



Dodder Greenway

PART 8 REPORT

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Dodder Greenway

PART 8 APPLICATION REPORT

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1. OVERALL GREENWAY SCHEME INTRODUCTION

This report supports a Part 8 application for the construction of the River Dodder Greenway (hereafter referred to as the "Scheme") which proposes the construction of a Premium Pedestrian and Cycle Route along the River Dodder from the Liffey at John Rogerson's Quay to Fortbridge at Friarstown near the Bohernabreena Reservoirs at Glenasmole.

The route for the Greenway passes between three Local Authority administrative areas: Dublin City Council, Dún Laoghaire-Rathdown County Council and South Dublin County Council. A Section 85 (Local Government Act as amended, 2001) agreement is in place between the Local Authorities and in this regard and for the purposes of advancing the project in a timely manner, the project comprises two sections which will each be subject to separate Part 8 applications. The extents of the two sections of the proposed Greenway (described below) are shown in Appendix A.

Section 1: Dublin City Council will advance design and planning between Grand Canal Dock and Orwell Park (Dodder Road Lower).

Section 2: South Dublin County Council will advance design and planning in the section of the project between Orwell Park (Dodder Road Lower) and Glenasmole valley at Bohernabreena.

1.1 Purpose of the Report

The purpose of the report is to describe the nature and extent of the proposed Greenway and to summarise the potential impact on the local environmental as well as on the local pedestrian, cycle and traffic regime. The Greenway Scheme length is 17 km and the majority of the route is proposed on existing footpaths and roadways of the Dodder Valley.

Amongst the overall design features of the Greenway Scheme are the following:

- The linking of an existing ecological network;
- The enhancement of ecological features;
- The enhancement of the network of parks and open spaces along the Dodder Valley;
- The development of a premium pedestrian and cycle route;
- The provision of public lighting;
- The provision of universal access; and
- The promotion of sustainable transport.

Given the high value ecological nature of the River Dodder and its riparian fringes, the development of the Dodder Greenway must ensure that no degradation takes place and where opportunities to enhance the existing ecological status arise they will be promoted.

In this context, it is necessary to determine the potential for ecological impact arising from the entire Dodder Greenway Scheme and not each section

which is developed in isolation. South Dublin County Council in conjunction with Dublin City Council and the National Transport Authority therefore commissioned an overarching Ecological Impact Assessment (EIA) of the Dodder Greenway on the river's ecological corridor to determine the potential for environmental and ecological impact. The scope of environmental fieldwork and assessments undertaken to inform the EIA for the River Dodder was developed through consultation with various stakeholders including the National Parks and Wildlife Associate (NPWS) and the Parks Departments of Dublin City Council, Dun Laoghaire-Rathdown County Council and South Dublin County Council. Further details are given in the accompanying Environmental Impact Report (EIR) and in Section 3 of this report.

1.2 General Description of a Greenway

The function of Greenways is manifold. The following is a non-exhaustive list of objectives for the route taken into account by the project team in developing the Greenway to date:

- (i) To be a Greenway of international renown - the scheme must avoid compromises and be on a par with the best greenways in the world.
- (ii) To connect areas of parkland - the route should provide clear and coherent connectivity, both ecological and physical, between existing parks along the river corridor - such as Bushy Park, Herbert Park and Dodder Linear Park etc.
- (iii) To enhance the ecological corridor - the scheme should have a neutral to positive impact on local ecology. This can be achieved by inclusion of complementary planting and features for flora and fauna, providing ecological linkages and wildlife corridors.
- (iv) To cater for local amenity - the route should benefit local communities through enhancing existing amenity paths and providing new linkages to adjacent communities and village centres.
- (v) To benefit local business - the scheme will increase accessibility to local businesses and village centres along the river corridor.
- (vi) To cater for tourist amenity - it is envisaged that the route will attract walking and cycle tourists undertaking trails and circuits through the Dublin and Wicklow Mountains.
- (vii) To cater for commuting – where commuting currently exists along the existing routes the scheme will either; ensure it is facilitated in a pedestrian priority environment or by provision of an alternative route for commuting cyclists if required.

European Greenways definition

"Greenways are communication routes reserved exclusively for non-motorised journeys, developed in an integrated manner which enhances both the environment and quality of life of the surrounding area. These routes should meet satisfactory standards of width, gradient and surface condition to ensure that they are both user-friendly and low-risk for users of all abilities. (Lille Declaration, European Greenways Association, 12th September 2000)."



In common with the project objectives above The European Greenways Association (EGA) describes the Functions of Greenways:

"In principle, Greenways - natural and cultural heritage trails have four basic functions:

1. Sustainable transport and safety

Greenways promote non-motorized forms of transport and mass transit, encourage mobility and tourism related to walking, cycling, horse-riding, boating etc. Greenways contribute to increasing road safety and sustainable transport in urban and rural areas for many different user groups, including disabled, elderly and children.

2. Promoting healthy lifestyles

Greenways contribute to promoting healthy life-styles and improving the quality of life of local residents and visitors by encouraging active tourism, recreation and sports in the open air and in natural environments.

3. Development of eco-tourism and natural and cultural heritage conservation

Greenways contribute to the development of different types of environmentally-friendly tourism, including creation and promotion of environmental tourist products. All tourist products promoted along Greenways share the common principle of using local potential and supporting local communities – they are created with local resources: tourist services, cultural opportunities, local products and point of sale, as well as other community initiatives. Greenways serve to support grassroots and regional initiatives aimed at cultural, natural and landscape heritage conservation.

4. Supporting economic and social development of communities, including enterprise development

Greenways contribute to the development of local economies and encourage enterprise among local populations. Establishment of

Greenways serves to initiate development of accommodation, food and guiding services. Trails promote establishment of galleries and points of sale for local products, tourism information services, sport and tourism equipment hire services etc."

1.3 Requirements for the Dodder Greenway

The following requirements have been identified for the Dodder Greenway Route in order to achieve the objectives set out above:

- Pleasant Environment

The Greenway will be a high quality route set within a pre-dominantly parkland setting. The existing routes through the parklands are mostly quiet and relaxing. The Greenway aims to enhance the environment through which it passes and where possible provide green routes between parkland.

- Enhanced landscape features

The preliminary design includes a landscape design for the scheme which proposes a planting scheme along the Greenway as well as landscape enhancements at entry and exit points to the Greenway. The ecological proposals regarding grassland management, inclusion of wetlands and planting of native species is intended to enhance the environment of the Greenway.

- Coherence and Directness

The route will have to be legible and coherent and easy for tourists and locals to follow. Even independent of any signage proposed, it should be possible to logically follow the route along the river.

- Width

One of the principal considerations that was established early on is the required width for the route. Given the need to accommodate pedestrians and cyclists within a pedestrian priority Greenway, a general width requirement of 4m is proposed. This will cater for two-way cycling and pedestrian activity. Where particular pinchpoints exist, an absolute minimum width of 3.0m should be provided to allow two cyclists to pass or one cyclist to pass a pedestrian. The route width should only reduce below this where unavoidable ecological or built constraints demand it. Where the Greenway is subject to commuting pressures (mostly downstream sections), alternative cycle routes are also being considered.

- Priority

Where at-grade public road crossings are required, and compromises in terms of traffic capacity are necessary, these should generally favour the greenway route. Advance sensors, be they radar or detection loops should be included on the greenway on approach to the road crossings so as to enable signals to switch to green promptly and minimise delay and disruption for pedestrians and cyclists. These might include intelligent sensors that would apportion priority based on the number of pedestrians and cyclists approaching, or which might give greater priority to the greenway in inclement weather conditions.

All road crossings should be toucan crossings, a minimum of 4m wide, and with push button units on each side of the Greenway. Raised bars for cyclists to rest their foot on when stopped should also be provided on each side. Where the route is shared with traffic and crosses a busy road, the junction layout should generally be tightened to provide an increased area for pedestrians and cyclists, and shorten the crossing distance.

- **Lighting**

High quality public lighting should be installed along the route (where not already present), at least between Old Bawn and the River Liffey. The design of lighting should have regard to the impact on ecology – particularly bats, at night. Unlike a busy road, the greenway does not require to be lit for increased traffic volumes at night, but the lighting design needs to ensure the route is navigable and that CCTV requirements are met. Low level lighting rather than conventional lamp post lighting might be considered at more ecologically sensitive parts of the scheme.
- **Paving**

The route will provide a high quality and smooth bound surface, generally free from service chamber covers, bumps around tree roots, etc. The detail design stage will further consider the surface treatments where consideration will also be given to permeable paving materials to reduce the need for drainage interventions.
- **CCTV**

Certain sections of the route will require CCTV coverage for security reasons – particularly where the route is remote from main road corridors that provide passive surveillance.
- **Access and Permeability**

All kissing gates along the route should be removed to ensure ease of passage for all users. Links to the surrounding areas should be provided along the route to maximise the access to the greenway.
- **Tourism**

The greenway will emphasise features of interest to visitors along the route. Signage boards and sheltered stops will be included in the detail design stage. Local businesses should be encouraged to engage with the scheme, which could deliver additional custom to their premises.
- **Signage**

In addition to the signboards proposed for visitors, a comprehensive and coherent route signage strategy will be developed for the greenway. This will include complementary signage towards the route from its hinterland and from the greenway towards village centres and other features of interest.
- **Mitigatory planting**

Where trees are required to be removed to facilitate the development of the greenway route, compensatory planting should be provided nearby. Where possible, existing greenery along the river corridor will be maintained.

2. PROJECT DESCRIPTION

2.1 Introduction

This Part 8 application relates to the construction of the section of the Dodder Greenway Scheme which runs from Orwell Park to Fortbridge at Friarstown near the Bohernabreena Reservoirs at Glenasmole. The location of the proposed works falls within the administrative areas of South Dublin County Council and Dublin City Council.

This report describes the nature and extent of the proposed works and assesses their potential impact on the local environment as well as the local pedestrian, cycle and traffic regime. The Scheme proposes to provide and/or upgrade footpaths and cycletracks along the bank, or within close proximity to, the River Dodder to Greenway status. This will involve the provision of new planting, new surface treatments, lighting, furniture, signage, ramps and pedestrian/cycle crossing facilities which will provide access and safe passage to surrounding areas. The majority of the proposed works are located within parkland areas adjacent to the River Dodder, however a number of on-road sections are also proposed which generally provide connectivity between parkland areas. A detailed description of the proposed works is set out in Section 2.5 of this report.

The Scheme's primary objectives are to deliver a successful Greenway and public amenity which maximises the following objectives:

- Provision of an attractive Greenway and linear park;
- Delivery of a Greenway for pedestrians / cyclists in a low speed, pedestrian priority environment;
- Provision of linkages within the existing linear park system, particularly along roadways and existing road crossings;
- Provision of a high quality surface whilst minimising maintenance costs;
- Provision of an attractive, enhanced environment;
- Provision of a safe environment; and
- Enhancement of landscape and visual quality of the Greenway.

The route must be sympathetic to the existing landscape.

2.2 General Description of the Proposed Greenway

The proposed Dodder Greenway is being developed to be a Greenway of international renown and to be on a par with the best greenways in the world. Although developed as a combination of off road and on road it utilises existing facilities within the Dodder Valley as much as possible to connect the linear parkland along the route. The function of the proposed Greenway is manifold while the main elements of the proposed Greenway can be summarised as follows. While this Part 8 Application Report is the subject of the 14km route from Orwell/Terenure through to the entrance to the Bohernabreena reservoirs at Glenasmole, these elements relate to the entire 17km route of the proposed Greenway from Sir John Rogerson's Quay to the entrance to the Bohernabreena reservoirs at Glenasmole:

- The Greenway route passes along the Dodder Valley from the River Liffey at Sir John Rogerson's Quay to the entrance to the Bohernabreena reservoirs at Glenasmole.
- It connects the existing cycle and pedestrian facilities in Dublin city centre such as the Sutton to Sandycove (S2S) Cycleway and Walkway and the Grand Canal Green Route with the Dublin Mountain Way at Bohernabreena.
- It will provide for improved connectivity to communities, facilities and local business along the Dodder Valley corridor with a dedicated signage strategy.
- Where commuting currently exists and demand is anticipated to continue, the scheme either ensures it is facilitated in a pedestrian priority environment with additional capacity for safe use at junctions or provide an alternative route for commuting cyclists where required.
- The Greenway will generally consist of a shared 3-4m wide bound surface on the off road sections, tying into suitable bound surfacing for the on road sections. It is proposed to utilise enhanced variations to reflect local context.
- Works will include widening and upgrade to existing paths, construction of new paths, the construction of a number of new bridges, upgrade of existing bridges and underpasses, cantilever boardwalk structures, junction upgrades, etc.
- The upgrade and creation of new entrances to the Greenway.
- Improved landscape treatment to provide a coherent and legible Greenway along the proposed Greenway.
- Ecological enhancements including species rich grassland management, the planting of native trees and the provision of bat boxes.
- Bat friendly public lighting will be provided both in new areas and in upgrading sections of existing lighting.
- CCTV will be provided at a number of locations including each of the bridges.
- Drainage measures including swales, signage, markings and ancillary works.

2.3 Site Description & Location

The proposed section of the Dodder Greenway runs from Orwell Park to Fortbridge at Friarstown near the Bohernabreena Reservoirs (Glenasmole) following the course of the River Dodder. The lands descend rapidly towards Old Bawn from Fortbridge and the Dodder River is located in a sloped valley along the majority of project extents.

A significant proportion of the lands adjoining the river's course are in use as linear parks and green areas with existing pedestrian / cycling facilities. The proposed works will require the upgrade and extension of these existing facilities. In some locations new shared surfaces will be provided within parkland areas. Sections of the proposed route incorporate existing footpaths

and cycle paths along roadways such as at the R114 and Dodder Road Lower in Rathfarnham.

A section of the Greenway has already been constructed in the Dodder Valley Park as part of the Ballyboden to Tallaght Scheme. This required the construction of two new bridges and illumination of the paths. The majority of other Dodder parks are unlit which discourages use during darkness hours.

2.4 Planning and Development Context

2.4.1 Background

South Dublin County Council (SDCC) Development Plan 2016-2022 identifies the need to protect, strengthen and improve the biodiversity linkages within the County by formulating a Green Network Plan, creating linkages between open space, sensitive habitats, river systems and incorporating walking routes and greenways. The SDCC Development Plan identifies a cycle network strategy which incorporates 'Green Routes' for providing "tourist, recreational and leisure routes through amenity areas and along water courses".

Approximately 90% of the cycling network in the greater Dublin area consists of on-road lanes which are not physically separated from motorised traffic. Research indicates that many people are discouraged from cycling in the greater Dublin area by a perception of risk and there is evidence of a demand for more off-road pedestrian and cycling facilities which are physically separated from motorised traffic.

2.4.2 National Policy

Smarter Travel Policy – A Sustainable Transport Future

This is the transport policy for Ireland for the period 2009-2020. The policy recognises the vital importance of continued investment in transport to ensure an efficient economy and continued social development, but it also sets out the necessary steps to ensure that people choose more sustainable transport modes such as walking, cycling and public transport. The policy is a response to the fact that continued growth in demand for road transport is not sustainable from a number of angles; it will lead to further congestion, further local air pollution, contribute to global warming, and result in negative impacts to health through promoting increasingly sedentary lifestyles. Chapter 5 of the Policy document sets out (that in order that) the Government's ambition to ensure that a reduction in travel demand and reliance on the car can be achieved, there must be appropriate, reliable and user-friendly alternatives in place. Action 17 of Chapter 5 states "Many State properties are used for recreation and leisure. We will ensure that, where feasible, areas of State owned lands such as canal towpaths, former rail lines, Coillte estates, etc. are made available for the development of walking and cycling trails".

National Cycling Policy Framework 2009 - 2020

The National Cycle Policy Framework was officially launched in April 2009 and details 109 individual but integrated actions that will be taken over the coming 12 years to deliver a culture of safe cycling in Ireland by 2020. Policy

No 3.2 states 'We will carry out further research and surveying work in order to expand the network to include rural recreational routes around urban areas and to connect major urban areas. We will pay special attention to the opportunities of using both the extensive disused rail network and canal / river tow path networks as cycling / walking routes.'

In recognising cycling as one of the most important forms of sustainable transport the Department of Transport published a National Cycling Policy Framework in April 2009. The policy framework emanates from the Government's new transport policy for Ireland – 2009-2020 Smarter Travel – A Sustainable Transport Future. The framework sets out many policies and objectives in relation to cycling, with the ultimate aim of increasing cycling's share of the total travel market from 2% to 10% by 2020. The key objectives of the policy framework are as follows:

- Move 160,000 people a day to work by bike; an increase of 125,000 people;
- Invest in better, safer cycle routes around the country for commuters, leisure cyclists and visitors. (Improve existing cycle routes and introduce new routes to best international standards);
- Increase cycling's share of the total travel market, from 2% to 10%;
- Introduce a new approach to the design of urban roads to better recognise the needs of cyclists and pedestrians; and
- Retrofit major road junctions and roadways in key cities and towns to make them cycle-friendly.

The National Cycling Policy Framework 2009 – 2020 aims to create a strong culture of cycling in Ireland with an aim that 10% of all trips will be by bike by 2020. Reaching this national target will require that major urban centres achieve significantly higher cycling modal share. Currently around 3% of trips in Dublin are taken by bike.

As outlined in the National Cycling Policy Framework, no single action will prompt more people to cycle but the development of high quality cycling infrastructure will play an important part in helping to achieve a new culture where cycling is seen as an attractive mode of transport, particularly for short trips in urban areas.

GDA Cycle Network Plan

The Greater Dublin Area (GDA) Cycle Network Plan identifies and determines the networks in the GDA, including the Urban Cycle Network, the Inter-Urban Cycle Network, and the Green Route Network to provide for a consistent network across the local authority boundaries. The Plan sets out certain proposals in respect of individual network links. The Plan identifies the Dodder Valley Way as a corridor of the network. It identifies the route as having recreational and commuter functions to significant employment districts.

2.5 Local Planning Policy

South Dublin County Council (SDCC) Development Plan

The development of greenway routes is an aim of the South Dublin County Council Development Plan (2016 – 2022) document under **Theme 4.3 'Landscape, Natural Heritage and Amenities'** which states the Local Authority's aim as:

*"To create a well defined and linked green structure in rural and urban areas where biodiversity, heritage, amenities and landscape are afforded protection, management and enhancement. The green setting will be enhanced by encouraging elements of the rural landscape into urban areas through **greenways**, linear parks and wildlife corridors...."*

The Dodder Greenway complies with the policies and objectives of the Local Authority as set out in the SDCC Development Plan (2016-2022).

Dún Laoghaire Rathdown (DLR) County Council Development Plan

The Dún Laoghaire Rathdown (DLR) County Council Development Plan (2016 – 2022) provides for the development of greenway routes. **Policy OSR3** states:

"...this hierarchy shall be underpinned by the Greenways Network, which seeks to encompass and connect the parks and open spaces and other green infrastructure across the County."

In addition, **Policy OSR8** states:

Greenways Network: It is Council policy to develop a comprehensive network of County Greenways linking parks and public open spaces and to liaise with adjoining local authorities and other stakeholders to achieve and improve wider external linkages and corridors."

This current Scheme therefore complies with the policies and objectives of the DLR Authority as set out in the Development Plan (2016-2022).

Dublin City Council (DCC) Development Plan (2016-2022)

The Dublin City Council Development Plan (2016-2022) provides for the development of greenway routes under the following objectives:

"SC3: To develop a sustainable network of safe, clean, attractive pedestrian routes, lanes and cycleways in order to make the city more coherent and navigable."

"MTO9: To develop, within the lifetime of this plan, the Strategic Cycle Network for Dublin city - connecting key city centre destinations to the wider city and the national cycle network, and to implement the NTA's Greater Dublin Area Cycle Network Plan"

"MTO10: To improve existing cycleways and bicycle priority measures throughout the city, and to create guarded cycle lanes, where appropriate and feasible"

“GIO4: To improve pedestrian and cycle access routes to strategic level amenities while ensuring that ecosystem functions and existing amenity uses are not compromised and existing biodiversity and heritage is protected and enhanced.”

“GIO18: To protect and improve the natural character of watercourses, including the Dodder, and to promote access, walkways, cycleways and other compatible recreational uses along them, having regard to environmental sensitivities.”

Therefore, the Dodder Greenway complies with the objectives of the Local Authority as set out in the Dublin City Council Development Plan (2016-2022).

2.6 Consultation

As part of the design process, ROD contacted a number of Stakeholders inviting comments and observations regarding sensitive ecological receptors within the Dodder corridor on the proposed Scheme.

The following organisations were contacted during the Ecological Impact Assessment (EcIA) Scoping and route design phase:

- National Parks and Wildlife Service (NPWS),
- Bat Society of Ireland,
- Birdwatch Ireland,
- Botanical Society of Britain and Ireland,
- Inland Fisheries Ireland (IFI),
- An Taisce,
- The Vincent Wildlife Trust.

Consultation with these stakeholders, particularly the NPWS, informed the structure of additional ecological surveys to be carried out and subsequent design considerations.

Principle areas of concern highlighted includes:

- Cumulative impacts with the flood relief works must be considered. Recent flood defence works have had a destructive impact and there is a concern that the proposed Greenway could further exacerbate and extend this impact.
- The use of lighting along the route is a particular concern. NPWS are unsure of the impact of the lighting of the Grand Canal cycleway on bats. The Tallaght to Ballyboden cycleway has significantly higher lux levels during the operational phase than had initially been anticipated. Recent research shows certain bat species show a marked negative response to lighting and therefore the cumulative impacts of lighting on bat species (with particular focus on Daubenton's Bat) should be a material consideration.
- Seasonal construction constraints will be an issue along the whole route as different species have different seasonal constraints.
- Avoidance of runoff to the watercourse during the construction phase.

- Ongoing consultation with the NPWS will be required throughout the development of the Greenway project;

2.7 Extent of Proposed Works

The development of this proposed section of the Dodder Greenway will require varying degree of interventions to existing conditions dependant on the proposed location. In some areas very little construction works will be required due to the presence of an existing shared surface or cycleway already in place. However measures to upgrade the existing quality of the landscape to Greenway have been proposed and will be further detailed at detail design stage. Elements of the design will require more significant interventions including the provision of pedestrian / cycle bridges at a number of locations. Unless otherwise stated it is proposed to provide a 3.5 - 4m wide shared Greenway route. A reduced width is proposed in a number of areas where constraints exist where limit the ability for widening works. A summary of the route and the interventions required are given below. This summary should be read in conjunction with the Figures in Appendix A.

- Orwell Park - Section 2 of the proposed route joins with the Section 1 in Orwell Park. The existing and upgraded footpath in the park will be realigned towards a new ramped section of pedestrian / cycle path and clear span bridge over the River Dodder adjacent to Dodder Road Lower. The proposed bridge will comprise a 4.4m wide structure over spanning the River Dodder for a distance of 21.5m. Two further 15.78m spanned sections will bring the structure back to the level of a ramped section which will tie in with the pedestrian/cycle path in Orwell Park. Landscape improvements are proposed at the landing.
- Dodder Road Lower – an existing pedestrian/cyclist shared surface is in place along Dodder Road Lower which will be upgraded as necessary to progress the project - all works within existing paved areas. Space is constricted but landscape and planting upgrades will be incorporated where possible.
- Dodder Road Lower / Dodder Park Drive – the existing shared surface along Dodder Road Lower between Dodder Park Drive and Rathfarnham Road will be upgraded where necessary. The 4m wide shared footpath/cycle track will continue along Dodder Park Drive to Dodder Park Road to the Rathfarnham Road junction – all works largely within existing paved areas.
- Dodder Park Road/Rathfarnham Road Junction – all arms of this junction will be improved with pedestrian and cyclist facilities – all works within existing paved areas. The entrance to the parkland will be upgraded with hard landscape and planting proposed.
- Springfield Avenue – along Springfield Avenue there is a proposed 4m shared footpath / cycletrack with separate 2m cycle track on western side of road with 2m footpath and 2m cycletrack on eastern side of road as far as the bend in the road adjacent to the River Dodder where the road narrows – all works within existing paved areas. The planting plan continues within the adjacent parkland.
- Springfield Avenue – from where the road narrows there is an existing 3.9m shared footpath / cycletrack on the western side of the roadway

which will be upgraded where necessary and retained. On the eastern side of the roadway a proposed 4.2m shared footpath / cycletrack will be provided – see Plate 1 below. All works will be completed within existing paved areas with the removal of the existing central reservation to provide additional space.

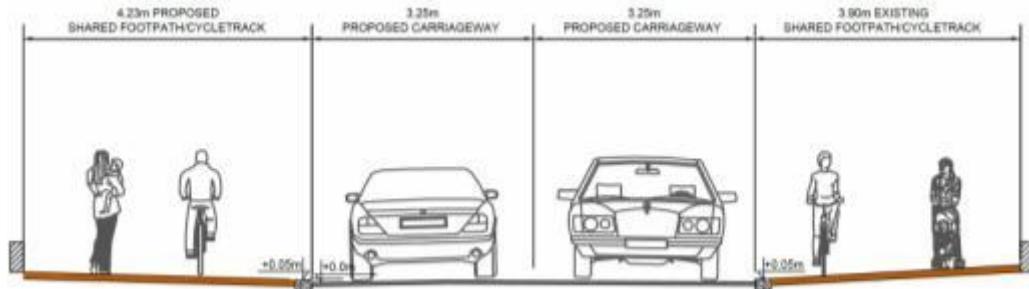


Plate 1: Typical Cross-section at Springfield Avenue

- Springfield Avenue / Woodview Cottages – a proposed new bridge with ramped sections connecting the proposed Greenway to Bushy Park is proposed on the northern side of the roadway at this location. A new 4m shared footpath/cycletrack is proposed through open space on the southern side of the roadway connecting to Church Lane. Planting and surface treatments are proposed.
- A wide shared street connection to Rathfarnham Main Street will be provided via Church Lane – all works within existing paved areas.
- Springfield Avenue / Owendoher River – the 4m shared footpath / cycletrack will continue along the north-western side of Springfield Avenue with the existing 3.3m shared footpath / cycletrack along the south-eastern side of the roadway upgraded as required. The existing parking bay will be realigned to accommodate the 4m shared footpath/cycletrack.
- Springfield Avenue / Fairways – the 4m shared footpath / cycletrack will continue along the northern side of Springfield Avenue with the existing 3.2m shared footpath/cycletrack along the southern side of the roadway upgraded as required as far as the junction with Fairways. An upgrade to the boundary treatment and planting is proposed.
- Dodder Valley Park – at Fairways the route turns southwards and enters Dodder Valley Park. The 4m shared footpath / cycletrack running from Bushy Park will link via an existing underpass beneath Springfield Avenue. Through Dodder Valley Park it is proposed to incorporate a 4m shared footpath / cycletrack utilising existing footpaths. This will require works widening the existing footpaths into the verge – a typical section through the shared footpath / cycletrack through Dodder Valley Park is shown in Plate 2. Care will be taken to retain vegetation along the riverside at this section. Swales will be incorporated to cleanse run-off and provide wetland habitats.

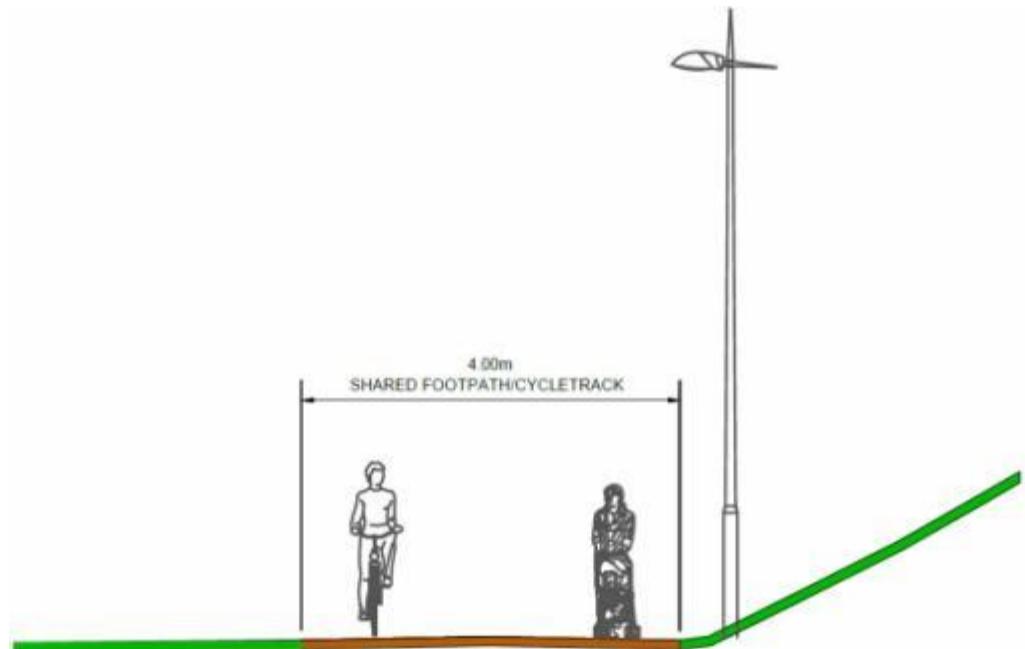


Plate 2: Typical Cross-section through Dodder Valley Park

- Riverside Cottages – it is proposed to provide a new bridge over the River Dodder to connect the 4m shared footpath / cycletrack to the northern bank and extend the route through a green area at Riverside cottages through a shared street to Templeogue Road (see image below). The new bridge will consist of a 4.44m structure spanning 21m over the river with a ramped section on the northern section spanning 15.8m over an existing footpath. The new shared footpath / cycletrack will be through an existing green area at Riverside Cottages as the route leaves the existing footpath along the River Dodder. New planting is proposed through the parkland and open space areas.



Plate 3: Photomontage of proposed bridge at Riverside Cottages

- Kilvere – the proposed 4m shared footpath / cycletrack continues along the route of the existing footpath through Dodder Valley Park to Kilvere. Through Kilvere and as far as Butterfield Avenue the route continues as a

shared wide street. This will be completed on existing paved surfaces with road marking provided as required – see Plate 4 below.

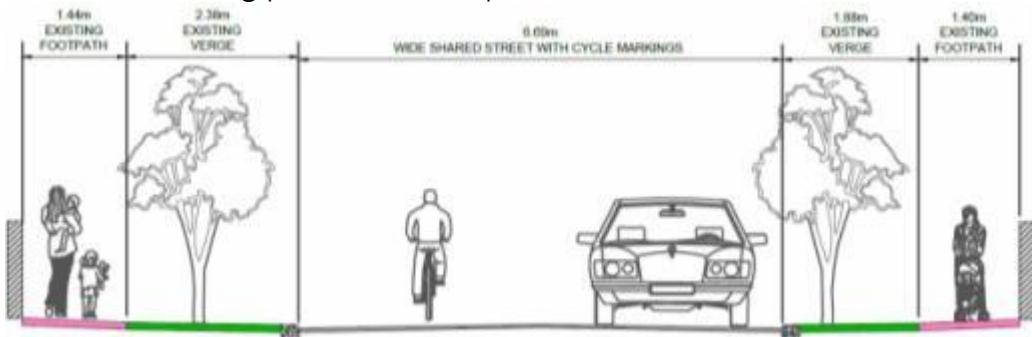


Plate 4: Typical Cross-section at Kilvere

- Butterfield Avenue – along Butterfield Avenue the route proceeds westward and consists a 2m off road cycletrack on both sides with a 2 – 3m footpath on the verge-side. This will be completed on existing paved surface with the existing road carriageways reduced as required.
- Ballyroan Road/Old Bridge Road – the route continues along Firhouse Road through the junction with the Ballyroan and Old Bridge Roads with local realignments and kerb adjustments at the junction as required.
- Firhouse Road – the route continues along Firhouse Road making use of existing footpaths and existing cycle lanes as far as Dodder Valley Park.
- Dodder Valley Park – the route enters Dodder Valley Park at Firhouse Road before the junction with Knocklyon Road. Once the Greenway route enters Dodder Valley Park a 4m footpath / cycletrack continues utilising existing footpaths in the park. This will require works widening the existing footpaths into the verge at both sides – a typical section through the shared footpath/cycletrack through Dodder Valley Park similar to that shown in Plate 2. Portions of the route through Dodder Valley Park will reduce to a 3.5m shared footpath/cycletrack. A 'no-dig' route will be implemented through woodland. The route avoids high quality calcareous grassland. New planting and landscaped features at the entrances are proposed.
- Ballycullen Road / Firhouse Road – a shared street connection will be provided from the route through Dodder Valley Park to the Ballycullen Road / Firhouse Road junction - this will be completed on existing paved surfaces.
- M50 – the 3.5/4m shared footpath / cycletrack continues through Dodder Valley Park as far as the M50 which it passes beneath utilising an existing underpass and enters Dodder Riverbank Park. There will be a requirement for significant regrading of the ground profile through this section. New planting is proposed along the Greenway. The existing weir at Balrothery will be enhanced by a specific landscape plan at detail design stage to respond to its significant heritage and local and national interest.
- Dodder Linear Park – the 4m shared footpath / cycletrack continues through Dodder Linear Park – this will require works widening the existing footpaths into the verge at both sides. No widening is required further into Dodder Linear Park where existing wide paths/maintenance tracks

can accommodate the 4m shared surface. However, planting, entrance treatment and landscape treatments are incorporated.

- Avonmore Road link – a new bridge is proposed to link the route with Avonmore Road through a shared street adjacent to Bolbrook Enterprise Centre. The proposed bridge consists a 23.2m structure overspanning the River Dodder with two 13.7m ramped sections on the eastern side of the river.
- Dodder Valley Park Cycle Scheme – the route continues with 4m shared footpath / cycletracks following the route of existing park footpaths which will require widening into the grass verges. A portion of the route has already been constructed comprising the Dodder Valley Park Scheme. This included a 52m clear span cabled stayed bridge over the Dodder River and a 20m clear span bridge over the Ballycullen Stream.
- Old Bawn Road – the route leaves Dodder Valley Park at Old Bawn Road and continues as a 5m shared street with traffic calming measures along Kiltipper Road turning south along an existing access lane as a shared street to Kiltipper Woods Clinic.
- Kiltipper Woods Clinic to Fortbridge – the final section of the Greenway route continues along existing footpaths between the Kiltipper Woods Clinic and Fortbridge (Friarstown Upper) at the entrance to Glenasmole Reservoir. A small portion of the route will be located adjacent to Ballinascorney Road requiring a new shared footpath / cycletrack on the southern side of the carriageway to facilitate a safe crossing point. Significant native tree planting and new entrance treatments are proposed.
- Car Park at entrance to Glenasmole Reservoir – minor upgrade works in the form of surfacing, line markings and pedestrian facilities will be undertaken to the existing car park at the entrance to Glenasmole Reservoir.

Given that this current proposal (which is primarily within the administrative district of South Dublin County Council) consists of only a portion of the full Greenway Scheme, consideration has been given to the safe onward journey for people utilising the route in the absence of the remaining portion of the Scheme being completed. This current portion of the Scheme, when developed, will terminate at Dodder Road Lower and therefore an interim termination arrangement is required for cyclists; pedestrians can safely utilise existing footpaths in the areas to continue their journey onward. It is proposed that cyclists will be routed along Dodder Road Lower as far as Orwell Road where they will rejoin existing cycling facilities in the area. Cyclists will not be routed into Orwell Park in the absence of Section 1 of the Scheme being developed. Please refer to Plate 5 below for details.



Plate 5: Proposed interim termination arrangement for the Scheme at Orwell Park

3. POTENTIAL IMPACTS

3.1 Population and Human Health

The River Dodder predominantly passes through urbanised areas and is crossed in numerous locations by major and minor roads. The M50 motorway crosses the River Dodder adjacent to Exit 11 – Tallaght. All other road crossings are regional or local routes. The proposed Greenway will avail of underpasses and also return to the existing carriageways where roads will be upgraded to accommodate pedestrians and cyclists in parallel.

There will be minor changes to traffic flow patterns as a result of the Scheme. Traffic queuing may increase on the approaches to remodelled junctions but it is considered that changes to journey times will be negligible. There will be new pedestrian and cycle facilities included throughout the Scheme. The pedestrian crossing facilities and new footpath and cycletracks will provide greatly improved and safer conditions for cyclists, road users and pedestrians. Therefore, the proposed development has the potential to make a significant positive impact on human health in the area. This is due to improved connectivity and accessibility across the area, safer road conditions and the improvement in walking and cycling infrastructure in the area. The proposed development supports a modal shift to more sustainable modes of transport (walking and cycling) which has the potential to improve health and help reduce the rise in sedentary lifestyles. A modal shift away from the use of the private car also has the potential to reduce air and noise emissions in the area.

The increase in environmental quality will have an impact in terms of quality of life and feeling of well being and increased mental health of people able to access the Greenway.

The Scheme will have a positive effect on landscape permeability, increasing local communities access to amenities and commercial premises, it is not expected there will be any permanent severance as a result of the proposed works. The proposed Scheme will therefore have a positive effect in meeting the travel and access needs of those living, working and visiting in the wider area.

3.2 Architecture, Archaeology and Cultural Heritage

For the most part the proposed scheme runs primarily along existing surfaces that are to be retained with associated widening and upgrade works. The proposed Greenway will pass through the southern edge of a zone of archaeological potential associated with medieval water course (DU022-003001) and the southern edge of a zone of archaeological potential associated with a mill race and the River Dodder (DU022-096).

Limited removal of topsoil may be necessary within greenfield areas during the construction phase. Any such works have the potential to negatively impact upon previously unrecorded archaeological features or deposits that have the potential to survive beneath the current ground level.

In addition there may be an adverse impact on previously unrecorded archaeological features or deposits that have the potential to survive beneath the current ground level as a result of the construction of the four proposed bridges, along with the excavation of drainage swales in the Dodder Riverbank Park and the Dodder Valley Park.

It has been recommended that any topsoil stripping that is required within greenfield areas (including DU022-003001 and DU022-096) be monitored by a suitably qualified archaeologist. Full provision should be made available for the resolution of any archaeological deposits or features that are identified, if that is deemed the most appropriate manner in which to proceed.

It is further recommended that all groundworks associated with the construction of the bridges across the Dodder be monitored by a suitably qualified archaeologist. Any topsoil stripping along the banks of the River Dodder should also be subject to metal detection survey. This work should be carried out under licence to the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs (DAHRRGA). Full provision should be made available for the resolution of any archaeological remains, both on site and during the post excavation process, should that be deemed the appropriate manner in which to proceed.

For the most part works associated with the proposed Greenway will not impact on any features of architectural heritage interest or their settings. However, at the eastern most section of the scheme, several potential impacts have been identified.

This section of the proposed scheme traverses the Architectural Conservation Area surrounding Rathfarnham Village. It is proposed that the cycle way share the existing surfaces through this area. However, revisions to traffic management and additional signage associated with the scheme may have an adverse impact on the character of the ACA. It is recommended that any traffic management or signage that is required as part of the Greenway within this area be designed with the advice of an appropriately qualified architectural heritage expert in order to maintain the special character of the ACA.

Construction activities associated with the bridges have the potential to adversely impact on archaeology particularly the section of Bushy Park demesne wall that travels between the demesne and the western bank of the River Dodder. A portion of this wall may require demolition. It is recommended that the section of the Bushy Park demesne wall to be impacted upon be subject to a full written and photographic record prior to construction going ahead. This should be carried out by an appropriately qualified professional.

The proposed scheme passes in close proximity to two cast-iron vents dating to 1912. The proposed works have the potential to directly impact upon these features. It is recommended that the vents be retained in-situ. However, if works necessitate their removal, the features should be lifted and stored in order to allow reinstatement after the completion of works.

3.3 Landscape & Visual

3.3.1 Methodology

In preparing the report Cunnane Stratton Reynolds Landscape Architects have reviewed the following reports and documentation.

- River Dodder Greenway – From the Sea to the Mountains – Feasibility Study Report
- Dodder Greenway Bohernabreena to Orwell Park Preliminary Design Report CSEA April 2016
- South Dublin County Council Development Plan 2016-2022
- Landscape Character Assessment of South Dublin County 2015
- Dodder Greenway Landscape Constraints Study February 2015

The development and receiving environment has been assessed and the route corridor and its characteristics described. The route and its key elements are described in this context and landscape and visual issues arising, if any, set out and any mitigation.

The South Dublin County Development Plan contains various policies aimed at protecting built and natural heritage - trees, habitat, buildings and structures – and these have provided localised constraints on design and route alignment. Policies supportive of walking and cycling also recognise the need to reconfigure footpaths/streets to give priority to cyclists and pedestrians including the enhancement of the public realm.

The Landscape Character Assessment of South Dublin describes the Dodder Valley as an important ecological corridor facilitating mobility of species along its green spaces. The stretch of vegetation between Firhouse Bridge and Oldbawn is noted as the last remaining natural river bank vegetation on the River Dodder and this also provides a constraint to alignment.

In general landscape planning policy is supportive of the development type and the interventions proposed and their alignment on predominantly existing paths and routes is complementary to the receiving environment.

Overview of the development and receiving environment

The Greenway route in South Dublin is approximately 14km in length and traverses a cross-section of the modern residential suburbs of South Dublin City and County from Orwell / Terenure through the outer suburbs of Tallaght to rural and upland Dublin at the Bohernabreena reservoirs.

The route will consist of the key components contained in Section 2.2 of this report.

The proposed route is described in relation to the receiving environment below and predicted landscape effects. In general the route will occupy existing or improved paths within public parks or adjusted road corridors with limited landscape change. Associated planting/landscape works are proposed in places and within the public parks new public lighting along the

Greenway. A number of new bridges are also proposed which will form locally significant features along the river corridor.

The receiving environment consists of the River Corridor of the Dodder as it passes from Orwell Park to Bohernabreena through the following parts of Dublin:

Outer Suburbs – mostly 20th Century

- Terenure / Rathfarnham and Templeogue
- Firhouse / Tallaght / Old Bawn / Kiltipper

Rural Dublin

- Kiltipper Park and Bohernabreena Reservoir

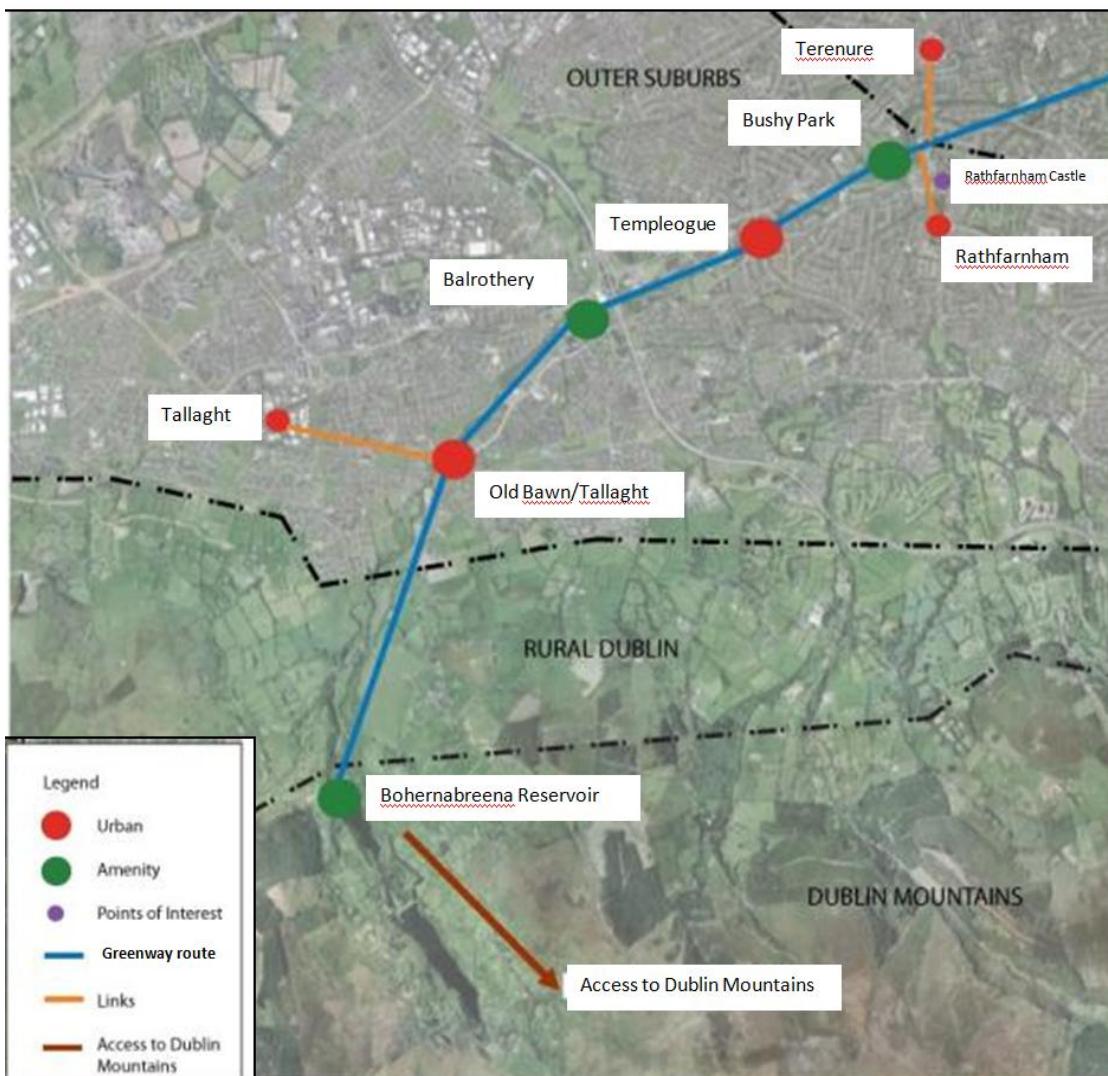


Plate 6: Diagram illustrating concentric layers of the route through Outer Suburbs and rural Dublin - Extract from Feasibility Study

The desired route is along the River Dodder, often in close proximity to the river bank and generally along existing surfaced pedestrian walks and routes. The river corridor is generally green with good bankside tree cover and

greenery. For much of the route, the river is lined with parks and green spaces, linear and more expansive, leading to more extensive open spaces and parks in the outer suburbs, before the city edge and the rural zone.

The above brief description of the proposed development describes a proposed Greenway that is benign and low in terms of its potential landscape and visual impact, with some features such as the bridges that require more careful consideration. The Greenway represents an evolution and development of the receiving environment, complementary to existing uses and character, and indeed existing infrastructure already present. The constraints study (and the previous feasibility study), in landscape terms, highlighted opportunities to maximise positive impacts and enhance the receiving environment, as well as sensitivities and constraints to that development.

Strategic planning policy in all local authorities and across a range of criteria – open space, transportation, walking and cycling - is supportive of a project of this nature. Specifically existing walking and cycling routes or sections of routes exist within the corridor that will become part of the Greenway are supported by existing policy and its implementation on the ground. Landscape interventions will ensure a coherent and pleasant environment. Open Space Policies and current concepts of Green Infrastructure, chains or networks of open space, have kept available the green corridor of the River Dodder as amenity and pedestrian/cycling circulation and are complementary and supportive of a wider joined up Dodder Greenway. Where public access has been lost it is stated policy to secure public access along waterways. These policies are set out in the feasibility study and are still relevant. Enhancements change during the route design. These enhancements protect sensitive ecological environments and increase the potential for wildlife corridors.

3.3.2 Route Corridor Analysis

Outer Suburbs – mostly 20th Century and mostly through a broad parkland or green corridor Orwell Park, Terenure / Rathfarnham and Templeogue

This section commences with the transitional suburbs and distinctive urban villages of Terenure/Rathfarnham. The Greenway commences at the river crossing in Orwell Park passes between the two villages in a parkland setting and continues upstream through an increasingly wider corridor of open space / parkland, with less and less developed landscape structure and maturity, and surrounded by relatively low density but extensive housing estates stretching to rural Dublin. The initial stretches share characteristics with the more mature and well used urban parks of the inner suburbs and the stretches further upstream becoming increasingly new, undeveloped and in some places urban fringe in character.

Description of the Route Corridor

The route passes through Orwell Park – the constraints plan highlighted conflicts along existing park footpaths and seating areas - and on approaching the River Dodder rises up on a bespoke ramp on piers to lift the bridge level over the river to land on the southern side of the river adjacent

Dodder Park Road. The narrow landing area to the south – between the road and the river – requires the route, ramp and bridge to turn through 180degrees to cross the river and maintain suitable gradients.



Plate 7: Orwell Park looking west and aerial view of proposed ramp and bridge



Plate 8: Location of proposed new bridge and landing on Lower Dodder Road

The crossing is downstream of the existing narrow hump-backed pedestrian bridge and the long approaches facilitate the avoidance of many of the tree

groups and clusters in the south western corner of the park and to the south of the river. Whilst some trees would require removal to accommodate the route and landing points this would not have a significant effect on the wooded river landscape. Within Orwell Park itself the long ramp on piers has potential to be visually intrusive however mitigation in the form of tree planting to the east of the ramp to extend the tree group around the cycleway reduces impacts. On crossing the river the route then travels along the existing shared route along Lower Dodder Road, with some widening and improvements, until it meets Rathfarnham Road.

The route passes across Rathfarnham Road via an improved road crossing – a toucan crossing – thus ensuring minimal intrusion on the wider landscape.



Plate 9: Prominent mature trees at Dodder Park Road / Rathfarnham Road junction

The preferred route then proceeds along an expanded 4m shared path / cycleway adjacent to Springfield Avenue. The carriageway will be reduced to accommodate a 4m wide route however landscape and visual impacts would be negligible and beneficial.

Midway along Springfield Avenue a new bridge is proposed over the Dodder River linking the cycleway to Bushy Park. Coupled with the improved parking and related amenities at this location this would be in keeping with the Bushy Park Masterplan and the Greenway and the Masterplan would be mutually complementary and not raise significant landscape and visual impact issues. As elsewhere, the proposed bridge is an urban design opportunity and consideration of the design and its aesthetic contribution is important particularly in the context of this much loved historic demesne and park. However the straight alignment (90degree crossing) of the proposed link will integrate well.



Plate 10: Location of river crossing to Bushy Park, landscape works and parking areas on Springfield Avenue



Plate 11: Aerial view of proposed river crossing to Bushy Park, landscape works and parking areas, and lined Greenway on Springfield Avenue

Bends in the river means that travelling upstream the Dodder passes under Springfield Avenue. The Greenway will follow the river via an existing underpass under Springfield Avenue and from the existing on road route to the south of the road via a ramp. The Greenway will travel on widened existing paths through Dodder Valley Park with generally beneficial impacts in terms of increased activity, new planting and landscape design in this linear riverside park.

A new bridge is proposed over the river to Riverside Cottages and linking north to Templeogue Village. This will again contribute beneficial impacts, activity and additional users to the Greenway/park area and the wider urban areas linked.

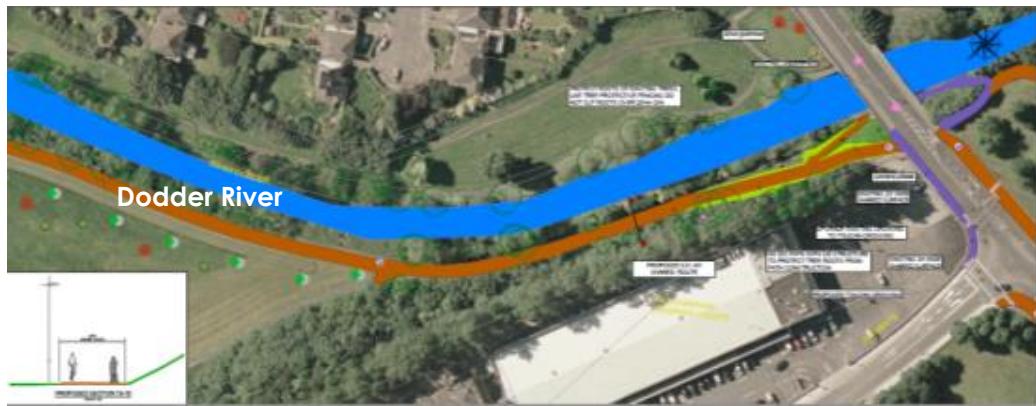


Plate 12: Greenway passing under Springfield Avenue to Dodder Valley Park



Plate 13: Dodder Valley Park



Plate 14: Riverside Cottages

Due to constraints in passing directly along the river corridor, the greenway then enters the rear of Kilvere housing estate. This is a very quiet residential estate and ideal for walking and cycling, albeit on a vehicular route. No houses open directly on to the road and the proposal will create a shared street linking Butterfield Avenue through Kilvere to the Dodder Valley Park. The Greenway will follow Butterfield Avenue, across Old Bridge Road to Firhouse. Apart from adjustments to the road corridor including removal of on-street parking to Butterfield Avenue, improved surfaces and tree planting, landscape and visual impacts will be negligible.



Plate 15: Proposed shared street through Kilvere

The route then re-joins the river corridor turning onto an existing overgrown track between Cherryfield Way and the river, off the Firhouse Road. Works here will involve clearance and construction of a 3.5-4m shared surface.



Plate 16: Proposed route along Firhouse Road and spur back to Dodder Valley Park at Cherryfield Way



Plate 17: Existing overgrown track between Cherryfield Way and the River



Plate 18: Aerial view of Firhouse Road, Cherryfield Way and the Bend in the River Dodder

The route then continues travelling upstream parallel to the river on existing and improved paths through the Dodder Valley Park and under the Spawell

Link Road. Proposals through the parks include for lighting columns for maximum use of the new route.

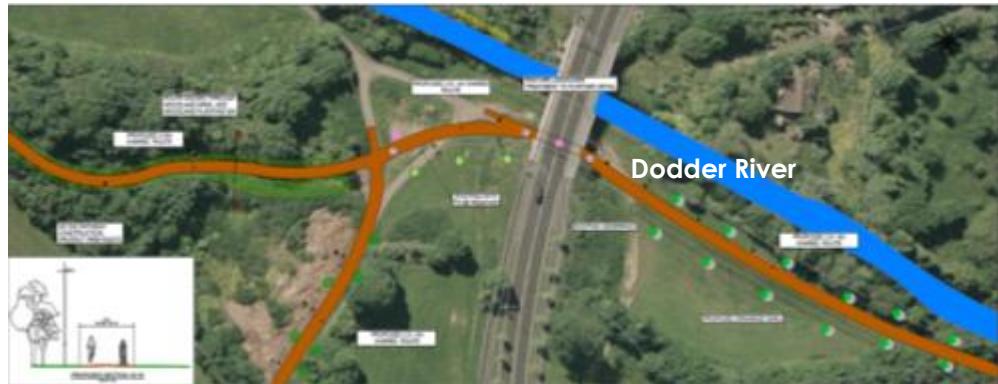


Plate 19: Greenway passing under Spawell Link Road through Dodder Valley Park



Plate 20: Spawell Link Road Underpass



Plate 21: Establishing open space of Dodder Valley Park

Once past Spawell Link Road the route travels along existing paths for almost a kilometre through the relatively open Dodder Valley Park to the M50 underpass and Balrothery/Firhouse Weir beyond. Other than widening and improved access interventions, tree planting and lighting columns there are no significant landscape impacts. The Greenway would enhance and enliven these landscapes of the outer suburbs. Provision is given for the design of an enhanced landscape treatment at the Weir to provide for access, seating and the enjoyment of this beautiful amenity and historical feature.



Plate 22: M50 Underpass

Key Planning Issues

- Bushy Park Masterplan (Dublin City Council) and proposals for new bridge.
- General Protection of trees and biodiversity



Plate 23: Extracts from Bushy Park Masterplan

Landscape and Visual Impact Issues

- Generally benign interventions and changes complementary to existing uses, character and trends throughout the corridor.
- Architectural opportunities posed by new river crossings at Orwell Park and Bushy Park. The river crossings present an opportunity to create new landscape features at each location and contribute to the experience, brand and image of the route as well as its functionality.

Mitigation

- Relocation of ramps and/or tree planting to integrate ramps into Orwell Park
- Detailed design of proposed bridges present an opportunity to create new landscape features at each location and contribute to the experience, brand and image of the route as well as its functionality.

Firhouse / Tallaght / Old Bawn



Plate 24: **Balrothery/Firhouse Weir**

From Balrothery/Firhouse Weir the route passes along the southern and eastern side of the river upstream. The route runs along an existing path system through the Dodder Valley Park. Interventions required are minor – widening to 3.5-4m to create a shared surface route, access improvements, lighting, a new bridge linking to the Bolbrook Enterprise Centre (and beyond to the eastern part of Tallaght and the N81) on the north side of the river. Links to adjacent housing areas and related Greenway infrastructure improvements. The park appears well used and Greenway users will add to passive surveillance in this area. The paths are generally in place or requiring enhancement, passing through relatively open parkland landscapes. The changes required and the impacts are not only complementary to, but an enhancement of an establishing “country park” amenity as the outer suburbs slowly give way to countryside.

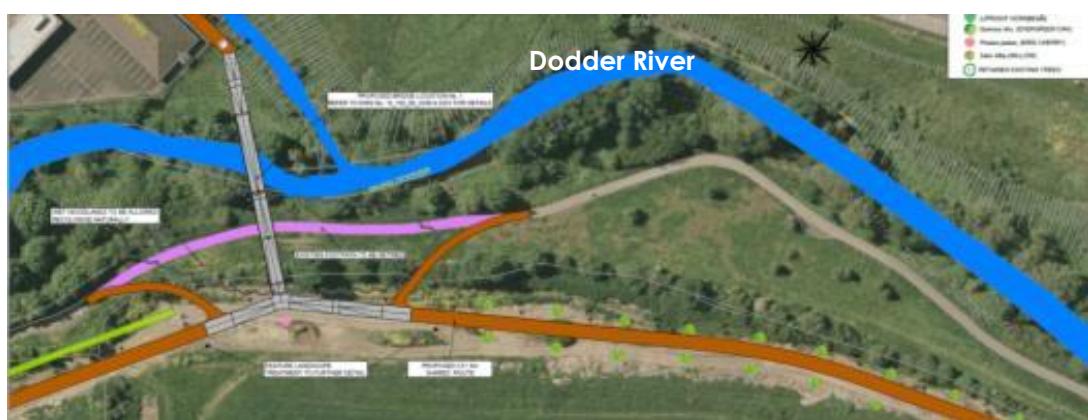


Plate 25: **Proposed link to Bolbrook Enterprise Centre**

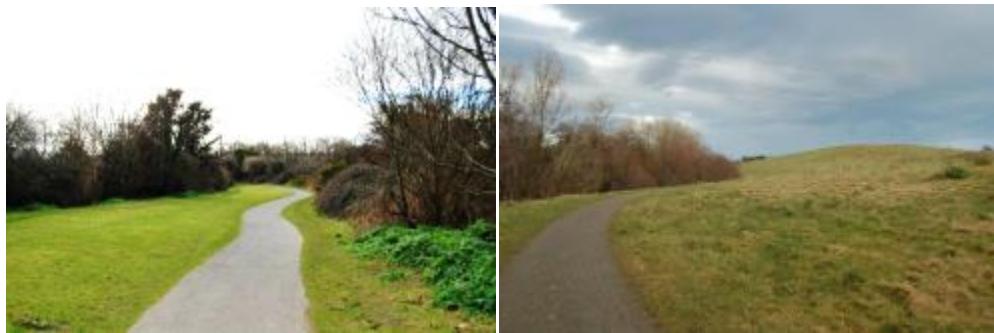


Plate 26: Footpaths heading upstream (southwest) from Firhouse Weir in the Dodder Valley park

A new bridge recently constructed by South Dublin County Council as part of the Tallaght to Ballyboden route would carry the Greenway across to the northern bank and along existing paths by Seskin and Bawnville housing estates to Old Bawn Road. This section of the route has protected views south east over the park. These will remain unaffected.

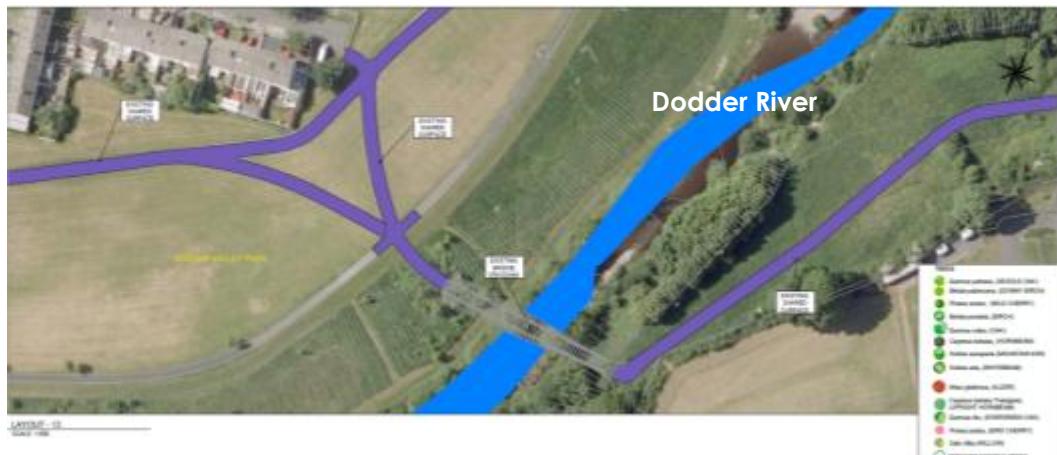


Plate 27: Greenway crossing to northern side at Bawnville



Plate 28: View upstream from the new pedestrian bridge at Bawnville

The proposed Greenway will run along Old Bawn Road via the existing and proposed pedestrian and cycle facilities until the junction with Kiltipper Road which will become a shared cycleway / vehicular road to the Kiltipper Woods Care Centre. Interventions here will consist of minor reconfigurations of the road layout to facilitate safety and control vehicular speed with negligible landscape or visual impacts.



Plate 29: Kiltipper Road – shared street

The Greenway will turn south east onto the driveway serving the Kiltipper Woods Care Centre, although cycleways and footpaths will continue either side of Kiltipper Road to the Kiltipper roundabout.



Plate 30: Driveway to Kiltipper Care Centre

The access road to Kiltipper Care Centre will become a shared route. A car park is proposed which will be created using a low impact free draining reinforced earth permeable surface

Key Planning Issues

- Dodder Valley Park Masterplan – the scheme is complementary to the longstanding objectives of this masterplan.
- General Protection of trees and biodiversity

- Protected views at Seskin / Bawnville – negligible or complementary change.

Landscape and Visual Impact Issues

- Generally benign interventions and changes complementary to existing uses, character and trends throughout the corridor.
- As the main built intervention in the corridor there is scope with detailed design of the new bridge at the Tallaght Stream to create a positive new landscape feature with the river crossing as a landmark, and contribute to the experience, brand and image of the route as well as its functionality.
- The Greenway enhances and develops further the Dodder Valley Park particularly increasing footfall and use and improving passive supervision and public safety, as well as providing new planting, much of it native species and landscape upgrades at entrances and key features.

Mitigation

- Detailed design of proposed bridge at the Tallaght Stream presents an opportunity to create new landscape feature and contribute to the experience, brand and image of the route as well as its functionality.

Rural Dublin

From Kiltipper Woods Café the river corridor landscape – Kiltipper Park - is increasingly natural in character and of ecological value. The cycleway now embarks into rural south Dublin and travels along the existing and adequately wide Dublin Mountain Way which travels through Kiltipper Park and travels upstream along the west bank of the Dodder until it reaches the R114. There are little or no additional interventions proposed and this section of the route would not include public lighting. Here, traffic calming facilities crossing of the road to the existing paths linking to the car-park and gates of the Bohernabreena Reservoir access road and the routes final destination.

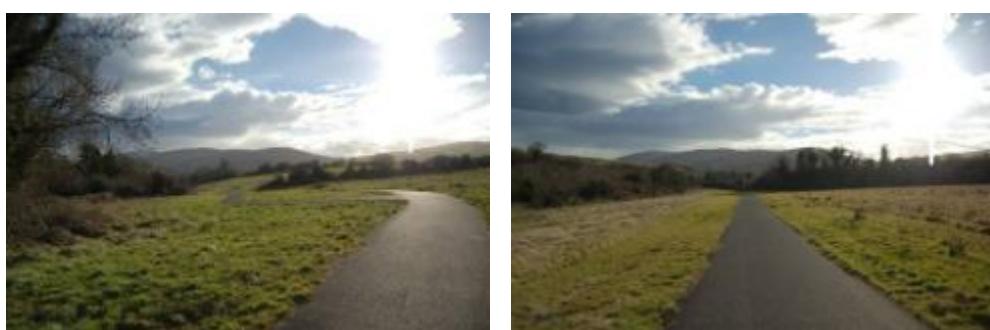


Plate 31: Final Approaches to Bohernabreena Reservoir through Kiltipper Park



Plate 32: Route through Kiltipper Park

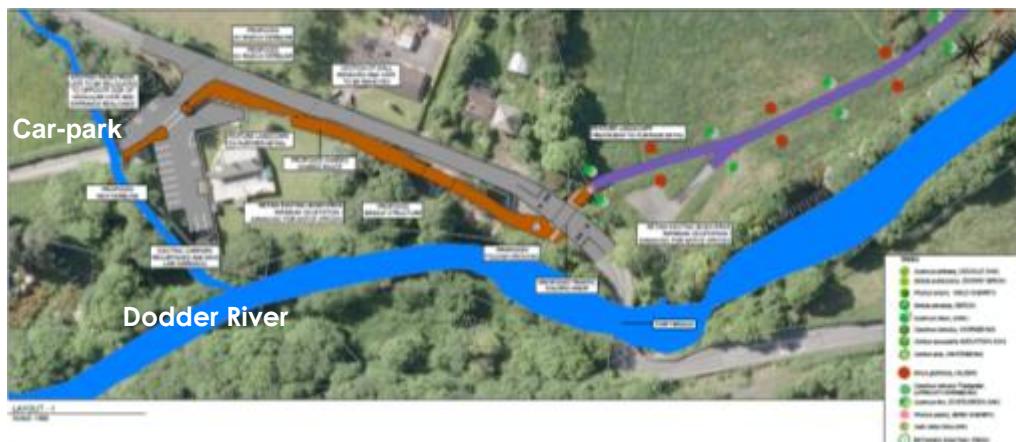


Plate 33: Crossing R114 and car-park at Bohernabreena Reservoir

Key Planning Issues

- None.

Landscape and Visual Impact Issues

- Generally benign interventions and changes complementary to existing uses, character and trends throughout the corridor.
- There are no changes/impacts of significance.
- New native planting and key landscape upgrades at entrances will enhance the Greenway route.

3.3.3 Summary and Overview

The analysis above indicates that the proposed Greenway and its alignment, with sensitive design, would be neutral in terms of potential impacts, generally benign and often positive.

In general the route, once past Rathfarnham and Templeogue enters Outer Parks and the Rural Outskirts of the city. The Greenway can only increase footfall and activity in these areas and the introduction of such a city wide amenity through these areas will animate them significantly. The proposed alignment and route creates a more supervised environment in sections that may be isolated and avoids landscape and amenity conflicts.

In general the route follows existing paths and interventions consist of improvements – widening, some additional landscape works and in places public lighting. There is generally, however, a high landscape capacity to accommodate the Greenway in the receiving environment.

The proposed bridges whilst addressing the functional need to cross the Dodder, in places have the potential to be adverse interventions in high quality environments (Orwell/ Bushy Park). As the only upstanding built elements of the Greenway they present an opportunity to create new landscape features/structures at each location and contribute to the experience, brand and image of the route as well as its functionality. The Detailed design of the bridges will ensure that the landscape quality of the Dodder is at the core of design and an aesthetic solution is proposed.

Nonetheless, subject to detailed design at the bridge locations to address aesthetic issues, the proposed Greenway would be a benign and beneficial intervention and change complementary to existing uses, character and trends throughout the corridor.

3.4 Biodiversity

A full Ecological Impact Assessment has been undertaken for the full Dodder Greenway as is available as a standalone Report.

No likely significant effects on flora and fauna are predicted during the operational phase. The Dodder Valley Park is listed as a pNHA. It is proposed that industry standard pollution prevention measures are adhered to during construction and therefore it is considered that the proposed Scheme can be provided without any negative impact on the pNHA. A Construction Erosion and Sediment Control Plan (CESCP) has been prepared to ensure that there will be no pollution of the watercourse during the construction phase (See Appendix B). South Dublin County Council will appoint an Ecological Clerk of Works (ECoW) to oversee the implementation of the CESCP and all other mitigation measures and ecological enhancements.

No key biogeochemical processes necessary for the survival of habitat features will be impacted, directly or indirectly or in the short to long term. Some limited loss of low value grassland habitat may occur however the impacts of this loss are negligible. The most significant potential for impacts to the environment arise as a result of the four proposed river crossings. No in-stream works are proposed as part of the provision of these bridges and it is anticipated that the structures will be prefabricated off-site. This will minimise the potential for pollution to the watercourse. The use of industry standard pollution prevention measures will mitigate the remaining risk to the watercourse during the construction phase. There will be a very limited loss of habitat arising from the provision of these four bridges. During the operational phase, there will be a negligible impact on the watercourse from the provision of these bridge structures. In order to mitigate this small loss of habitat, landscaping improvements including new grassland management regimes, planting of trees and other measures to encourage fauna and

landscaping will be included where possible and as agreed with South Dublin County Council Parks Department and the NPWS.

The Scheme will include for the provision of new public lighting and also the upgrade of existing public lighting at a number of locations between Orwell Park and Kiltipper Road. It is not proposed to provide lighting in the upriver section of the route. A lighting code has been prepared as part of the Ecological Impact Assessment (EIA) which the lighting designers will comply with. The proposed lighting will be directed away from river edge so as to minimise impacts on Fauna. The lighting design is being developed through on-going consultation with the NPWS. The final design of lighting proposals proposed as part of this proposed development will be approved by both the NPWS and SDCC parks department and will be neutral with respect to the existing bat and Fauna population. This approach aims to ensure that there will be a negligible impact on Fauna arising from the proposed lighting design.

Mitigation measures implemented during construction phase and maintained as relevant to protect flora and fauna in particular bat, badger, and otter species identified in the suburban and upper reaches of the Dodder and the protection of calcareous grassland and tufa forming springs will be maintained into the operational phase as required (e.g. mowing regimes, encouragement of kingfisher and sand martin species, lighting control and the retention and enhancement of the riparian and ecological corridor along the Dodder Valley). The nature of these mitigation measures (such as fencing or the provision of artificial mammal facilities) have been presented to NPWS and will be agreed with the relevant stakeholders during the detailed design stage.

3.5 Other Environmental Factors

The proposed Greenway is not anticipated to have significant effects on Noise and Vibration or Air Quality & Climate. As the route follows existing paths for the majority of the Scheme, the works will be minor in nature, mainly comprising online widening and upgrading. The construction works will be short term and therefore are not likely to cause significant effects. Most prolonged disturbance will occur at bridge locations. These effects however will also be short term in nature and are not anticipated to be significant. The operation stage of the greenway is not likely to cause significant effects as the nature and character of the area will not have changed.

The TII/NRA guidance document specifies noise levels that it typically deems acceptable in terms of construction noise and the following noise and vibration limits will be imposed on the Contractor during the construction phase.

Table 3.5.1 Maximum Permissible Noise Levels at the Facade of Dwellings During Construction

Days and Times	Noise Levels (dB re. 2x10 ⁻⁵ Pa)	
	L _{Aeq(1hr)}	L _{Amax}
Monday to Friday 07:00 to 19:00hrs	70	80
Monday to Friday 19:00 to 22:00hrs	60*	65*
Saturdays 08:00 to 16:30hrs	65	75
Sundays & Bank Holidays 08:00 to 16:30hrs	60*	65*

Note * Construction activity at these times, other than that required for emergency works, will normally require the explicit permission of the relevant local authority.

In the case that works are required on Saturday evenings (16:30 to 19:00hrs), works will be required not to exceed noise levels of 60dB L_{Aeq(1hr)} and 65dB L_{Amax} at the Facade of Dwellings.

With regards to construction vibration, the TII/NRA Guidelines outline the following limits in respect of ensuring that no cosmetic damage occurs to buildings in the vicinity of construction works.

Table 3.5.2 Allowable vibration During Road Construction in Order to Minimise the Risk of Building Damage

Allowable vibration velocity (Peak Particle Velocity) at the closest part of any sensitive property to the source of vibration, at a frequency of		
Less than 10Hz	10 to 50Hz	50 to 100Hz (and above)
8 mm/s	12.5 mm/s	20 mm/s

Whilst the levels of vibration outlined in Table 3.5.2 are deemed to be appropriate for soundly constructed buildings, it may be appropriate to adopt lower limits on vibration in the case of sensitive buildings of high intrinsic or archaeological value that are not in poor state of repair. Limits outlined in German Standard DIN 4150-3 (1999-02) *Structural Vibration - Effects of Vibration on Structures* may be appropriate for use in such instances.

4. ROUTE CONSIDERATIONS

The route selection process for the proposed Scheme conducted by Clifton Scannel Emerson Associates (CSEA) emphasised the River Dodder as a key feature in the regional landscape. The proposed Scheme is located for the majority of its route through parkland and riparian greenfield sites adjacent to the River Dodder. The character of the Scheme as part of the "the Dodder Greenway" would be undermined if it were to deviate considerably and/or consistently from the immediate vicinity of the River Dodder. Failure to utilise the existing network of paths within River Dodder riparian parklands could be seen as a lost opportunity to emphasise the potential amenity value inherent in urban watercourses such as the Dodder. However through certain sensitive locations or areas not within public ownership or where it is not possible to place the route within riparian parkland, the shortest deviations were selected such as at Butterfield Avenue, Kilvere and Dodder Road Lower. Raised shared surfaces are proposed along these roads. The continuity of the Scheme will be insured by the implementation of preferential junctions and crossings for cyclists and pedestrians, as well as the implementation of a signage scheme at detailed design stage.

The proposed route allows for existing pedestrian footpaths to be upgraded to a high quality greenway, with links to pedestrian and cycle routes in the adjacent localities. The proposed route will, in time, integrate with the existing and future pedestrian and cycle routes (such as the Blueway Scheme) paralleling and crossing the Greenway and also its continuation into the Grand Canal Basin.

5. CONCLUSION

This report supports a Part 8 application for a portion of the Dodder Greenway between Orwell Park and Fortbridge near the Bohernabreena Reservoirs at Glenasmole. The scheme is located within the administrative districts of both South Dublin County Council and Dublin City Council.

A review of both national and local policy documents has shown that the development of the River Dodder Greenway is in accordance with planning policy. The Scheme provides an opportunity to meet specific objectives contained within these national and local policy documents and serves to satisfy specific green infrastructure objectives. In addition the proposed Scheme will encourage a shift to more sustainable modes by improving pedestrian and cyclist facilities.

The Scheme proposes the provision of a dedicated greenway generally comprising of a shared surface with upgraded or new road crossings. The Scheme includes for the provision of four new bridges crossing the River Dodder. There are also a number of on-road sections which will also include for the upgrade of existing junction geometry at a number of locations. Development of the Greenway Scheme will also include the provision of public lighting facilities which will be directed away from river edge. The Greenway also incorporates a specific landscape plan to enhance the environment through which the Greenway passes, by incorporating grassland management regimes, providing new planting, and enhanced landscape treatments at entrance points and to highlight key features along the route. Signage, furniture, and specific surface treatments will be considered further at the detailed design stage. The signage strategy will include both route directional signage and also promotional/branding signage to highlight the River Dodder and its key features en route. The overall impact of the Scheme will be to provide an enhanced parkland setting, a coherent wildlife corridor where possible and an improved environment for pedestrians and cyclists in a traffic calmed environment.

There will be minimal adverse impacts on Human Beings or Architecture, Archaeology and Cultural Heritage with the Scheme in fact providing generally positive impacts in both of these areas. There will be some limited loss of habitat and risks to the aquatic environment arising from the provision of the scheme, however these impacts will be mitigated through landscaping improvements and other measures to encourage the continued development of fauna along the River Dodder.

The proposed works will greatly enhance facilities for cyclists and park users in the area. The improvements will provide greater accessibility and integration of communities in the local area and will assist in providing a more sustainable transport network within the Greater Dublin Area. Environmental enhancements will increase and protect biodiversity.

Appendix A

Drawings

DODDER GREENWAY

PART 8 DRAWINGS

13_102_00_2000 PART 8 DRAWING LIST

13_102_00_2001 PROPOSED DODDER GREENWAY
THROUGH SOUTH DUBLIN Co. Co.
13_102_00_2002 PROPOSED DODDER GREENWAY
THROUGH SOUTH DUBLIN Co. Co.

SHEET 1 OF 2

SHEET 2 OF 2

13_102_00_2005 PROJECT OVERVIEW MAP

13_102_00_2200 DODDER GREENWAY EXTENT AND KEY PLAN

13_102_00_2201 PROPOSED SCHEME LAYOUT SHEET 1 OF 22
13_102_00_2202 PROPOSED SCHEME LAYOUT SHEET 2 OF 22
13_102_00_2203 PROPOSED SCHEME LAYOUT SHEET 3 OF 22
13_102_00_2204 PROPOSED SCHEME LAYOUT SHEET 4 OF 22
13_102_00_2205 PROPOSED SCHEME LAYOUT SHEET 5 OF 22
13_102_00_2206 PROPOSED SCHEME LAYOUT SHEET 6 OF 22
13_102_00_2207 PROPOSED SCHEME LAYOUT SHEET 7 OF 22
13_102_00_2208 PROPOSED SCHEME LAYOUT SHEET 8 OF 22
13_102_00_2209 PROPOSED SCHEME LAYOUT SHEET 9 OF 22
13_102_00_2210 PROPOSED SCHEME LAYOUT SHEET 10 OF 22
13_102_00_2211 PROPOSED SCHEME LAYOUT SHEET 11 OF 22
13_102_00_2212 PROPOSED SCHEME LAYOUT SHEET 12 OF 22
13_102_00_2213 PROPOSED SCHEME LAYOUT SHEET 13 OF 22
13_102_00_2214 PROPOSED SCHEME LAYOUT SHEET 14 OF 22
13_102_00_2215 PROPOSED SCHEME LAYOUT SHEET 15 OF 22
13_102_00_2216 PROPOSED SCHEME LAYOUT SHEET 16 OF 22
13_102_00_2217 PROPOSED SCHEME LAYOUT SHEET 17 OF 22
13_102_00_2218 PROPOSED SCHEME LAYOUT SHEET 18 OF 22
13_102_00_2219 PROPOSED SCHEME LAYOUT SHEET 19 OF 22
13_102_00_2220 PROPOSED SCHEME LAYOUT SHEET 20 OF 22
13_102_00_2221 PROPOSED SCHEME LAYOUT SHEET 21 OF 22
13_102_00_2222 PROPOSED SCHEME LAYOUT SHEET 22 OF 22

13_102_00_2230 PROPOSED PEDESTRIAN BRIDGE OVER THE
DODDER RIVER AT TALLAGHT BYPASS - PLAN

13_102_00_2231 PROPOSED PEDESTRIAN BRIDGE OVER THE
DODDER RIVER AT TALLAGHT BYPASS - LONG SECTION

13_102_00_2232 PROPOSED PEDESTRIAN BRIDGE FROM
KILVERE ESTATE TO RIVERSIDE COTTAGES

13_102_00_2233 PROPOSED PEDESTRIAN BRIDGE
AT BUSHY PARK

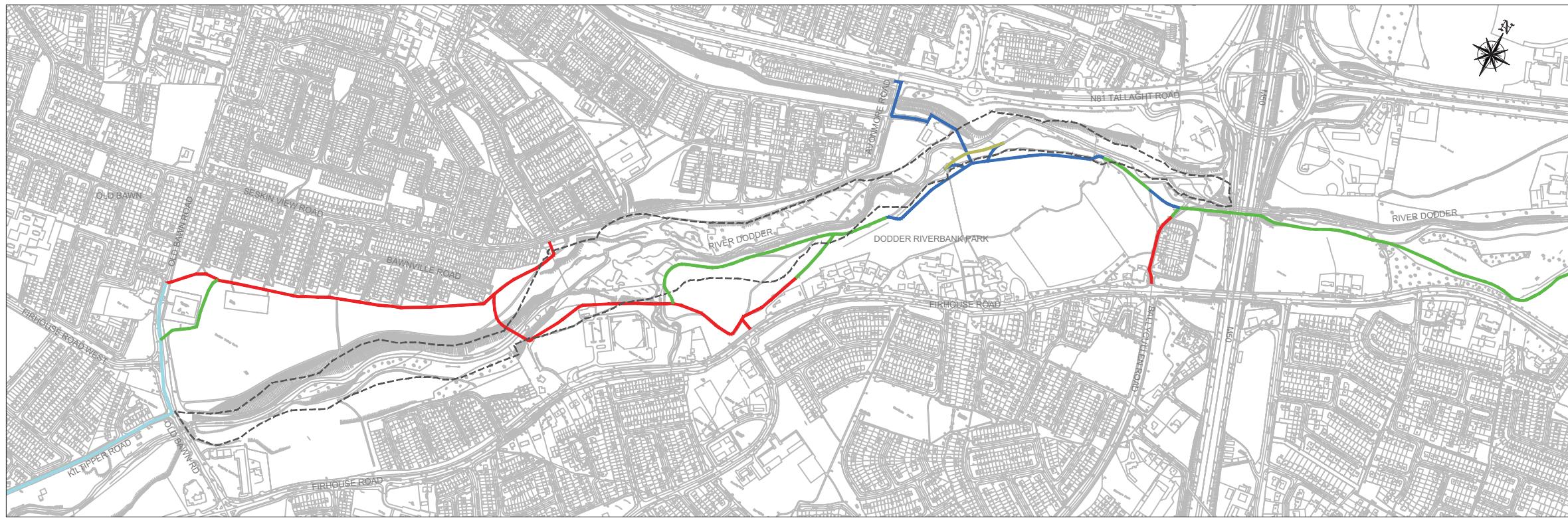
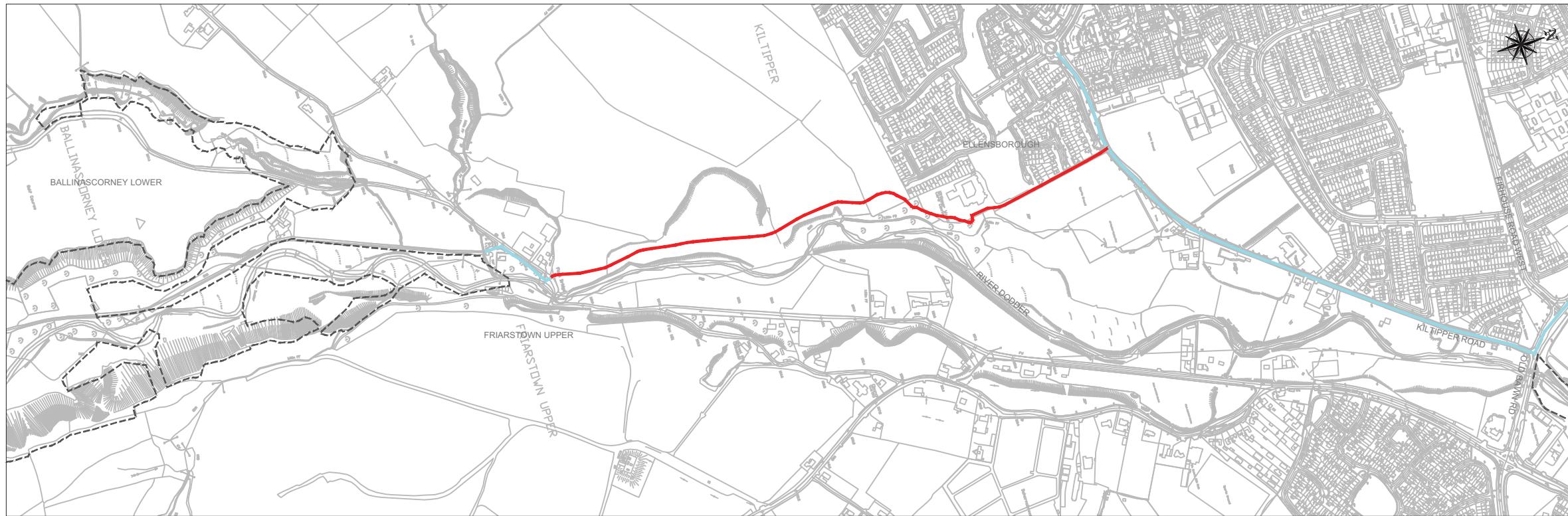
13_102_00_2234 PROPOSED PEDESTRIAN BRIDGE
AT ORWELL PARK - PLAN

13_102_00_2235 PROPOSED PEDESTRIAN BRIDGE
AT ORWELL PARK - LONG SECTION

13_102_00_2236 HARD LANDSCAPE MOOD BOARD

13_102_00_2237 SOFT LANDSCAPE MOOD BOARD

PROPOSED DODDER GREENWAY THROUGH SOUTH DUBLIN COUNTY COUNCIL



A	TITLE BLOCK AMENDED	KT	30/05/2017
Revision	Description	Initials	Date



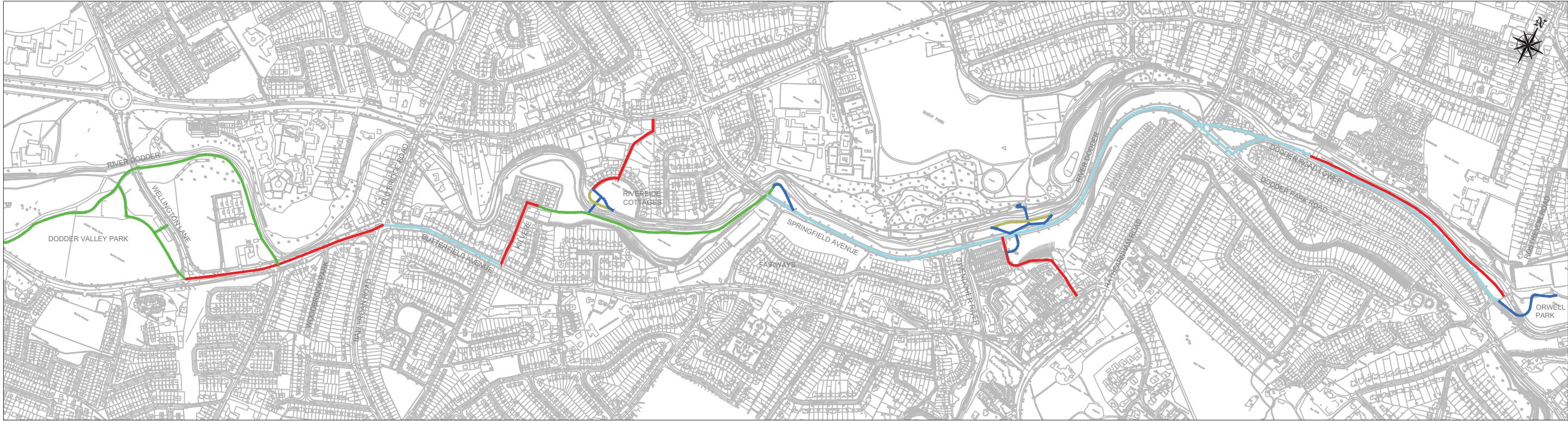
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Client	South Dublin County Council		
Project	Dodger Greenway		
Dwg. Title	Proposed Dodger Greenway Through South Dublin Co. Co. Sheet 2 of 2		
Drawn By	KT	Date	March 2016
Checked by	RG	Scale	1:5000 @ A1
Dwg. Progress			PART 8
Dwg. No.	13_102_00_2002-A		

PROPOSED DODDER GREENWAY THROUGH SOUTH DUBLIN COUNTY COUNCIL



LEGEND:

LENGTH
OF PATHS: PERCENTAGE

EXISTING ROUTE ALONG ROADS & PARKLAND WITH MINIMAL CHANGES		4885m	33.61%
EXISTING ROUTE WITHIN PARKLAND TO BE UPGRADED		3626m	24.95%
EXISTING ROUTE ALONG ROAD TO BE UPGRADED		4335m	29.83%
NEW ROUTE TO BE CONSTRUCTED		1687m	11.61%
TOTAL:		14533m	100%
PATH TO BE REMOVED		375m	
PROPOSED NATURAL HERITAGE AREAS			
EXISTING WALKWAYS		11530m	

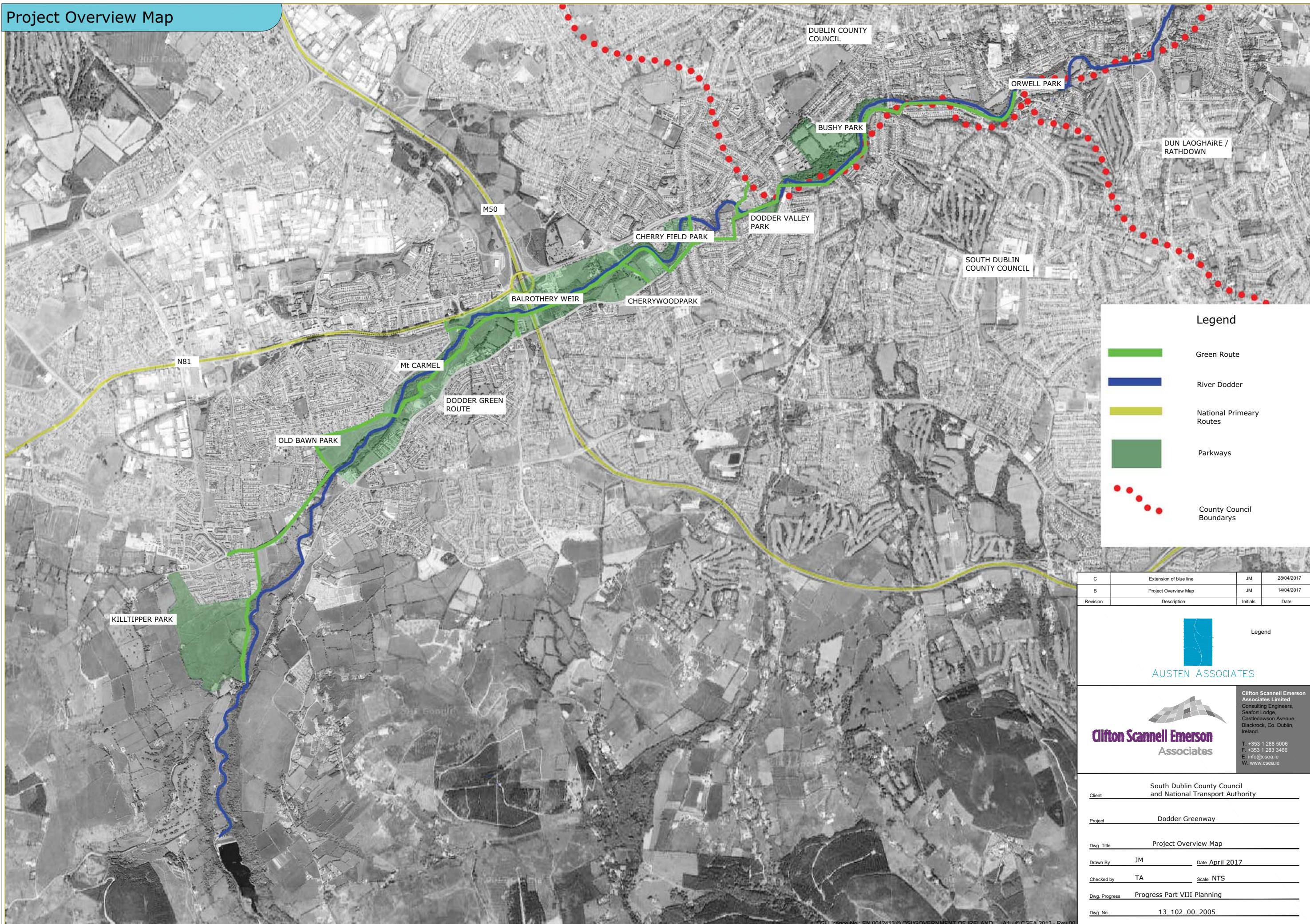
A	TITLE BLOCK AMENDED	KT	30/05/2017
Revision	Description	Initials	Date



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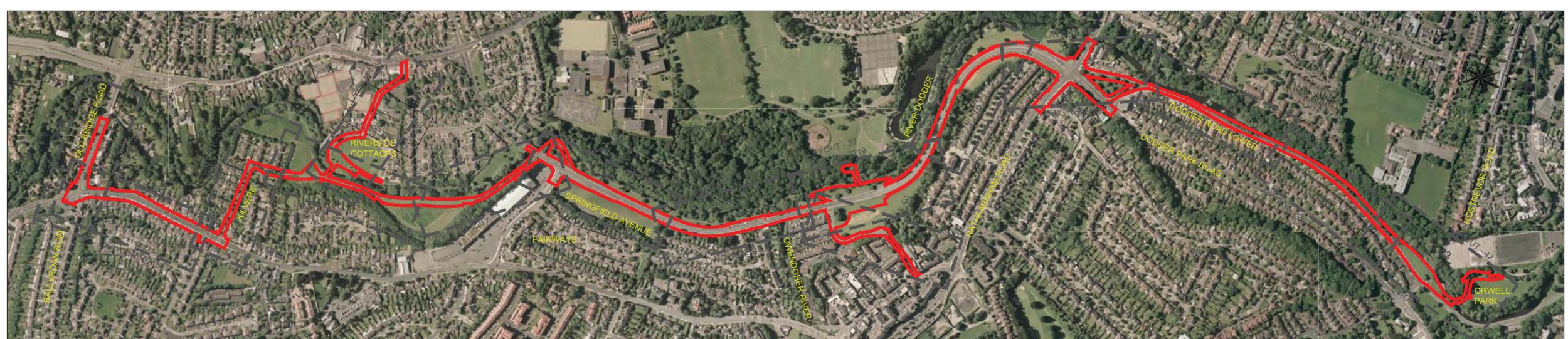
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Project	Dodder Greenway		
Dwg. Title	Proposed Dodder Greenway Through South Dublin Co. Co. Sheet 2 of 2		
Drawn By	KT	Date	March 2016
Checked by	RG	Scale	1:5000 @ A1
Dwg. Progress	PART 8		
Dwg. No.	13_102_00_2002-A		

Project Overview Map

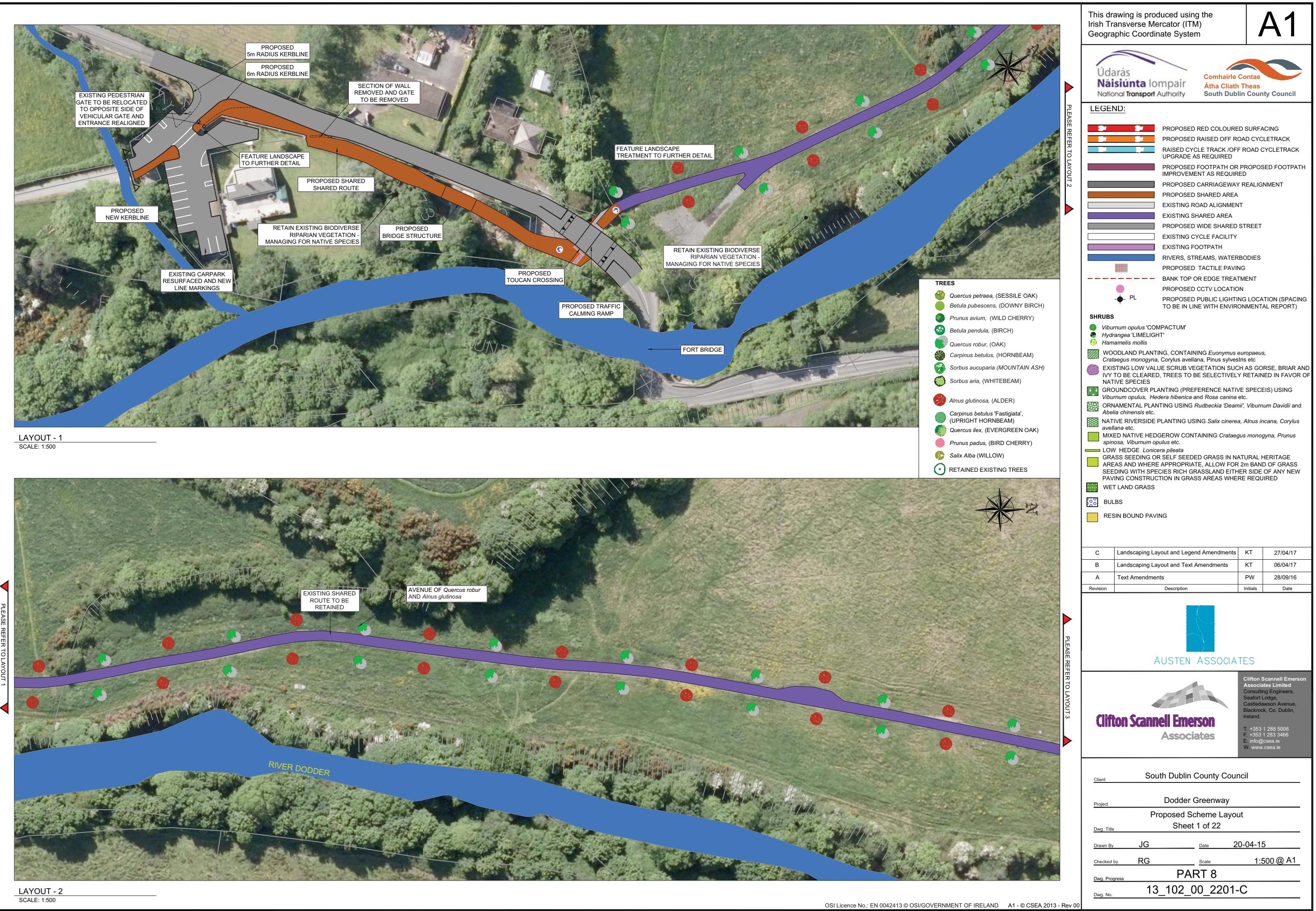


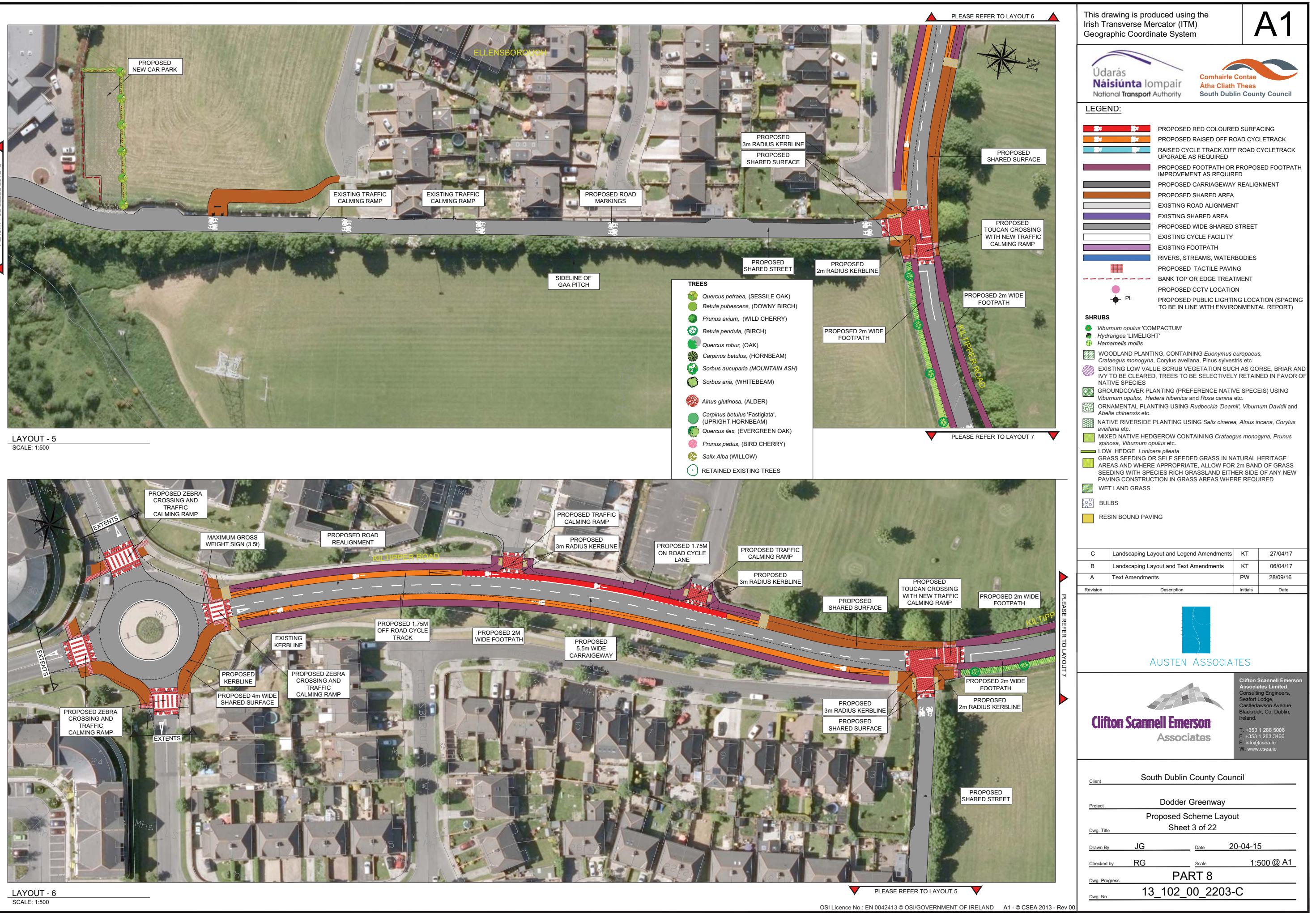
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PROPOSED SCHEME EXTENT KEY PLAN

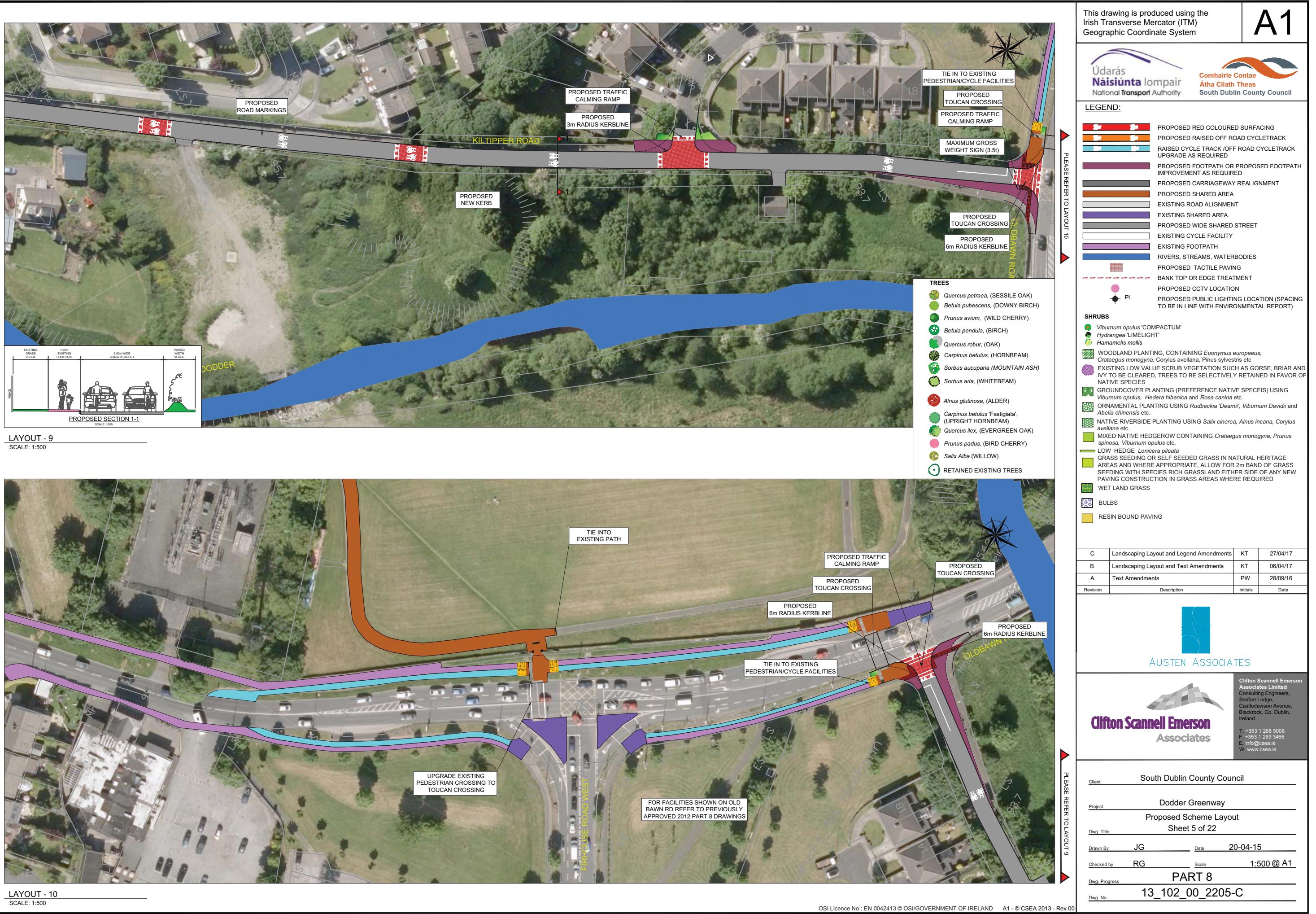


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Revision	Description		Initials	Date
 <p>Clifton Scannell Emerson Associates</p>				
<p>Clifton Scannell Emerson Associates Limited Consulting Engineers, Seafort Lodge, Castedawson Avenue, Blackrock, Co. Dublin, Ireland.</p> <p>T. +353 1 288 5006 F. +353 1 283 3466 E. info@csea.ie W. www.csea.ie</p>				
<p>South Dublin County Council National Transport Authority (NTA)</p>				
Client				
Project	Dodder Greenway			
Dwg. Title	Proposed Overall Layout			
Drawn By	JG	Date	April 2016	
Checked by	RG	Scale	1:5000 @ A1	
Dwg. Progress	Part 8			
Dwg. No.	13_102_00_2200-A			











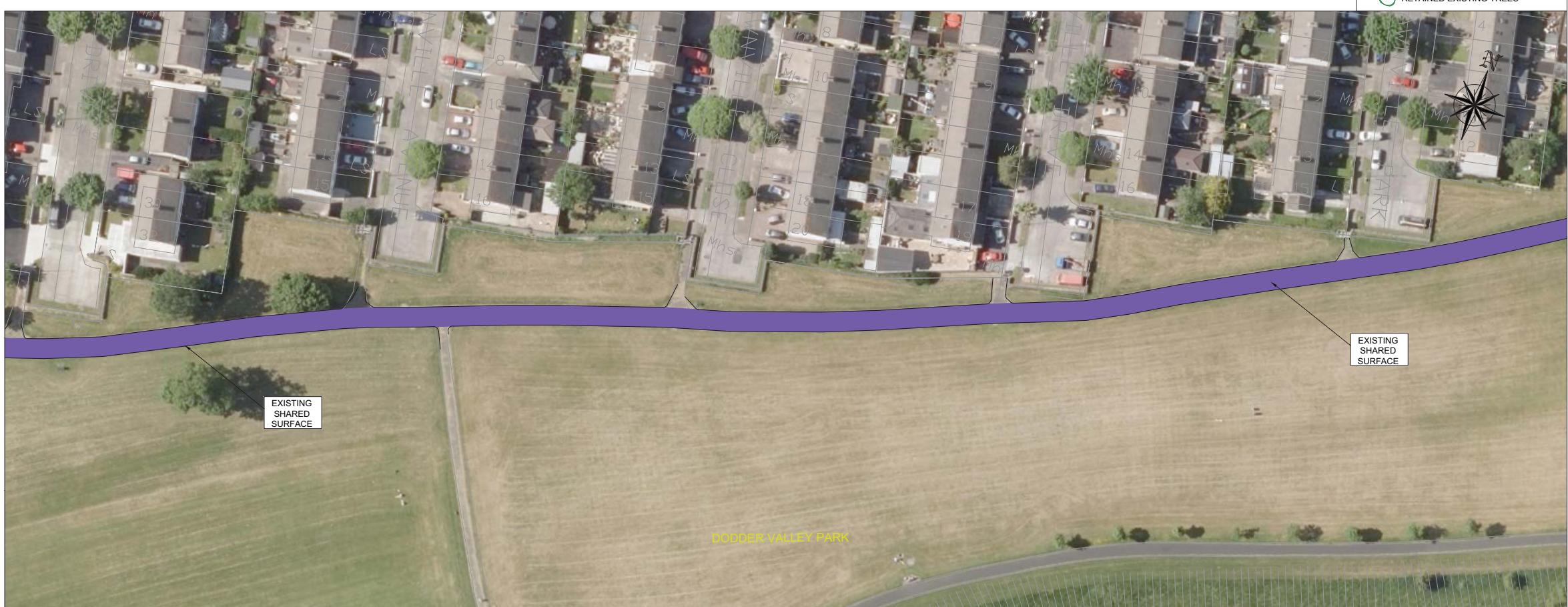
LAYOUT 11 ▼ PLEASE REFER TO LAYOUT 10

LAYOUT

PLEASE REFER TO LAYOUT 10

1

LAYOUT -



LAYOUT - 12

10 of 10

This drawing is produced using the
Irish Transverse Mercator (ITM)
Geographic Coordinate System

A1



LEGEND:

	PROPOSED RED COLOURED SURFACING
	PROPOSED RAISED OFF ROAD CYCLETRACK
	RAISED CYCLE TRACK/OFF ROAD CYCLETRACK UPGRADE AS REQUIRED
	PROPOSED FOOTPATH OR PROPOSED FOOTPATH IMPROVEMENT AS REQUIRED
	PROPOSED CARRIAGeway REALIGNMENT
	PROPOSED SHARED AREA
	EXISTING ROAD ALIGNMENT
	EXISTING SHARED AREA
	PROPOSED WIDE SHARED STREET
	EXISTING CYCLE FACILITY
	EXISTING FOOTPATH
	RIVERS, STREAMS, WATERBODIES
	PROPOSED TACTILE PAVING
<hr/>	
	BANK TOP OR EDGE TREATMENT
	PROPOSED CCTV LOCATION
	PROPOSED PUBLIC LIGHTING LOCATION (SPACING TO BE IN LINE WITH ENVIRONMENTAL REPORT)

SHRUBS

- *Viburnum opulus* 'COMPACTUM'
- *Hydrangea* 'LIMELIGHT'
- *Hamamelis mollis*

WOODLAND PLANTING, CONTAINING *Euonymus europaeus*, *Crataegus monogyna*, *Corylus avellana*, *Pinus sylvestris* etc

EXISTING LOW VALUE SCRUB VEGETATION SUCH AS GORSE, BRIAR AND IVY TO BE CLEARED, TREES TO BE SELECTIVELY RETAINED IN FAVOR OF NATIVE SPECIES

GROUNDCOVER PLANTING (PREFERENCE NATIVE SPECIES) USING *Viburnum opulus*, *Hedera helix* and *Rosa canina* etc.

ORNAMENTAL PLANTING USING *Rudbeckia* 'Dæmeli', *Viburnum Davidii* and *Abelia chinensis* etc.

NATIVE RIVERSIDE PLANTING USING *Salix cinerea*, *Alnus incana*, *Corylus avellana* etc.

MIXED NATIVE HEDGEROW CONTAINING *Crataegus monogyna*, *Prunus spinosa*, *Viburnum opulus* etc.

LOW HEDGE *Lonicera pileata*

GRASS SEEDING OR SELF SEEDED GRASS IN NATURAL HERITAGE AREAS AND WHERE APPROPRIATE, ALLOW FOR 2m BAND OF GRASS SEEDING WITH SPECIES RICH GRASSLAND EITHER SIDE OF ANY NEW PAVING CONSTRUCTION IN GRASS AREAS WHERE REQUIRED

C	Landscaping Layout and Legend Amendments	KT	27/04/17
B	Landscaping Layout and Text Amendments	KT	06/04/17
A	Text Amendments	PW	28/09/16

AUSTEN ASSOCIATES



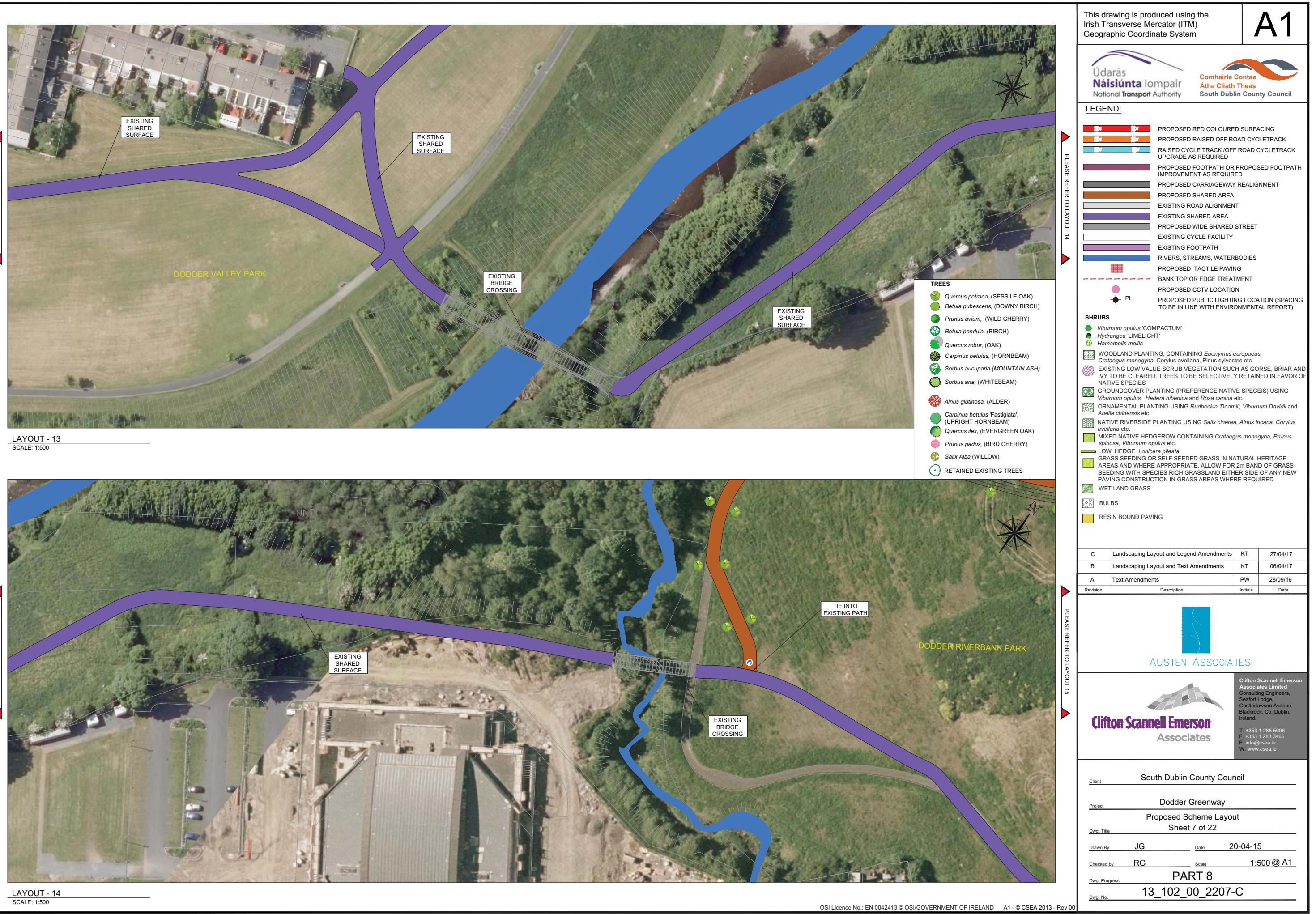
**Clifton Scannell Emerson
Associates Limited**
Consulting Engineers,
Seafort Lodge,
Castledawson Avenue,
Blackrock, Co. Dublin,
Ireland.

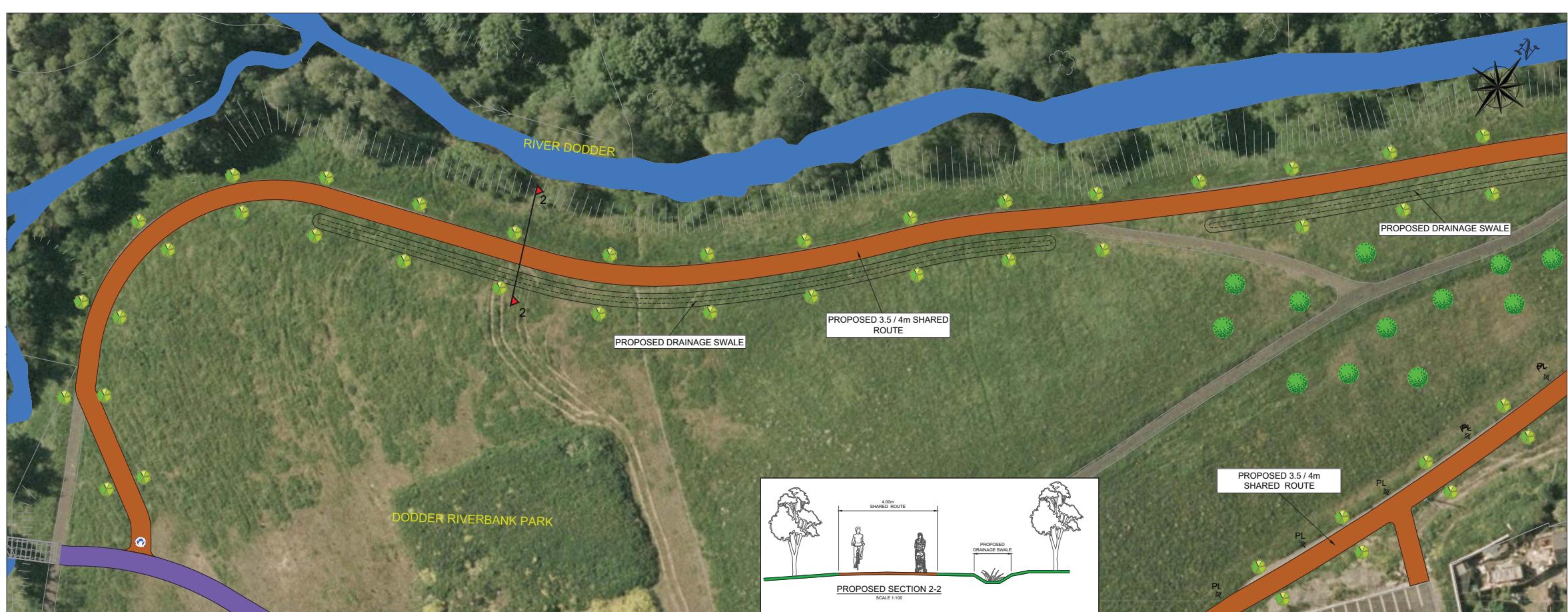
South Pacific Coast Survey

Dodd's Greenway

Proposed Scheme Layout
Sheet 6 of 22

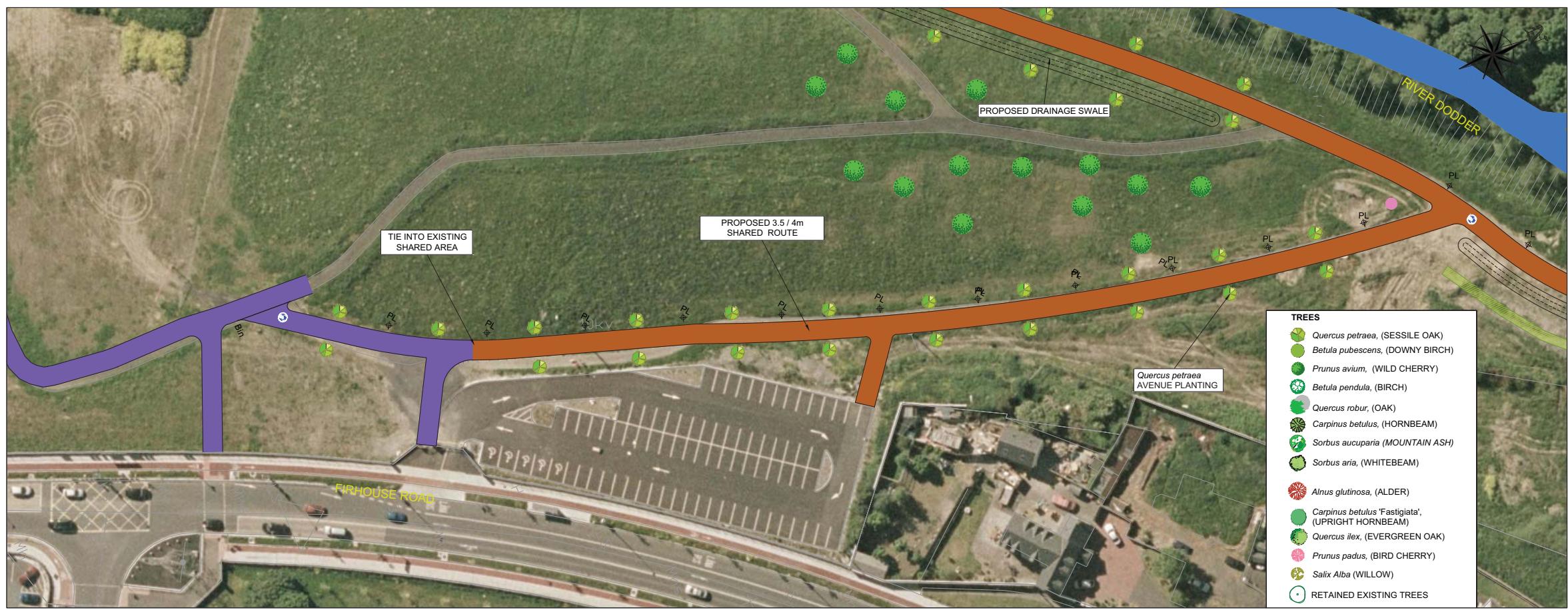
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Dwg. No. **13_102_00_2206-C**





LAYOUT - 15

SCALE: 1:500



LAYOUT - 16

SCALE: 1:500

This drawing is produced using the
Irish Transverse Mercator (ITM)
Geographic Coordinate System

A1



LEGEND:

The legend consists of a vertical list of 14 items, each with a colored square or icon followed by a text description. The items are:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- RAISED CYCLE TRACK/OFF ROAD CYCLETRACK UPGRADE AS REQUIRED
- PROPOSED FOOTPATH OR PROPOSED FOOTPATH IMPROVEMENT AS REQUIRED
- PROPOSED CARRIAGEWAY REALIGNMENT
- PROPOSED SHARED AREA
- EXISTING ROAD ALIGNMENT
- EXISTING SHARED AREA
- PROPOSED WIDE SHARED STREET
- EXISTING CYCLE FACILITY
- EXISTING FOOTPATH
- RIVERS, STREAMS, WATERBODIES
- PROPOSED TACTILE PAVING
- BANK TOP OR EDGE TREATMENT
- PROPOSED CCTV LOCATION
- PROPOSED PUBLIC LIGHTING LOCATION (SPACING TO BE IN LINE WITH ENVIRONMENTAL REPORT)

Below the legend, there is a dashed red line, a pink circle, a black dot, and the text 'PL'.

SHRUBS

-  *Viburnum opulus 'COMPACTUM'*
-  *Hydrangea 'LIMELIGHT'*
-  *Hamamelis mollis*
-  **WOODLAND PLANTING, CONTAINING *Euonymus europaeus*, *Crataegus monogyna*, *Corylus avellana*, *Pinus sylvestris* etc**
-  **EXISTING LOW VALUE SCRUB VEGETATION SUCH AS GORSE, BRIAR AND IVY TO BE CLEARED, TREES TO BE SELECTIVELY RETAINED IN FAVOR OF NATIVE SPECIES**
-  **GROUNDCOVER PLANTING (PREFERENCE NATIVE SPECIES) USING *Viburnum opulus*, *Hedera hibernica* and *Rosa canina* etc.**
-  **ORNAMENTAL PLANTING USING *Rudbeckia 'Deamii'*, *Viburnum Davidii* and *Abelia chinensis* etc.**
-  **NATIVE RIVERSIDE PLANTING USING *Salix cinerea*, *Alnus incana*, *Corylus avellana* etc.**
-  **MIXED NATIVE HEDGEROW CONTAINING *Crataegus monogyna*, *Prunus spinosa*, *Viburnum opulus* etc.**
-  **LOW HEDGE *Lonicera pileata***
-  **GRASS SEEDING OR SELF SEEDED GRASS IN NATURAL HERITAGE AREAS AND WHERE APPROPRIATE, ALLOW FOR 2m BAND OF GRASS SEEDING WITH SPECIES RICH GRASSLAND EITHER SIDE OF ANY NEW PAVING CONSTRUCTION IN GRASS AREAS WHERE REQUIRED**
-  **WET LAND GRASS**
-  **BULBS**
-  **PESIM ROUND PAVING**

C	Landscaping Layout and Legend Amendments	KT	27/04/17
B	Landscaping Layout and Text Amendments	KT	06/04/17
A	Text Amendments	PW	28/09/16
D	Landscaping Layout and Text Amendments	KT	06/04/17



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Client	South Dublin County Council		
Project	Dodder Greenway		
Dwg. Title	Proposed Scheme Layout		
	Sheet 8 of 22		
Drawn By	JG	Date	23-07-13
Checked by	RG	Scale	1:500 @ A1
Dwg. Progress	PART 8		
Dwg. No.	13_102_00_2208-C		

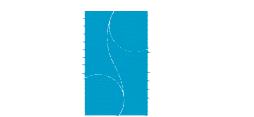
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- RAISED CYCLE TRACK/OFF ROAD CYCLETRACK UPGRADE AS REQUIRED
- PROPOSED FOOTPATH OR PROPOSED FOOTPATH IMPROVEMENT AS REQUIRED
- PROPOSED CARRIAGEWAY REALIGNMENT
- PROPOSED SHARED AREA
- EXISTING ROAD ALIGNMENT
- EXISTING SHARED AREA
- PROPOSED WIDE SHARED STREET
- EXISTING CYCLE FACILITY
- EXISTING FOOTPATH
- RIVERS, STREAMS, WATERBODIES
- PROPOSED TACTILE PAVING
- BANK TOP OR EDGE TREATMENT
- PROPOSED CCTV LOCATION
- PROPOSED PUBLIC LIGHTING LOCATION (SPACING TO BE IN LINE WITH ENVIRONMENTAL REPORT)
- PL

SHRUBS

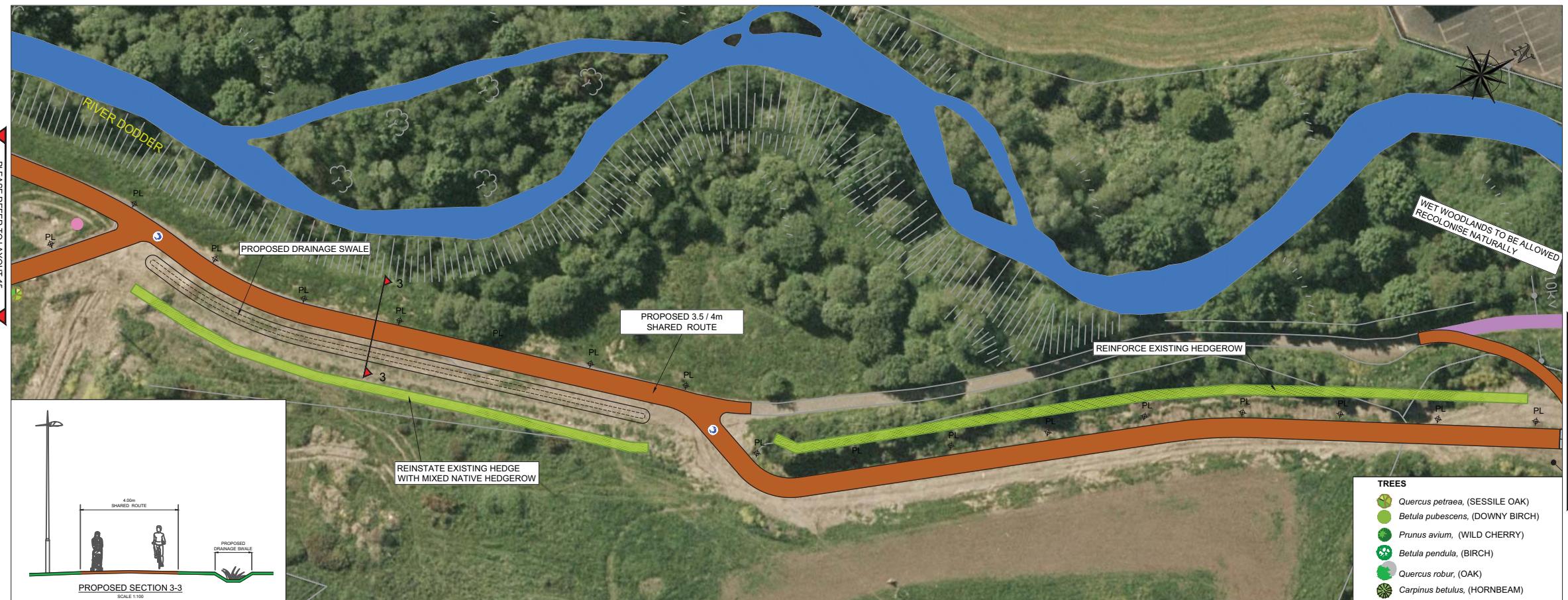
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- Hydrangea 'LIMELIGHT'*
- Hamamelis mollis*
- WOODLAND PLANTING, CONTAINING *Euonymus europaeus*, *Crataegus monogyna*, *Corylus avellana*, *Pinus sylvestris* etc
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- ORNAMENTAL PLANTING USING *Rudbeckia 'Deamii'*, *Viburnum Davidii* and *Abelia chinensis* etc.
- NATIVE RIVERSIDE PLANTING USING *Salix cinerea*, *Alnus incana*, *Corylus avellana* etc.
- MIXED NATIVE HEDGEROW CONTAINING *Crataegus monogyna*, *Prunus spinosa*, *Viburnum opulus* etc.
- LOW HEDGE *Lonicera pileata*
- GRASS SEEDING OR SELF-SEEDED GRASS IN NATURAL HERITAGE AREAS AND WHERE APPROPRIATE, ALLOW FOR 2m BAND OF GRASS SEEDING WITH SPECIES RICH GRASSLAND EITHER SIDE OF ANY NEW PAVING CONSTRUCTION IN GRASS AREAS WHERE REQUIRED
- WET LAND GRASS
- BULBS
- RESIN BOUND PAVING

C	Landscape Layout and Legend Amendments	KT	27/04/17
B	Landscape Layout and Text Amendments	KT	06/04/17
A	Text Amendments	PW	28/09/16
Revision	Description	Initials	Date

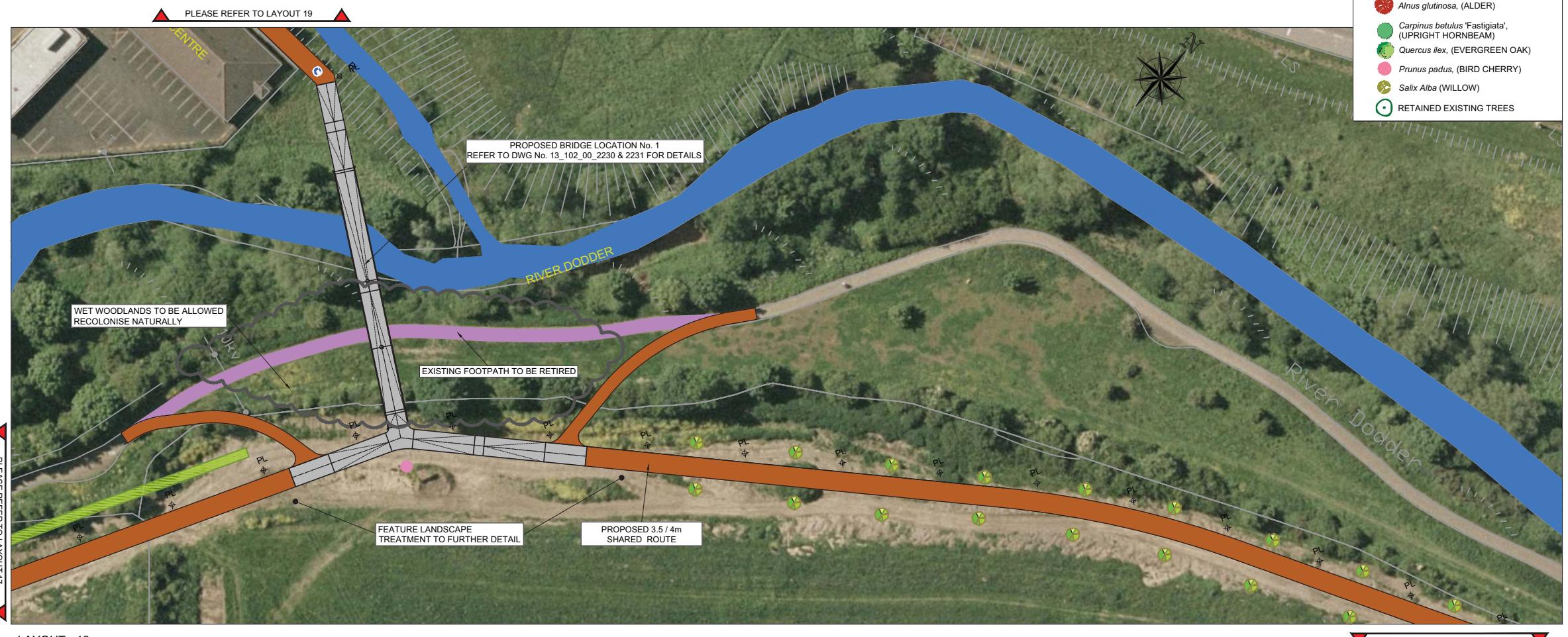


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E: info@csea.ie
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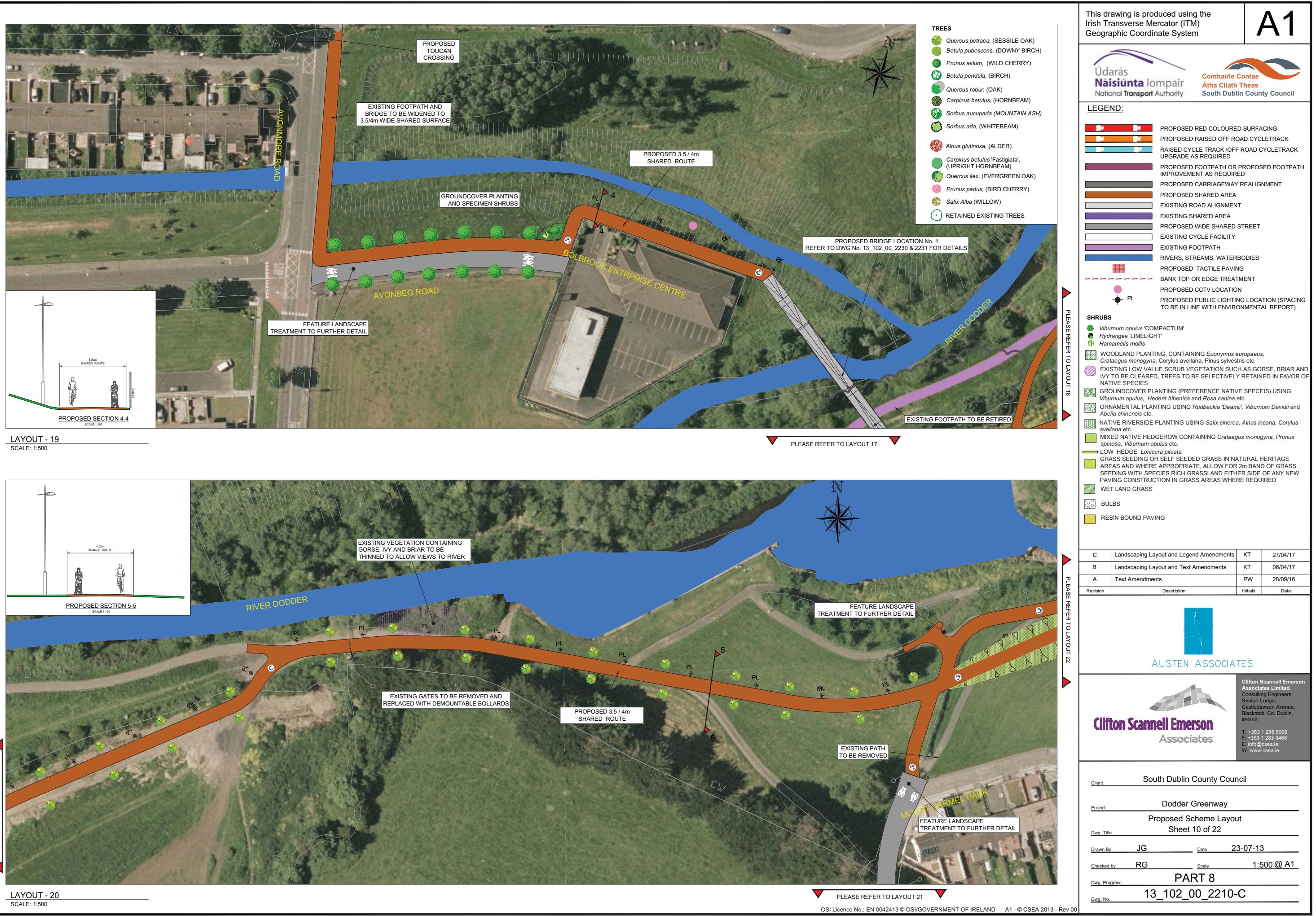
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Project	Dodder Greenway		
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Drawn By	JG	Date	23-07-13
Checked by	RG	Scale	1:500 @ A1
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Dwg. No.	13_102_00_2209-C		



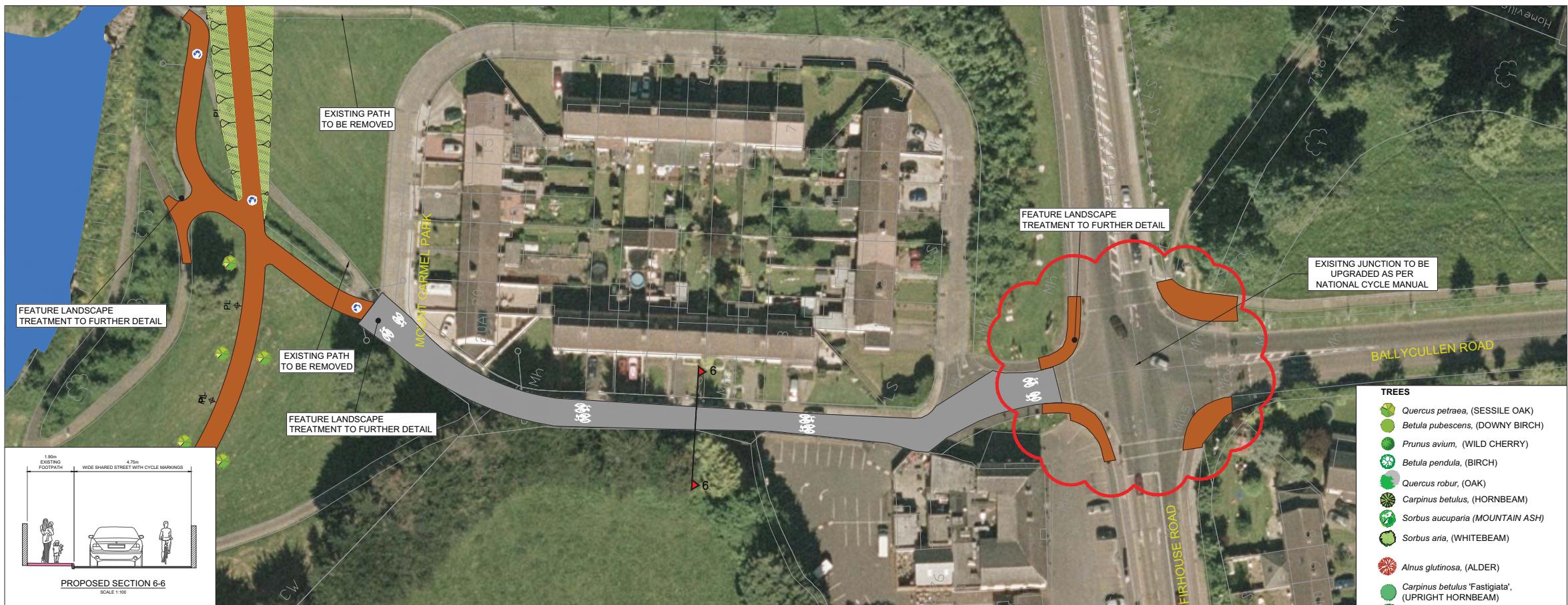
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LAYOUT - 18
SCALE: 1:500



PLEASE REFER TO LAYOUT 22



This drawing is produced using the Irish Transverse Mercator (ITM) Geographic Coordinate System

A1



LEGEND:

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PROPOSED RAISED OFF ROAD CYCLETRACK
RAISED CYCLE TRACK/OFF ROAD CYCLETRACK UPGRADE AS REQUIRED
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BANK TOP OR EDGE TREATMENT
PROPOSED CCTV LOCATION
PROPOSED PUBLIC LIGHTING LOCATION (SPACING TO BE IN LINE WITH ENVIRONMENTAL REPORT)

SHRUBS

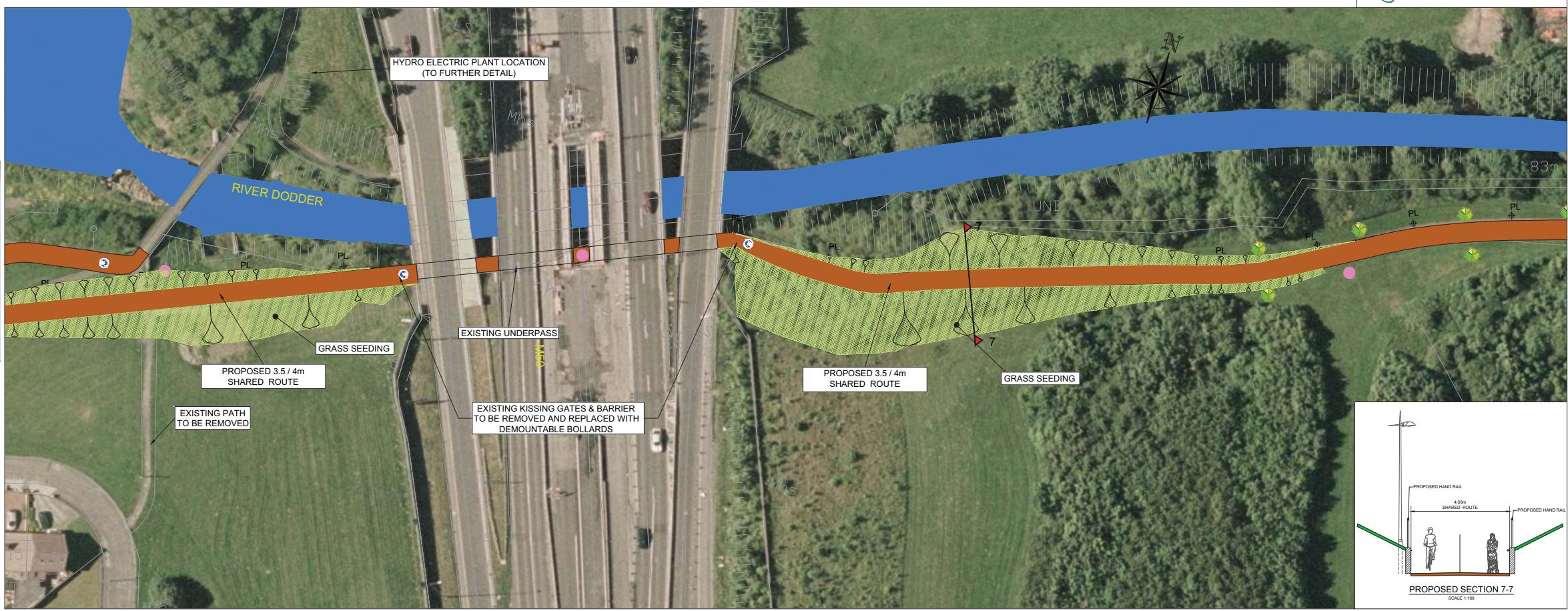
Viburnum opulus 'COMPACTUM'
Hydrangea 'LIMELIGHT'
Hamamelis mollis
WOODLAND PLANTING, CONTAINING Euonymus europaeus, Crataegus monogyna, Corylus avellana, Pinus sylvestris etc
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LOW HEDGE Lonicera pileata
GRASS SEEDING OR SELF SEEDED GRASS IN NATURAL HERITAGE AREAS AND WHERE APPROPRIATE, ALLOW FOR 2m BAND OF GRASS SEEDING WITH SPECIES RICH GRASSLAND EITHER SIDE OF ANY NEW PAVING CONSTRUCTION IN GRASS AREAS WHERE REQUIRED
WET LAND GRASS
BULBS
RESIN BOUND PAVING

C	Landscape Layout and Legend Amendments	KT	27/04/17
B	Landscape Layout and Text Amendments	KT	06/04/17
A	Text Amendments	PW	28/09/16
Revision	Description	Initials	Date



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Client	South Dublin County Council		
Project	Dodder Greenway		
Proposed Scheme Layout	Sheet 11 of 22		
Dwg. Title	JG	Date	23-07-13
Drawn By	RG	Scale	1:500 @ A1
Checked by			
Dwg. Progress			
Dwg. No.	13_102_00_2211-C		

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- RAISED CYCLE TRACK/OFF ROAD CYCLETRACK UPGRADE AS REQUIRED
- PROPOSED FOOTPATH OR PROPOSED FOOTPATH IMPROVEMENT AS REQUIRED
- PROPOSED CARRIAGEWAY REALIGNMENT
- PROPOSED SHARED AREA
- EXISTING ROAD ALIGNMENT
- EXISTING SHARED AREA
- PROPOSED WIDE SHARED STREET
- EXISTING CYCLE FACILITY
- EXISTING FOOTPATH
- RIVERS, STREAMS, WATERBODIES
- PROPOSED TACTILE PAVING
- BANK TOP OR EDGE TREATMENT
- PROPOSED CCTV LOCATION
- PROPOSED PUBLIC LIGHTING LOCATION (SPACING TO BE IN LINE WITH ENVIRONMENTAL REPORT)

SHRUBS

- Viburnum opulus 'COMPACTUM'*
- Hydrangea 'LIMELIGHT'*
- Hamamelis mollis*
- WOODLAND PLANTING, CONTAINING *Euonymus europaeus*, *Crataegus monogyna*, *Corylus avellana*, *Pinus sylvestris* etc
- EXISTING LOW VALUE SCRUB VEGETATION SUCH AS GORSE, BRIAR AND IVY TO BE CLEARED, TREES TO BE SELECTIVELY RETAINED IN FAVOR OF NATIVE SPECIES
- GROUNDCOVER PLANTING (PREFERENCE NATIVE SPECIES) USING *Viburnum opulus*, *Hedera hibernica* and *Rosa canina* etc.
- ORNAMENTAL PLANTING USING *Rudbeckia 'Deamii'*, *Viburnum Davidii* and *Abelia chinensis* etc.
- NATIVE RIVERSIDE PLANTING USING *Salix cinerea*, *Alnus incana*, *Corylus avellana* etc.
- MIXED NATIVE HEDGEROW CONTAINING *Crataegus monogyna*, *Prunus spinosa*, *Viburnum opulus* etc.
- LOW HEDGE *Lonicera pileata*
- GRASS SEEDING OR SELF-SEEDED GRASS IN NATURAL HERITAGE AREAS AND WHERE APPROPRIATE, ALLOW FOR 2m BAND OF GRASS SEEDING WITH SPECIES RICH GRASSLAND EITHER SIDE OF ANY NEW PAVING CONSTRUCTION IN GRASS AREAS WHERE REQUIRED
- WET LAND GRASS
- BULBS
- RESIN BOUND PAVING

C	Landscape Layout and Legend Amendments	KT	27/04/17
B	Landscape Layout and Text Amendments	KT	06/04/17
A	Text Amendments	PW	28/09/16
Revision	Description	Initials	Date



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South Dublin County Council

Dodder Greenway

Proposed Scheme Layout

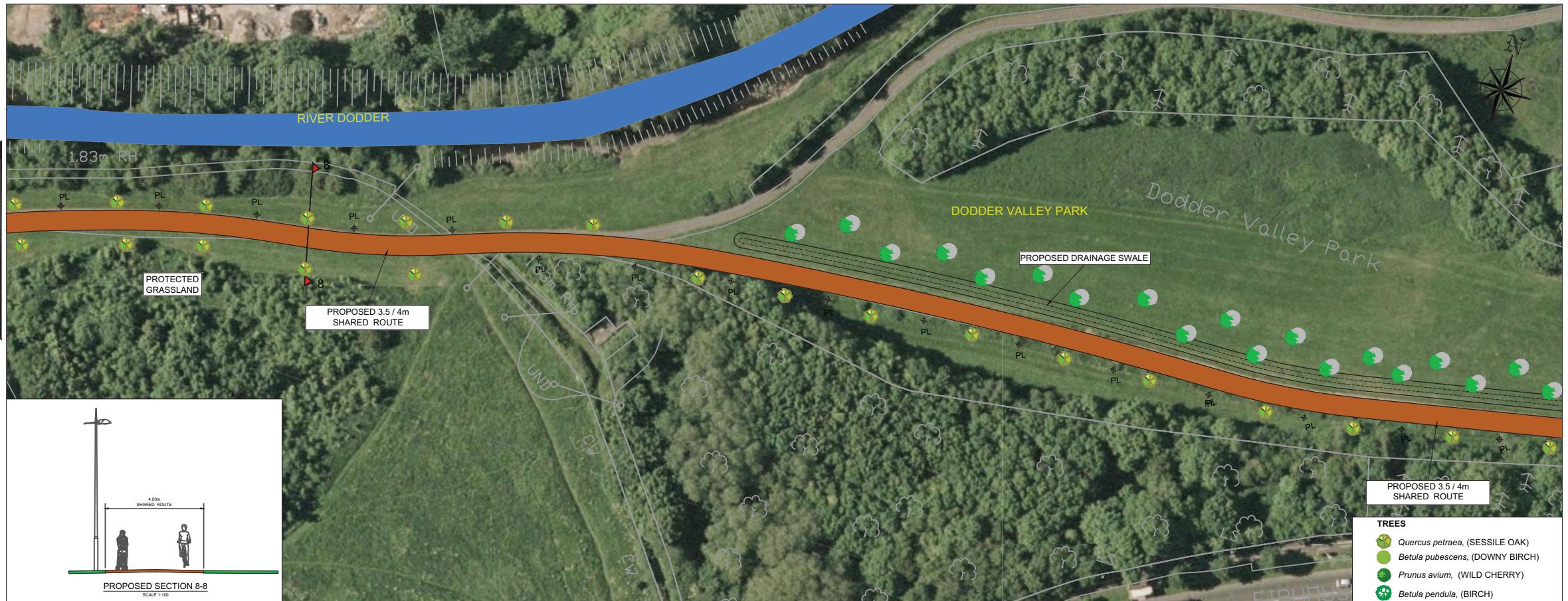
Sheet 12 of 22

Drawn By JG Date 23-07-13

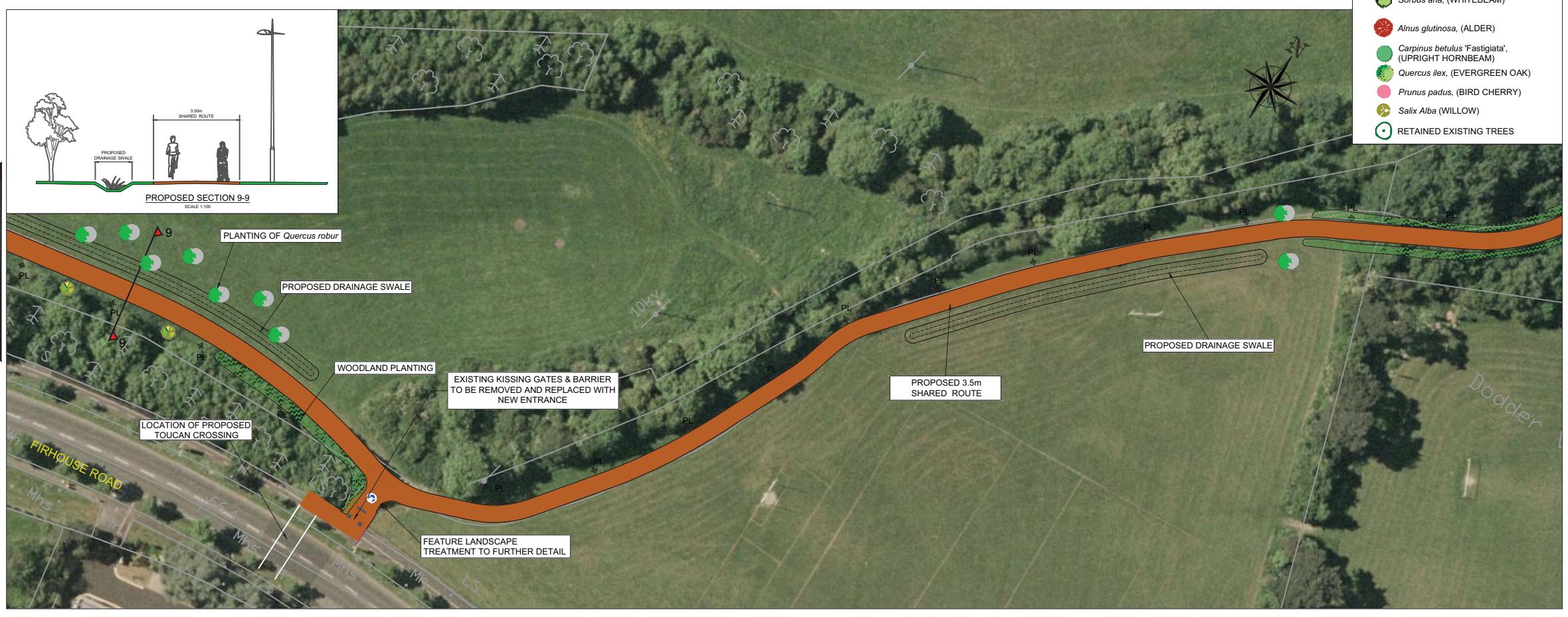
Checked by RG Scale 1:500 @ A1

Dwg. Progress

Dwg. No. 13_102_00_2212-C



LAYOUT - 23
SCALE: 1:500



LAYOUT - 24
SCALE: 1:500

LEGEND:

- PROPOSED RED COLOURED SURFACING
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SHRUBS

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- Hamamelis mollis*

WOODLAND PLANTING, CONTAINING *Euonymus europaeus*, *Crataegus monogyna*, *Corylus avellana*, *Pinus sylvestris* etc

EXISTING LOW VALUE SCRUB VEGETATION SUCH AS GORSE, BRIAR AND NATIVE SPECIES

GROUNDCOVER PLANTING (PREFERENCE NATIVE SPECIES) USING *Viburnum opulus*, *Hedera hibernica* and *Rosa canina* etc.

ORNAMENTAL PLANTING USING *Rudbeckia 'Deamii'*, *Viburnum Davidii* and *Abelia chinensis* etc.

NATIVE RIVERSIDE PLANTING USING *Salix cinerea*, *Alnus incana*, *Corylus avellana* etc.

MIXED NATIVE HEDGEROW CONTAINING *Crataegus monogyna*, *Prunus spinosa*, *Viburnum opulus* etc.

LOW HEDGE *Lonicera pileata*

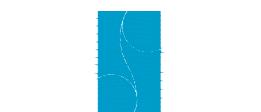
GRASS SEEDING OR SELF-SEDED GRASS IN NATURAL HERITAGE AREAS AND WHERE APPROPRIATE, ALLOW FOR 2m BAND OF GRASS SEEDING WITH SPECIES RICH GRASSLAND EITHER SIDE OF ANY NEW PAVING CONSTRUCTION IN GRASS AREAS WHERE REQUIRED

WET LAND GRASS

BULBS

RESIN BOUND PAVING

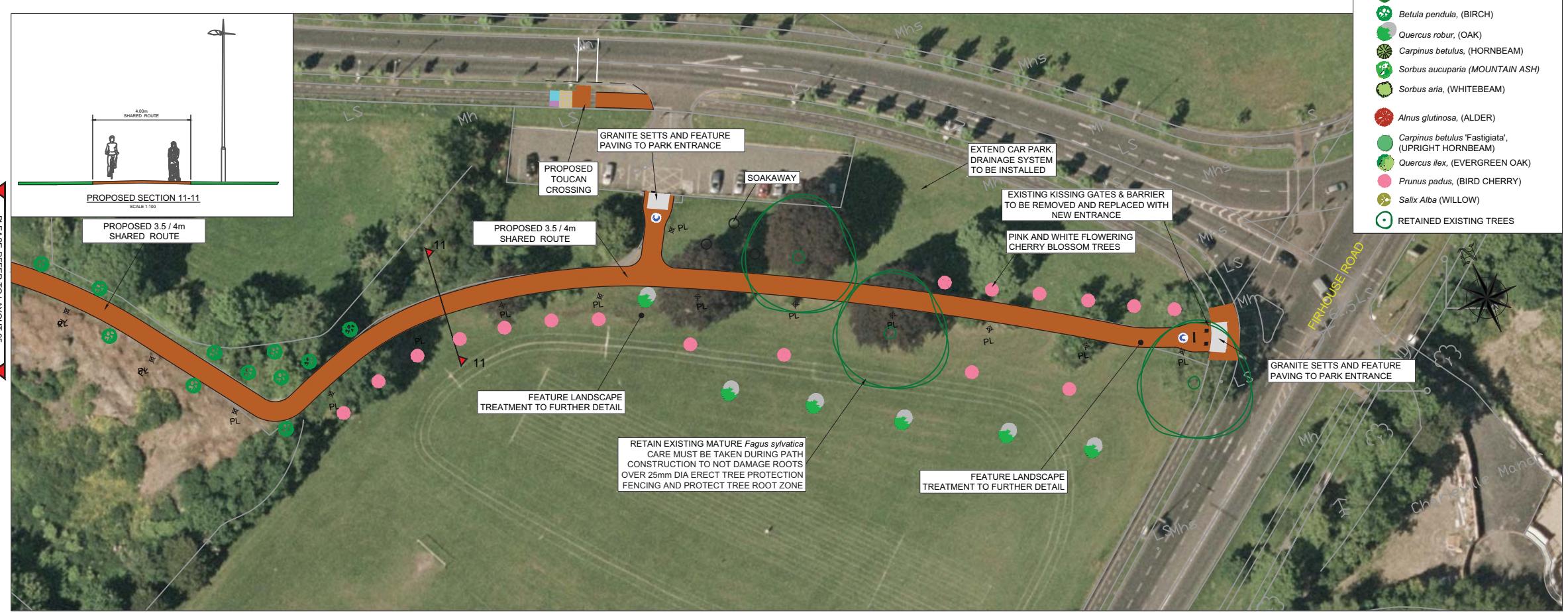
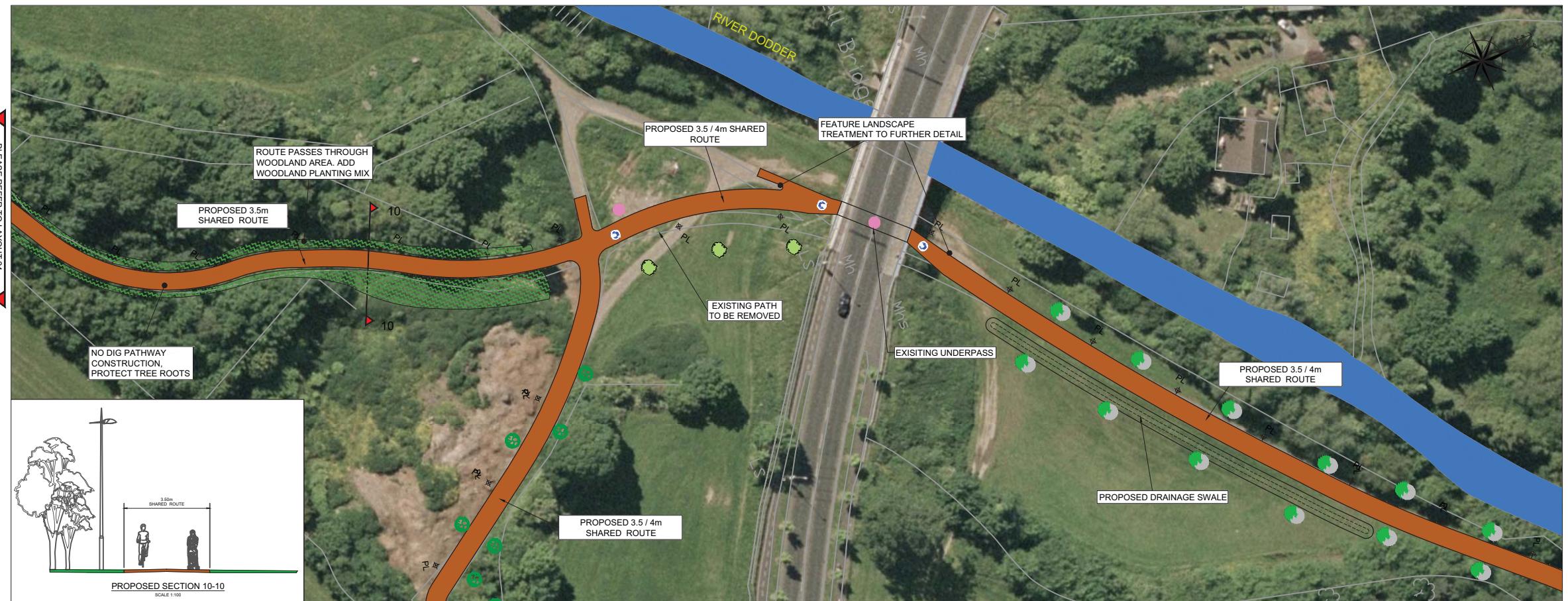
C	Landscape Layout and Legend Amendments	KT	27/04/17
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Client	South Dublin County Council		
Project	Dodder Greenway		
Dwg. Title	Proposed Scheme Layout Sheet 13 of 22		
Drawn By	JG	Date	23-07-13
Checked by	RG	Scale	1:500 @ A1
Dwg. Progress			
Dwg. No.	13_102_00_2213-C		



LEGEND:

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	Hydrangea 'LIMELIGHT'
	Hamamelis mollis
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	WET LAND GRASS
	BULBS
	RESIN BOUND PAVING

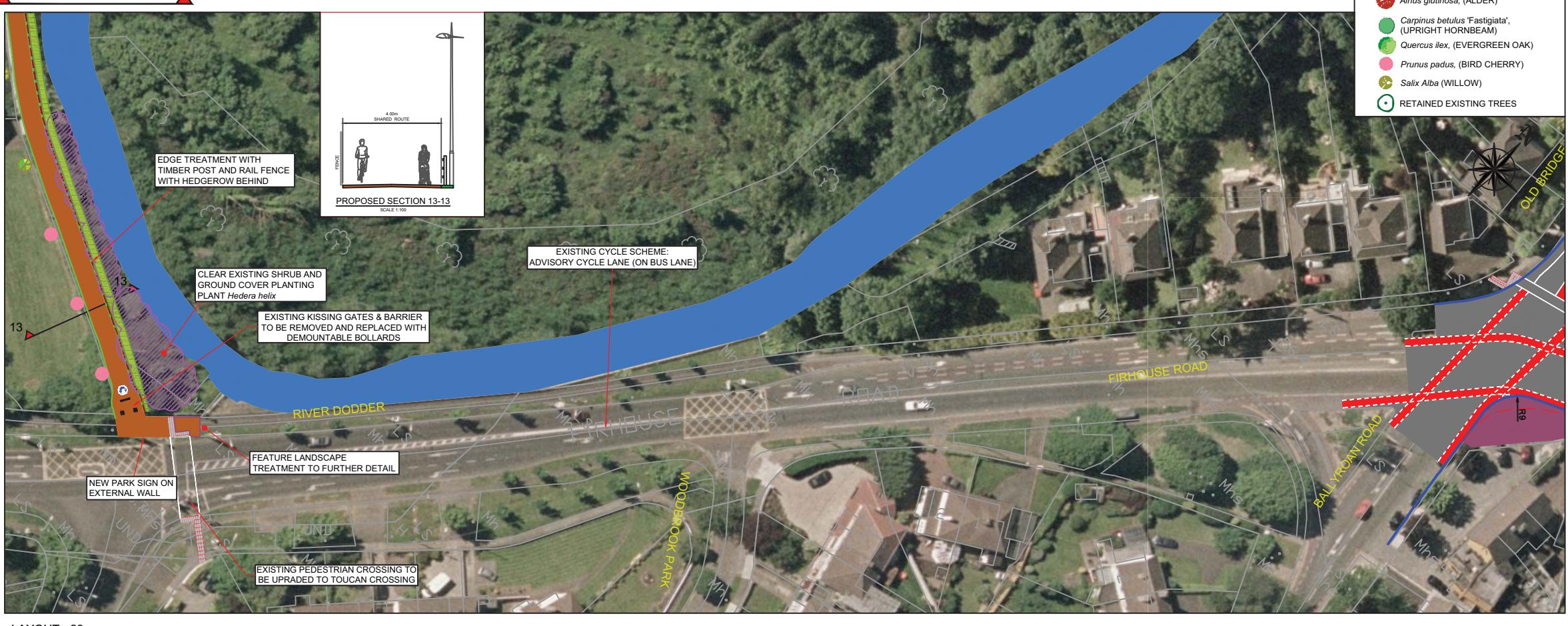
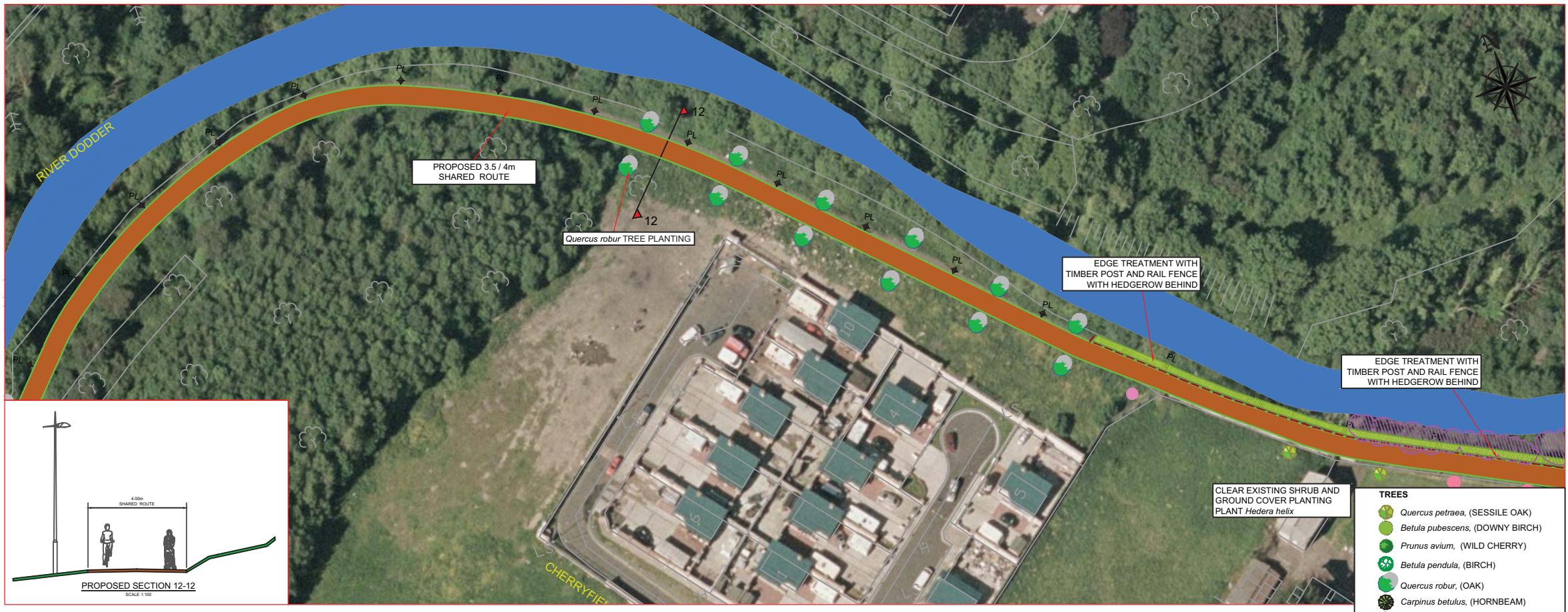
C	Landscape Layout and Legend Amendments	KT	27/04/17
B	Landscape Layout and Text Amendments	KT	06/04/17
A	Text Amendments	PW	28/09/16
Revision	Description	Initials	Date

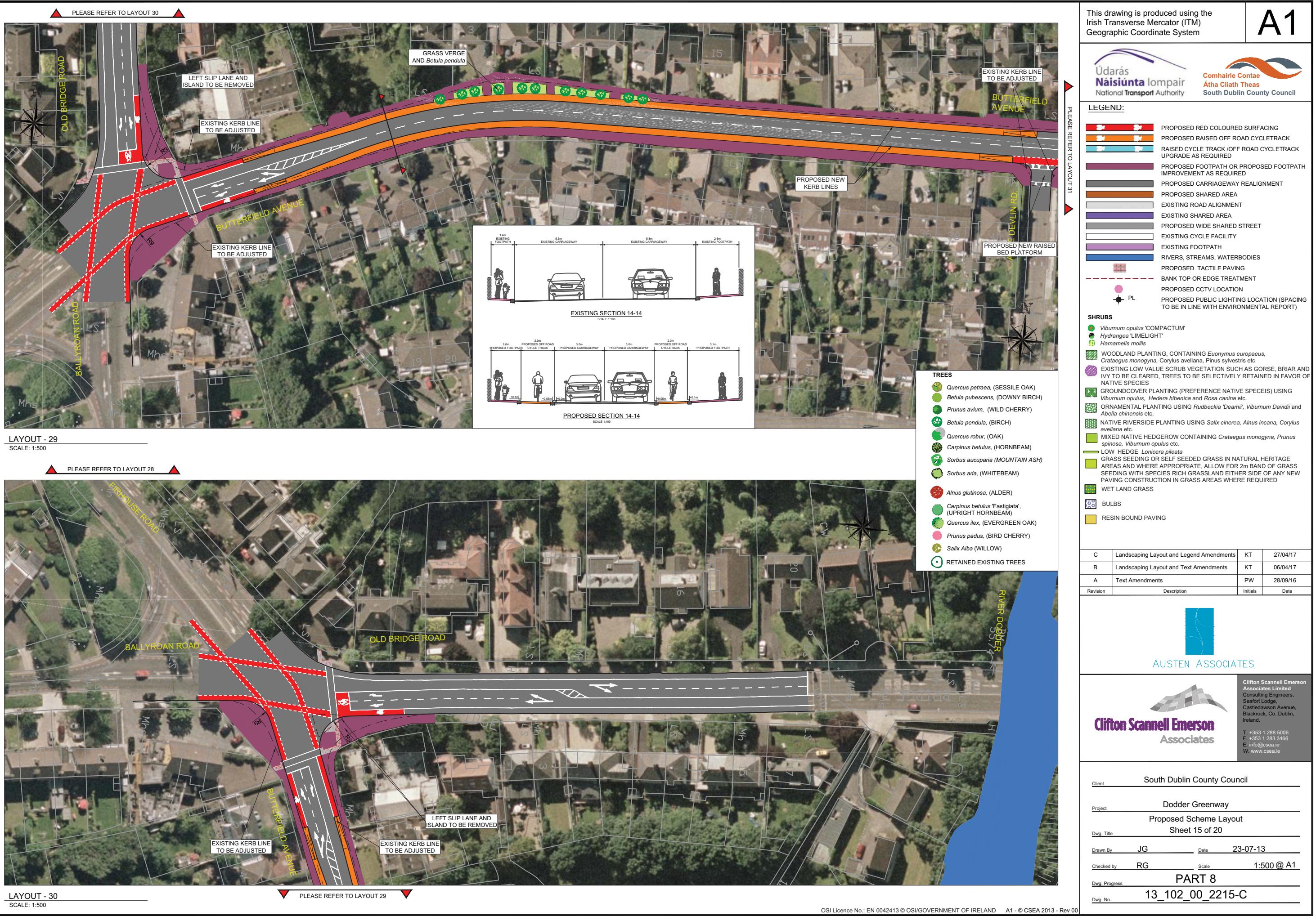


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Client	South Dublin County Council		
Project	Dodder Greenway		
Proposed Scheme Layout	Sheet 14 of 22		
Dwg. Title	JG	Date	23-07-13
Drawn By	RG	Scale	1:500 @ A1
Checked by			
Dwg. Progress			
Dwg. No.	13_102_00_2214-C		





PLEASE REFER TO LAYOUT 29

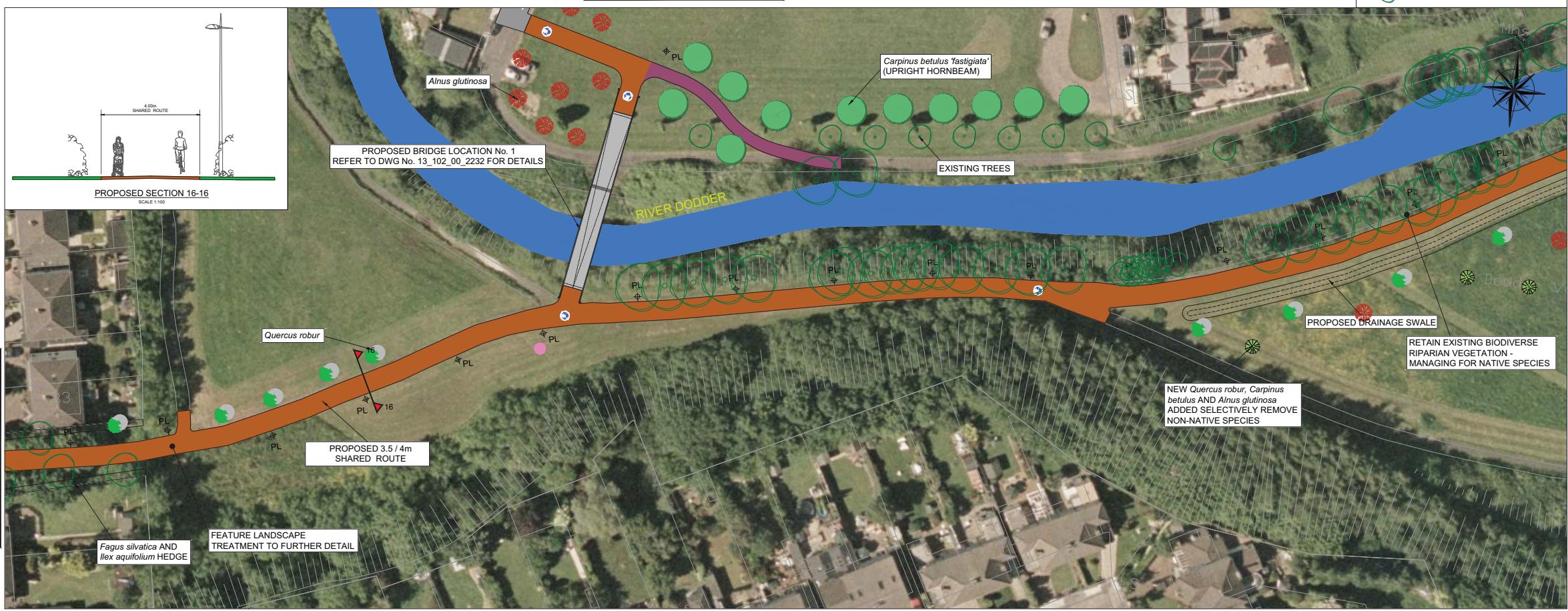


LAYOUT - 31

SCALE: 1:500

PLEASE REFER TO LAYOUT 32

PLEASE REFER TO LAYOUT 33



LAYOUT - 32

SCALE: 1:500

This drawing is produced using the Irish Transverse Mercator (ITM) Geographic Coordinate System

A1



LEGEND:

PROPOSED RED COLOURED SURFACING
PROPOSED RAISED OFF ROAD CYCLETRACK
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EXISTING CYCLE FACILITY
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PROPOSED TAPE PAVING
BANK TOP OR EDGE TREATMENT
PROPOSED CCTV LOCATION
PROPOSED PUBLIC LIGHTING LOCATION (SPACING TO BE IN LINE WITH ENVIRONMENTAL REPORT)

PL

TREES

Quercus petraea, (SESSILE OAK)
Betula pubescens, (DOWNY BIRCH)
Prunus avium, (WILD CHERRY)
Betula pendula, (BIRCH)
Quercus robur, (OAK)
Carpinus betulus, (HORNBEAM)
Sorbus aucuparia (MOUNTAIN ASH)
Sorbus aria, (WHITEBEAM)
Alnus glutinosa, (ALDER)
Carpinus betulus 'Fastigiata', (UPRIGHT HORNBEAM)
Quercus ilex, (EVERGREEN OAK)
Prunus padus, (BIRD CHERRY)
Salix Alba (WILLOW)
RETAINED EXISTING TREES

SHRUBS

Viburnum opulus 'COMPACTUM'
Hydrangea 'LIMELIGHT'
Hamamelis mollis
WOODLAND PLANTING, CONTAINING Euonymus europaeus, Crataegus monogyna, Corylus avellana, Pinus sylvestris etc
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ORNAMENTAL PLANTING USING Rudbeckia 'Deamii', Viburnum Davidii and Abelia chinensis etc.
NATIVE RIVERSIDE PLANTING USING Salix cinerea, Alnus incana, Corylus avellana etc.
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WET LAND GRASS
BULBS
RESIN BOUND PAVING

C

Landscape Layout and Legend Amendments

KT

27/04/17

B

Landscape Layout and Text Amendments

KT

06/04/17

A

Text Amendments

PW

28/09/16

Revision

Description

Initials

Date



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Clifton Scannell Emerson
Associates

Client
South Dublin County Council

Project
Dodder Greenway

Proposed Scheme Layout

Sheet 16 of 22

Dwg. Title
Drawn By JG Date 23-07-13

Checked by RG Scale 1:500 @ A1

Dwg. Progress

Dwg. No. 13_102_00_2216-C

PART 8

LEGEND:

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
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- BANK TOP OR EDGE TREATMENT
- PROPOSED CCTV LOCATION
- PROPOSED PUBLIC LIGHTING LOCATION (SPACING TO BE IN LINE WITH ENVIRONMENTAL REPORT)

SHRUBS

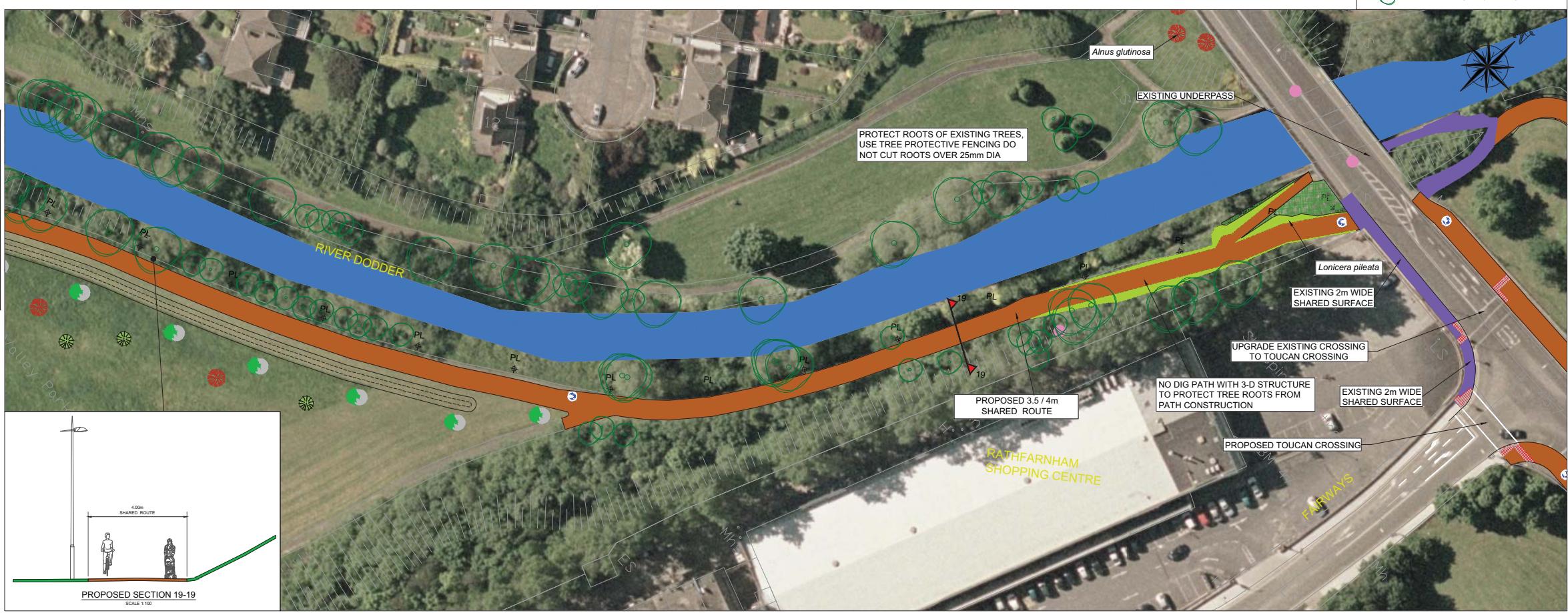
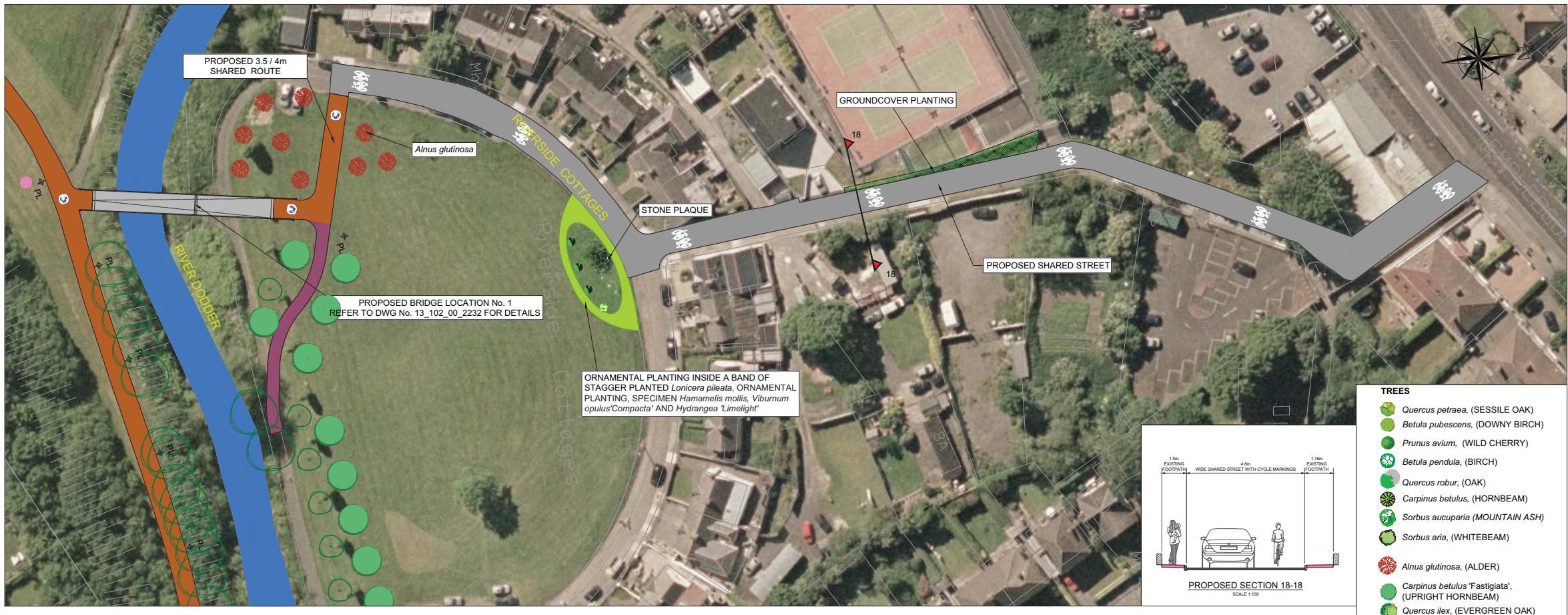
- Viburnum opulus 'COMPACTUM'*
- Hydrangea 'LIMELIGHT'*
- Hamamelis mollis*
- WOODLAND PLANTING, CONTAINING *Euonymus europaeus*, *Crataegus monogyna*, *Corylus avellana*, *Pinus sylvestris* etc
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- WET LAND GRASS
- BULBS
- RESIN BOUND PAVING

C	Landscaping Layout and Legend Amendments	KT	27/04/17
B	Landscaping Layout and Text Amendments	KT	06/04/17
A	Text Amendments	PW	28/09/16
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Dwg. Title	Proposed Scheme Layout Sheet 17 of 22		
Drawn By	JG	Date	23-07-13
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Dwg. Progress			
Dwg. No.	13_102_00_2217-C		



LEGEND:

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- WET LAND GRASS

- BULBS

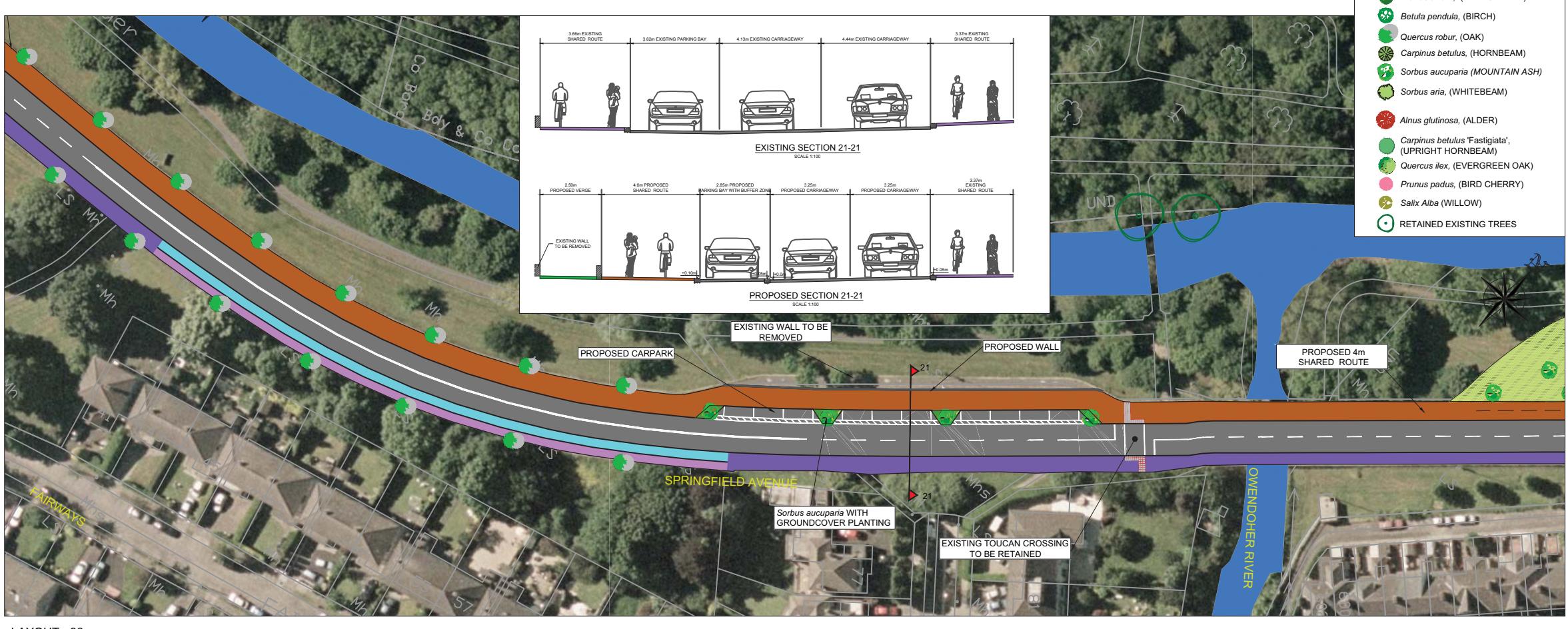
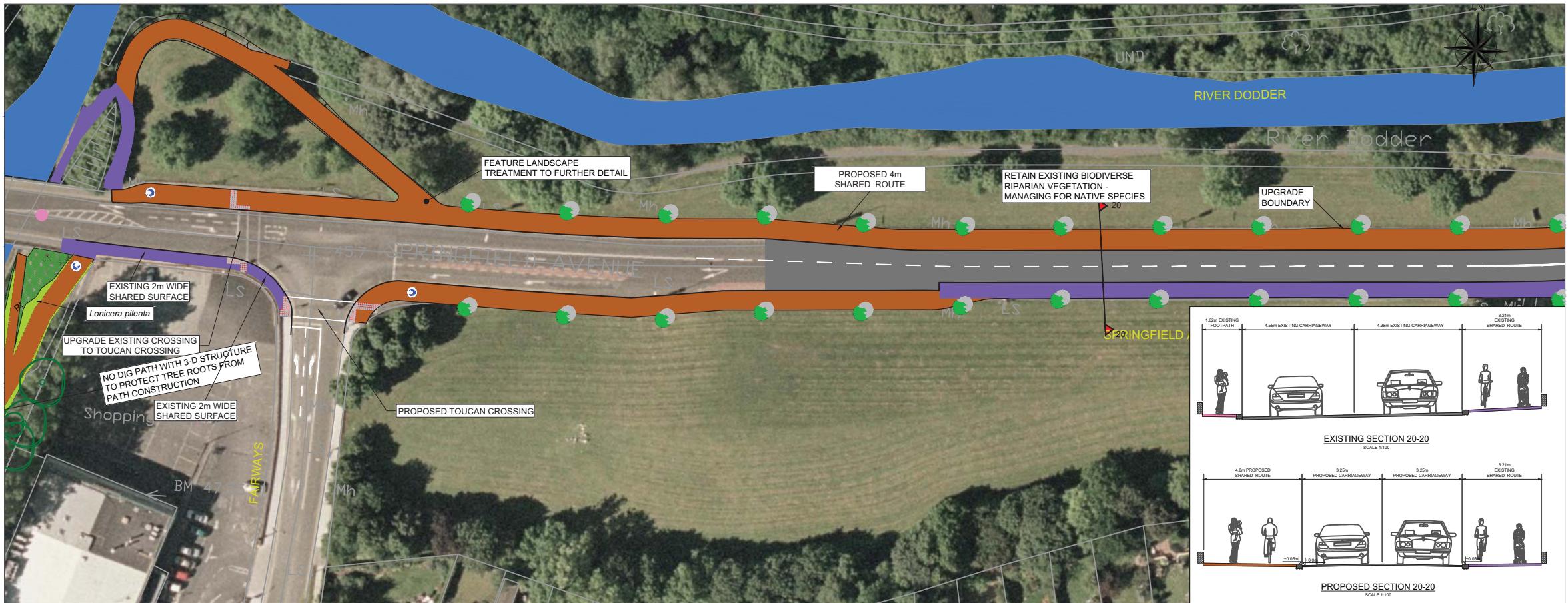
- RESIN BOUND PAVING

C	Landscape Layout and Legend Amendments	KT	27/04/17
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Project	Dodder Greenway		
Dwg. Title	Proposed Scheme Layout Sheet 18 of 22		
Drawn By	JG	Date	23-07-13
Checked by	RG	Scale	1:500 @ A1
Dwg. Progress			
Dwg. No.	13_102_00_2018-C		



PLEASE REFER TO LAYOUT 39

PLEASE REFER TO LAYOUT 36

PLEASE REFER TO LAYOUT 37

PLEASE REFER TO LAYOUT 38

PLEASE REFER TO LAYOUT 36

LAYOUT - 37
SCALE: 1:500

LAYOUT - 38
SCALE: 1:500

PLEASE REFER TO LAYOUT 37

PLEASE REFER TO LAYOUT 38

PLEASE REFER TO LAYOUT 39

PROPOSED BRIDGE LOCATION No. 3 REFER TO DWG No. 13_102_00_2233 FOR DETAILS

PROTECT ROOTS OF EXISTING TREES, USE TREE PROTECTIVE FENCING DO NOT CUT ROOTS OVER 20mm DIAMETER

EXISTING FOOTPATH TO BE RETIRED (WET WOODLANDS TO COLONIZE THIS AREA)

RIVER-DODDER

GRASS SEEDING

WETLAND GRASSES

PROPOSED TOUCAN CROSSING

Sorbus aucuparia ARRANGED IN A GRID PATTERN WITH LINES OF Lonicera pileata INTERPLANTED WITH GROUNDCOVER PLANTING AND ORNAMENTAL PLANTING

PROPOSED DRAINAGE SWALE

FEATURE LANDSCAPE TREATMENT TO FURTHER DETAIL

SPRINGFIELD AVENUE

EXISTING KERB LINE TO BE ADJUSTED

WOODVIEW COTTAGES

PROPOSED NEW RAISED BED PLATFORM

PROPOSED NEW RAISED BED PLATFORM

GREY GRANITE FACED WING WALLS AND GRANITE CAPPING

PROPOSED KERB LINE TO BE ADJUSTED

EXISTING SECTION 23-23
SCALE 1:100

PROPOSED SECTION 23-23
SCALE 1:100

TREES

- Quercus petraea, (SESSILE OAK)
- Betula pubescens, (DOWNY BIRCH)
- Prunus avium, (WILD CHERRY)
- Betula pendula, (BIRCH)
- Quercus robur, (OAK)
- Carpinus betulus, (HORNBEAM)
- Sorbus aucuparia (MOUNTAIN ASH)
- Sorbus aria, (WHITEBEAM)
- Alnus glutinosa, (ALDER)
- Carpinus betulus 'Fastigata', (UPRIGHT HORNBEAM)
- Quercus ilex, (EVERGREEN OAK)
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- Salix Alba (WILLOW)
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- BULBS
- RESIN BOUND PAVING

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AUSTEN ASSOCIATES

Clifton Scannell Emerson Associates

South Dublin County Council

Dodder Greenway

Proposed Scheme Layout

Sheet 19 of 22

Dwg. Title

Drawn By JG **Date** 23-07-13

Checked by RG **Scale** 1:500 @ A1

Dwg. Progress

Dwg. No. 13_102_00_2219-C

Client

Project

Drawn By

Checked by

Scale

Progress

No.

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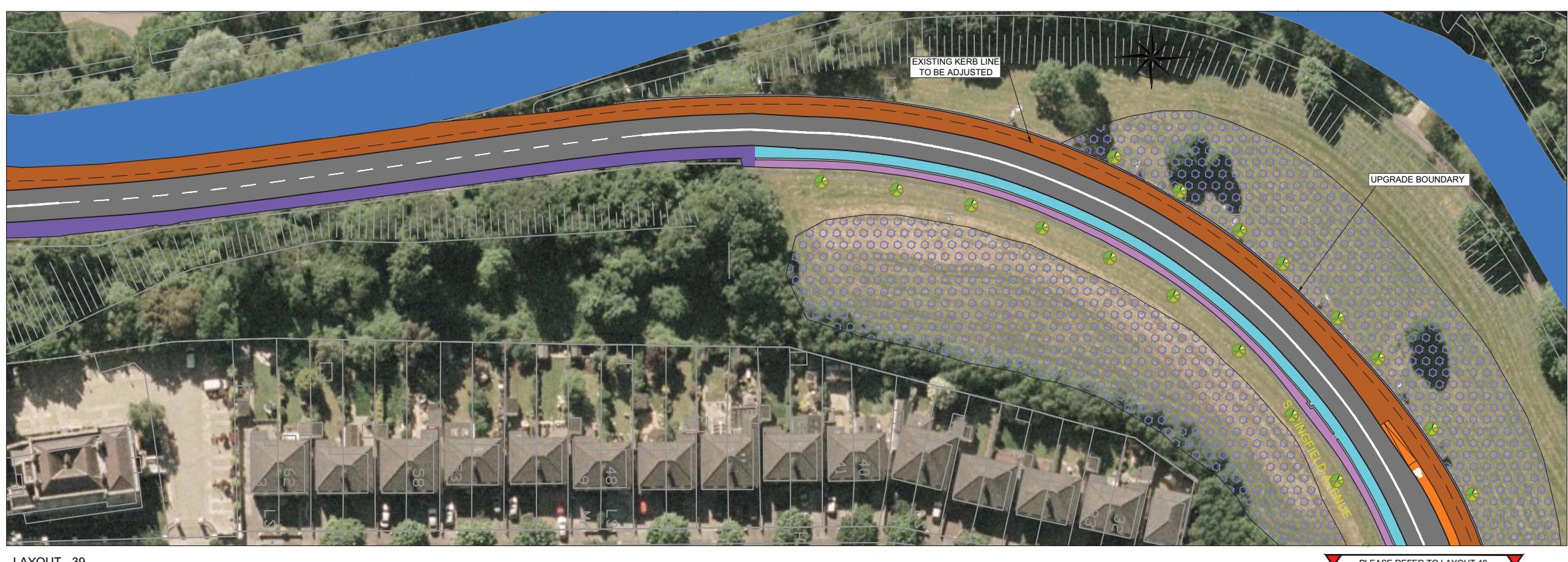
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A1

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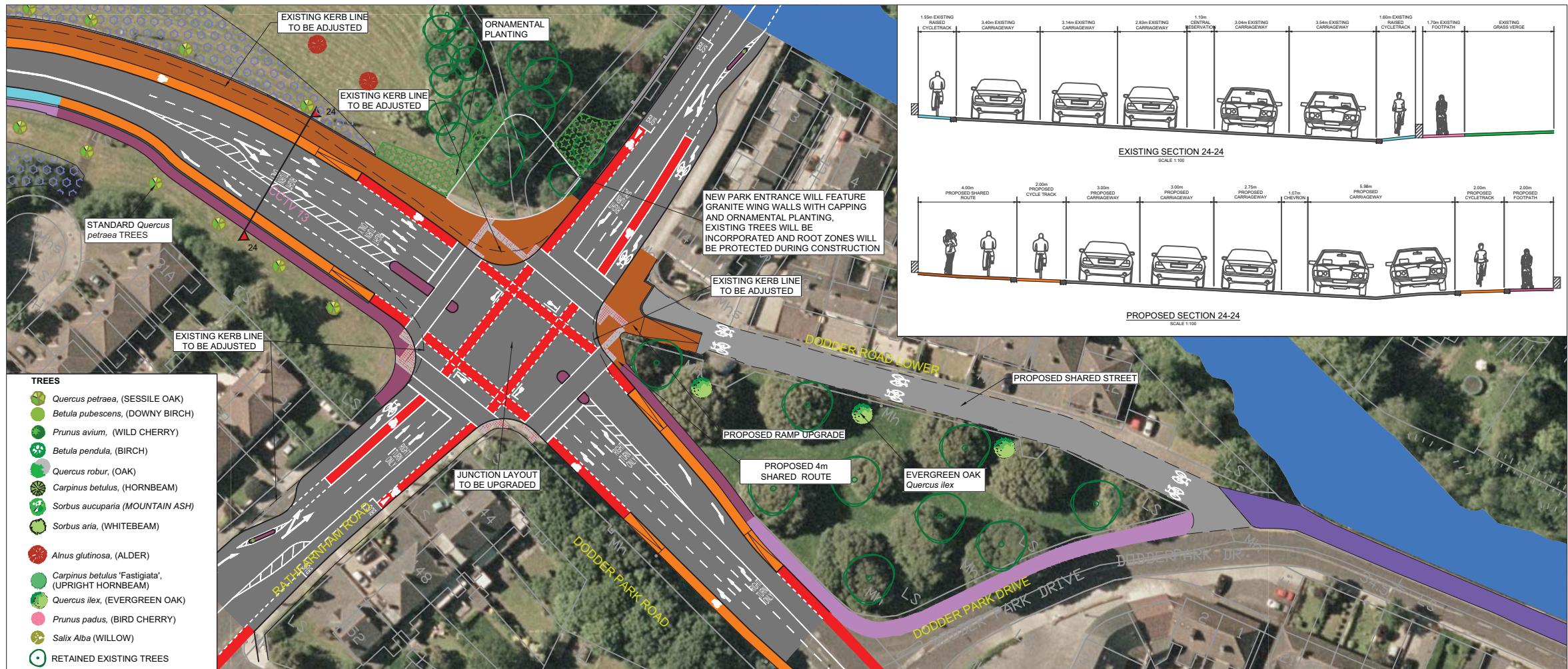
Údarás Náisiúnta lompair National Transport Authority

Comhairle Contae Átha Cliath Theas South Dublin County Council



LAYOUT - 39
SCALE: 1:500

SCALE: 1:500



LAYOUT - 40
SCALE: 1:500

Score: 1.00

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A1



LEGEND:

LEGEND

- PROPOSED RED COLOURED SURFACING
- PROPOSED RAISED OFF ROAD CYCLETRACK
- RAISED CYCLE TRACK / OFF ROAD CYCLETRACK UPGRADE AS REQUIRED
- PROPOSED FOOTPATH OR PROPOSED FOOTPATH IMPROVEMENT AS REQUIRED
- PROPOSED CARRIAGEWAY REALIGNMENT
- PROPOSED SHARED AREA
- EXISTING ROAD ALIGNMENT
- EXISTING SHARED AREA
- PROPOSED WIDE SHARED STREET
- EXISTING CYCLE FACILITY
- EXISTING FOOTPATH
- RIVERS, STREAMS, WATERBODIES
- PROPOSED TACTILE PAVING
- BANK TOP OR EDGE TREATMENT
- PROPOSED CCTV LOCATION
- PROPOSED PUBLIC LIGHTING LOCATION (SPACING TO BE IN LINE WITH ENVIRONMENTAL REPORT)

SHRUBS

-  *Viburnum opulus 'COMPACTUM'*
-  *Hydrangea 'LIMELIGHT'*
-  *Hamamelis mollis*
-  **WOODLAND PLANTING, CONTAINING *Euonymus europaeus*, *Crataegus monogyna*, *Corylus avellana*, *Pinus sylvestris* etc**
-  **EXISTING LOW VALUE SCRUB VEGETATION SUCH AS GORSE, BRIAR AND IVY TO BE CLEARED, TREES TO BE SELECTIVELY RETAINED IN FAVOR OF NATIVE SPECIES**
-  **GROUNDCOVER PLANTING (PREFERENCE NATIVE SPECIES) USING *Viburnum opulus*, *Hedera hibernica* and *Rosa canina* etc.**
-  **ORNAMENTAL PLANTING USING *Rudbeckia 'Deamii'*, *Viburnum Davidii* and *Abelia chinensis* etc.**
-  **NATIVE RIVERSIDE PLANTING USING *Salix cinerea*, *Alnus incana*, *Corylus avellana* etc.**
-  **MIXED NATIVE HEDGEROW CONTAINING *Crataegus monogyna*, *Prunus spinosa*, *Viburnum opulus* etc.**
-  **LOW HEDGE *Lonicera pileata***
-  **GRASS SEEDING OR SELF SEEDED GRASS IN NATURAL HERITAGE AREAS AND WHERE APPROPRIATE, ALLOW FOR 2m BAND OF GRASS SEEDING WITH SPECIES RICH GRASSLAND EITHER SIDE OF ANY NEW PAVING CONSTRUCTION IN GRASS AREAS WHERE REQUIRED**
-  **WET LAND GRASS**
-  **BULBS**
-  **RESIN BOUND PAVING**

C	Landscaping Layout and Legend Amendments	KT	27/04/17
B	Landscaping Layout and Text Amendments	KT	06/04/17
A	Text Amendments	PW	28/09/16
Revision	Description	Initials	Date



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Client	South Dublin County Council		
Project	Dodder Greenway		
Dwg. Title	Proposed Scheme Layout Sheet 20 of 22		
Drawn By	JG	Date	23-07-13
Checked by	RG	Scale	1:500 @ A1
Dwg. Progress	PART 8		
Dwg. No.	13_102_00_2220-C		

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- RAISED CYCLE TRACK/OFF ROAD CYCLETRACK UPGRADE AS REQUIRED
- PROPOSED FOOTPATH OR PROPOSED FOOTPATH IMPROVEMENT AS REQUIRED
- PROPOSED CARRIAGEWAY REALIGNMENT
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- EXISTING SHARED AREA
- PROPOSED WIDE SHARED STREET
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- PROPOSED TACTILE PAVING
- BANK TOP OR EDGE TREATMENT
- PROPOSED CCTV LOCATION
- PROPOSED PUBLIC LIGHTING LOCATION (SPACING TO BE IN LINE WITH ENVIRONMENTAL REPORT)
- PL

SHRUBS

- Viburnum opulus 'COMPACTUM'
- Hydrangea 'LIMELIGHT'
- Hamamelis mollis
- WOODLAND PLANTING, CONTAINING Euonymus europaea, Crataegus monogyna, Corylus avellana, Pinus sylvestris etc
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- GROUNDCOVER PLANTING (PREFERENCE NATIVE SPECIES) USING Viburnum opulus, Hedera hibernica and Rosa canina etc.
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- WET LAND GRASS
- BULBS
- RESIN BOUND PAVING

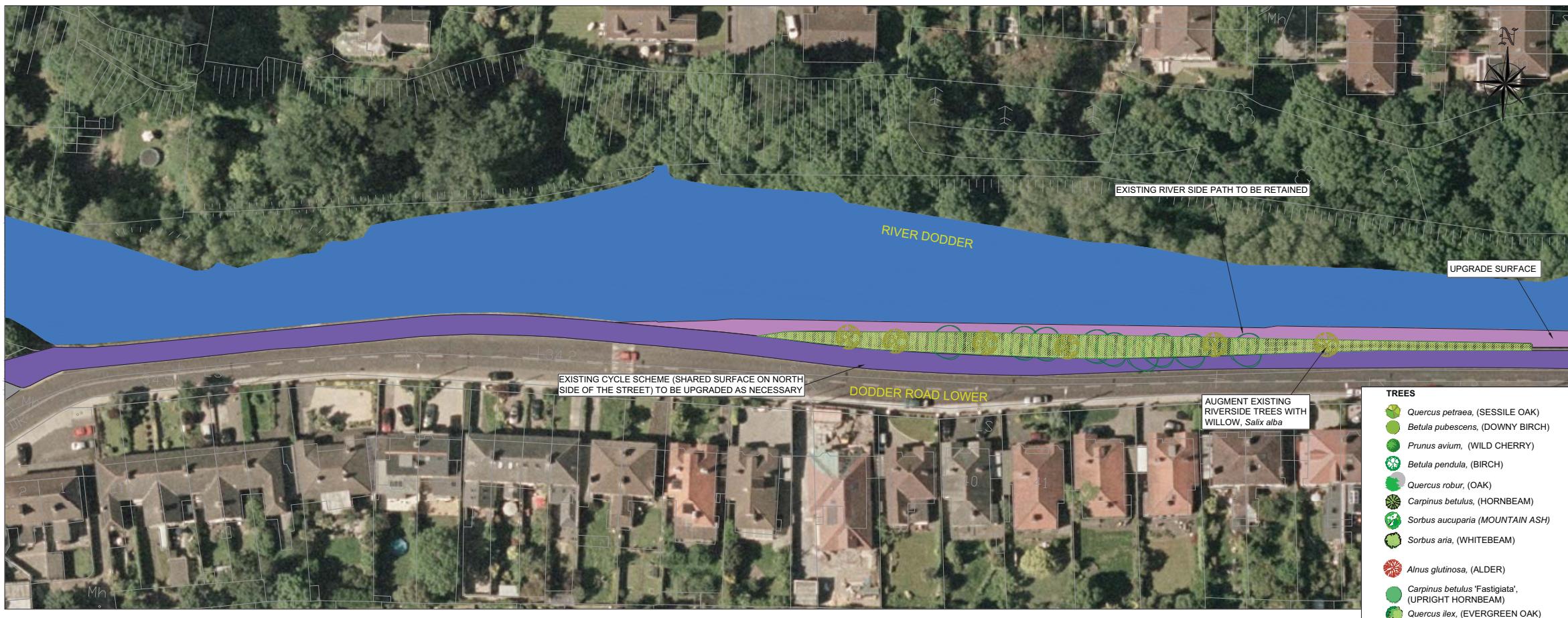
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B	Landscaping Layout and Text Amendments	KT	06/04/17
A	Text Amendments	PW	28/09/16
Revision	Description	Initials	Date

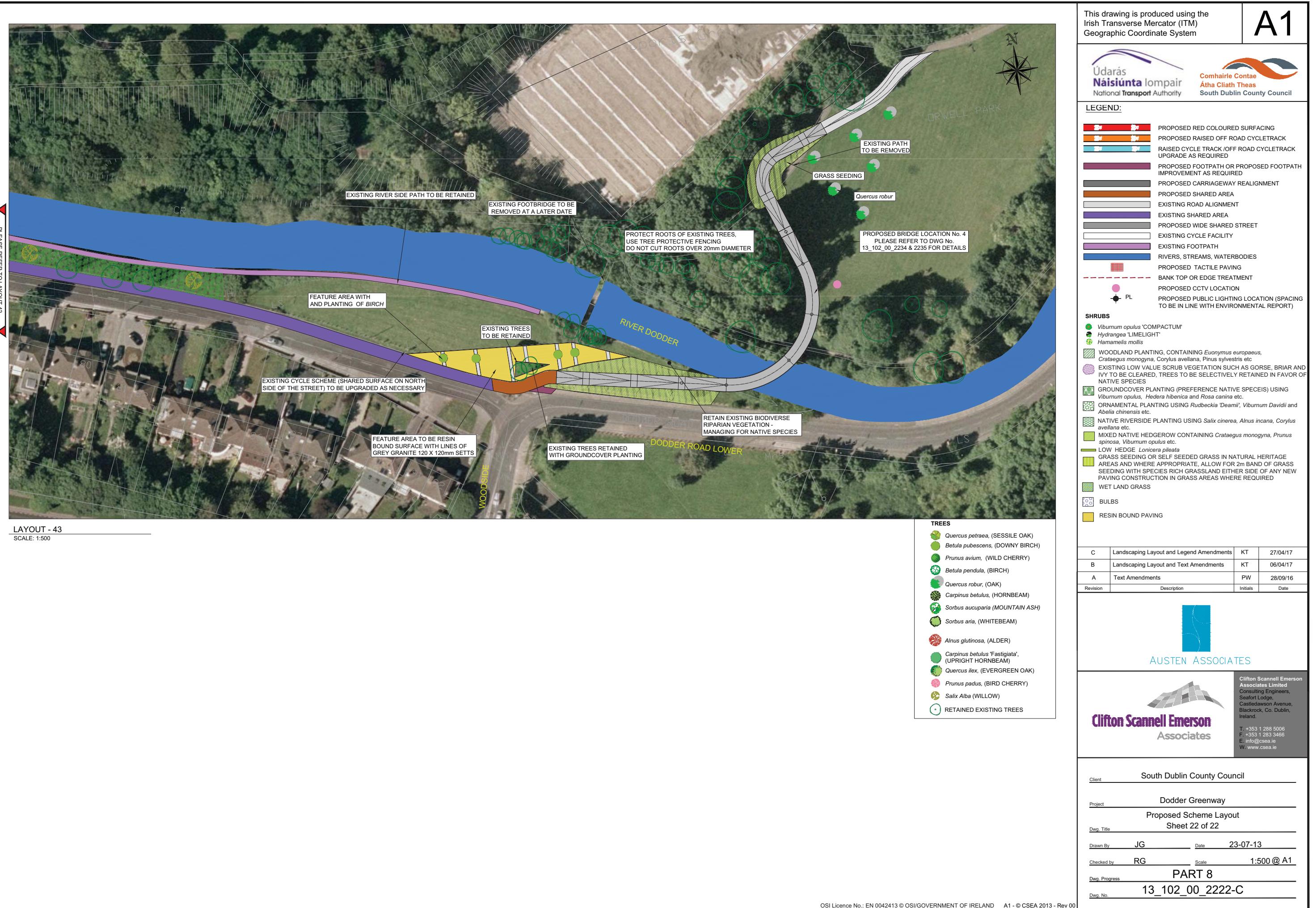


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Client	South Dublin County Council		
Project	Dodder Greenway		
Dwg. Title	Proposed Scheme Layout Sheet 21 of 22		
Drawn By	JG	Date	23-07-13
Checked by	RG	Scale	1:500 @ A1
Dwg. Progress			
Dwg. No.	13_102_00_2221-C		







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South Dublin County Council



PROPOSED BRIDGE LOCATIONS

SCALE: NTS

A	Title Block Amended	KT	27/04/17
Revision	Description	Initials	Date



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Client: South Dublin County Council

Project Dodder Greenway

Proposed Pedestrian Bridge over the Dodder River
at Tallaght Bypass - Plan

Drawn By JG Date 12-12-13

Checked by RG Scale AS NOTED @ A1

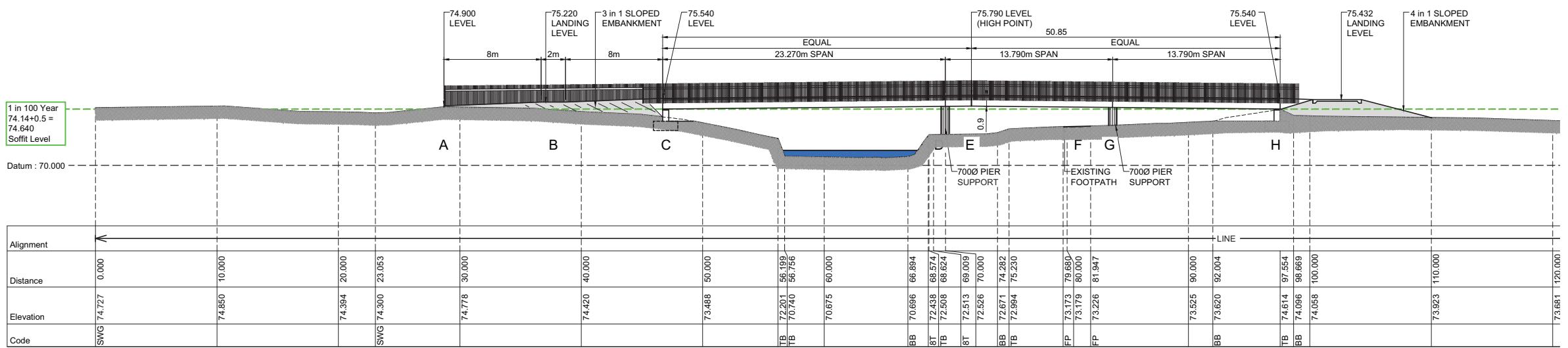
Dwg. Progress

Dwg. No. 13_102_00_2230-A

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A1



LONG SECTION - A thru H

TALLAGHT BYPASS SCALE: 1:200/1:200



PROPOSED BRIDGE LOCATIONS

SCALE: NTS

A	Title Block Amended	KT	27/04/17
Revision	Description	Initials	Date



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Client South Dublin County Council

Project Dodder Greenway

Proposed Pedestrian Bridge over the Dodder River
at Tallaght Bypass - Long Section

Dwg. Title

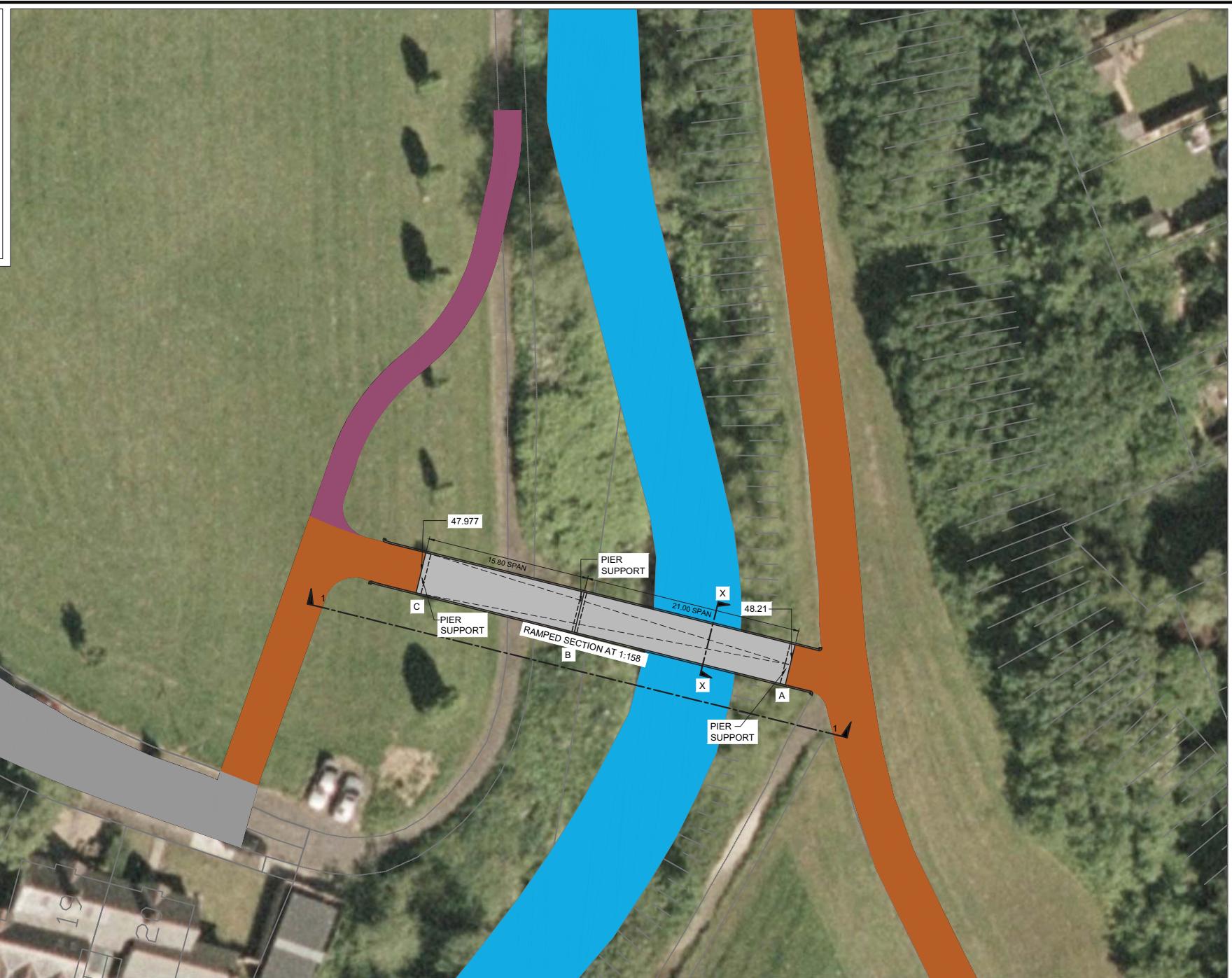
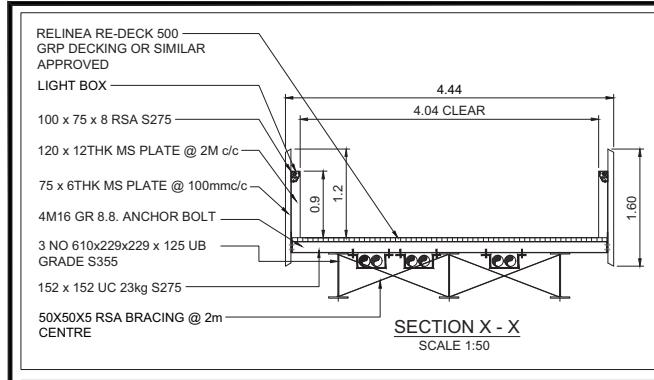
Drawn By JG Date 12-12-13

Checked by RG Scale AS NOTED @ A1

Dwg. Progress

Dwg. No. PART 8

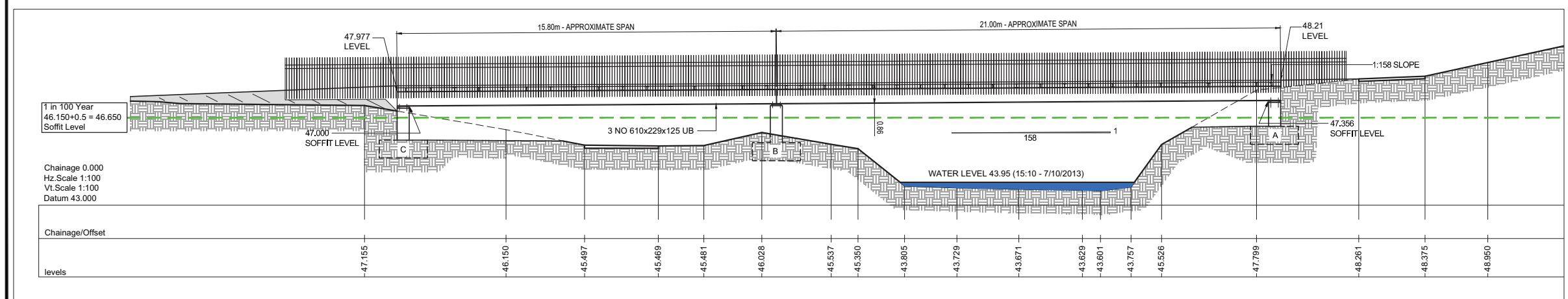
13_102_00_2231-A



PROPOSED BRIDGE LOCATION No.2

KILVERE ESTATE TO RIVERSIDE COTTAGES

SCALE 1:250



ELEVATIONAL SECTION 1-1
KILVERE ESTATE TO RIVERSIDE COTTAGES

SCALE: 1:100

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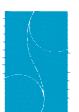
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PROPOSED BRIDGE LOCATIONS

SCALE·NTS

A	Title Block Amended	KT	27/04/17
Revision	Description	Initials	Date



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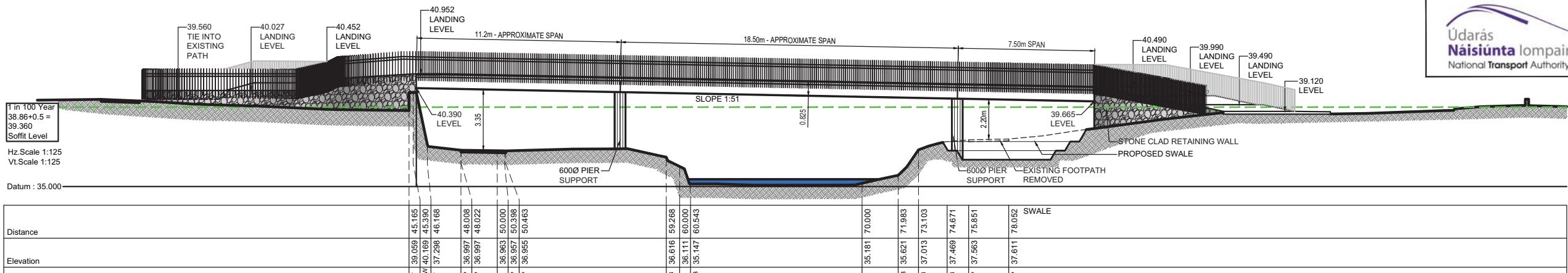


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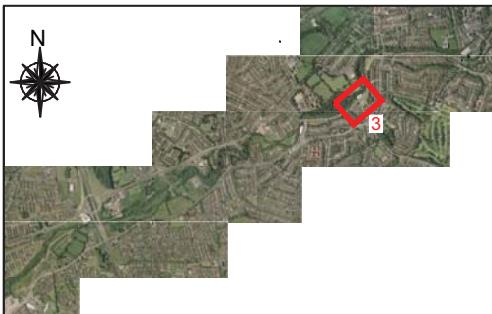
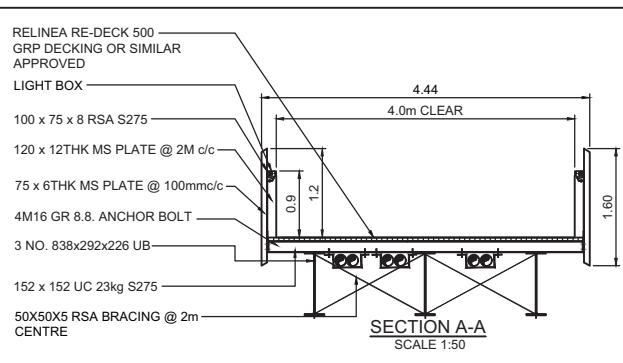
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Project	Dodder Greenway		
Dwg. Title	Proposed Pedestrian Bridge from Kilvere Estate to Riverside Cottages		
Drawn By	JG	Date	16-10-13
Checked by	RG	Scale	AS NOTED @ A1
Dwg. Progress	PART 8		
Dwg. No.	13_102_00_2232-A		



SECTIONAL ELEVATION B-B

Dodder View Road to Bushy Park SCALE: 1:125/1:125



PROPOSED BRIDGE LOCATIONS

SCALE: NTS

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A	Title Block Amended	KT	27/04/17
Revision	Description	Initials	Date



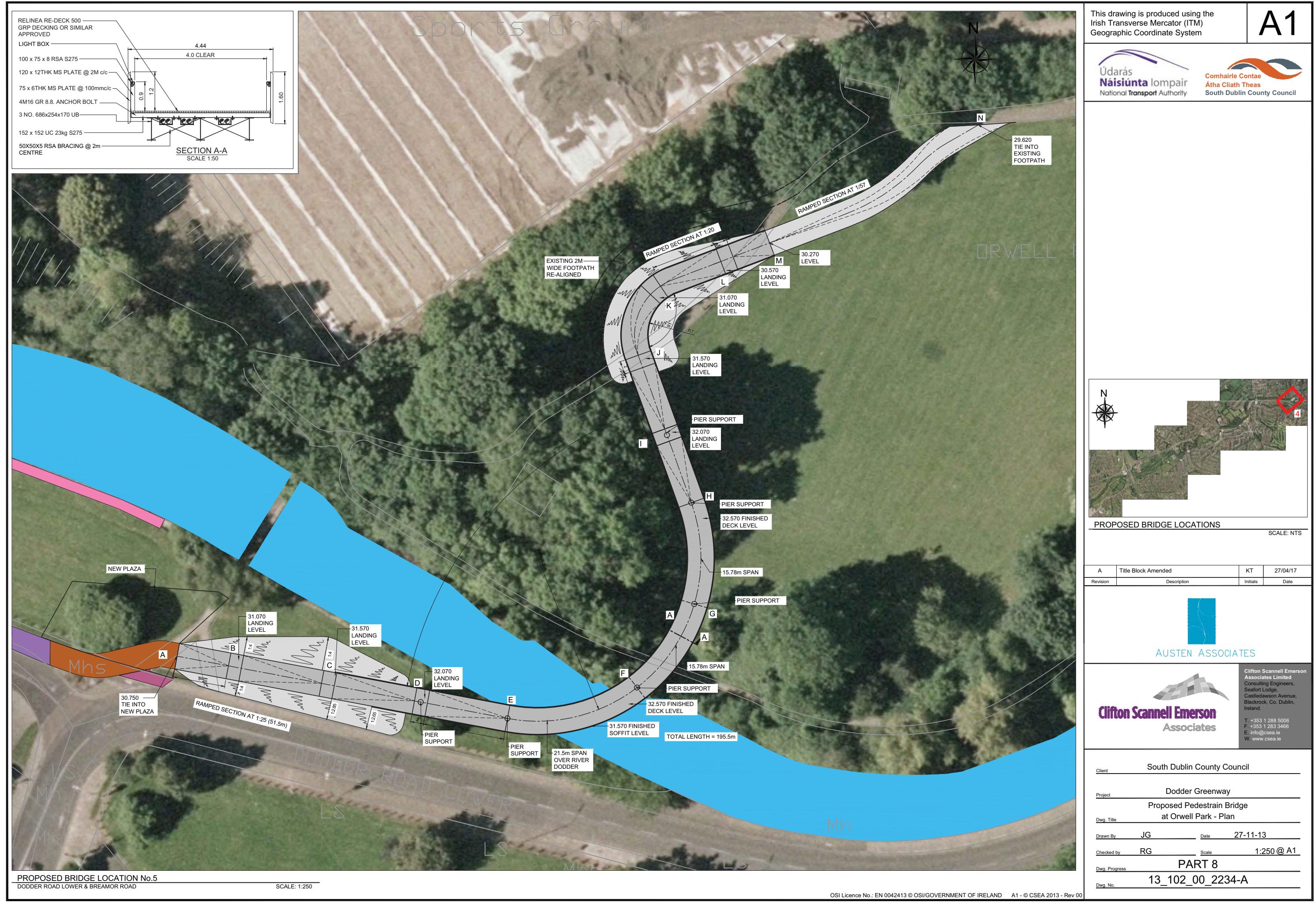
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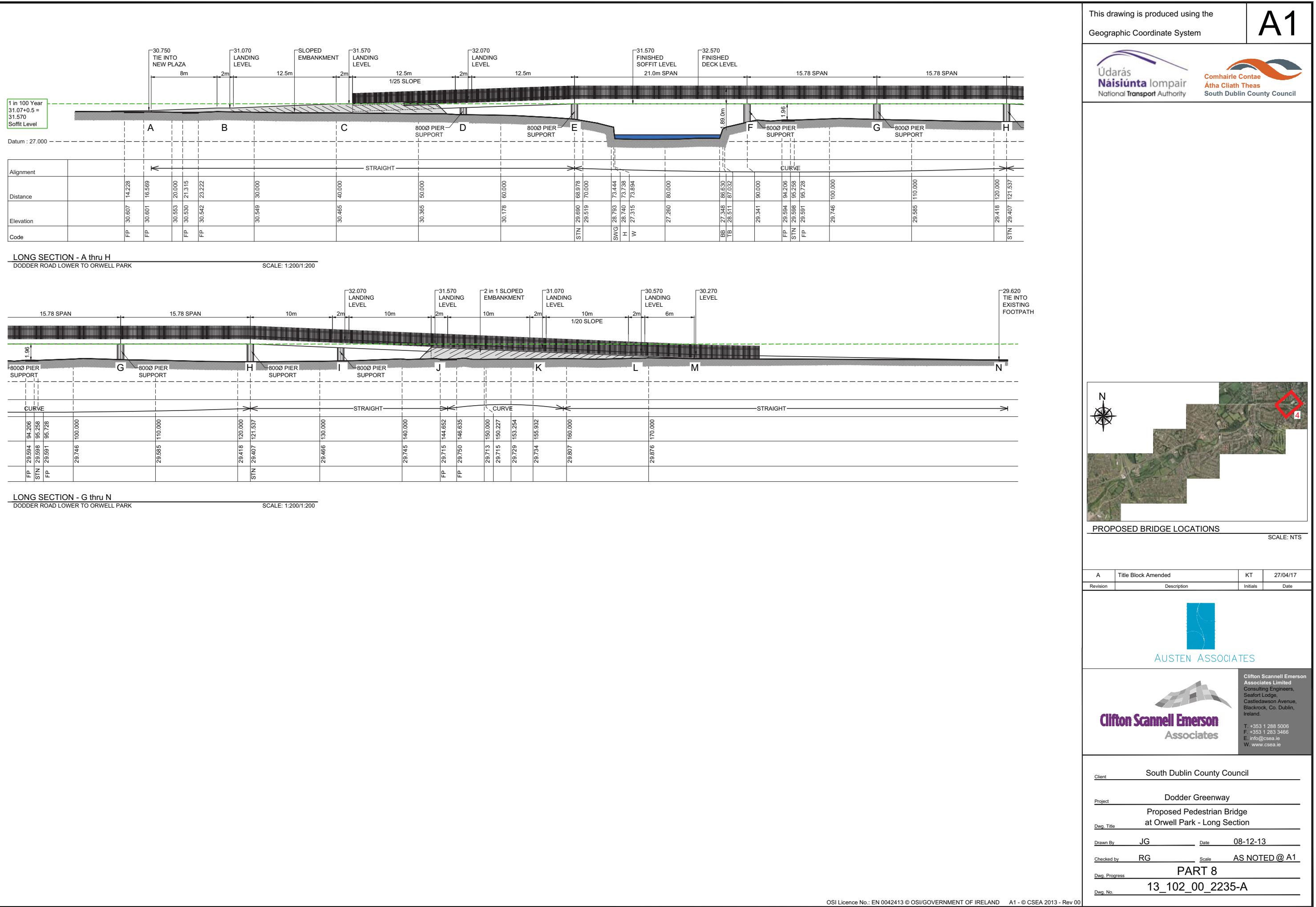


Client	South Dublin County Council		
Project	Dodder Greenway Proposed Pedestrian Bridge at Bushy Park		
Dwg. Title			
Drawn By	JG	Date	27-11-13
Checked by	RG	Scale	1:250 @ A1
Dwg. Progress			
Dwg. No.	13_102_00_2233-B		

PROPOSED BRIDGE LOCATION No.3
Dodder View Road to Bushy Park

SCALE: 1:250

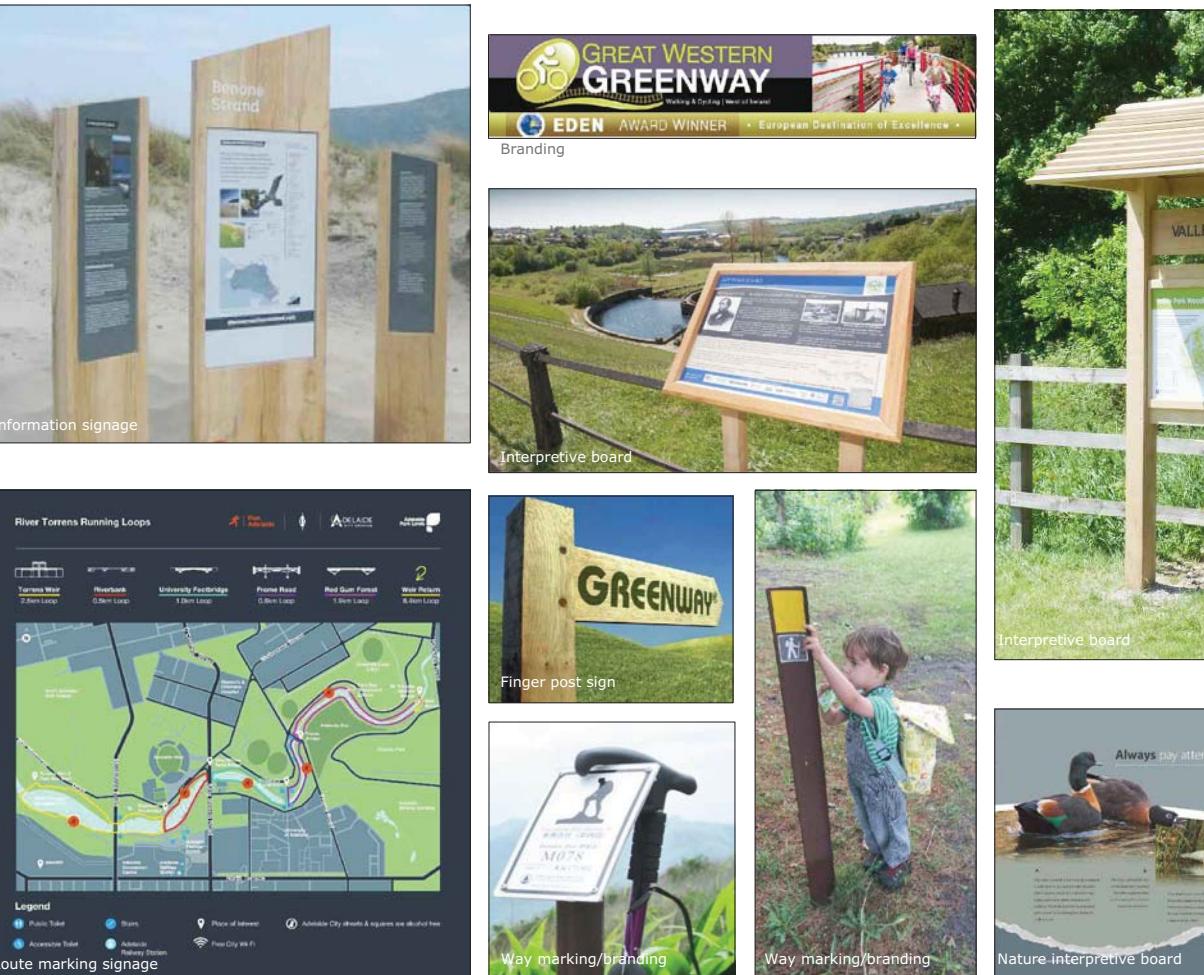




SURFACE TREATMENTS, REPRESENTATIVE IMAGES



SIGNAGE, REPRESENTATIVE IMAGES



The Dodder Greenway will receive decorative paving treatment at high profile areas such as public park entrances and exits and certain path junctions. Strip lighting, ground lighting, signage and landscape treatments will highlight a number of these areas.

Distances along route shall be marked out with selected treatments such as bands of natural stone, marker posts and /or specific planting types.

Street furniture and lighting will improve the amenity experience that the route will provide. Where appropriate solar powered lighting will be used. Indirect public lighting and standard public lighting columns and lanterns shall be selected for use along the route.

C	Added combined Title Block	EOD	27/04/17
B	Added combined Title Block	EOD	14/04/17
A	Layout	EOD	26/01/17
Revision	Description	Initials	Date



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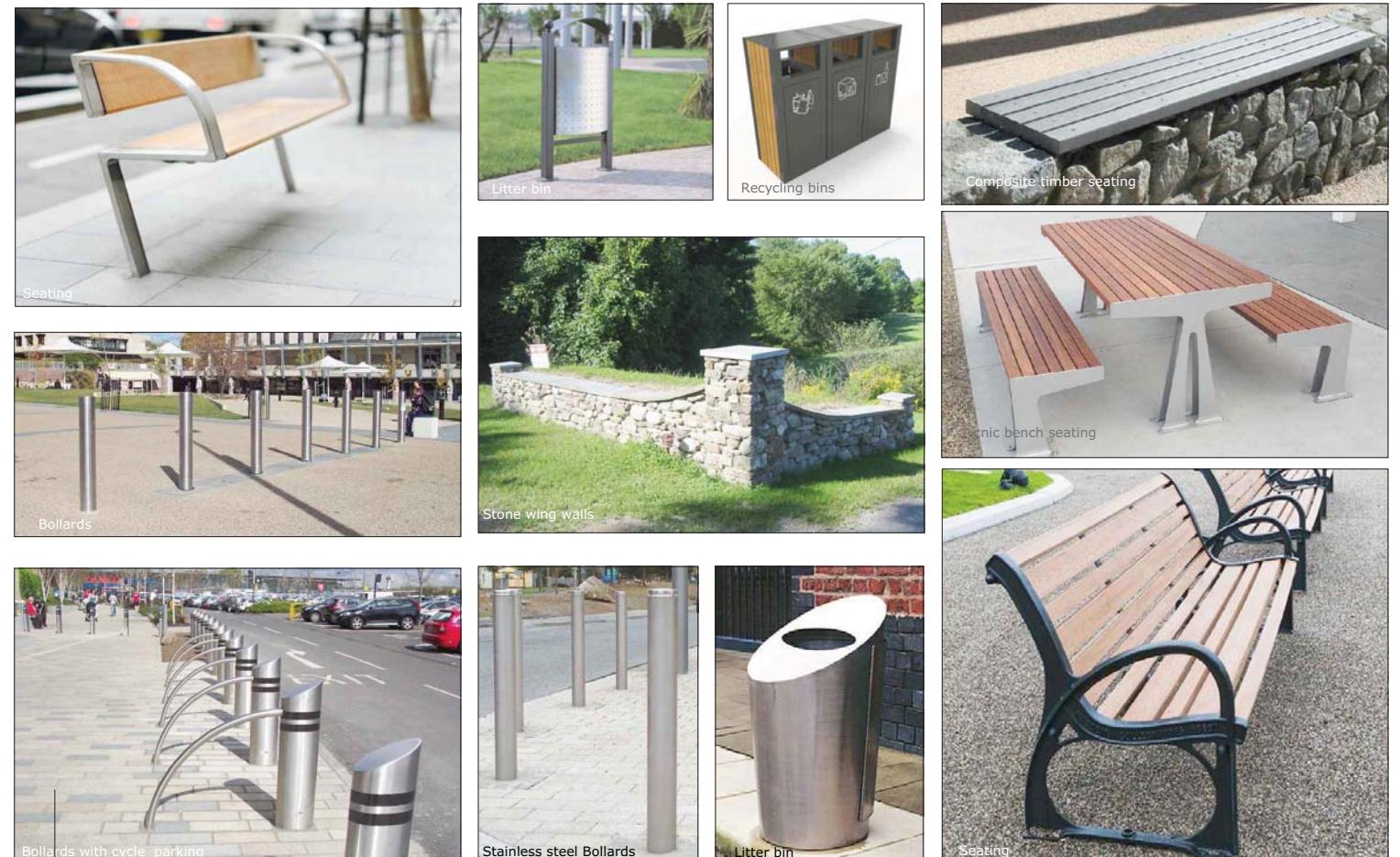
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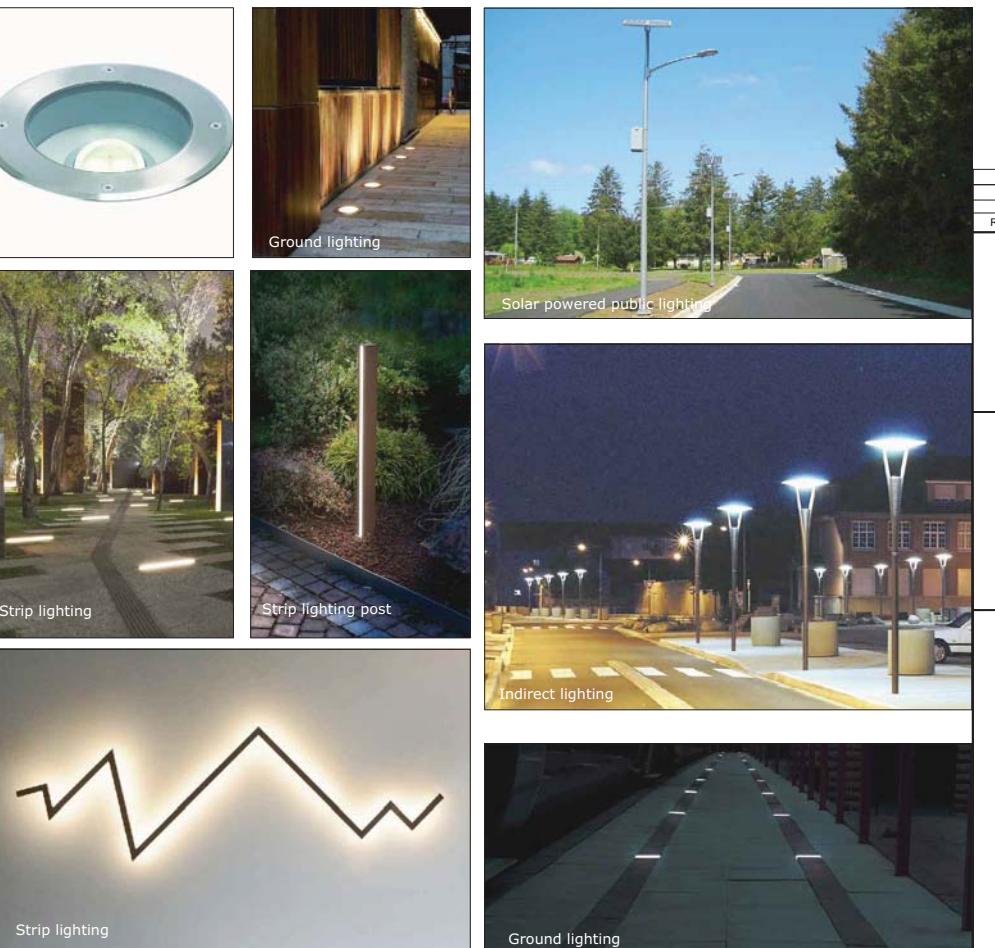
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STREET FURNITURE, REPRESENTATIVE IMAGES

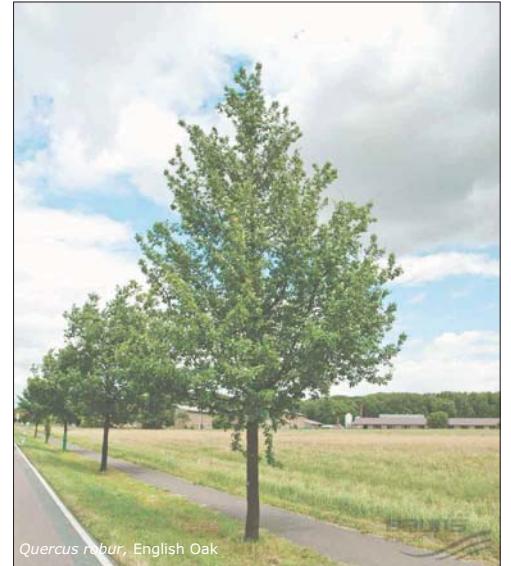
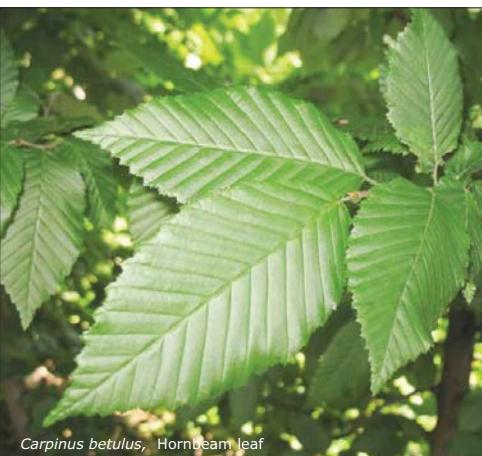
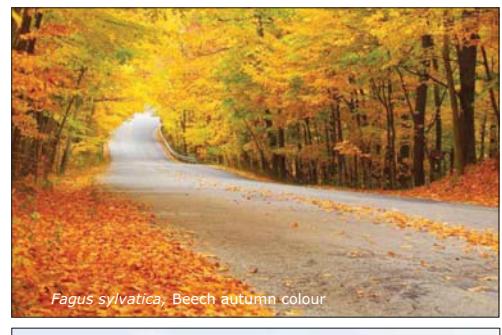


LIGHTING, REPRESENTATIVE IMAGES



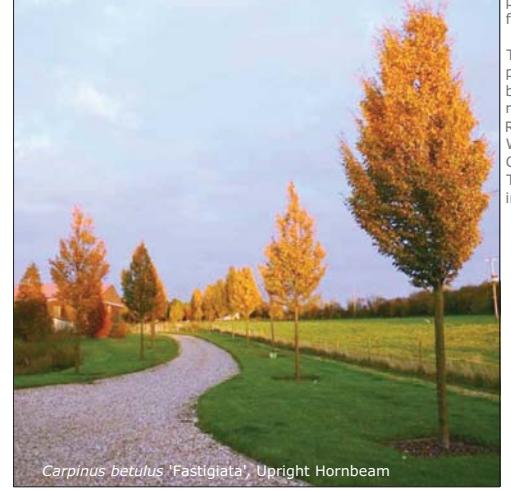
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Project	Dodder Greenway		
Dwg. Title	Hard landscape mood board		
Drawn By	EOD	Date	April 2017
Checked by	TA	Scale	N/A @ A1
Dwg. Progress	Part VIII Planning		
Dwg. No.	13_102_00_2236		

SELECTED PARKLAND TREES



The Dodder Greenway will be extensively planted with trees, shrubs and ornamental planting further greening up the existing landscape.

SELECTED SMALLER TREES



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South Dublin County Council
and National Transport Authority

Dodder Greenway

Soft landscape mood board

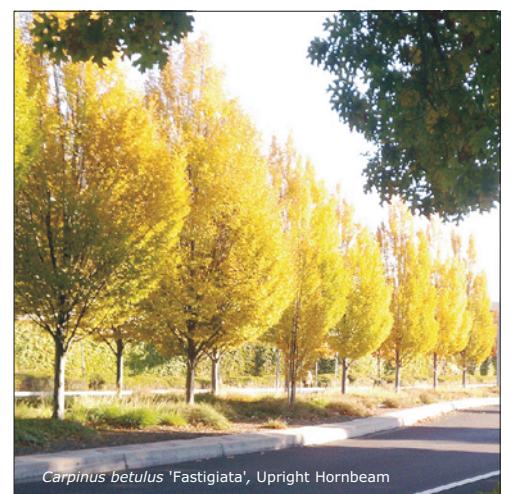
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Drawn By EOD Date April 2017

Checked by TA Scale N/A @ A1

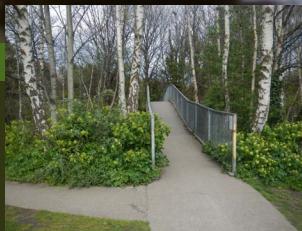
Dwg. Progress Part VIII Planning

Dwg. No. 13_102_00_2237



Appendix B

Construction Erosion and Sediment Control Plan (CESCP)



Dodder Greenway

CONSTRUCTION EROSION & SEDIMENT CONTROL PLAN (CESCP)

JUNE 2017

Dodder Greenway

Construction, Erosion and Sediment Control Plan

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1. INTRODUCTION

1.1 General

This document outlines the procedures and technical practices for implementing effective erosion and sediment control during the construction phase of the project through a variety of delivery methods. The Plan provides an effective tool for reducing potential environmental effects by:

- Identifying erosion and sediment control objectives before construction;
- Encouraging the management of water, control of erosion and control of sediment by identifying potential impacts and mitigation measures;
- Providing a mechanism for clear communication to workers;
- Defining a performance expectation; and
- Assuring owners and regulators that due diligence has been exercised.

The purposes of a Construction Erosion and Sediment Control Plan (CESCP) are to:

- Minimise erosion potential by effective planning, procedures and water management;
- Apply erosion control measures to prevent the movement of sediment; and
- Apply sediment control measures to prevent off-site sediment release in the event of sediment movement.

The plan is intended to be a working document and has been prepared to inform the Construction Stage Erosion and Sediment Control Plan which, in turn, will form an integral part of the Environmental Operating Plan for the proposed Greenway. In particular, the mitigation, control, monitoring and emergency measures for the proposed greenway in relation to Erosion and Sediment Control are described in this document.

1.2 Description of the Proposed Development

This CESCP relates to the construction of the section of the Dodder Greenway Scheme which runs from Orwell Park to Fortbridge at Friarstown near the Bohernabreena Reservoirs at Glenasmole. The location of the proposed Greenway falls within the administrative area of South Dublin County Council.

The Scheme proposes to provide and/or upgrade footpaths and cycletracks along the bank, or within close proximity to, the River Dodder. This will involve the provision of new ramps and pedestrian/cycle crossing facilities which will provide access and safe passage to intermediate roads. The majority of the proposed Greenway will be located within parkland areas adjacent to the River Dodder, however a number of on-road sections are also proposed which generally provide connectivity between parkland areas.

The Scheme's primary objective is to deliver a successful Greenway and public amenity which maximises the following objectives:

- Provision of an attractive Greenway and linear park;

- Delivery of a Greenway for pedestrians / cyclists in a low speed, pedestrian priority environment;
- Provision of linkages within the existing linear park system, particularly along roadways and existing road crossings;
- Provision of a high quality surface whilst minimising maintenance costs;
- Provision of an attractive enhanced environment;
- Provision of a safe environment; and
- Enhancement of landscaped visual quality of the Greenway.

The route must be suitable for all levels of cyclists as well as being sympathetic to the existing landscape.

A significant proportion of the lands adjoining the river's course are in use as linear parks and green areas with existing pedestrian / cycling facilities. The proposed works will require the upgrade and extension of these existing facilities. In some locations new shared surfaces will be provided within parkland areas. Sections of the proposed route incorporate existing footpaths and cycle paths along roadways such as at the R114 and Dodder Road Lower in Rathfarnham.

A section of the Greenway has already been constructed in the Dodder Valley Park as part of the Ballyboden to Tallaght Cycle Scheme. This required the construction of two new bridges and illumination of the paths. The majority of other parks along the Dodder are unlit which discourages use during darkness hours.

Key Scheme Elements

The function of the proposed Greenway is manifold while the main elements of the proposed Greenway can be summarised as follows:

- The Greenway route which is the subject of this proposal passes along the Dodder Valley from Orwell Park to the entrance to the Bohernabreena reservoirs at Glenasmole where it connects with the Dublin Mountain Way at Bohernabreena.
- It will provide for improved connectivity to communities, facilities and local business along the Dodder Valley corridor with a dedicated signage strategy.
- Where commuting currently exists and demand is anticipated to continue, the scheme either ensures it is facilitated in a pedestrian priority environment with additional capacity for safe use at junctions or provide an alternative route for commuting cyclists where required.
- The Greenway will generally consist of a shared 3-4m wide bound surface on the off road sections, tying into suitable bound surfacing for the on road sections. It is proposed to utilise enhanced variations to reflect local context.
- Works will include widening and upgrade to existing paths, construction of new paths, the construction of a number of new bridges, upgrade of existing bridges and underpasses, cantilever boardwalk structures, junction upgrades, etc.

- The upgrade and creation of new entrances to the Greenway.
- Improved landscape treatment to provide a coherent and legible Greenway along the proposed Greenway.
- Ecological enhancements including species rich grassland management, the planting of native trees and the provision of bat boxes.
- Bat friendly public lighting will be provided both in new areas and in upgrading sections of existing lighting.
- CCTV will be provided at a number of locations including each of the bridges.
- Drainage measures including swales, signage, markings and ancillary works.

This section of the project will result in 14 km of greenway, of which 34% comprises existing routes along roads and parkland requiring minimal changes. A total of 1,687m (12%) of new greenway will be constructed while existing routes along parkland and roads to be upgraded account for 55% of the total length.

The development of this proposed section of the Dodder Greenway will require a varying degree of interventions to existing conditions dependant on the proposed location. In some areas very little works will be required due to the presence of an existing shared surface or cycleway already in place. Elements of the design will require more significant interventions including the provision of pedestrian/cycle bridges at a number of locations. Unless otherwise stated it is proposed to provide a 4m wide Greenway. A reduced width is proposed in a number of areas where constraints exist, limiting the ability for widening works.

1.3 Consultations

The relevant environmental organisations, including the National Parks and Wildlife Service (NPWS), Inland Fisheries Ireland (IFI) and the Office of Public Works (OPW) were consulted during the preliminary design process. These organisations will be informed when works are about to commence on site. The organisations will be provided with sufficient time to allow inspection of the control measures that are put in place.

1.4 Principles of Erosion and Sediment Control

The principles of erosion and sediment control during the construction stage of a Project, as outlined in CIRIA C649 'Control of Water Pollution from Linear Construction Projects. Site Guide', are detailed in Section 4.2 – Principle Control Measures.

This plan initiates these principles for eventual incorporation and expansion in the Construction Erosion and Sediment Control Plan.

2. SITE CHARACTERISTICS

2.1 General

A desk study was undertaken to indicate Dodder catchment characteristics. The following gives a general overview of the local hydrology, underlying geology, landscape character and key ecological receptors which are relevant in terms of erosion and sediment control.

2.2 Hydrology

The Dodder rises in the Wicklow mountains and flows northeast through Dublin City centre and its suburbs for 26km before discharging to the River Liffey at Ringsend. The upper portion of the catchment is mainly rural while the lower catchment is heavily developed with residential and industrial adjacent land uses. There are five sub-catchments which drain into the River Dodder via tributary streams (listed below). These streams flow through highly urbanised areas:

- The Jobstown Stream (Tallaght)
- The Owendoher River (Rathfarnham)
- The Whitechurch Stream (Rathfarnham)
- The Little Dargle River (Churchtown)
- The Dundrum Slang River (Milltown)

Flooding

The Office of Public Works (OPW) flood hazard maps indicate numerous flooding events have been recorded for the River Dodder. Many of the historical flood events have caused extensive damage to properties, public roads and parklands in the lower Dodder catchment. These flood events are as a result of both fluvial and tidal flooding events. Dublin City Council (DCC) is currently in the process of constructing flood defence measures along sections of the Lower River Dodder. The section downstream of Newbridge has been completed while sections upstream of this are currently ongoing. These works consist primarily of flood defence walls, flood defence embankments, flood gates, infilling of bridge parapets and associated drainage and services alterations together with reinstatement and landscaping works.

Flooding is recorded in the upper catchment resulting from high intensity rainfall events. The main tributaries of the Dodder also record regular flooding.

EPA River Water Quality Monitoring Programme

The Environmental Protection Agency (EPA) carries out river water quality assessments as part of a nationwide monitoring programme. Data is collected from physico-chemical and biological surveys, sampling both river water and the benthic substrate (sediment) in contact with the water.

Water sampling and analysis is carried out throughout the year. The main parameters that are usually analysed for include: conductivity, pH, colour,

alkalinity, hardness, dissolved oxygen, biochemical oxygen demand (BOD), ammonia, chloride, ortho-phosphate, oxidised nitrogen and temperature.

Biological surveys are normally carried out between the months of June and October. These surveys look at the relationship between water quality and the relative abundance and composition of the macro-invertebrate communities in the sediment of rivers and streams. The macro-invertebrates include the aquatic stages of insects, shrimps, snails and bivalves, worms and leeches. It is generally found that the greater the diversity of macro-invertebrates, the better the water quality.

The collated information relating to the water quality and macro-invertebrate community composition is condensed to a numerical scale of Q-values or Biotic Index. The indices are grouped into four classes based on the river's suitability for beneficial uses such as water abstraction, fishery potential, amenity value, etc. The Q-value criteria are shown in Table 2.1 while the recorded values for the River Dodder are detailed in Table 2.2.

Table 2.1 Biological River Water Quality Classification System

Biotic Index (Q value)	Quality Status	Quality Class	Condition
Q5, Q4-5, Q4	Unpolluted	Class A	Satisfactory
Q3-4	Slightly Polluted / Eutrophic	Class B	Transitional
Q3, Q2-3	Moderately Polluted	Class C	Unsatisfactory
Q2, Q1-2, Q1	Seriously Polluted	Class D	Unsatisfactory

Table 2.2 EPA Monitored River Water Quality Within or Near Study Area

Water shed	River Name and Code	Stations Code	Q-value			
			2005	2007	2010	2013
Dodder	Dodder - 09D01	RS09D010900	NA	3	4	4
		RS09D010800	3	NA	3-4	NA
		RS09D010620	3	3-4	3	3-4
		RS09D010300	3-4	4	4	4
		RS09D010100	4-5	4	3-4	4
Owenadoher	Owenadoher R - 09O01	RS09O011700	3	3-4	3-4	3-4
		RS09O011300	3/0	3	4	NA

2.3 Hydrogeology

The River Dodder flows through two Groundwater Bodies (GWB) as described by the Geological Society of Ireland (GSI). The majority of the study area is in the Dublin groundwater body, with the upper reach of the river located in the Kilcullen groundwater body. Both of these groundwater bodies are reported by the EPA as being of good status but are assigned a rating of "1a – at risk."

The predominant risk to these groundwater bodies is presented by urban pressures such as dense development and associated polluting activities. Bedrock aquifers provide valuable groundwater resources for water supply across the country and are assigned into categories based on their predicted productivity at local and regional level. Bedrock aquifers in the Greater Dublin Area are generally categorised as *Locally Important (LI)* and these aquifers are considered to be moderately productive only in local zones; areas of *Poor Aquifer (PI)* also occur, which are generally unproductive except in local zones. Groundwater vulnerability is a measure of the ease with which groundwater may be contaminated by human activities and is determined by local geological and hydrogeological characteristics (mainly subsoil permeability and thickness). Groundwater vulnerability mapping for the study area shows that high and extreme vulnerability ratings are present in the River Dodder corridor. The river traverses a very steep sided valley from Fort Bridge (near the Glenasmole reservoir) downstream as far as Old Bawn. This valley cuts through glacial till which is exposed in many places and, in this section, the river bed and lower banks have instances of exposed bedrock. In this area, there are many locations where springs and seepages occur along the interface of the till and bedrock. The springs occur due to the hydraulic head of groundwater in the area combined with reduced depth or absence of subsoil. These calcareous springs form part of an Annex I listed Groundwater Dependant Terrestrial Ecosystems (GWDTEs) and are a protected habitat.

2.4 Geology

The study area is underlain by Granites & other Igneous Intrusive rocks with some small pockets of bedrock outcrops located adjacent to the proposed development. These granites have very low primary permeability but have been subject to varying degrees of rock deformation. These rocks would have deformed mainly by folding and faulting; both of which are associated with fracturing and permeability development. A weathered zone likely exists at the bedrock overburden interface which may extend for up to 5m, providing higher permeability zones. There are no fault lines located within the vicinity of the proposed development.

2.5 Soils/Subsoils

For much of the Dodder catchment, subsoils generally consist of Made / Built land given the urbanised nature of its location. Areas of linear parkland along the Dodder are underlain by sedimentary derived tills while alluvium deposits are located along the River Dodder and Jobstown Stream. Table 2.3 lists the subsoils present directly adjacent to the River Dodder (Teagasc subsoil dataset, 2006).

Table 2.3 Teagasc Subsoil Dataset

GSI Identifier Code	Category	Description
Made	Made ground	Made ground
A	Alluvium	Alluvium undifferentiated
RCK	Bedrock outcrop and subcrop	Bedrock at surface

GSI Identifier Code	Category	Description
TLs	Till derived from limestones	Limestone till (Carboniferous)
TLPsSsS	Till derived from Lower Palaeozoic sandstones and shales	Sandstone and shale till (Lower Palaeozoic)
GLs	Gravels derived from limestones	Limestone sands and gravels (Carboniferous)

2.6 Landscape Character

The landscape along the Greenway comprises predominantly of parklands as the Greenway travels along existing footpaths and cycletracks which will be upgraded and widened. The remaining sections of the Greenway are through existing built areas of the city and suburbs, primarily either constructed as shared surfaces on existing roads or along realigned sections of roads as combined footpath/cycletracks.

3. KEY ECOLOGICAL RECEPTORS

The key ecological receptors (KERs) that could be impacted by sediment laden water are generally considered to be those relating to aquatic ecology and fisheries. Whilst 10 KERs were identified along the Greenway, three were identified in relation to aquatic ecology and fisheries, as outlined in Table 3.1.

Table 3.1 Receptors of Ecological Interest: Summary Information

No.	Location/Name	Area of Receptor	Conservation Rating
1	River Dodder including the Dodder Valley proposed Natural Heritage Area (pNHA)	Along the length of proposed greenway	National Importance
2	Otter (<i>Lutra lutra</i>)	Along the length of the proposed greenway	County Importance
3	Kingfisher (<i>Alcedo atthis</i>)	No confirmed nesting sites however a number of areas are deemed to have suitable nesting habitat.	County Importance

4. EROSION AND SEDIMENT CONTROLS

4.1 General

Construction of new path and widening of existing pathways will require the scraping away of topsoil to the required depth. A number of deeper cuttings may be required for bridge foundations and swales. Bridge construction will not require any in-channel works. The proposed pathway will generally not be embanked, however the construction of the new bridges necessitate embankments for access. The principal objectives in relation to erosion and sediment control during construction will be:

- To keep the area exposed to the elements to an absolute minimum;
- To minimise the amount of runoff from the site;
- To organise the work so that it progresses from the low point towards the high point within each outfall catchment;
- To have an efficient earthworks operation to ensure that fill is placed as material is removed; and
- To ensure that the unacceptable material (if any is present) is removed and placed in controlled repository areas in an efficient manner.

4.2 Principal Avoidance Measures

The protection of watercourses from pollution due to construction works is achieved by avoidance in the first instance. Erosion control (preventing runoff) is more effective than sediment control in preventing water pollution. Erosion control is less subject to failure from high rainfall, requires less maintenance and is also less costly. The principles of erosion and sediment control during the construction stage as outlined in CIRIA C649 'Control of Water Pollution from Linear Construction Projects. Site Guide', include: -

- a) Site works will be limited to the minimum required to undertake the necessary elements of the project;
- b) Install drainage and runoff controls before starting site clearance and earthworks;
- c) Prevent runoff entering the site from adjacent ground, as this creates additional polluted water;
- d) It is intended that all topsoil will be reused on site in landscaping or building. Where this is a surplus the contractor will be required to obtain the appropriate licence to dispose of the material;
- e) Haul routes will where possible, be limited to the confines of the Land Made Available (LMA). Haul routes outside the limits of the site or permanent earthworks will only be permitted with the prior agreement of the Local Authorities;
- f) Establish vegetation as soon as practical on all areas where soil has been exposed; and
- g) As far as is practicable, construction works shall proceed within predetermined Construction Areas on a phased basis. These areas will be determined by the contractor during the construction phase of the project.

4.3 Principal Control Measures

The following outlines the principal control measures that will be prescribed for the construction phase to protect all the catchments, watercourses and local ecology which will be overseen by an Ecological Clerk of Works (ECoW) appointed by the Local Authority:

- a) Method statements for the works along the Dodder River will be reviewed by the Clients Project Ecologist and submitted to Inland Fisheries Ireland and the National Parks and Wildlife Service to ensure that the proposed methods satisfy the legislative requirements.
- b) All runoff from site compounds or constructions works areas shall be routed to specific discharge points where silt traps, screens and other appropriate measures deemed necessary will be employed to remove the sediment load prior to discharge.
- c) No construction vehicles shall be allowed to enter any watercourses. Site Compounds shall be a minimum of 25m from open watercourses. Compounds shall not be constructed in lands designated as Flood Zone A or B as indicated in the Eastern CFRAM Study flood mapping in accordance with the OPW Flood Risk Management Guidelines (November 2009).
- d) Foul drainage from all site offices, site compounds and construction facilities will be contained and disposed of in an appropriate manner to prevent pollution of rivers and local watercourses.
- e) The storage of oils, fuel, chemicals, hydraulic fluids, etc will not occur with 25m of open watercourses and will be undertaken in accordance with current best practice for oil storage (Enterprise Ireland, BPGCS005) on an impervious base within a bund and appropriately secured.
- f) Surface water drainage from the site compound and bridge construction sites will be directed through a settlement pond or silt trap prior to discharge. Temporary facilities to trap any accidental spillage shall also be required. Further construction requirements regarding the use of settlement ponds are described in section 4.4.1.
- g) Protection measures will be put in place to ensure that all hydrocarbons used during the construction phase are appropriately handled, stored and disposed of in accordance with recognised standards as laid out by the EPA. All chemical and fuel filling locations will be contained within bunded areas.
- h) The scheme requires works to be undertaken in close proximity to watercourses. This will necessitate the protection of such rivers from silt load. This will be through the use of silt fences so as to prevent direct runoff of waters from the construction site to watercourses. Silt fences shall be installed parallel to the closest adjacent watercourses. Typical examples of where silt fences are located are indicated on Plates 1 and 2 below.



Plates 1 & 2: Typical Silt Fence Usage

- i) Any surface water abstracted from a river for use during construction shall be through a pump fitted with a filter to prevent intake of fish.
- j) The quality of surface water discharge from the site will meet water quality targets specified to protect riparian ecosystems and protected species. Appropriate Environmental Quality Standards, namely the Surface Water Regulations 2009, will be utilised to determine specific water quality targets.
- k) A water quality monitoring program will be undertaken downstream of all proposed outfalls during the construction phase. It will be continued post construction of the road for a period of 12 months to enable the identification of any changes in water quality parameters.
- l) There will be maintenance of good site management at all times and all site personnel will be made aware of the importance of the freshwater environment and the requirement to avoid pollution of all types, throughout all stages of the construction phase of the project.
- m) Top soil stripping in proximity to the River Dodder will be undertaken as much as feasible in dry weather conditions and all stockpiles will be located greater than 25m from the river. Stockpiles within 50m of the river will be covered. Further construction requirements regarding the stockpiling of materials are described in section 4.4.3.
- n) Swales shall be constructed before alterations to the existing path or new pathway is constructed. Swales will be constructed with pre-rolled turf lining to promote immediate vegetative growth. Throughout the construction phase all swales shall discharge to temporary settlement ponds before discharging to watercourses. Swales shall be designed in accordance with CIRIA C753 "The SuDS Manual".
- o) All machinery operating in these locations will be routinely checked to ensure no leakage of oils or lubricants occurs. All fuelling of machinery will be undertaken within site compound or at a minimum set-back of 25m from the Dodder River.
- p) Maintenance of the drainage and pollution control systems will be undertaken during the entire duration of the Greenway's construction.
- q) The use and management of concrete in or close to watercourses must be carefully controlled to avoid spillage which, as stated earlier, has a deleterious effect on water chemistry and aquatic habitats and species. Alternate construction methods are encouraged, for example the use of pre-cast concrete or permanent formwork will reduce the amount of in-

situ concreting required. Further construction requirements regarding the use of concrete are described in section 4.4.4.

- r) The pouring of concrete, sealing of joints, application of water-proofing paint or protective systems, curing agents, etc for outfalls will be completed in the dry in order to avoid pollution of the freshwater environment.

4.4 Specific Construction Requirements

4.4.1 Temporary Settlement Ponds

In order to limit the potential for pollution due to runoff from construction, the first requirements in terms of mitigation shall be the establishment and construction of the temporary settlement attenuation ponds at the locations of the four proposed bridges. Additional temporary settlement ponds may be required to suit the Contractor's design or proposed construction sequencing. Where pumping of water is to be carried out, filters will be used at intake points and discharge will be through a sediment trap.

A double layer of silt control fences shall be established around the areas of the ponds prior to construction to control any runoff from the construction of the ponds and the associated outfalls. The ponds themselves will be lined over the forebay area to prevent the infiltration of runoff as well as fitted with temporary silt traps, filters and bunds to mitigate against runoff and pollution during the construction phase of the project until sufficient vegetation has been established within the pond itself. The lining of the pond forebay will be with a layer of clay / cohesive material with a minimum thickness of 200 mm with a geotextile membrane overlying this.

Penstocks will be fitted to the ponds to shut off the outfall to the river in case of emergency or particular spill events. The Contractor's Emergency Incident Response Plan shall address the control measures in relation to responsibilities for monitoring of spills during the construction and maintenance stages of the project. During the construction stage any silt deposits within the pond will be cleared as necessary to provide the required design storage capacity so as not to reduce the effectiveness of the pond's storage.

On completion of construction, the pond shall be cleaned of any remaining silt and debris and all removed from site. All surfaces disturbed as part of the scheme must be appropriately rehabilitated as to complete each phase.

The design of temporary sedimentation ponds shall be carried out as in accordance with CIRIA C532 "Control of Water Pollution from Construction Sites" and CIRIA C649 "Control of water pollution from linear construction projects".

4.4.2 Excavation

Construction of new path and widening of existing paths will require the scraping away of topsoil to the required depth. A number of deeper cuttings may be required for bridge foundations and swales. Embankments will be limited to the bridge access slopes. The transportation of materials to and from the site will be carried out in an efficient manner so as to minimise the

number of trips, minimise the length of individual trips, and minimise the escape of material from the trucks. The following principal controls will be put in place.

- The construction operation will be managed so as to minimise journey lengths
- Transportation of excess or unacceptable materials from the site will be primarily on haul routes within the site.
- Where any excavated material is “sloppy” and presents a risk of splashing over the top of the trucks the capacity of the trucks will be limited to 75% of the height of the lowest side of the truck.
- Haulage of unacceptable material will be by means of trucks with water-tight bodies only.
- Trucks leaving and entering the site will do so via a stabilised construction entrance.
- Road cleaning will be carried out at least daily to ensure that there is no build-up of sediment on the public road. The sweeper shall collect the sweepings and dispose of same to an approved facility off-site or alternatively to the material borrow/disposal areas.

4.4.3 Stockpiles

It is envisaged that topsoil and/ or acceptable material will be stockpiled during the construction of the proposed greenway development. The following control measures are proposed to limit the potential impact of stockpiling:

- Topsoil stripping over large areas in advance of main excavation works will not be permitted. It will be restricted to the minimum required for efficient earthworks operations and in any case will only be carried out in construction area units where earthworks is on-going.
- Each construction area unit will be topsoiled as the works proceed thus limiting both the amount and the length of time for which materials have to be stockpiled.
- Stockpiles will not be located within 25m of the River Dodder and shall be surrounded with a continuous double silt fence.
- Runoff from a stockpile will be collected via a shallow toe drain, located outside the silt fence, which will discharge to a temporary settlement pond which will be designed to have a retention time of at least 5 hours.
- Stockpiles of non-granular materials shall be limited in height to not more than 2.5m.

4.4.4 Concrete Works

The use and management of concrete in or close to watercourses must be carefully controlled to avoid spillage which has a deleterious effect on water chemistry and aquatic habitats and species. Where the use of concrete near and in watercourses or near lakes cannot be avoided the following control measures will be employed:

- Hydrophilic grout and quick-setting mixes or rapid hardener additives shall be used to promote the early set of concrete surfaces exposed to water;
- When working in or near the surface water and the application of in-situ materials cannot be avoided, the use of alternative materials such as biodegradable shutter oils shall be used;
- Any plant operating close to the water will require special consideration on the transport of concrete from the point of discharge from the mixer to final discharge into the delivery pipe (tremie). Care will be exercised when slewing concrete skips or mobile concrete pumps over or near surface waters;
- Placing of concrete in or near watercourses will be carried out only under the supervision of the Ecological Clerk of Works (ECoW);
- There will be no hosing into surface water drains of spills of concrete, cement, grout or similar materials. Such spills shall be contained immediately and runoff prevented from entering the watercourse;
- Concrete waste and wash-down water will be contained and managed on site to prevent pollution of all surface watercourses and lakes;
- On-site concrete batching and mixing activities will only be allowed at the identified construction compound areas;
- Washout from concrete lorries, with the exception of the chute, will not be permitted on site and will only take place at the construction compound (or other appropriate facility designated by the manufacturer);
- Chute washout will be carried out at designated locations only. These locations will be signposted. The Concrete Plant and all Delivery Drivers will be informed of their location with the order information and on arrival to site; and
- Chute washout locations will be provided with an appropriate designated, contained impermeable area and treatment facilities including adequately sized settlement tanks. The clear water from the settlement tanks shall be pH corrected prior to discharge (which shall be by means of one of the construction stage settlement facilities) or alternatively disposed of as waste in accordance with the Contractor's Waste Management Plan.

5. MONITORING AND AUDIT

5.1 Introduction

This Construction Erosion and Sediment Control Plan (CESCP) will form part of the Environmental Operating Plan (EOP). The EOP shall be prepared in accordance with the National Roads Authority's (NRA's) *Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan*. The monitoring of all aspects of the EOP, including the CESCP, will be carried out by the contractor as the responsible party. The responsibilities of the Employer will be discharged by the Employer's Site Representative staff.

5.2 General

The avoidance, control and mitigation measures outlined in this document will ensure that erosion and sediment arising from the works is controlled. They have been developed in accordance with best practice, in consultation with environmental organisations including NPWS and IFI, and have been shown to work on other projects. As with all systems, there is a requirement to have monitoring, audit and feedback loops to demonstrate the operation of the system. The following sections describe the framework pre-construction monitoring and construction monitoring regime.

5.3 Pre-Construction

Permanent continuous monitoring for turbidity will commence 6 months in advance of construction and will continue for 12 months post completion. Monitors will be placed on the watercourses at locations determined following consultations with IFI and NPWS. In addition, the suspended solids concentration in the watercourses will be measured at each location on a weekly basis during the construction phase.

This monitoring will be reviewed on an ongoing basis during construction. Should investigatory levels (a breach of the limits set out in the second schedule to the European Communities (Quality of Salmonid Waters) Regulations, 1988, measured at the point of discharge to the nearest watercourse) be reached then corrective action shall be taken.

5.4 Construction Stage

The pre-construction monitors (turbidity) will continue to be operated.

5.5 Contractor

The procedures and monitoring and audit regime outlined in section 5.6 and 6 shall be used by the contractor to ensure and demonstrate the effective operation of the avoidance, control and mitigation measures for Erosion and Sediment control. It will facilitate use as a feedback loop to target any issues that may arise.

5.6 Site Environmental Manager (SEM)

In order to help ensure the successful development, implementation and maintenance of the EOP, it is recommended that the main contractor appoint a Site Environmental Manager (SEM).

The SEM should possess sufficient training, experience and knowledge appropriate to the nature of the task to be undertaken, a Level Eight qualification recognised by the Higher Education and Training Awards Council (HETAC), or a University equivalent, or other qualification acceptable to the Employer, in Environmental Science or Environmental Management, or other subject acceptable to the Employer.

Separate from the on-going and detailed monitoring carried out by the contractor as part of the EOP, the SEM shall carry out the inspection/ monitoring regime described below on behalf of the employer. The results will be stored in the SEM's Monitoring file and will be available for inspection/ audit by the Client, NPWS or IFI staff. All inspections/ monitoring/ results will be recorded on standard forms.

- (i) Inspect the Principal Control Measures outlined in this plan on a weekly basis. Report findings to the Contractor;
- (ii) Inspect surface water treatment measures (settlement ponds, etc.) on a daily basis and obtain turbidity readings;
- (iii) Inspect all outfalls to watercourses on a daily basis and obtain turbidity readings. Where excavation, deposition, pumping out or concreting works are on-going in the vicinity, obtain turbidity readings three times per day;
- (iv) Daily visual inspection of watercourses to which there is a discharge from the works and of those where there is construction works in the vicinity;
- (v) Wheel wash facilities shall be inspected on a weekly basis;
- (vi) Stockpiles shall be monitored on a daily basis while being filled or emptied and otherwise on a weekly basis;
- (vii) Control measures for works at or near water bodies shall be inspected on a daily basis;
- (viii) Concrete operations at or near watercourses shall be supervised and designated chute washing out facilities shall be inspected on a daily basis;
- (ix) Site Compounds and satellite compounds shall be inspected on a weekly basis;
- (x) The Contractor's EOP monitoring results shall be audited on a frequent basis (6 times per quarter at a minimum);
- (xi) Any and all exceedance of the investigatory level for turbidity shall be reported to the NPWS and IFI and shall be investigated thoroughly by the SEM and the Contractor. Where the works are identified as the source causing the exceedance, the procedures outlined in items xii(a) to xii(d) below shall be followed;
- (xii) Any direct release of sediment to a watercourse causing plumes or exceedance of the turbidity investigatory levels shall result in:
 - (a) the relevant NPWS and IFI staff being notified immediately;
 - (b) the contractor will be required to take immediate action and to implement measures to ensure that such discharges do not re-occur;

- (c) Works, if stopped, shall not recommence until appropriate corrective measures to avoid any repetition are put in place. Such measures shall be agreed with the SEM following consultation with the NPWS and IFI; and
- (d) Works and/ or discharges from the works shall not recommence until written consent is received from the SEM.

(xiii) Where the SEM considers that the risk of a sediment release is high, he/she shall inform the Contractor and request protective action to be taken. Where the Contractor does not take immediate action the SEM shall instruct the Contractor to take action and same shall be reported to the Contract Manager and the Client; and

(xiv) The SEM will be delegated powers under the contract sufficient for these instructions to be issued and for an instruction.

6. EMERGENCY PROCEDURES

6.1 Introduction

Prior to commencing works, the Contractor shall prepare an Emergency Incident Response Plan based on a thorough risk assessment. The plan shall detail the procedures to be undertaken in the event of the release of any sediment into a watercourse, serious spillage of chemical, fuel or other hazardous wastes (e.g. concrete), non-compliance incident with any permit or license, or other such risks that could lead to a pollution incident, including flood risks.

6.2 Resources

Relevant staff, including cover staff, shall be trained in the implementation of the Emergency Response Plan and the use of any spill kit/ control equipment as necessary. The contractor shall provide a list of all such staff to the Employer's Site Representative detailing the name, contact number, and training received, and the date of that training.

The Contractor shall provide a full list, including the exact locations, of all pollution control plant and equipment to the Employer's Site Representative. All such plant and equipment shall be maintained in place and in working order for the duration of the works.

6.3 Spill Response

The Emergency Response Plan shall include a simplified Spill Response with the following as a minimum:

- (i) Instruction to stop work;
- (ii) Instruction to contain the spill;
- (iii) Details of spill clean-up material location;
- (iv) Name and contact details of responsible staff;
- (v) Measures particular to the location and the activity; and
- (vi) Instruction to contact the SEM (including Name and Contact Details).

This Spill Response shall be displayed at several locations throughout the site and at all sensitive locations.

The SEM shall decide on whether or not the NPWS/ IFI should be notified and shall also determine if and when works may proceed once corrective actions have been completed.

7. CONCLUSION

This CESCP sets out the minimum requirements that must be adhered to. Any alternative measures that may be incorporated at the construction stage will be required to provide at least the same, or a better standard of protection to surface and groundwater bodies.



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