range of factors, including the current traffic conditions on the road, the available space for new infrastructure, and the potential impact on the local community.

The findings of this report will be used to inform the development of a more detailed design and implementation plan for active travel and cycle infrastructure on Balheary Road. The goal is to create a safe and convenient environment for active modes of travel, while also minimising any negative impacts on the local community and the existing road network.

1.1 Study Area

Figure 1.1 - Newtown Bridge, Balheary Road Active Travel Scheme shown in Red

1.2 Background & Scheme Objectives

The purpose of this optioneering process is to examine options for providing traffic calming measures and improved pedestrian and cyclist facilities at Newtown Bridge, Swords. The overall aspiration of the scheme is to maximise the provision of high-quality pedestrian and cycling facilities to improve the safety of vulnerable road users accessing Balheary reservoir lands, the Broadmeadow River linear park and surrounding areas.

The main aims of the scheme as described in the project brief are as follows:

- Address the safety concerns for pedestrians and cyclists who are currently forced onto the road space to walk, and cycle unprotected alongside fast-moving vehicular traffic.
- To consider one-way vehicular movements across the bridge with appropriate traffic management designs to accommodate widening of footpaths and redevelopment of road space for vulnerable road users.
- To consider the installation of additional signage to reflect the use of the road in the vicinity of Newtown Bridge for pedestrians, cyclists, and vehicular traffic.
- To consider the provision of traffic calming on the approaches to the existing bridge and apply a coloured surface over the bridge and approaches to highlight the area of conflict to encourage the reduction of speed by vehicular traffic.
- To improve existing access point to Linear Park and provide pedestrian/cycle facilities to Swords Celtic grounds to facilitate future access.
- To install a pedestrian crossing across bridge into Parklands with adequate visibility.

2 Policy Context, Project Need & Objectives

2.1 Fingal Development Plan 2017-2023

The Fingal Development Plan 2017-2023 includes a number of policies and objectives aimed at promoting walking and cycling in the county. These policies are part of the plan's overall aim to create sustainable communities that prioritise sustainable transport modes encouraging active travel and reducing the county's carbon footprint. Some of the key policies and objectives related to pedestrian and cycling infrastructure are listed below:

- Objective PM01 - Support the development of sustainable low-carbon climate resilient communities.
- Objective MT13 - Promote walking and cycling as efficient, healthy, and environmentally friendly modes of transport by securing the development of a network of direct, comfortable, convenient and safe cycle routes and footpaths, particularly in urban areas.
- Objective MT17 - Improve pedestrian and cycle connectivity to schools and third level colleges and identify and minimise barriers to children walking and cycling to primary and secondary schools.
- Objective GI07 - Ensure green infrastructure protection and provision promotes pedestrian access, cycling, and public transport in preference to the car, as appropriate.
- Objective GI08 - Integrate the provision of green infrastructure with infrastructure provision and replacement, including walking and cycling routes, as appropriate, while protecting biodiversity and other landscape resources
- Objective GI28 - Provide attractive and safe routes linking key green space sites, parks and open spaces and other foci such as cultural sites and heritage assets as an integral part of new green infrastructure provision, where appropriate and feasible.

2.2 Fingal Climate Change Action Plan 2019 - 2024

Fingal County Council's Climate Change Action Plan sets out how the Council will improve energy efficiency and reduce greenhouse gas emissions in its own buildings and operations, while making Fingal a more climate resilient region, with engaged and informed citizens. This will be achieved by a range of ongoing and planned actions in five key areas (Energy & Building, Transport, Flood Resilience, Nature-Based Solutions and Resource Management) which will be continuously monitored, evaluated, and updated to 2030 and beyond.

This plan concentrates on the two approaches required to tackle climate change. The first, mitigation, consists of actions that will reduce current and future GHG emissions. The second approach, adaptation, consists of actions that will reduce the impacts that are already happening now from our changing climate and those that are projected to happen in the future. Examples of mitigation measures include reductions in energy use, switching to renewable energy sources and enhancement of carbon sinks. Part of this measures implies active travel such as walking and cycling.

Transport contributes to a significant amount of GHG emissions within the Fingal area. Walking, cycling and public transport currently accounts for just 38.6% of all journeys, and the target is to increase this figure to 50%. Therefore, through its own development plan strategy and policies, FCC promotes the integration of land use and transportation, and works with a range of stakeholders to improve transportation in Fingal and encourage modal shift away from private cars to more sustainable alternatives, in order to achieve this target.

Encouraging people to walk or cycle will help FCC to respond to climate change. Moreover, promotion of active travel will improve the health of citizens. Of the transportation modes that FCC can influence and shape, cycling has been the predominant focus.

To encourage the uptake of cycling and walking, the Council is actively advancing a number of specific cycle facilities across the county.

2.3 Climate Action Plan 2023

The Climate Action Plan 2023, published by the Department of the Environment, Climate and Communications, outlines the Irish Government's plan for tackling the negative impacts that have been brought about as a result of climate breakdown, such as the risk of more frequent extreme weather events and flooding. It outlines the current state of play across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and charts a course towards ambitious decarbonisation targets. The Climate Action Plan sets a roadmap for taking decisive actions to halve Ireland's omissions by 2023 and reach net zero emissions by 2050 and aims to create a more resilient, vibrant and sustainable country.

Climate Action Plan 2023 action measures related to active travel include:

- Action No. TR/23/29: Advance roll out of 1,000km walking / cycling infrastructure.
- Action No. TR/23/30: Advance roll out of National Cycle and Greenway Networks.
- Action No. TR/23/31: Advance widespread and consistent implementation of National Cycle Manual guidance and the Design Manual for Urban Roads and Streets (DMURS) with the Department of Housing, Local Government and Heritage (DHLGH).
- Action No. TR/23/32: Leverage of Protection and Renewal road infrastructure programme to enhance safety of sustainable mobility users.
- Action No. TR/23/34: Identify and implement mechanisms for improved multiple Local Authority delivery of strategic, network-based Active Travel projects (e.g., NTA-led projects, Section 85 agreements under the Local Government Act 2001) in line with the objective of CycleConnects pathfinder project.

2.4 National Cycle Policy Framework 2009-2020

This plan sets out a substantial suite of interventions to improve the ease and safety of cycling in order to achieve greater mode share going forward. It states that making provision for cyclists in the urban environment does not merely consist of providing dedicated cycling facilities but also involves wider traffic interventions that benefit all vulnerable road users. It acknowledges that investment in a cycling network has an impact on an entire geographical area not just the liner corridor where the cycle facility is installed. It has an impact on road safety within that area as well as a positive impact on the health of the population using the whole network which amounts to a societal effect.

2.5 Project Ireland 2040

This document is the Government's high-level strategic plan to improve transport, tourism and sport infrastructure by 2040. This document supports an ambitious growth target to enable a town like Celbridge to expand in the period up to 2040.

Project Ireland 2040 seeks to achieve ten strategic outcomes, building around the overarching themes of wellbeing, equality and opportunity. Two of these ten shared priorities are Sustainable Mobility and Enhanced Amenity and Heritage. Sustainable Mobility focuses on the provision of safe alternative active travel options to alleviate congestion and help to meet climate action objectives, where Enhanced Amenity and Heritage aims to investment in high-quality infrastructure to create living space with defined character and attractiveness.

2.6 Smarter Travel – A Sustainable Transport Future

This policy document is A New Transport Policy for Ireland 2009-2020 and includes five key aims, such as:

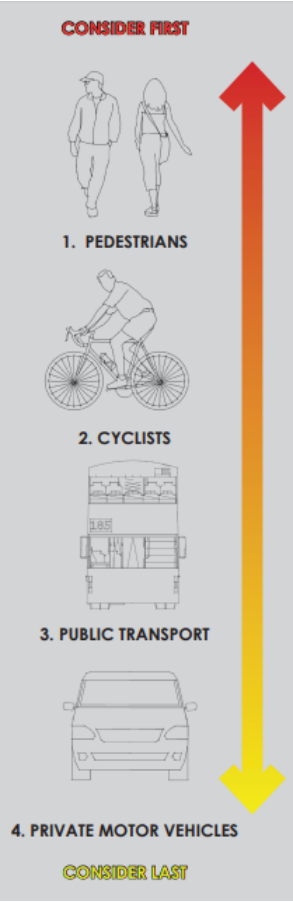
- Improve quality of life and accessibility to transport for all, including people with reduced mobility and those who may experience isolation due to lack of transport,
- Improve economic competitiveness through maximising the efficiency of the transport system and alleviating congestion and infrastructural bottlenecks,
- Minimise the negative impacts of transport on the local and global environment through reducing localised air pollutants and greenhouse gas emissions,
- Reduce overall travel demand and commuting distances travelled by the private car,
- Improve security of energy supply by reducing dependence on imported fossil fuels.

3 Design Guidance

3.1 Design Manual for Urban Roads and Streets

DMURS provides guidance relating to the design of urban roads and streets. It outlines principles, approaches and standards that are necessary to achieve balanced, best practice design outcomes with regard to street networks and individual streets. This Manual sets out an integrated design approach influenced by the type of place in which the street is located and balance the needs of all users. It also aims to put well designed streets at the heart of sustainable communities creating physical, social and transport networks that promote real alternatives to car journeys, namely walking, cycling and public transport. The manual key design principles are as follows:

- To support the creation of integrated street networks, which promote higher levels of permeability and legibility for all users, and in particular more sustainable forms of transport.
- The promotion of multi-functional, place-based streets that balance the needs of all users within a self-regulating environment.
- The quality of the street is measured by the quality of the pedestrian environment; and
- Greater communication and co-operation between design professional through the promotion of a plan-led, multidisciplinary approach design.
- The figure shown displays the proposed user hierarchy that promotes and prioritises sustainable forms of transportation.



3.2 National Cycle Manual

This document is a national guidance document to guide planners and engineers in their work to improve cycling provision in urban areas.

Cycling as a vulnerable mode of transport should be supported by a good design with principles of sustainable safety applied.

There are five principles, which should be followed in every design:

- Functionality – cycle facility design is fit for purpose and follows movement related functions and place related functions.
- Homogeneity – reduction in the relative speed, mass and directional differences of different road users sharing the same space.
- Legibility – self-evident, self-explanatory and self-enforcing road environment.
- Forgivingness
- Self-awareness

3.3 Traffic Signs Manual

The Traffic Signs Manual provides details of the traffic signs which may be used on roads in Ireland, including their layout and symbols, the circumstances in which each sign may be used and rules for positioning them for the efficient operation of the road network. It also provides guidance on the temporary traffic measures required at roadworks.

To be effective, traffic signs must be readily recognized as such and must:

- Have messages which can be quickly read and understood.
- Be co-ordinated with the geometric road layout so they are conspicuous by day and night; and
- Be located far enough in advance of the situation to give sufficient time for the road user to take the appropriate action.

The Traffic Signs Manual is divided into a number chapters addressing different aspects of signage, road markings and signalisation.

4 Existing Conditions and Constraints

4.1 Data Collection

To facilitate the optioneering design process, it was necessary to carry out different forms of data collection. Following discussion with Fingal County Council the main types of data required was agreed upon including topographical surveys and traffic count data for the Newtown Bridge, Balheary Road Active Travel Scheme.

4.1.1 Topographical Survey

A topographical survey for Balheary Road was completed in September 2022 by IO Geomatics. The survey was used to inform the preliminary designs presented in this report.

4.1.2 Traffic Data

Nationwide Data Collection (NDC) conducted traffic data collection on the 18^{h} of October 2022. The data collection included junction turning counts, access counts and pedestrian crossing counts. The count locations are shown on the figure below.

The purpose of gathering the traffic data was to measure the volume of traffic along the scheme, and to assess the impacts of the proposed scheme.

Using the traffic data collected at Newtown Bridge, Balheary Road, the AADT for this road is estimated to be 3063 AADT and the percentage of HGV's on the Balheary Road is 1.7%.

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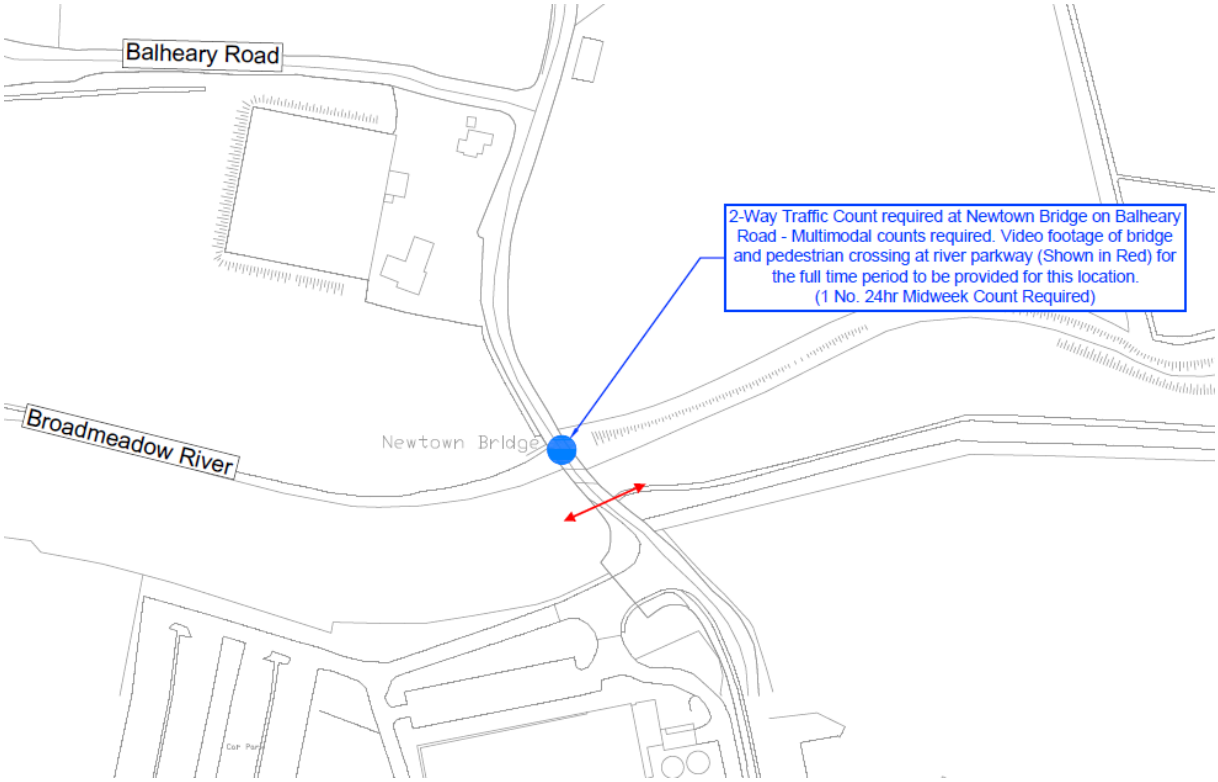


Figure 4.1 - Traffic Data Collection Locations

4.2 Scheme Constraints

4.2.1 Swords Celtic Access

Figure 4.2 – Pedestrian entrance into Swords Celtic

The Newtown Bridge is located near Swords Celtic football club and is a bustling hub for both kids and adults visiting the club. Currently, there are footpaths and cycle tracks on the south side of the bridge, but they end abruptly 70 metres from the bridge.

Unfortunately, the limited footpath space over the bridge forces pedestrians and cyclists onto the road, exposing them to the dangers of fast-moving vehicles. Adding to the peril is the inadequate public lighting in the area, which increases safety risks for all users of the road.

Access to Swords Celtic FC is currently achieved via Balheary Road for vehicular and pedestrian/cyclist movement. Evidence of "desire lines" can be seen, where pedestrians have created their own ad-hoc pathways onto the public road, leading to conflict with vehicular traffic.

4.2.2 Protected Structure – Newtown Bridge, Balheary Road

Figure 4.3 – Newtown Bridge, Balheary Road Protected Structure

This project entails providing traffic calming measures and improved pedestrian and cyclist facilities at Newtown Bridge, Swords. The existing bridge accommodates two-way traffic and has a substandard concrete path on and the western side of approximately 1.0m in width.

Newtown Bridge Balheary Road, being a protected structure, is subject to specific regulations and planning controls aimed at protecting its character and preserving its special interest. Any works or alterations to a protected structure must be carried out in a manner that is sympathetic to its character and should not negatively impact its special interest.

4.2.3 Broadmeadow River Linear Park Crossing

The current access points to the Broadmeadow River Walkway present significant issues. The existing access on the eastern side is very narrow and inaccessible for the mobility impaired. The current intervisibility between pedestrians and vehicular traffic is very poor. As a result, it is difficult for drivers to see people who are trying to cross the road to access the linear park. This can be especially dangerous for people with elderly or mobility impaired people.

Figure 4.4 – Existing entrance to east side of linear park

Figure 4.5 – Existing linear park pedestrian crossing with poor accessibility and poor visibility.

4.2.4 Existing Sightlines on the Northern approach to Newtown Bridge, Balheary Road

Vehicles approaching the bridge from the north side have restricted sightlines due to the road curvature, boundary wall and hedgerow. The forward visibility is limited which thus increases the risk of collisions.

The scheme options will examine the possibility of sightline improvements on the approach to the bridge, and determine the amount of land take that would be required. It is critical that any option provides adequate sight distances to stop lines to minimise the risk of rear end collisions on the approach to the stop.

Figure 4.6 – Limited forward visibility on approach to Newtown Bridge, Balheary Road

5 Options Development

This section details the proposed design options developed for this scheme, outlining the main characteristics of each option and how they compare with each other. A multicriteria analysis of the scheme was undertaken to compare the options and identify a preferred option for the Newtown Bridge, Balheary Road Active Travel Scheme.

Drawings for each of the proposed design options are provided in Appendix A of this report.

5.1 Do Nothing Option

In this option, there would be no change to the existing layout or traffic operations. This scenario is used to compare the impacts of the design proposals with the existing operation.

5.2 Option 1 – Short Shuttle System

5.2.1 Option Description

Refer to Drawing 22_110C-CSE-GEN-XX-DR-C-1011

In this option, it is proposed to utilise a traffic signalised shuttle across Newtown Bridge. This would involve the narrowing of the carriageway to a 3.25m wide single traffic lane to facilitate the signalised traffic system across Broadmeadow River. The option also provides for the reallocation of road space to provide a 3m wide shared pedestrian/cyclist path on the western side of the bridge.

It would be proposed to link the existing cycle and pedestrian facilities at the southern end of the scheme to both the unauthorised pedestrian access at Swords Celtic and the linear park via the shared path.

It is proposed to widen out and set back the eastern access point to the linear park. This would create a larger area for people to wait and safely cross the road, known as a "refuge area." Additionally, widening out the access point would help improve the intervisibility between pedestrians and drivers, making it easier and safer for people to cross the road. These changes would benefit pedestrians, cyclists, and wheelchair users who use the linear park and help make the area more accessible and safer for all. A pedestrian crossing at this location to safely facilitate pedestrian and cyclist access to the linear park along the Broadmeadow River and allow those wishing to cross do so safely.

5.2.2 Option Assessment:

To facilitate sightline improvements on the approach to the bridge and minimise the shuttle length, this option would require the acquisition of land on the eastern side of the northern approach. The improvement of these sightlines would also involve the removal and setback of an existing wall and the removal of some mature trees.

Traffic analysis was undertaken on this option to assess capacity and to determine the maximum queue lengths. The results of this analysis are detailed below in Table 5.2.1.

Table 5.2.1 – Traffic Analysis Results – Option 1.

	Shuttle Length	Required Cycle Time	Analysis Period	Northern Approach Capacity %	Southern Approach Capacity %	Northern Approach Maximum Queue Length	Southern Approach Maximum Queue Length
Option 1	60 metres	55 Seconds	AM Peak	77.3%	32.3%	38 metres	9 metres
			PM Peak	45.6%	55.9%	13 metres	23 metres

The shared path across the Newtown Bridge requires a 1450mm guard rail to prevent falls from bicycle or walkers to the river. It is noted that the existing parapet height is as low as 600-700mm. The proposed guard rail must be designed to minimise the visual impact of the system on the visual quality of the protected structure. A specialist Conservation Architect has been engaged to advise on the development of this barrier.

The proposed option would include traffic calming measures including speed bars on the road surface on the approaches to the existing bridge and a coloured surface over the bridge and approaches to highlight the area of conflict to encourage speed reduction.

The table below presents some of the advantages and disadvantages of the proposed option:

Advantages	Disadvantages
Pedestrian and Cycle facilities to a standard will significantly enhance the safety of vulnerable road users.	Requires CPO of land to accommodate improved sightlines. This could delay implementation significantly due to the likely necessary CPO process.
A controlled crossing will allow those wishing to access or continue the Broadmeadow Walkway to do so safely.	Some traffic disruption during construction phase.
Good quality cycle infrastructure provides an attractive environment and encourages modal shift towards sustainable transport.	Requires the removal of existing mature trees
Provides cycle facility continuity through the scheme linking existing cycle facilities to Swords Celtic and the Broadmeadow River walkway.	Requires the demolition of existing historical stone wall. Note this is not a protected structure.
Traffic signalised operation enforces one-way shuttle across bridge and reduces conflict risk when compared to give-way arrangement.	
Shorter shuttle length when compared with other signalised options	

5.3 Option 2 – Give Way

5.3.1 Option Description

Refer to Drawing 22_110C-CSE-GEN-XX-DR-C-1012

In Option 2 it is proposed to create a give-way shuttle operation where vehicles approaching the bridge yield to each other. The option would involve narrowing the carriageway to a 3.25m wide lane to facilitate the give-way operation across the bridge and to allow for the provision of a 3m shared footpath/cycle path on the western side of the bridge. As in option 1, it is proposed to link the existing cycle facilities at the southern end of the scheme to both the unauthorised pedestrian access at Swords Celtic and the linear park via a 3m wide shared pedestrian/cyclist path.

A 30km/h reduced speed zone would be enforced for the entire length of the scheme. To encourage lower speeds some traffic calming measures would be installed including speed ramps throughout the scheme on the approaches to the existing bridge and a coloured surface over the bridge and approaches to highlight the area of conflict.

Similarly, as in option 1, It is proposed to widen out and set back the eastern access point to the linear park. An uncontrolled pedestrian crossing would be provided on a raised table on the southern end of the bridge to facilitate pedestrian and cyclist access to the linear park along the Broadmeadow River.

5.3.2 Option Assessment

This option would also require sightline improvements on the northern approach to the bridge to allow vehicles safely approach the yield line and to allow vehicles to see vehicles on the opposite side of the river as they approach the bridge. Similarly, as in option 1, the improvement of these sightlines would involve the removal and setback of an existing wall and the removal of some mature trees.

The shared path across the Newtown Bridge will require a 1450mm high guard rail to prevent pedestrians or cyclists falling to the river. It is not anticipated that this option would create significant queuing.

The table below presents some of the advantages and disadvantages of the proposed option:

Advantages	Disadvantages
Pedestrian and Cycle facilities to a standard will significantly enhance the safety of vulnerable road users.	Give-way shuttle arrangement would present a higher conflict risk on the bridge when compared to signalised options
An uncontrolled crossing will allow those wishing to access or continue the Broadmeadow Walkway to do more safely than in the current environment.	Requires CPO of large area on approach to accommodate improved sightlines. This would require significant capital cost and would delay construction due to the CPO process.
Good quality cycle infrastructure provides an attractive environment and encourages modal shift towards sustainable transport.	Significant traffic disruptions and environmental impact during construction phase.
Provides cycle facility continuity through the scheme linking existing cycle facilities to Swords Celtic and the Broadmeadow River walkway.	Requires the removal of existing mature trees
30km/h reduced speed zone throughout scheme promotes lower speeds	

5.4 Option 3 – Longer Shuttle System

5.4.1 Option Description

Refer to Drawing 22_110C-CSE-GEN-XX-DR-C-1013

This option is similar to option 1 but amended to provide a longer shuttle system. The option would involve narrowing the carriageway to a 3.25m wide single lane to facilitate the signalised traffic system across the bridge with 130m between stop lines. This reallocation of road space would allow for the provision of a 3m shared foot/cycle path across the bridge.

As in option 1 & 2, it is proposed to link the existing cycle facilities at the southern end of the scheme to the Swords Celtic entrance via a 3m wide shared pedestrian/cyclist path across the Newtown Bridge. It would be proposed to access the Broadmeadow Walkway via a signalised pedestrian crossing at the southern side of the bridge.

This option also proposes to widen out and set back the eastern access point to the linear park. This scheme would include a signalised pedestrian crossing would be provided on the southern side of the bridge to safely facilitate pedestrian and cyclist access to the linear park along the Broadmeadow River.

This option would also involve some traffic calming measures including road surface speed bars on the approaches to the existing bridge and a coloured surface over the bridge and approaches to highlight the area of conflict to encourage speed reduction.

5.4.2 Option Assessment

The advantage of the longer shuttle system is the removal of the need to acquire land and demolish the existing stone wall along the eastern boundary north of the bridge. The additional length is required to ensure that there is sufficient visibility to the traffic signals to allow traffic stop safely on the norther approach.

A traffic analysis was undertaken to assess the traffic capacity and to determine the maximum queue lengths resulting from the increased shuttle length. The results of this analysis are detailed in the table 5.4.1 below.

Table 5.4.1 – Traffic Analysis Results – Option 3.

	Shuttle Length	Required Cycle Time	Analysis Period	Northern Approach Capacity %	Southern Approach Capacity %	Northern Approach Maximum Queue Length	Southern Approach Maximum Queue Length
Option 3	130 metres	80 Seconds	AM Peak	73.1%	47.0%	49 metres	14 metres
			PM Peak	53.1%	58.7%	19 metres	33 metres

The shared path across the Newtown Bridge will require a 1450mm high guard rail to prevent pedestrians or cyclists falling to the river.

The table below presents some of the advantages and disadvantages of the proposed option:

Advantages	Disadvantages
Pedestrian and Cycle facilities to a standard will significantly enhance the safety of vulnerable road users.	Longer shuttle length and longer cycle time than other signalised option will lead to slightly longer delay and queuing
A controlled crossing will allow those wishing to access or continue the Broadmeadow Walkway to do so safely.	
Good quality cycle infrastructure provides an attractive environment and encourages modal shift towards sustainable transport.	
Provides cycle facility continuity through the scheme linking existing cycle facilities to Swords Celtic and the Broadmeadow River linear park.	
Traffic signalised operation enforces one-way shuttle across bridge and reduces conflict risk when compared to give-way arrangement.	
No requirement for land acquisition and much less environmental impact than other options. Significant reduction in the required capital cost.	

6 Options Assessment

6.1 Assessment Methodology

The Common Appraisal Framework (CAF) (Department of Transport 2016, updated 2021) was used as to inform the requirements of a Multi Criteria Analysis (MCA) as required for all similar infrastructure projects. The required criteria are as follows:

6.1.1 Economy

6.1.1.1 Capital Cost and Value for Money

Capital cost estimates are determined from both the indicative high-level infrastructure cost estimate and land acquisition cost. Indicative cost estimate is established to assess options for their likely capital infrastructure cost.

Each option has been assessed relative to the nature and extent of infrastructure works requirements and the total time required to deliver the scheme objectives.

6.1.1.2 Access for All, Transport Reliability and Efficiency, and Quality of Service

This sub-criterion assesses the extent to which new users will be attracted to the cycle facilities, creating a mode shift those results in journey time savings for all users including and especially those choosing cycling and public transport. The safer, more consistent, and higher quality the cycling facilities are, the more likely that new users will be attracted to this route.

This sub-criterion also assesses the time required to deliver the scheme and the level of risk associated with the delivery. The more readily the land required for the scheme is available to Fingal County Council, the faster a scheme can be delivered. In case more land acquisition is necessary, the scheme will potentially take longer to deliver with significantly more risks associated in relation to delays or opposition from various parties. A scheme that can be delivered in a shorter timeframe is more likely to bring benefits to the users at the earliest possible opportunity, allowing for earlier improvements in relation to access, reliability, efficiency, and quality of service.

6.1.2 Safety

Transport policy has a specific focus on reduction of collisions, particularly for vulnerable road users including pedestrians and cyclists. The assessment of Safety is therefore based on the probability of incident reduction and avoidance, for pedestrians and cyclists. In this instance Safety is a key consideration and improvement of safety is a major objective of the scheme.

6.1.3 Physical Activity

This criterion identifies the potential impact of each proposed option in facilitating a healthier lifestyle. This assessment considers how each option provides measures which support walking and cycling. Under this criterion, options that provide the greatest opportunity to optimise active mobility (walking and cycling) within and across the Scheme were considered to present comparative advantage over other options.

Options were assessed based on the standard and extent of walking and cycle infrastructure and the extent to which movement by these modes was impeded through conflicts or barriers caused by vehicular movements.

6.1.4 Environment

The main environmental factor considered on the assessment of this scheme is the impact of works on existing habitat and vegetation and the impact on elements of cultural heritage within the proposed works area. Thus, the impact is largely a function of the extent of works beyond the edge of the existing roadway. These factors can result in direct impacts and indirect through changes to cultural, heritage assets and landscape quality.

6.1.5 Accessibility and Social Inclusion

Government policy in relation to Social Inclusion is set out in the National Action Plan for Social Inclusion (NAPSI). This policy looks to reduce and eliminate poverty and social inclusion particularly as it affects vulnerable groups, including people with disabilities. The assessment compared the options based on how the designs accommodated vulnerable groups, particularly people with disabilities, as well as providing an inclusive space that all communities can enjoy.

6.1.6 Integration

6.1.6.1 Land Use Integration

This criterion identifies the extent to which an option supports or encourages planned future development or provides economic opportunities. It considers whether an option supports integration between sustainable transport and land-use planning and policies. As part of this assessment, cognisance was taken of the ability of each option to facilitate connectivity to the future greenway.

6.1.6.2 Transport Network Integration

This criterion identifies the possible links between each option and existing and proposed sustainable transport modes. Additionally, major effects on general traffic are also considered.

This criterion identifies the integration of the proposed options with the existing and proposed adjacent routes, and the quality of pedestrian and cycle infrastructure along the route.

6.2 MCA Sub Criteria Interpretation

As the CAF criteria are too general for the purpose of assessing the subtle differences between the design proposals, the following sub criteria relevant to the scheme objectives have been developed for the purposes of this MCA.

Assessment Criterion	Assessment Sub Criteria	Scheme Objectives relevant to CAF Criteria
Economy	**Value for Money**	Relative nature and extent of infrastructure works requirements and the total cost and time required to deliver the scheme objectives
	Transport Reliability & Quality	Assist in delivering a high-quality sustainable transport network to support adopted economic policy including high quality pedestrian, cyclist, and public transport network
Safety	**Safety of Road Users**	Improve pedestrian safety within the scheme
		Improve cyclist safety within the scheme
		Improve road safety within the scheme
Physical Activity	**Active Travel**	Optimise pedestrian movement within the scheme
		Optimise cyclist movement within the scheme
Environment	**Landscape and Visual Quality**	Optimise the aesthetical value of the road
	Air Quality	Minimise emissions to provide a high-quality environment
	Noise and Vibration	Minimise noise and vibration to provide a high-quality environment
	Cultural Heritage	Optimise the architectural and cultural value of road
Accessibility and Social Inclusion	**Vulnerable Groups**	Ensure the environment throughout the scheme is accessible for people with disabilities
Integration	**Land Use Integration**	Alignment of the scheme with FCC spatial policies
	Transport Network Integration	Integration of the scheme with the existing and planned pedestrian & cycle network
	Other Government Policy Integration	Alignment of the scheme with Project Ireland 2040, Climate Action Plan (CAP), Smarter Travel, DMURS

6.3 MCA Ranking Scale

Each design option was appraised under the criteria outlined above and compared based on a five-point scale, ranging from having significant advantages to having significant disadvantages over other design options. Table 66-1 shows the colour coding of the five-point scale, with advantageous options graded "dark green" and disadvantageous routes graded "red".

Table 66-1 Options Colour Coded Ranking Scale

Colour	Description
+2	Significant advantages over other options.
+1	Some advantages over other options.
0	Neutral compared to other options.
-1	Some disadvantages to other options.
-2	Significant disadvantages to other options.

6.4 Multi Criteria Analysis

The results of the MCA are presented in Table 4.1. In general, the options that limit vehicular activity within and through the scheme performed better than those options with higher vehicular movement across all six of the CAF criteria.

Economy Criterion Scoring

The economic criteria measure the compatibility of the three options against a range of sub-criteria including, transport reliability and quality and other economic impacts.

All three of the proposed designs provide improvement to the pedestrian and cycle network. However of the three design proposals presented here, Option 3 scores best under this criterion as it delivers the greatest value for money.

This option delivers high quality pedestrian and cycling facilities while not requiring the acquisition of lands on the northern approach which would require considerable capital costs. A likely CPO process would also take significant time thus delaying delivery of the scheme.

Safety Criterion Scoring

Although all the proposed design options would provide safety improvements when compared to the existing facilities, under this criterion both options 1 and 3 of the design proposals score best as they provide safe facilities for pedestrians and cyclists along the length of the scheme with a signalised pedestrian crossing at the Broadmeadow River linear park.

Theses options also score best for road safety as they safely manage traffic movements through the one-way shuttle with traffic signals.

Physical Activity Criterion Scoring

This criterion identifies the potential impact of each proposed option in facilitating a healthier lifestyle, by creating an extended pedestrianised area and thereby facilitating and encouraging greater active travel (walking and cycling) and improved opportunities for permeability and local connections.

Options were assessed based on the standard and extent of walking and cycle infrastructure and the extent to which movement by these modes was impeded through conflicts or barriers caused by vehicular movements.

Although all of the design proposals provide safe facilities for pedestrians and cyclists along the length of the scheme, Options 1 and 3 were ranked highest under this criterion as they include a signalised pedestrian crossing at the Broadmeadow River linear park.

Environment Criterion Scoring

This criterion assesses the impact of proposals on local environmental factors such as air, noise, and visual and heritage impact.

The noise pollution that results from vehicle movement along with harmful emissions can make a place less attractive for people to dwell, enjoy and relax as well as having a significant adverse impact on the built environment. Options which allow for a freer flow of traffic help minimise harmful gases (CO2, Nitrogen Oxides and Particulate Matter), while shuttling of traffic with one-way flows across the bridge would lessen noise and vibrational impact in the environs around the bridge.

All three of the design proposals scored well under this criterion with each proposal scoring differently under each of the environmental sub-criteria.

The do-nothing option and option 3 score equally on optimising the aesthetical value of the road by reattaining the existing stone wall on the northern approach.

The do-nothing option scores best for minimising emissions as it would not require any stop/starting of vehicular traffic.

Option 3 scores best at minimising noise and vibration throughout the scheme. This is due to the one-way shuttling of traffic across the bridge and the longer intergreen time required due to the longer shuttle length.

The do-nothing option and option 3 score equally on optimising the architectural impact and cultural value of the road as they don't impact the existing stone walls on the northern approach.

Accessibility and Social Inclusion Criterion Scoring

Under this criterion the assessment compared the options based on how the designs accommodated vulnerable groups, particularly the elderly and people with disabilities.

All three of the design proposals provide great improvements for vulnerable road users including new footpaths and accessible access to the linear park. However, options 1 and 3 scored best under this criterion as they create the friendliest pedestrian environment for vulnerable users due to controlled pedestrian crossing facilities at the Broadmeadow River linear park.

Integration Criterion Scoring

This criterion measures the compatibility of the design options to relevant transport, land use and other government policies.

All three of the design proposals score well under this criterion as they align with the polices set out in the Fingal County Development Plan, Climate Action Plan, Project Ireland 2040 and smarter travel by prioritisation of active travel measures.

Options 1 and 3 have a comparative advantage over the other options as they include a signalised pedestrian crossing at the Broadmeadow River linear park.

6.5 Multi Criteria Analysis Scoring Matrix

Assessment Criterion			Do Nothing	Option 1	Option 2	Option 3
Economy	**Value for Money**	Relative nature and extent of infrastructure works requirements and the total cost and time required to deliver the scheme objectives	0	-1	-1	2
	Transport Reliability & Quality	Assist in delivering a high-quality sustainable transport network to support adopted economic policy including high quality pedestrian, cyclist, and public transport network	-1	1	1	1
		Criteria Sub Total (Average)	**-0.50**	**0.00**	**0.00**	**1.50**
Safety	**Pedestrian Safety**	Improve pedestrian safety within the scheme	-2	2	1	2
	Cyclist Safety	Improve cyclist safety within the scheme	-1	2	1	2
	Road Safety	Improve road safety within the scheme	-1	1	0	1
		Criteria Sub Total (Average)	**-1.33**	**1.67**	**0.67**	**1.67**
Physical Activity	**Active Travel**	Optimise pedestrian movement within the scheme	-2	2	1	2
		Optimise cyclist movement within the scheme	-1	2	1	2
		Criteria Sub Total (Average)	**-1.50**	**2.00**	**1.00**	**2.00**
Environment	**Landscape and Visual Quality**	Optimise the aesthetical value of the road	1	-1	-1	1
	Air Quality	Minimise emissions to provide a high-quality environment	2	0	1	0
	Noise and Vibration	Minimise noise and vibration to provide a high-quality environment	-1	1	0	2
	Land Use	Optimise the architectural and cultural value of road	2	1	1	2
		Criteria Sub Total (Average)	**1.00**	**0.25**	**0.25**	**1.25**
Accessibility and Social Inclusion	**Vulnerable Groups**	Ensure the environment throughout the scheme is accessible for people with disabilities	-2	2	1	2
		Criteria Sub Total (Average)	**-2.00**	**2.00**	**1.00**	**2.00**
Integration	**Land Use Integration**	Alignment of the scheme with FCC development plan active travel policies	-1	1	1	1
	Transport Network Integration	Integration of the scheme with the existing and planned pedestrian & cycle network	-1	2	1	2
	Other Government Policy Integration	Alignment of the scheme with Project Ireland 2040, Climate Action Plan (CAP), Smarter Travel, DMURS	-1	1	1	1
		Criteria Sub Total (Average)	**-1.00**	**1.33**	**1.00**	**1.33**
			-5.33	7.25	3.92	9.75

7 Emerging Preferred Option

Further to assessment, Option 3 has performed the best overall and offers the greatest advantage across all criteria. Therefore, it is the preferred choice for the Newtown Bridge, Balheary Road Active Travel Scheme as it strikes the best balance between fulfilling the scheme's objectives and minimising the impact on the surrounding environment.

Option 3 provides several benefits over the other options. It would offer a safer and more comfortable path for pedestrians and cyclists with reduced risk of conflict with motor vehicles. Thus, it is considered more attractive and likely to encourage more people to walk and cycle. This in turn will help reduce congestion and improve air quality. Additionally, the scheme would have minimal impact on traffic flows.

Furthermore, Option 3 would have a lesser impact on the environment as it would not require the removal of mature trees or the demolition of the existing stone wall. As Option 3 doesn't require CPO of land on the eastern side of the northern approach, it would reduce the capital cost needed for the scheme's construction and avoid delays in the construction process caused by the CPO process.

Reducing vehicular dominance in the area creates more accessible and socially inclusive spaces for all members of society. This is achieved by lowering the number of potential conflict points and improving safety for all users, particularly vulnerable groups like pedestrians and cyclists. The reduction of vehicular presence and the creation of an extended pedestrian/cycle path also promotes physical activity through active travel and enhances opportunities for permeability and local connectivity.

Moreover, this proposal is more aligned with national, local, and regional policies that aim to encourage active travel and reduce reliance on vehicle travel and the negative environmental impacts it has. Ultimately, the creation of a more coherent, usable, and pleasant route will be enjoyed by its users, making them feel safe.

The proposed scheme is the subject of a screening assessment for both the Impact on designated sites (Appropriate Assessment) and an assessment of the potential environmental impact of the scheme. These reports are to be supplied at a later date pending review of pedestrian restraint designs by conservation architect.

7.1 Next Steps

It is proposed to complete the scheme as a Section 38 procedure. This is reference to in the Road Traffic Act, 1994 which sets out the procedure for carrying out traffic calming and minor road improvements to provide traffic calming measures including footpath and cycle track improvements as the road authority considers desirable in respect of public roads in their charge.

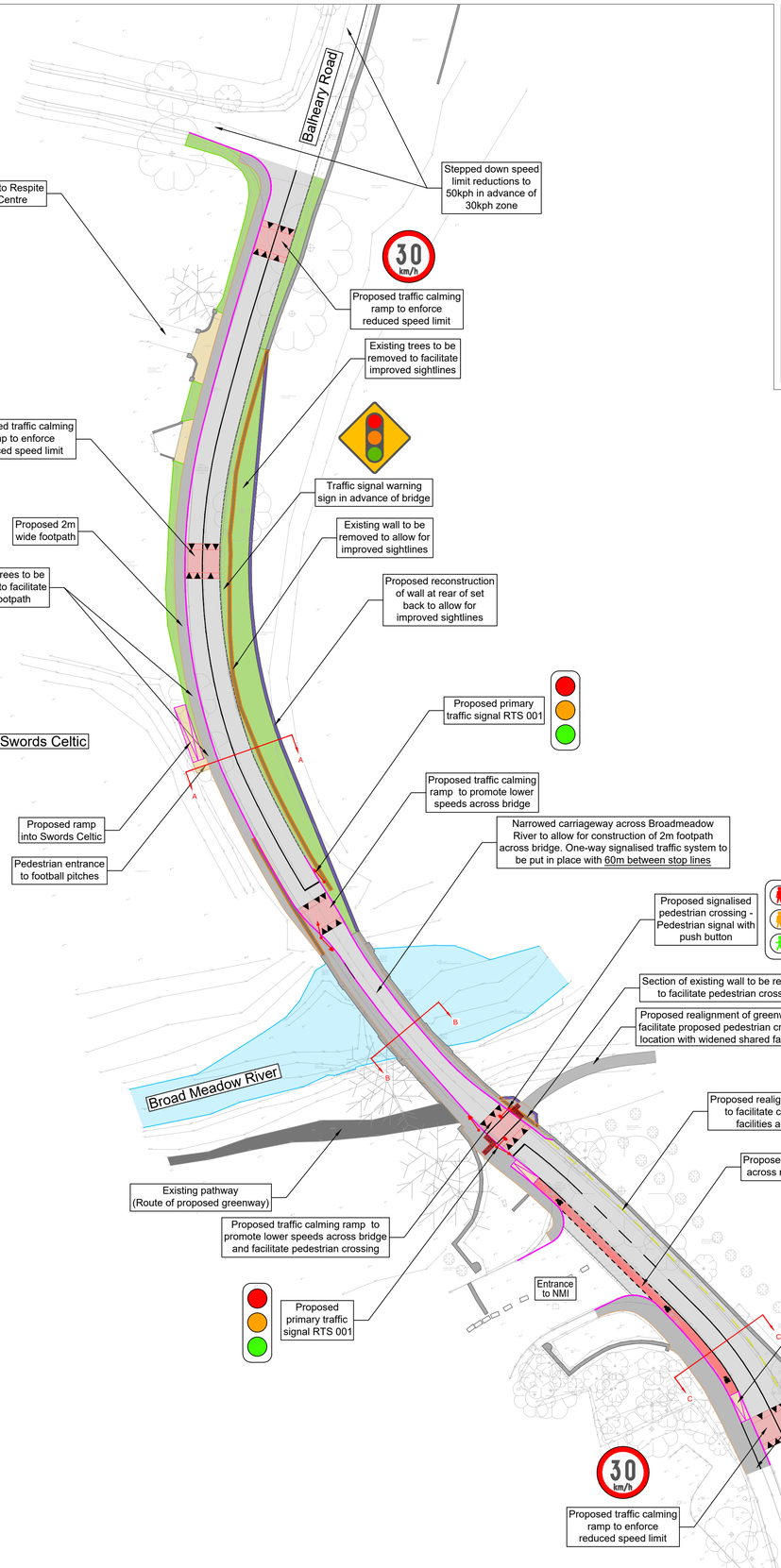
Once the non-statutory consultation for the scheme is completed, the project will move on to the detailed design phase where the scheme designs will be refined.

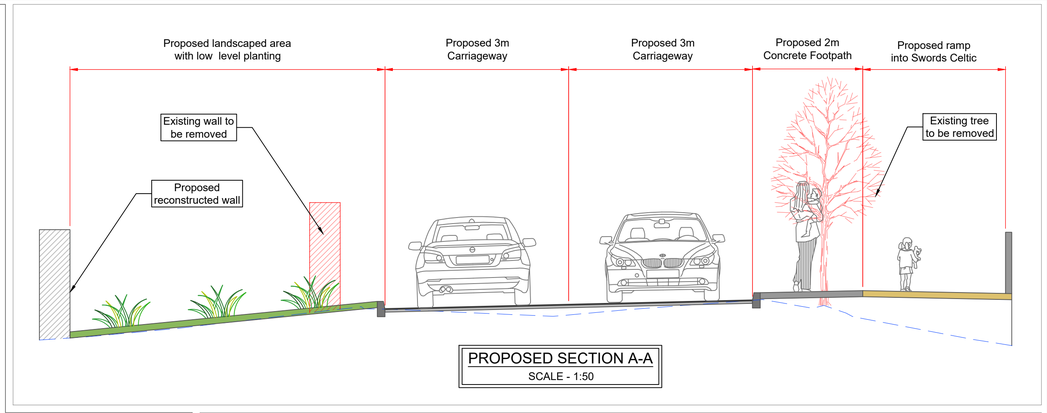
Once the scheme detailed design stage has been completed, the Tender documents for the project would be compiled and an open procedure tendering process would be undertaken.

Following the tendering process, the received tenders would be assessed and the project awarded to a successful tenderer.

It is anticipated that the scheme would commence construction in mid-summer 2023.

Appendix A – Proposed Options Drawings





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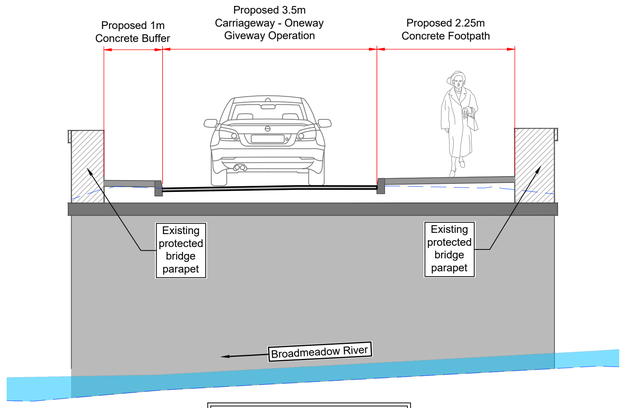

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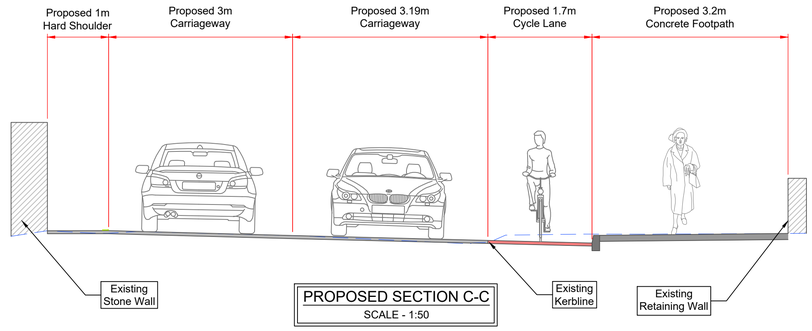

PROPOSED SECTION C-C
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This drawing is produced using the Irish Grid Geographic Coordinate System

A1

N

LEGEND

- Existing Kerbline
- Proposed 125mm High Kerbline
- Proposed 50mm Kerb between Cycle Track and Footpath
- Proposed Kassel Kerb at Bus Stop
- Proposed Cycle Ramp
- Proposed Bus Shelter
- Proposed Carriageway Resurfacing
- Proposed Concrete Footpath
- Proposed Cycle Track
- Proposed Cycle Lane
- Proposed Traffic Calming Ramp

Revision	Description	Initials	Date

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Client: Fingal Active Travel Projects

Project: Balheary Road Bridge

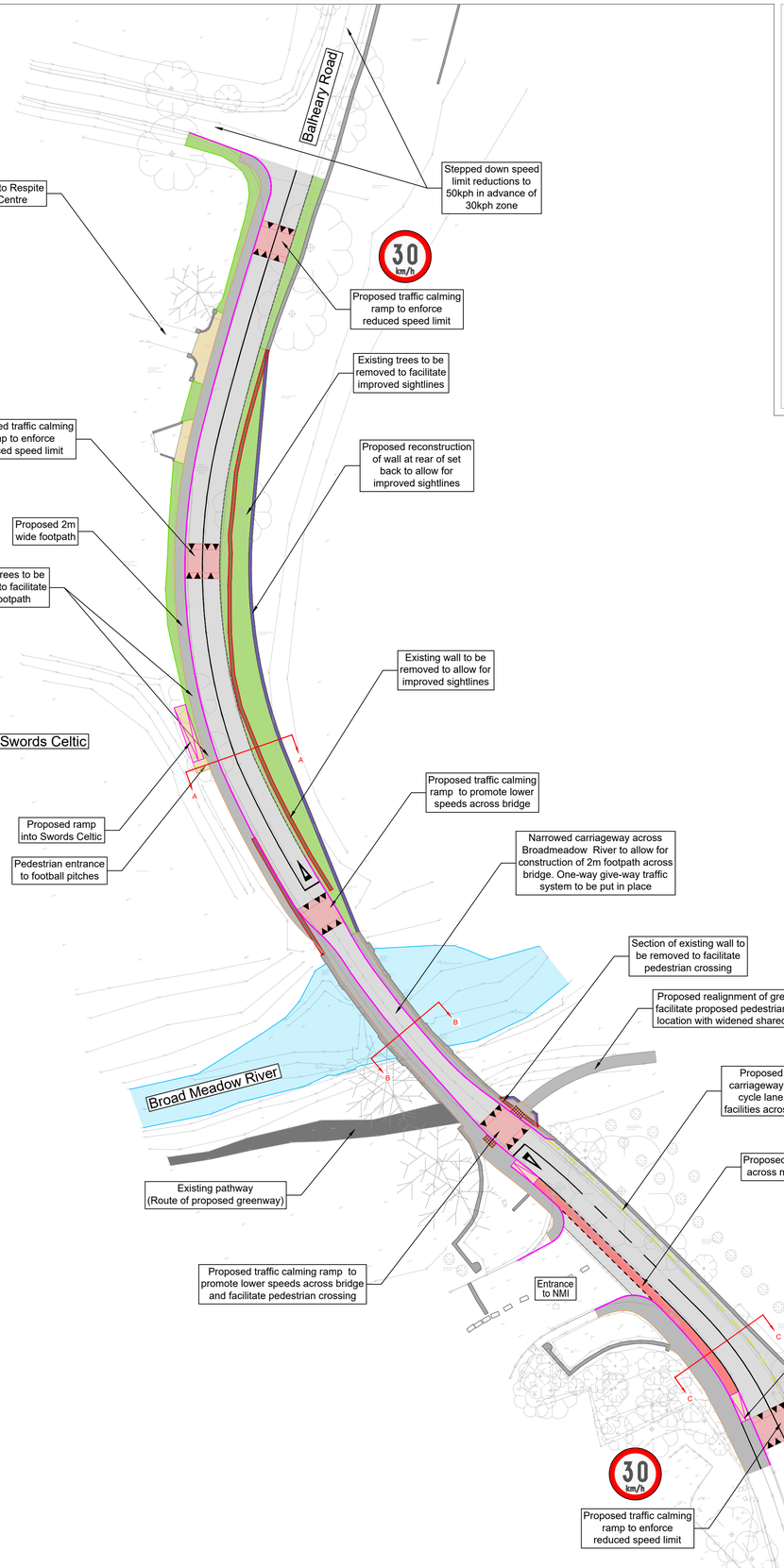
Dwg. Title: Option 1 - Signal Controlled Shuttle

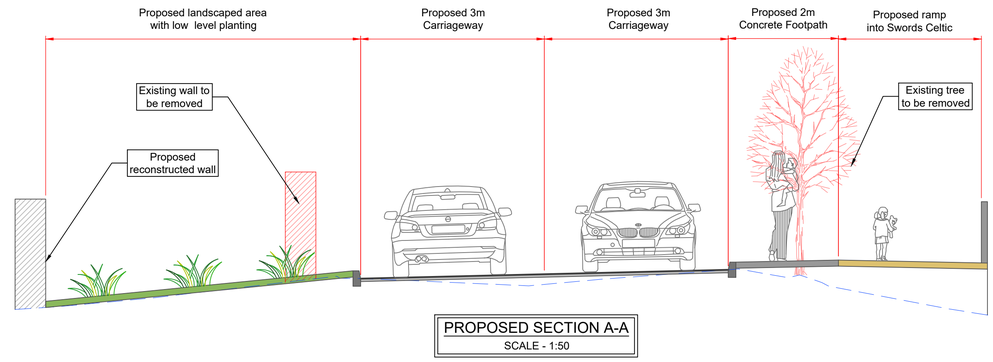
Drawn By: SP | Date: NOVEMBER 2022

Checked by: MC | Scale: 1:500 @ A1

Dwg. Progress: Information

Dwg. No.: 22_110C-CSE-GEN-XX-DR-C-1011





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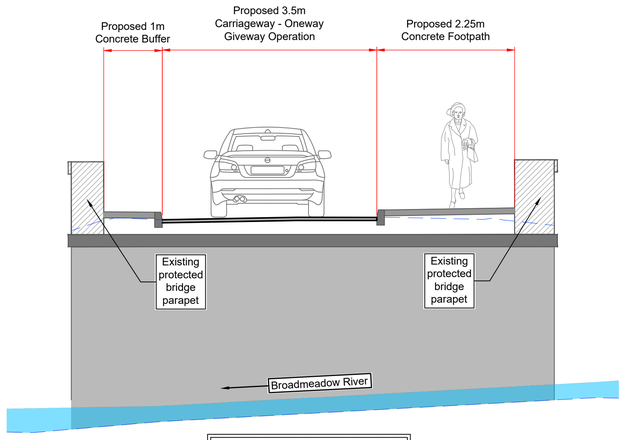

PROPOSED SECTION B-B
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PROPOSED SECTION C-C
SCALE - 1:50

This drawing is produced using the Irish Grid Geographic Coordinate System

A1

N

LEGEND

- Existing Kerbline
- Proposed 125mm High Kerbline
- Proposed 50mm Kerb between Cycle Track and Footpath
- Proposed Kassel Kerb at Bus Stop
- Proposed Cycle Ramp
- Proposed Bus Shelter
- Proposed Carriageway Resurfacing
- Proposed Concrete Footpath
- Proposed Cycle Track
- Proposed Cycle Lane
- Proposed Traffic Calming Ramp

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Client: Fingal Active Travel Projects

Project: Balheary Road Bridge

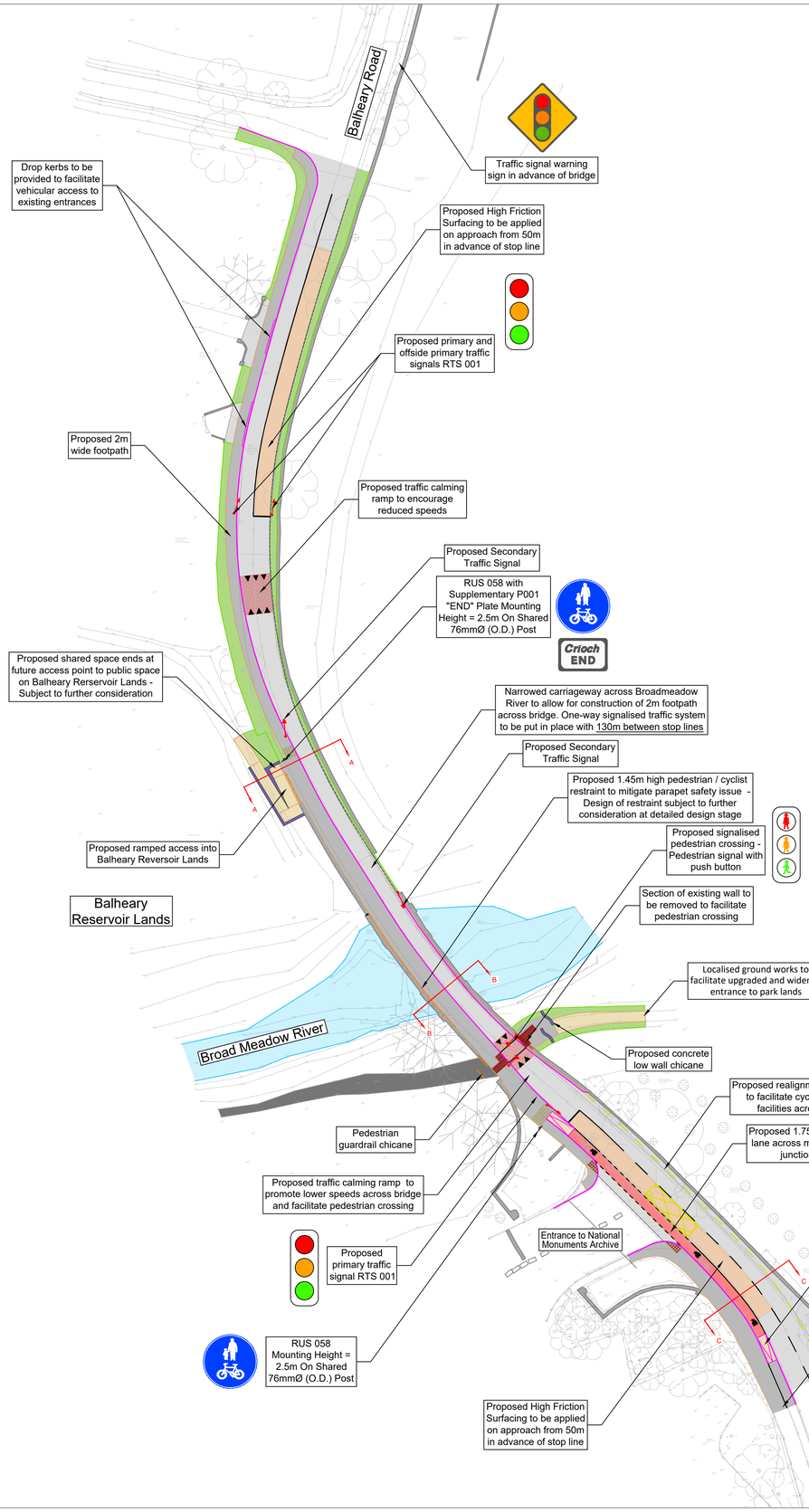
Dwg. Title: Option 2 - Give Way Option

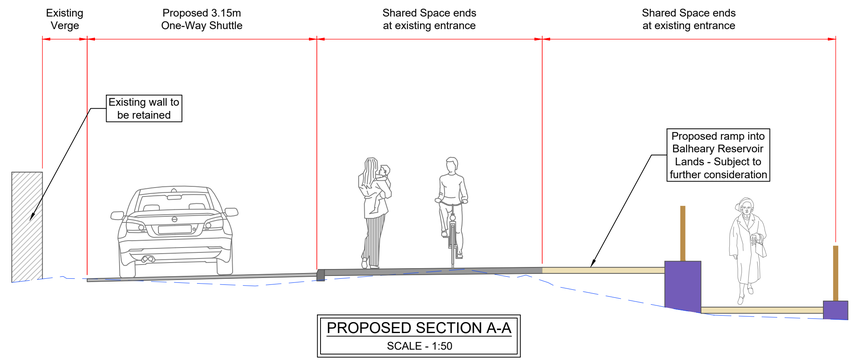
Drawn By: CL Date: November 2022

Checked by: MC Scale: 1:500 @ A1

Dwg. Progress: Information

Dwg. No.: 22_110C-CSE-GEN-XX-DR-C-1012





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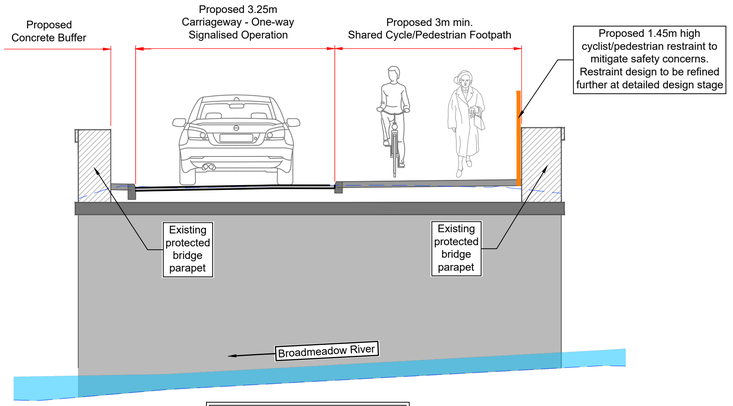

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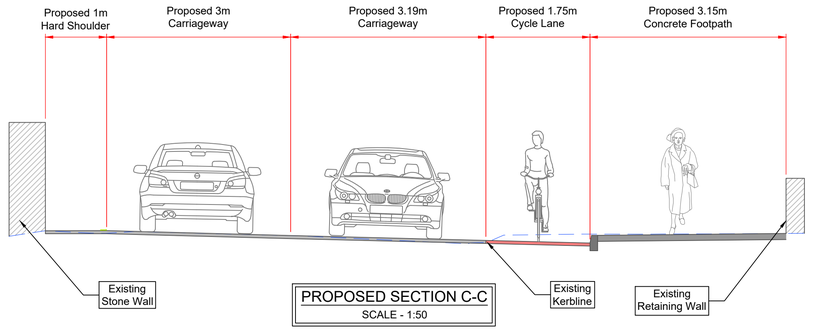

PROPOSED SECTION C-C
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This drawing is produced using the Irish Grid Geographic Coordinate System

A1

N

LEGEND

- Existing Kerbline
- Proposed 125mm High Kerbline
- Proposed 50mm Kerb between Cycle Track and Footpath
- Proposed Cycle Ramp
- Proposed Bus Shelter
- Proposed Carriageway Resurfacing
- Proposed Concrete Footpath
- Proposed Cycle Track
- Proposed Cycle Lane
- Proposed Traffic Calming Ramp
- Proposed High Friction Surfacing

Revision	Description	Initials	Date

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Client	Fingal Active Travel Projects
Project	Balheary Road Bridge
Dwg. Title	Option 3 - Long Signal Controlled Shuttle - Emerging Preferred Option
Drawn By	SP
Date	MARCH 2023
Checked by	MC
Scale	1:500 @ A1
Dwg. Progress	PRELIMINARY
Dwg. No.	22_110C-CSE-GEN-XX-DR-C-1013

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