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Royal Canal Urban Greenway

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1.0 INTRODUCTION

- 1.1.1 This report has been prepared by DBFL Consulting Engineers (DBFL) on behalf of Fingal County Council (FCC) and outlines the Royal Canal Urban Greenway Scheme (hereafter referred to as the 'proposed development').
- 1.1.2 The Royal Canal Links the River Shannon in County Longford to the River Liffey in Dublin City's Docklands. On its way, it passes close to a number of towns, including Mullingar, Kilcock, Maynooth and Leixlip before entering Fingal where it passes through the built-up areas of Clonsilla, Coolmine, Castleknock and Blanchardstown on its way towards the north City.
- 1.1.3 The proposed development is a pedestrian and cycle route which is to be constructed along /adjacent to the Royal Canal as it heads eastwards from the Kildare County Boundary to the Old Navan Road (near 12th Lock) to connect with a previously constructed section of the Greenway. The proposed development is a joint scheme, Fingal County Council (the Client) is the scheme promoter in conjunction with the National Transport Authority (NTA) as the funding body and Waterways Ireland (WI) who are the principle property owner.
- 1.1.4 The scheme will provide a shared pedestrian/cycle route on/adjacent to the Royal Canal towpath over an approximate length of 8.1km which will tie in with the completed section of the Ashtown Greenway at Talbot Bridge (Old Navan Road) in the east and the Kildare County Council greenway section at the County boundary in the west. The extent of the scheme is illustrated in **Figure 1.1** below.



Figure 1.1: The Royal Canal Urban Greenway

- 1.1.5 The Royal Canal Urban Greenway is a section of the major route corridor Dublin to Galway (266km) proposed in the National Cycle Network (NCN) Scoping Study 2010 (Route 8). The proposed development is the start of the urban section of the route as it approaches the Dublin Metropolitan area.
- 1.1.6 The NCN Route 8, is also part of the longer distance trans-European 'EuroVelo Route 2', which extends eastwards across Europe to Moscow.
- 1.1.7 The Royal Canal Greenway between Maynooth in County Kildare and the Shannon in County Longford has been completed and was officially opened on the 24th March 2021. <https://www.waterwaysireland.org/greenways/royal-canal>
- 1.1.8 The full Greenway, when completed will offer a first-class multi-purpose off-road walking and cycling link running from the River Liffey in Dublin, through Counties Dublin, Kildare, Meath, Westmeath and Longford to Cloondara on the River Shannon.
- 1.1.9 The subject scheme, the Royal Canal Urban Greenway, from the Kildare/Fingal County Boundary to the existing Ashtown Greenway at Talbot Bridge (Old Navan Road), is the final piece of Royal Canal greenway route yet to obtain planning approval. When complete, the Royal Canal Urban Greenway will deliver a continuous greenway from Dublin City's Docklands to Kildare and westwards towards the Shannon and Galway. The scheme when complete will provide a high quality link for pedestrians and cyclists to commute to Maynooth and Dublin City Centre whilst also offering excellent recreational opportunities. The status of the other phases of the Royal Canal Greenway within the Greater Dublin Area are illustrated in **Figure 1.2**.

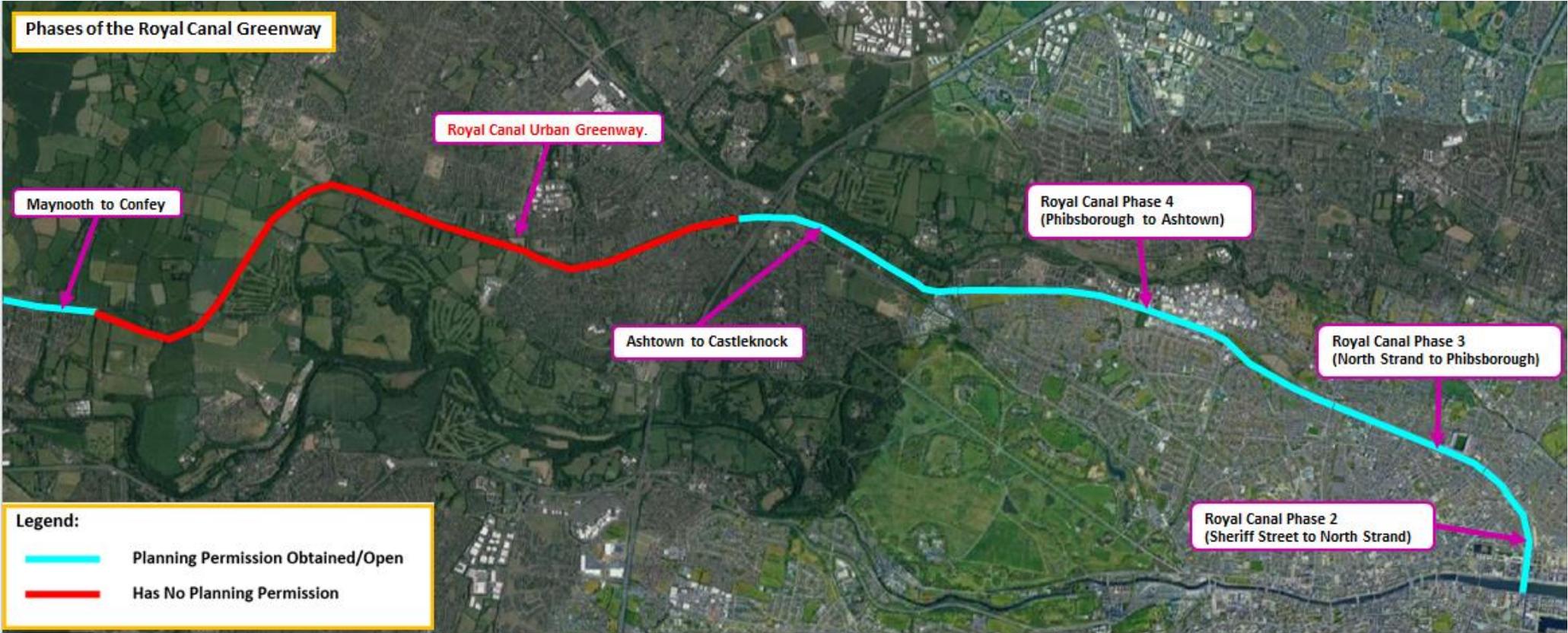


Figure 1.2: Status of the other phases of the Royal Canal Greenway

2.0 SCHEME OBJECTIVES

2.1.1 Building on several key policy documents such as the Fingal Development Plan (2017-2021), Fingal County Council's overall objective for the proposed development is to 'deliver a safe combined pedestrian and cycle route, which meets the standards set out for a Greenway in the NTA's "National Cycle Manual" (published in 2011) and TII Publication "Rural Cycleway Design, DN-GEO-03047, April 2017", subject to detailed engineering design and the mitigation measures presented in the SEA and Natura Impact Statement accompanying the Greater Dublin Area Cycle Network Plan'.

2.1.2 The following specific objectives, which are consistent with the various policy documents outlined in the *'Royal Canal Urban Greenway, Route Options Report'*, have also been established for the proposed development:

- To deliver a premium quality combined pedestrian and cycle route which will serve projected recreational and commuter demand.
- To improve the canal corridor as a recreational pedestrian and cycle route
- To improve connectivity between the canal and adjacent residential neighbourhoods.
- To deliver enhanced permeability via sustainable modes of walking and cycling in a manner that balances the security of the greenway user and respects potentially affected landowners & residents in accordance with best practice urban design.
- To encourage use of a sustainable modes of transport, and interlink with existing public transport (with links to Train Stations) and proposed public transport schemes such as DART + West;
- To deliver a greenway which respects the environmental, conservation and heritage sensitivities within the Study Area.
- To create a first-class cycling facility and tourist attraction which can contribute to the economic development of County Fingal;
- Connect to the completed phase of the Greenway at Ashtown and tie in with the section to be completed by Kildare County Council.
- Raise the profile of cycling and inspire people to cycle;

- Increased cyclist and pedestrian safety;
- Tackle obesity and promote activity and create a better quality of life;
- Reduce congestion and the number of motorised vehicle trips;
- To deliver the scheme in compliance with DMURS, NCM and the latest design standards.
- To meet the requirements of Fingal County Council Departments, the NTA, Iarnród Éireann, National Parks & Wildlife Services and other key stakeholders.
- To consult with the statutory and non-statutory stakeholders at all stages during the project.
- To meet planning and statutory requirements.
- To meet the environmental requirements including mitigation measures outlined.
- To protect the current uses of the canal/scheme and to respect the access requirements of Waterways Ireland, as primary landowner within the Study Area, and other users such as anglers, walkers and barges.
- To protect the Royal Canal or ensure that its historical context is protected in the delivery of this greenway.

2.1.1 The scheme objectives are derived from national, regional and local policy which prioritise the movement of pedestrians and cyclists and place active modes at the top of the movement hierarchy. At the heart of the scheme is the prioritisation of pedestrian and cyclist safety and connectivity.

3.0 NEED FOR THE SCHEME

3.1.1 The proposed development is mainly located within the highly populated suburban area of Dublin 15 which is set for further growth and expansion in the future. The Royal Canal Urban Greenway is a key future transport linkage in the development of the area. The Royal Canal is used extensively as a recreational route and the popularity for greenway schemes have increased significantly & the appetite for outdoor recreation has grown since the Covid-19 pandemic. Its delivery is crucial to ensure this growth could be achieved sustainably by providing excellent sustainable travel alternatives to the use of the private vehicle whilst also enhancing public transport accessibility and interchange most notably at train stations along the route.

Economy

3.1.2 There is huge potential for the proposed development to increase economic activity within the local area generated by local coffee shops or bike repair shops or tourism offerings along the route.

3.1.3 The proposed development, forming part of the Dublin to Galway Cycle Route, has the potential to have a significant and positive impact on tourism and general economic activity in County Fingal providing a stimulus into the local economy of the adjoining towns and businesses.

Environment

3.1.4 An absence of traffic free active travel routes within the Study Area results in most cycling trips (whether they are recreational, leisure-based, commuter, business or school) are being undertaken on the regional and local road network.

3.1.5 Whilst the proposed development will facilitate leisure and recreational trip purposes, it will also serve an important function as a strategic commuter route. The Greenway will encourage walking and cycling to schools and train stations whilst also providing a direct route eastward to Dublin City Centre and westwards to Leixlip & Maynooth which are key areas of employment for residents of Dublin 15. Therefore, the proposed development has potential to encourage a modal

shift from the private car to the sustainable modes of walking & cycling for commuting purposes.

- 3.1.6 With reference to TII's Project Appraisal Guidelines it is likely that in reducing trips by motorised modes, particularly reducing private car travel, there will be an improvement in air quality, noise reduction and overall positive impacts on climate change.

Safety

- 3.1.7 In general, along the Royal Canal, within the Study Area facilities for pedestrians & cyclists are poor. Currently pedestrians and cyclists walk and cycle along the existing unsurfaced and narrow towpath. Sections of the existing towpath, particularly within the 'Deep Sinking' area (between Porterstown & Castleknock), are not suitable to walk or cycle & typically consist of a 2 - 3m wide unsurfaced trail, with local pinch points of approx. 1.3m width, flanked by a deep cutting of 1.0 - 9.0m to the canal. Also, due to these sections of towpath being unsuitable for many user, there would be very little passive surveillance along the towpath resulting in an uncomfortable environment to walk or cycle.



Figure 3.1: Existing towpath on the southern side of the canal between Kennan Bridge and Kirkpatrick Bridge (adjacent to the railway line)

- 3.1.8 The proposed development will improve this significantly for leisure, recreational and commuter users by providing a safe and comfortable route that achieves a consistently high level of service.

Accessibility and Social Inclusion

- 3.1.9 Within the Study Area there is a lack of accessible routes that link to key services and amenities that could be considered appropriate to encourage active travel for people with impairments and disabilities.
- 3.1.10 With 13% of the population of Fingal aged 60 or over and 11% of the population considered to have a disability, with those figures likely to rise, it is strategically important to ensure that our built environments are accessible and inclusive to a full range of people, including cyclists.
- 3.1.11 There is a lack of dedicated high quality recreational and leisure walking and cycling routes that facilitate users of all abilities which would encourage physical activity that could provide social benefits, such as increased social interaction that helps to build community networks, reduce isolation and exclusion and build social cohesion.
- 3.1.12 The proposed development will improve this significantly for leisure, recreational and commuter users by providing a safe and comfortable route linking key services, facilities, amenities and attractions as much as possible without losing the vital proximity to the Royal Canal and its associated scenery.
- 3.1.13 The proposed development will also be designed for school children, providing them a safe facility that they can use without supervision.

Integration

- 3.1.14 The proposed development will form part of a national greenway route along the Royal Canal that links the River Liffey in Dublin City's Docklands to the River Shannon in County Longford and eventually on to Galway. Also, the Canal Loop Greenway proposes to link the Grand Canal and the Royal Canal via Lucan. The route is likely to go through Lucan and possibly join the Royal Canal at Collins Bridge.
- 3.1.15 The proposed development scheme (approx. 8.1km) will tie in with the completed section of the Ashtown Greenway at Talbot Bridge (Old Navan Road) in the east and the Kildare County Council greenway section at the County boundary in the west.

- 3.1.16 In terms of a local integration perspective, the scheme will serve the towns of Clonsilla, Coolmine, Castleknock directly. The route will encompass large population catchments in suburban areas and rural areas which are currently more isolated, and in doing so, local schools, playing fields and other amenities will become more accessible. All of the urban centres have noteworthy populations with numerous services and amenities such as schools, shopping areas, community centres, parks, tourism attractions, playing pitches and train stations.
- 3.1.17 There is a significant lack of connectivity and integration between these services and amenities by active travel present. The possibility of connection of these amenities to nearby train stations and bus facilities is a significant benefit that the proposed development could bring to the Dublin 15 area.

Overall Need for the Scheme

- 3.1.18 The proposed Study Area is one of immense scenic beauty and amenity value rich with heritage and archaeological attractions.
- 3.1.19 There is huge potential to deliver a greenway, designed to high quality user safety and comfort standards, that can deliver a product with significant potential to attract local users and tourists.
- 3.1.20 This would benefit the economy of the adjacent local communities, contribute significantly to health and wellbeing of all users as an amenity for physical activity and facilitate short to medium local commuter journeys thereby encouraging modal shift to active and sustainable transport alternatives.

4.0 DESIGN APPROACH & OPTIONS ASSESSMENT

4.1 Introduction

4.1.1 A total of 31 route options were developed for the scheme from the Kildare County Council boundary (Royal Canal Amenity Group premises) to the Old Navan Road (Talbot Bridge). Each of the route options have been assessed individually with various design options discussed and appraised in order to determine the optimal layout for both greenway and canal users. These options include routes on the northern and southern embankments of the canal as well as parallel routes through adjacent residential estates, with varied engineering design solutions e.g. bound and unbound greenway surface, cantilevered boardwalk, raised boardwalk, on-road cycle tracks, shared street, pedestrian/cycle bridges etc. The detailed assessment of the route options is outlined in the '*Royal Canal Urban Greenway, Route Options Report*'.

4.1.2 The target greenway width will be 3-4m (within existing embankment widths) from the Kildare/Fingal County Council boundary line to Hansfield Railway Bridge. For the remainder of the route, from Hansfield Railway Bridge to the end of the scheme at Talbot Bridge (Ashtown Greenway), where increased usage is projected, the greenway will be constructed as a 4m wide path made from a bituminous surface to provide a high quality and durable finish for cyclists and pedestrians. This is based on the route being of National/Regional and Local importance that is expected to attract significant demand for commuter and leisure use.

4.2 Route Options Assessment

4.2.1 In order to determine the preferred route option for the proposed development, it was necessary to undertake an options appraisal. This appraisal was based on the Multi-Criteria Assessment (MCA) set out by the Department of Transport, Tourism and Sport (DTTAS), aligning with the Common Appraisal Framework (CAF) criteria used for the MCA covering Economy, Integration, Safety and Environment. The route options for each Section were then compared against each other based on a five-point scale, ranging from having significant

advantages to having significant disadvantages over other options. Further information on the assessment methodology is provided in Chapter 7 of the *'Royal Canal Urban Greenway, Route Options Report'*.

4.2.2 As part of the route options assessment process a number of desktop studies and site visits were undertaken to establish the constraints and develop a working knowledge of the issues along the proposed route.

4.2.3 The following detailed surveys were also commissioned to gain an additional appreciation of the constraints and opportunities and to further understand potential construction methods required for particular route options:

- i. Topographical survey for the entire scheme.
- ii. Ground Investigation Survey.
- iii. Ground Penetration Radar for all Bridge locations.
- iv. Habitat surveys of the woodland in the Deep Sinking.
- v. Habitat surveys of grassland in the western sections of the Study Area.
- vi. Tree survey of the entire Study Area.
- vii. Breeding waterbird surveys along the full length of the Study Area.
- viii. Bat surveys of the bridges in the Study Area including bat activity.
- ix. Bat activity surveys of the section between Ashtown station and the M50 for comparison with an earlier bat survey to examine the effects of lighting.
- x. Snail Survey (terrestrial molluscs) on the full length of the Study Area.
- xi. A survey of the woodland on the north side of the Royal Canal east of Kirkpatrick Bridge for badger setts

4.2.4 The methodologies for these surveys are described in the *'Royal Canal Urban Greenway, Biodiversity Assessment Report (2018)'* and the *'Royal Canal Urban Greenway, Route Options Report'*.

- 4.2.5 The Route Options Assessment Report presents the findings of the route options assessment work undertaken for the proposed development and a recommendation on a preferred route is made.
- 4.2.6 The '*Royal Canal Urban Greenway, Route Options Report*' describes the assessment of potentially viable route options within the Study Area for the proposed scheme.

4.3 Stakeholder Consultation

- 4.3.1 Extensive engagement has taken place since the project inception in 2018 and has continued to the current date. Consultation has been undertaken by the Project Team with the various departments in Fingal County Council (FCC), with the National Transport Authority (NTA) and Waterways Ireland (WI), in order to discuss the feasibility of particular route options.
- 4.3.2 Consultation with the general public, residential groups, elected representatives, other state bodies, such as An Garda Síochána, National Parks & Wildlife Service (NPWS), Inland Fisheries & Iarnród Éireann, as well as other interested parties have also been undertaken. There was a Non-Statutory Public Consultation on the emerging preferred route held in February 2019. As part of this consultation there were meetings with elected members and residential groups which also followed the public consultation.

Non-Statutory Public Consultation (2019)

- 4.3.3 The Emerging Preferred Route for the proposed development was presented during a Non-Statutory Public Consultation held from 25th February to 27th March 2019.
- 4.3.4 A total of 602 submissions were received. The majority of the submissions received (from the general public) as part of the public consultation process related to a 1km section of route between Kirkpatrick Bridge (Coolmine Road) and 400m west of Castleknock Train Station. The most common concerns mentioned were increased traffic, anti-social behaviour and crime and biodiversity impacts.

- 4.3.5 Many submissions were in favour of the Emerging Preferred Route, however, a greater number were in favour of the greenway to be specifically on the southern side of the Canal between Kirkpatrick Bridge and Granard Bridge at Castleknock Station.
- 4.3.6 The concerns raised have been thoroughly reviewed with reference to their alignment with local and national policy and the scheme project objectives and this has formed a core consideration in the progression of the Option Development and Assessment process leading to the identification of the Preferred Route. Preliminary designs were prepared for both options on the north and south of the canal between Kirkpatrick and Granard Bridges as a result of the concerns raised in the 2019 consultation process. This included consideration of the anticipated constructability of the designs which was then incorporated into a refined options assessment process which is presented later in this report.

Key Stakeholder Consultation

- 4.3.7 Ongoing consultation has been undertaken with a number of stakeholder groups in order to discuss strategic and specific elements of the scheme. This consultation has assisted in guiding technical and strategic elements of the scheme. On-going consultation and engagement have been undertaken with the National Transport Authority, the various departments of Fingal County Council, Waterways Ireland, An Garda Síochána, Iarnród Éireann and DART+West, Dublin Cycling Campaign, Royal Canal Amenity Group (RCAG) and Elected Representatives & Local Residential Groups throughout the route options assessment process. A summary of some of the feedback from the key stakeholders to-date are outlined in Chapter 6.3 of the *'Royal Canal Urban Greenway, Route Options Report'*.

4.4 Study Area

4.4.1 The Study Area for the proposed development route option assessment begins to the west of the Royal Canal at the Kildare County Council boundary (Royal Canal Amenity Group premises) travelling north eastwards towards Clonsilla. The Study Area then continues along the canal to Coolmine and onto the 12th Lock where it ties into the Ashtown section of the Greenway at the Old Navan Road (Talbot Bridge). The Study Area is as identified by the area within the red boundary line in **Figure 4.1** below. The study area follows the route of the Royal Canal corridor and extents north and south of the corridor for alternative route options.

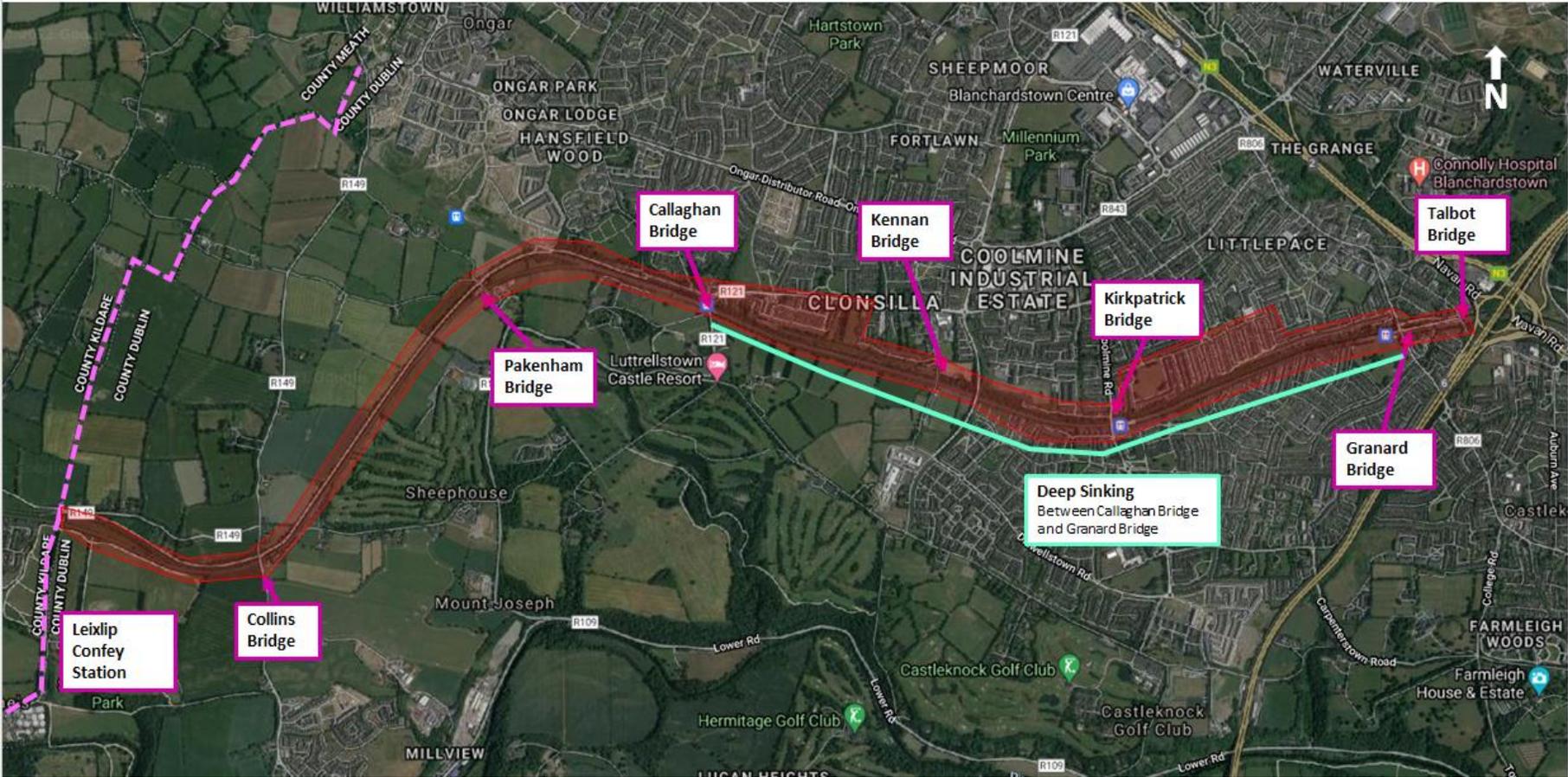


Figure 4.1: Proposed Study Area

4.4.2 The Study Area has been divided into three distinct sections based on their different geographical and physical characteristics to simplify the route options assessment process as illustrated below in **Figure 4.2**: -

- **Section 1** – between the Kildare/Fingal County Council boundary line (Royal Canal Amenity Group) and Hansfield Railway Bridge (Ch. 0 – 3200).
- **Section 2** – between Hansfield Railway Bridge and Kennan Bridge (Porterstown Road) (Ch. 3200 – 5325).
- **Section 3** – between Kennan Bridge (Porterstown Road) and Talbot Bridge (Old Navan Road) (Ch. 5325 – 8100).



Figure 4.2: Study Area Sections

5.0 PREFERRED ROUTE - SECTION 1 (Drawing Sheets 1 to 10)

Key Design Considerations

- 5.1.1 Section 1 extends from Kildare/Dublin County boundary line to Hansfield Railway Bridge. This section is rural/peri-urban in nature, predominately farmlands, however, it also adjoins local amenities such Westmanstown Golf Club and Westmanstown Sports Centre.
- 5.1.2 The existing towpath is present along the northern embankment. There is sufficient available width along the northern towpath to provide a 3-4m wide greenway (within existing embankment widths).
- 5.1.3 The overall topography for Section 1 and its surrounding landscape is generally flat, therefore topography will not constitute a significant constraint for this route selection
- 5.1.4 In terms of ecology, there are grasslands along both sides of the canal for Section 1 which are of high conservation value (especially pockets containing the Annex 1 habitat 'Lowland hay meadows').
- 5.1.5 The Royal Canal is a protected area of national importance and is designated as a proposed Natural Heritage Area with the objective of conserving species and habitats of national importance. Collins Bridge and Pakenham Bridge are also protected structures.

Preferred Option

- 5.1.6 The preferred route option will follow the existing towpath along the northern side of the Royal Canal from the Kildare County Council boundary line to Hansfield Railway Bridge.
- 5.1.7 The Greenway will be constructed as a 3-4m wide (within existing embankment widths) unbound surface from the western scheme extent to Hansfield Bridge (Railway Bridge). This western section will be constructed using materials that are sensitive to the rural character and environment of this area, see **Figure 5.1** below.



Figure 5.1: Photomontage of proposed greenway in Section 1

- 5.1.8 The greenway will be set back at least 1m from the water's edge, to maintain a riparian strip so as not to disturb the grasslands which are of high conservation value.
- 5.1.9 The greenway will continue through the existing pedestrian underpass by Hansfield Railway Bridge.
- 5.1.10 Signal Controlled Crossings will be provided for Greenway users at junctions with roads such as the L3005 (Collins Bridge) and Barberstown Lane (Pakenham Bridge), see **Figure 5.2**.



Figure 5.2: Photomontage of proposed signal controlled crossing at Pakenham Bridge (Barberstown Lane)

5.1.11 A summary of the key benefits of the preferred option for Section 1 are outlined below:

Preferred Option - Section 1

Benefits

- Provides greenway facilities along Royal Canal corridor for the entire Section 1.
- Provides segregated greenway facilities along the entire Section 1, with the only interaction with vehicular traffic at the signal controlled crossings at the canal bridges.
- The environmental impact of delivering the scheme would be minimal as the proposed greenway would be provided within the available land along the Royal Canal Towpath.
- Minimal visual impact as the route will be constructed using materials that are sensitive to the rural character and environment of this area. No bridge structures are required.
- It does not involve land acquisition from private lands.
- It provides a high quality of service, as it has not sections of route adjacent to vehicular traffic or does not detour from the canal.
- It has no impact on the Iarnród Éireann network

Disbenefits

- The fabric of the canal itself is a protected structure. This route option does not detour from the canal corridor. Therefore, this route option may alter the existing Royal Canal environment, however, the scheme will be constructed using materials that are sensitive to the rural character and environment in Section 1.

6.0 PREFERRED ROUTE - SECTION 2 (Drawing Sheets 10 to 17)

Key Design Considerations

- 6.1.1 Section 2 extends from Hansfield rail bridge, through Clonsilla under Callaghan bridge to Kennan bridge at Porterstown Road. In Section 2, the character of the Study Area changes from rural to predominantly suburban in nature. This section is predominately residential on the northern side of the canal with farmlands on the southern side.
- 6.1.2 The 'Deep Sinking' section of the Royal Canal is between Clonsilla Road and Castleknock Road. For Section 2, the 'Deep Sinking' section is from the eastern side of Callaghan Bridge from Clonsilla Road to Porterstown Road. It presents significant challenges to the provision of a continuous 4m wide greenway route. The topography and layout of the existing towpath typically consists of a 2-3m wide track flanked by a deep cutting of 1.0 – 5.0m to the canal on one side and a varying height embankment supporting the Dublin – Maynooth Railway on the other.
- 6.1.3 In terms of ecology, there are grasslands (GS2) along both sides of the canal for Section 2 which are of high conservation value (especially pockets containing the Annex 1 habitat 'Lowland hay meadows').
- 6.1.4 The Royal Canal itself is the main protected structure in Section 2 along with Callaghan Bridge and Kennan Bridge.

Preferred Option

- 6.1.5 The preferred route option will continue along the northern towpath of the Royal Canal from Hansfield Railway Bridge to Callaghan Bridge (Clonsilla Road) and into the Porterstown School House lands to Porterstown Road (Kennan Bridge).
- 6.1.6 This involves widening of the existing trail to 4m along the northern side of the canal from Hansfield Railway bridge to Callaghan Bridge (Clonsilla Station).



Figure 6.1: 3D image of the proposed bound greenway (4m wide) on approach to Callaghan Bridge from the west.

6.1.7 A cantilevered boardwalk structure is proposed from Callaghan Bridge along the towpath to the proposed ramp into the Porterstown Old School house lands (Ch. 4150-4560), to protect underlying ecological habitats along the canal.



Figure 6.2: 3D image of the proposed 4m wide cantilevered boardwalk east of Callaghan Bridge.

- 6.1.8 The greenway will ramp up into the Porterstown Old School House lands (Ch. 4570), to the north of the existing towpath, see **Figure 6.3** below. A paved surface will be provided for the greenway route within the Old School House lands.

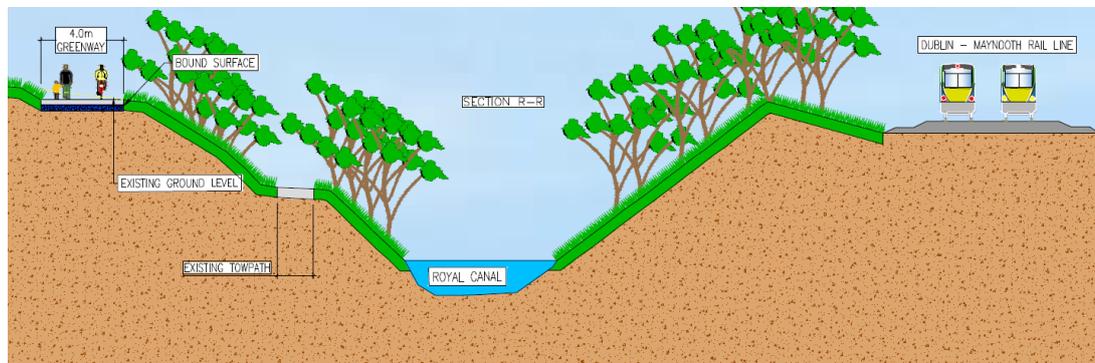


Figure 6.3: Cross-section of the proposed greenway route through the Old School house Lands.

- 6.1.9 A summary of the key benefits of the preferred option for Section 2 are outlined below:

Preferred Option - Section 2

Benefits

- Provides segregated greenway facilities along the entire Section, with the only interaction with vehicular traffic at the signalised crossing at Porterstown Road.
- Provides greenway facilities along Royal Canal corridor for the majority of the route, detours slightly from the Canal's towpath via the Old Schoolhouse Lands.
- It provides good quality of service, as it has no sections of route adjacent to vehicular traffic or does not detour significantly from the canal.
- It has minimal impact on the Traffic Network, with the only interaction with vehicular traffic at the signal controlled crossing at Porterstown Road.
- To protect underlying ecological habitats along the canal, a cantilevered boardwalk structure is proposed from Callaghan Bridge along the towpath to the proposed ramp into the Porterstown Old School house lands (Ch. 4150-4560).
- It has no impact on the Iarnród Éireann network and interchange will be possible at Clonsilla Station.

Disbenefits

- The route runs under Callaghan Bridge which may require cyclists to dismount owing to the reduced width and vertical clearances here.

7.0 PREFERRED ROUTE - SECTION 3 (Drawing Sheets 17 to 25)

Key Design Considerations

- 7.1.1 Section 3 runs from Kennan bridge (Porterstown Road) to Talbot Bridge (Old Navan Road). This section is predominately urban with extensive residential catchments on both sides of the Canal.
- 7.1.2 The existing towpath for Section 3 from Kennan Bridge to Granard Bridge is on the southern side of the Royal Canal directly adjacent to the rail line/stations. For the majority of this section, there is no surface finish along the existing towpath.
- 7.1.3 The 'Deep Sinking' section is between Clonsilla Road and Castleknock Road. The 'Deep Sinking' section therefore continues through Section 3 from Porterstown Road to Castleknock Road. It presents significant challenges to the provision of a continuous 4m greenway route. The layout of the existing towpath typically consists of a 2-3m wide track flanked by a deep cutting of 1.0 – 9.0m to the canal on a varying height embankment adjacent to the Dublin – Maynooth Railway. The Iarnród Éireann network runs along the entire length of Section 3 immediately south of the towpath.
- 7.1.4 In terms of ecology, there are woodland habitats of Oak-Ash-Hazel Woodland of high conservation value are on both sides of the Royal Canal along Section 3. There are green belts of on either side of the canal, however, the larger woodlands are located on the northern side of the canal, see Sheet 3 **Appendix G** of *the 'Royal Canal Urban Greenway, Route Options Report'*.
- 7.1.5 The Royal Canal itself is the main protected structure in Section 3 along with Kirkpatrick Bridge, Granard Bridge and Talbot Bridge.
- 7.1.6 The other main constraints in Section 3 are the proximity of the railway line to the southern embankment, slope stability of the existing railway embankment and supporting infrastructure, pinch points along the southern towpath (1.2m wide) including at the entrance to Coolmine Train Station. These are discussed in detail in the Technical Note within **Appendix I** of *the 'Royal Canal Urban Greenway, Route Options Report'*.

Section 3 'Deep Sinking' Preliminary Designs between Coolmine Road (Kirkpatrick Bridge) and Castleknock Road (Granard Bridge) (Ch. 6250 – 7800)

- 7.1.7 As mentioned in Chapter 3, a number of submissions made as part of the non-statutory public consultation held in 2019 suggested that the greenway be along the southern embankment rather than the Emerging Preferred Route as presented along the northern embankment. Fingal County Council subsequently requested that preliminary designs were developed for the northern and southern embankments for this section so more detailed considerations including constructability and environment could be incorporated into an updated route options assessment used to determine the Preferred Route for the Scheme.
- 7.1.8 These preliminary designs were informed by site investigations undertaken by Ground Investigations Ireland 'Ground Investigation Report (Rev B)' as well as consultation with stakeholders such as Waterways Ireland, Iarnród Eireann, the NTA, An Garda Síochána & FCC officials. Given the complexities of constructing the greenway adjacent to the rail line, design options developed for the southern embankment were also subjected to independent expert peer review by Gavin & Doherty Geosolutions Ltd (GDG).
- 7.1.9 The two principal design options within this section between Coolmine Road and Castleknock Road which were considered in greater detail are:
- Along the southern embankment (existing towpath) of the Royal Canal, which includes a cantilevered boardwalk design to achieve the proposed 4m greenway width due to limited width on the towpath.
 - On the northern side of the canal on the upper embankment to the rear of houses in Delwood Park and into the open space (green area) at Brompton. Greenway crosses to the southern side of the canal via a new pedestrian/cycle bridge.
- 7.1.10 A schematic outlining these route options on the northern and southern embankments of the Royal Canal is illustrated in **Figure 7.1** overleaf.

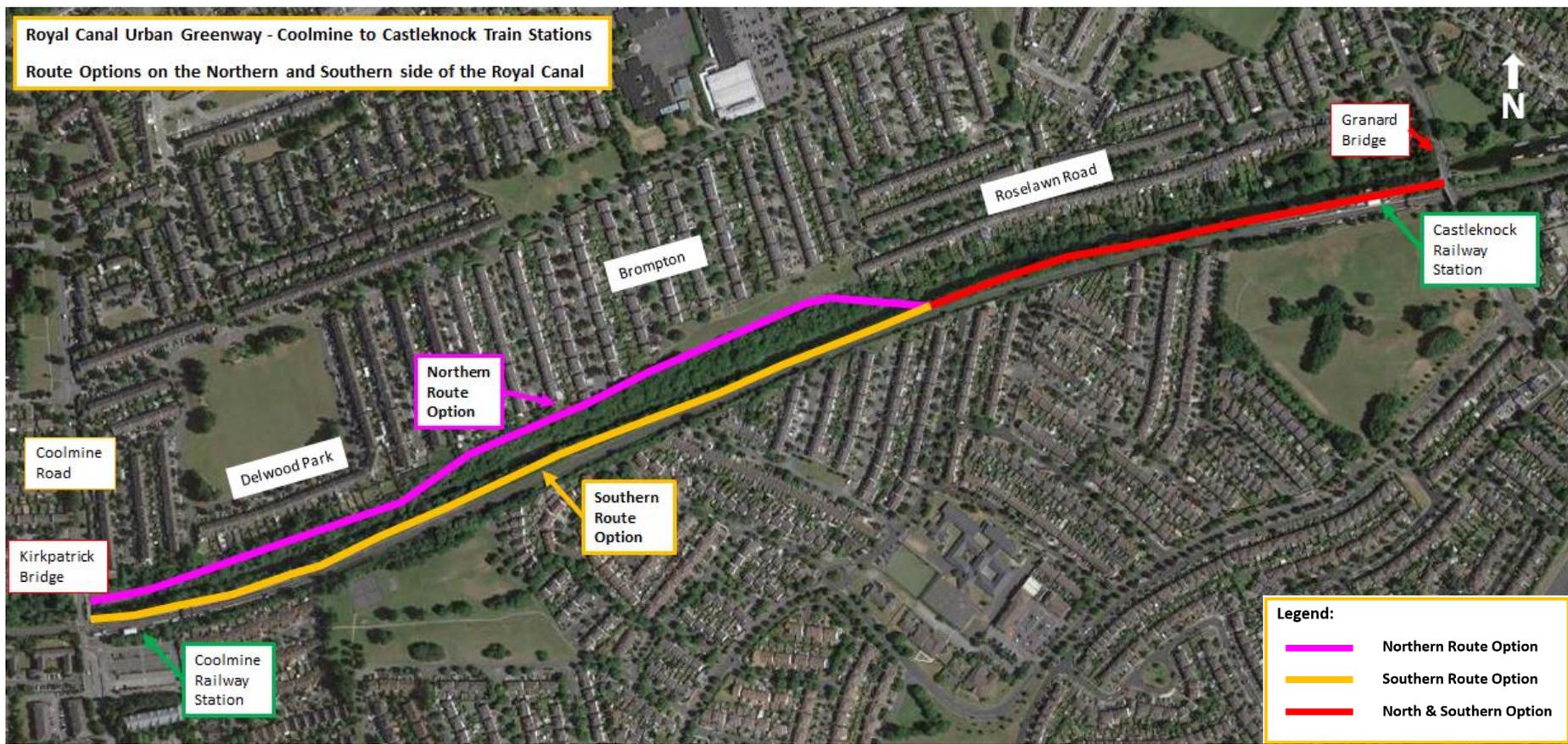


Figure 7.1 Route Options on the Northern and Southern side of the Royal Canal

- 7.1.11 The design elements and the constructability constraints associated with both options are discussed in detail in the Technical Note within **Appendix I** of the '*Royal Canal Urban Greenway, Route Options Report*'.
- 7.1.12 **Table 7.1** below provides a comparison between the route option on southern embankment (existing towpath) and on the northern embankment on the section of the route between Kirkpatrick Bridge (Coolmine Road) and 400m west of Castleknock Station.

Royal Canal Comparisons between the Southern Embankment (Existing Towpath) and the Northern Embankment (Preferred Route)		
Criteria	Southern Embankment (Existing Towpath)	Northern Embankment (Preferred Route)
Constructability	<p>This route options proposes a cantilevered boardwalk due to the inadequate towpath width along this section (approx.950m).</p> <p>Working widths along the towpath for construction machinery is limited. The boardwalk sections would need to be transported and placed into position via a crane on a barge.</p> <p>To prevent any settlement/slope slips on the railway embankment an anti-erosion geocell mat will need to be installed.</p> <p>The railway masonry retaining wall (Ch.7000-7200) will have to be reinforced, secured by anchors below the retained ground level (railway embankment). These works would take place during night.</p> <p>Retrofitting or removal of the existing pedestrian bridge at Kirkpatrick Bridge may be required (pinch point 1.2m width) to provide a 4m greenway on approach to Kirkpatrick bridge.</p>	<p>The northern option will be a paved greenway for the majority of the route (4m wide).</p> <p>At the quarry section (Ch. +6500m) a 30m single span bridge is proposed. The greenway will be constructed from either side of the quarry with access possible from Coolmine Road and Brompton. The works could take place during normal working hours.</p> <p>A new steel pedestrian/cycle bridge will link the greenway between Brompton and the southern embankment of the Canal (Ch. 7100-7200). Similar to the bridge at the quarry, the greenway will be constructed either side of the canal. Alternatively, the steel beams could be transported and craned into position from a barge.</p>
Potential Impact on Rail Network	<p>Sections of this option are within the Iarnród Eireann 'Red Zone Working' area (within 3m of the nearest track).</p> <p>To prevent any settlement/slope slips on the railway embankment an anti-erosion geocell will be installed. To place the geocell anti-erosion net, a majority of the existing vegetation will have to be removed.</p> <p>The railway masonry retaining wall (Ch.7000-7200) will have to be reinforced, secured by anchors below the retained ground level (railway embankment). These anchors could possibly be severed during the installation of future Overhead infrastructure required for the Dart + West scheme.</p> <p>The rail line would have to be closed during these works. This would result in night works, anchoring during the night would create noise and nuisance.</p> <p>The 4m wide greenway may potentially impact on the pedestrian access to Coolmine Station. Potential risk of train derailment onto the greenway.</p>	<p>This route option will not require working within the Iarnród Eireann 'Red Zone Working' area (within 3m of the nearest track).</p> <p>At the proposed ped/cycle bridge tie-in, there will be at least 4.5m (minimum) separation from Irish Rail assets (Irish Rail Requirement).</p> <p>This route option will have no appreciable impact on the Iarnród Eireann network.</p>
Potential Impact on Canal Users	<p>The proposed cantilevered boardwalk along the southern towpath of the canal may impact on Waterways Ireland's maintenance along the southern bank of the canal and the operation of barges along the route due to the extent of the projected cantilever.</p>	<p>The Preferred Route will have no appreciable impact on canal users.</p> <p>The proposed pedestrian/cycle bridge will be constructed as per Waterways Ireland clearance requirements, therefore, it should not impact on the operation of barges along the canal or the use of the towpath.</p>
Integration with surrounding community	<p>Accessibility to the greenway on the southern embankment is restricted between Kirkpatrick Bridge and Granard Bridge (approx. 1.5km) due to the railway line on the southern side of the towpath, thereby resulting in a less secure and effective facility.</p>	<p>The Preferred Route on the northern embankment permits permeability and linkages from residential catchments (Delwood Close and the Brompton green area), in accordance with National Policy as set out in the Design Manual for Urban Roads & Streets (DMURS) and the NTA Permeability Best Practice Guide.</p>
Safety During Construction	<p>There are a number of safety concerns during construction:</p> <ul style="list-style-type: none"> i. Risk of construction workers falling off the embankment (towpath) into the canal. i. Proximity of workers to a live railway line particularly at the pinch point 400m west of Castleknock Station Ch. 7000-7160 between the canal towpath's edge and masonry retaining wall structure for Irish Rail (1-2m width). 	<p>The topography on the northern bank of the Royal Canal varies along the section (Ch. 6400 – 7150), with steep banks, particularly at the historic quarry locations. There is a risk that construction workers could fall from these steep banks when filling, bridging or re-grading of lands to achieve the desirable longitudinal gradients. There is also a potential risk of construction workers falling into the canal during the construction of the pedestrian/cycle bridge. However, the probability and severity of such incidents could be mitigated by Health & Safety Measures implemented by a suitably qualified contractor.</p>
Safety Operation Period	<p>Safety barriers will be required along the towpath for the majority of the route, to prevent people falling from height into the canal which could result in serious injury or death.</p>	<p>Safety barriers will be required at the steep bank/historic quarry locations, some 300-400m, to prevent people falling from height which could result in serious injury or death.</p>
Architectural Heritage	<p>Potential to directly impact Kirkpatrick Bridge (protected structure), as the bridge would have to be modified to provide a 4m wide greenway on the southern towpath.</p> <p>This option would result in significant physical and visual alternations to the fabric of the canal (protected structure) and the protected bridge structures, along with impacts on their setting which FCC Conservation Department advised to be avoided.</p>	<p>The proposed route is a sufficient distance from Kirkpatrick Bridge (protected structure), therefore, it is unlikely that there will be any direct impact on the bridge. This option complies with FCC Conservation Department request, that physical alterations to the fabric of the canal and the protected bridge structures, along with impacts on their setting are to be avoided.</p> <p>The proposed pedestrian/cycle bridge will be of high architectural value and will complement and enhance the existing Royal Canal environment/landscape.</p>
Flora & Fauna	<p>Providing a cantilevered structure along the towpath would result in the removal of the treeline/hedgerow between the Railway Line and the towpath. According to FCC Biodiversity department, the removal of this ecological corridor would have a detrimental impact on corridor function of the canal for fauna, particularly in terms of bats (commuting and feeding routes), birds (breeding habitat) and invertebrates (commuting and feeding routes). Iarnród Eireann indicated a preference that replacement planting is not provided adjacent to the train line.</p> <p>Disturbance to nocturnal wildlife along the royal canal may occur during the night works.</p>	<p>FCC Biodiversity Department advised that the loss of woodland on the northern embankment is not desirable, therefore, to minimise the impact on highly sensitive trees, the Preferred Route is proposed in close proximity to the back gardens of the residents of Delwood Park and into the open space (green area) at Brompton.</p> <p>Replacement planting is proposed between the Greenway and the residential properties to the north of the greenway.</p>
Landscape & Visual	<p>The Conservation Department in Fingal County Council advised that the provision of a 4m wide cantilevered boardwalk greenway (concrete or steel) along the southern towpath for 1km, would have a significant visual impact on the Royal Canal (and its status as a protected structure).</p>	<p>The preferred route will be hidden/separated from the northern embankment of the Royal Canal by a large woodland. There will be negligible visual impact on the Royal Canal (protected structure).</p> <p>The proposed new pedestrian & cycle bridge will be architecturally designed to complement and potentially enhance the existing Royal Canal landscape.</p>
Land Use Character	<p>No appreciable impacts.</p>	<p>To minimise impact on highly sensitive trees, the proposed route will be located in close proximity to the back gardens of the residents of Delwood Park. To prevent the greenway overlooking the back gardens of the residents of Delwood Park, a cutting through the embankment will be undertaken to reduce the proposed level of the greenway.</p> <p>Fencing and landscaping will be provided between the greenway and the back gardens to increase security. CCTV surveillance will also be placed along the greenway route to deter anti-social behaviour.</p> <p>To provide accessibility/permeability to the greenway, linkages at Delwood Close and the Brompton green area will be provided from the open space/green area at Brompton.</p>

Table 7.1: Comparisons between the Southern Embankment (Existing Towpath) and the Northern Embankment (Preferred Route)

7.1.13 Based on the route options assessment undertaken, the route option on the northern side of the Royal Canal offers more benefits over the option on the southern embankment. The **Northern Route Option** is the **Preferred Route Option** for the following reasons:

- The northern route option permits permeability and linkages from residential catchments, the southern option is restricted between Coolmine Road and Castleknock Road (approx. 1.5km) due to the railway line on the southern side of the towpath. There would be no opportunity to provide additional access points along this section on the southern embankment which would create considerable security issues for greenway users.
- There will be a minimal visual impact from the northern option on the Royal Canal as the route will be hidden/separated from the northern embankment of the Royal Canal by a large woodland (see **Figure 7.2**), compared to the proposed concrete cantilevered boardwalk greenway along the southern towpath for 1km, which would have a significant visual impact on the Royal Canal (protected structure), see **Figures 7.3 & 7.4**.



Figure 7.2: Animation of proposed greenway on northern embankment (facing north east from Kirkpatrick Bridge (Coolmine Road))



Figure 7.3 Photograph of existing southern embankment in Zone 1 (facing west toward Kirkpatrick bridge)



Figure 7.4 Photomontage of cantilevered boardwalk in Zone 1 (facing west toward Kirkpatrick bridge)

- In terms of Architectural heritage, the northern route option will not directly impact on Kirkpatrick Bridge or result in significant physical and visual alterations to the fabric of the canal (protected structure).
- The northern route option provides greater access for construction, access will be from Coolmine Road and the Brompton green area. For the southern option, working widths along the towpath is limited. It is proposed to use the canal with a barge type system for a working platform.
- The northern option will not impact on existing or proposed Iarnród Eireann infrastructure. The southern option, with the proposed cantilevered boardwalk design along the towpath (particularly between Ch. 7000-7160 where tie-back anchors will protrude under the railway line) will impact on existing Irish Rail operations and future Dart + West proposals.
- The northern option will have no appreciable impact on canal users. The cantilevered boardwalk on the southern side may impact on Waterways Ireland maintenance along the canal and the operation of barges due to the extent of the projected cantilever. During construction/installation of the cantilevered boardwalk from a barge, the canal may need to be closed for a period of 8-12 months.
- To minimise the impact on highly sensitive trees, the preferred route option is proposed on the northern side of the wooded area and into the open space (green area) at Brompton, providing a cantilevered structure along

the towpath for the southern option would result in the removal of the treeline/hedgerow between the Railway Line along the towpath (approx. 1km length).

- 7.1.14 For further details refer to the Technical Note within **Appendix I** of the '*Royal Canal Urban Greenway, Route Options Report*' and the '*Royal Canal Urban Greenway, Feasibility and Constraint Study at Coolmine Train Station*' prepared by GDG.

Preferred Option (Section 3)

- 7.1.15 In Section 3, the Greenway will continue on the northern side of the Royal Canal from Porterstown Road (Kennan Bridge) to Coolmine Road (Kirkpatrick Bridge).
- 7.1.16 To minimise the impact on highly sensitive trees, the proposed route is located to the north of the wooded area along the northern embankment of the canal from Porterstown Road to Sheepmoor Lane.
- 7.1.17 Greenway users will be directed onto the pedestrian/cycle facilities proposed as part of the Windmill Court Residential Development.
- 7.1.18 Through Sheepmoor Lane greenway users will share the road carriageway with vehicles (low volume of vehicular use).

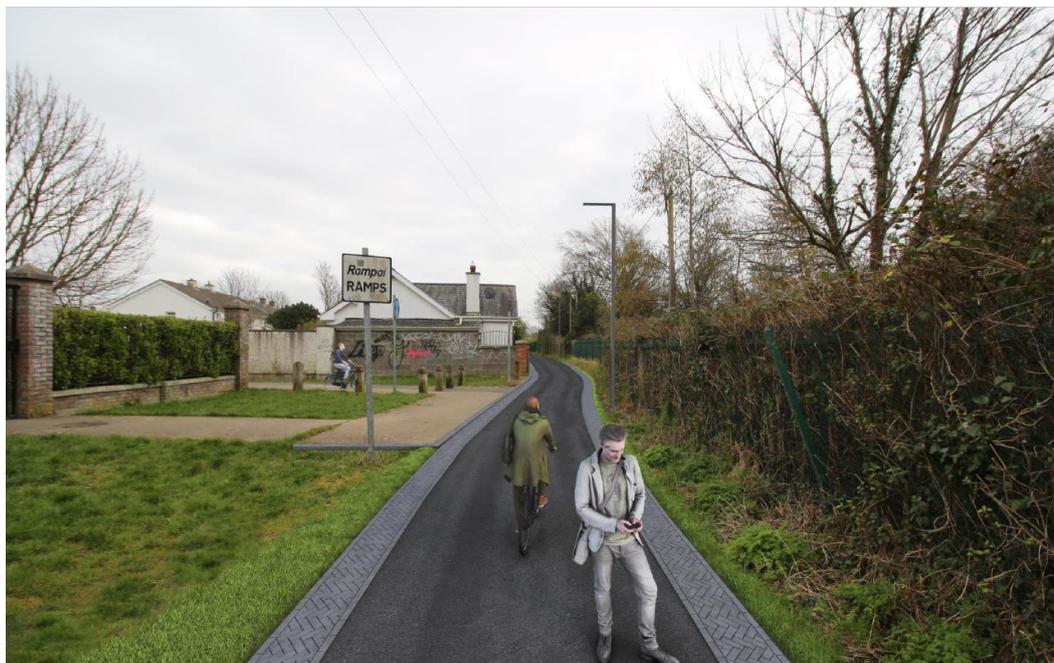


Figure 7.5: Photomontage of the proposed Sheepmoor Lane shared street.

7.1.19 The Greenway will continue on the northern side of the canal east of Coolmine Road (Kirkpatrick Bridge). Signal Controlled Crossings will be provided for Greenway users at junctions with roads such as Coolmine Road, see **Figure 7.6** below.



Figure 7.6: 3D Animation of the proposed signal crossing on Coolmine Road to the proposed greenway on the northern side of the canal.

7.1.20 The Greenway will be situated on the upper level of the northern embankment, from Coolmine Road (Kirkpatrick Bridge) to the Brompton green area (Ch. 6250-6850), to minimise tree removal and the visual impact of the scheme on the Canal, see **Figure 4.5**.

7.1.21 To prevent the greenway overlooking the back gardens of the residents of Delwood Park and for security reasons, the ground level of the greenway would be lowered, see **Figure 7.7**.

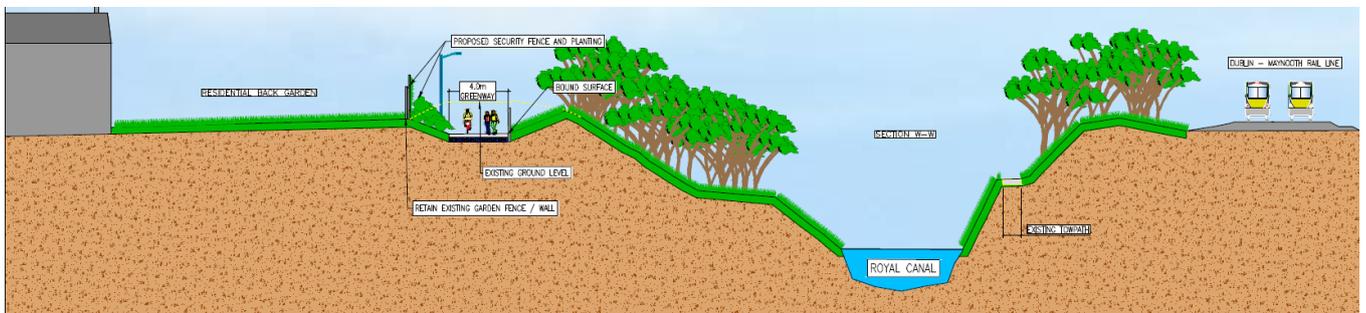


Figure 7.7: Cross section of the proposed greenway behind the back gardens of the residents of Delwood Park.

- 7.1.22 Also, fencing and landscaping will be provided between the greenway and the back gardens to provide added security to adjacent residential properties.



Figure 7.8: 3D Animation illustrating the fencing and landscaping proposed between the greenway and back gardens.

- 7.1.23 A bridge structure will be required to enable the proposed greenway to cross an historic quarry area on the northern embankment (Ch. +6500m).



Figure 7.9: 3D Animation illustrating the proposed bridge over the historic quarry.

- 7.1.24 A 4m paved greenway will be provided along the southern side of the Brompton green area (Ch. 6850-7100). Planting and railings will be provided along this

section of the greenway. The scheme will provide opportunities for users to access Brompton & Roselawn estates.



Figure 7.10: 3D Animation illustrating the greenway adjacent to the Brompton green area.

7.1.25 The route switches from the northern side to the southern side of the Royal Canal at chainage 7100-7200 (before Roselawn Road). The Greenway will cross the Canal over an architecturally designed pedestrian and cycle bridge. The bridge will respect existing uses along the Canal and existing and future operations on the Dublin to Maynooth rail line



Figure 7.11: 3D Animation illustrating the proposed bridge over the Royal Canal.

- 7.1.26 The greenway will continue on the southern side of the Royal Canal, past Castleknock Station and under Castleknock Road through the proposed greenway underpass.



Figure 7.12: Photomontage of the proposed greenway on approach to Castleknock Station.

- 7.1.27 A paved 4m wide greenway will be provided on the southern side of the Royal Canal to the 12th Lock Hotel. Due a pinch point between the hotel and the canal a 3m wide greenway is only feasible from the 12th Lock Hotel to Talbot Bridge/Old Navan Road.



Figure 7.13: Photomontage of the proposed greenway on approach to the 12th Lock Hotel.

7.1.28 The greenway will tie into the current Ashtown section of the Royal Canal Greenway at Talbot Bridge providing continued linkage onwards to Dublin City.

8.0 PREFERRED ROUTE

8.1 Introduction

8.1.1 The Preferred Route for the Royal Canal Urban Greenway has determined been in accordance with the methodology set out in Chapter 7 of the '*Royal Canal Urban Greenway, Route Option Report*'. This assessment process included Multi-criteria Analysis under the headings of Economy, Integration, Safety and Environment. Following the undertaking of the Multi Criteria Analysis, the preferred routes for each of the Study Area sections were combined to create an end-to-end preferred route for the entire Study Area.

8.2 Recommended Preferred Route

1.1.1 The preferred route for the proposed scheme is presented in **Figure 8.1** below and **Appendix A**. Refer to scheme drawings 170239-2100 to 170239-2125 for greater detail.

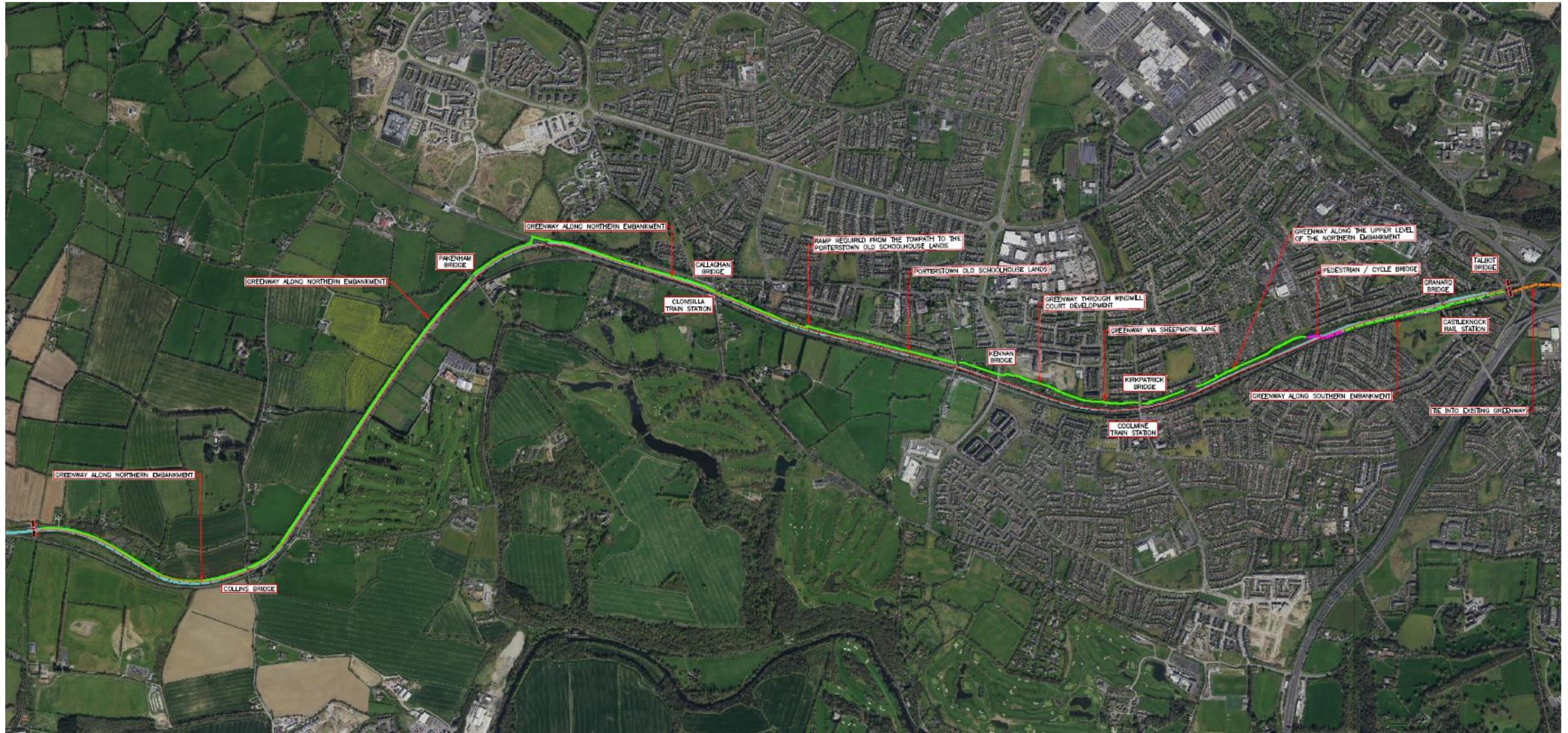


Figure 8.1: Royal Canal Urban Greenway Preferred Route

9.0 HOW TO SUBMIT YOUR FEEDBACK

- 9.1.1 The preferred plans and reports for the proposed scheme will be available to view online at <https://consult.fingal.ie/en/browse> from **25th of May 2021 to 7th of July 2021** inclusive.
- 9.1.2 Submissions or observations on the proposed scheme may be made from **25th of May 2021 and must arrive no later than 11:59pm on 7th of July 2021**.
- 9.1.3 **Submissions/Observations may be made as follows:**
- Online at: <https://consult.fingal.ie/en/browse> or
 - In writing to:

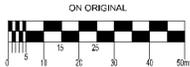
Senior Executive Officer,
Planning and Strategic Infrastructure Department,
Fingal County Council,
County Hall,
Main Street,
Swords,
Co. Dublin, K67 X8Y2
- 9.1.4 If you have a query about making your submission or questions about the plans, you may contact us at:

Email: fingal.developmentplan@fingal.ie
- 9.1.5 A hard copy of the full set of drawings in A3 size can be made available for purchase for a fee of €30, upon prior request to fingal.developmentplan@fingal.ie.
- 9.1.6 Please make your submission or observation by one medium only i.e. online or in writing. Clearly mark your submission as for the **Royal Canal Urban Greenway**.
- 9.1.7 Any submissions shall state your name, address and where relevant, the body or organisation represented. Your name and body or organisation represented will appear on the list of submissions. Issues raised in submissions or observations on the proposed development will appear in any reports linked to the proposed development and will list the persons or bodies who made submissions or observations. Details including the names of those making submissions or observations may also be shared with relevant Council Departments and agents working on their behalf.

Next Steps

- 9.1.8 A Preferred Route for the Royal Canal Urban Greenway from Kildare County Boundary to the Ashtown Greenway at Talbot Bridge (Old Navan Road) has been identified following an Options Assessment Process incorporating detailed studies of constraints, impacts and environmental assessment appropriate to this Phase of the project.
- 9.1.9 Fingal County Council now wishes to invite feedback from members of the public on the Preferred Route Proposals. This feedback will be incorporated into the preliminary design of the proposed development which will be subjected to screening for Environmental Impact Assessment and Appropriate Assessment. The outcome of this screening will determine the statutory planning process for the scheme which will follow soon after.

APPENDIX A – PREFERRED ROUTE DRAWING



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PUBLIC ENGAGEMENT

DESIGNED	NK	PREPARED	JP
DATE	MAY 2021	CHECKED	RK



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DBFL Consulting Engineers EMAIL: info@dbfl.ie SITE: www.dbfl.ie

PROJECT
ROYAL CANAL URBAN GREENWAY

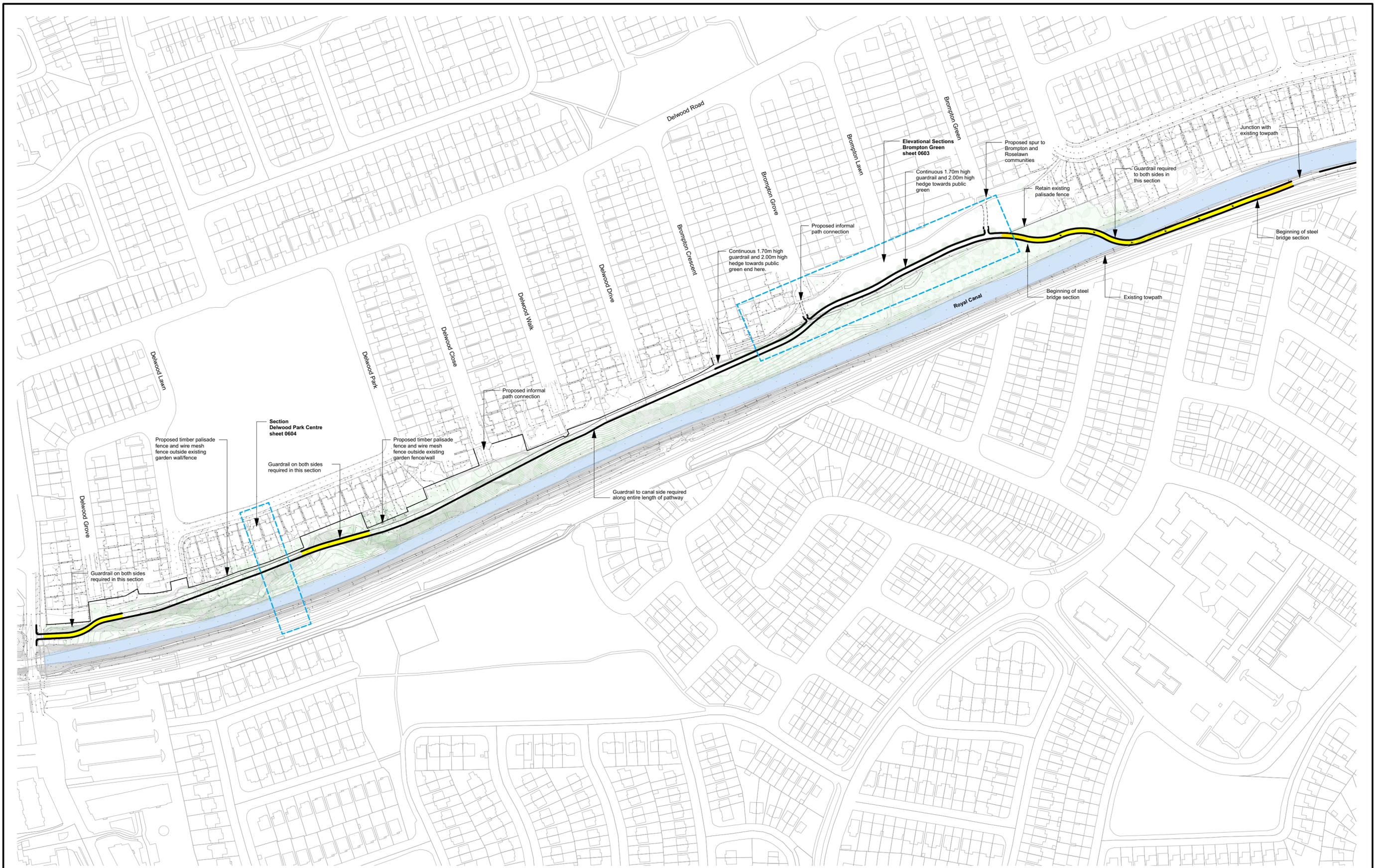
DRG. TITLE
PREFERRED ROUTE



SCALE 1:500 @A1 FILE REF: 170239-0073

DRG. NO. 170239-0073

APPENDIX B – ARCHITECTURAL DRAWINGS



1 Site Plan
Scale: 1:2000

Notes:
- Guardrail required in these sections

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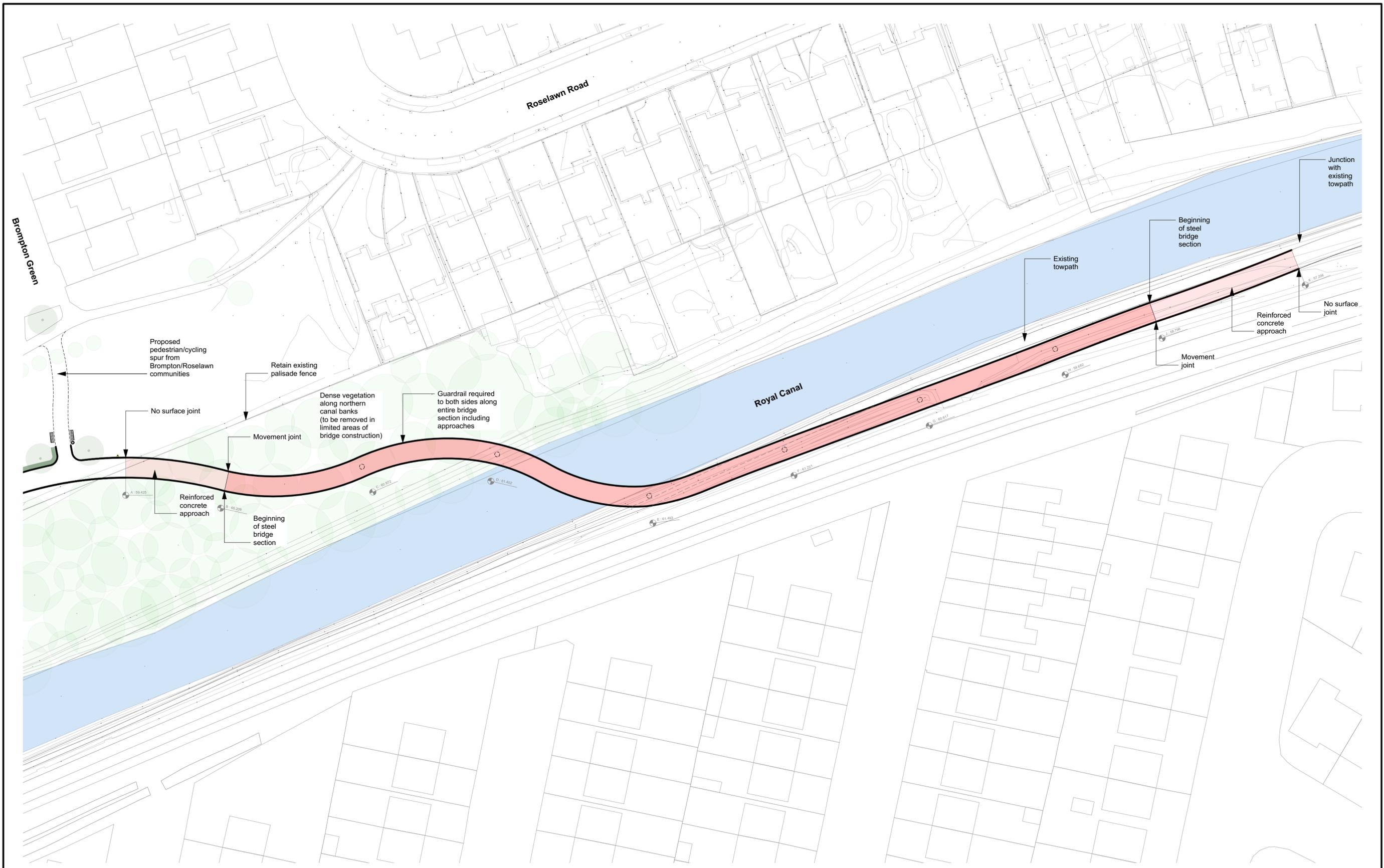
SEÁN HARRINGTON ARCHITECTS
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Dublin 1, Ireland
t 01 8733 422
e info@sha.ie

PROJECT: Royal Canal Urban Greenway
CLIENT: NTA / Waterways Ireland
DRAWING TITLE: Site Plan

DRAFT

REV	NOTES	DATE	Project - Orig - Vol - Level - Type - Rate - No.	REV NO.
			358JJ-SHA-XX-XX-DR-A-0501	

PROJECT STAGE: Planning	SCALE: 1:2000	DATE: May 2021
SUITABILITY CODE: TP	CHECKED BY: SH	



5 Plan
Scale: 1:500

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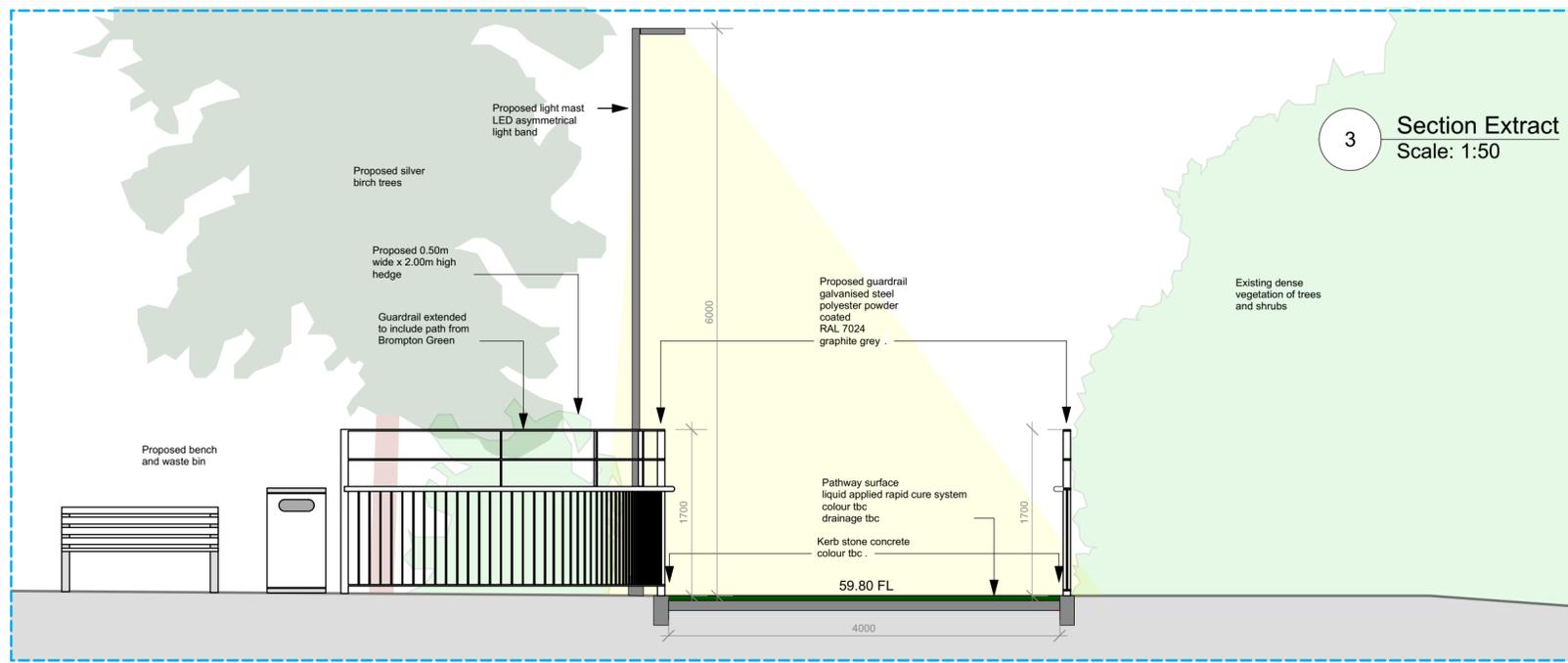
PROJECT: Royal Canal Urban Greenway
 CLIENT: NTA / Waterways Ireland
 DRAWING TITLE: Bridge Plan

DRAFT

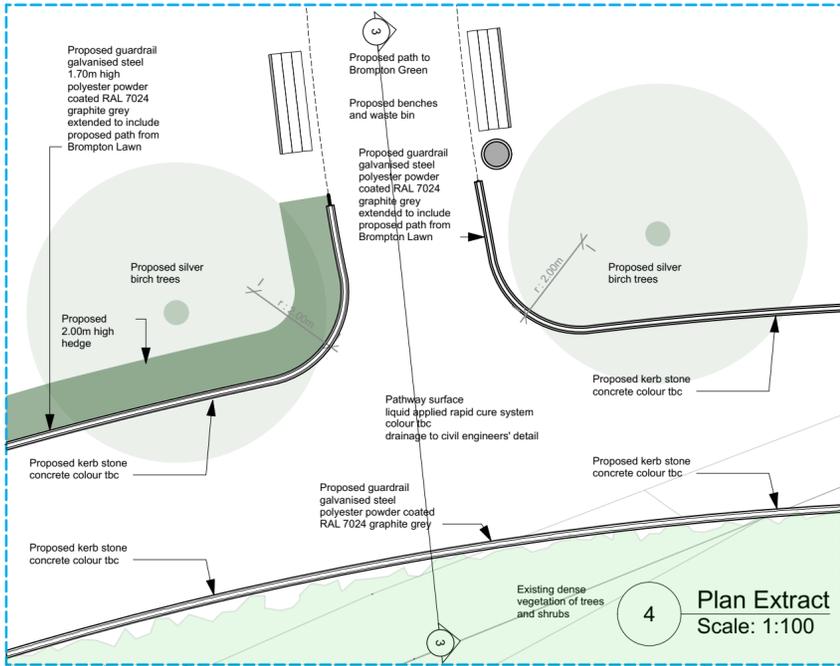
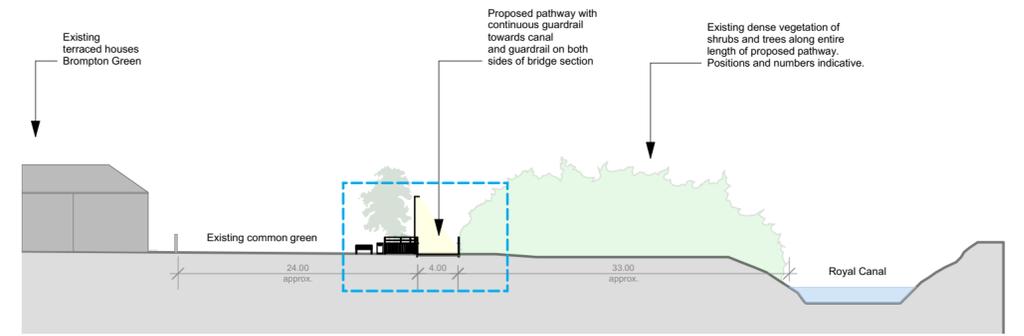
REV	NOTES	DATE	Project - Orig - Vol - Level - Type - Rate - No.	REV NO.
			358JJ-SHA-XX-XX-DR-A-0502	

PROJECT STAGE: Planning
 SCALE: 1:500
 DATE: May 2021
 CHECKED BY: SH
 DRAWN BY: TP

3 Section Extract
Scale: 1:50

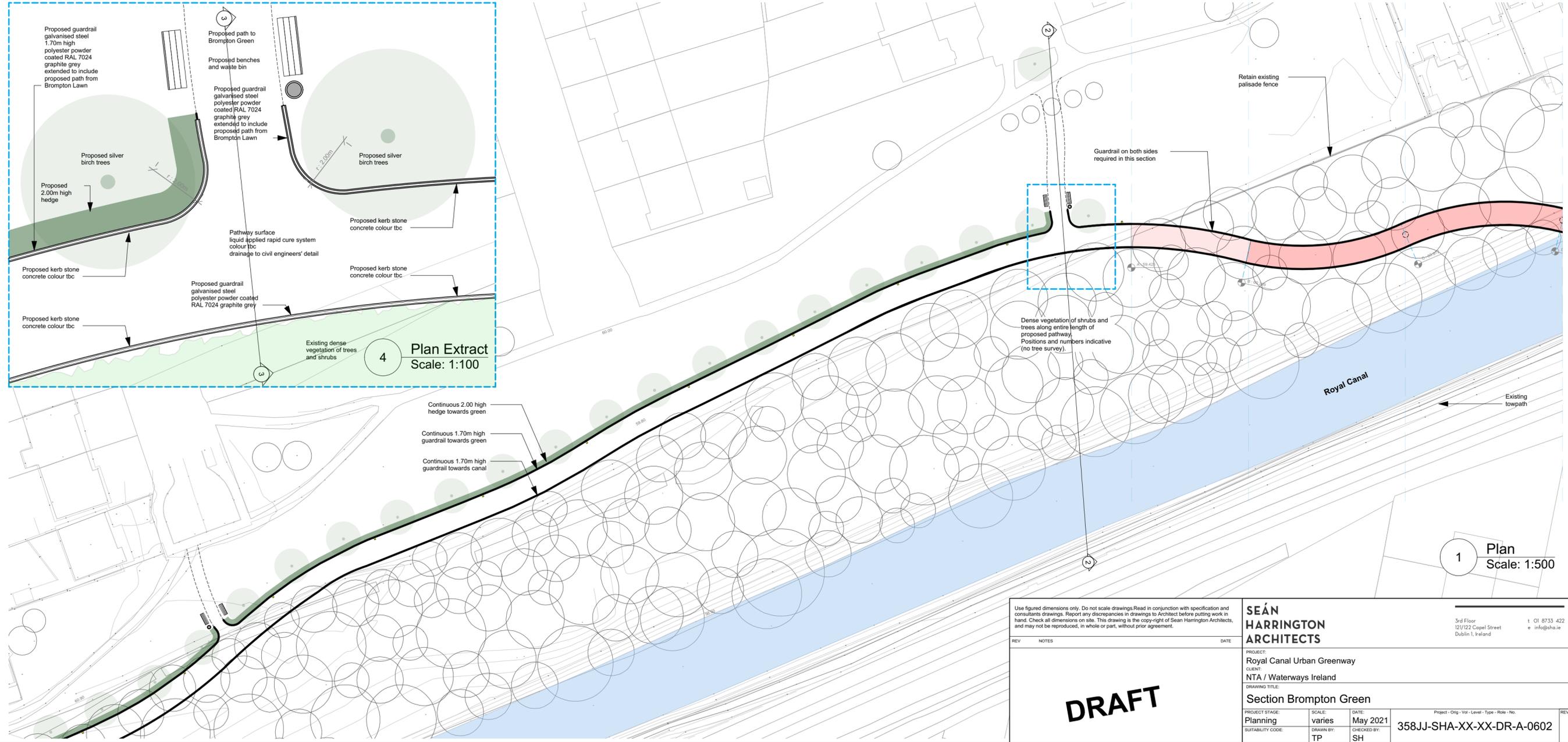


2 Section
Scale: 1:500



4 Plan Extract
Scale: 1:100

1 Plan
Scale: 1:500



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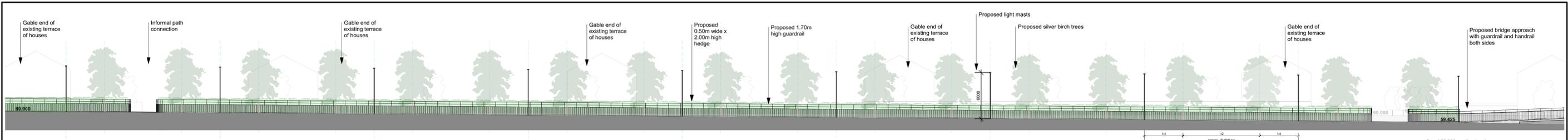
REV	NOTES	DATE

DRAFT

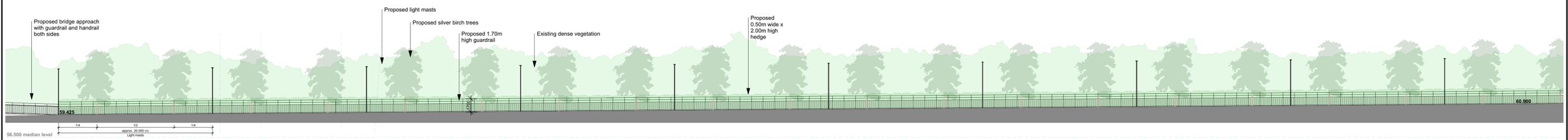
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PROJECT: Royal Canal Urban Greenway
CLIENT: NTA / Waterways Ireland
DRAWING TITLE: Section Brompton Green

PROJECT STAGE: Planning	SCALE: varies	DATE: May 2021	Project - Orig - Vol - Level - Type - Rate - No.	REV NO:
SUITABILITY CODE: TP	DRAWN BY: SH	CHECKED BY: SH	358JJ-SHA-XX-XX-DR-A-0602	



3 Sectional Elevation looking North
1:250



2 Sectional Elevation looking South
1:250



1 Plan
Scale: 1:500

Notes:
 Existing vegetation is thickets rather than single identifiable trees (height approx. 5.00-10.00m)
 FL 58.425 at bridge approach (East) rising to FL 60.900 at Brompton Grove end (West)
 Remove existing palisade fence and replace with 1.70m high powder coated steel guardrail
 Handrail for guardrail along bridge sections only
 Light masts powder coated steel colour tbc (LED asymmetrical band)
 Light masts height 3.50-4.50m at approx. 21.00m c/c spacing
 Proposed silver birch trees at approx. 10.50m equal spacing between light masts

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REV: NONE DATE: NONE

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PROJECT: Royal Canal Urban Greenway
 CLIENT: NTA / Waterways Ireland
 DRAWING TITLE: Elevational Sections Brompton Green

PROJECT STAGE: Planning SCALE: 1:500 DATE: May 2021
 DRAWN BY: TP CHECKED BY: SH

358JJ-SHA-XX-XX-DR-A-0603

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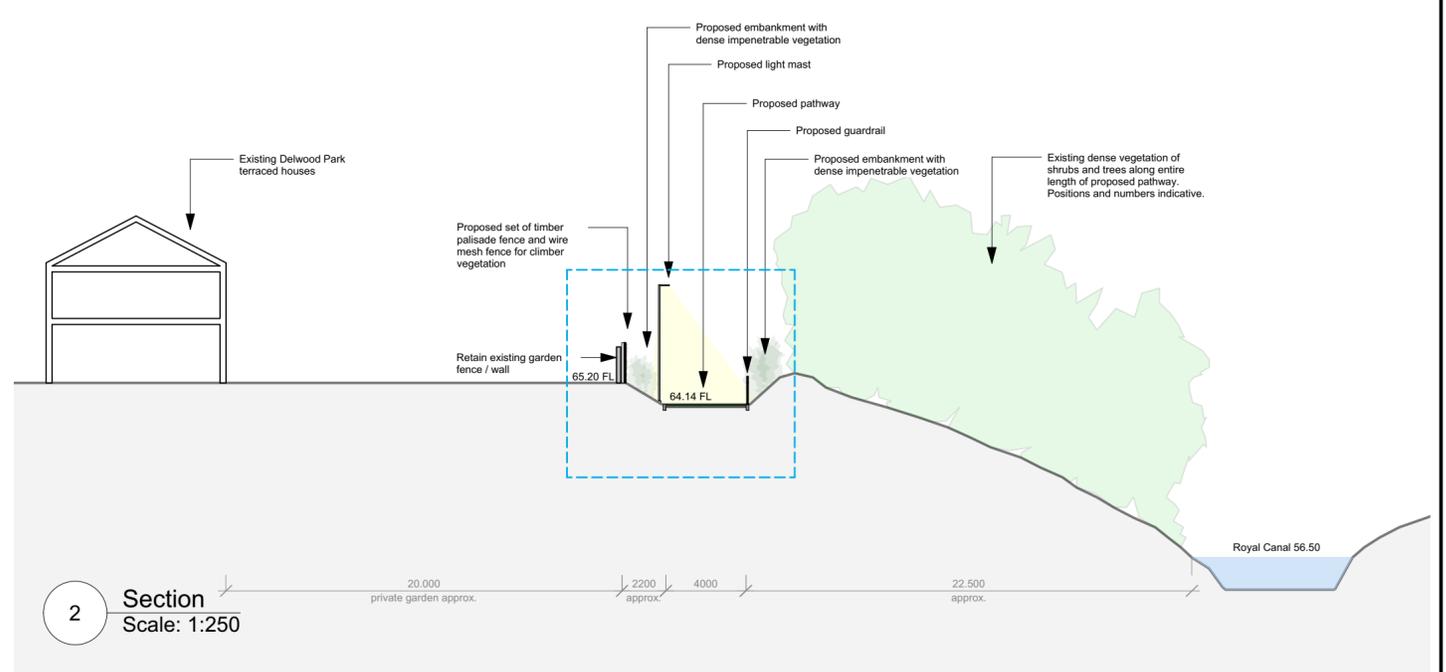
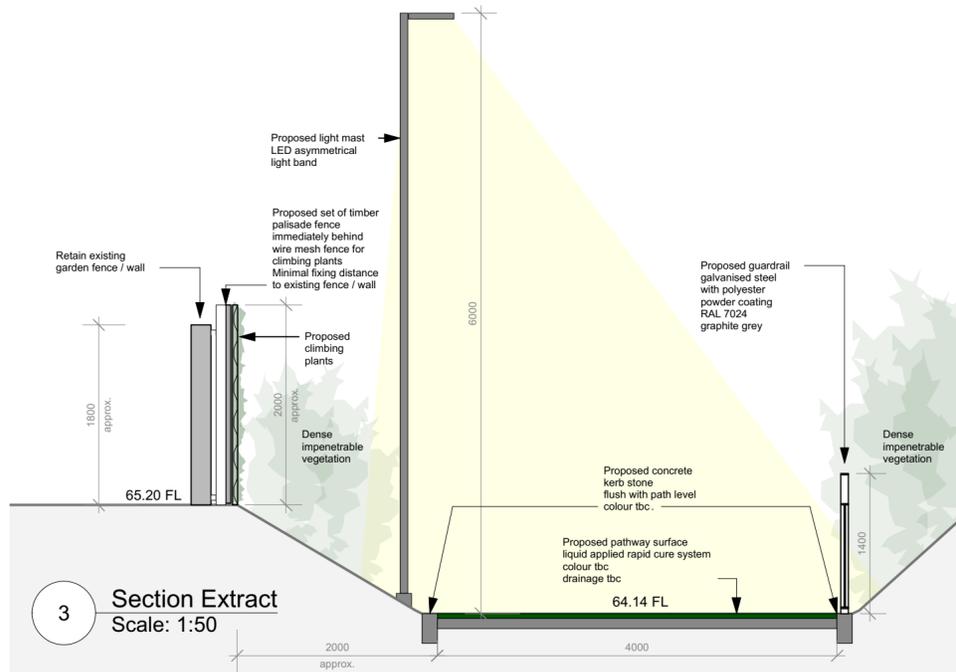
Timber palisade fence example



Wire mesh fence example

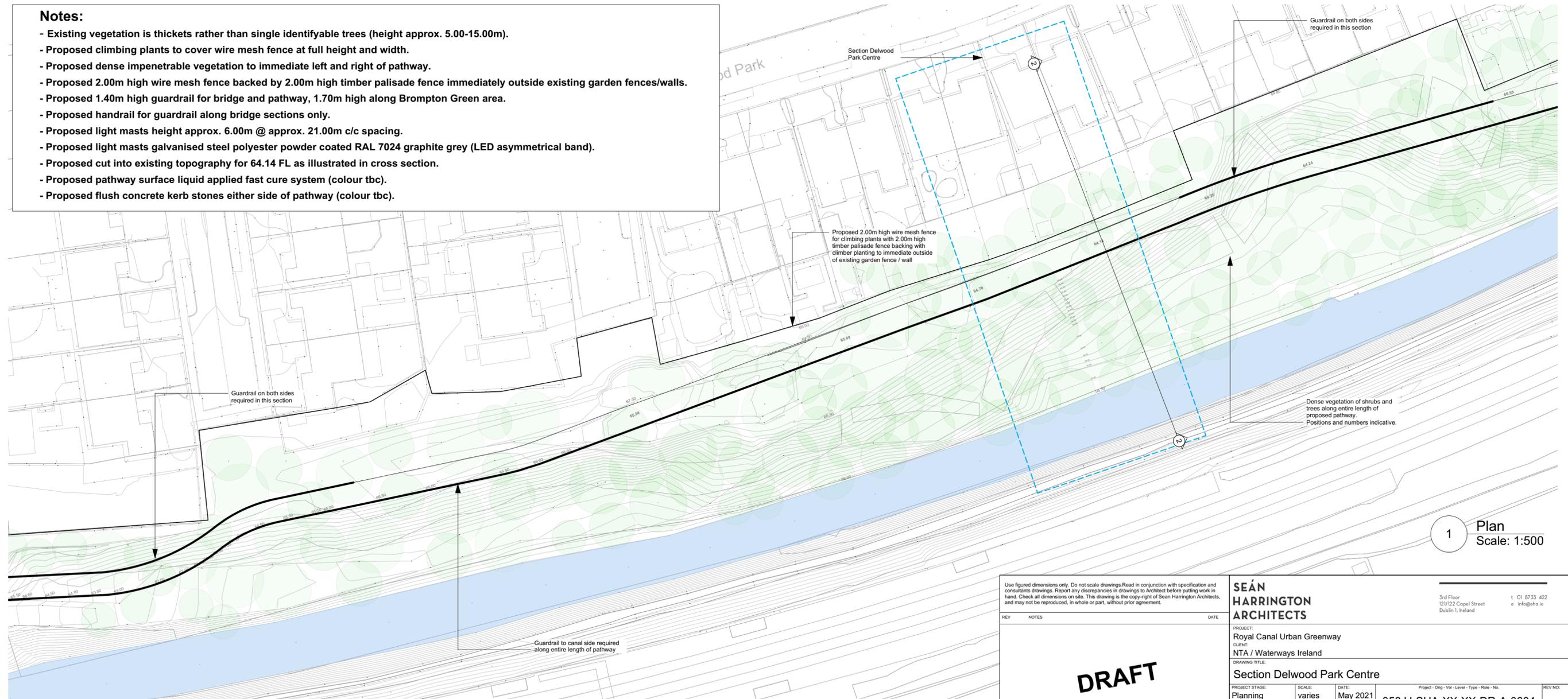


Plant cover example



Notes:

- Existing vegetation is thickets rather than single identifiable trees (height approx. 5.00-15.00m).
- Proposed climbing plants to cover wire mesh fence at full height and width.
- Proposed dense impenetrable vegetation to immediate left and right of pathway.
- Proposed 2.00m high wire mesh fence backed by 2.00m high timber palisade fence immediately outside existing garden fences/walls.
- Proposed 1.40m high guardrail for bridge and pathway, 1.70m high along Brompton Green area.
- Proposed handrail for guardrail along bridge sections only.
- Proposed light masts height approx. 6.00m @ approx. 21.00m c/c spacing.
- Proposed light masts galvanised steel polyester powder coated RAL 7024 graphite grey (LED asymmetrical band).
- Proposed cut into existing topography for 64.14 FL as illustrated in cross section.
- Proposed pathway surface liquid applied fast cure system (colour tbc).
- Proposed flush concrete kerb stones either side of pathway (colour tbc).



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REV	NOTES	DATE

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PROJECT: Royal Canal Urban Greenway
 CLIENT: NTA / Waterways Ireland
 DRAWING TITLE: Section Delwood Park Centre

PROJECT STAGE: Planning	SCALE: varies	DATE: May 2021	Project - Orig - Vol - Level - Type - Rate - No.	REV NO.
SUITABILITY CODE: TP	DRAWN BY: SH	CHECKED BY: SH	358JJ-SHA-XX-XX-DR-A-0604	