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EIAR Chapter 2 Project Description and Planning Policy Context

Suir Island Infrastructure Links

Comhairle Contae Thiobraid Árann
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Document Control Sheet

Project Name:	Suir Island Infrastructure Links
Project Number:	20_071
Report Title:	Environmental Impact Assessment Report - Chapter 1 Introduction
Filename:	RPT-20_071-030

Issue No.	Issue Status	Date	Prepared by	Checked by
0	Final	22.09.2023	HB	LP

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2 Project Description and Planning Policy Context

2.1 Introduction

This section of the chapter provides a description of the Suir Island Infrastructure Links proposed development. A description of the primary elements of the design is presented in the following sections and describes the need and objectives of the proposed development. It should be noted that surveys, assessments and information that form the basis of this Environmental Impact Assessment Report (EIAR) are based on the design of the project as described in this chapter, which has been developed to a stage that permits a fully informed Environmental Impact Assessment (EIA) to be carried out by the competent authority.

2.2 Project Description

The proposed development is located in the centre of Clonmel town, with the development encompassing areas located on The Quay, Quay Steet, and New Quay (i.e. The Quays), Suir Island and Raheen Road. Refer to the Locality Map shown in Figure 2-1.

The proposed development will consist of:

- Two pedestrian bridges, the first bridge linking the proposed North Plaza on The Quay/Quay St/Sarsfield St Junction to Suir Island, and the second bridge connecting Suir Island to Raheen Road.
- The pedestrian bridges will be 4-metre-wide consisting of a double curvature alignment, which allow users to discover Suir Island 'from up high' by walking seamlessly between the trees while linking the project elements (North Plaza, the berm embankment, and the south riverbank) along one sinuous route. The first bridge follows the geometry of Sarsfield Street and arrives on the island following the line of the berm embankment, which then links onto the second bridge facilitating a link to Denis Burke Park on Raheen Road, creating a direct connection for pedestrians/cyclists between the park and the Town Centre.
- Provision of a new public open space called the North Plaza which will be aligned with Sarsfield Street. The steps and ramp will be visible from O'Connell Street creating a new landmark in the town of Clonmel and will encourage pedestrian movement towards the River Suir. The bicycle access ramp is designed to be as transparent as possible so as not to block the view of Suir Island from Sarsfield Street.
- Modification of traffic direction and carriageway widths in The Quay and Quay Street around the proposed North Plaza.
- Provision of a bus stop on the western side of the North Plaza located on Quay Street with five benches providing comfortable facilities for public transport users.
- Upgrading of the existing 2-metre-wide sidewalk along Quay Street into a 4-metre-wide shared pedestrian/cycle path which will provide unencumbered access to the proposed plaza area underneath the elevated access ramp.
- Provision of a sloping landscaped terrace with public seating, located inside the hairpin-shaped access ramp leading up to the northern bridge crossing.
- Provision of three benches and a 9-metre-long stepped promenade seating area integrated into the circular-shaped plaza.
- Planting of various native tree species around the North Plaza to integrate the proposed development with the existing scenery of Suir Island and complement the visual experience of users.
- Provision of a pedestrian path or promenade along the existing berm embankment across Suir Island linking the two pedestrian bridges, to facilitate access between Denis Burke Park on Raheen Road and the proposed North Plaza on The Quay.
- Construction of a pedestrian/bicycle ramp from the link promenade onto Suir Island Carpark. The ramp is fully integrated into the landscape by using the existing slope of the berm.

- Construction of three sets of steps connecting the link promenade to Suir Island carpark and the eastern end of Suir Island.
- Provision of a mini public space within Suir Island Carpark at the entrance to the proposed Suir Island Gardens.
- Provision of a south arrival point for the second bridge connecting Suir Island to the Raheen Road. The South Arrival Point will consist of one access ramp to the east and one set of steps to the west, integrated with the bridge landing level and running parallel to the footpath. These elements will be located outside the existing flood barrier.
- Road improvements for the safety of pedestrians/cyclists at the South Arrival Point, including the footpaths being widened and the road narrowed to accommodate 3.0-metre-wide lanes. Removal of three carparking spaces from the southern edge of the road to allow for wider footpaths.
- Installation of two uncontrolled pedestrian crossings positioned at either ends of the proposed access ramp and flight of steps to provide traffic calming at the South Arrival Point. This bridge arrival point will be located close to the school entrance of Raheen College, providing safe and convenient access for the schoolchildren.
- Access ramps and steps are located behind the flood barriers to allow access even during flood events.
- Construction of a new foul pumping station to be located within Suir Island car park which will facilitate future Irish Water connections. Wastewater will be pumped 0.1km approx. via rising main along the proposed bridge linking Suir Island to the proposed North Plaza where it will connect into the existing public network along The Quay.
- Ancillary site development works to include, but not limited to, surface water drainage, lighting and associated electrical works, hard and soft landscaping, road works to include surfacing and line marking, landscaping and installation of street furniture.
- All associated site works.

Refer to Figure 2-1 below for a locality map of the proposed development.

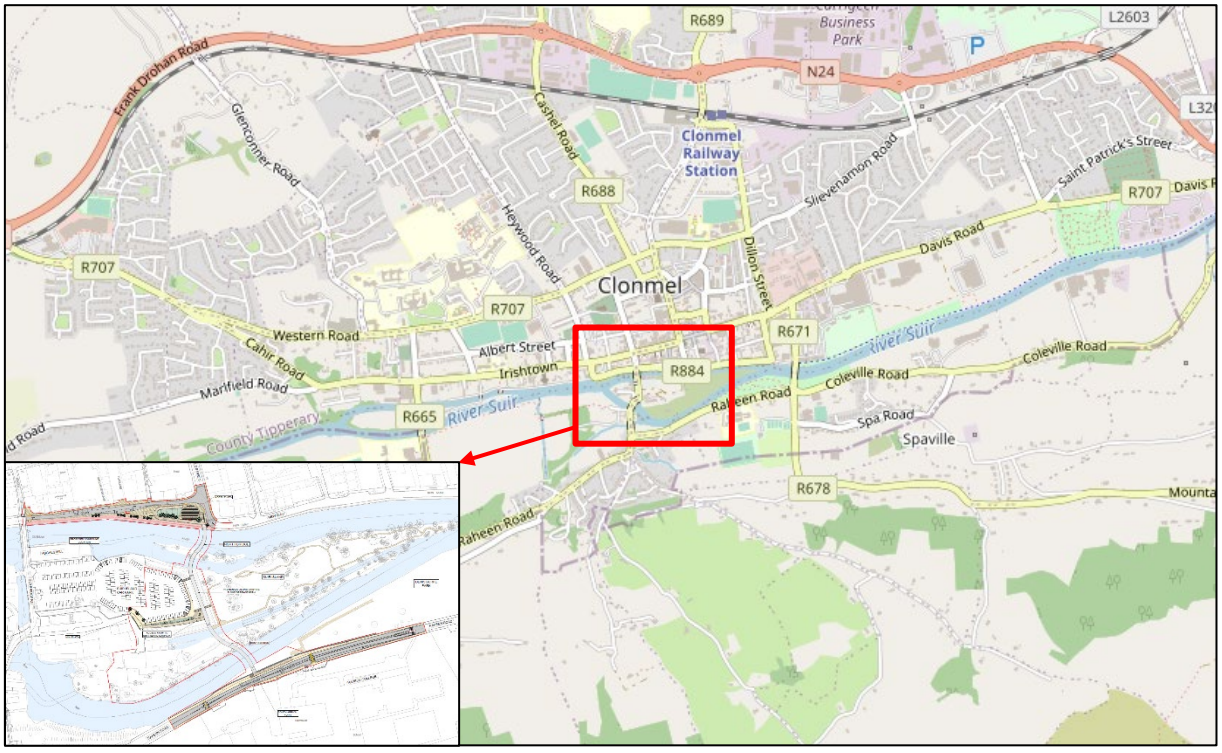


Figure 2-1: Project locality map and layout extent

2.2.1 Primary Elements of the Proposed Development

This section of the EIAR Chapter highlights the primary elements of the proposed development as summarised in the project description. This section aims to provide a baseline understanding of the proposed development, which is considered pertinent to the subsequent sections of this EIAR Chapter. Ancillary development proposal such as alterations to road networks, drainage, lighting and bridge structural elements are provided in Section 2.6 of this EIAR Chapter.

As highlighted in the project description, the proposed development is located in the centre of Clonmel town, with the development encompassing areas located on The Quay, Quay Steet, and New Quay (i.e. The Quays), Suir Island and Raheen Road as highlighted below:

The proposed Northern Bridge crossing, connecting the North Plaza to Suir Island, will span over the Suir River for a total distance of 60m as shown in Figure 2-2. The northern bridge abutment, access ramp and steps will be constructed behind the existing flood protection wall as shown on Figures 2-3 and 2-4.

The existing flood defence berm located on Suir Island will be utilised as a link between the northern and southern bridges as shown on Figure 2-5. Access ramps and steps are proposed to the existing car park as shown on Figure 2-6.

The Southern Bridge crossing, connecting Suir Island to Raheen Road and Denis Burke Park, will span the Suir River Slalom Course and Millrace for a total distance of 75m as shown on Figure 2-7. The Suir Island abutment will be constructed on top of the flood protection berm (Figure 2-5) and the Raheen Road abutment will be integrated into the existing concrete flood protection wall (Figure 2-8). The 2 No. support piers will be located on both banks of the Slalom Course.

Figure 2-2: New public open space called the North Plaza

Figure 2-3: North Plaza access ramp and steps to northern bridge

Figure 2-4: Northern bridge crossing connecting the North Plaza to Suir Island

Figure 2-5: Suir Island promenade, mini-plaza, access ramp and steps

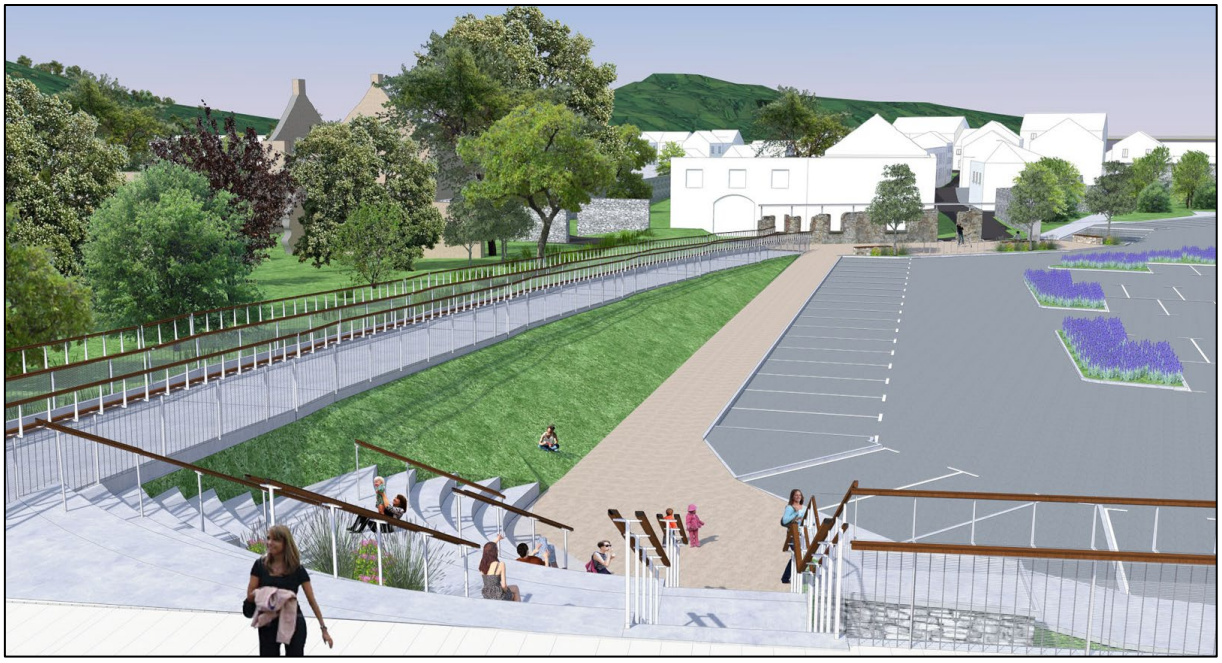


Figure 2-6: Suir Island access ramp and steps

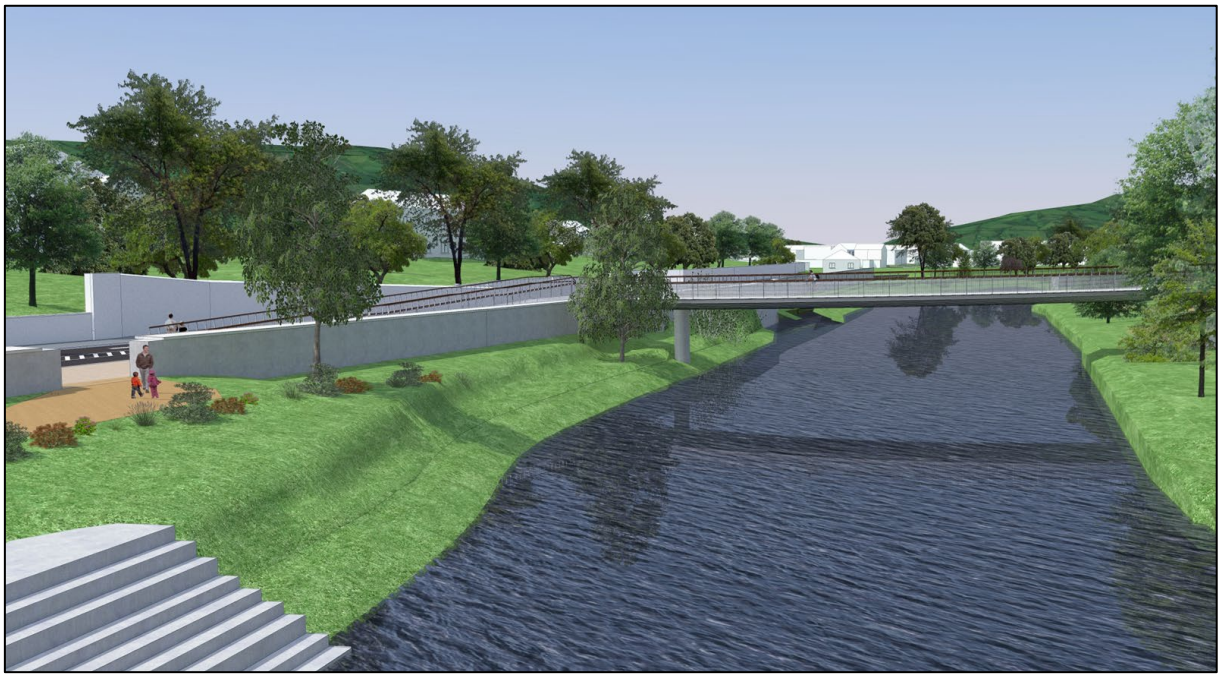


Figure 2-7: Southern bridge crossing connecting Suir Island to Raheen Road

Figure 2-8: Southern arrival point in Raheen Road

2.3 Need for the Proposed Development

Clonmel Town Centre is considered to be in need of public realm and traffic management improvements, together with enhancements and increases in the provision of amenity, recreation, leisure and cultural space.

The existing access linkages from the northern bank of the River Suir (town centre) and Raheen Road to Suir Island is available via Old Bridge Road located to the west of Suir Island. Old Bridge is a 14th-

century protected structure (Reg. No. 22117113) consisting of a three-arch slightly humpbacked limestone road bridge, built c.1550 and rebuilt c.1750.

The existing footpaths, located on either side of the single carriageway road, vary between 1-metre to 1.8-metres wide and contains numerous hazards for pedestrians and cyclists such as vehicular ingress/egress entrances, private dwelling entrances, public lighting poles, insufficient sight distances and “blind” corners adjacent to buildings and boundary walls.

Currently, there is no safe and universally accessible facility available to cross the River Suir from the Suir Blueway to the Greenane Blueway. Options are limited to Old Bridge Road or Old Waterford Road Gashouse Bridge (Reg. No. 22118007). The Suir Blueway commence beneath Gashouse Bridge with only a set of step leading from the road to the Blueway facility.

The need for the proposed development is to overcome the physical barriers for pedestrians and cyclists which are namely; the River Suir and existing space-constrained heritage bridges to increase connectivity between various residential, amenity, business and educational institutions as highlighted below.

The proposed Suir Island Infrastructure Links development will provide a safe, high-quality and universally accessible facility for users, whilst significantly increasing connectivity to existing and future planned amenity facilities as highlighted in **Section 2.3.1**.

The proposed development, in unison with existing and proposed urban realm improvements, will enhance resident and visitor experiences, create new opportunities for business and amenity facilities and enhance the surrounding environment to showcase the town’s rich historical heritage.

2.3.1 Development Linkages to existing and planned schemes

The town of Clonmel is home to numerous walking and cycling facilities such as the Greenane Blueway which connects Green Lane Road to Convent Road (R665) for a distance of 0.88 km, located west of Suir Island on the southern riverbank and the Suir Blueway from Clonmel to Carrick-on-Suir.

The Suir Blueway runs for 53 km in an east-west direction from Carrick-on-Suir to Cahir via Clonmel. The route is made up of a walking/cycling trail of 21 km which runs from Carrick-on-Suir to Clonmel and a further 32 km of waterway along the River Suir which can be canoed or kayaked, starting at the Gashouse Bridge in Clonmel on the northern riverbank. Figure 2-9 below shows the proposed development in relation to the existing Suir and Greenane Blueways and future required connections.

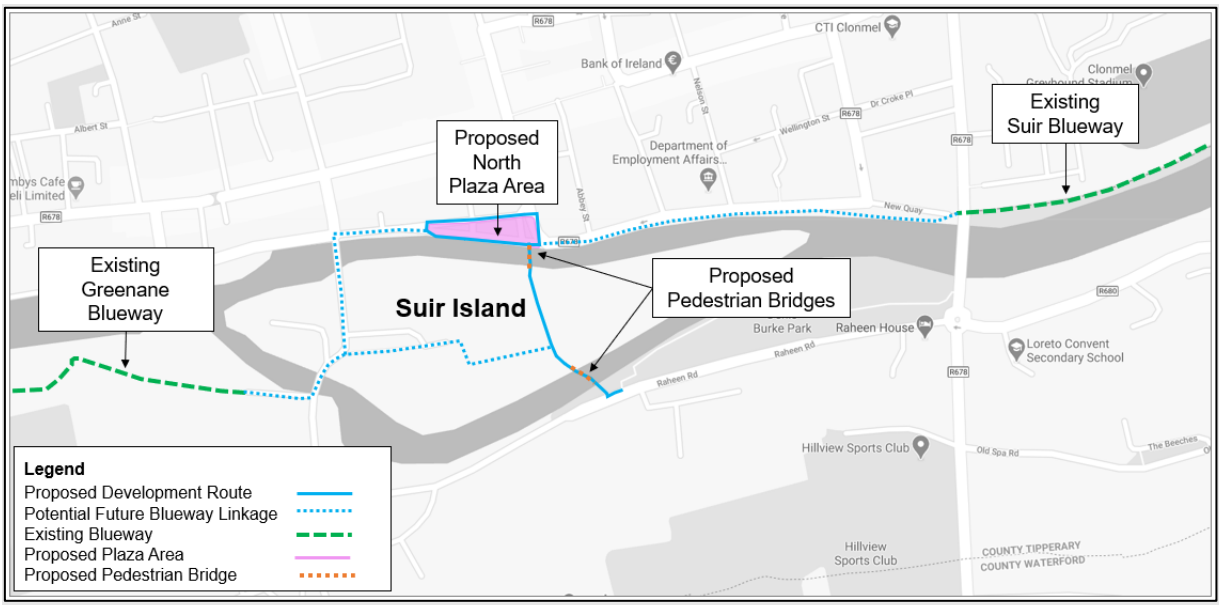


Figure 2-9: Proposed development connectivity benefits

Tipperary County Council were granted Part VIII planning approval for the Clonmel Urban Realm development which is currently in detailed design and procurement phase which encompasses the following areas:

- Sarsfield Street which will connect directly to the proposed North Plaza and northern bridge access steps and ramp;
- Blue Anchor Lane which will connect directly to the North Plaza and northern bridge access ramp; and
- Bridge Street which will connect to the proposed 4-metre-wide pedestrian path leading to the proposed northern bridge crossing and increase connectivity to the Suir Blueway commencing at Gashouse Bridge.

The purpose of the Clonmel Urban Realm development is to improve the existing public realm within the central, primary retail core and adjacent linkages, whilst respecting the existing context and key buildings within the town centre. For more information regarding the Clonmel Urban Realm project, refer to the Part VIII Planning Report (Ref. No, MGT0491) compiled by RPS Group which is available on the Tipperary County Council website planning portal.

Various Tipperary County Council walking and cycling schemes are currently under investigation phases which will further expand the wider connectivity between the abovementioned schemes. Table 2-1 provides a summary of existing, approved and future walking and cycling schemes.

Table 2-1: Proposed development linkages (direct and indirect)

Scheme Name and Description	Current approval phase or planned for future development	Description of linkages required
Direct linkages		
Suir Island Infrastructure Links (two pedestrian bridges connecting the town centre to Suir Island and Raheen Road/Dennis Burke Park)	Design and Environmental Evaluation	N/A

Suir Island Gardens (renovation of existing gardens at Suir Island House (in ruin), proposed water mains connection, proposed play area, picnic areas, lawns and planting.)	Approved Part VIII and Detailed Design and Procurement Phase	No additional linkages required. The Suir Island Gardens will be accessible from the Suir Island mini-plaza area and car park.
Suir Blueway (53-km walking and cycling blueway from Carrick-on-Suir to Cahir via Clonmel)	Existing infrastructure	Future western link required from Old Waterford Bridge Gashouse Bridge along the northern riverbank (New Quay) to connect to the proposed North Plaza. Distance c. 430-metres
Greenane Blueway (connects Green Lane Road to Convent Road (R665) for a distance of 0.88 km)	Existing infrastructure	Future eastern link required from Suir Island car park up to Greenane Blueway commencing from Green Lane Road. Potential linkage will be via Old Bridge Road for a distance of c. 290-metres.
Clonmel Urban Design Project (…to create a new public realm environment to attract footfall to Clonmel Town Centre through the construction of improved footpath widths and plaza areas at key nodal locations, which can be used to host civic events equipped with new modern street furniture and aesthetic features unique to Clonmel.)	Approved Part VIII and Detailed Design and Procurement Phase	Future northern links required from the proposed North Plaza via Sarsfield and Bridge Street to O'Connell Street consisting of c. 80-metres and 50-metres, respectively.
Indirect Linkages		
Convent Road to Marlfield Road Walking and Cycling Scheme (provision of segregated walking and cycling infrastructure between Convent and Marlfield Roads connecting to the Greenane Blueway)	Design and Environmental Evaluation	No additional linkages required other than has highlighted above.
Clonmel to Marlfield Greenway (provision of shared-path greenway from Marlfield (Inishlounaght to the abovementioned Convent Road to Marlfield Walking and Cycling Scheme)	Design and Environmental Evaluation	No additional linkages required other than has highlighted above.

2.4 Objectives of the Proposed Development

The proposed public realm improvements are intended to create a safe public space for all, while improving connectivity for pedestrians and cyclists. It is expected that the proposed development will encourage cycling and walking among all age groups as they travel between home, school, sports clubs, etc. as well as providing an attractive commuter and leisure route.

The objectives to be achieved from the proposed development include:

- Enhance/revitalise the public realm of the Clonmel town centre and to develop Suir Island and The Quays into the "Green Heart" of Clonmel as highlighted in the Clonmel & Environs Development Plan compiled in 2013;
- Provide a safe and high-quality connection route for pedestrians and cyclists from the Town Centre located on the northern bank of the River Suir to Suir Island and to the Raheen Road/Denis Burke Park located on the southern back of river;
- Unlock the amenity potential of Suir Island by providing a high-quality and safe access route for users from Denis Burke Park to Suir Island and the northern town centre
- Encourage people to make the modal shift to sustainable transportation modes such as walking and cycling and thus reducing greenhouse gas emissions to improve air quality and reduce traffic congestion by providing an alternative route of transport;
- Encourage people to be active;
- Encourage tourism in Clonmel and Suir Island by attracting more visitors to Clonmel;
- to complement climate action plans and decarbonization goals by promoting sustainable transportation options, reducing emissions, and improving public health and urban design.
- Boost economic activity in the town centre by attracting more visitors to Clonmel;
- Improve the connection between the Suir Blueway connecting Clonmel to Carrick-on-Suir located along the northern bank of the river and the Greenane Lane Blueway between Suir Island and Convent Road (R665) located on the southern bank of the river by providing a safer crossing location over restricted protected bridge structures;
- Contribute to the objectives of the proposed Clonmel Urban Realm project encompassing Sarsfield Street, Blue Anchor Lane, Bridge Road and O'Connell Street located to the north of the proposed development.

2.5 Planning Policy Context

2.5.1 Introduction

This section of the chapter details how the Suir Island Infrastructure Links proposed development aligns with current National, Regional and Local planning policies.

As noted in Section 2.3, the existing facilities to access Suir Island from the town centre and Raheen Road is constrained and does not conform to present-day safety and accessibility design standards, therefore it is relevant to review current policies and design guidance documents to implement the necessary changes to comply with the requirements presented within such documents.

The following planning policy and design guidance documents were reviewed and described in the sections below as well as how the proposed development aligns with current objectives and standards:

National Policy Context

- National Planning Framework
- National Development Plan 2021-2030
- Project Ireland 2040, National Development Plan 2018 – 2027
- National Investment Framework for Transport in Ireland, December 2021
- Climate Action Plan 2023
- National Sustainable Mobility Policy
- National Implementation Plan for the Sustainable Development Goals 2022-2024
- People, Place And Policy Growing Tourism To 2025
- Ireland's Government Road Safety Strategy 2021–2030

- Transport Infrastructure Ireland Sustainability Implementation Plan Our Future

Regional Policy Context

- Regional Spatial Economic Strategy for the Southern Region, January 2020

Local Policy Context

- Tipperary County Development Plan 2022-2028
- Clonmel & Environs Development Plan 2013 – 2019, (as extended)
- Suir Island Master Plan, 2019

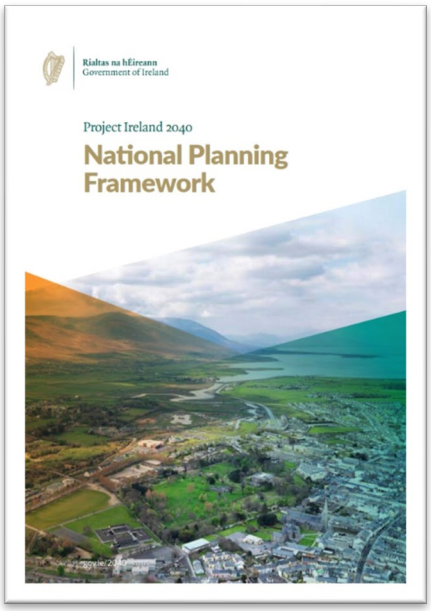
Design Guidance Documentation

- National Cycle Manual
- Design Manual for Urban Roads and Streets
- Traffic Management Guidelines
- Accessibility Guidance

2.5.2 National Policy Context

National Planning Framework

This document was published by the Irish Government as a high-level strategic plan for shaping the future growth and development of Ireland out to the year 2040. It has been created as a guide for public and private investment to help create and promote economic opportunities and sustainable cities.



The NPF aims to "*Enable more effective traffic management within and around cities and re-allocation of inner-city road-space in favour of bus-based public transport services and walking/cycling facilities.*" (reference from the National Strategic Outcome 2, page 140)

This framework aims to identify strategic areas for the sustainable development of renewable electricity projects of scale, in a sustainable manner, compatible with environmental and cultural heritage. The following strategic investment areas have been considered relevant to the proposed development:

<u>Enhanced Amenity and Heritage</u>

The purpose of this strategic investment is to ensure that our cities, towns, and villages are attractive and can enhance the quality of life of residents. It will require investment in well-designed public realm, which includes public spaces, parks, and streets, as well as recreational infrastructure. This is linked to and must integrate with our built, cultural, and natural heritage, which has intrinsic value in defining the character of urban and rural areas and adding to their attractiveness and sense of place.

The proposed development will impact positively on the public realm by improving accessibility between public spaces, parks, walking and cycling facilities and streets. The proposed development will complement the rich cultural and natural heritage of the town centre by attractiveness of the area, increase access between land uses consisting of amenities, businesses, retail and residential uses whilst promoting green modes of transport as noted below.

The National Strategic Outcome 7 (page 146) aims to create "attractive places including a combination of factors, including vitality and diversity of uses, ease of access to amenities and services supported

by integrated transport systems and green modes of movement such as pedestrian and cycling facilities. Appealing places are also defined by their character, heritage, and sense of community. This includes attractive buildings and street layouts, civic spaces and parks and regeneration of older areas and making places feel safe through active use and design."

The following objectives, relevant to the design of cities, towns, and villages and sustainability, are listed within the NPF:

National Objective 4 (page 55) – Ensure the creation of attractive, liveable, well designed, high quality urban places that are home to diverse and integrated communities that enjoy a high quality of life and well-being.

National Objective 6 (page 57) - Regenerate and rejuvenate cities, towns and villages of all types and scale as environmental assets, which can accommodate changing roles and functions, increased residential population and employment activity and enhanced levels of amenity and design quality, in order to sustainably influence and support their surrounding area.

National Policy Objective 18a (page 73) aims to "support the proportionate growth of and appropriately designed development in rural towns that will contribute to their regeneration and renewal, including interventions in the public realm, the provision of amenities, the acquisition of sites and the provision of services."

National Objective 27 (page 82) - Ensure the integration of safe and convenient alternatives to the car into the design of our communities, by prioritising walking and cycling accessibility to both existing and proposed developments and integrating physical activity facilities for all ages.

The proposed development aims to deliver well-designed, high-quality facility to integrate communities, rejuvenate the town centre of Clonmel and contribute to increased economic activity by attracting more visitors whilst providing an alternative to vehicular transport methods as noted in the NPF objectives above.

National Development Plan 2021-2030

This document was published by the Irish *Department of Public Expenditure and Reform* in October 2021 with the purpose to set out the Government's over-arching investment strategy and budget for the period 2021-2030. It is an ambitious plan that balances the significant demand for public investment across all sectors and regions of Ireland with a major focus on improving the delivery of infrastructure projects to ensure speed of delivery and value for money.

Chapter 8 of the Plan discusses the goals of 'Strengthened Rural Economies and Communities'. *The Rural Regeneration and Development Fund (RRDF),* will continue to support ambitious investments of scale which will deliver key Rural Future objectives and Programme for Government commitments, delivering the necessary facilities and infrastructure – to revitalise our rural towns and villages, addressing vacancy, dereliction and driving town centre residency, remote working, and enterprise development - which will play a part in making rural areas attractive places to live and work.

Active travel has been highlighted as a strategic investment priority. It is the goal to continue the development of walking and cycling infrastructure all over Ireland, including in towns and villages in more rural areas of the country. The investment has transformative potential to substantially increase the numbers choosing to make active travel part of their daily life, improving personal health and mental

well-being, making our city, town, and village centres more vibrant and people focused spaces, and significantly addressing our climate action challenge.

As noted in Section 2.3, the proposed development will create the necessary linkages between the Suir Blue, stretching from Clonmel to Carrick-on-Suir, and the Greenane Blueway between Green Lane and Convent Road. The proposed development will integrate further to the proposed Clonmel Urban Realm project which is currently in detail design and procurement phase. The above integration and linkages will create a continuous route for pedestrians and cyclists. With the provision of continuous, high-quality and universally accessible facilities, users would be more encouraged to make the modal-shift to sustainable, greener and healthier transport modes and thus, creating a vibrant town centre, benefiting residents, promote tourism and improve economic activity in line with the National Development Plan goals and objectives.

Project Ireland 2040, National Development Plan 2018 – 2027

The Government published Ireland's National Development Plan 2018 – 2027 (NDP) to drive long term economic, environmental and social progress in Ireland over the next decade. The National Development Plan is integrated with the NPF. This document was published by the Irish *Department of Public Expenditure and Reform* in July 2018 with the purpose of providing a high-level strategic plan to improve transport, tourism, and sport infrastructure by 2040. This document supports an ambitious growth target to enable a town like Clonmel to grow by 50-60% by 2040.

The National Development Plan is a broad document setting the Government's policy vision over the period 2018-2027. It includes a chapter on the transition to a low carbon and climate resilient society. The Government pledges to invest 22 billion euros in order to reach an almost zero emissions economy by 2050. The funds are to be primarily deployed to reduce carbon emissions from transport, housing, agriculture and the energy sector, along with flood defences.

The National Development Plan sets out the investment priorities that will underpin the successful implementation of the new National Planning Framework (NPF). This will guide national, regional and local planning and investment decisions in Ireland over the next two decades to cater for an expected population increase of over 1 million people to 2040.

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

The proposed development aligns with the National Development Plan, which underpins the National Planning Framework, by providing a sustainable transport route for commuters in the town on Clonmel to make the modal shift to sustainable transport methods such as walking and cycling by connecting existing facilities such as the Suir and Greenane Blueways and urban realm project to residents. The result would be a continuous link between these facilities to businesses, retail, amenities, parks and residential properties by overcoming the physical barrier that is the River Suir, whilst enhancing the amenity space of the town centre and preserving the cultural and natural heritage of Clonmel.

National Investment Framework for Transport in Ireland (NIFTI)

The National Investment Framework for Transport in Ireland (NIFTI), published by the Department of Transport in December 2021, is the "*strategic framework for future investment decision making in land transport. Its purpose is to guide the development of the transport network in the decades ahead to enable the National Planning Framework and promote positive social, environmental, and economic outcomes throughout the country.*" (refer Section 1.1)

One of the objectives presented within this document is the delivery of "a safe and sustainable land transport network which supports prosperous communities, promotes balanced development and helps to realise our climate change goals."(refer to Section 2.2)

The decarbonisation of the transport sector is an urgent priority of the NIFTI and is aimed to "support sustainable mobility wherever it is feasible and encourage modal shift to these modes, namely active travel, and public transport. This will include extending the reach of sustainable mobility in rural areas through investment in greenways, public transport and the strategic provision of integrated park and ride solutions" (refer to page 7)

Section 4 of the NIFTI present the investment priorities, which are described below:

- **Decarbonisation**: this priority aims to invest in "sustainable modes so that transport users have safe, accessible, reliable and efficient alternatives to the private car."
- **Protection and Renewal**: this priority aims to protect and renew the existing land transport network.
- **Mobility of People and Goods in Urban Areas**: This priority focuses on making towns and cities more vibrant and sustainable places to live and work. It aims to encourage modal shift and disincentivise private car use by reducing the availability of parking in urban centres and congestion charging. Innovations such as shared mobility and mobility as a service are also likely to have an increasingly important role to play.
- **Enhanced Regional and Rural Connectivity:** This priority focus on "delivering reliable, shorter journey times to and between centres of scale for people and goods. Connectivity ensures access to jobs, leisure, and public services for everyone in Ireland, and is particularly important for people living in rural areas who are dependent on a small number of transport links."

The proposed development, to which this EIAR relates to, aligns with the NIFTI investment priorities by:

- Promoting the decarbonisation of Clonmel Town Centre through the enhancement of the walking/cycling infrastructure. The proposed development will provide safe and segregated infrastructure in and around Suir Island, linking both sides of the town and shortening the journey time via active modes of travel. This creates a modal shift opportunity for trips in the 2 km radius from the island.
- Making Clonmel Town Centre a more vibrant and sustainable place to live and work through the provision of high-quality infrastructure in and around Suir Island and a Plaza in the heart of the Town.

Section 4.3 of the NIFTI presents the investment hierarchies, which is reproduced in Figure 2-10, below.

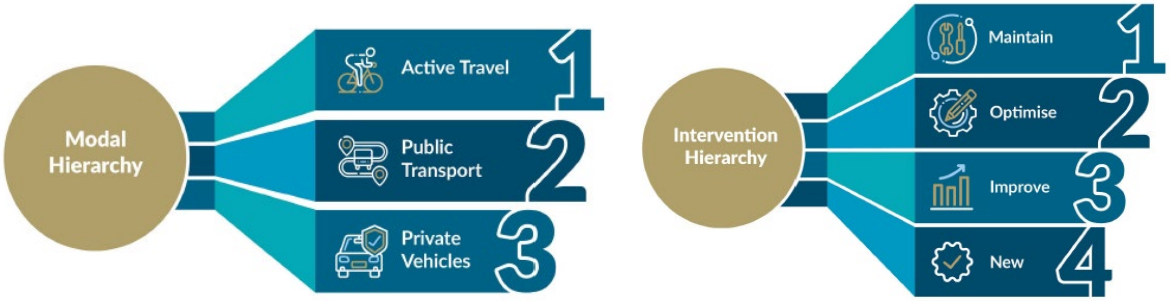
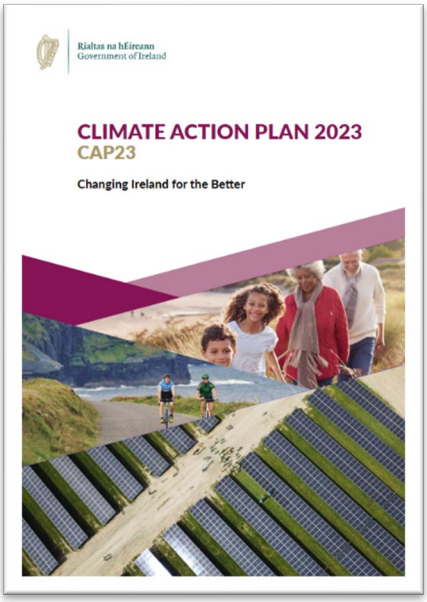


Figure 2-10: NIFTI Modal and Intervention Hierarchy

As shown above, the NIFTI prioritises the delivery of projects that promote active travel (walking & cycling), with the aim to shift from low-occupancy private vehicles to more sustainable modes. The proposed development aims to promote the use of active travel modes by providing a high-quality, safe and universally accessible alternative to private vehicles and thus aligns with the number 1 priority of the NIFTI in terms of Modal Hierarchy.

In terms of the Intervention Hierarchy as shown above, the proposed development will provide new infrastructure in terms of bridges to access the amenities on Suir Island and thus aligns with priority number 4. As noted in Section 2.3, Suir Island is accessible via Old Bridge Road which is a protected structure and thus scope to improve and optimise access is restricted via this route. Elements of the proposed development such as the proposed North Plaza, Suir Island mini-plaza and alterations to Raheen Road aligns with priorities Number 2 and 3 as highlighted in Figure 2-10, where the works aims to optimise and improve the active travel space in the town centre.

Climate Action Plan 2023



The *Climate Action Plan 2023* was published by the Department of the Environment, Climate and Communications on the 21st of December 2022 and updated in January 2023. The plan is the second annual update to Ireland's Climate Action 2019. This plan is the first to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021, and following the introduction in 2022, of economy-wide carbon budgets and sectoral emissions ceilings.

The plan implements the carbon budgets and sectoral emissions ceilings and sets out a roadmap for taking decisive action to halve our emissions by 2030 and reach net zero no later than 2050, as committed to in the Programme for Government. Climate Action Plan 2023 sets out how Ireland can accelerate the actions that are required to respond to the climate crisis, putting climate solutions at the centre of Ireland's social and economic development.

Agriculture is our largest source of emissions, representing 33.3% of total national greenhouse gasses (GHG) emissions in 2021, based on provisional estimates. The transport and energy (primarily power generation) sectors represented 15.7% and 14.4% of emissions respectively in 2021. The transport sector has been the fastest growing source of GHG emissions over the past three decades, showing a 112% increase between 1990 and 2021. These three key sectors – agriculture, transport and energy – consistently produce the largest share of Ireland's emissions.

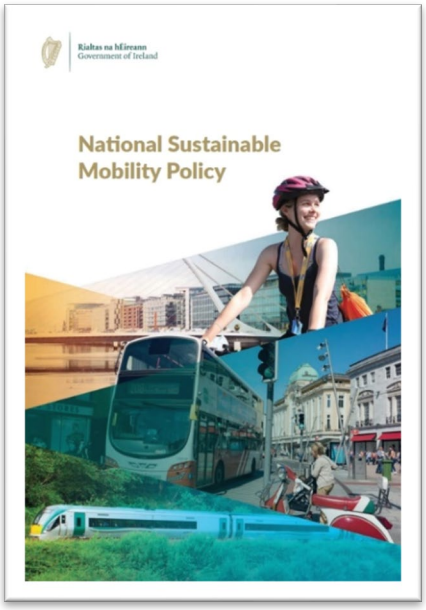
The CAP23 highlights the five most important decarbonisation measures for Ireland in the coming decade, one of which is:

> "*Modal Shift in Transport and Fleet Electrification: Policies providing the infrastructure and incentives to use public transport, coupled with changes in behaviour are required to reduce passenger car use. This will require a 20% reduction in vehicle kilometres travelled, and significant increases to the level of additional public transport and active travel journeys per day, as set out in Chapter 15. The uptake of electric vehicles will also require a step change with 30% of the private car fleet to be electrified by 2030, and all new car registrations to be electric for subsequent years.*"

The proposed development will contribute to the decarbonisation measure quoted above by encouraging people to make use of active travel methods by providing an alternative to private vehicle trips taken. With more people making use of active travel transport methods, traffic congestion will be reduced, thus reducing fuel consumption and the emission of greenhouse gasses from idling vehicles. The proposed development will also increase the accessibility to public transport facilities by providing a new bus stop. With increased access to public transport or making the modal shift to active travel methods, residents could experience a reduction in transportation costs compared to private vehicle trips.

Overall, the proposed development aims to complement climate action plans and decarbonization goals by promoting sustainable transportation options, reducing emissions, and improving public health and urban design.

National Sustainable Mobility Policy



The *National Sustainable Mobility Policy*, prepared by the *Department of Transport*, set out a strategic framework to 2030 for active travel and public transport to support Ireland's overall requirement to achieve a 51% reduction in carbon emissions by the end of this decade.

It is the target of this policy to deliver at least 500,000 additional daily active travel and public transport journeys and a 10% reduction in kilometres driven by fossil fuelled cars by 2030, in line with metrics for transport set out in the Climate Action Plan 2021 (Updated to 20% in Climate Action Plan 2023).

This plan commits to developing pedestrian enhancement plans and cycle network plans to guide investment in new active travel infrastructure and retrofitting of existing infrastructure. Furthermore, expanding walking and cycling options across the country, including greenways.

The principles and goals presented on page 25 of this policy document are reproduced below.

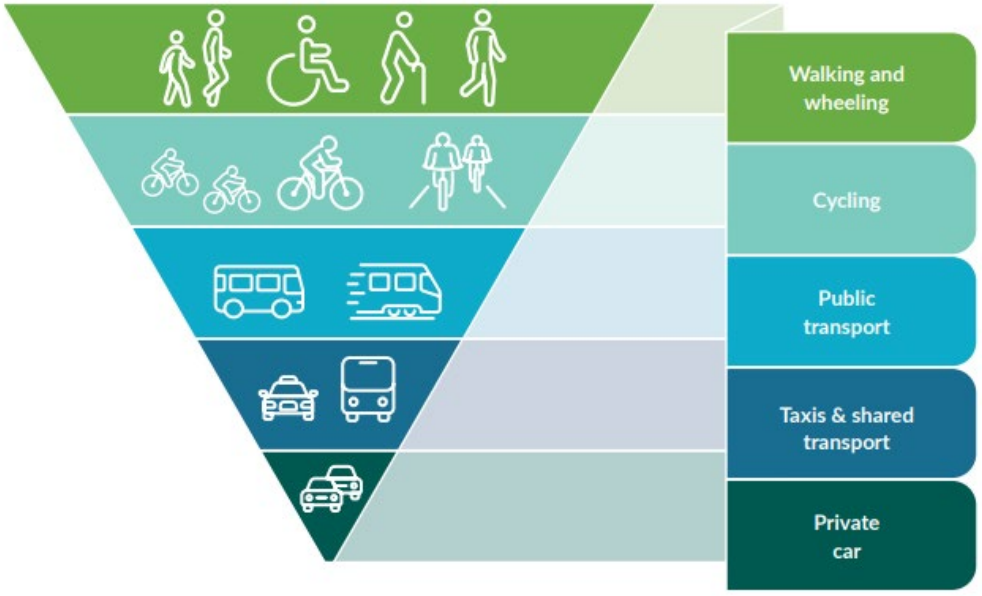
PRINCIPLES	GOALS
Safe and Green Mobility	1. Improve mobility safety. 2. Decarbonise public transport. 3. Expand availability of sustainable mobility in metropolitan areas. 4. Expand availability of sustainable mobility in regional and rural areas. 5. Encourage people to choose sustainable mobility over the private car.
People Focused Mobility	6. Take a whole of journey approach to mobility, promoting inclusive access for all. 7. Design infrastructure according to Universal Design Principles and the Hierarchy of Road Users model. 8. Promote sustainable mobility through research and citizen engagement.
Better Integrated Mobility	9. Better integrate land use and transport planning at all levels. 10. Promote smart and integrated mobility through innovative technologies and development of appropriate regulation.

As shown above, improving mobility safety is the number 1 Goal of this policy document. Goal 1 aims "to improve the safety of all mobility options including active travel, road and rail and to prioritise the safety and security of those working on / travelling by sustainable mobility."

Expanding the availability of sustainable mobility options has also been established as a goal of this policy. It states that "Goal 4 aims to expand the capacity and availability of sustainable mobility in a regional and rural context. This will be done through the delivery of improved active travel infrastructures."

Goal 7 aims to "support enhanced permeability and ensure that the universal design principle and Hierarchy of Road Users model is used to inform future investment decisions to reduce inequalities, support a whole of journey approach, and prioritise sustainable mobility."

Figure 8: *Hierarchy of Road Users model*



Overall, the goals of the proposed development are aligned with the vision of this policy document as it:

- Aims to create a safer route for pedestrians and cyclists.
- Promotes walking and cycling for trips under 2 to 5 km, instead of the use of single passenger cars.
- Prioritises pedestrians and cyclists in the transport network.
- Expands the available walking and cycling infrastructure within the town.
- Creates a potential opportunity to strategically link the two existing Blueways on the eastern and western side of Clonmel through this proposed development.

National Implementation Plan for the Sustainable Development Goals 2022-2024

The National Implementation Plan for the Sustainable Development Goals 2022-2024 was developed in collaboration with all Government Departments, key stakeholders, and based on input from two public consultation processes.

The Plan sets out five strategic objectives and 51 actions, with 119 individual measures to increase Ireland's ambition and strengthen implementation structures to achieve the Sustainable Development Goals (SDGs). It also incorporates 23 external actions from four other National Plans or Strategies which contribute to and are complementary to the objectives of this Plan and which have been included for coherence and reporting purposes.

- Strategic Objective 1: To embed the SDG framework into the work of Government Departments to achieve greater Policy Coherence for Sustainable Development
- Strategic Objective 2: To integrate the SDGs into Local Authority work to better support the localisation of the SDGs.
- Strategic Objective 3: Greater partnerships for the Goals
- Strategic Objective 4: To further incorporate the principle of Leave No One Behind into Ireland's Agenda 2030 implementation and reporting mechanisms.
- Strategic Objective 5: Strong reporting mechanisms

The Plan also contains 22 case studies to showcase some of the valuable initiatives and examples of best practice projects and programmes being progressed by a variety of organisations, institutions and sectors across the country.

The proposed development will provide new and enhance existing active travel facilities in Clonmel which aligns with several of the Sustainable Development Goals (SDGs):

- SDG 3: Good health and well-being: Active travel facilities can promote physical activity, which is essential for good health and well-being. Encouraging walking and cycling can help reduce the risk of chronic diseases, improve mental health, and enhance overall quality of life.
- SDG 7: Affordable and clean energy: Active travel facilities can help reduce the need for fossil fuel-powered transportation, which can contribute to climate change and air pollution.
- SDG 9: Industry, innovation, and infrastructure: Building active travel facilities requires infrastructure investment and innovation. By developing safe and accessible walking and cycling routes, communities can improve transportation infrastructure and create new opportunities for economic growth and innovation.

- SDG 11: Sustainable cities and communities: Active travel facilities can help create more sustainable and liveable cities and communities. By reducing traffic congestion and emissions, and promoting physical activity and community engagement, active travel facilities can help create healthier and more equitable communities.
- SDG 13: Climate action: Active travel facilities can contribute to climate action by reducing greenhouse gas emissions from transportation.

People, Place And Policy Growing Tourism To 2025

Tourism is one of Ireland's most important economic sectors and has significant potential to play a further role in Ireland's economic renewal.

Tourism is one of Ireland's most important economic sectors and has significant potential to play a further role in Ireland's economic renewal. In 2013, tourism was responsible for overseas earnings of €3.3 billion (excluding carrier receipts – airfares and ferry costs).

Combining the data from the domestic market and international visitors, total tourism revenue for the economy in 2013 was around €5.7 billion. Of this revenue, €1.4 billion directly benefited the Exchequer through taxation.

The overall tourism goal of Government is that:

- By 2025, revenue from overseas visitors, excluding carrier receipts, will increase to €5 billion in real terms (i.e. excluding effects of inflation).
- Employment in the tourism sector will be 250,000 by 2025, compared with around 200,000 at present.
- There will be 10 million visits to Ireland annually by 2025.

Development of public infrastructure and private construction activity should be carried out with as much cognisance as possible for the natural landscape as well as with regard for the value of built, cultural and natural heritage. Effective and balanced management of key natural and built heritage is essential for growth in tourism that is both economically and environmentally sustainable.

The proposed development will enhance the visitor experience by providing a unique way to explore cultural and natural heritage sites. Walking and cycling can provide a more immersive and personal experience of a destination, allowing visitors to connect with local culture and history in a more meaningful way. The proposed development will attract tourists who are looking for outdoor recreational activities. By promoting active travel options, the community of Clonmel can create new opportunities for tourism and economic growth.

Ireland's Government Road Safety Strategy 2021–2030

For the 2021–2030 strategy, seven Safe System priority intervention areas have been identified, and our aim for each of these is provided below:

- Safe roads and roadsides
- Safe speeds
- Safe vehicles
- Safe road use
- Post-crash response
- Safe and healthy modes of travel
- Safe work-related road use

Fully embracing and embedding a Safe System approach across all components and partners of the traffic system will allow us to transform our policy and practice beyond traditional road safety interventions and achieve greater reductions in fatalities and serious injuries than before. This will also

include aligning with key international road safety policies, such as the Stockholm Declaration (Road Safety Sweden, 2020).

To ensure this long-term goal is achieved, and to reflect the transformational approach to road safety policy, practice and governance being implemented in the 2021–2030 strategy, Ireland has set a target to reduce road deaths and serious injuries by 50% by 2030.

The objectives of the plan are to:

- Develop a National Cycle Network plan for interurban rural cycling and walking, and an implementation plan for delivery in Phases 2 & 3.
- Continue to implement an active travel infrastructure for local authorities.
- Encourage modal shift to support environmental, safety and health objectives.
- Promote and support an expanded Cycle Right training programme.
- To achieve the critical reductions in deaths and serious injuries required by 2030 and to progress towards our ultimate Vision Zero goal by 2050.

The proposed development will contribute to the above objectives by connecting regional cycle networks such as the Suir and Greenane Blueways, promote active travel methods which support environmental, health and climate objectives by encouraging people to make the modal shift to sustainable methods. The development has been designed in accordance with relevant guidance documents to ensure that pedestrian and cyclists' safety is a priority.

Transport Infrastructure Ireland Sustainability Implementation Plan Our Future

Transport Infrastructure Ireland (TII) has a vision to lead in the delivery and operation of sustainable transport, enabling our networks to drive inclusive growth, create job opportunities, enhance the well-being of all persons including vulnerable groups, strengthen our resilience to address climate change, maintain our commitment to the environment and continue to prioritise safety. This is the context in which we have developed our Sustainability Implementation Plan – Our Future.

TII exists to fulfil an important purpose of national strategic significance, touching the lives of citizens and visitors alike on a daily basis. Our purpose is to provide sustainable transport infrastructure and services, delivering a better quality of life, supporting economic growth and respecting the environment. TII's Sustainable Implementation Plan summarises their six sustainable principles as highlighted below:

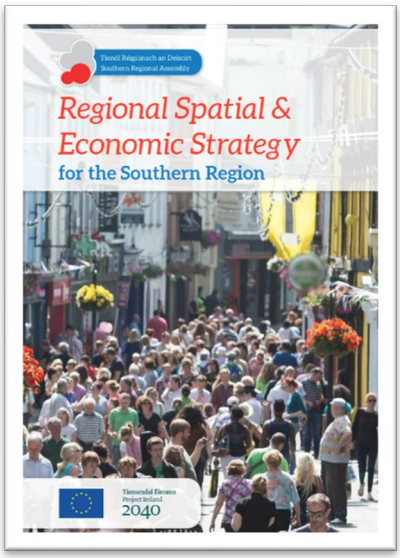
1. Provide effective, efficient and equitable mobility;
2. Enable safe and resilient networks and services;
3. Collaborate for a holistic approach;
4. Deliver end-to-end improvements;
5. Transition to net zero; and
6. Create total value for society.

The proposed development aims to provide effective, efficient, and equitable mobility by promoting sustainable transportation options that are accessible to everyone. Walking and cycling can be faster and more convenient than driving in urban areas, especially during peak traffic times. Walking and cycling provides equitable mobility by offering transportation options that are accessible to everyone, regardless of their income or mobility status. Walking and cycling are low-cost transportation options

that can be used by people of all ages and abilities. As noted in the Climate Action Plan 2023 and People, Place And Policy Growing Tourism To 2025 policies, the proposed development aligns with objectives to transition to net zero, whilst providing value for residents by enhancing visitor experiences, promote tourism and provide access to the rich cultural and natural heritage site of Clonmel.

2.5.3 Regional Policy Context

Regional Spatial Economic Strategy for the Southern Region 2020 – 2032



The Regional Spatial Economic Strategy for the Southern Region was published in 2020 by the Southern Regional Assembly (RSES). This 12-year strategic regional development framework is to guide this change and establishes a broad framework for the way in which our society, environment, economy and the use of land should evolve. It includes Metropolitan Area Strategic Plans (MASPs) for Cork, Limerick-Shannon and Waterford and a regional strategy for our Key Towns, towns, villages and rural areas.

The RSES primarily aims to support the delivery of the programme for change set out in Project Ireland 2040, the National Planning Framework (NPF) and the National Development Plan 2018-2027 (NDP). As the regional tier of the national planning process, it will ensure coordination between the City and County Development Plans (CCDP) and Local Enterprise and Community Plans (LECP) of the ten local authorities in the Region.

The RSES Vision is to:

- Nurture all our places to realise their full potential;
- Protect and enhance our environment;
- Successfully combat climate change;
- Achieve economic prosperity and improved quality of life for all our citizens;
- Accommodate expanded growth and development in suitable locations; and
- Make the Southern Region one of Europe's most creative, innovative, greenest and liveable regions.

Clonmel is one of six Key Towns in the Region set out in this document and on page 68-69 it outlines key infrastructural requirements for the town including "*transport measures through a Local Transport Plan including continued investment enhancing sustainable transport modes, particularly walking and cycling in the town"*

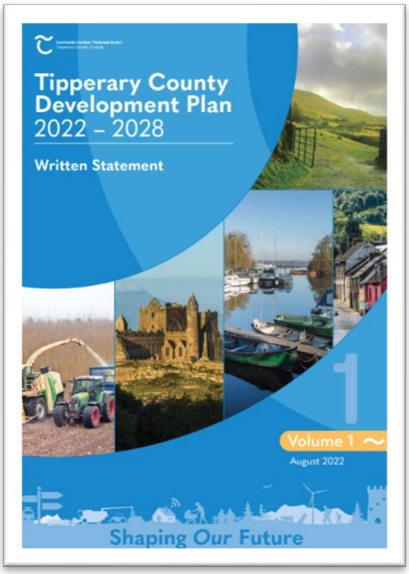
2.5.4 Local Policy Context

Tipperary County Development Plan 2022 – 2028

The *Tipperary County Development Plan* sets out the Council's policies and objectives for development in the county over the period from 2022 to 2028.

Section 4.3.1 of the Plan discusses the economic vitality of the County. Within this section, the Council acknowledge Clonmel is a "*self-sustaining regional economic driver, and a key location for investment and choice, and will support the overall development of the southern region*." The Council states that Clonmel has significant potential to attract large employers and regional services, amenities, and infrastructure to Tipperary.

The Council will support the role of Clonmel as a location for large-scale and high-tech industry, third-level education and as a strong and attractive residential centre with a growing population. In this section the Council also set out to "*work with the community to support more sustainable transport patterns, active travel and modal shift and will continue to support investment in the Limerick to Waterford rail line and enhanced provision of bus services to improve inter-regional connectivity. In particular, the Council will seek to maximise support under the 'Town Centre First' policy to develop Kickham Barracks and town centre areas, implement the Masterplan for Suir Island and the tourism product plan under 'Flights of Discovery'.*"



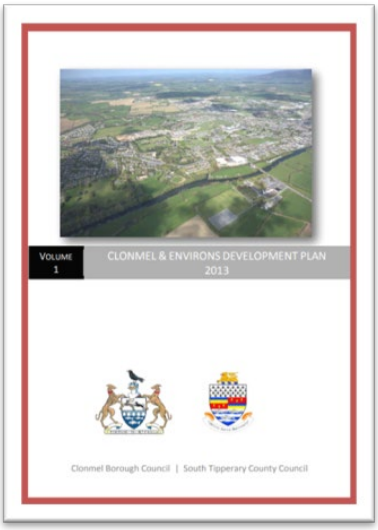
In Section 2.6 the Council aims with Strategic Objective Policy SO-9 *"to enhance connectivity and promote sustainable transport, through the integration of land-use and transport planning and promotion of and prioritisation of public transport and walking and cycling."*

In Section 12.7 it is the objective of the Council with Objective Policy 12-F to *"Implement improvements to facilitate pedestrians and cyclists and to improve access for people with mobility needs."*

With Objective S14-B, the Council aims to *"consider all opportunities as they arise to seek maximum connectivity between existing and new walking and cycling routes. The potentials for better inter-connectivity will be detailed in the proposed LTPs and Active Travel Plans to be prepared for the towns as part of the review of existing town plans and LAPs."*

Clonmel & Environs Development Plan 2013 (as extended)

The *Clonmel & Environs Development Plan* sets out the South Tipperary County Council and Clonmel Borough Council's policies and objectives for development in the Town of Clonmel and Environs. This document states that the Plan is the *"main public statement of planning policies for the local community. It is the blueprint for the planning and development of the area and presents a significant opportunity to affect the way physical change and development occurs." (reference from Section 1.1.0)*



Section 2.3.4 of the Plan recognises the relevance of appropriate infrastructure provision to support the town projected growth. It is stated that "*appropriate infrastructure will be critical to supporting the implementation of the vision for the Plan. Provision will be made to ensure appropriate linkages are achieved between the north and south of the town (both pedestrian and vehicular) with the town centre as a key focal point."*

The Plan presents Suir Island as one of the 'key public areas' with the potential to become the "Green Heart" of Clonmel. In relation to Suir Island, the Plan states in Section 3.4.2 that *"there is potential for enhanced linkages between Suir Island and Sarsfield Street via a new pedestrian bridge. This would allow for the development of additional car and bus parking as well as an amenity space in the town centre allowing for a greenway connecting the island to Denis Burke Park."* Furthermore, in Section 7.3.4*, the Plan* goes into detail about the intended future use of the island stating that *"the location of the island within Flood Zone A, within the Lower River Suir and its central location in Clonmel make it an ideal location as an amenity hub with both formal and informal amenity and recreational facilities to*

be developed here including the development of non-engine-based water sports between Suir Island and Denis Burke Park."

Section 7.3.3 of the Plan presents as one of the objectives of the Council the reinstatement of the Suir Blueway for recreational purposes. A 'Greenway or a 'Blueway' is a dedicated recreational or pedestrian route, which enhances both the environment and quality-of-life for residents of the surrounding area.

Another location of relevance within the Plan is Denis Burke Park, of which in Section 7.3.5, the Council considers it as *'underused'* and would benefit from improvements to the accessibility and linkage to the town centre and the adjoining road networks.

Appendix 1 of the Plan presents the opportunity sites for development within the Clonmel Town. Suir Island and former Clonmel Arms located at R678 Sarsfield Street has been labelled as Opportunity Site 1. It is stated that "*the combined redevelopment of the Clonmel Arms site and Suir Island offers an opportunity to improve the amenity and commercial function of the town centre. This potential anchors around the redevelopment of the Clonmel Arms site and the Quay Street car-park as a high-quality mixed-use development overlooking the River Suir. The potential for the development of a raised plaza along the quays with views overlooking the River Suir and Suir Island and the development of a raised pedestrian link along Sarsfield Street and across the River Suir should be considered and developed if feasible and subject to project level Strategic Environmental Assessment and Appropriate Assessment screening."* Figure 2-12 below illustrates the extent of the development area related to Opportunity Site 1.

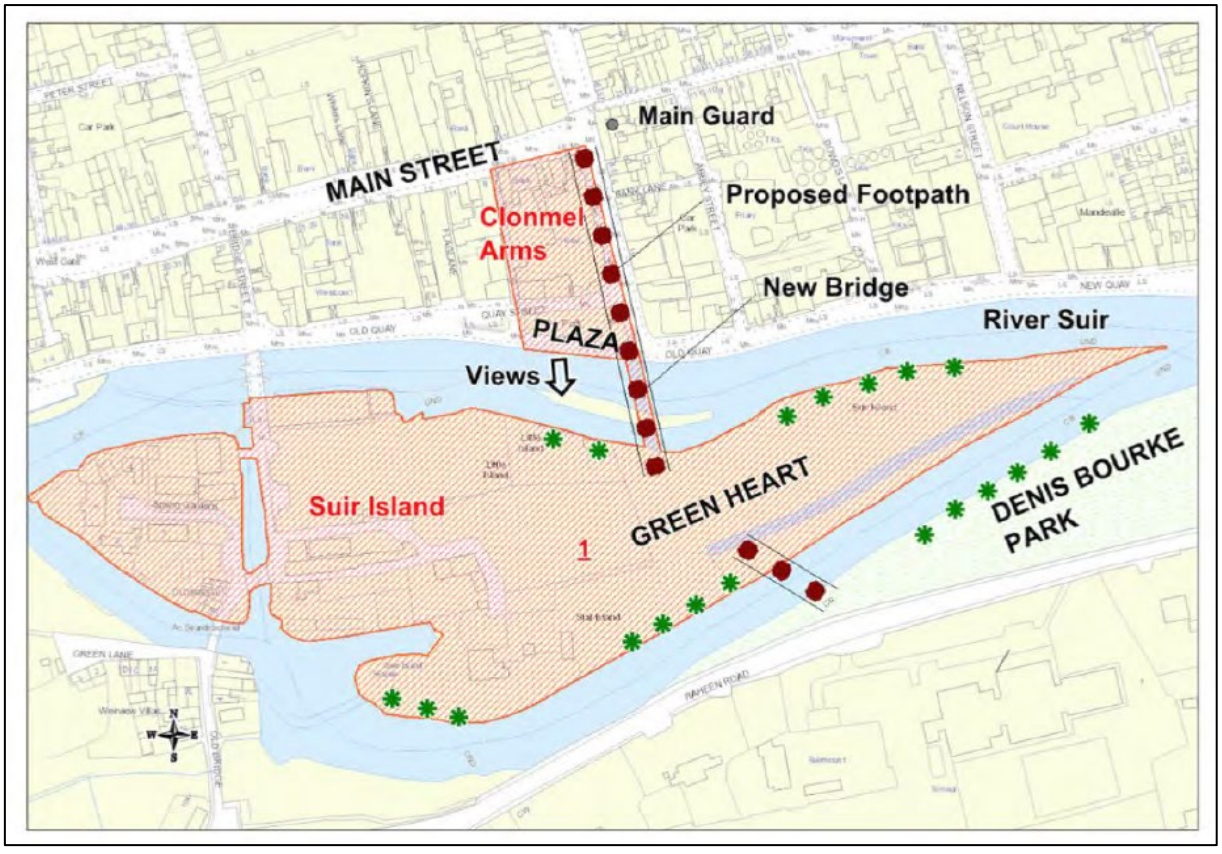


Figure 2-11: shows Figure A1.2 Proposal for Site 1 from Appendix 1 of the Clonmel & Environs Development Plan 2013 (page 115).

The following development objectives have been set out within Appendix 1 of the Plan for Opportunity Site 1:

- The potential to develop a pedestrian link (possibly raised) from the junction of O'Connell Street and Sarsfield Street connecting to the Clonmel Arms site, over the flood defence wall and across the River Suir onto Suir Island, must be investigated to determine if it is feasible at this location.
- It will be a key requirement of any proposal to demonstrate that the road width along the Quays remains suitable to accommodate two-way traffic flows with footpath, and that the flood defences along the Quays are not undermined.
- The site shall be redeveloped as a mixed-use town centre scheme, with a high-quality retail anchor units with office and/or residential units above.
- Suir Island shall be developed as the 'Green Heart' of the town with extensive formal and informal/natural garden areas, footpaths, and views across the Suir subject to the protection of the existing habitats within the Special Area of Conservation. The island is suitable for a dedicated urban sports and leisure complex/emporium, and it is envisaged that this could cater for new indoor and outdoor sports, and leisure activities for all ages.
- Suir Island is to be connected to Denis Burke Park via a footbridge, thus linking the South Bank and Denis Burke Park with the town centre.
- The development of the site shall incorporate car-parking especially at ground floor level with potential for access underneath the raised footpath/plaza area. The development of Suir Island shall incorporate car-parking and coach parking at appropriate locations with easy access to the town centre via the proposed 'active travel bridge'.
- Any development shall have regard to the site-specific issues set out in the accompanying SFRA.

Section 5.1.4 of the Plan presents the policies and objectives of the Council for the development of pedestrian and cycle routes within the town. Policy INF 3 states "*It is the policy of the Council to provide for the improvement of facilities for pedestrians, cyclists and those with special mobility requirements as opportunities arise and to require that all new development proposals provide for associated infrastructure and facilities where appropriate and as part of the development.*"

The elements proposed with the proposed development integrate all the envisioned infrastructure set out within the *Clonmel & Environs Development Plan 2013 (as extended).*

Suir Island Master Plan

Tipperary County Council together with the Tipperary Sports Partnership appointed Kenneth Hennessy Architects, Martin Peters Associates Consulting Engineers and The Planning Partnership to prepare a Masterplan for Suir Island, Clonmel as a community amenity and recreational resource in September 2019.

Suir Island set in the River Suir was once the commercial and industrial heart of the Town, with milling as the primary industry and a trade centre due to the navigation of the River Suir from the port in Waterford to Clonmel. Suir Island is located in the centre of Clonmel and is within easy walking distance of Clonmel Town Centre and is one of Clonmel's most important attributes, its high-quality natural setting at the foot of the Comeragh Mountains and within the valley of the River Suir.

A key objective of the development of the Masterplan was to explore the potential opportunities for the development of Suir Island. The long-term aim is to provide the local community with a recreational amenity in keeping with its surroundings which will allow people access to a variety of amenities creating both a social and economic benefit to the area. The development will also aid to reconnect the community of Clonmel with the River Suir and explore the outdoors on Suir Island. It will be a step forward in investment for future generations, improved well-being, addressing social issues in the

community along with generating interest in healthy living, sport and fitness along with a connection to the heritage and biodiversity of the island.

The Suir Island Masterplan identified the following opportunities:

- *"Regeneration of a naturally occurring island within Clonmel's town centre into a functioning recreational and amenity resource and regenerate same as a tourism draw.*
- *New identity and transformation of character to an activity /recreation/adventure hub anchored on the existing slalom course, key location on the Blueway and natural high-quality amenity parkland. This can be through:*
    - *Promotion of slalom course as an attraction for events/ training/ centre of excellence.*
    - *Promotion of site as a hub for water sports.*
    - *Development of natural amenities as parklands, gardens, adventure/sporting activities (archery, tree top walk, zipline), walking trails.*
- *Develop facilities and services to support the above i.e. bicycle/ boat storage and rental, showers, lockers, changing and welfare facilities.*
- *Improved accessibility to and within the island for all forms of transport with direct pedestrian linkage to Clonmel's town centre and adjoining amenities.*
- *Improved physical character to the island and the approaches/gateways to same to develop a new sense of place.*
- *Conserve the built heritage remains and integrate same into new uses. Reinstate former industrial heritage where possible i.e. re-watered mill race.*
- *Exploit industrial heritage as tourism draw and for education and interpretation.*
- *Active management of ecology and biodiversity of the site, removal of invasive species and creation of new habitat through re-watered mill race.*
- *Develop site as base for sports and/or nature clubs/organisations. Provide skills training in nature, sports etc.*
- *Enliven the carpark through use of same for markets, events, concerts etc.*
- *Use site ecology and heritage for education interpretation."*

The Suir Island Masterplan resulted in the following proposals as summarised in Table 2-2:

Table 2-2: Suir Island Masterplan proposals

Key Elements Proposed	
Public Plaza and North Bridge	New public plaza to North Quay, linking to Sarsfield Street and Clonmel town centre Stepped and ramped access to new bridge crossing to north of Suir Island
Raised Walkway around berm and Tree Top Walk	Raised walkway to existing flood berm, with seating Potential as event space Starting point for accessible tree top walk into the east of island
Suir Island Garden	Formal garden, seating and picnic provision Potential uses for Suir Island House
Wildwood clearings and associated pathways/looped walks.	Clearings with range of possible uses (e.g. outdoor classroom to archery, orienteering, bike park, children's play, zip line)

	Alternative 'fitness routes' for higher energy walking Poetry/sculpture trails and seating
Re-water Millrace and develop river crossings and pathways	Re-watering of millrace, with footbridges and stepping stones Kayak launch/access pontoon and potential loop route for return to slalom starting point Children's hydrology play area
South Pedestrian Bridge	Pedestrian link bridge (giving clearance for kayakers below) from Suir Island to Southern bank and Denis Burke Park Seating/slalom viewing possible
Facilities Building	Providing storage, kitchenette and showers

As highlighted in Section 2.2, the proposed Suir Island Infrastructure Links development includes the proposals as highlighted in the Suir Island Masterplan, with the exception of the Suir Island Gardens, re-watering the millrace and facilities building. The Suir Island Gardens was granted planning permission in October 2022 under a Part VIII planning application. For more detail on the Suir Island Gardens development refer to the Tipperary County Council Planning Portal website.

2.5.5 Design Guidance Documents

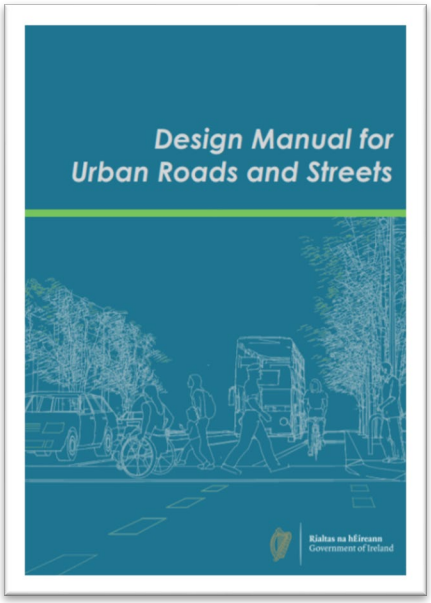
National Cycle Manual

The *National Cycle Manual (NCM)*, published by the National Transport Authority in 2011, sets out detailed guidance on implementation of cyclist facilities for all road types and environments. This document provides guidance to planners and engineers to improve cycling provision in urban areas.

In traffic terms, cycling is considered a vulnerable mode of transport. As a result of this, the contents within the *National Cycle Manual (NCM)* advise that the design of cycling infrastructure should be supported by principles of sustainable safety. This document details five principles which should be followed in every design of cycling infrastructure:

- *Functionality* – cycle facility design is fit for purpose and follows movement related functions and place related functions.
- *Homogeneity* – reduction in the relative speed, mass and directional differences of different road users sharing the same space.
- *Legibility* – self-evident, self-explanatory, and self-enforcing road environment.
- *Forgivingness* – designing environments that contribute to safer outcomes when an accident occurs.
- *Self-awareness* – awareness of the expected cycling abilities of the potential users of the infrastructure.

Design Manual for Urban Roads and Streets



The *Design Manual for Urban Roads and Streets (DMURS)* was jointly published by the Department of Transport, Tourism and Sport and Department of Environment, Community and Local Government in 2013, and updated in 2019. The principles, approaches and standards set out in DMURS apply to the design of all urban roads and streets (with a speed limit of 60 km/ hour or less).

DMURS outlines the principles approaches and standards that are necessary to achieve balanced, best practice design outcomes with regard to street networks and individual streets. This Manual sets out an integrated design approach influenced by the type of place in which the street is located and balance the needs of all users. It also aims to put well designed streets at the heart of sustainable communities creating physical, social and transport networks that promote real alternatives to car journeys, namely walking, cycling and public transport. The manual key design principles set out on page 30 and 31 are as follows:

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

The proposed development aims to provide higher levels of permeability and legibility for all users, particularly for pedestrians and cyclists. The infrastructure will create a more sustainable community by bettering the conditions for active travel.

Traffic Signs Manual

The Traffic Signs Manual was published by the Department of Transport in February 2021 and updated in October 2021. The Traffic Signs Manual provides details of the traffic signs which may be used on roads in Ireland, including their layout and symbols, the circumstances in which each sign may be used and rules for positioning them to ensure that signage is effective and are essential for the efficient operation of the road network, for the enforcement of traffic regulations and for road safety.

Traffic Management Guidelines

The Traffic Management Guidelines was published by the Department of Transport in September 2019 and updated in May 2022. The purpose of this Traffic Management Guidelines manual is to provide guidance on a variety of issues including traffic planning, traffic calming and management, incorporation of speed restraint measures in new residential designs and the provision of suitably designed facilities for public transport users and for vulnerable road users such as cyclists, motorcyclists and pedestrians (including those with mobility/sensory impairments). It also focuses on how these issues must be examined and implemented in the context of overall transportation and land use policies.

Accessibility Guidance

The NTA published the Access Control of Active Travel Facilities Advice Note in July 2022. This Advice Note provides guidance for suitable access controls that may be provided only where necessary to

prevent inappropriate vehicular access to pedestrian and cycling facilities, including shared greenways and segregated cycleways, to achieve consistent universal access to all such active travel facilities. This advice note also provides examples of typical layouts showing appropriate use of access controls.

2.6 Details of the Proposed Development

2.6.1 Proposed Bridge Structures

This section highlights the proposed design of the proposed bridges and foundations. Refer to Drawings 20_071-CSE-GEN-XX-DR-C-2260 to 2262 for the bridge preliminary design drawings included in Volume C of this EIAR.

The construction of the bridges will follow the high-level sequence summarised below:

- Construction of encased bored piles at six locations for the abutments and pier which will be founded on competent bedrock.
- Insitu concrete poured pile caps and piers will be constructed during dry-weather periods to allow access to the work areas. Localised sheet-piling around the works areas will be utilised to provide protection for up to the 50% Annual Exceedance Probability or 1-in-2-year recurrence interval summer flood events plus an additional 300mm dry-freeboard.
- Provision of haul roads on the island for accessibility of machinery for pile construction and installation of bridges.
- Reinforced concrete piers will be constructed up to the soffit levels of the proposed bridges.
- The superstructures for the bridges will consist of prefabricated steel sections, which will be transported to site by exceptional road convoys which will require appropriate licensing and approval.
- The prefabricated steel sections will be assembled at 3 No. locations, namely the North Plaza, Suir Island Carpark site compound and a temporary assembly platform within Denis Burke Park.
- The bridge sections shall be installed by heavy-duty cranes in approx. 30m length sections which will place the sections on top of the completed abutment and pier structures.
- For the northern bridge, a crane will lift half of the footbridge from the North Plaza along the northern river bank while another crane will lift the other half of the footbridge from the Suir Island Carpark.

2.6.2 Foundations

Geological site investigations were completed in March 2022, which included 6 No. rotary boreholes at the abutments and pier locations to determine the depths to competent bedrock. The bridge foundations will consist of concrete encased piled foundations, with the piers and abutment structures constructed on reinforced concrete pile caps. Refer to Figure 2-12 for the positions and Table 2-3 for the details of the boreholes.

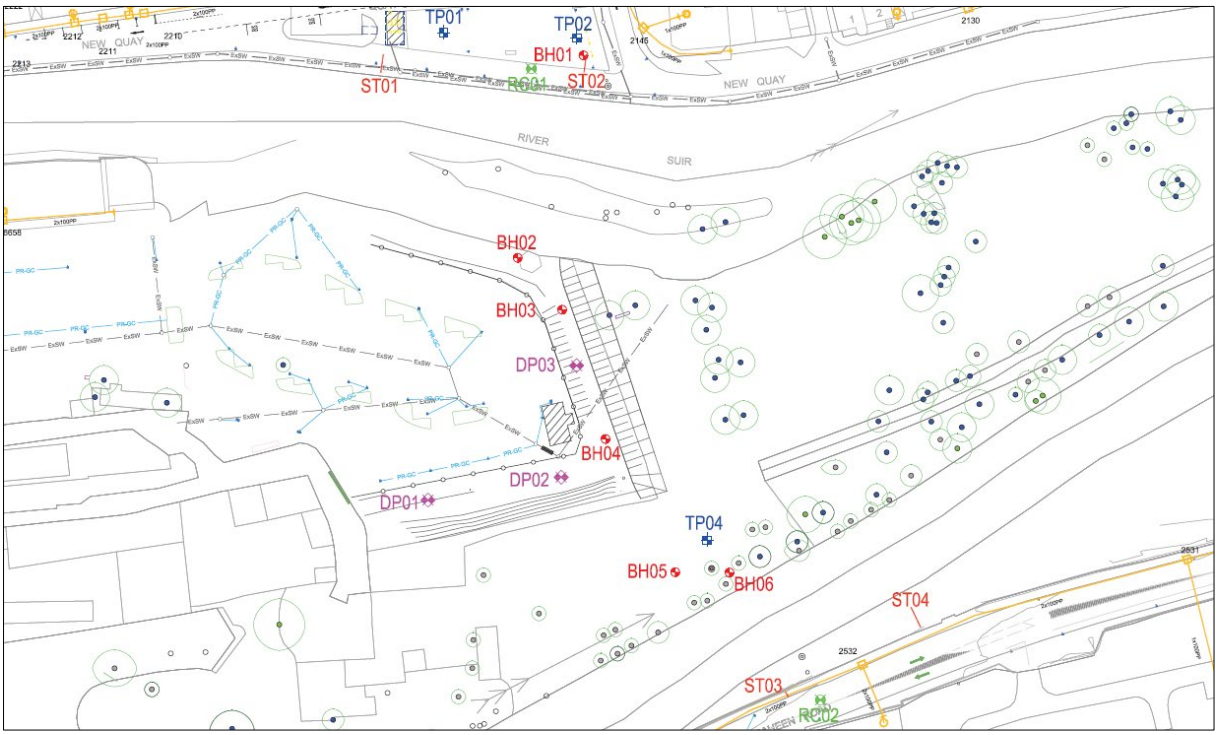


Figure 2-12: Location of site investigation boreholes

Table 2-3: Bridge foundation bedrock depths

Support Structure I.D. (Borehole I.D.)	Depth to Bedrock	Bedrock Description
Abutment 01 – North Plaza (BH 01)	16.40m	Strong grey muddy Limestone with frequent fossils. Fresh to slightly weathered.
Pier 01 (BH 02)	18.50m	Cobbles and Boulders of Limestone and Sandstone
Abutment 02 – Berm North (BH 03)	19.30m	Moderately strong light grey muddy Limestone interbedded with moderately weak dark grey calcareous Mudstone with occasional fossils and thin calcite veins (<1mm)
Abutment 03 – Berm South (BH 04)	17.70m	Moderately strong to muddy grey Limestone with frequent fossils and calcite veins (<2mm) Fresh to slightly weathered.
Pier 02 – North of Slalom Course (BH 05)	18.50m	Brown sandy gravely silty clay with medium cobbles and boulders.
Pier 03 – South of Slalom Course (BH 06)	13.00m	Moderately strong to strong grey muddy Limestone with frequent fossils and calcite veins (<1mm). Fresh to slightly weathered.
Abutment 04 – Raheen Road	-	Borehole not accessible due to River Suir water levels. Sufficient geotechnical data provided by BH 01 to 06 for preliminary design.

2.6.3 Bridge Substructures

The proposed bridge substructures will consist of reinforced concrete piers/abutments, constructed on top of the reinforced concrete pile caps. A typical section of the substructures is shown in Figure 2-13. Refer to Appendix E of the RPT-20_071-059 Engineering Planning Report for the preliminary bridge design drawings.

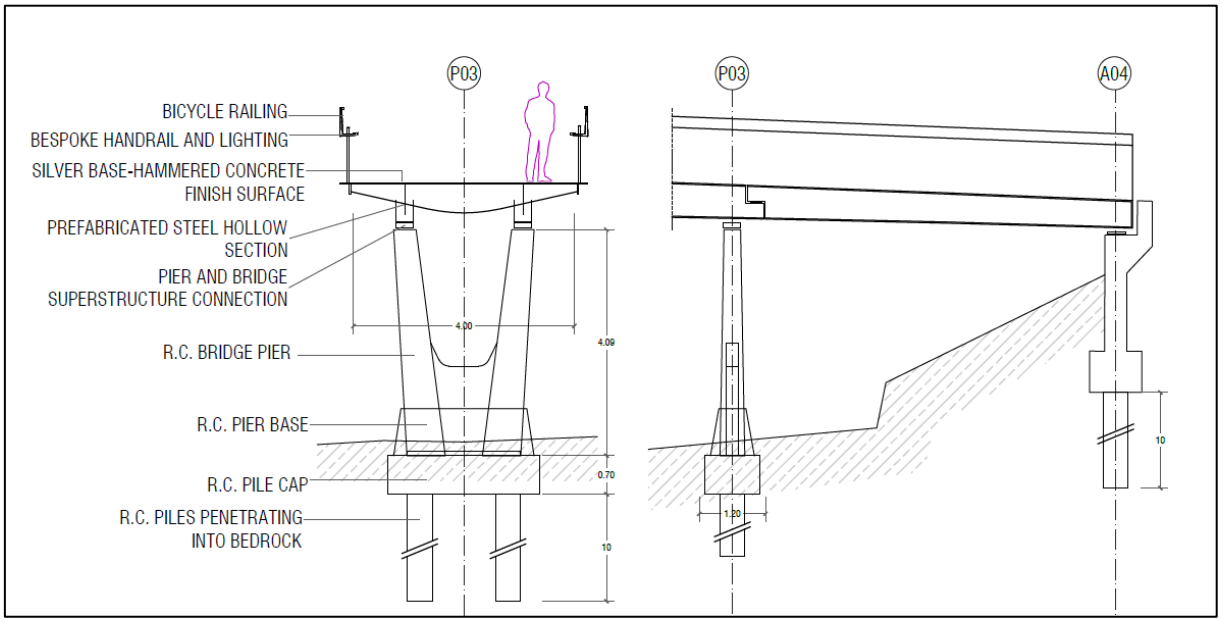


Figure 2-13: Typical section of bridge pier and abutments

2.6.4 Bridge Superstructures

The Northern Bridge crossing, connecting the North Plaza to Suir Island, will span over the Suir River for a total distance of 60m. The northern bridge abutment, access ramp and steps will be constructed behind the existing flood protection wall. A minimum clearance of 300mm is proposed above the demountable flood protection barriers and the soffit level of bridge superstructure. The demountable barrier provides flood protection for the 1% Annual Exceedance Probability event plus a 20% Climate Change allowance. The northern bridge abutment on Suir Island will be constructed on top of the existing flood protection berm.

Additional bridge parameters are summarised in Table 2-4, with dimensions measured from the North Plaza abutment to Pier No. 1 and then to the abutment constructed on top of the existing flood protection berm located on Suir Island.

Table 2-4: North Bridge parameters

Parameter	Value
Bridge deck top walkway width	4m
Span (total)	60.1m
Span between supports	34.1m and 26.0m
Bridge deck levels (top)	21.20mOD, 20.84mOD, 20.56mOD
Bridge deck levels (soffit)	20.70mOD, 20.05mOD, 20.05mOD
Bridge deck to river channel invert	5.93m (max) and 3.14m (min)
Bridge deck soffit clearance above flood protection structure	300mm to demountable barrier installed on top of permanent flood defence wall

The Southern Bridge crossing, connecting Suir Island to Raheen Road and Denis Burke Park, will span the Suir River Slalom Course and Millrace for a total distance of 75m. The Suir Island abutment will be constructed on top of the flood protection berm and the Raheen Road abutment will be integrated into the existing concrete flood protection wall. The 2 No. support piers will be located on both banks of the Slalom Course. Table 2-5 summarises additional parameters for the South Bridge, with dimensions measured from the Suir Island abutment to Pier 1 to Pier 2 and to the Raheen Road abutment.

Table 2-5: South Bridge parameters

Parameter	Value
Bridge deck top walkway width	4m
Span (total)	75.0m
Span between supports	33.1m, 35.0m, 6.9m
Bridge deck levels (top)	21.05mOD, 21.57mOD, 20.30mOD, 20.20mOD
Bridge deck levels (soffit)	20.60mOD, 20.59mOD, 19.87mOD, 19.73mOD
Bridge deck to river channel invert	6.97m (max) and 3.01m (min)
Bridge deck soffit clearance above flood protection structure	Bridge soffit and deck level to span over permanent flood protection wall

The proposed bridge deck or superstructure will consist of prefabricated steel sections, which will be transported to site and craned onto the completed bridge substructures/supports. A typical section through the proposed bridge superstructure is shown in Figure 2-14. Refer to the preliminary design drawings included in Appendix E of the RPT-20_071-059 Engineering Planning Report showing plan layouts, vertical alignments and details of the proposed bridges.

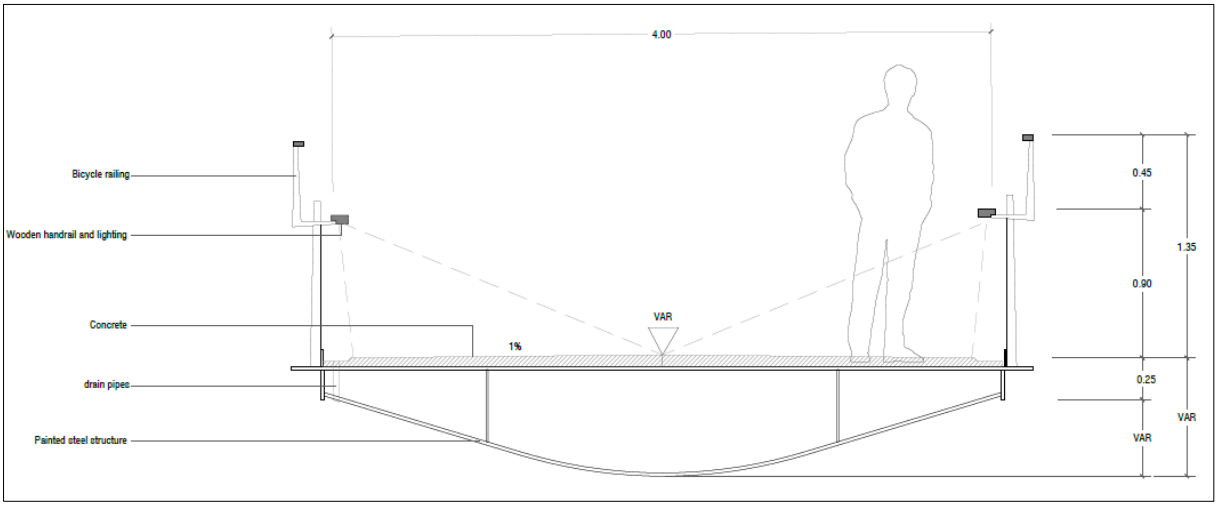


Figure 2-14: Typical bridge superstructure cross section

The proposed bridge decks or superstructures will consist of prefabricated steel sections, which will be transported to site via abnormal load convoys via road networks and craned onto the completed bridge substructures/supports.

2.6.5 Bridge Surfacing and Drainage

The proposed bridge surfacing will consist of bush-hammered concrete surfacing, which will provide sufficient traction for pedestrians and cyclists in wet conditions. The bridge deck will be sloped to ensure water is drained to side-channels, which will be drained by downpipes discharging into the River Suir. The downpipes will be installed at intervals along the proposed bridges as shown in Figure 2-15.

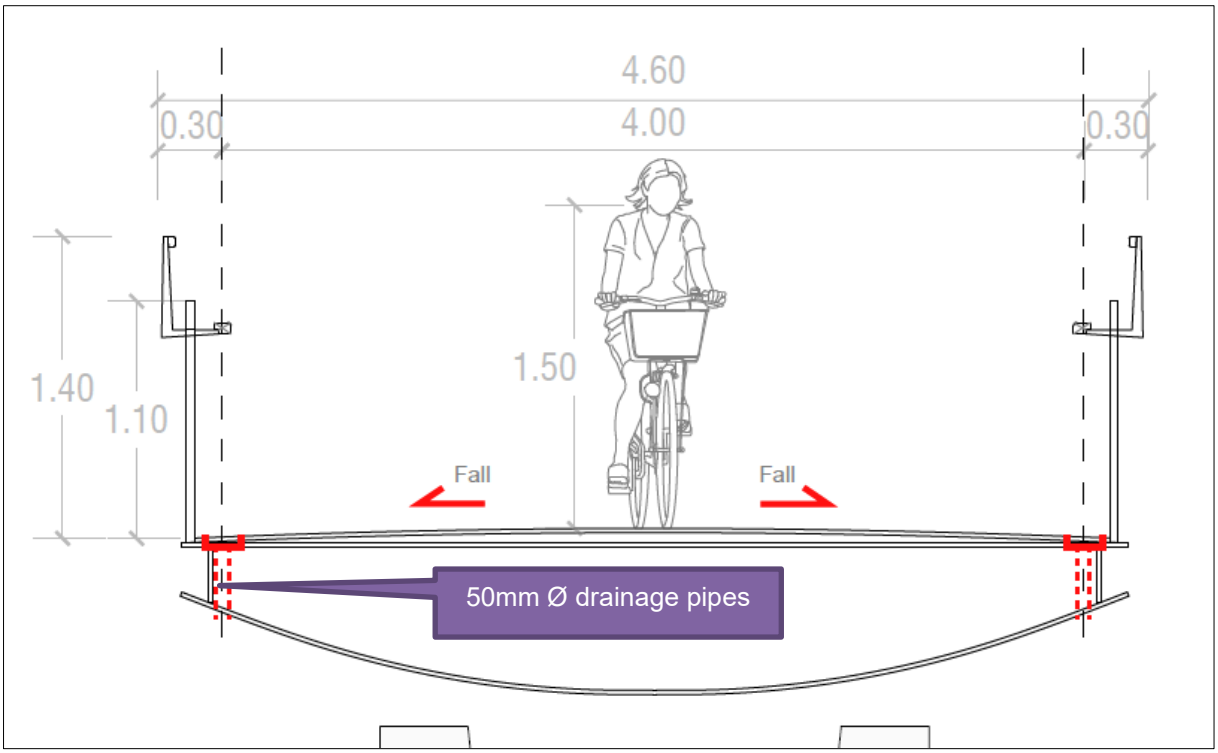


Figure 2-15: Indicative sketch of the proposed bridge drainage arrangement

2.6.6 Suir Island Embankment

The existing flood defence embankment located on Suir Island will be utilised as the pedestrian link between the Northern and Southern bridge crossings and will provide access to and from the Suir Island car park via the proposed access ramp and three sets of steps as indicated on Drawing 20_071-CSE-00-XX-DR-C-2260 included in Appendix E of the RPT-20_071-059 Engineering Planning Report and also in Volume 3. The embankment crest levels will be raised with a filler clay material to tie into the proposed bridges walkway levels. The walkway surfacing and layer build-up shall be confirmed during the detailed design stage. Currently it is envisaged that this will consist of a cellular confinement system filled with uniformly graded crushed stone to minimise settlement potential and a flexible surface type such asphalt-cement or brick paving.

2.6.7 Public Lighting

Lighting proposals for Bridges, Access Ramps and Steps

A durable, energy-efficient illumination solution which provides a safe and well-lit environment for pedestrians, cyclists has been developed for the proposed footbridges, access ramps and steps, which will be illuminated by a bespoke balustrade LED handrail as indicated in Figure 2-16.

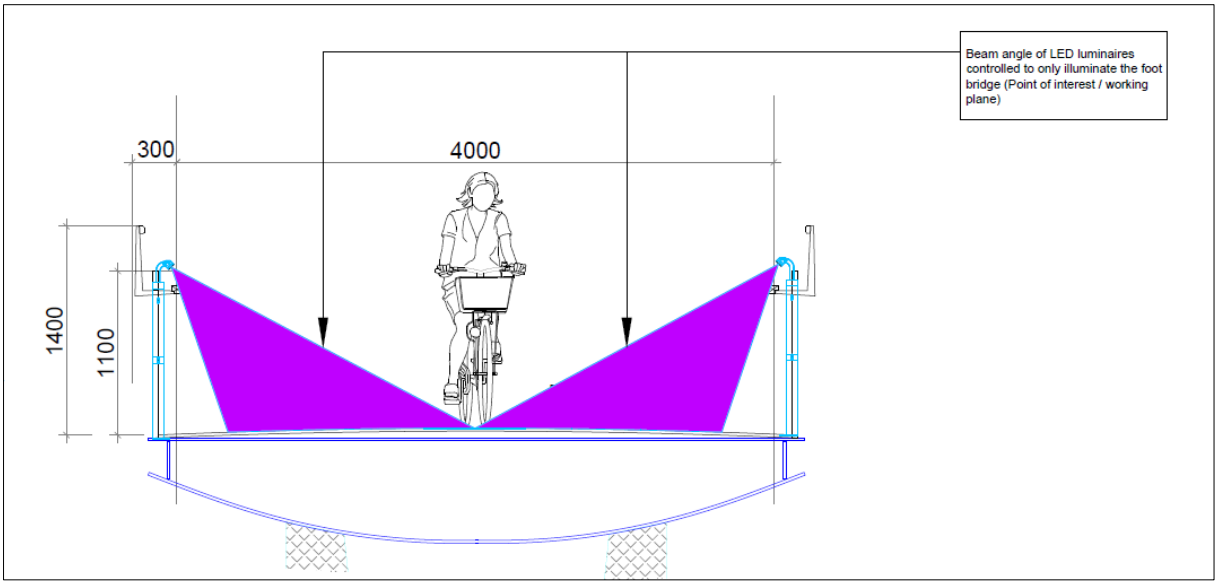


Figure 2-16: Typical detail of bespoke LED handrail

The primary aim of the bespoke balustrade LED handrail is to minimise light-pollution by ensuring that the bridge walkway is illuminated for pedestrian safety, but with no light spilling over, above or below the bridge. Refer to the Environmental Impact Assessment Report Chapter 5: Biodiversity, Species and Habitats for more information regarding the lighting impacts on habitats and mitigation measures proposed.

The lighting will be controlled via Passive Infrared (PIRs) sensors. The PIRs will have the ability to detect the presence of any person who comes into the detection zone of the PIR and illuminate the section of the LED balustrade accordingly. Several light-dimming options have been proposed for the illumination of the pedestrian bridges. Refer to the Suir Island Public Realm – Stage 1 Electrical Report compiled by Douglas Carroll Consulting Engineers for a detailed lighting assessment. A plan layout and typical lighting detail is shown on Drawings 20_071-CSE-GEN-XX-DR-C-2270 and 2271 included in Appendix E of the RPT-20_071-059 Engineering Planning Report.

North Plaza – Alterations to Public Lighting Infrastructure

The redevelopment of the existing car park into the North Plaza will require the removal of 3 existing public lighting poles, located adjacent to the eastern ingress/egress points to the existing car park. As the handrails located on the North Bridge access steps and ramp will be illuminated, it is not required to replace the removed public lighting poles. Refer to Drawing No. 20_071-CSE-GEN-XX-DR-C-2270 included in Appendix E of the RPT-20_071-059 Engineering Planning Report for a plan layout showing alterations to the public lighting infrastructure located in the North Plaza.

Raheen Road – Alterations to Public Lighting Infrastructure

The narrowing of Raheen Road will require the removal of one existing public lighting pole, which will be replaced by the bespoke balustrade lighting on the access ramp and steps leading up to the southern bridge crossing and one lighting pole to be relocated to match the realigned pedestrian walkway. Refer to Drawing No. 20_071-CSE-GEN-XX-DR-C-2270 included in Appendix E of the RPT-20_071-059 Engineering Planning Report for a plan layout showing alterations to the public lighting infrastructure located in Raheen Road.

2.6.8 Utilities

The underground and overhead utilities were mapped for the Suir Island Infrastructure Links development using services record data followed up with site reconnaissance. The following utility providers were contacted to request services records:

- Gas Networks Ireland;
- ESB (Electricity Supply Board);
- Irish Water;
- EIR;
- Local Authority (Public Lighting, Stormwater, Drainage and Traffic); and
- Telecoms/ Cable TV/ Broadband: eir, BT Ireland, COLT, ENET, Virgin Media, Magnet Networks.

Responses were received from all providers with the exception of Magnet Networks and Virgin Media. COLT confirmed that they do not have any services in the area. No overhead services are present. The following services have been identified at the Quays and location of the proposed North Plaza:

- Gas Network Ireland services;
- ESB Medium Voltage (MV)/ Low Voltage (LV), lighting, underground;
- Irish Water watermains;
- Local Authority (Sewer mains, traffic cables, public lighting); and
- Telecom/ Cable TV/ Broadband (eir, ENET and BT Ireland).

The public lighting, power and other services listed in Table 2-6 will require diversion as part of the Suir Island Infrastructure Links proposed works.

Table 2-6: Existing Services Impacted by the Proposed Development

The Quays (Proposed North Plaza)
Foul Sewer for Public Toilet Facility
Surface Water
Public Lighting Underground
ESB Underground
Suir Island
None

Raheen Road
Bord Gáis
Public Lighting Underground
Watermains
eir

2.6.9 Surface Water Drainage

The surface water drainage proposals for the Suir Island Infrastructure Links development should be read in conjunction with the drawings and reports included in of the RPT-20_071-059 Engineering Planning Report. The proposed surface water networks were modelled using Innovyze MicroDrainage software to size the proposed pipe networks and calculate the surcharge levels for extreme rainfall events.

- **North Plaza**

The North Plaza proposed surface water drainage utilities are shown on Drawing 20_071-CSE-00-XX-DR-C-2501 included in Volume 3. The redevelopment of the existing car park and realignment of The Quays will require the removal of nineteen (19) existing road gullies, which will be replaced by seventeen (17) gullies along the proposed kerblines. Additionally, slotted drains will be installed along the widened pedestrian walkways and along the kerblines located in Sarsfield Street and The Quay Street. The proposed surface water utilities will be connected to the existing OQ-02 manhole located in front of the proposed access steps leading up to the North Bridge. Slot-drains and gullies are proposed along one side of the bridge access ramp and at the bottom of the steps. Three (3) slot drains and two (2) new road gullies will be connected to the existing OQ-01 manhole or connected pipelines adjacent to OQ-01 as shown on the drawing at the intersection with New Quay and the proposed North Plaza.

- **Suir Island**

The Suir Island proposed surface water drainage utilities are shown on Drawing 20_071-CSE-00-XX-DR-C-2502 included in Volume 3. Three (3) existing gullies located on the southern kerbline of the carpark will be removed to allow for the construction of the 2m-wide pedestrian path leading to the access steps to the link promenade. A new 225mm diameter surface water pipeline is proposed along this pedestrian path, which will be connected to seven (7) new gullies to drain the southern portion of the carpark. The proposed network will drain to the existing manhole SI-01, which is connected to the existing surface water pump station and/or the 600mm diameter outfall pipeline which discharges into the Little Island Millrace.

- **Raheen Road**

The proposed surface water drainage utilities for Raheen Road are shown on Drawings 20_071-CSE-00-XX-DR-C-2503 and 2504 included in Volume 3. Five (5) existing gullies will be removed due to the proposed narrowing of the road lane widths and widening of the pedestrian walkway. The existing surface water pipeline draining towards Old Bridge Road surface water pump station will be extended further east with a proposed 300mm diameter and 225mm diameter pipeline which will require 4 No. additional manholes. A total of twenty-three (23) new road gullies are proposed along the narrowed Raheen Road. Slotted drains are proposed on the access ramp and at the bottom of the bridge access steps which will be connected to the proposed surface water pipeline.

2.6.10 Proposed Foul Drainage

This section outlines the foul drainage proposals for the Suir Island Infrastructure Links proposed development and should be read in conjunction with the drawings and documents included in Appendix C of the RPT-20_071-059 Engineering Planning Report.

- **North Plaza**

The existing public toilet will be relocated below the proposed access ramp to the North Bridge located on the North Plaza as shown on Drawing 20_071-CSE-00-XX-DR-C-2501 included in Volume 3. The proposed foul pumping station located on Suir Island will be connected to the existing 300mm concrete foul pipeline which drains to the main 900mm diameter concrete foul pipeline draining eastwards via New Quay.

- **Suir Island**

The foul drainage network for the existing dwellings and apartment building located on Suir Island is expected to consist of septic tanks with overflows to the Suir River. As part of the Suir Island Infrastructure Links proposed development, a foul pumping station will be provided to allow Irish Water to connect the dwellings/apartment building to a formalised network in the future. The proposed location of the pump station and 24-hour emergency storage tank in the existing carpark will not result in the loss of parking spaces.

From the proposed pumping station and emergency storage tank, a 125mm diameter raising main pipeline will be installed inside the proposed North Bridge superstructure to cross the northern reach of the River Suir and will be connected to the existing 300mm diameter foul pipeline. The proposed pumping station layout and section is shown in Drawing 20_071-CSE-GEN-XX-DR-C-2502 and the connection to the existing 300mm diameter pipeline is indicated on Drawing 20_071-CSE-GEN-XX-DR-C-2501 included in Volume 3.

A Pre-Connection Enquiry Application was submitted to Irish Water containing the relevant calculations to size the 24-hour emergency storage and pump station. Confirmation of feasibility has been received from Irish Water.

- **Raheen Road**

No foul drainage works are proposed along Raheen Road.

2.6.11 Water Supply

No alterations or improvements to the existing water supply network is required for the Suir Island Infrastructure Links proposed development.

2.6.12 Landscaping and Furniture

A sloping landscaped terrace with public seating will be provided on the North Plaza, located inside the hairpin-shaped access ramp leading up to the northern bridge crossing, offering unencumbered views of the plaza area. Three benches and a 9-metre-long stepped promenade seating area will also be provided and integrated into the circular-shaped plaza, offering exceptional views for users of the proposed development. The planting of various native tree species around the North Plaza will integrate the proposed development with the existing scenery of Suir Island and complement the visual experience of users.

2.7 Construction Methodology

The construction of the proposed development will be progressed as a single construction contract with the construction phase potentially lasting approximately 18 months. It is proposed that the construction period starts in early summer, to ensure that foundations are constructed when the Suir River water-level is at its lowest, which will ensure safe access and minimise flood risk when constructing temporary sheet piling which will restrict the river flow area.

Refer to **Appendix 2.2** of this EIAR Chapter for an Outline Construction Methodology (RPT-20_071-020) which details site compound locations, construction sequencing, site access, preparatory and site clearance works. The information contained therein has been assessed for potential impacts throughout the Environmental Impact Assessment chapters.

2.8 Environmental Management Plans

The following outline environmental management plans have been compiled for this EIAR. The purpose of the outline reports is to highlight the minimum environmental management procedures to be implemented during the construction works, recommends best-practices for managing various environmental receptors during the works and provides summarises pertinent guideline documents to be used by the appointed contractor to compile the detailed environmental management plans. The following outline reports have been compiled:

- Outline Environmental Operating Plan (EOP) and Outline Incident Response Plan (IRP) which is available in **Appendix 2.3** of the EIAR Chapter;

The EOP is a document that outlines procedures for the delivery of environmental mitigation measures and for addressing general day-to-day environmental issues that can arise during the construction phase of developments. Essentially the EOP is a project management tool. It is prepared, developed and updated by the Contractor during the project construction stage and will be limited to setting out the detailed procedures by which the mitigation measures proposed as part of the EIAR and NIS and arising out of the Board's decision (if approving the proposed development) will be achieved.

Before any works commence on site, the Contractor will be required to prepare an EOP in accordance with the TII/National Roads Authority (NRA) Guidelines for the Creation and Maintenance of an Environmental Operating Plan. The EOP will set out the Contractor's approach to managing environmental issues associated with the construction of the proposed development and provide a documented account to the implementation of the environmental commitments set out in the EIAR and measures stipulated in the planning conditions. Details within the plan will include:

- All environmental commitments and mitigation measures included as part of the planning approval process and any requirements of statutory bodies such as the NPWS and IFI as well as a method documenting compliance with the measures;
- A list of all applicable environmental legislation requirements and a method of documenting compliance with these requirements; and
- Outline methods by which construction work will be managed to avoid, reduce or remedy potential adverse impacts on the environment.

To oversee the implementation of the EOP, the Contractor will be required to appoint a suitably competent Site Environmental Manager (SEM) to ensure that the mitigation measures included in the EIAR, the EOP and the statutory approvals are executed in the construction of the works and to monitor that those mitigation measures employed are functioning properly. The EOP contains the Outline Incident Response Plan (IRP) which describes the procedures, lines of authority and processes that will be followed to ensure that incident response efforts are prompt, efficient, and appropriate to particular circumstances. It has been developed to provide the information that each employee may need in order

to respond to an emergency and to handle it effectively. The Outline IRP contains a copy of TCC's Major Emergency Plan.

- Outline Construction Environmental Management Plan (CEMP) which is contained in **Appendix 7.1** of the EIAR Chapter 7 Hydrology; and

Prior to any demolition, excavation or construction, a Construction Environmental Management Plan (CEMP) will be produced by the successful contractor. The CEMP will set out the Contractor's overall management and administration of the construction project. The CEMP will be prepared by the Contractor during the pre-construction phase to ensure commitments included in the statutory approvals are adhered to, and that it integrates the requirements of the outline CEMP, Environmental Operating Plan (EOP) and the CDWMP. The Contractor will be required to include details under the following headings:

- Details of working hours and days;
- Details of emergency plan - in the event of fire, chemical spillage, cement spillage, collapse of structures or failure of equipment or road traffic incident within an area of traffic management. The plan must include contact names and telephone numbers for: Local Authority (all sections/departments); Ambulance; Gardaí and Fire Services;
- Details of chemical/fuel storage areas (including location and bunding to contain runoff of spillages and leakages);
- Details of construction plant storage, temporary offices;
- Traffic management plan (to be developed in conjunction with the TCC Roads Section) including details of routing of network traffic; temporary road closures; temporary signal strategy; routing of construction traffic; programme of vehicular arrivals; on-site parking for vehicles and workers; road cleaning; other traffic management requirements;
- Truck wheel wash details (including measures to reduce and treat runoff);
- Dust management to prevent nuisance (demolition and construction);
- Site run-off management;
- Noise and vibration management to prevent nuisance (demolition and construction);
- Landscape management;
- Management of demolition of all structures and assessment of risks for same;
- Stockpiles;
- Project procedures and method statements for;
    - Demolition and removal of structures, services, pipelines (including risk assessment and disposal);
    - Diversion of services;
    - Excavation and blasting (through peat, soils and bedrock);
    - Piling;
    - Construction of pipelines;
    - Temporary hoarding and lighting;
    - Borrow pits and location of crushing plant;
    - Storage and treatment of peat and soft soils;
    - Disposal of surplus geological material (peat, soils, rock etc.);
    - Earthworks material improvement; and
    - Protection of watercourses from contamination and silting during construction;
- Site Compounds.

The production of the CEMP will also detail areas of concern with regards to health and safety and any environmental issues that require attention during the construction phase. Adoption of good management practices on site during the construction and operation phases will also contribute to reducing environmental impacts.

- Outline Construction and Demolition Waste Management Plan (C&DWMP) which is contained in **Appendix 13.1** of the EIAR Chapter 13 Material Assets: Resources and Waste Management.

The C&DWMP will be included within the CEMP, clearly setting out the Contractor's proposals regarding the treatment, storage and disposal of waste. An outline C&DWMP has been prepared for the proposed development. The outline C&DWMP is a live document that will be amended and updated to reflect current conditions on site as the project progresses and in accordance with all statutory approvals. The obligation to develop, maintain and operate a C&DWMP will form part of the contract documents for the project. The plan itself will contain, but not limited to, the following measures:

- Details of waste storage to be provided for different waste;
- Details of where and how materials are to be disposed of - landfill or other appropriately licensed waste management facility;
- Details of storage areas for waste materials and containers;
- Details of how unsuitable excess materials will be disposed of where necessary; and
- Details of how and where hazardous wastes such as oils, diesel and other hydrocarbon or other chemical waste are to be stored and disposed of in a suitable manner.

Appendix 2.1: Planning Engineering Report (RPT-20_071-059)

Clifton Scannell Emerson Associates

Engineering Planning Report

Suir Island Infrastructure Links

Comhairle Contae Thiobraid Árann
Tipperary County Council

Client: Tipperary County Council

Date: September 2023

Job Number: 20_071

CONSULTING ENGINEERS

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Document Control Sheet

Project Name:	Suir Island Infrastructure Links
Project Number:	20_071
Report Title:	Engineering Planning Report
Filename:	RPT-20_071-059

Issue No.	Issue Status	Date	Prepared by	Checked by
0	Final	22.09.2023	HB	LP

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1 Introduction

1.1 Commissioning

Tipperary County Council (TCC) commissioned Clifton Scannell Emerson Associates (CSEA) to prepare this Engineering Planning Report as part of the planning application for the Suir Island Infrastructure Links proposed development, located in Clonmel, County Tipperary.

1.2 Document Structure

This report addresses the following elements from an engineering perspective:

- Section 1 summarises relevant engineering reports, pertinent planning policies and describes the site and proposed development;
- Section 2 highlights the alterations to existing road networks and public lighting;
- Section 3 provides design information on the upgrading of surface water drainage utilities;
- Section 4 covers alterations to the foul water drainage utilities;
- Section 5 highlights any changes to water supply utilities;
- Section 6 briefly highlights the preliminary design of the pedestrian bridges; and
- Section 7 summarises the Stage I and 2 flood risk assessment outcomes and provides a brief overview of the detailed flood modelling undertaken to determine the increase in water levels upstream and downstream of the proposed bridge crossings.

1.3 Additional Information

This report should be read in conjunction with the following detailed engineering reports summarised in Table 1-1, which form part of the planning application suite of documents.

Table 1-1: Relevant engineering reports

Report No.	Title
RPT-20_071-038 & 039	Environmental Impact Assessment Report Chapters 11 & 12
RPT-20_071-058	Flood Risk Assessment Stage 1 & 2
RPT-20_071-055	Flood Risk Assessment Suir Island Hydraulic Modelling Report
RPT-20_071-019	OPW Application for Consent under Section 50 of the Arterial Drainage Act, 1945 & EU Regulations SI 122 of 2010
W2062	Suir Island Public Realm – Stage 1 Report Electrical – Douglas Carroll Consulting Engineers
S.I. Ltd Contract No: 5931 Rev 1	Suir Island Infrastructure Links, Clonmel, Co. Tipperary, Site Investigation Report

1.4 Principle of the Development

The need for the Suir Island Infrastructure Links project and how the proposed development aligns with European, National, Regional and Local policy documents are highlighted in the Environmental Impact Assessment Report (EAIR) Chapter 2 Project Description and Planning Policy Context.

The proposed development forms part of the local strategy to transform Suir Island into the “Green Heart of Clonmel” as highlighted in the Clonmel & Environ Development Plan 2013 – 2019. Figure 1-1 was extracted from the development plan, which refers to the proposed Suir Island Infrastructure Links project as “Opportunity 1”. The development provides the opportunity to improve the amenity and

commercial function of the town centre, which anchors around the redevelopment of the Clonmel Arms site and the Quay Street car-park as a high-quality mixed-use development overlooking the Suir River.

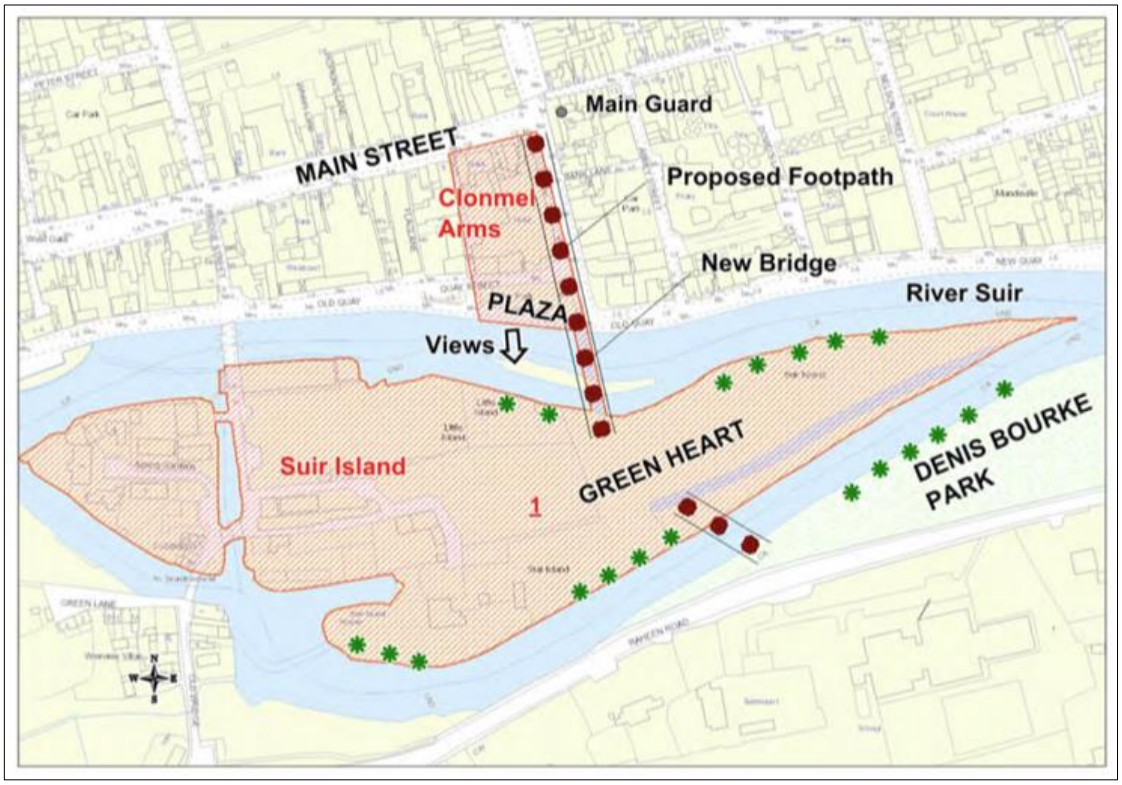

Figure 1-1: Clonmel & Environs Development Plan 2013 Opportunity No. 1

1.5 Site Location and Description

The Suir Island Infrastructure Links site is located in the centre of Clonmel, with the development encompassing areas located on The Quays, Suir Island and Raheen Road. Refer to Figure 1-2 for the locality and site extent map. The proposed development Drawings 20_071-CSE-00-XX-DR-C-2251 to 2257 are included in **Appendix A**.

Clonmel is a large town on the River Suir at the foot of the Comeragh Mountains. Suir Island is low-lying, consisting of four islands: Little Island, Suir Island, Willow Island and Stretches Island. It has been an important crossing point since medieval times, linking the Anglo-Norman walled town of Clonmel to County Waterford on the southern side of the river.

The island is surrounded by the River Suir on all sides and is accessible from the town centre via Old Bridge Road located to the west of the island. The island, from its mid-section to eastern end is largely undeveloped and overgrown. The site is zoned for amenity, social and public uses, however, there is no zoning assigned to the River Suir. The northern bank of the island is fully bordered by the River Suir and Clonmel town. To the south of the site, the area consists mainly of residential areas and agricultural lands. Clonmel has experienced significant flooding in the past. Flood risk is addressed in the reports highlighted in Table 1-1 and briefly summarised in **Section 7** of this report.

The site is located within part of the European site, Lower River Suir Special Area of Conservation (SAC), Site Code 002137 and Zone of Archaeological Potential as designated by the National Inventory of Architectural Heritage (NIAH), with a number of other sites of cultural and architectural heritage significance in the surrounding area. The impacts of the proposed development on the different environmental receptors are addressed in the various Environmental Impact Assessment Report (EIAR) Chapters completed as part of the planning application.

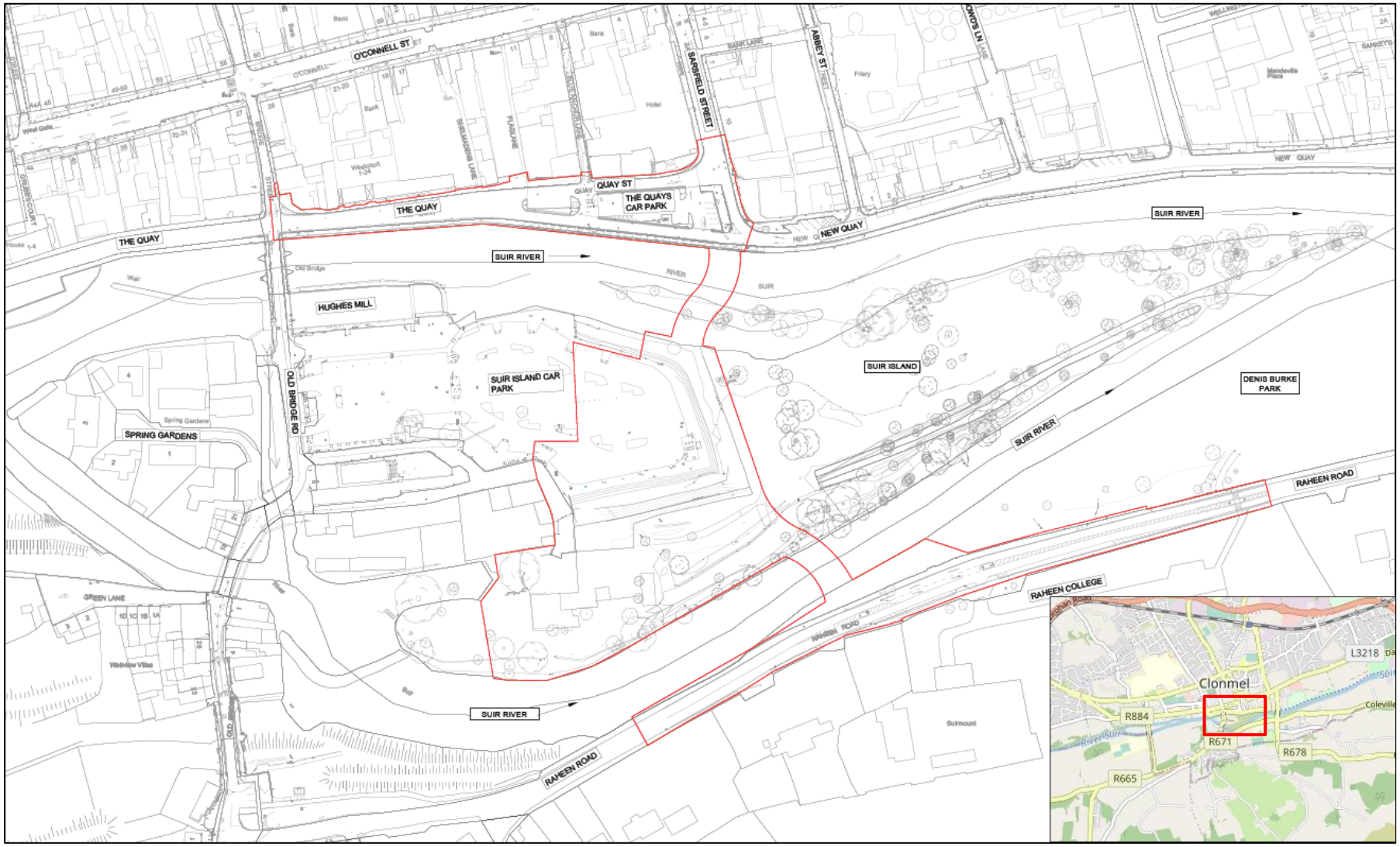

Figure 1-2: Project locality map and layout extent

1.6 Description of Proposed Development

The proposed development will consist of:

- Two pedestrian bridges, the first bridge linking the proposed North Plaza on The Quay/Quay St/Sarsfield St Junction to Suir Island, and the second bridge connecting Suir Island to Raheen Road.
- The pedestrian bridges will be 4-metre-wide consisting of a double curvature alignment, which allow users to discover Suir Island 'from up high' by walking seamlessly between the trees while linking the project elements (North Plaza, the berm embankment, and the south riverbank) along one sinuous route. The first bridge follows the geometry of Sarsfield Street and arrives on the island following the line of the berm embankment, which then links onto the second bridge facilitating a link to Denis Burke Park on Raheen Road, creating a direct connection for pedestrians/cyclists between the park and the Town Centre.
- Provision of a new public open space called the North Plaza which will be aligned with Sarsfield Street. The steps and ramp will be visible from O'Connell Street creating a new landmark in the town of Clonmel and will encourage pedestrian movement towards the River Suir. The bicycle access ramp is designed to be as transparent as possible so as not to block the view of Suir Island from Sarsfield Street.
- Modification of traffic direction and carriageway width around the North Plaza and The Quay and Quay St.
- Provision of a bus stop on the western side of the North Plaza located on Quay Street with five benches providing comfortable facilities for public transport users.
- Upgrading of the existing 2-metre-wide sidewalk along Quay Street into a 4-metre-wide shared pedestrian/cycle path which will provide unencumbered access to the proposed plaza area underneath the elevated access ramp.
- Provision of a sloping landscaped terrace with public seating, located inside the hairpin-shaped access ramp leading up to the northern bridge crossing.
- Provision of three benches and a 9-metre-long stepped promenade seating area integrated into the circular-shaped plaza.
- Planting of various native tree species around the North Plaza to integrate the proposed development with the existing scenery of Suir Island and complement the visual experience of users.
- Provision of a pedestrian path or promenade along the existing berm embankment across Suir Island linking the two pedestrian bridges, to facilitate access between Denis Burke Park on Raheen Road and the proposed North Plaza on The Quay.
- Construction of a pedestrian/bicycle ramp from the link promenade onto Suir Island Carpark. The ramp is fully integrated into the landscape by using the existing slope of the berm.
- Construction of three sets of steps connecting the link promenade to Suir Island carpark and the eastern end of Suir Island.
- Provision of a mini public space within Suir Island Carpark at the entrance to the proposed Suir Island Gardens.
- Provision of a south arrival point for the second bridge connecting Suir Island to the Raheen Road. The South Arrival Point will consist of one access ramp to the east and one set of steps to the west, integrated with the bridge landing level and running parallel to the footpath. These elements will be located outside the existing flood barrier.
- Road improvements for the safety of pedestrians/cyclists at the South Arrival Point, including the footpaths being widened and the road narrowed to accommodate 3.0-metre-wide lanes. Removal of three carparking spaces from the southern edge of the road to allow for wider footpaths.
- Installation of two uncontrolled pedestrian crossings positioned at either ends of the proposed access ramp and flight of steps to provide traffic calming at the South Arrival Point. This bridge arrival point

will be located close to the school entrance of Raheen College, providing safe and convenient access for the schoolchildren.

- Access ramps and steps are located behind the flood barriers to allow access even during flood events.
- Construction of a new foul pumping station to be located within Suir Island car park which will facilitate future Irish Water connections. Wastewater will be pumped 0.1km approx. via rising main along the proposed bridge linking Suir Island to the proposed North Plaza where it will connect into the existing public network along The Quay.
- Ancillary site development works to include, but not limited to, surface water drainage, lighting and associated electrical works, hard and soft landscaping, road works to include surfacing and line marking, landscaping and installation of street furniture.
- All associated site works.

2 Layout and Road Networks

2.1 Existing Layout and Road Networks

New Quay intersects with Sarsfield Street and Quay Street via a 3-arm priority-controlled junction located in the works area referred to as The Quays. The layout of the existing road layouts is illustrated in Figure 2-1.

At present, New Quay is a one-way regional road accommodating westbound traffic. On the approach to the junction, this road splits into The Quay for westbound traffic movements and Sarsfield Street for Northbound traffic. Sarsfield Street is also a one-way regional road accommodating northbound movement. The Quay Street arm of the junction only extends for c. 100 metres accommodating eastbound traffic moving towards Sarsfield Street.

Raheen Road currently consists of a single-lane carriageway located between Old Bridge Road/McDonagh Crescent (west) and R678 Old Waterford Road (east).

The Suir Island carpark is accessible from Old Bridge Road and consists of a one-way entrance/exit crescent layout around the existing park area. Refer to Drawings 20_071-CSE-GEN-XX-DR-C-3900 and 3901 included in **Appendix A** showing the existing vs proposed road layouts for The Quays and Raheen Road.

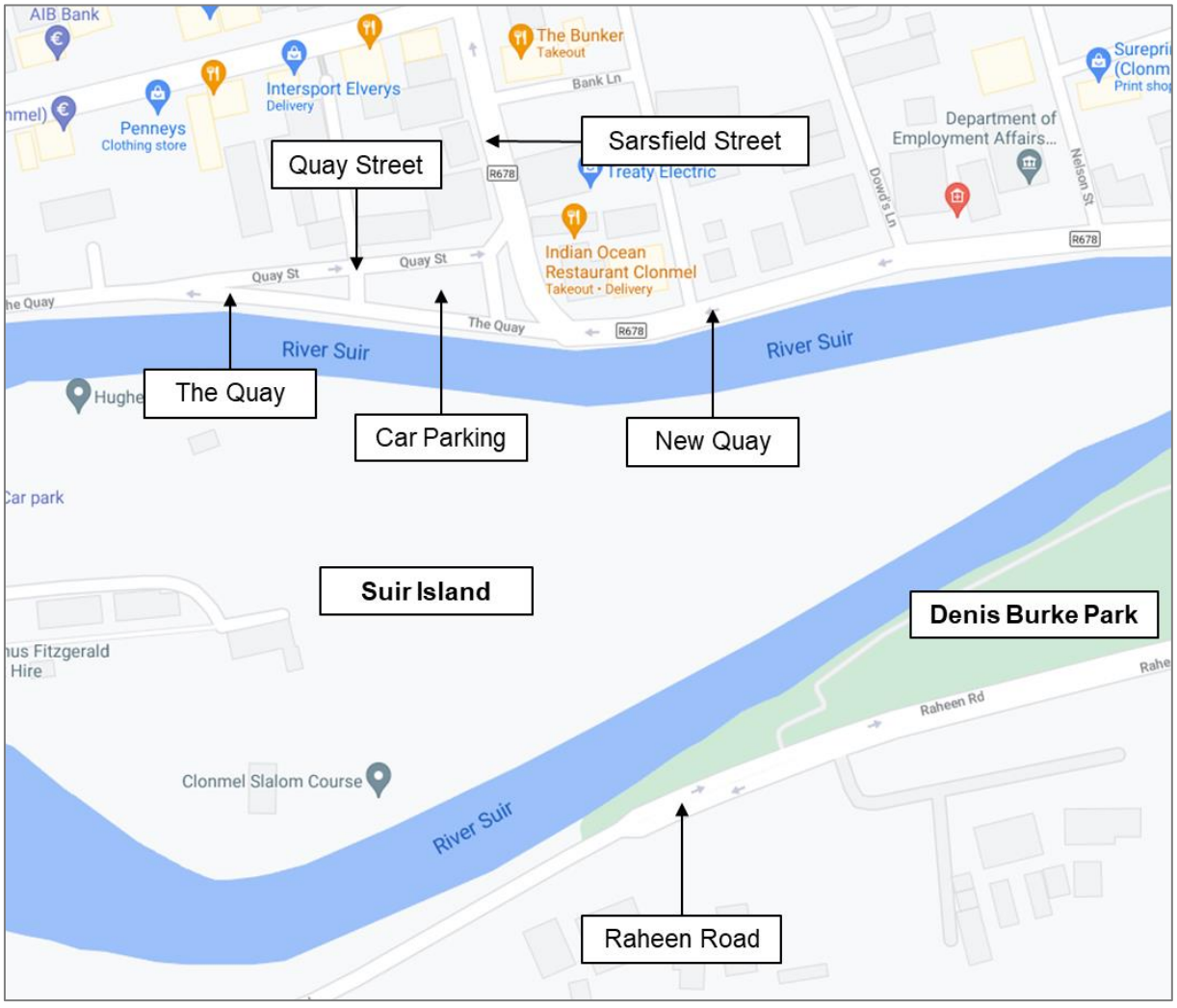

Figure 2-1: Existing road infrastructure

2.1.1 Existing Road Layerworks

Site investigations were completed in March 2022, which included two road cores to establish the existing layerworks in The Quay Road and Raheen Road. The core results and material build-up of the roads are summarised in Table 2-1.

Table 2-1: Existing road layerworks

Road (Core No.)	Layer 1 thickness (mm) / Material Type	Layer 2 thickness (mm) / Material Type	Layer 3 thickness (mm) / Material Type	Layer 4 thickness (mm) / Material Type
The Quay **(Label on Figure 6-1: RC01)**	30 / 14mm SMA w/c macadam	45 / 30% 14mm HRA macadam	65 / 20mm Basecourse macadam	40 / 28mm Roadbase macadam
Raheen Road **(Label on Figure 6-1: RC02)**	20 / 14mm SMA w/c macadam	40 / 30% 14mm HRA macadam	95 / 20mm Basecourse macadam	95 / 28mm Roadbase macadam

2.2 Proposed Layout and Road Networks

2.2.1 North Plaza

The proposal to realign the traffic around the North Plaza is shown in Figure 2-2, which will alter the traffic direction solely westbound via New Quay Road, Quay Street and The Quay Road or northbound via the existing one-directional Sarsfield Street.

The proposed North Plaza public open space and access ramps will be located in the existing car park area. A bus-stop and parking bays (6 No.) and a 2.4m long loading bay will be provided to the west of the North Plaza in Quay Street. An assessment on carpark spaces has concluded that the Suir Island carpark has sufficient capacity to accommodate the loss of parking in The Quays. Refer to the Environmental Impact Assessment Report (EIAR) Chapter 12 Material Assets: Traffic and Transportation for details regarding the parking demand assessment.

The existing 2m wide sidewalk located adjacent to the flood protection wall will be widened to 4m shared pedestrian/cyclist path, which will provide unencumbered access to the North Plaza underneath the access ramp as shown in Figure 2-3. Refer to Drawing 20_071-CSE-GEN-XX-DR-C-2252 included in **Appendix A** showing a detailed layout of the proposed North Plaza.

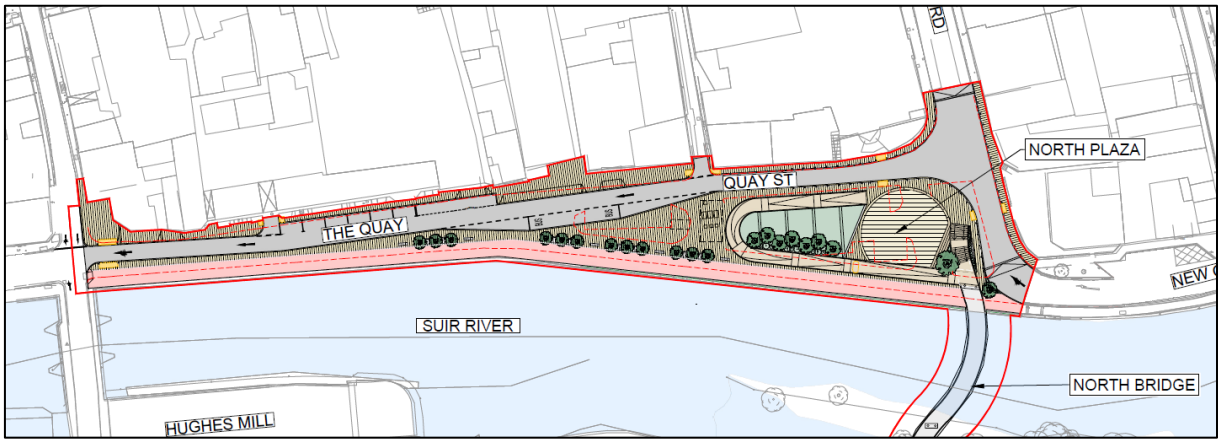

Figure 2-2: North Plaza proposed road layout

2.2.1.1 Alterations to Public Lighting Infrastructure

The redevelopment of the existing car park into the North Plaza will require the removal of 3 existing public lighting poles, located adjacent to the eastern ingress/egress points to the existing car park. As the handrails located on the North Bridge access steps and ramp will be illuminated, it is not required to replace the removed public lighting poles. Refer to **Section 6.5** of this report highlighting the lighting proposals for the bridges, access ramps and steps. Refer to Drawing No. 20_071-CSE-GEN-XX-DR-C-2270 included in **Appendix E** for a plan layout showing alterations to the public lighting infrastructure located in the North Plaza.

2.2.1.2 North Plaza Surfacing

The proposed hard-stand surfacing details for the North Plaza is shown on Drawing 20_071-CSE-00-XX-DR-C-2258 included in **Appendix A**. The hard-standing surface palette will consist of:

- Paving:
  - Pattern 1: Varies sizes light grey Granite or Sandstone setts with varies Flamed/Bush-hammered / Sandblasted finishes to Pavements.
  - Pattern 2 (River Pattern): Varies sizes light grey Granite or Sandstone setts with Sandblasted finishes to Pavements.
  - Pattern 3: 100 x 100 mm Granite/Sandstone setts with Flamed Finish to Pavements line.
  - 400 x 400 mm light grey Granite tactile setts to pedestrian crossings.
- Bridge, access ramp and steps:
  - Bridge: Silver bush-hammered concrete finish laid on a waterproofed surface
  - Access ramp and steps: Concrete Surfacing with beige/white/light grey exposed aggregate stone
- Carriageway:
  - 40mm hot rolled asphalt (with precoated chips) on; 60mm asphalt concrete 20 on; 100mm asphalt concrete 32 on; 150mm Sub base.

2.2.1.3 North Plaza Landscaping

As shown on Figure 2-3, landscaping is proposed around the North Plaza access ramp and steps. This provides an opportunity to reverse pollinator population decline in Ireland by making public land pollinator friendly, which aligns with the All-Ireland Pollinator Plan 2021-2025 Objective No. 2.

The All-Ireland Pollinator Plan 2021-2025 notes that more than half of Ireland's bee species have undergone substantial declines in numbers since 1980, with 30% of species considered threatened with

extinction. To combat the decline of pollinator population, pollinator-friendly plants species will be incorporated into the landscaping design.

The potential usage of landscaping (i.e. trees) to replace the concrete bollards will be investigated during the detailed design stage, which will contribute to the traffic calming of the intersection as noted in the TII guideline “The Treatment of Transition Zones to Towns and Villages on National Roads (DN-GEO-03084)” published in July 2021.

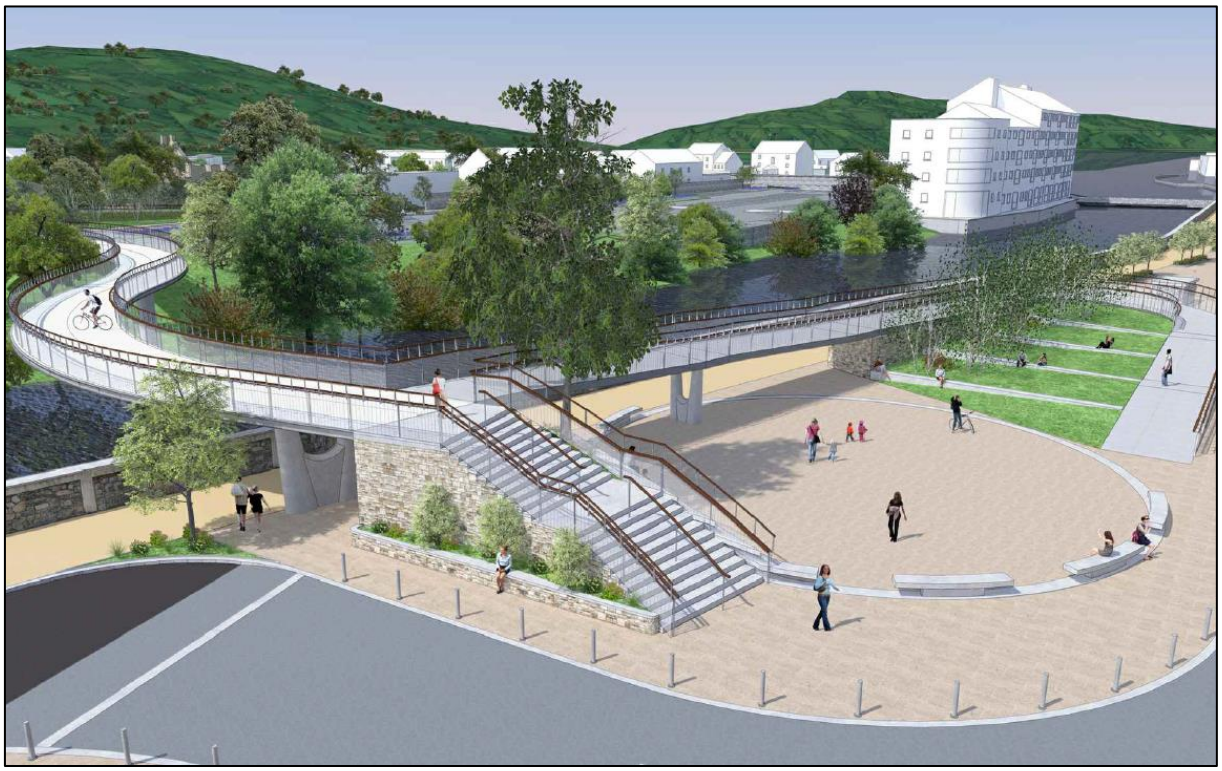

Figure 2-3: North Plaza Architectural 3D view

2.2.2 Raheen Road

The proposed works in Raheen Road includes narrowing of existing lane widths, narrowing of road Chevron boundary lines and removal of the school entrance right turning lane to allow for the widening of the pedestrian walkway and the construction of the bridge access ramp and steps. The proposed narrowing of the single-lane carriageway and proposed bridge access ramp/steps is shown in Figure 2-4 and 2-5, respectively. Refer to Drawing 20_071-CSE-GEN-XX-DR-C-2254 and 2255 included in **Appendix A** showing a detailed plan layout of upgrading works in Raheen Road.

The narrowing of the carriageway widths will slow speeds and reduce crossing widths along Raheen Road. The proposed lighting at the pedestrian crossings to the Raheen College will further draw specific attention to pupils crossing the road, as noted in the TII guideline “The Treatment of Transition Zones to Towns and Villages on National Roads (DN-GEO-03084)” published in July 2021.

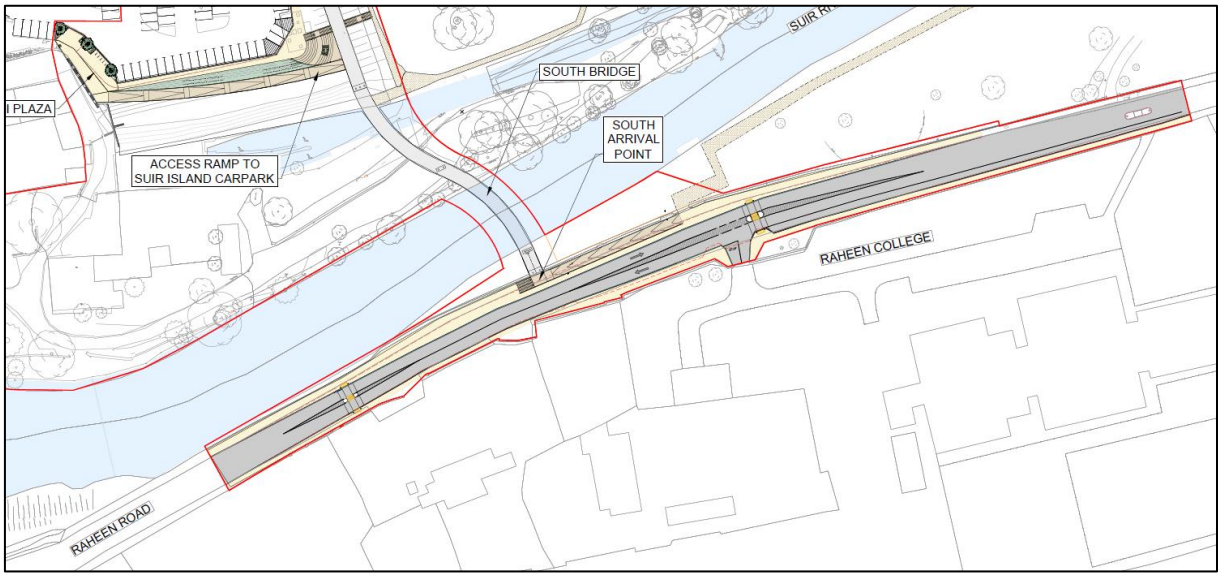

Figure 2-4: Raheen Road proposed road layout

Figure 2-5: Raheen Road Architectural 3D view

2.2.2.1 Alterations to Public Lighting Infrastructure

The narrowing of Raheen Road will require the removal of one existing public lighting pole, which will be replaced by the bespoke balustrade lighting on the access ramp and steps leading up to the southern bridge crossing and one lighting pole to be relocated to match the realigned pedestrian walkway. Refer to **Section 6.5** of this report highlighting the lighting proposals for the bridges, access ramps and steps. Refer to Drawing No. 20_071-CSE-GEN-XX-DR-C-2270 included in **Appendix E** for a plan layout showing alterations to the public lighting infrastructure located in Raheen Road.

2.2.2.2 South Arrival Point Surfacing

The proposed hard-stand surfacing details for the Raheen Road is shown on Drawing 20_071-CSE-00-XX-DR-C-2259 included in **Appendix A**. The hard-standing surface palette will consist of:

- Paving:
  - Pattern 1: Varies sizes light grey Granite or Sandstone setts with varies Flamed/Bush-hammered / Sandblasted finishes to Pavements.
  - 400 x 400 mm light grey Granite tactile setts to pedestrian crossings.
- Bridge, access ramp and steps:
  - Bridge: Silver bush-hammered concrete finish laid on a waterproofed surface
  - Access ramp and steps: Concrete Surfacing with beige/white/light grey exposed aggregate stone
- Carriageway:
  - 40mm hot rolled asphalt (with precoated chips) on; 60mm asphalt concrete 20 on; 100mm asphalt concrete 32 on; 150mm Sub base.

2.3 Suir Island

The proposed works on Suir Island will be predominantly contained to the existing flood protection berm and southern corner of the car park, which will be utilised as a landing or mini-plaza for the proposed ramp providing access to the northern and southern bridge crossings. Refer to Figure 2-6 showing a plan layout of the proposed works in Suir Island. Three sets of access steps will be constructed on the existing flood protection berm slope as indicated in the Figure 2-7.

The construction of the proposed mini-plaza area will result in the loss of 5 No. parking bays, which is currently occupied by the Canoeing Club storage container. No additional loss of parking bays or realignment of access roads are required for Suir Island. Refer to Drawing 20_071-CSE-GEN-XX-DR-C-2253 included in **Appendix A** showing a detailed layout of the Suir Island car park and proposed alterations to the existing flood protection berm.

2.3.1.1 Suir Island Surfacing

The proposed hard-stand surfacing details for the Raheen Road is shown on Drawing 20_071-CSE-00-XX-DR-C-2259 included in **Appendix A**. The hard-standing surface palette will consist of:

- Paving:
  - Pattern 5: Varies sizes Silver and Sandstone setts to Pavements.
  - 400 x 400 mm light grey Granite tactile setts to pedestrian crossings.
- Bridge, access ramp and steps:
  - Bridge: Silver bush-hammered concrete finish laid on a waterproofed surface
  - Promenade: Concrete Surfacing with beige/white/light grey exposed aggregate stone
  - Access ramp and steps: Concrete Surfacing with beige/white/light grey exposed aggregate stone

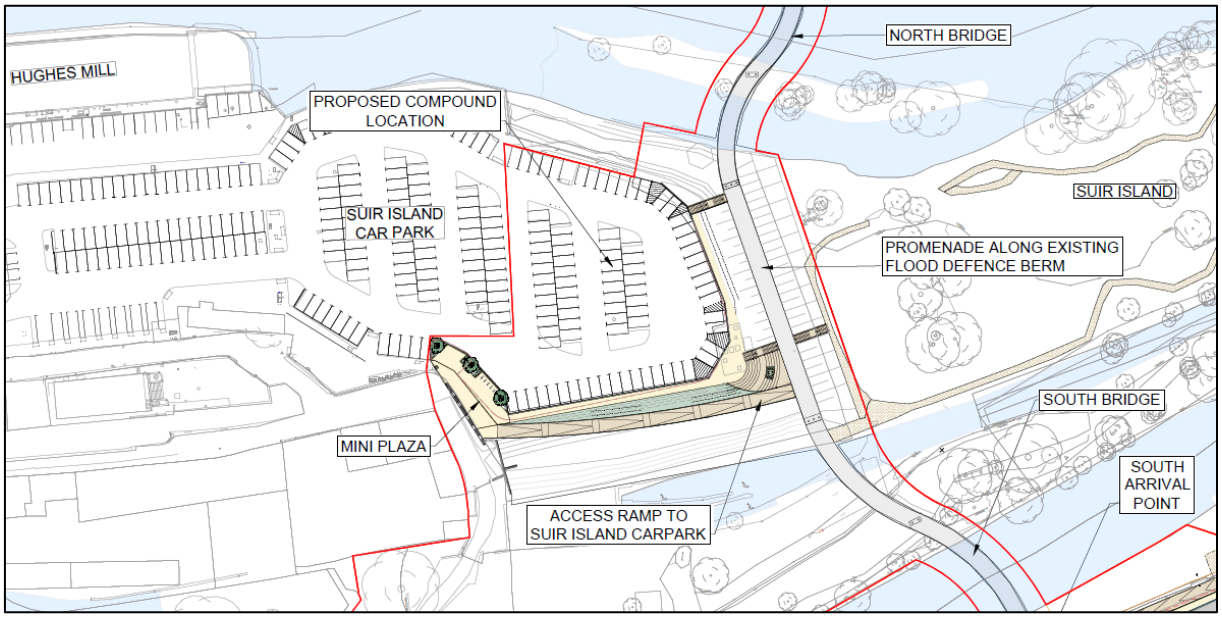

Figure 2-6: Plan layout of Suir Island cark-park alterations

Figure 2-7: Suir Island Architectural 3D view

2.3.1.2 Landscaping and Tree Removal

The Tree Survey Report was carried out in November 2021 for Suir Island by Austen Associates. All significant/mature trees have been individually identified and numbers referenced in the survey table included in the Tree Survey Report. This report should be read in conjunction with Drawing No. 072921_TS_01 (Tree Survey Plan) and Drawing No. 072921_TP_02 (Tree Retention and Protection Plan) appended to the EIAR Chapter 15.

As shown on Drawing 072921_TP_02, the southern bridge, which spans over the Slalom Course to Raheen Road, will require the removal of 4 No. trees designated as Category C (Trees of low quality).

Category A (high quality) and Category B (moderate quality) will not be removed and will be protected as directed by the Arboriculturist.

Similarly to the North Plaza landscaping (Section 2.2.1.3), the proposed landscaping in and around the Suir Island flood defence berm and promenade provides an excellent opportunity to incorporate pollinator-friendly plants species into the landscape design.

2.4 Stage 1 and 2 Road Safety Audit

A Stage 1 and 2 Road Safety Audit was carried out on the 22nd of June 2023 by Roadplan Consulting. The audit team visited the site on the 12th June 2023 and consisted of:

- Ray Butler, BE CEng MIEI (Auditor Number RB210538)
- George Frisby, BE CEng MIEI (Auditor Number GF51255)

This Stage 1/2 Audit has been carried out in accordance with the relevant sections of TII GE-STY-01024. The team has examined only those issues within the design relating to the road safety implications of the scheme and has therefore not examined or verified the compliance of the design to any other criteria.

All problems described the RSA Report are considered by the audit team to require action in order to improve the safety of the scheme and minimise accident occurrence. A copy of this report is included in **Appendix H** of this report and the outcomes of the RSA has been summarised in Table 2-2 below.

Table 2-2: Road Safety Audit outcomes and solutions

Paragraph No. in Safety Audit Report	To Be Completed By Designer			To Be Completed by Audit Team Leader
	Problem accepted (yes/no)	Recommended measure accepted (yes/no)	Describe alternative measure(s). Give reasons for not accepting recommended measure. Only complete if recommended measure is not accepted.	Alternative measures or reasons accepted by auditors (yes/no)
2.1	Yes	Yes	Drop-kerb to be added to allow cyclists on New Quay to access the proposed shared-path.	
2.2	Yes	Yes	Central bollard to be added to reduce cyclist speeds on bridges. On ramps, central handrail to be added as per the Irish Wheelchair Association access guidelines.	
2.3	Yes	Yes	Existing drop kerb shown on drawings west of Old Bridge. Cyclists will be required to obey road rules and vehicle right of way as per the existing layout. Appropriate signage to be added at the end of shared path at the junction to alert users of the shared path's termination.	
2.4	Yes	Yes	2 No. disabled parking spaces to be added adjacent to mini-plaza.	
2.5	Yes	Yes	Pedestrian crossings provided on either side of access ramp to be used. Additional drop-kerb will not be provided. Cyclists are to access the footpath and traverse slowly to bridge access ramps making use of provided pedestrian crossings. Tactile Paving and signage to be added on the path adjacent to	

			the bottom of the ramp and also to the east of the pedestrian crossing to indicate to cyclists that the northern path beyond those points are for pedestrians only.	
2.6	Yes	Yes	Although not shown on drawing, existing arrows will be removed and a new arrow as indicated will replace the removed arrows.	
2.7	Yes	Yes	Right-turn only signage and arrow to be added. Parking bay closest to the laneway to be removed.	
2.8	Yes	Yes	Existing road markings to be retained and extended which prevents vehicles parking too close to college entrance and thus limiting sight-distances.	
2.9	Yes	Yes	Same response as Item 2.8	
2.10	Yes	Yes	Longitudinal line markings to be reviewed and amended in accordance with DMURS to indicate vehicle right-of-way.	
2.11	Yes	Yes	Review of whole scheme to be undertaken and amendments to include appropriate signage and tactile paving throughout.	

3 Surface Water Drainage

This section outlines the surface water drainage proposals for the Suir Island Infrastructure Links development and should be read in conjunction with the drawings and reports included in **Appendix B**.

3.1 Existing Surface Water Network

3.1.1 The Quays

The as-built surface water network for The Quays is shown on Drawing 1401-01 which should be read in conjunction with Drawing A5243-C064, showing the plan layout and long sections for The Quays, as designed by Mott MacDonald in December 2009. Drawing A5243-C064 indicates pipe sizes and slopes. The drawings are included in **Appendix B**.

The main surface water pipeline is indicated as OQ-06 to OQ-01 and ranges from 300mm diameter to 450mm diameter. Road gullies on The Quay, Quay Street and Sarsfield Street drain via the main pipeline to manhole OQ-01, which discharges to the Suir River through a flap valve located in the quay wall and/or to the existing surface water pump station located west of the existing Quays carpark. The existing surface water pump station discharges to the Suir River through the quay wall as indicated on Drawing A5243-C064.

3.1.2 Suir Island

The as-built surface water network located in the Suir Island carpark is shown on Drawing 1401-01 which should be read in conjunction with Drawing A5243-C066, which shows the plan layout and long sections for Suir Island surface water network, as designed by Mott MacDonald in December 2009. The drawings are included in **Appendix B**.

The existing surface water drainage system consists of multiple pipelines, ranging from 225mm to 450mm in diameter and drains to manhole SI-01. A 600mm diameter pipeline is connected to manhole SI-01 which discharges into the Little Island Mill Race. On Drawing A5243-C066, a connection is shown to the existing surface water pump station via a 450mm diameter pipeline and indicates that the pumping station discharges into the Little Island Mill Race via a 300mm diameter ductile-iron pipeline.

3.1.3 Raheen Road

The existing surface water drainage manholes and road gully's locations were surveyed by Murphy Surveys in November 2020. The plan layout of the existing surface water pipelines in Raheen Road is shown on Drawing No. A5243-N506-F included in **Appendix B**. Existing gullies drain to the main surface water pipeline draining westwards towards a surface water pump station located near the intersection with Old Bridge Road. The pump station discharges into the River Suir as indicated on the drawing.

3.2 Proposed Surface Water Network

The proposed surface water networks were modelled using Innovyze MicroDrainage software to size the proposed pipe networks and calculate the surcharge levels for extreme rainfall events. Refer to the modelling results report included in **Appendix B**.

3.2.1 Design Criteria

The proposed surface water drainage was designed in accordance with the following guidance documents:

- The Greater Dublin Strategic Drainage Study (GDSDS) published in March 2005;
- TII Road Drainage and the Water Environment (including Amendment No.) DN-DNG-03065 published in June 2015;

- TII Determination of Pipe and Bedding Combinations for Drainage Works (including Amendment No. 1) DN-DNG-03070 published in June 2015;
- TII Hydraulic Design of Road-Edge Surface Water Channels (including Amendment No. 1) DN-DNG-03068 published in June 2015;
- TII Spacing of Road Gullies (including Amendment No. 1) DN-DNG-03067 published in June 2015; and
- Department of Housing, Local Government and Heritage (DHLGH) Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas Water Sensitive Urban Design Best Practice Interim Guidance Document.

The adopted design rainfall criteria, return periods and catchment areas are summarised in Table 3-1 to Table 3-3, respectively.

Table 3-1: Summary of Design Rainfall Characteristics

Characteristic	Value
Ratio "r"	0.25
M5-60 (mm)	19.4
6 hours-100-year rainfall depth (mm)	58.7
Max. rainfall intensity depth for stormwater network design (mm/hr)	50
Max. Time of Concentration (mins)	30

Table 3-2: Summary of Design Rainfall Return Period and Climate Change Allowances

Drainage infrastructure	Rainfall Return period	Climate Change Allowance
Stormwater Networks - Design	30 year	+10%
Stormwater Networks – Flooding	100 year	+20%

Table 3-3: Summary of Catchment Areas

Drainage Area	Catchment Area (ha)	Outfall Name (as per report)
North Plaza	0.490	Ex.OQ-02
Suir Island	0.148	Ex.SI-01 (I.SW.03)
Raheen Road	0.334	S.SW.05

3.2.2 North Plaza

The North Plaza proposed surface water drainage utilities are shown on Drawing 20_071-CSE-00-XX-DR-C-2501 included in **Appendix B**. The redevelopment of the existing car park and realignment of The Quays will require the removal of nineteen (19) existing road gullies, which will be replaced by seventeen (17) gullies along the proposed kerblines. Additionally, slotted drains will be installed along the widened pedestrian walkways and along the kerblines located in Sarsfield Street and The Quay Street. The proposed surface water utilities will be connected to the existing OQ-02 manhole located in front of the proposed access steps leading up to the North Bridge. Slot-drains and gullies are proposed along one side of the bridge access ramp and at the bottom of the steps. Three (3) slot drains and two (2) new road gullies will be connected to the existing OQ-01 manhole or connected pipelines adjacent to OQ-01 as shown on the drawing at the intersection with New Quay and the proposed North Plaza.

3.2.3 Suir Island

The Suir Island proposed surface water drainage utilities are shown on Drawing 20_071-CSE-00-XX-DR-C-2502 included in **Appendix B**. Three (3) existing gullies located on the southern kerbline of the carpark will be removed to allow for the construction of the 2m-wide pedestrian path leading to the access steps to the link promenade. A new 225mm diameter surface water pipeline is proposed along this pedestrian path, which will be connected to seven (7) new gullies to drain the southern portion of the carpark. The proposed network will drain to the existing manhole SI-01 highlighted in **Section 3.1.2**, which is connected to the existing surface water pump station and/or the 600mm diameter outfall pipeline which discharges into the Little Island Millrace.

3.2.4 Raheen Road

The proposed surface water drainage utilities for Raheen Road are shown on Drawings 20_071-CSE-00-XX-DR-C-2503 and 2504 included in **Appendix B**. Five (5) existing gullies will be removed due to the proposed narrowing of the road lane widths and widening of the pedestrian walkway. The existing surface water pipeline draining towards Old Bridge Road surface water pump station as highlighted in **Section 3.1.3**, will be extended further east with a proposed 300mm diameter and 225mm diameter pipeline which will require 4 No. additional manholes. A total of twenty-three (23) new road gullies are proposed along the narrowed Raheen Road. Slotted drains are proposed on the access ramp and at the bottom of the bridge access steps which will be connected to the proposed surface water pipeline.

3.2.5 Nature-based Sustainable Drainage System Solutions

As noted in the Department of Housing, Local Government and Heritage (DHLGH) Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas Water Sensitive Urban Design Best Practice Interim Guidance Document, nature-based solutions assists to reduce pollution and flood risk as well as improving biodiversity and a greener more pleasant urban environment.

The proposed landscaping layouts for the North Plaza (Figure 2-2 and 2-3) and Suir Island car park (Figure 2-6 and 2-7) provides great opportunities to incorporate Nature-based Sustainable Drainage Systems into the proposed development.

As shown on Drawing 20_071-CSE-00-XX-DR-C-2501 and 2502 included in **Appendix B,** urban rain gardens and tree planting pits have been included in the North Plaza and Suir Island car park landscaping areas.

4 Foul Drainage

This section outlines the foul drainage proposals for the Suir Island Infrastructure Links proposed development and should be read in conjunction with the drawings and documents included in **Appendix C**.

4.1 Existing Foul Drainage

4.1.1 The Quays

The existing sewer/foul drainage network for The Quays is shown on Drawing IW-AGG-2017-000 included in **Appendix C**. As indicated on the drawing, a 900mm diameter concrete foul drainage pipeline is located in The Quay road draining in an easterly direction which includes five (5) manholes between Old Bridge Road and Sarsfield Street. The cover depth to this pipeline ranges from c. 1.28m to 2.1m. The area north of The Quays is serviced by 375mm diameter vitrified clay and 300mm diameter concrete pipelines originating from Bridge Street and Sarsfield Street, respectively. As indicated on the drawing, these pipelines originating from Bridge Street and Sarsfield Street drain to the 900mm diameter pipe.

A public toilet is located in the existing car park as shown in Figure 4-1 with an expected connection to the nearest manhole structure on the existing 900mm diameter concrete foul pipeline mentioned above.

Figure 4-1: Location of existing public toilet

4.1.2 Suir Island

No existing foul drainage information is available for Suir Island or Little Island. It is expected that all private dwellings and the Hughes Mill apartment building drains to septic tanks, with overflows to the River Suir.

4.1.3 Raheen Road

The existing sewer/foul drainage network along Raheen Road is shown on Drawing IW-AGG-2017-000 included in **Appendix C**. A 525mm diameter concrete pipeline originates from Old Bridge Road and drains westwards towards Denis Burke Park. The pipeline is located in Raheen Road up to the Raheen College entrance, before departing from the road alignment and continues through Denis Burke Park.

4.2 Proposed Foul Drainage

4.2.1 North Plaza

The existing public toilet will be relocated below the proposed access ramp to the North Bridge located on the North Plaza as shown on Drawing 20_071-CSE-00-XX-DR-C-2501 included in **Appendix B**. Refer to **Section 4.2.2** for the proposed foul pumping station located on Suir Island, which will be connected to the existing 300mm concrete foul pipeline which drains to the main 900mm diameter concrete foul pipeline draining eastwards via New Quay.

4.2.2 Suir Island

As highlighted in **Section 4.1.2**, the foul drainage network for the existing dwellings and apartment building located on Suir Island is expected to consist of septic tanks with overflows to the Suir River. As part of the Suir Island Infrastructure Links proposed development, a foul pumping station will be provided to allow Irish Water to connect the dwellings/apartment building to a formalised network in the future. The proposed location of the pump station and 24-hour emergency storage tank in the existing carpark will not result in the loss of parking spaces.

From the proposed pumping station and emergency storage tank, a 125mm diameter raising main pipeline will be installed inside the proposed North Bridge superstructure to cross the northern reach of the River Suir and will be connected to the existing 300mm diameter foul pipeline highlighted in **Section 4.2.1**. The proposed pumping station layout and section is shown in Drawing 20_071-CSE-GEN-XX-DR-C-2502 and the connection to the existing 300mm diameter pipeline is indicated on Drawing 20_071-CSE-GEN-XX-DR-C-2501 included in **Appendix B**.

A Pre-Connection Enquiry Application was submitted to Irish Water containing the relevant calculations to size the 24-hour emergency storage and pump station. Confirmation of feasibility has been received from Irish Water. Refer to **Appendix C** for the Pre-Connection Enquiry Application and Confirmation of Feasibility Letter with Reference No. CDS21008413.

4.2.3 Raheen Road

No foul drainage works are proposed along Raheen Road.

5 Water Supply

5.1 Existing Water Supply

The existing water supply network is shown on drawing IW-AGG-2017-000 included in **Appendix D**.

5.2 Proposed Water Supply

No alterations or improvements to the existing water supply network is required for the proposed Suir Island Infrastructure Links proposed development.

6 Proposed Bridge Design

This section of the Engineering Report highlights the preliminary design of the proposed bridges and foundations. A preliminary design report and detailed design report will be prepared following the Planning Application submission for the proposed development, which will contain the structural analysis and geotechnical design of the bridge structure, supports and foundations. Refer to Drawings 20_071-CSE-GEN-XX-DR-C-2260 to 2262 for the bridge preliminary design drawings included in **Appendix E**.

The construction of the bridges will follow the high-level sequence summarised below:

- Construction of encased bored piles at six locations for the abutments and pier which will be founded on competent bedrock. If competent rock is not available, the use of friction piles shall be evaluated.
- Insitu concrete poured pile caps and piers will be constructed during dry-weather periods to allow access to the work areas. Localised sheet-piling around the works areas will be utilised to provide protection for up to the 50% Annual Exceedance Probability or 1-in-2-year recurrence interval summer flood events.
- Provision of haul roads on the island for accessibility of machinery for pile construction and installation of bridges.
- Reinforced concrete piers will be constructed up to the soffit levels of the proposed bridges.
- The superstructures for the bridges will consist of prefabricated steel sections, which will be transported to site by exceptional road convoys which will require appropriate licensing and approval.
- The prefabricated steel sections will be assembled at 3 No. locations, namely the North Plaza, Suir Island Carpark site compound and a temporary assembly platform within Denis Burke Park.
- The bridge sections shall be installed by heavy-duty cranes in approx. 30m length sections which will place the sections on top of the completed abutment and pier structures.
- For the northern bridge, a crane will lift half of the footbridge from the North Plaza along the northern river bank while another crane will lift the other half of the footbridge from the Suir Island Carpark.
- For the southern footbridge, a crane will lift half of the footbridge from the temporary assembly platform located within Denis Burke Park along the southern river bank, while another crane lifts the other half of the footbridge from Suir Island.

6.1 Foundations

Geological site investigations were completed in March 2022, which included 6 No. rotary boreholes at the abutments and pier locations to determine the depths to competent bedrock. The bridge foundations will consist of concrete encased piled foundations, with the piers and abutment structures constructed on reinforced concrete pile caps. The type of pile, spacing, minimum penetration depth into bedrock and number of piles shall be confirmed during the detailed design stage. Refer to Figure 6-1 for the positions and Table 6-1 for the details of the boreholes.

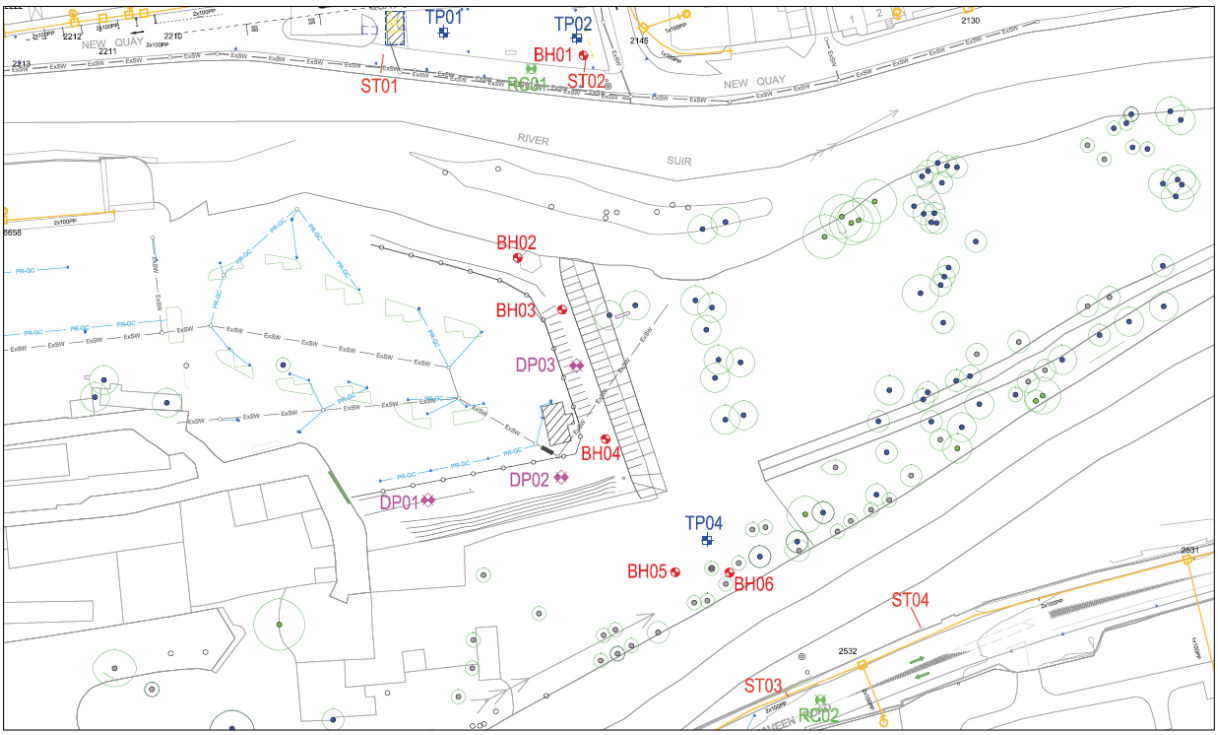

Figure 6-1: Location of site investigation boreholes

Table 6-1: Bridge foundation bedrock depths

Support Structure I.D. (Borehole I.D.)	Depth to Bedrock	Bedrock Description
Abutment 01 – North Plaza (BH 01)	16.40m	Strong grey muddy Limestone with frequent fossils. Fresh to slightly weathered.
Pier 01 (BH 02)	18.50m	Cobbles and Boulders of Limestone and Sandstone
Abutment 02 – Berm North (BH 03)	19.30m	Moderately strong light grey muddy Limestone interbedded with moderately weak dark grey calcareous Mudstone with occasional fossils and thin calcite veins (<1mm)
Abutment 03 – Berm South (BH 04)	17.70m	Moderately strong to muddy grey Limestone with frequent fossils and calcite veins (<2mm) Fresh to slightly weathered.
Pier 02 – North of Slalom Course (BH 05)	18.50m	Brown sandy gravely silty clay with medium cobbles and boulders.
Pier 03 – South of Slalom Course (BH 06)	13.00m	Moderately strong to strong grey muddy Limestone with frequent fossils and calcite veins (<1mm). Fresh to slightly weathered.
Abutment 04 – Raheen Road	-	Borehole not accessible due to River Suir water levels. Sufficient geotechnical data provided by BH 01 to 06 for preliminary design.

6.2 Bridge Substructure

The proposed bridge substructures will consist of reinforced concrete piers/abutments, constructed on top of the reinforced concrete pile caps. A typical section of the substructures is shown in Figure 6-2. Refer to **Appendix E** for the preliminary bridge design drawings.

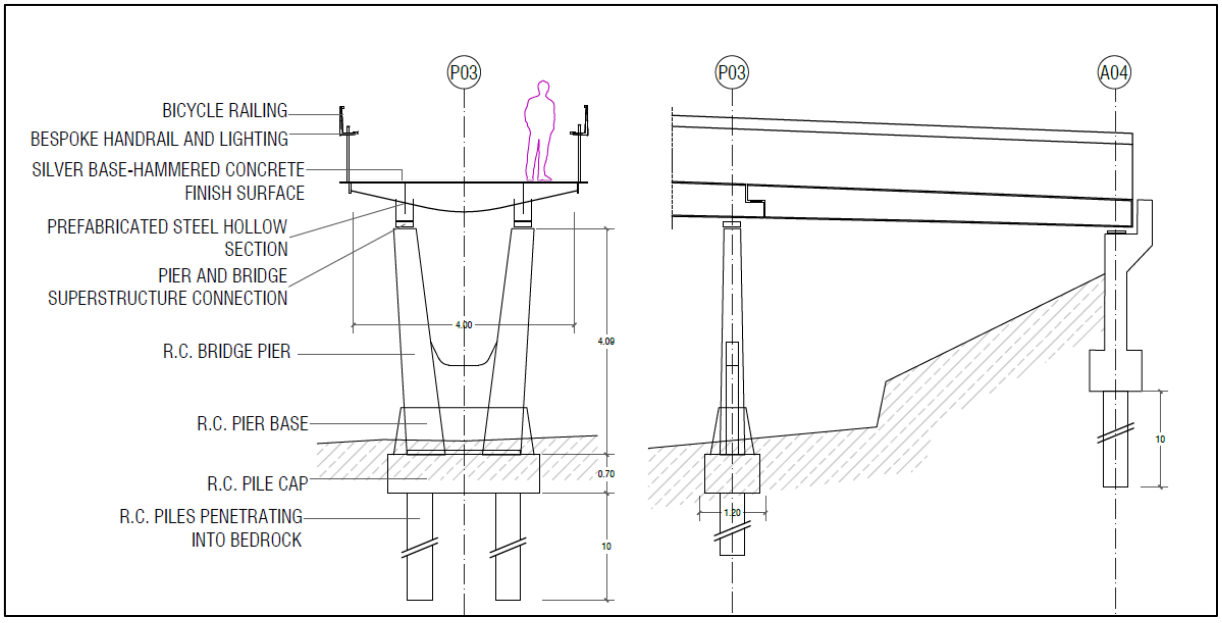

Figure 6-2: Typical section of bridge pier and abutments

6.3 Bridge Superstructure

The Northern Bridge crossing, connecting the North Plaza to Suir Island, will span over the Suir River for a total distance of 60m. The northern bridge abutment, access ramp and steps will be constructed behind the existing flood protection wall. A minimum clearance of 300mm is proposed above the demountable flood protection barriers and the soffit level of bridge superstructure. The demountable barrier provides flood protection for the 1% Annual Exceedance Probability event plus a 20% Climate Change allowance. The northern bridge abutment on Suir Island will be constructed on top of the existing flood protection berm.

Additional bridge parameters are summarised in Table 6-2, with dimensions measured from the North Plaza abutment to Pier No. 1 and then to the abutment constructed on top of the existing flood protection berm located on Suir Island.

Table 6-2: North Bridge parameters

Parameter	Value
Bridge deck top walkway width	4m
Span (total)	60.0m
Span between supports	34.1m and 26.0m
Bridge deck levels (top)	21.20mOD, 20.84mOD, 20.56mOD
Bridge deck levels (soffit)	20.70mOD, 20.05mOD, 20.05mOD
Bridge deck to river channel invert	5.93m (max) and 3.14m (min)
Bridge deck soffit clearance above flood protection structure	300mm to demountable barrier installed on top of permanent flood defence wall

The Southern Bridge crossing, connecting Suir Island to Raheen Road and Denis Burke Park, will span the Suir River Slalom Course and Millrace for a total distance of 75m. The Suir Island abutment will be constructed on top of the flood protection berm and the Raheen Road abutment will be integrated into the existing concrete flood protection wall. The 2 No. support piers will be located on both banks of the Slalom Course. Table 6-3 summarises additional parameters for the South Bridge, with dimensions measured from the Suir Island abutment to Pier 1 to Pier 2 and to the Raheen Road abutment.

Table 6-3: South Bridge parameters

Parameter	Value
Bridge deck top walkway width	4m
Span (total)	75.0m
Span between supports	33.1m, 35.0m, 6.9m
Bridge deck levels (top)	21.05mOD, 21.57mOD, 20.30mOD, 20.20mOD
Bridge deck levels (soffit)	20.60mOD, 20.59mOD, 19.87mOD, 19.73mOD
Bridge deck to river channel invert	6.97m (max) and 3.01m (min)
Bridge deck soffit clearance above flood protection structure	Bridge deck level to tie into top of existing concrete flood protection wall

The proposed bridge deck or superstructure will consist of prefabricated steel sections, which will be transported to site and craned onto the completed bridge substructures/supports. A typical section through the proposed bridge superstructure is shown in Figure 6-3. Refer to the preliminary design drawings included in **Appendix E** showing plan layouts, vertical alignments and details of the proposed bridges.

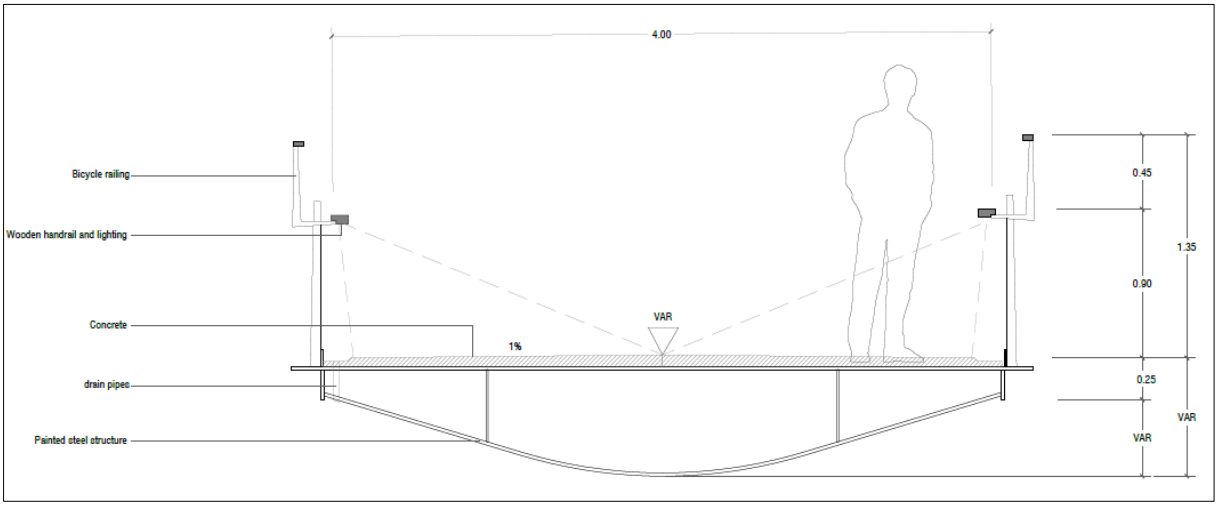

Figure 6-3: Typical bridge superstructure cross section

6.4 Bridge Surfacing and Drainage

The proposed bridge surfacing will consist of bush-hammered concrete surfacing, which will provide sufficient traction for pedestrians and cyclists in wet conditions. The bridge deck will be sloped to ensure water is drained to side-channels, which will be drained by downpipes discharging into the River Suir. The downpipes will be installed at intervals along the proposed bridges as shown in Figure 6-4.

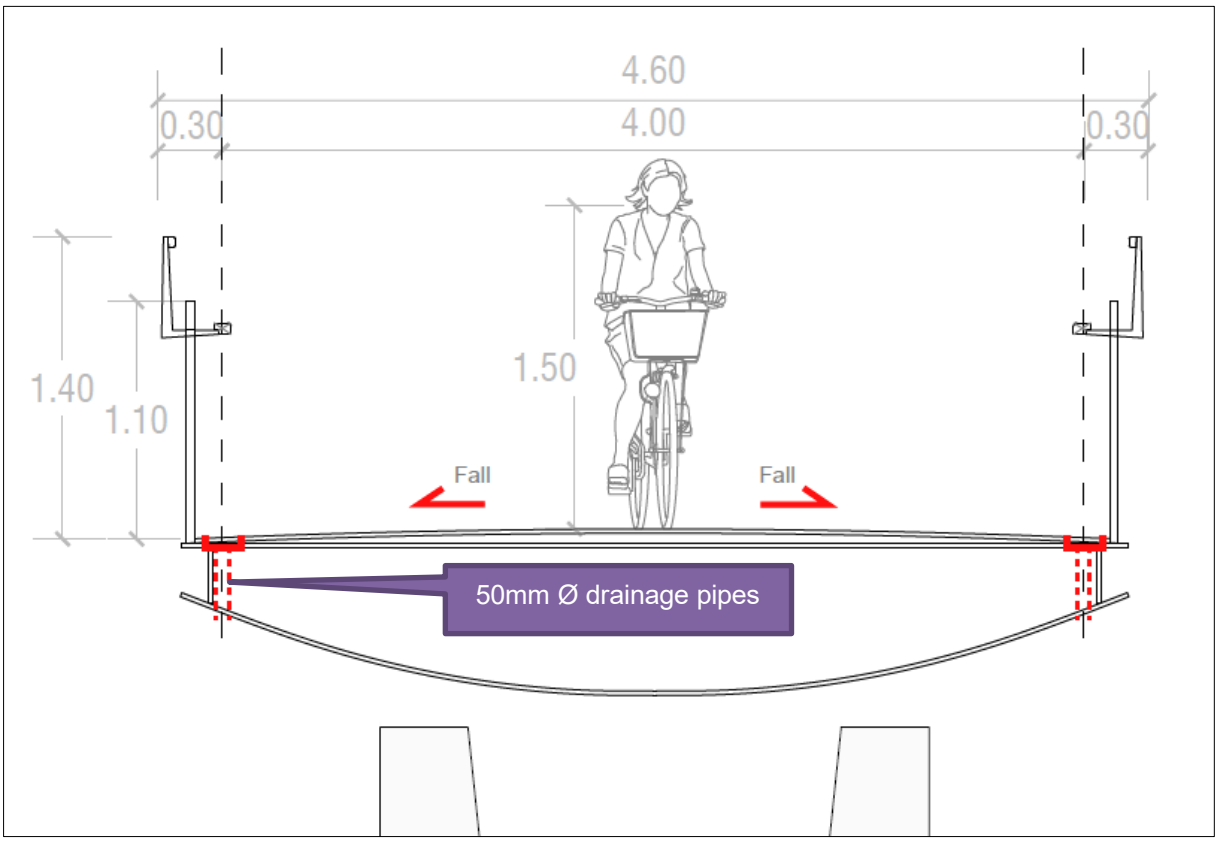

Figure 6-4: Indicative sketch of the proposed bridge drainage arrangement

6.5 Suir Island Embankment

The existing flood defence embankment located on Suir Island will be utilised as the pedestrian link between the Northern and Southern bridge crossings and will provide access to and from the Suir Island car park via the proposed access ramp and three sets of steps as indicated on Drawing 20_071-CSE-00-XX-DR-C-2260 included in **Appendix E**. The embankment crest levels will be raised with a filler clay material to tie into the proposed bridges walkway levels. The walkway surfacing and layer build-up shall be confirmed during the detailed design stage. Currently it is envisaged that this will consist of a cellular confinement system filled with uniformly graded crushed stone to minimise settlement potential and a flexible surface type such asphalt-cement or brick paving.

6.6 Lighting

The proposed footbridges, access ramps and steps will be illuminated by a bespoke balustrade LED handrail as indicated in Figure 6-5. The primary aim of the bespoke balustrade LED handrail is to minimise light-pollution by ensuring that the bridge walkway is illuminated for pedestrian safety, but with no light spilling over, above or below the bridge. Refer to the Environmental Impact Assessment Report Chapter 5: Biodiversity, Species and Habitats for more information regarding the lighting impacts on habitats and mitigation measures proposed.

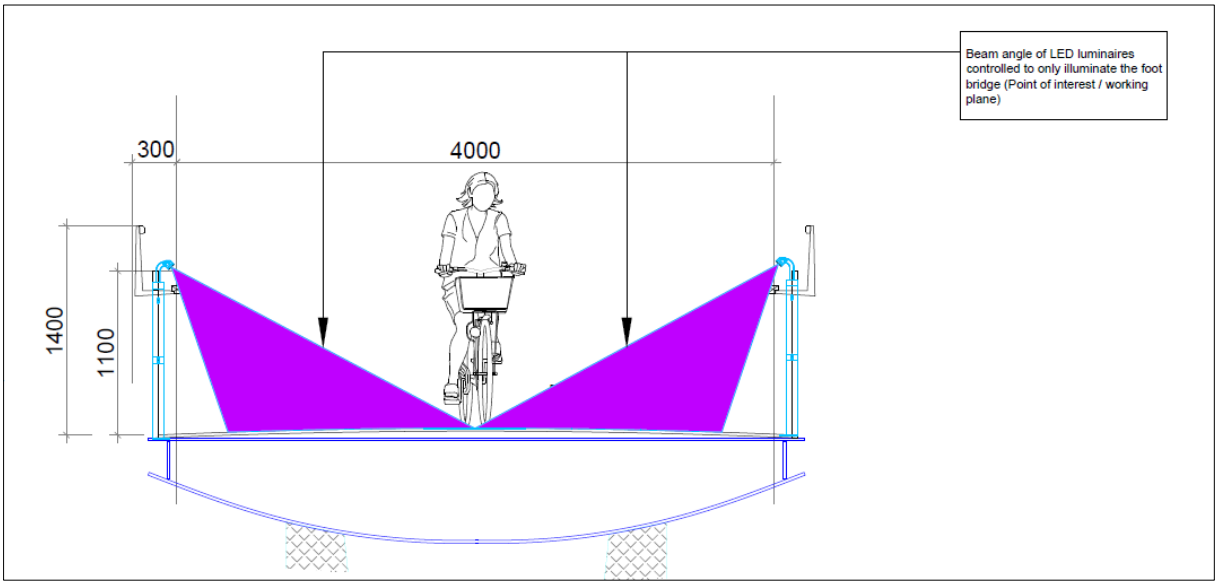

Figure 6-5: Typical detail of bespoke LED handrail

The lighting will be controlled via Passive Infrared (PIRs) sensors. The PIRs will have the ability to detect the presence of any person who comes into the detection zone of the PIR and illuminate the section of the LED balustrade accordingly. Several light-dimming options have been proposed for the illumination of the pedestrian bridges as summarised in Table 6-4:

Table 6-4: Summary of bridge lighting options

Option No.	Description
Option 1	LED balustrade is constantly illuminated at the 5% of its total power output to illuminate the bridge to 10 lux 0.2 uniformity.
Option 2	LED Balustrade operate at 1% of its output until detection of a person, where LED balustrade ramps up to 5% set output for a time period of 10 minutes without further detection activated on the PIR.

Option 3	LED Balustrade operate at 0% of its output (OFF) until detection of a person, where LED balustrade ramps up to 5% output for a time period of 10 minutes without further detection activated on the PIR.

Refer to the Suir Island Public Realm – Stage 1 Electrical Report compiled by Douglas Carroll Consulting Engineers for a detailed lighting assessment included in **Appendix G**. A plan layout and typical lighting detail is shown on Drawings 20_071-CSE-GEN-XX-DR-C-2270 and 2271 included in **Appendix E**.

7 Flood Risk Assessment

7.1 Stage 1 & 2 Flood Risk Assessment

The Stage 1 and 2 Flood Risk Assessment Report (RPT-20_071-058) has been prepared in accordance with the Office of Public Works (OPW) guidelines publication, "The Planning System and Flood Risk Management, Guidelines for Planning Authorities" published in November 2009. The findings of this report are briefly summarised below.

7.1.1 Identification of Flood Risk Sources

Tidal Flood Risk

As highlighted in the OPW Suir CFRAM Hydrology Report (Report No. 1891_RP_ Hydrology Report Draft Final_Rev14), the Suir River tidal influence extent is located 2.5km upstream of Carrick-On-Suir. The Suir Island Infrastructure Links proposed development is not at risk of coastal or tidal flooding.

Pluvial Flood Risk

The proposed development is not at risk from Pluvial Flooding from existing or proposed surface water drainage systems. The existing surface water drainage systems, located on The Quays, Suir Island car park and Raheen Road will be upgraded as highlighted in **Section 3** of this report.

Fluvial Flood Risk

The Office of Public Works (OPW) guidelines publication, "The Planning System and Flood Risk Management, Guidelines for Planning Authorities" published in November 2009 states that flood protection structures should be ignored when determining the correct flood zone for a proposed development. Thus, the development is considered to be in Flood Zone A, even though the development is defended by structures providing protection for events up to the 1-in-100-year plus 20% climate change events.

Groundwater Flood Risk

The OPW Flood Maps website (https://www.floodinfo.ie/map/floodmaps/) and Geological Survey Ireland Spatial Resources website (Geological Survey Ireland (Groundwater Flooding Data Viewer)) were used to assess the risk of groundwater flooding for the proposed development. Based on the above sources, the proposed development was found not to be at risk to groundwater flooding.

Increasing Flood Risk Downstream or Upstream

The proposed development poses an imperceptible risk of increasing flood risk either upstream or downstream in the River Suir. The northern bridge crossing will require one support pier, located in the northern reach and the southern bridge crossing will require two support piers on either side of the southern river reach as shown on the preliminary bridge design drawings included in **Appendix E**. The bridge decks are so designed to have sufficient freeboard between the deck soffit levels and/or flood water levels/existing flood defence structures.

In support of the Application for Consent under Section 50 of the Arterial Drainage Act, 1945 & EU Regulations SI 122 of 2010 to construct bridges across the Suir River and existing flood defences, the OPW requested that Hydraulic Modelling be conducted to determine the effect of constructing the bridge piers in Flood Zone A.

The outcomes of the hydraulic modelling conducted to determine if the construction of the bridge support piers in the floodplain would increase flood risk upstream or downstream of the proposed development, found that:

- For the 1% AEP event; flood water levels upstream can potentially be increased by 5mm and 3mm downstream of the northern bridge crossing;
- For the 1% AEP event; flood water levels upstream can potentially be increased by 35mm and 8mm downstream of the southern bridge crossing;

For more information refer to the Suir Island Infrastructure Links Hydraulic Modelling Report No. RPT-20_071-055 and **Section 7.2.2** of this report.

7.1.2 Sequential Approach

The purpose of the sequential approach as set out in the OPW guidelines publication, "The Planning System and Flood Risk Management, Guidelines for Planning Authorities" is to assess flood risks for planning applications to ensure that developments, particularly new developments, are primarily directed towards land that is at low risk of flooding. As the purpose of this development is to promote pedestrian access to Suir Island, which is delineated as a high-flood-risk area, the complete avoidance of flood risk is not possible. Thus, the sequential approach methodology was followed to evaluate the different development elements in terms of the Flood Zones and Vulnerability Categories. Refer to Table 7-1 below for the outcomes of the sequential approach. As highlighted in **Section 7.1.1**, existing flood defences should be ignored when determining the appropriate flood zone.

Table 7-1: Proposed development flood zone and vulnerability classification

Development Elements	Flood Zone	Vulnerability Category
North Plaza		
Amenities open space and plaza	**Zone A**	Water compatible
Redevelopment of Quay Steet surfacing/drainage	**Zone A**	Less vulnerable
Access ramps, stairs and walkways, cycle lanes	**Zone A**	Less vulnerable
North Bridge Crossing		
Abutments	**Zone A**	Less vulnerable
Piers (Total 1 No.)	**Zone A**	Less vulnerable
Bridge Deck	**Zone A**	Less vulnerable
Suir Island		
Walkways, access ramps	**Zone A**	Less vulnerable
Amenities open space	**Zone A**	Water compatible
South Bridge Crossing		
Abutments	**Zone A**	Less vulnerable
Piers (Total 2 No.)	**Zone A**	Less vulnerable
Bridge Deck	**Zone A**	Less vulnerable
Raheen Road (south arrival point)		
Access ramps, stairs and walkways, cycle lanes	**Zone A**	Less vulnerable
Resurfacing of Raheen road and surface water drainage	**Zone A**	Less vulnerable

7.1.3 Justification Test

As highlighted in **Section 7.1.2**, the Suir Island Infrastructure Links proposed development is considered to be in Flood Zone A with the development elements consisting of local transport infrastructure, pedestrian infrastructure, amenities open space and recreational facilities, which is categorised as "Less Vulnerable" to "Water Compatible" infrastructure according to the guideline. Table 7-2 below specifies that for a development located in Flood Zone A and consisting of "Less Vulnerable" elements, a detailed Justification is required to motivate the appropriateness of the development being considered for an area of high flood risk.

Table 7-2: Matrix of vulnerability versus flood zone to illustrate appropriate development

Vulnerability Category	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

The OPW guideline sets out that the following criteria must be satisfied whilst applying the Justification Test (Table 7-3) when considering proposal for developments, which may be vulnerable to flooding:

- The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of these Guidelines.
- The proposal has been subject to an appropriate flood risk assessment that demonstrates:
  - i. The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk;
  - ii. The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;
  - iii. The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access; and
  - iv. The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.

Table 7-3: Justification Test Criteria-Assessment

Criteria Ref	OPW Criteria	CSEA Assessment
1	The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has	The proposed development aligns with the core strategy/objectives as set out in the Tipperary County Development Plan (2022 – 2028). The proposed development forms part of the local strategy to transform Suir Island into the "Green Heart of

	been adopted or varied taking account of these Guidelines.	Clonmel" as highlighted in the Clonmel & Environ Development Plan 2013 – 2019. Hence, the subject lands of the proposed development meet the operative developments plans of Tipperary County Council.
2	The proposal has been subject to an appropriate flood risk assessment that demonstrates:	
2(i)	The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk	• The development will not significantly increase flood risk upstream or downstream of the proposed development as detailed in the Stage 3 Detailed Flood Risk Assessment Report "Suir Island Hydraulic Modelling Report (RPT-20_071-055)" contained in Appendix C of the OPW Application for Consent under Section 50 of the Arterial Drainage Act, 1945 & EU Regulations SI 122 of 2010, Report No. RPT-20_071-019. • The proposed development is so designed not to adversely impact on the operation of the Clonmel Flood Defence Scheme infrastructure or significantly increase the flood levels as determined in the OPW Suir CFRAM. • The proposed development is so designed to be located in the defended areas indicated on the Suir CFRAM Study Clonmel Scheme Fluvial Flood Extent Map Drawing O16CLN_EXDCD_F0_45 and 46 included in **Appendix B**. • Refer to criteria 2(ii) below for mitigation measures included in the design to counteract increasing flood risk upstream or downstream of the development.
2(ii)	The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible.	• The proposed development includes measures to minimise flood risk as summarised below: - The proposed North Plaza is located behind the flood defence wall and demountable barrier system providing protection for the 1-in-100-year recurrence interval plus 20% climate change scenario flood event. - The proposed North Bridge abutments are located behind the defence wall mentioned above and on top of the existing flood protection berm located on Suir Island. Only a single narrow support pier will be constructed on Suir Island in the floodplain. The pier width varies from 410mm to 300mm in diameter and the pile cap will not protrude into the floodplain, thus minimising the impact on existing flood water levels. - The proposed upgrading works on Suir Island is contained to the top of the existing flood defence berm or in the defended Suir Island car park.

		- The existing berm will be upgraded and raised as part of the works, thus decreasing flood risk for Suir Island. - The South Bridge abutments are so designed to integrate into the existing flood defence berm on Suir Island and the existing flood defence wall located along Raheen Road. - The South Bridge consisting of a 75m span will be supported by two narrow support piers constructed in the floodplain on either side of the Slalom Course. - Both the North and South Bridge deck levels are so designed to allow a minimum available freeboard of 300mm between the bridge soffit levels and the 1% Annual Exceedance Probability Flood and can accommodate the 0.1% AEP event without significantly increasing flood risk upstream or downstream of the proposed development. - The bridge supporting structures are so designed to be located in the floodplains and no works will be required in the main River Suir and Slalom Course channels, thus not significantly impacting on the river morphology and hydraulic characteristics. - The proposed development includes the provision of upgrading the existing surface water drainage systems on The Quays, Suir Island Car Park and Raheen Road.
2(iii)	The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access	• The development is so designed as to not impact on the operation of the Clonmel Flood Defence Scheme infrastructure (as highlighted in criteria 2(ii) above) and thus the development does not increase residual flood risk. • Provisions for public awareness and early flood warning are provided by TCC to the best practices.
2(iv)	The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.	As assessed in criteria (1) above, the proposed development is compatible with wider plans.

7.1.4 Source-Pathway-Receptor

A Source-Pathway-Receptor model has been produced to assess the possible sources, likelihood of impacts and pathways by which flood water reaches receptors and also the risk to the receptors that could be affected by potential flooding. Refer to Table 7-4 below for a summary of the Source-Pathway-Receptor.

Table 7-4: Proposed Development S-P-R Model

Flood Type	Source	Path	Receptor	Likelihood	Impact	Risk
Tidal	Suir Estuary	Suir River	People and infrastructure (the proposed development)	Improbable	Moderate	Very Low
Fluvial	Suir River	Suir River	People and infrastructure (the proposed development)	High	High	High
Pluvial	North Plaza Suir Island Raheen Rd	Existing Surface Water Infrastructure	People and infrastructure (the proposed development)	Improbable	Low	Very Low
Groundwater	Rising groundwater levels around site	Open space	People and infrastructure (the proposed development)	Improbable	Low	Very Low
Other sources	Flooding due to human or mechanical errors	Open space	People and infrastructure (the proposed development)	Unlikely	Low	Very Low

7.1.5 Conclusion of Stage 1 and 2 Flood Risk Assessment

The site-specific Flood Risk Assessment for the proposed Suir Island Infrastructure development was carried out in accordance with the Office of Public Works (OPW) guidelines publication, “The Planning System and Flood Risk Management, Guidelines for Planning Authorities”, published in November 2009.

The outcomes of the assessment found the proposed development to be most at risk from Fluvial Flooding occurring in the Suir River. The development is considered to be located in Flood Zone A with the project elements/structures classified as Less Vulnerable to Water-Compatible.

The majority of the development is located within the “Defended Area” as indicated on the Suir CFRAM Study Clonmel Scheme, Fluvial Flood Extent Map Drawing O16CLN_EXDCD_F0_45 and 46 included in **Appendix F**. Only three (3) support piers will be constructed in the floodplain of the River Suir and southern Slalom Course. As per the guideline document, flood defences were ignored when categorising the correct Flood Zone for the proposed development.

As per **Section 7.1.3** of this report and the OPW guideline document, further justification is required for developments categorised as “Less Vulnerable” or “Water Compatible” and located in Flood Zone A. Refer to Table 7-3 summarising the outcomes of the Justification Test Criteria-Assessment. Following

the outcomes of the assessment and compliance with the Justification Test Criteria, the development is considered appropriate for this flood risk area.

7.2 Detailed Flood Risk Assessment

The purpose of the detailed flood risk assessment was to determine water surface elevations for the pre- and post-development scenarios, considering a range of design flood events including climate change scenarios. The Suir Island Hydraulic Modelling Report (RPT-20_071-055) provides a detailed breakdown of the hydrological review and model development. The outcomes of the hydraulic modelling is briefly summarised below.

7.2.1 Hydrological Review

The hydrological review covers key reports and studies completed during the OPW Suir Catchment Flood Risk Assessment and Management (CFRAM) program and available information from the Clonmel Flood Relief Scheme design. The Flood Studies Update methodology was followed to estimate Design Peaks which was used in the hydraulic modelling. Refer to Table 7-4 for the present-day and climate change future scenario flood peaks derived from the hydrological review.

Table 7-5: Design peaks for present-day and future scenarios

Design Peaks including Climate Change Scenarios								
AEP	**50%**	**20%**	**10%**	**5%**	**2%**	**1%**	**0.5%**	**0.1%**
Flow (m^3/s) (Present-day)	245.32	309.84	352.56	393.54	446.58	486.32	525.92	617.65
Flow (m^3/s) (20% CC - MRFS)	294.38	371.81	423.07	472.25	535.90	583.58	631.10	741.18
Flow (m^3/s) (30% CC - HEFS)	318.92	402.79	458.33	511.60	580.55	632.22	683.70	802.95

Where:

- CC- MRFS = Climate Change Mid-Range Future Scenario of 20%
- CC-HEFS = Climate Change High-End Future Scenario of 30%

7.2.2 Hydraulic Modelling

The outcome of the detailed flood risk assessment concluded that the negligible increase in flood water levels as a consequence of constructing the proposed bridges support structures in the Suir River floodplain, would not increase flood risk downstream or upstream of the proposed development. Table 7-5 and 7-6 below summarises the increase in flood water surface elevations for the North Bridge and South Bridge, respectively. The hydraulic model cross sections (XS) indicated in the table below reads from an upstream to downstream orientation.

Table 7-6: North Bridge Increase in Water Surface Elevation

River	Reach	River XS Station	Increase in WSE (m)			
			50% AEP	10% AEP	1% AEP	0.1% AEP
Suir Main	North 03	768.4	0.000	-0.002	0.004	0.041
		724.3	0.000	0.001	0.005	0.045
		704	0.001	-0.001	0.005	0.042
		701	North Bridge Centreline			
		698	0.002	-0.001	0.003	0.040
		687.4	0.002	-0.002	0.001	0.037
		636.4	0.002	0.001	0.004	0.047

Table 7-7: South Bridge Increase in Water Surface Elevation

River	Reach	River XS Station	Increase in WSE (m)			
			50% AEP	10% AEP	1% AEP	0.1% AEP
Suir South	South 02	330.6	0.030	0.037	0.034	0.071
		301.5	0.030	0.036	0.035	0.070
		281	0.032	0.036	0.035	0.069
		278	South Bridge Centreline			
		275	0.000	0.007	0.008	0.043
		258.5	0.001	0.007	0.008	0.044
		224.9	0.001	0.006	0.007	0.042

Appendix A – Development Drawings

Drawing No.	Title
20_071-CSE-00-XX-DR-C-2251	Preferred Overall Option Plan
20_071-CSE-00-XX-DR-C-2252	Preferred Option Plan Sheet 01 of 04
20_071-CSE-00-XX-DR-C-2253	Preferred Option Plan Sheet 02 of 04
20_071-CSE-00-XX-DR-C-2254	Preferred Option Plan Sheet 03 of 04
20_071-CSE-00-XX-DR-C-2255	Preferred Option Plan Sheet 04 of 04
20_071-CSE-00-XX-DR-C-2256	Preferred Option 01 Typical Sections A, B & C
20_071-CSE-00-XX-DR-C-2257	Preferred Option 01 Typical Sections D, E, F & G
20_071-CSE-00-XX-DR-C-3900	Existing & Proposed Quay Plan
20_071-CSE-00-XX-DR-C-3901	Existing & Proposed Raheen Road Plan

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1

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ENGINEERS

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LIGHTING CONSULTANTS

Douglas Carroll
Consulting Engineers

LEGEND :

- SITE BOUNDARY
- PEDESTRIAN BRIDGES - STEEL STRUCTURE - BUSH - HAMMERED CONCRETE FINISH LAID ON A WATERPROOF SURFACE
- VARIOUS SIZES OF STONE PAVING TO FOOTPATH (LIGHT GREY GRANITE AND / OR SANDSTONE)
- STONE AGGREGATE PAVING TO FOOTPATH (SILVER / SANDSTONE)
- ASPHALT FINISH TO ROAD & SHARED SURFACE
- STONE AGGREGATE FINISH TO THE SHARED SURFACE FOR PEDESTRIANS AND BICYCLES (BEIGE/WHITE/LIGHT GREY)
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- STONE KERBS TO PLANTER BED
- EXISTING PATH LINE
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  BIG TREE-SALIX ALBA / SWEETGUM / RED MAPLE
  MEDIUM TREE-RIVER BIRCH / ALNUS GLUTINOSA / BETULA PUBESCENS CARPINUS BETULUS **SMALL TREE**-CRATAEGUS
- EXISTING TREE

Rev	Description	Drawn	Checked	Date
PL01	ISSUED FOR PLANNING	FO	LP	22.09.23

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Client: TIPPERARY COUNTY COUNCIL

Project: SUIR ISLAND INFRASTRUCTURE LINKS

Dwg. Title: PREFERRED OPTION 01 OVERALL PLAN

Drawn By	Date	CSEA Job No.
FO	SEPT 2023	20_071
Checked By: LP	Scale: 1:1000 @ A1	

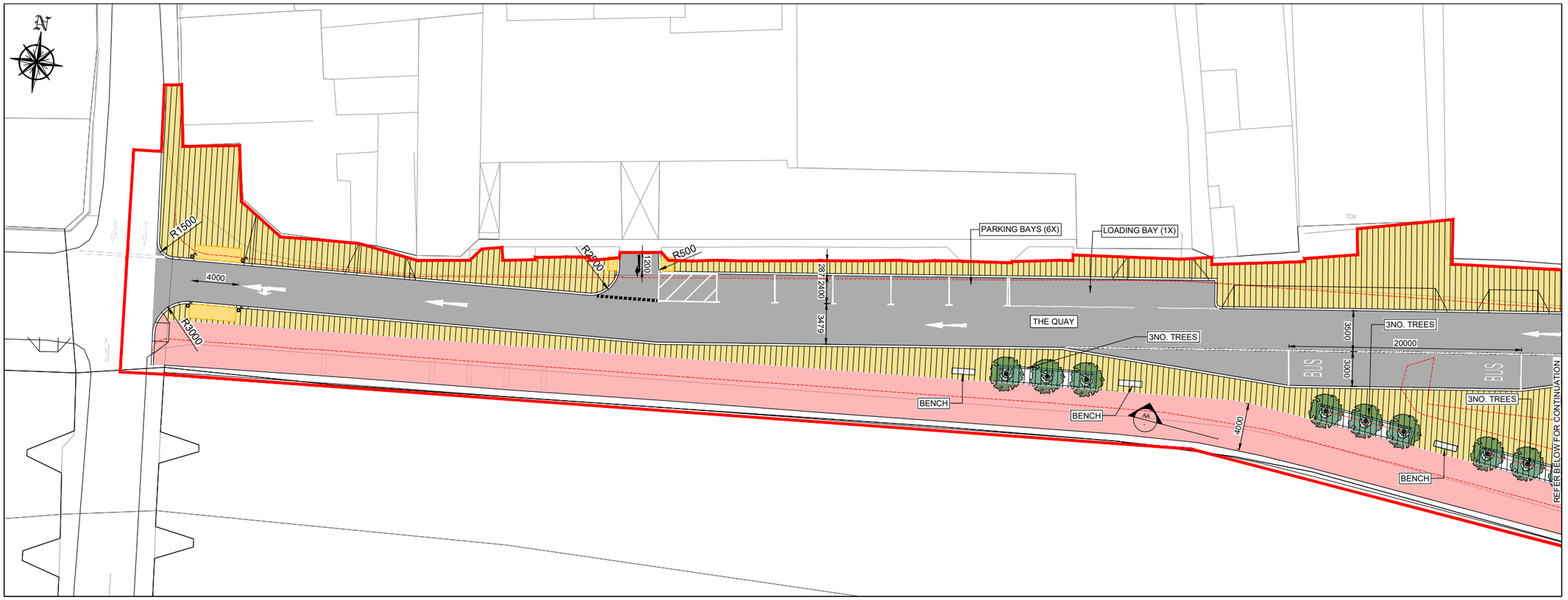
Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
20_071	CSE	GEN	XX	DR	C	2251

S2 — Status Code — SUITABLE FOR INFORMATION — Suitability Description

PL01 — Revision — ISSUED FOR PLANNING — Project Status

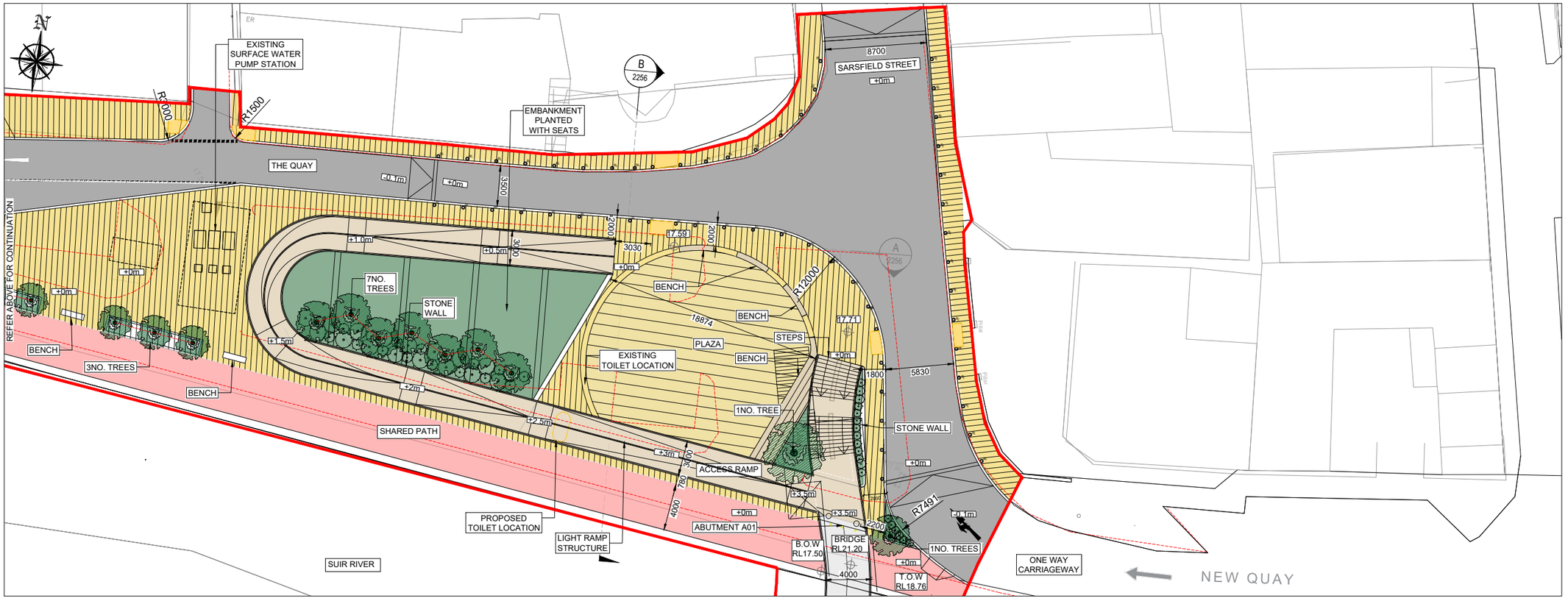
DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1



PLAN 1

SCALE 1:200



PLAN 2

SCALE 1:200

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LIGHTING CONSULTANTS

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Consulting Engineers

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- EXISTING TREE

Rev	Description	Drawn	Checked	Date

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PL01	ISSUED FOR PLANNING	FO	LP	22.09.23

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Client: TIPPERARY COUNTY COUNCIL

Project: SUIR ISLAND INFRASTRUCTURE LINKS

Dwg. Title: PREFERRED OPTION 01 NORTH PLAZA PLAN SHEET 01 OF 04

Drawn By	Date	
FO	SEPT 2023	20_071
Checked By	Scale	CSEA Job No.
LP	1:200 @ A1	

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
20_071	CSE	00	XX	DR	C	2252

S2 — SUITABLE FOR INFORMATION (Status Code / Suitability Description)

PL01 — ISSUED FOR PLANNING (Revision / Project Status)

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

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- EXISTING TREE

Rev	Description	Drawn	Checked	Date
PL01	ISSUED FOR PLANNING	FO	LP	22.09.23

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Client: TIPPERARY COUNTY COUNCIL

Project: SUIR ISLAND INFRASTRUCTURE LINKS

Dwg. Title: PREFERRED OPTION 01 CARPARK PLAN SHEET 02 OF 04

Drawn By	Date	CSEA Job No.
FO	SEPT 2023	20_071
Checked By	Scale	
LP	1:200 @ A1	

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
20_071	CSE	00	XX	DR	C	2253

Status Code: S2 — SUITABLE FOR INFORMATION

Revision: PL01 — ISSUED FOR PLANNING

PLAN 3
SCALE 1:200

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Tipperary County Council

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ENGINEERS

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ENVIRONMENTAL CONSULTANTS

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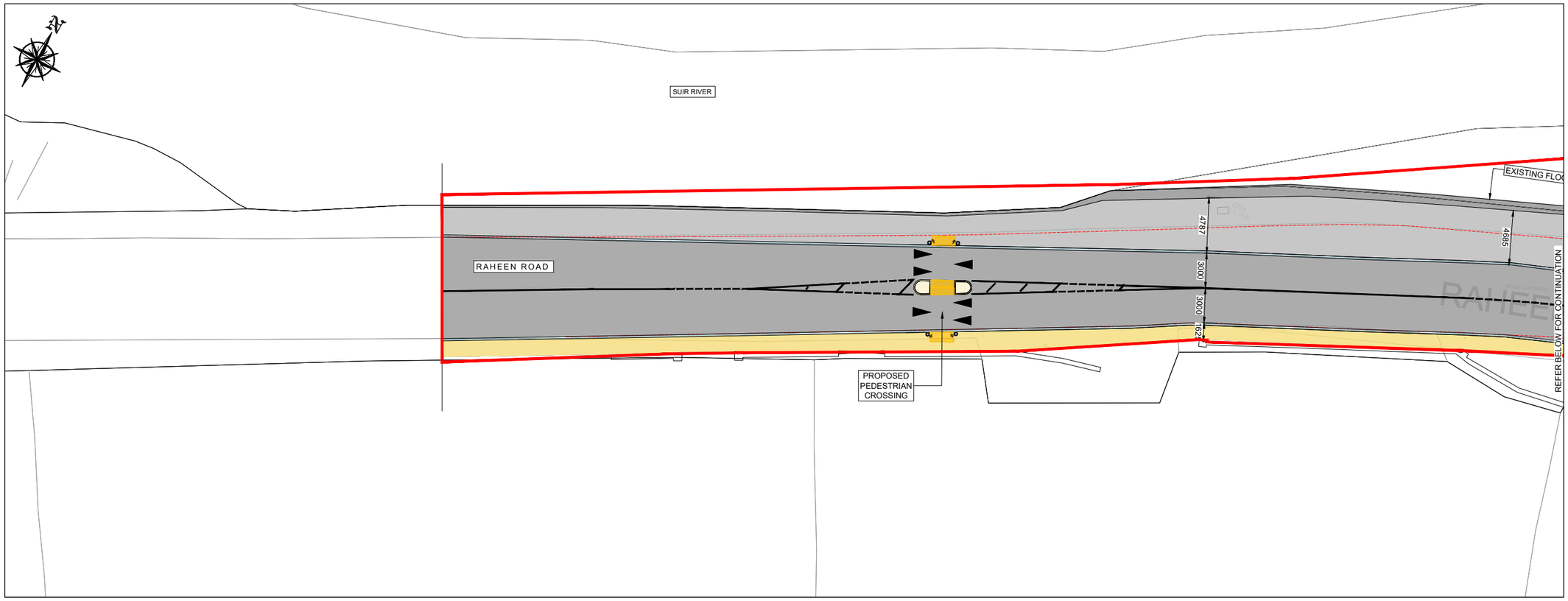
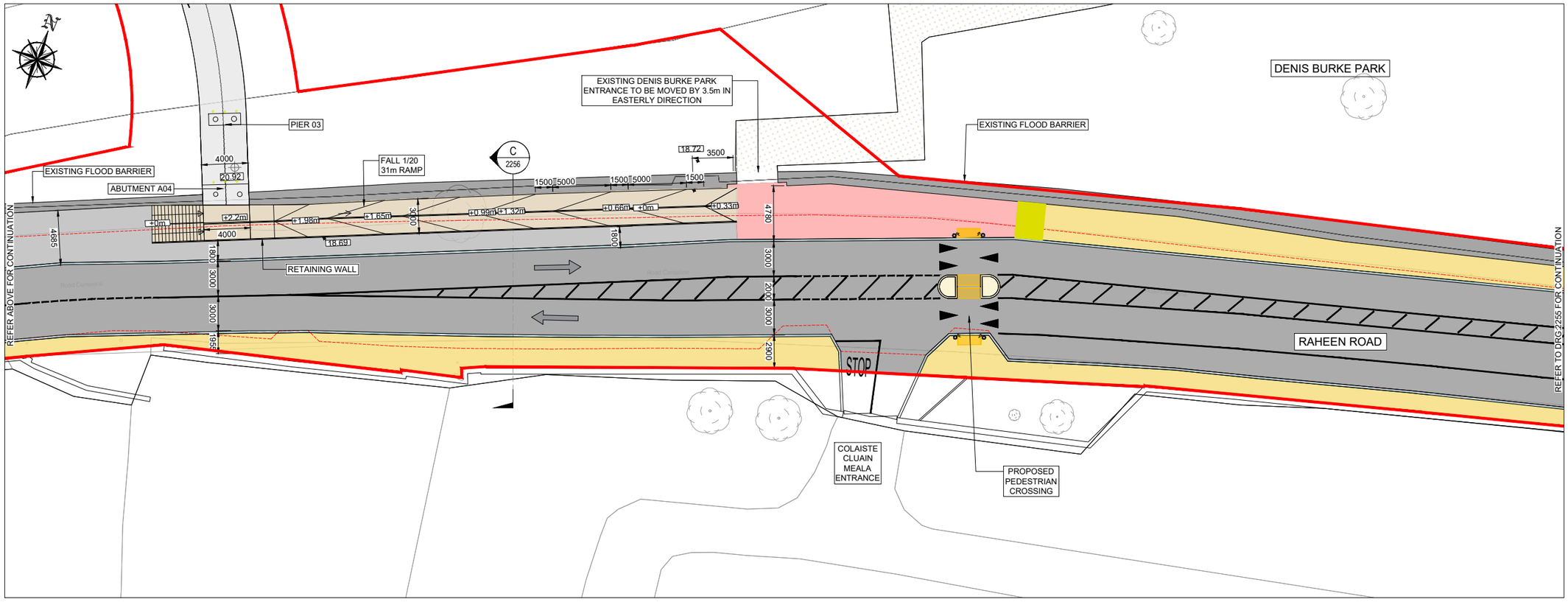
LIGHTING CONSULTANTS

Douglas Carroll
Consulting Engineers



PLAN 4

SCALE 1:200



PLAN 5

SCALE 1:200

LEGEND :

- SITE BOUNDARY
- PEDESTRIAN BRIDGES - STEEL STRUCTURE - BUSH - HAMMERED CONCRETE FINISH LAID ON A WATERPROOF SURFACE
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PL01	ISSUED FOR PLANNING	FO	LP	22.09.23

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Project: SUIR ISLAND INFRASTRUCTURE LINKS

Dwg. Title: PREFERRED OPTION 01 SOUTH ARRIVAL PLAN SHEET 03 OF 04

Drawn By: FO | Date: SEPT 2023

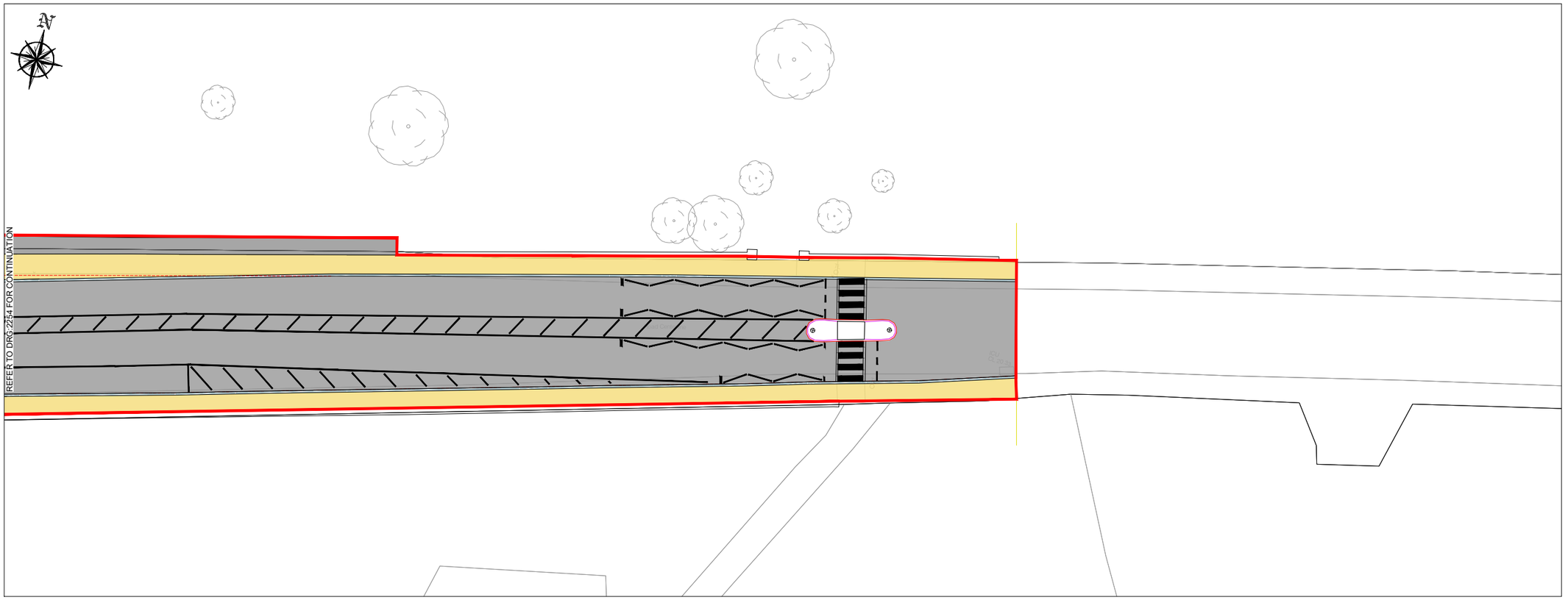
Checked By: LP | Scale: 1:200 @ A1

CSEA Job No.: 20_071

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
20_071	CSE	00	XX	DR	C	2254

Status Code: S2 — SUITABLE FOR INFORMATION

Revision: PL01 — ISSUED FOR PLANNING



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A1

CLIENT

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Tipperary County Council

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BRIDGES

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INGÉNIERIE

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LIGHTING CONSULTANTS

Douglas Carroll
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LEGEND :

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PL01	ISSUED FOR PLANNING	FO	LP	22.09.23

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Client: TIPPERARY COUNTY COUNCIL

Project: SUIR ISLAND INFRASTRUCTURE LINKS

Dwg. Title: PREFERRED OPTION 01 SOUTH ARRIVAL PLAN SHEET 04 OF 04

Drawn By: FO | Date: SEPT 2023

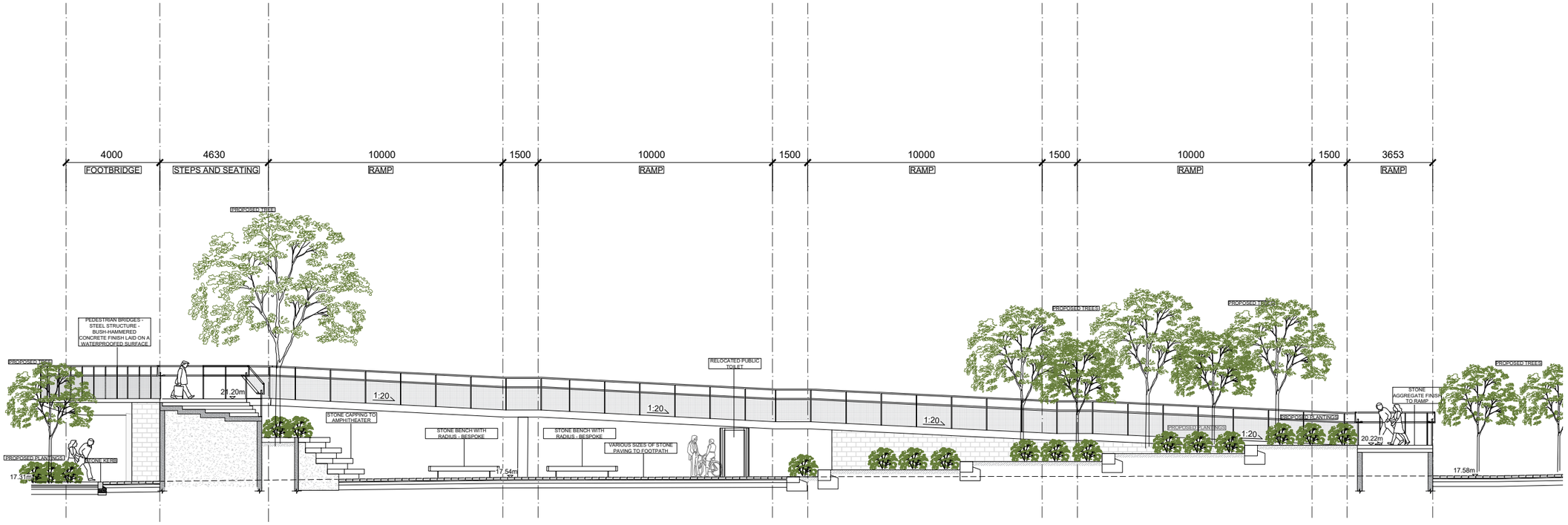
Checked By: LP | Scale: 1:200 @ A1

CSEA Job No.: 20_071

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
20_071	CSE	00	XX	DR	C	2255

Status Code: S2 — SUITABLE FOR INFORMATION

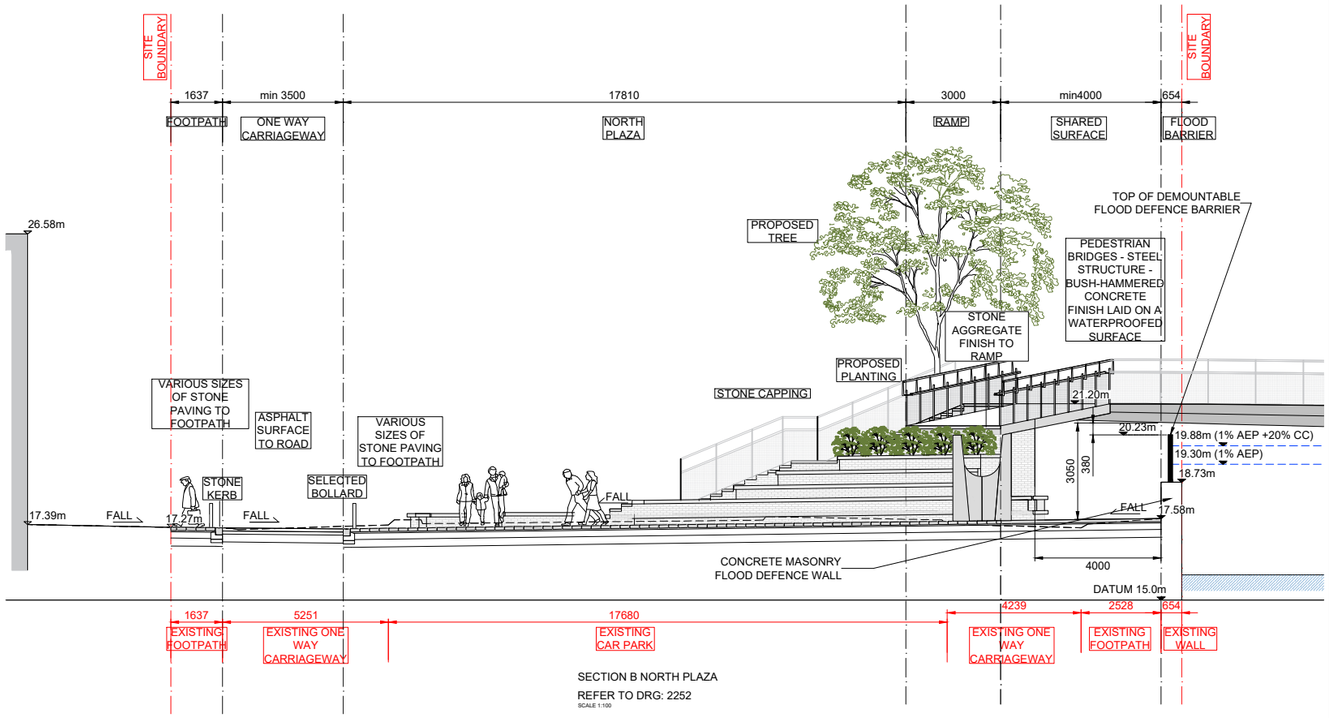
Revision: PL01 — Project Status: ISSUED FOR PLANNING



SECTION A NORTH PLAZA

REFER TO DRG: 2252

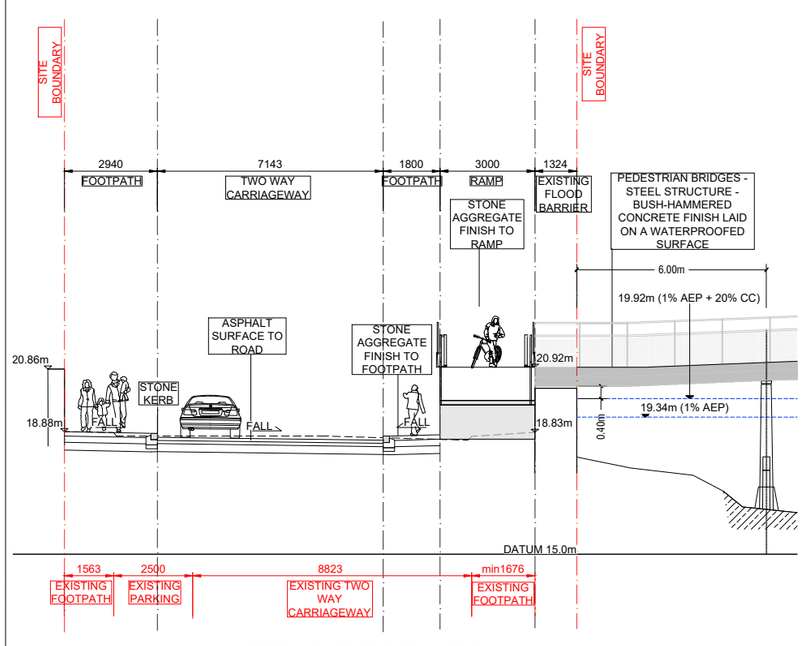
SCALE 1:100



SECTION B NORTH PLAZA

REFER TO DRG: 2252

SCALE 1:100



SECTION C RAHEEN ROAD ARRIVAL POINT

REFER TO DRG: 2255

SCALE 1:100

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Rev	Description	Drawn	Checked	Date
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PL01	ISSUED FOR PLANNING	FO	LP	22.09.23

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Client: TIPPERARY COUNTY COUNCIL

Project: SUIR ISLAND INFRASTRUCTURE LINKS

Dwg. Title: PREFERRED OPTION 01 TYPICAL SECTIONS A, B & C

Drawn By: FO | Date: SEPT 2023

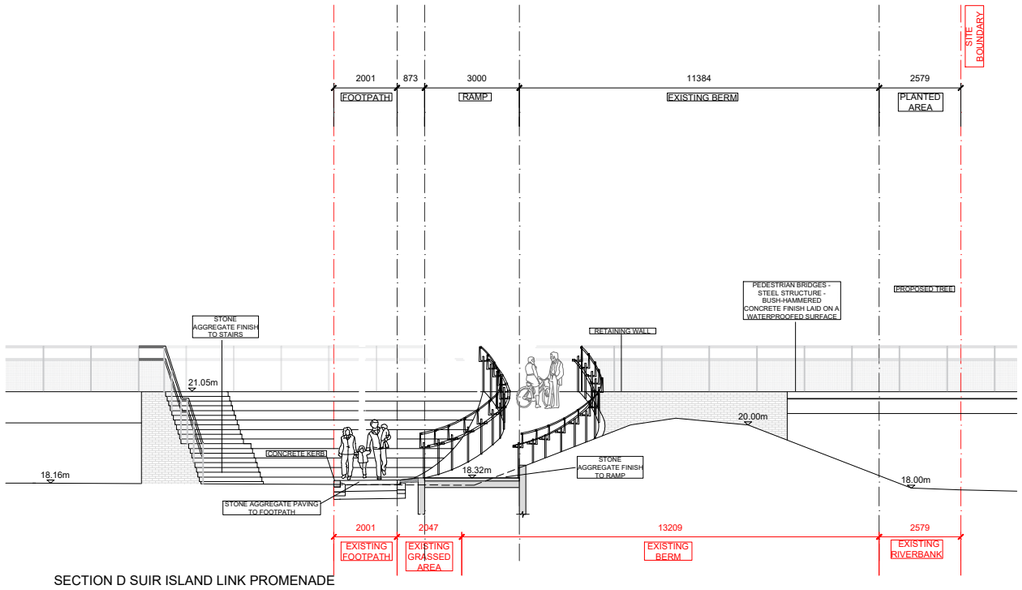
Checked By: LP | Scale: 1:100 @ A1

CSEA Job No.: 20_071

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
20_071	CSE	GEN	XX	DR	C	2256

Status Code: S2 — SUITABLE FOR INFORMATION

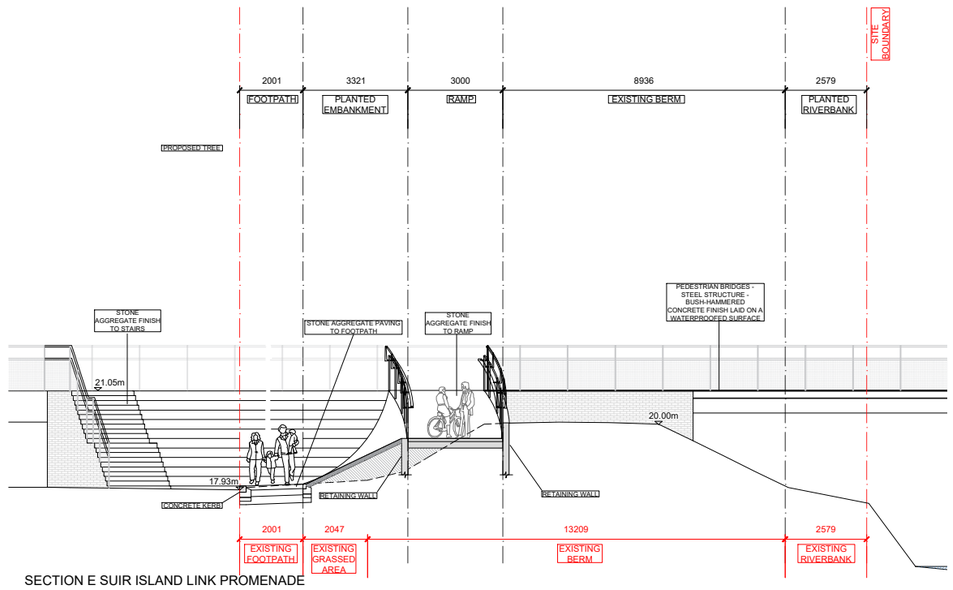
Revision: PL01 — ISSUED FOR PLANNING



SECTION D SUIR ISLAND LINK PROMENADE

REFER TO DRG: 2254

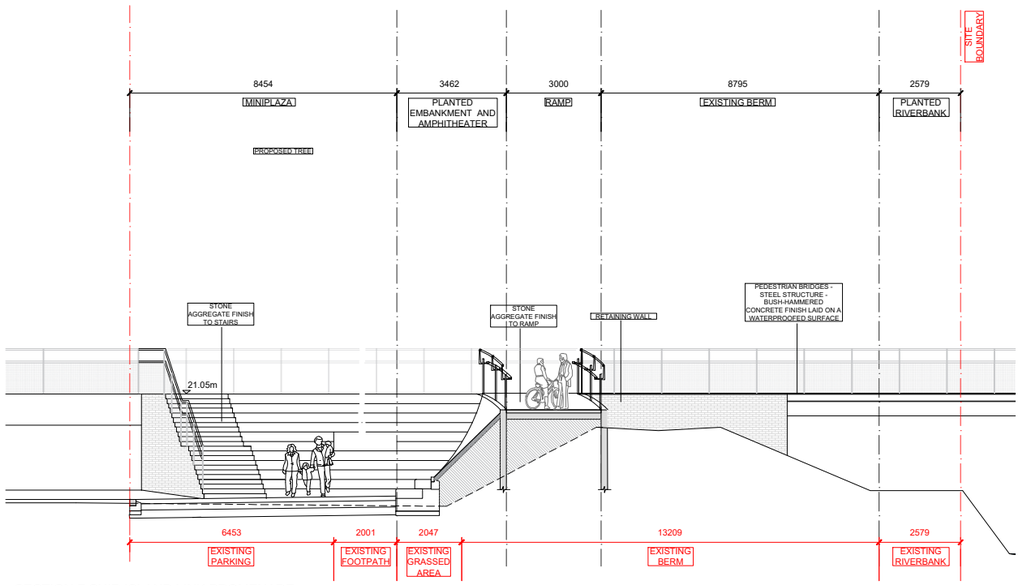
SCALE 1:100



SECTION E SUIR ISLAND LINK PROMENADE

REFER TO DRG: 2254

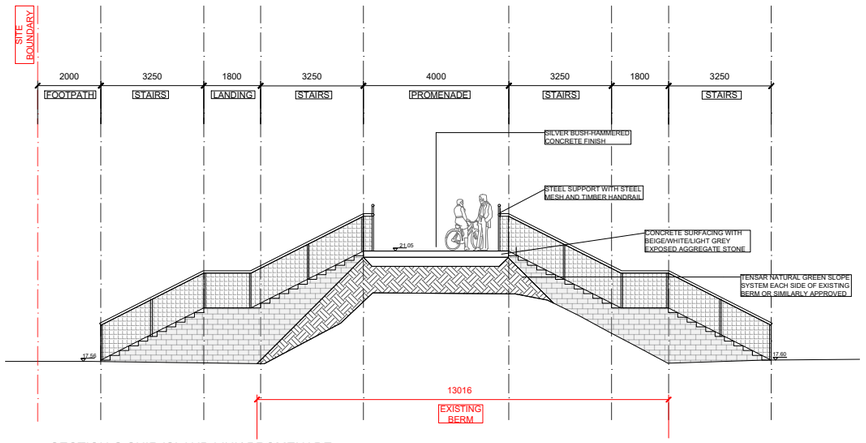
SCALE 1:100



SECTION F SUIR ISLAND LINK PROMENADE

REFER TO DRG: 2254

SCALE 1:100



SECTION G SUIR ISLAND LINK PROMENADE

REFER TO DRG: 2254

SCALE 1:100

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

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Rev	Description	Drawn	Checked	Date

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PL01	ISSUED FOR PLANNING	FO	LP	22.09.23

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Client: TIPPERARY COUNTY COUNCIL

Project: SUIR ISLAND INFRASTRUCTURE LINKS

Dwg. Title: PREFERRED OPTION 01 TYPICAL SECTIONS D, E, F & G

Drawn By: FO | Date: SEPT 2023

Checked By: LP | Scale: 1:100 @ A1 | CSEA Job No.: 20_071

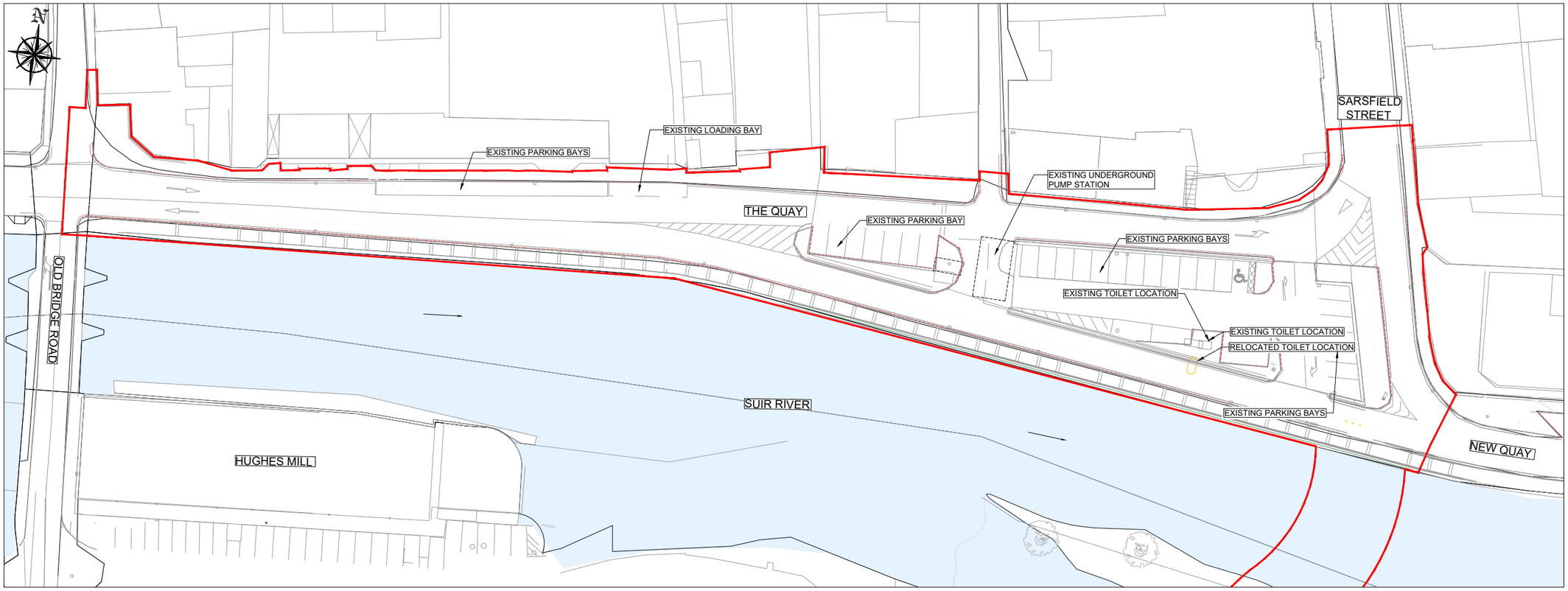
Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
20_071	CSE	GEN	XX	DR	C	2257

Status Code: S2 — SUITABLE FOR INFORMATION

Revision: PL01 — ISSUED FOR PLANNING

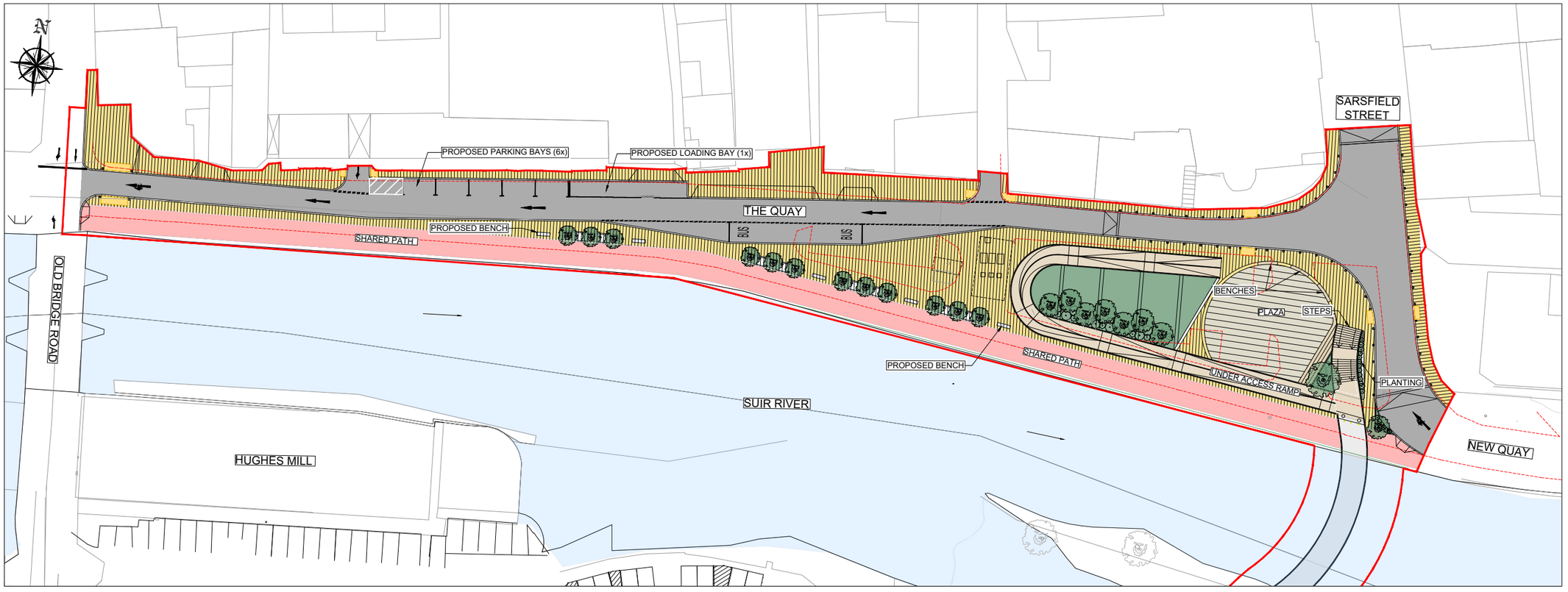
DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1



EXISTING QUAY PLAN

SCALE 1:350



PROPOSED QUAY PLAN

SCALE 1:350

CLIENT

Comhairle Contae Thiobraid Árann
Tipperary County Council

ARCHITECTS

dhbarchitects

ARCHEOLOGISTS

CourtneyDeery
ARCHAEOLOGY & CULTURAL HERITAGE

BRIDGES

MARC MIMRAM
ARCHITECTURE INGÉNIERIE

ENGINEERS

Clifton Scannell Emerson Associates

ENVIRONMENTAL CONSULTANTS

awnconsulting
A Trinity Consultants Company

LIGHTING CONSULTANTS

Douglas Carroll
Consulting Engineers

LEGEND :

- SITE BOUNDARY
- PEDESTRIAN BRIDGES - STEEL STRUCTURE - BUSH - HAMMERED CONCRETE FINISH LAID ON A WATERPROOF SURFACE
- VARIOUS SIZES OF STONE PAVING TO FOOTPATH (LIGHT GREY GRANITE AND / OR SANDSTONE)
- STONE AGGREGATE PAVING TO FOOTPATH (SILVER / SANDSTONE)
- ASPHALT FINISH TO ROAD & SHARED SURFACE
- STONE AGGREGATE FINISH TO THE SHARED SURFACE FOR PEDESTRIANS AND BICYCLES (BEIGE/WHITE/LIGHT GREY)
- EXPOSED STONE AGGREGATE FINISH TO STEPS AND RAMP (BEIGE/WHITE/LIGHT GREY)
- GRASSED AND PLANTED AREAS
- TACTILE SURFACE TO PEDESTRIAN CROSSINGS
- STONE KERBS TO FOOTPATH
- STONE KERBS TO PLANTER BED
- EXISTING PATH LINE
- SELECTED BOLLARD (BL)
- PROPOSED PLANTING (SHRUBS / WILDFLOWER)
- PROPOSED TREE:
  BIG TREE-SALIX ALBA / SWEETGUM / RED MAPLE
  MEDIUM TREE-RIVER BIRCH / ALNUS GLUTINOSA / BETULA PUBESCENS CARPINUS BETULUS **SMALL TREE**-CRATAEGUS
- EXISTING TREE

Rev	Description	Drawn	Checked	Date

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PL01	ISSUED FOR PLANNING	FO	LP	22.09.23

Clifton Scannell Emerson Associates

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Client: TIPPERARY COUNTY COUNCIL

Project: SUIR ISLAND INFRASTRUCTURE LINKS

Dwg. Title: EXISTING & PROPOSED QUAY PLAN

Drawn By	Date	CSEA Job No.
FO	SEPT 2023	20_071
Checked By	Scale	
LP	1:350 @ A1	

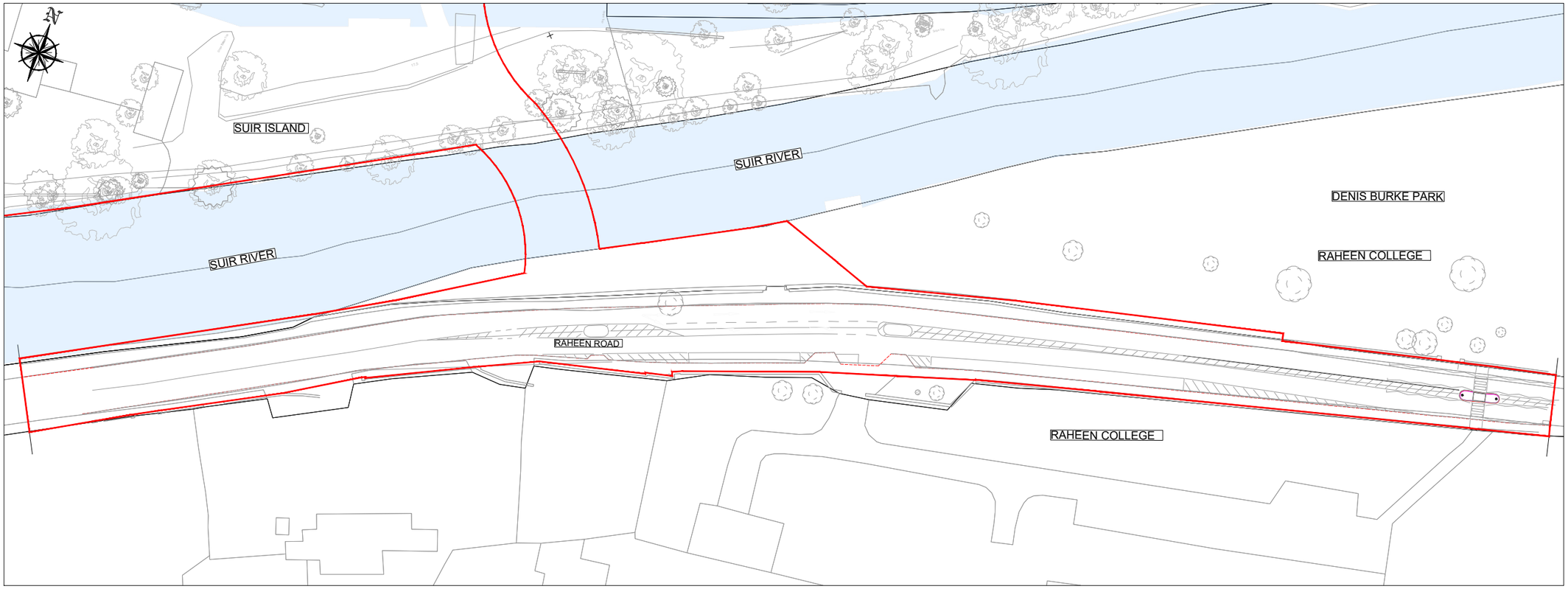
Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
20_071	CSE	GEN	XX	DR	C	3900

S2 — SUITABLE FOR INFORMATION (Status Code / Suitability Description)

PL01 — ISSUED FOR PLANNING (Revision / Project Status)

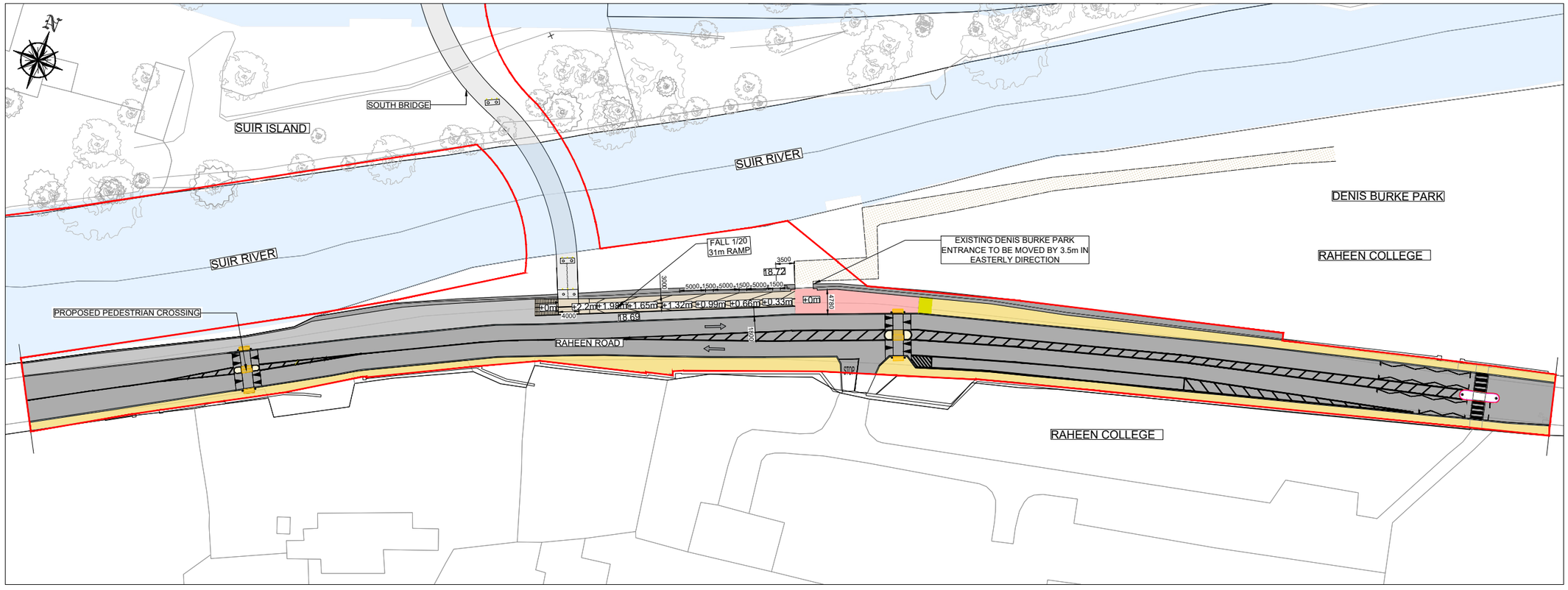
DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1



EXISTING RAHEEN ROAD PLAN

SCALE 1:450



PROPOSED RAHEEN ROAD PLAN

SCALE 1:450

CLIENT

Comhairle Contae Thiobraid Árann
Tipperary County Council

ARCHITECTS

dhbarchitects

ARCHEOLOGISTS

CourtneyDeery
ARCHAEOLOGY & CULTURAL HERITAGE

BRIDGES

MARC MIMRAM
ARCHITECTURE INGÉNIERIE

ENGINEERS

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LEGEND :

- SITE BOUNDARY
- PEDESTRIAN BRIDGES - STEEL STRUCTURE - BUSH - HAMMERED CONCRETE FINISH LAID ON A WATERPROOF SURFACE
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- EXISTING TREE

Rev	Description	Drawn	Checked	Date

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PL01	ISSUED FOR PLANNING	FO	LP	22.09.23

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Client: TIPPERARY COUNTY COUNCIL

Project: SUIR ISLAND INFRASTRUCTURE LINKS

Dwg. Title: EXISTING & PROPOSED RAHEEN RD PLAN

Drawn By: FO | Date: SEPT 2023

Checked By: LP | Scale: 1:450 @ A1

CSEA Job No.: 20_071

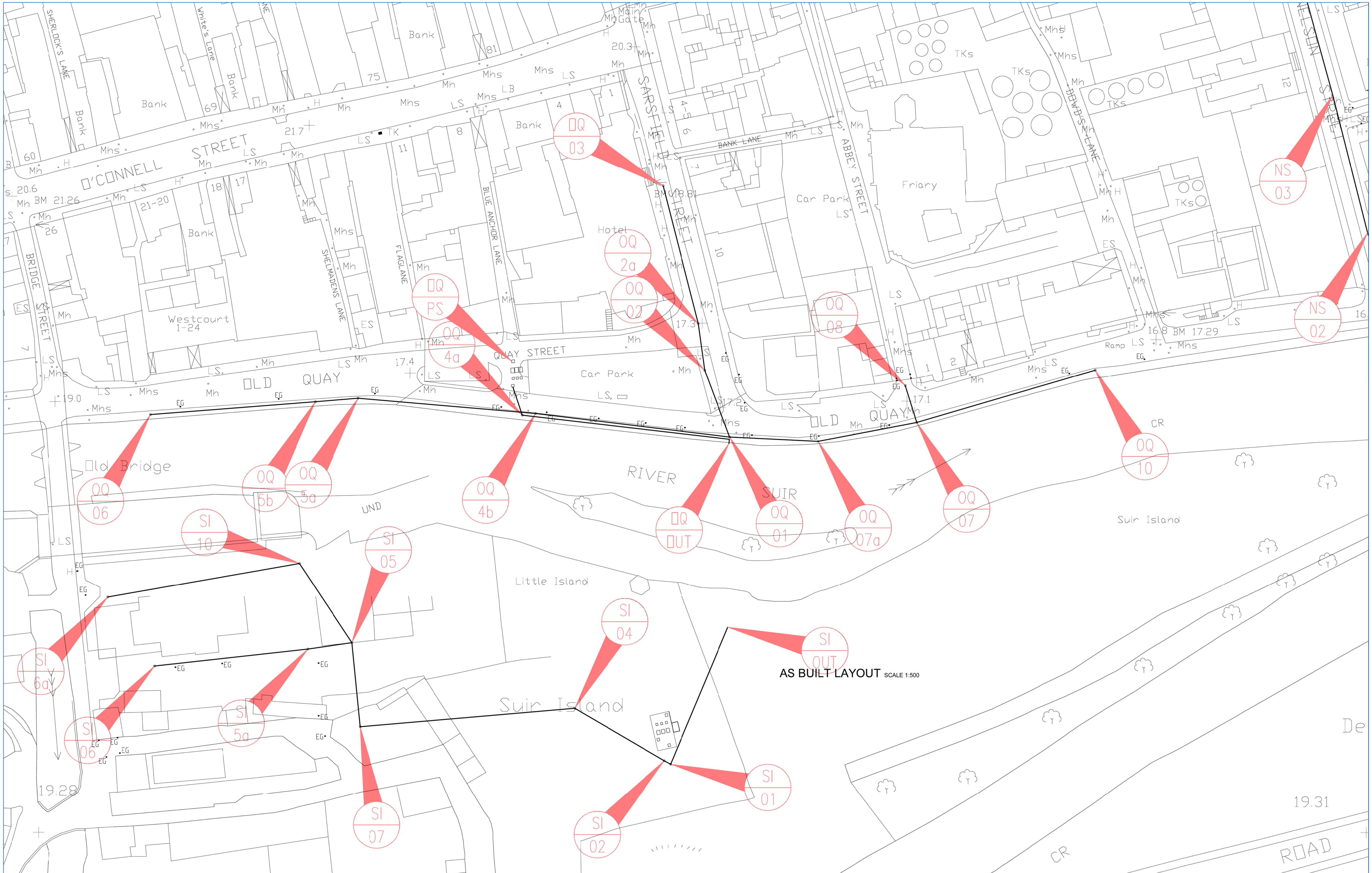
Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
20_071	CSE	GEN	XX	DR	C	3901

Status Code: S2 — SUITABLE FOR INFORMATION

Revision: PL01 — Project Status: ISSUED FOR PLANNING

Appendix B – Surface Water

Document Ref No.	Title
Drawing 1401-01	Surface Water As Built for North Plaza and Suir Island
Drawing A5243-C064	Proposed Storm Water Drainage Old Quay Sheet 1 of 2
Drawing A5243-C066	Proposed Storm Water Drainage Suir Island
A5243-N506-F	Suir River (Clonmel West) Drainage Scheme Flood Protection Scheme (Sheet 5 of 6)
20_071-CSE-GEN-XX-DR-C-2501	Proposed Combined Surface Water and Foul Water Layout Plan Sheet 01 of 04
20_071-CSE-GEN-XX-DR-C-2502	Proposed Combined Surface Water and Foul Water Layout Plan Sheet 02 of 04
20_071-CSE-GEN-XX-DR-C-2503	Proposed Combined Surface Water and Foul Water Layout Plan Sheet 03 of 04
20_071-CSE-GEN-XX-DR-C-2504	Proposed Combined Surface Water and Foul Water Layout Plan Sheet 04 of 04
20_071 – Suir Island	Innovyze Microdrainage Surface Drainage Modelling Report



WARD & BURKE CONSTRUCTION LIMITED

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Email: info@wardandburke.ie

GENERAL NOTES:

G1. THIS DRAWING TO BE READ WITH ALL OTHER RELEVANT ENGINEERS DRAWINGS.

G2. ANY QUERIES OR DISCREPENCIES ARE TO BE REFERRED TO THE ENGINEER IMMEDIATELY.

G3. FIGURED DIMENSIONS ONLY TO BE READ.

G4. ALL DIMENSIONS TO BE IN MILLIMETRES UNLESS NOTED OTHERWISE.

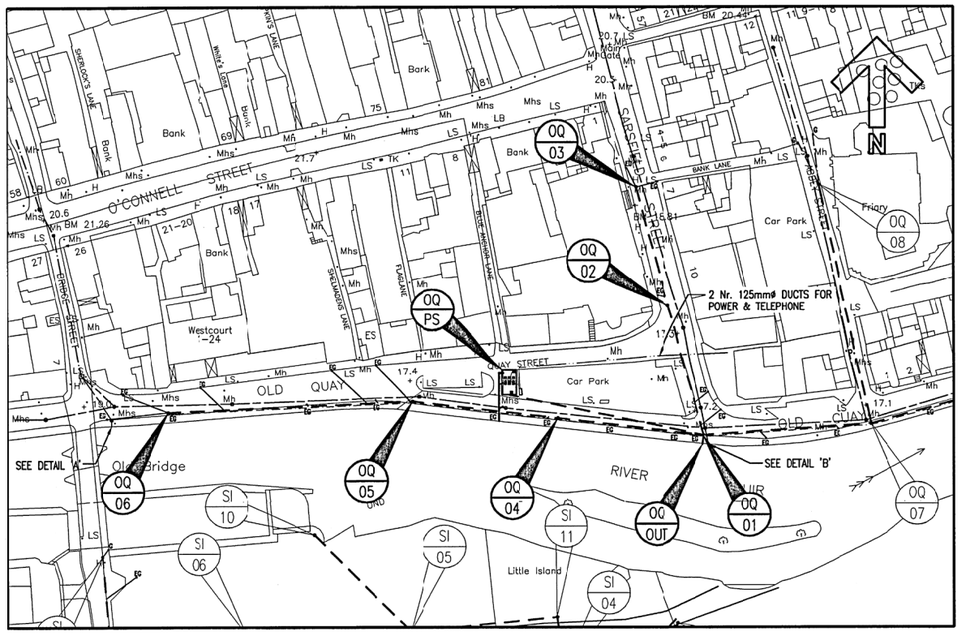
G5. ALL CONSTRUCTION JOINTS TO CONTAIN WATERSTOPS

No.	Date	DW/CH	Amendment / Issue	App
-	14/02/14	NC. / NC.	SECTIONS	NC

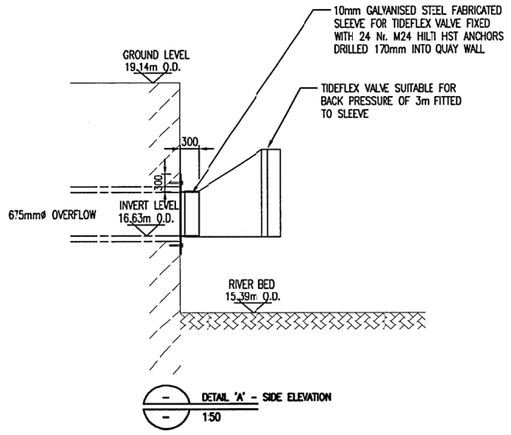
Client	Project	Drawing Number	Rev
South Tipperary County Council	RIVER SUIR (CLONMEL) DRAINAGE SCHEME	1401-01	-

Title: AS BUILT LAYOUT

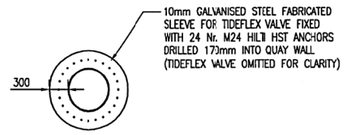
Drawn By	Checked By	Approved By	Date	Scale / Sheet Size
NC			12/02/14	1:500 @ A1



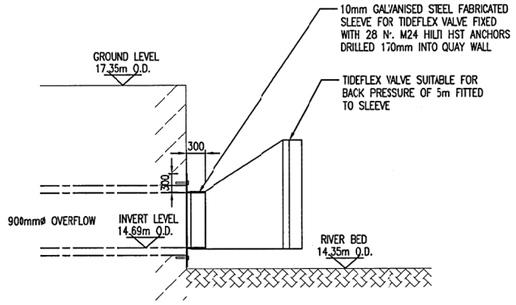
LOCATION PLAN
SCALE 1:1,000



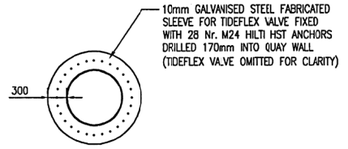
DETAIL 'A' – SIDE ELEVATION
1:50



DETAIL 'A' – FRONT ELEVATION
1:50



DETAIL 'B' – SIDE ELEVATION
1:50



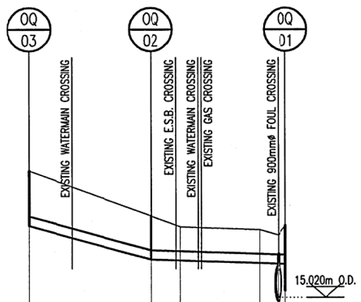
DETAIL 'B' – FRONT ELEVATION
1:50

Notes

KEY PLAN
SCALE 1:10,000

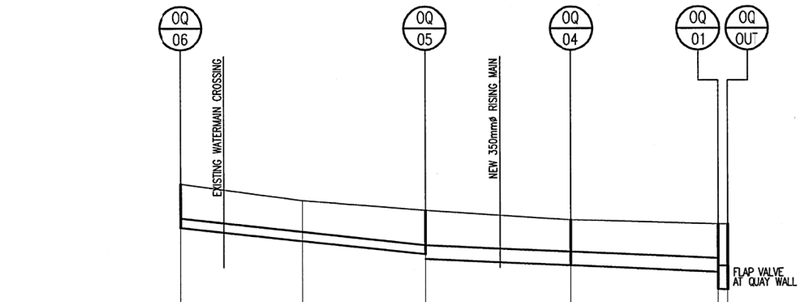
LEGEND:

FOUL SEWER EXISTING	
STORM SEWER EXISTING	
STORM SEWER PROPOSED	
COMBINED SEWER EXISTING	
LANDDRAIN	
EXISTING GULLY TO BE REVISED	EG
NEW GULLY	G



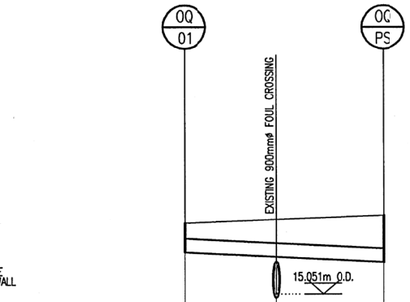
VERTICAL SCALE 1:100
HORIZONTAL SCALE 1:1,000
DATUM 10m O.D.
(MALIN HEAD)

GROUND LEVEL	19.110	17.651	17.300	17.200	17.033	17.348
INVERT LEVEL	17.331	16.244			16.097	15.241
PIPE DIAMETER	300					
GRADIENT	37	300				
CHAINAGE	0.0	39.9	49.5	75.6	81.6	84.0



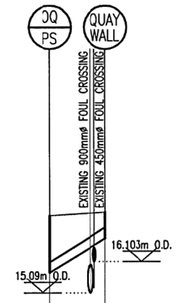
VERTICAL SCALE 1:100
HORIZONTAL SCALE 1:1,000
DATUM 10m O.D.
(MALIN HEAD)

GROUND LEVEL	18.650	18.109	17.794	17.482	17.348	17.348	
INVERT LEVEL	17.237		16.381	16.231	16.008	15.785	15.741	15.236
PIPE DIAMETER	300			450				→750
GRADIENT	93			215				→600
CHAINAGE	0.0	40.0	80.0	128.0	176.0	179.0		



VERTICAL SCALE 1:100
HORIZONTAL SCALE 1:1,000
DATUM 10m O.D.
(MALIN HEAD)

GROUND LEVEL	17.348		17.586
INVERT LEVEL	16.400	16.25	16.075
PIPE DIAMETER	600		
GRADIENT	200		
CHAINAGE	0.0	30	65.0



VERTICAL SCALE 1:100
HORIZONTAL SCALE 1:1,000
DATUM 10m O.D.
(MALIN HEAD)

GROUND LEVEL	17.586		17.700
INVERT LEVEL	15.730		16.867
PIPE DIAMETER	350 DUCTILE IRON		
GRADIENT	-15.8		
CHAINAGE	0.0		18.0

ISSUED FOR TENDER

Rev	Dcte	Drawn	Description	Ch'k'd	App'd
B	18.12.09	DOYAL	ISSUED FOR TENDER	BO'CO	FMc
A	23.10.09	RSEW	ISSUED FOR APPROVAL	BO'CO	DHIC

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OPW
The Office of Public Works
Oifig na nOibreacha Poiblí

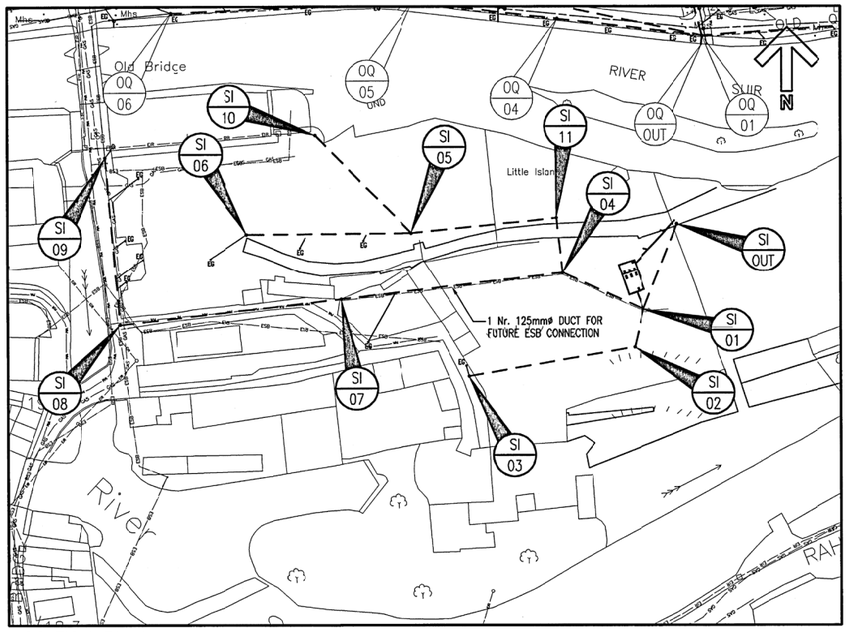
OFFICE OF PUBLIC WORKS
ENGINEERING SERVICES
51 St. STEPHENS GREEN
DUBLIN 2

Title
SUIR RIVER (CLONMEL NORTH & EAST)
DRAINAGE SCHEME
CIVIL WORKS CONTRACT

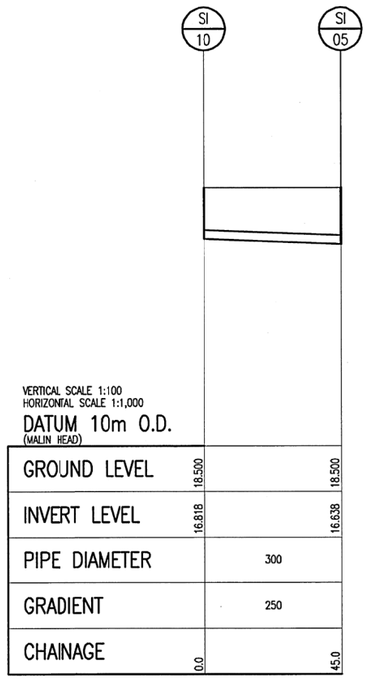
PROPOSED STORM WATER DRAINAGE
OLD QUAY 1 OF 2

Designed	B O'Connor		Eng.Chk.	N Smyth	
Drawn	R Seward		Coordination	.	
Dwg.Chk.	N Smyth		Approved	D Hickey	
Scale at A1	AS SHOWN	Project	A5243		Status TEN
		CAD file	5243C064		
Drawing No	A5243-C064				Rev B

filename: 5243C064.dwg, Plotted by pd28209, on Feb 01, 2010 -3.01pm

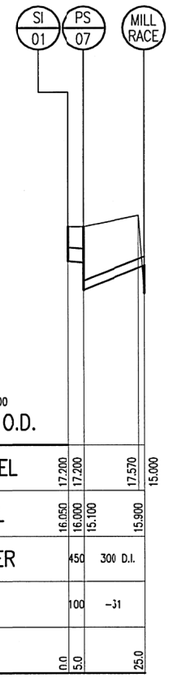


LOCATION PLAN
SCALE 1:1,000



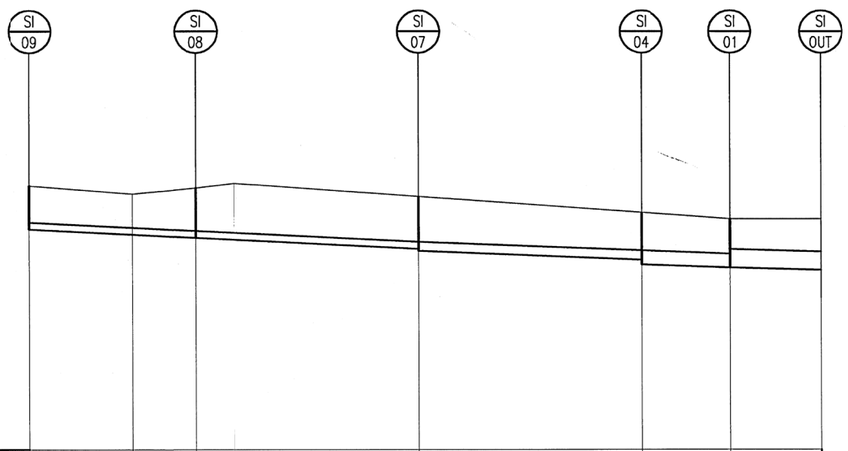
VERTICAL SCALE 1:100
HORIZONTAL SCALE 1:1,000
DATUM 10m O.D.
(MALIN HEAD)

GROUND LEVEL	18.500		18.500
INVERT LEVEL	16.818		16.638
PIPE DIAMETER		300	
GRADIENT		250	
CHAINAGE	0.0		45.0



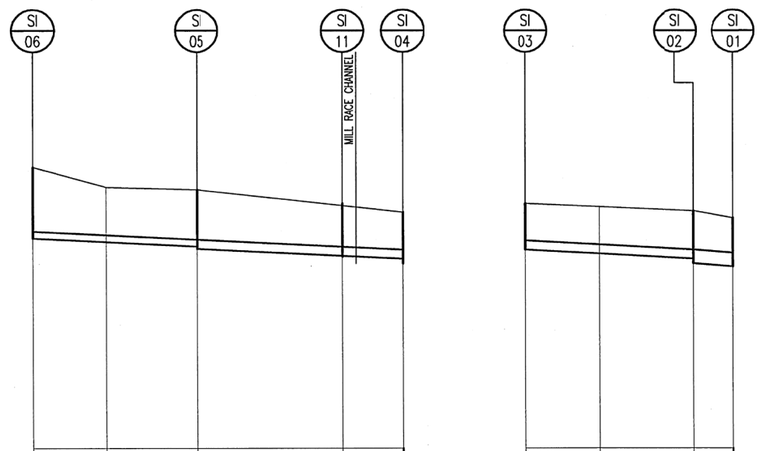
VERTICAL SCALE 1:100
HORIZONTAL SCALE 1:1,000
DATUM 10m O.D.
(MALIN HEAD)

GROUND LEVEL	17.200	17.200	17.570	15.000
INVERT LEVEL	16.050	16.000	15.100	15.900
PIPE DIAMETER		450	300 D.I.	
GRADIENT		100	-31	
CHAINAGE	0.0	5.0		25.0



VERTICAL SCALE 1:100
HORIZONTAL SCALE 1:1,000
DATUM 10m O.D.
(MALIN HEAD)

GROUND LEVEL	18.666	18.400	18.595	18.750	18.299	17.755	17.570	17.570	15.000
INVERT LEVEL	17.245		16.970		16.602	16.233	16.083	15.983	15.908
PIPE DIAMETER		225			300		450		600
GRADIENT		200			250		291.5		400
CHAINAGE	0.0	34.0	55.0	67.5	128.5	202.0	231.15		261.3



19.243	18.580	18.500		18.044	17.755	
16.908		16.638	16.563	16.313	16.233	16.083
	225		300			
	200		126			
0.0	24.3	54.0		102.0	122.0	

18.050	17.935		17.800	17.570	
16.534			16.233	16.083	15.983
	330			450	
	250			100	
0.0	24.3		75.0	85	

Notes

KEY PLAN
SCALE 1:10,000

LEGEND:
FOUL SEWER EXISTING
STORM SEWER EXISTING
STORM SEWER PROPOSED
COMBINED SEWER EXISTING
EXISTING GULLY TO BE REVISED EG
NEW GULLY G

ISSUED FOR TENDER

Rev	Date	Drawn	Description	Ch'k'd	App'd
B	18.12.09	DOL	ISSUED FOR TENDER	BO'CO	DHIC
A	23.10.09	RSEW	ISSUED FOR APPROVAL	BO'CO	DHIC

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DUBLIN 2

Title
SUIR RIVER (CLONMEL NORTH & EAST)
DRAINAGE SCHEME
CIVIL WORKS CONTRACT

PROPOSED STORM WATER DRAINAGE
SUIR ISLAND

Designed	B O'Connor		Eng.Chk.	N Smyth	
Drawn	R Seward		Coordination		
Dwg.Chk.	N Smyth		Approved	D Hickey	
Scale at A1	AS SHOWN	Project	A5243		Status TEN
		CAD file	5243C066		
Drawing No	A5243-C066				Rev B

Dwg. No. A5243-N506-F | File No. 5243N506

Interference No.	General Description of New Works
D17	Construct stormwater drainage pipeline
D18, D19	Construct stormwater drainage pipeline
D20, D26	Construct underground pumping station
D21, D22	Construct outfall to river
D23, D24	Construct stormwater drainage pipeline
D25, D29	Construct outfall to river
D27, D28	Construct stormwater drainage pipeline
D30, D34	Construct underground pumping station
D31	Construct stormwater drainage pipeline
D32	Construct outfall to river
D33	Construct manhole with flapped discharge to stream
D35, D36	Construct stormwater drainage pipeline
D37, D38	Excavate and replace culvert
G26, G27	Increase the frequency and depth of flooding likely in the future
G25	Increase the frequency and depth of flooding likely in the future. Prune trees and vegetation on river bank and route of spillway
G28 – G30	Provision of temporary access for plant and and labour to the works
G31	Maintain existing channel
H33 – H35	

Interference No.	General Description of New Works
L27, L34, L35	Excavate for foundations and construct reinforced concrete wall, 1.2m high, with provision to receive 1.5m high demountable flood protection system
L28, L29	Excavate for foundations and construct reinforced concrete wall, 1.8m high, to 21.2m AOD
L30, L31	Excavate for foundations and construct reinforced concrete wall, 1.4m high, to 21.0m AOD
L32, L33 & L36	Construct demountable flood defence barrier, 3.5m wide across slipway
L37 – L45	Excavate for foundations and construct reinforced concrete wall 2.3m high to 21.1m AOD
L46, L48	Excavate for foundations and construct reinforced concrete wall 2.8m high to 21.1m AOD
L47	Construct demountable flood defence barrier, 3.5m wide
L49	Raise / improve walls to 20.3m AOD
L50 – L52	Excavate for foundations and construct reinforced concrete wall 1.1m high to 20.3m AOD
L53	Excavate for foundations and construct reinforced concrete wall 3.4m high to 21.2m AOD
L54	Construct demountable flood defence barrier, 7m wide, across road
L55 – L57	Excavate for foundations and construct reinforced concrete wall 3.1m high to 21.0m AOD
L58	Demolish existing wall, excavate for foundations and construct reinforced concrete wall 3.7m high to 21.0m AOD
L59	Excavate for foundations and construct reinforced concrete wall 1.6m high to 20.4m AOD
L60	Excavate for foundations and construct reinforced concrete wall 3.2m high to 20.2m AOD
L61	Construct demountable flood defence barrier, 3.5m wide across gate
L62	Excavate for foundations and construct reinforced concrete wall 1.5m high to 20.0m AOD
L63	Construct new entrance to park with demountable flood defence barrier, 3.5m wide across it
L64	Excavate for foundations and construct reinforced concrete wall, between 1.8m and 1.1m high to 20.1m AOD
L65 – L71 L73, L74	Excavate for foundations and construct reinforced concrete wall 1.1m high
L72	Repair existing wall
L75	Demolish existing wall and replace with reinforced concrete wall 1.1m high
L76	Demolish existing wall and replace with reinforced concrete wall 1.9m high to 20.8m AOD
L77 – L79	Demolish existing wall and replace with reinforced concrete wall 2.4m high to 20.9m AOD
SL1, SL2	Construct Sluice in wall

Interference No.	General Description of New Works
E9	Excavate topsoil and construct embankment, between 0m & 1.8m high, to 21.4m AOD
E10	Excavate topsoil and construct embankment, between 1.8m & 3.5m high, to 21.4m AOD
E11 & E12	Excavate topsoil and construct embankment, 3.4m high, to 21.4m AOD
E13	Excavate topsoil and construct embankment, 3.6m high, to 21.2m AOD
E14 & E15	Excavate topsoil and construct embankment, 3.5m high, to 21.3m AOD
E16	Excavate topsoil and construct embankment, 3.1m high, to 21.3m AOD
E17	Excavate topsoil and construct embankment, 1.9m high, to 20.4m AOD

LEGEND

- PROPOSED IMPROVEMENTS TO EXISTING WALL
- PROPOSED NEW WALL
- PROPOSED NEW EMBANKMENT
- PROPOSED FRENCH DRAIN TO EMBANKMENT
- PROPOSED SURFACE WATER DRAINAGE
- PROPOSED POST AND RAIL FENCE

NOTE:

1. ALL LEVELS ARE IN METRES TO ORDNANCE DATUM MALIN HEAD
2. REFER TO DRG. NRS. A5243-N551 & N552 FOR DETAILS
3. ALL DRAINAGE OUTLETS THROUGH FLOOD DEFENCES TO BE FLAPPED OR SEALED AS REQUIRED
4. MATURE TREES TO BE RETAINED WHERE POSSIBLE
5. ADDITIONAL TEMPORARY FLOOD PROTECTION MEASURES MAY BE REQUIRED IN TIMES OF FLOOD BEFORE THE COMPLETION OF THE CLONMEL NORTH SCHEME

Rev.	Date	Description	Drn.By	Chkd.	Appd.	Client
F	24.05.05	MINOR CHANGES	SWAL	BAOC	DHIC	
E	06.05.05	MINOR CHANGES	SWAL	BAOC	DHIC	
D	05.05.05	ISSUED FOR PUBLIC EXHIBITION	SWAL	BAOC	DHIC	
C	04.04.05	ISSUED FOR APPROVAL	SWAL	BAOC	DHIC	
B	07.05.04	ISSUED FOR PUBLIC EXHIBITION	NDIA	BAOC	KTHO	
A	22.12.03	ISSUED FOR INFORMATION	NCOU	BAOC	KTHO	

Not For Construction Unless Stamped Accordingly | Do Not Scale - If in Doubt Ask | A1

OPW The Office of Public Works
ENGINEERING BRANCH
51 St. Stephen's Green Tel: (01) 647 6000
Dublin 2 Fax: (01) 661 0747

pettit

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Blackrock Road,
Cork, Ireland.
Tel: 353-(0)21-4966400
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email: info@pettit.ie
Website: www.pettit.ie
Other Offices : Dublin, Killarney, Waterford and Limerick
Overseas Offices : U.S.A., Poland and Nigeria

Client: OFFICE OF PUBLIC WORKS

Project: SUIR RIVER (CLONMEL WEST) DRAINAGE SCHEME

Drg. Title: FLOOD PROTECTION SCHEME (SHEET 5 OF 6)

Job Nr.	Drg. Nr.	Scale	File Nr.
A5243	A5243-N506-F	1:1,000	5243N506

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

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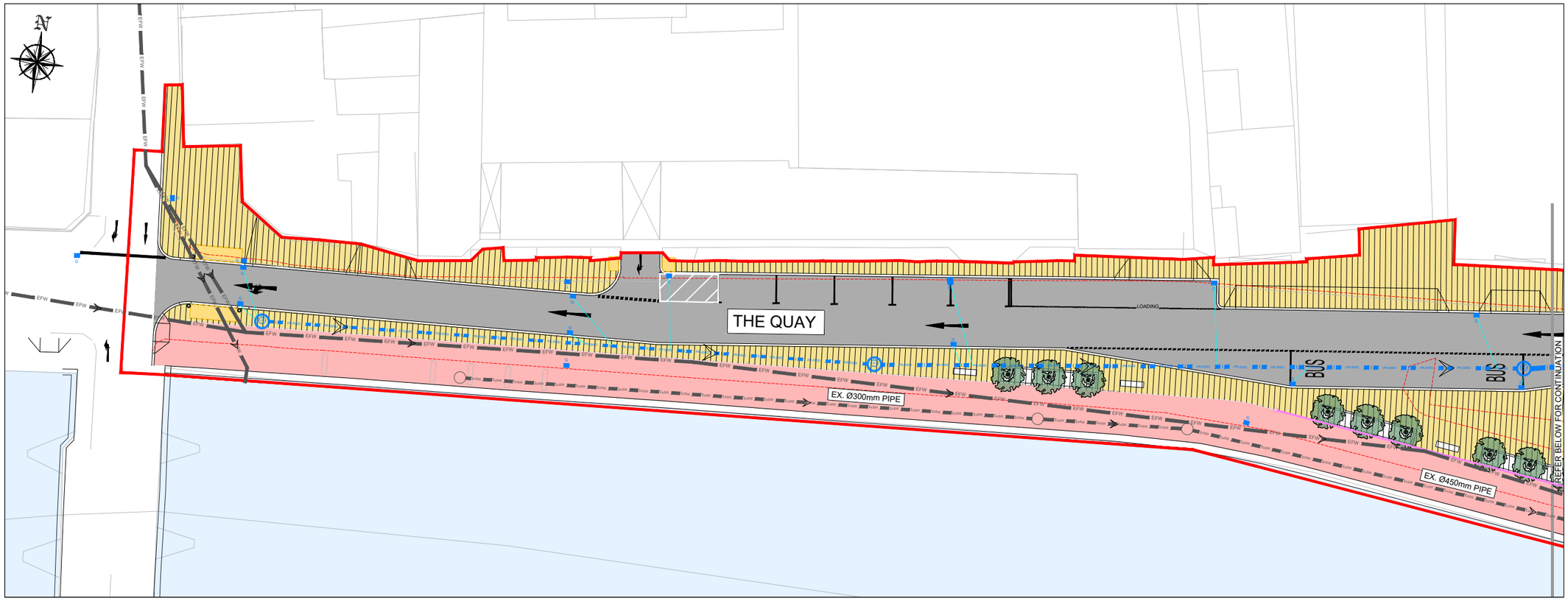
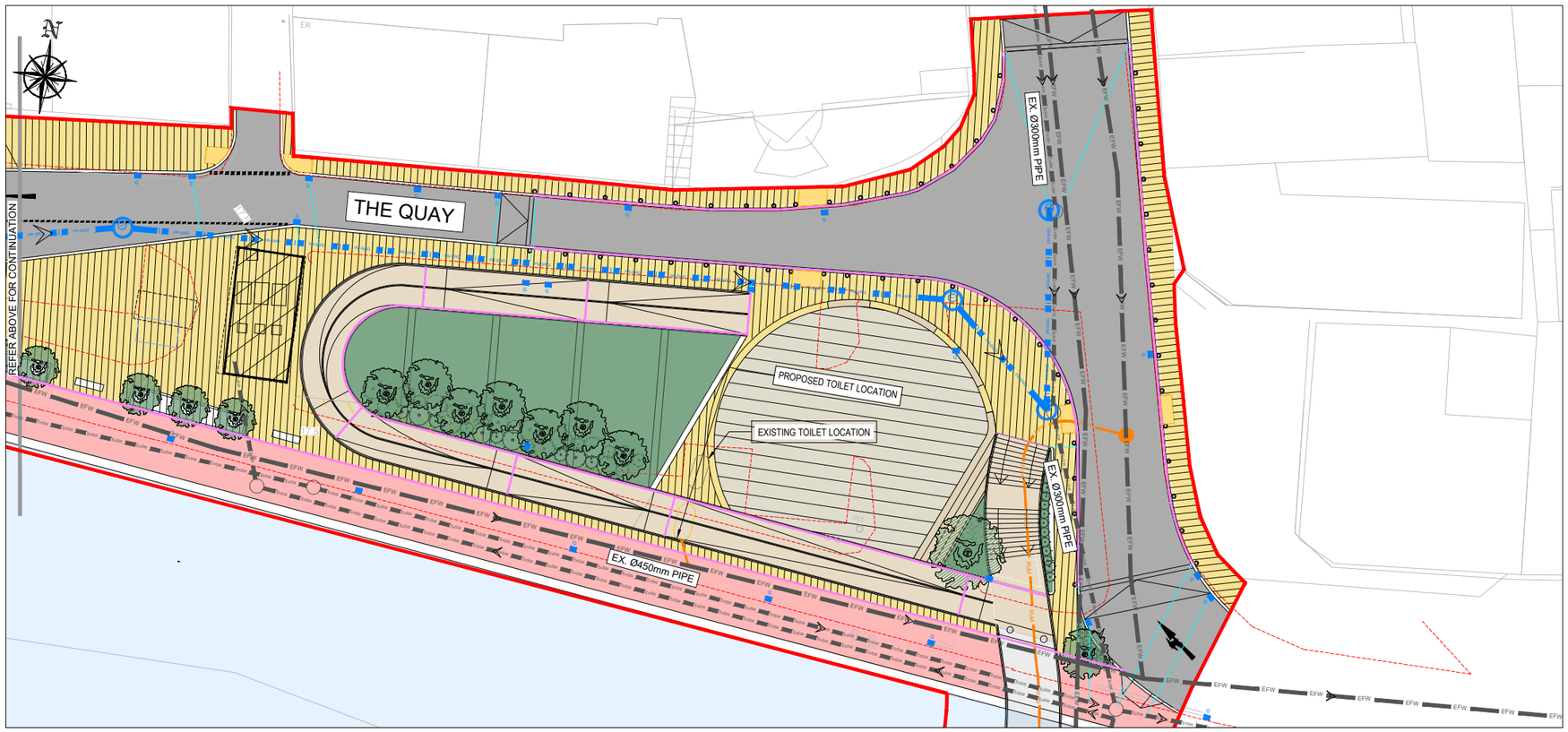


PLAN 1
SCALE 1:200



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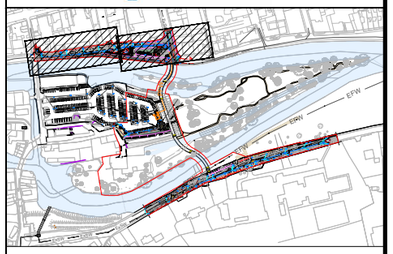
SCALE 1:200



KEYPLAN
SCALE N.T.S

LEGEND:

SITE BOUNDARY

PROPOSED SURFACE WATER DRAINAGE:

- PROPOSED STORM WATER PIPE
- PROPOSED STORM WATER MANHOLE
- PROPOSED SLOT DRAIN
- GATIC 308x308mm ACCESS BOX OR SIMILAR APPROVED
- PROPOSED GULLY AS PER TII DETAIL CC-SCD-00510 AND GRATING AS PER TII CC-SCD-514

PROPOSED FOUL WATER DRAINAGE:

- PROPOSED FOUL WATER PIPE
- PROPOSED FOUL WATER MANHOLE
- PROPOSED PUMP STATION
- PROPOSED 24HR EMERGENCY STORAGE
- PROPOSED RELOCATED PUBLIC TOILET

EXISTING SURFACE & FOUL WATER DRAINAGE:

- EXISTING SURFACE WATER PIPE
- EXISTING SURFACE WATER MANHOLE
- EXISTING SURFACE WATER GULLY RETAINED
- EXISTING FOUL SEWER PIPE
- EXISTING GULLY PIPE
- EXISTING PUBLIC TOILET TO BE MOVED
- EXISTING PIPE TO BE REMOVED
- EXISTING GULLY TO BE REMOVED

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Rev	Description	Drawn	Checked	Date
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PL01	ISSUED FOR PLANNING	FO	LP	22.09.23

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Client: TIPPERARY COUNTY COUNCIL

Project: SUIR ISLAND INFRASTRUCTURE LINKS

Dwg. Title: PROPOSED COMBINED SW & FW LAYOUT PLAN SHEET 01 OF 04

Drawn By	FO	Date	SEPT 2023
Checked By	LP	Scale	1:200 @ A1
		CSEA Job No.	20_071

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
20_071	CSE	GEN	XX	DR	C	2501

Status Code: S2 — SUITABLE FOR INFORMATION

Revision: PL01 — ISSUED FOR PLANNING

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1

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Tipperary County Council

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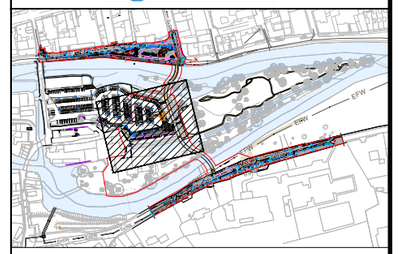
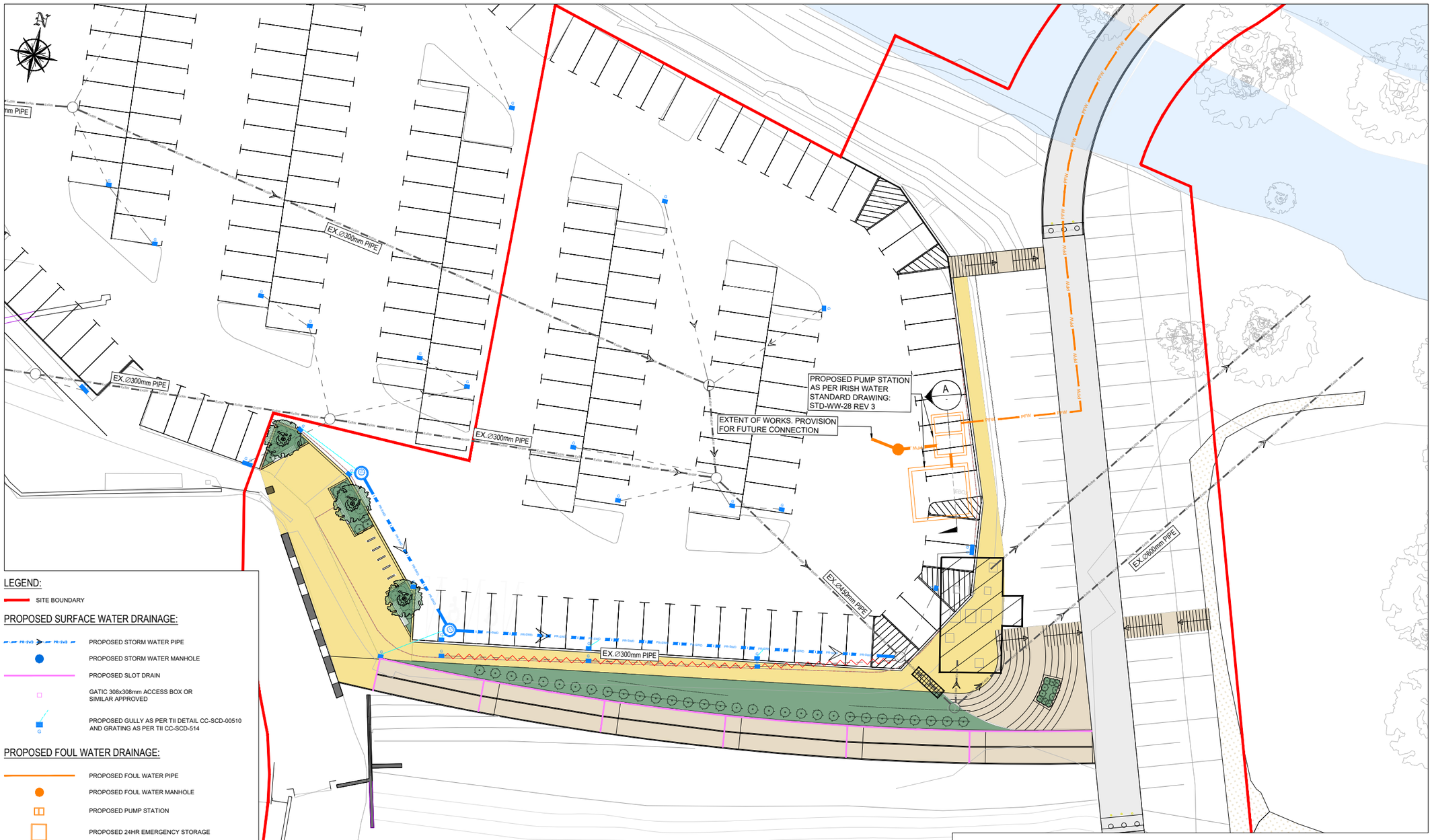


KEYPLAN
SCALE N.T.S



PLAN 3
SCALE 1:200

LEGEND:

SITE BOUNDARY

PROPOSED SURFACE WATER DRAINAGE:

- PROPOSED STORM WATER PIPE
- PROPOSED STORM WATER MANHOLE
- PROPOSED SLOT DRAIN
- GATIC 308x308mm ACCESS BOX OR SIMILAR APPROVED
- PROPOSED GULLY AS PER TII DETAIL CC-SCD-00510 AND GRATING AS PER TII CC-SCD-514

PROPOSED FOUL WATER DRAINAGE:

- PROPOSED FOUL WATER PIPE
- PROPOSED FOUL WATER MANHOLE
- PROPOSED PUMP STATION
- PROPOSED 24HR EMERGENCY STORAGE
- PROPOSED RELOCATED PUBLIC TOILET

EXISTING SURFACE & FOUL WATER DRAINAGE:

- EXISTING SURFACE WATER PIPE
- EXISTING SURFACE WATER MANHOLE
- EXISTING SURFACE WATER GULLY RETAINED
- EXISTING FOUL SEWER PIPE
- EXISTING GULLY PIPE
- EXISTING PUBLIC TOILET TO BE MOVED
- EXISTING PIPE TO BE REMOVED
- EXISTING GULLY TO BE REMOVED

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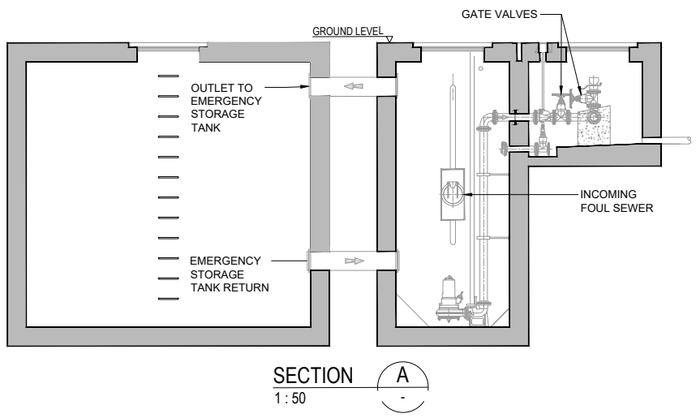

SECTION A
1 : 50

NOTE: REFER TO IRISH WATER STANDARD DESIGN DOCUMENT: IW-CDS-5030-01 FOR DESIGN INFORMATION. FOR STRUCTURAL DESIGN DETAILS REFER TO DRAWING: STD-WW-28 REV 3 (TYP)

Rev	Description	Drawn	Checked	Date

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PL01	ISSUED FOR PLANNING	FO	LP	22.09.23

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Client: TIPPERARY COUNTY COUNCIL

Project: SUIR ISLAND INFRASTRUCTURE LINKS

Dwg. Title: PROPOSED COMBINED SW & FW LAYOUT PLAN SHEET 02 OF 04

Drawn By	FO	Date	SEP 2023
Checked By	LP	Scale	1:200 @ A1
		CSEA Job No.	20_071

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
20_071	CSE	GEN	XX	DR	C	2502

Status Code: S2 — SUITABLE FOR INFORMATION

Revision: PL01 — ISSUED FOR PLANNING

Project Status

LEGEND:

SITE BOUNDARY

PROPOSED SURFACE WATER DRAINAGE:

PROPOSED STORM WATER PIPE

PROPOSED STORM WATER MANHOLE

PROPOSED SLOT DRAIN

GATIC 308x308mm ACCESS BOX OR SIMILAR APPROVED

PROPOSED GULLY AS PER TII DETAIL CC-SCD-00510 AND GRATING AS PER TII CC-SCD-514

PROPOSED FOUL WATER DRAINAGE:

PROPOSED FOUL WATER PIPE

PROPOSED FOUL WATER MANHOLE

PROPOSED PUMP STATION

PROPOSED 24HR EMERGENCY STORAGE

PROPOSED RELOCATED PUBLIC TOILET

EXISTING SURFACE & FOUL WATER DRAINAGE:

EXISTING SURFACE WATER PIPE

EXISTING SURFACE WATER MANHOLE

EXISTING SURFACE WATER GULLY RETAINED

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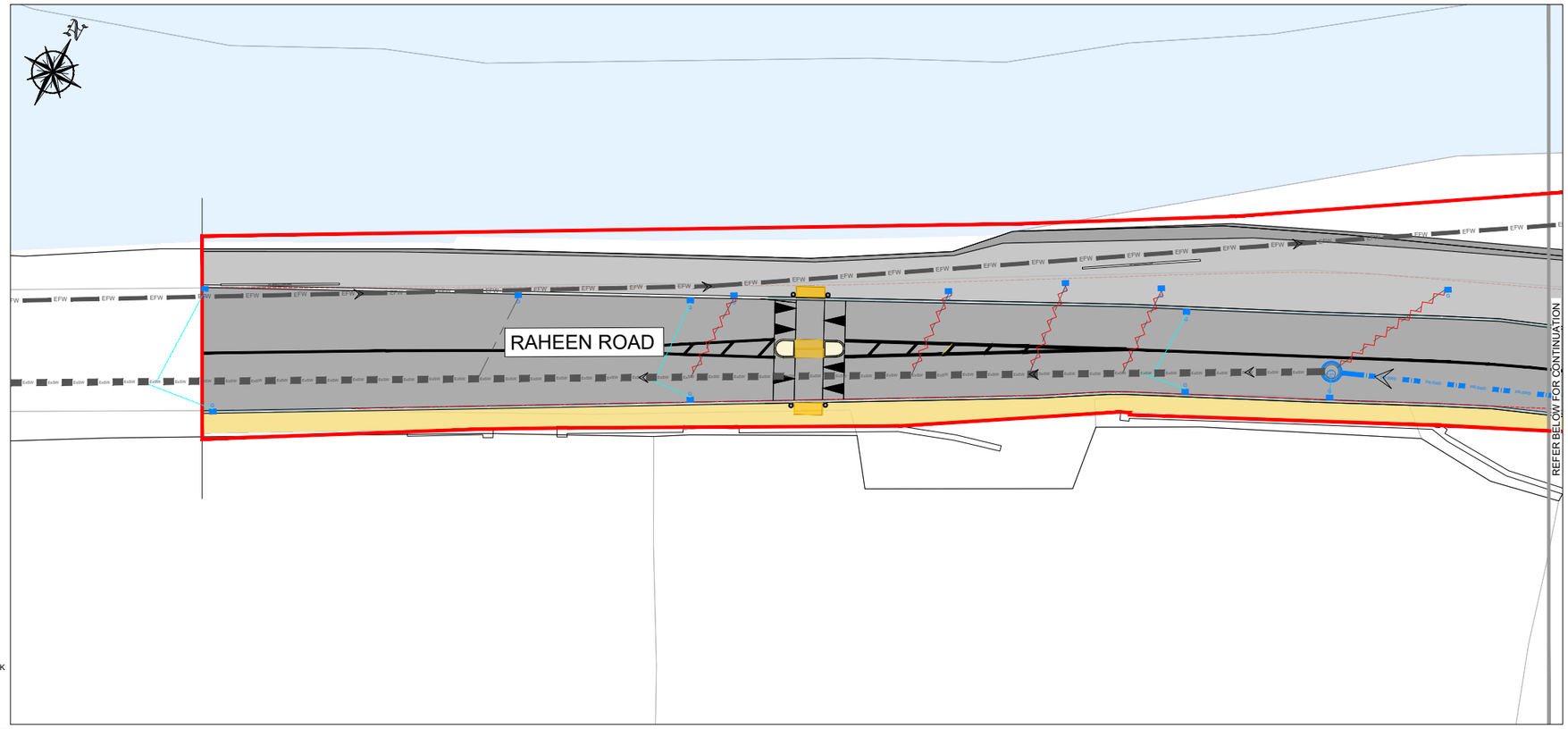
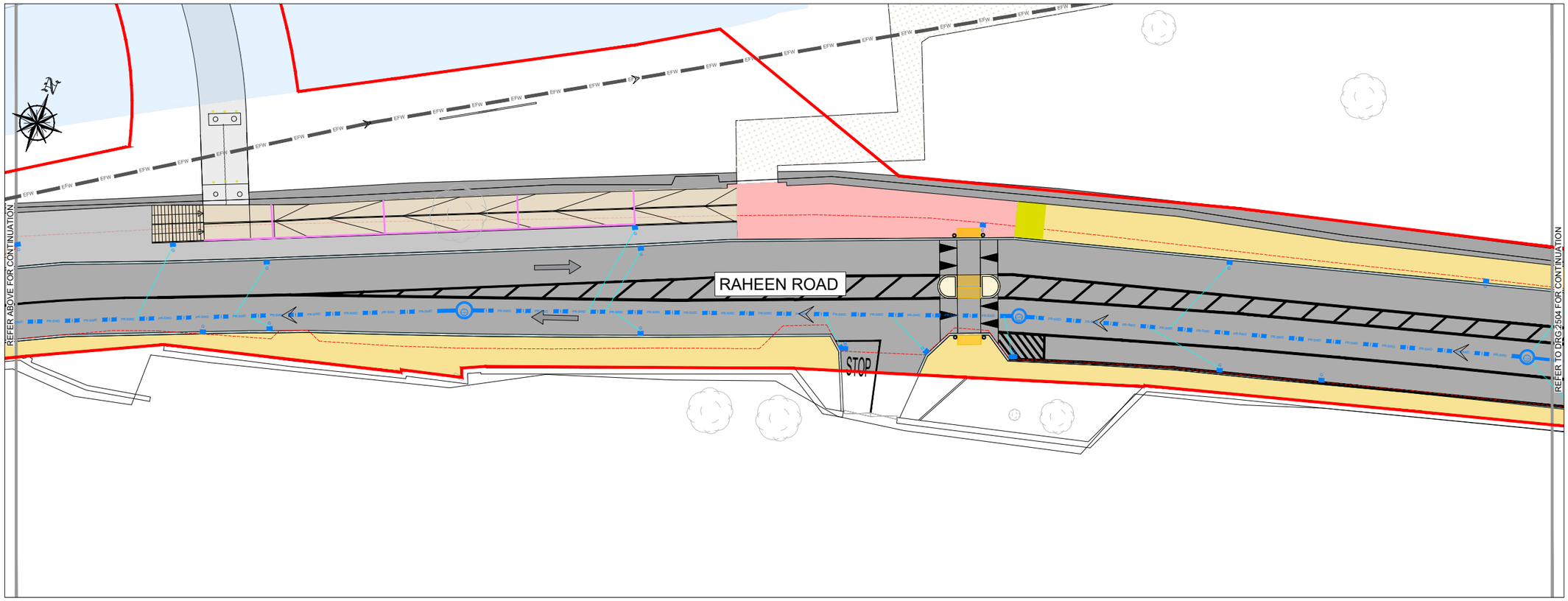


PLAN 4

SCALE 1:200



PLAN 5

SCALE 1:200

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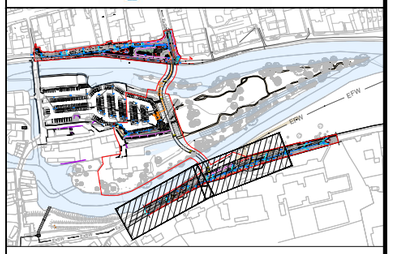

KEYPLAN

SCALE N.T.S

Rev	Description	Drawn	Checked	Date
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PL01	ISSUED FOR PLANNING	FO	FO	22.09.23

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Client: TIPPERARY COUNTY COUNCIL

Project: SUIR ISLAND INFRASTRUCTURE LINKS

Dwg. Title: PROPOSED COMBINED SW & FW LAYOUT PLAN SHEET 03 OF 04

Drawn By	Date	CSEA Job No.
FO	SEPT 2023	20_071
Checked By	Scale	
LP	1:200 @ A1	

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
20_071	CSE	GEN	XX	DR	C	2503

S2 — SUITABLE FOR INFORMATION
Status Code — Suitability Description

PL01 — ISSUED FOR PLANNING
Revision — Project Status

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

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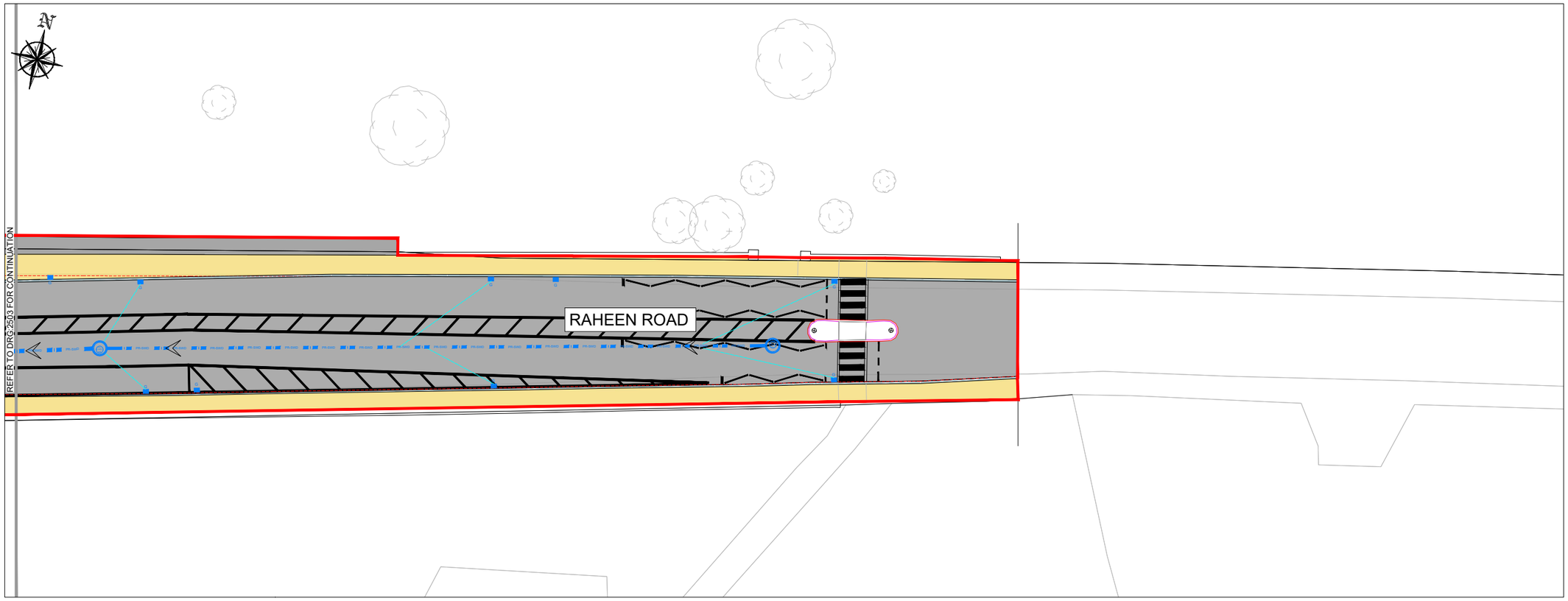
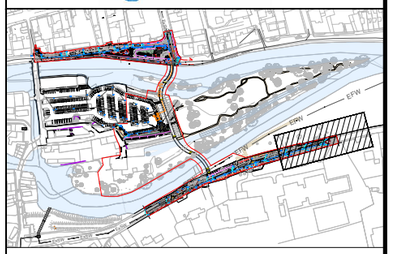


PLAN 6
SCALE 1:200



KEYPLAN
SCALE N.T.S

LEGEND:

SITE BOUNDARY

PROPOSED SURFACE WATER DRAINAGE:

- PROPOSED STORM WATER PIPE
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- PROPOSED SLOT DRAIN
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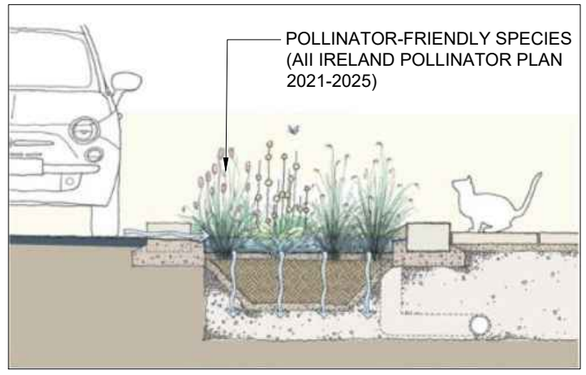
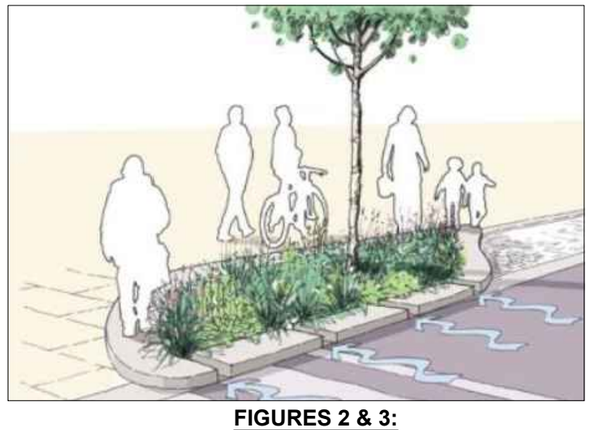
FIGURE 1:
NATURE-BASED SOLUTIONS (NB SUDs): STOCKHOLM METHOD FOR PLANTED TREES





FIGURES 2 & 3:
NATURE-BASED SOLUTIONS (NB SUDs) RAIN GARDENS DRAINAGE SOLUTIONS FOR LANDSCAPING

Rev	Description	Drawn	Checked	Date

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Client: TIPPERARY COUNTY COUNCIL

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Dwg. Title: PROPOSED COMBINED SW & FW LAYOUT PLAN SHEET 04 OF 04

Drawn By	Date	CSEA Job No.
FO	SEPT 2023	20_071
Checked By	Scale	
LP	1:200 @ A1	

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
20_071	CSE	GEN	XX	DR	C	2504

Status Code: S2 — SUITABLE FOR INFORMATION

Revision: PL01 — ISSUED FOR PLANNING

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - Scotland and Ireland

Return Period (years)	30	PIMP (%)	100
M5-60 (mm)	19.400	Add Flow / Climate Change (%)	10
Ratio R	0.250	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm at outfall Ex.OQ-02 (pipe 1.004)

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.335	4-8	0.150	8-12	0.005

Total Area Contributing (ha) = 0.490

Total Pipe Volume (m³) = 14.515

Time Area Diagram at outfall S.SW.05 (pipe 2.003)

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.205	4-8	0.123	8-12	0.005

Total Area Contributing (ha) = 0.334

Total Pipe Volume (m³) = 12.004

Time Area Diagram at outfall I.SW.03 (pipe 3.001)

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.114	4-8	0.034

Total Area Contributing (ha) = 0.148

Total Pipe Volume (m³) = 3.674

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	53.157	0.532	100.0	0.031	6.00	0.0	0.600	o	225	Pipe/Conduit	
1.001	60.528	0.202	300.0	0.191	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.002	10.408	0.035	300.0	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.003	53.515	0.178	300.0	0.044	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.004	9.626	0.032	300.0	0.224	0.00	0.0	0.600	o	375	Pipe/Conduit	
2.000	57.837	0.578	100.0	0.062	6.00	0.0	0.600	o	225	Pipe/Conduit	
2.001	43.808	0.292	150.0	0.085	0.00	0.0	0.600	o	300	Pipe/Conduit	
2.002	47.683	0.318	150.0	0.105	0.00	0.0	0.600	o	300	Pipe/Conduit	
2.003	45.800	0.305	150.0	0.082	0.00	0.0	0.600	o	300	Pipe/Conduit	
3.000	16.931	0.169	100.0	0.051	6.00	0.0	0.600	o	225	Pipe/Conduit	
3.001	42.456	0.425	100.0	0.097	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	6.68	17.370	0.031	0.0	0.0	0.4	1.31	52.0	4.7
1.001	50.00	7.80	16.763	0.222	0.0	0.0	3.0	0.90	63.8	33.1
1.002	50.00	7.96	16.487	0.222	0.0	0.0	3.0	1.04	115.0	33.1
1.003	50.00	8.82	16.452	0.266	0.0	0.0	3.6	1.04	115.0	39.7
1.004	50.00	8.97	16.274	0.490	0.0	0.0	6.6	1.04	115.0	73.0
2.000	50.00	6.74	18.430	0.062	0.0	0.0	0.8	1.31	52.0	9.3
2.001	50.00	7.31	17.777	0.147	0.0	0.0	2.0	1.28	90.6	21.9
2.002	50.00	7.93	17.485	0.252	0.0	0.0	3.4	1.28	90.6	37.5
2.003	50.00	8.52	17.167	0.334	0.0	0.0	4.5	1.28	90.6	49.7
3.000	50.00	6.22	16.930	0.051	0.0	0.0	0.7	1.31	52.0	7.6
3.001	50.00	6.67	16.686	0.148	0.0	0.0	2.0	1.57	111.1	22.1

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.840	Additional Flow - % of Total Flow	10.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Winter
Return Period (years)	30	Cv (Summer)	0.750
Region	Scotland and Ireland	Cv (Winter)	0.840
M5-60 (mm)	19.400	Storm Duration (mins)	15
Ratio R	0.250		

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	10.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model		FSR	Ratio R 0.250
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	19.500	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	30, 100
Climate Change (%)	10, 20

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	N.SW.01	15 Winter	100	+20%					17.581
1.001	N.SW.02	15 Winter	100	+20%	30/15 Summer				17.538
1.002	N.SW.03	15 Winter	100	+20%	100/15 Summer				17.054
1.003	N.SW.04	15 Winter	100	+20%	100/15 Summer				17.016
1.004	N.SW.05	15 Winter	100	+20%	30/15 Summer				16.837
2.000	S.SW.1	15 Winter	100	+20%					18.554
2.001	S.SW.02	15 Winter	100	+20%	100/15 Summer				18.384
2.002	S.SW.03	15 Winter	100	+20%	30/15 Winter				18.258
2.003	S.SW.04	15 Winter	100	+20%	30/15 Summer				17.849
3.000	I.SW.01	15 Winter	100	+20%					17.043
3.001	I.SW.02	15 Winter	100	+20%					16.875

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	N.SW.01	-0.014	0.000	0.29			14.3	OK	
1.001	N.SW.02	0.475	0.000	1.51			91.9	SURCHARGED	
1.002	N.SW.03	0.193	0.000	1.10			94.1	SURCHARGED	
1.003	N.SW.04	0.189	0.000	0.99			105.4	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.004	N.SW.05	0.189	0.000	2.20			184.3	SURCHARGED	
2.000	S.SW.1	-0.101	0.000	0.56			27.9	OK	
2.001	S.SW.02	0.307	0.000	0.72			61.0	SURCHARGED	
2.002	S.SW.03	0.474	0.000	1.11			94.8	SURCHARGED	
2.003	S.SW.04	0.383	0.000	1.47			124.9	SURCHARGED	
3.000	I.SW.01	-0.112	0.000	0.51			23.5	OK	
3.001	I.SW.02	-0.111	0.000	0.70			72.6	OK	

Rainfall Hyetograph for 15 minute 100 year Winter I+20% for Pipe 1.000 (Storm)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	23.828	4	57.330	7	213.690	10	150.139	13	45.288
2	43.483	5	92.796	8	248.217	11	92.796	14	43.483
3	45.288	6	150.139	9	213.690	12	57.330	15	23.828

Rainfall Hyetograph for 15 minute 100 year Winter I+20% for Pipe 1.001 (Storm)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	23.828	4	57.330	7	213.690	10	150.139	13	45.288
2	43.483	5	92.796	8	248.217	11	92.796	14	43.483
3	45.288	6	150.139	9	213.690	12	57.330	15	23.828

Rainfall Hyetograph for 15 minute 100 year Winter I+20% for Pipe 1.002 (Storm)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	23.828	4	57.330	7	213.690	10	150.139	13	45.288
2	43.483	5	92.796	8	248.217	11	92.796	14	43.483
3	45.288	6	150.139	9	213.690	12	57.330	15	23.828

Rainfall Hyetograph for 15 minute 100 year Winter I+20% for Pipe 1.003 (Storm)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	23.828	4	57.330	7	213.690	10	150.139	13	45.288
2	43.483	5	92.796	8	248.217	11	92.796	14	43.483
3	45.288	6	150.139	9	213.690	12	57.330	15	23.828

Rainfall Hyetograph for 15 minute 100 year Winter I+20% for Pipe 1.004 (Storm)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	23.828	4	57.330	7	213.690	10	150.139	13	45.288
2	43.483	5	92.796	8	248.217	11	92.796	14	43.483
3	45.288	6	150.139	9	213.690	12	57.330	15	23.828

Rainfall Hyetograph for 15 minute 100 year Winter I+20% for Pipe 2.000 (Storm)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	23.828	4	57.330	7	213.690	10	150.139	13	45.288
2	43.483	5	92.796	8	248.217	11	92.796	14	43.483
3	45.288	6	150.139	9	213.690	12	57.330	15	23.828

Rainfall Hyetograph for 15 minute 100 year Winter I+20% for Pipe 2.001 (Storm)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	23.828	4	57.330	7	213.690	10	150.139	13	45.288
2	43.483	5	92.796	8	248.217	11	92.796	14	43.483
3	45.288	6	150.139	9	213.690	12	57.330	15	23.828

Rainfall Hyetograph for 15 minute 100 year Winter I+20% for Pipe 2.002 (Storm)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	23.828	4	57.330	7	213.690	10	150.139	13	45.288
2	43.483	5	92.796	8	248.217	11	92.796	14	43.483
3	45.288	6	150.139	9	213.690	12	57.330	15	23.828

Rainfall Hyetograph for 15 minute 100 year Winter I+20% for Pipe 2.003 (Storm)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	23.828	4	57.330	7	213.690	10	150.139	13	45.288
2	43.483	5	92.796	8	248.217	11	92.796	14	43.483
3	45.288	6	150.139	9	213.690	12	57.330	15	23.828

Rainfall Hyetograph for 15 minute 100 year Winter I+20% for Pipe 3.000 (Storm)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	23.828	4	57.330	7	213.690	10	150.139	13	45.288
2	43.483	5	92.796	8	248.217	11	92.796	14	43.483
3	45.288	6	150.139	9	213.690	12	57.330	15	23.828

Rainfall Hyetograph for 15 minute 100 year Winter I+20% for Pipe 3.001 (Storm)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	23.828	4	57.330	7	213.690	10	150.139	13	45.288
2	43.483	5	92.796	8	248.217	11	92.796	14	43.483
3	45.288	6	150.139	9	213.690	12	57.330	15	23.828

Appendix C – Foul Drainage

Document Ref No.	Title
IW-AGG-2017-000	Sewer Water Utilities Network Clonmel – Co. Tipperary
IW/EF/NC/B/0219	IW Pre-connection Enquiry Application
CDS21008413	IW Confirmation of Feasibility

UISCE ÉIREANN : IRISH WATER

Legend

Sewer Manholes

Manhole Type

- Standard
- Other; Unknown

Sewer Discharge Points

Discharge Type

- Other; Unknown

Sewer Inlets

Inlet Type

- Gully
- Gravity - Combined
- Gravity - Foul
- Gravity - Overflow
- Gravity - Combined
- Gravity - Foul

Legend

0 20 40 80 Meters

Coordinate System: TM65 Irish Grid
Projection: Transverse Mercator

Scale @ A0:	**1:1,200**
Drawing No.:	**IW-AGG-2017-000**
Drawn By:	**MBS**
Checked By:	**<Add Name>**
Approved By:	**<Add Name>**
Drawn Date	**25/08/2017**
Checked Date:	**<dd/mm/yyyy>**
Approved Date:	**<dd/mm/yyyy>**

DRAFT

Map Template Design: kcarroll@water.ie

Sewer Water Utilities Network
Clonmel - Co. Tipperary

Pre-connection enquiry form

Business developments, mixed use developments, housing developments

This form is to be filled out by applicants enquiring about the feasibility of a water and/or wastewater connection to Irish Water infrastructure. If completing this form by hand, please use BLOCK CAPITALS and black ink.

Please refer to the **Guide to completing the pre-connection enquiry form** on page 13 of this document when completing the form.

*** Denotes mandatory/ required field. Please note, if mandatory fields are not completed the application will be returned.**

Section A | Applicant details

1 *Applicant details:

Registered company name (if applicable):

Trading name (if applicable):

Company registration number (if applicable):

If you are not a registered company/business, please provide the applicant's name:

*Contact name: TIPPERARY COUNTY COUNCIL

*Postal address: CIVIC OFFICES

EMMET STREET

CLONMEL CO.TIPPERARY

*Eircode: E91N512

*Telephone: 076 106 5000

Mobile:

*Email: roger.noonan@tipperarycoco.ie

2 Agent details (if applicable):

Contact name: LAURA PEARE

Company name (if applicable): CSEA CONSULTING ENG.

Postal address: 3RD FLOOR,THE HIGHLINE

BAKERS POINT, POTTERY ROAD

DUN LAOGHAIRE, CO. DUBLIN

Eircode: A96KW29

Telephone: 0128850066

Email: laura.peare@csea.ie

3 ***Please indicate whether it is the applicant or agent who should receive future correspondence in relation to the enquiry:**

Applicant [ ] Agent [X]

Section B | Site details

4 ***Site address:** THE QUAY ROAD,

SUIR ISLAND, RAHEEN ROAD,

CLONMEL, COUNTY TIPPERARY

5 ***Irish Grid co-ordinates of site:** Eastings (X) 220399 Northings (Y) 122186

Eg. co-ordinates of GPO, O'Connell St., Dublin: E(X) 315,878 N(Y) 234,619

6 ***Local Authority:**

Local Authority that granted planning permission (if applicable):

N/A

7 ***Has full planning permission been granted?** Yes [ ] No [X]

If 'Yes', please provide the current or previous planning reference number:

N/A

Section C | Development details

8 Please outline the domestic and/or industry/business use proposed:

Property type	Number of units	Property type	Number of units	Property type	Number of units
House	15	Apartments	55	Agricultural	
Office		School		Retail unit	
Residential care home		Institution		Industrial unit	
Hotel		Factory		Other	
Other (please specify type)	1 No. Amenities Building				

9 *Approximate start date of proposed development: 01 / 04 / 2023

10 *Is the development multi-phased? Yes ☐ No ☒

If 'Yes', application must include a master-plan identifying the development phases and the current phase number.

If 'Yes', please provide details of variations in water demand volumes and wastewater discharge loads due to phasing requirements.

11 *Please indicate the type of connection required by ticking the appropriate box below:

Water ☐ Please go to Section D

Wastewater ☒ Please go to Section E

Both ☐ Please complete both Sections D and E

It is proposed to intercept all existing septic tanks on Suir Island along with the proposed foul drainage from a future amenities building and drain to the proposed pumping station before pumping via foul sewer rising main along the underside of the a proposed bridge from Suir Island to Sarsfield Street/The Quays/ Quay Road junction.

This application includes for intercepting septics tanks for 15 No. existing private dwellings, 55 No. existing apartments, 1 No. existing office all of which overflow to the River Suir at present, in addition to 1 No. future amenities building within Suir Island car park area.

Section D | Water connection and demand details

12 ***Is there an existing connection to public water mains at the site?** Yes ☐ No ☐

12.1 If yes, is this enquiry for an additional connection to one already installed? Yes ☐ No ☐

12.2 If yes, is this enquiry to increase the size of an existing connection? Yes ☐ No ☐

13 **Approximate date water connection is required:** ☐☐ / ☐☐ / ☐☐☐☐

14 ***What diameter of water connection is required to service the development?** ☐☐☐ mm

15 ***Is more than one connection required to the public infrastructure to service this development?** Yes ☐ No ☐

If 'Yes', how many? ☐☐

16 **Please indicate the business water demand (shops, offices, schools, hotels, restaurants, etc.):**

Post-development peak hour water demand		**l/s**
Post-development average hour water demand		**l/s**

Please include calculations on the attached sheet provided. Where there will be a daily/weekly/seasonal variation in the water demand profile, please provide all such details.

17 **Please indicate the industrial water demand (industry-specific water requirements):**

Post-development peak hour water demand		**l/s**
Post-development average hour water demand		**l/s**

Please include calculations on the attached sheet provided. Where there will be a daily/weekly/seasonal variation in the water demand profile, please provide all such details.

18 **What is the existing ground level at the property boundary at connection point (if known) above Malin Head Ordnance Datum?** ☐☐☐☐☐ m

19 **What is the highest finished floor level of the proposed development above Malin Head Ordnance Datum?** ☐☐☐☐☐ m

20 **Is on-site water storage being provided?** Yes ☐ No ☐

Please include calculations on the attached sheet provided.

21 **Are there fire flow requirements?** Yes ☐ No ☐

Additional fire flow requirements over and above those identified in Q16-17		**l/s**

Please include calculations on the attached sheet provided, and include confirmation of requirements from the Fire Authority.

22 **Do you propose to supplement your potable water supply from other sources?** Yes ☐ No ☐

If 'Yes', please indicate how you propose to supplement your potable water supply from other sources (see **Guide to completing the application form** on page 12 of this document for further details):

Section E | Wastewater connection and discharge details

23 ***Is there an existing connection to a public sewer at the site?** Yes ☐ No ☒

23.1 If yes, is this enquiry for an additional connection to the one already installed? Yes ☐ No ☒

23.2 If yes, is this enquiry to increase the size of an existing connection? Yes ☐ No ☒

24 ***Approximate date that wastewater connection is required:** 01 / 04 / 2023

25 ***What diameter of wastewater connection is required to service the development?** 125 mm

DN125 RISING MAIN

26 ***Is more than one connection required to the public infrastructure to service this development?** Yes ☐ No ☒

If 'Yes', how many? ☐☐

27 **Please indicate the commercial wastewater hydraulic load (shops, offices, schools, hotels, restaurants, etc.):**

Post-development peak discharge	2.55	**l/s**
Post-development average discharge	0.43	**l/s**

Please include calculations on the attached sheet provided.

28 **Please indicate the industrial wastewater hydraulic load (industry-specific discharge requirements):**

Post-development peak discharge	0	**l/s**
Post-development average discharge	0	**l/s**

Please include calculations on the attached sheet provided.

29 Wastewater organic load:

Characteristic	Max concentration (mg/l)	Average concentration (mg/l)	Maximum daily load (kg/day)
Biochemical oxygen demand (BOD)			
Chemical oxygen demand (COD)			
Suspended solids (SS)			
Total nitrogen (N)			
Total phosphorus (P)			
Other			

Temperature range	
pH range	

30 *Storm water run-off will only be accepted from brownfield sites that already have a storm/surface water connection to a combined sewer. In the case of such brownfield sites, please indicate if the development intends discharging surface water to the combined wastewater collection system:

Yes [ ] No [X]

If 'Yes', please give reason for discharge and comment on adequacy of SUDS/attenuation measures proposed.

31 *Do you propose to pump the wastewater? Yes [X] No [ ]

If 'Yes', please include justification for your pumped solution with this application.

32 What is the existing ground level at the property boundary at connection point (if known) above Malin Head Ordnance Datum?

17,46 m

33 What is the lowest finished floor level on site above Malin Head Ordnance Datum? 17.86 m

34 What is the proposed invert level of the pipe exiting the property to the public road?

15.02 m

Section F | Supporting documentation

Please provide the following additional information (all mandatory):

> Site location map: A site location map to a scale of 1:1000, which clearly identifies the land or structure to which the enquiry relates. The map shall include the following details: [X]

i. The scale shall be clearly indicated on the map.

ii. The boundaries shall be delineated in red.

iii. The site co-ordinates shall be marked on the site location map.

> Details of planning and development exemptions (if applicable). [ ]

> Calculations (calculation sheets provided below). [X]

> Site layout map to a scale of 1:500 showing layout of proposed development, water network and wastewater network layouts, additional water/wastewater infrastructure if proposed, connection points to Irish Water infrastructure. [X]

> Conceptual design of the connection asset from the proposed development to the existing Irish Water infrastructure, including service conflicts, gradients, pipe sizes and invert levels. [X]

> Any other information that might help Irish Water assess this pre-connection enquiry. [X]

Section G | Declaration

I/We hereby make this application to Irish Water for a water and/or wastewater connection as detailed on this form.

I/We understand that any alterations made to this application must be declared to Irish Water.

The details that I/we have given with this application are accurate.

I/We have enclosed all the necessary supporting documentation.

Any personal data you provide will be stored and processed by Irish Water and may be transferred to third parties for the purposes of the water and/or wastewater connection process. I hereby give consent to Irish Water to store and process my personal data and to transfer my personal data to third parties, if required, for the purposes of the connection process.

If you wish to revoke consent at any time or wish to see Irish Water's full Data Protection Notice, please see **https://www.water.ie/privacy-notice/**

Signature: [ ] Date: 25 / 11 / 2021

Your full name (in BLOCK CAPITALS):

LAURA PEARE

Irish Water will carry out a formal assessment based on the information provided on this form.
Any future connection offer made by Irish Water will be based on the information that has been provided here.

Please submit the completed form to **newconnections@water.ie** or alternatively, post to:

Irish Water
PO Box 860
South City Delivery Office
Cork City

Please note that if you are sending us your application form and any associated documentation by email, the maximum file size that we can receive in any one email is 35MB.

Please note, if mandatory fields are not completed the application will be returned.

Irish Water is subject to the provisions of the Freedom of Information Act 2014 ("FOIA") and the codes of practice issued under FOIA as may be amended, updated or replaced from time to time. The FOIA enables members of the public to obtain access to records held by public bodies subject to certain exemptions such as where the requested records may not be released, for example to protect another individual's privacy rights or to protect commercially sensitive information. Please clearly label any document or part thereof which contains commercially sensitive information. Irish Water accepts no responsibility for any loss or damage arising as a result of its processing of freedom of information requests.

Calculations

Water demand

N/A

On-site storage

N/A

Fire flow requirements

N/A

Post Development Foul Loading:

The Population is calculated based on the following:

1. Existing Foul Loading on Suir Island (west of Old Bridge Road) - 10 Houses + 1 Office
2. Existing Foul Loading on Suir Island (east of Old Bridge Road) - 5 Houses + 55 Apartments where population density applied is 2.7 per House/Apartments and 10 for Office.

Commercial Flow comprises of Proposed Amenities Pavilion Building as shown in drawings included in Section F.

Dry Weather Flow = PG + I + E
Design Foul Flow = [PfDom x PG] + [PfDom, Ind x PEGE] + I +[PfTrade x E]

Domestic Peaking Factor (PfDom) = 6
Commercial Peaking Factor (PfDom, Ind) = 4.5
Population (P) = 199
Water Consumption / Capita (G) = 150 l/day
PG = (189 x 150)+ (10 x 150) = 29,850 l/day = 0.345 l/sec
PEGE = 1100 l/day = 0.013 l/sec
Infiltration (I) = 20% PG for Existing Property
Infiltration (I) = 10% PEGE for Proposed Industrial

Domestic:
=> DWF = 0.345 + (20% x 0.345) = 0.414 l/sec
=> Design Foul Flow = 6 x 0.414 = 2.484 l/sec

Commercial / Light Industrial:
=>DWF = 0.013 + (20% x 0.013) = 0.016 l/sec
=>Design Foul Flow = 4.5 x 0.016 = 0.072 l/sec

Total Average Foul Loading = (0.414 + 0.016) = 0.430 l/sec
Total Peak Foul Loading = (2.28 + 0.072) = 2.556 l/sec
Total Normal Foul Loading (8 hrs) = 1.290 l/sec

No allowance required for surface runoff. Existing drainage system is present.

DWF (average) = 37,152 l/day= 0.43 l/sec

24h Storage Volume = 37 m^3

Provisional Dimensions:

Volume = L x W x D
Volume = 4.50m x 5.5m x 1.5m
Volume = 37.13 m^3 (excluding storage in pump station wet-well)

Pump Station Designation - Type 3 (dwellings exceeding 20) - Upper Limit Overall Power Capacity less than 20 kW - Pump station to be designed as per IW-CDS-5030-03 (Revision 2) Section 5

Reason for utilising pumping station: No existing formal sewer collection systems installed on the island. Existing dwellings sewerage collected in septic tanks with overflows to discharge raw sewerage to the Suir River. Gravity fed sewer lines are not possible over the existing Old Bridge Rd crossing (TOP of Bridge Level = 19.740 mOD and levels on site range from 17.86 mOD to 19.31 mOD)

Guide to completing the pre-connection enquiry form

This form should be completed by applicants enquiring about the feasibility of a water and/or wastewater connection to Irish Water infrastructure.

The Irish Water Codes of Practice are available at **www.water.ie** for reference.

Section A | Applicant Details

Question 1: This question requires the applicant or company enquiring about the feasibility of a connection to identify themselves, their postal address, and to provide their contact details.

Question 2: If the applicant has employed a consulting engineer or an agent to manage the enquiry on their behalf, the agent's address and contact details should be recorded here.

Question 3: Please indicate whether it is the applicant or the agent who should receive future correspondence in relation to the enquiry.

Section B | Site details

Question 4: This is the address of the site requiring the water/wastewater service connection and for which this enquiry is being made.

Question 5: Please provide the Irish Grid co-ordinates of the proposed site. Irish grid positions on maps are expressed in two dimensions as Eastings (E or X) and Northings (N or Y) relative to an origin. You will find these coordinates on your Ordnance Survey map which is required to be submitted with an application.

Question 6: Please identify the Local Authority that is or will be dealing with your planning application, for example Cork City Council.

Question 7: Please indicate if planning permission has been granted for this application, and if so, please provide the planning permission reference number.

Section C | Development details

Question 8: Please specify the number of different property/premises types by filling in the tables provided.

Question 9: Please indicate the approximate commencement date of works on the development.

Question 10: Please indicate if a phased building approach is to be adopted when developing the site. If so, please provide details of the phase master-plan and the proposed variation in water demand/wastewater discharge as a result of the phasing of the development.

Question 11: Please indicate the type of connection required by ticking the appropriate box and proceed to complete the appropriate section or sections.

Section D | Water connection and demand details

Question 12: Please indicate if a water connection already exists for this site.

Question 12.1: Please indicate if this enquiry concerns an additional connection to one already installed on the site.

Question 12.2: Please indicate if you are proposing to upgrade the water connection to facilitate an increase in water demand. Irish Water will determine what impact this will have on our infrastructure.

Question 13: Please indicate the approximate date that the proposed connection to the water infrastructure will be required.

Question 14: Please indicate what diameter of water connection is required to service this development.

Question 15: Please indicate if more than one connection is required to service this development. Please note that the connection size provided may be used to determine the connection charge.

Question 16: If this connection enquiry concerns a business premises, please provide calculations for the water demand and include your calculations on the calculation sheet provided. Business premises include shops, offices, hotels, schools, etc. Demand rates (peak and average) are site specific. Average demand is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). For design purposes, please refer to the Irish Water Codes of Practice for Water Infrastructure.

Question 17: If this connection enquiry is for an industrial premises, please calculate the water demand and include your calculations on the calculation sheet provided. Demand rates (peak and average) are site specific. Average demand is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak demand for sizing of the pipe network will be as per the specific business production requirements. For design purposes, please refer to the Irish Water Codes of Practice for Water Infrastructure.

Question 18: Please specify the ground level at the location where connection to the public water mains will be made. This is required in order to determine if there is sufficient pressure in the existing water infrastructure to serve your proposed development. Levels should be quoted in metres relative to Malin Head Ordnance Datum.

Question 19: Please specify the highest finished floor level on site. This is required in order to determine if there is sufficient pressure in the existing water infrastructure to serve your proposed development. Levels should be quoted in metres relative to Malin Head Ordnance Datum.

Question 20: If storage is required, water storage capacity of 24-hour water demand must usually be provided at the proposed site. In some cases, 24-hour storage capacity may not be required, for example 24-hour storage for a domestic house would be provided in an attic storage tank. Please calculate the 24-hour water storage requirements and include your calculations on the attached sheet provided. Please also confirm that on-site storage is being provided by ticking the appropriate box.

Question 21: The water supply system shall be designed and constructed to reliably convey the water flows that are required of the development including fire flow requirements by the Fire Authority. The Fire Authority will provide the requirement for fire flow rates that the water supply system will have to carry. Please note that while flows in excess of your required demand may be achieved in the Irish Water network and could be utilised in the event of a fire, Irish Water cannot guarantee a flow rate to meet your fire flow requirement. To guarantee a flow to meet the Fire Authority requirements, you should provide adequate fire storage capacity within your development. Please include your calculations on the attached sheet provided, and further provide confirmation of the Fire Authority requirements.

Question 22: Please identify proposed additional water supply sources, that is, do you intend to connect to the public water mains or the public mains and supplement from other sources? If supplementing public water supply with a supply from another source, please provide details as to how the potable water supply is to be protected from cross contamination at the premises.

Section E | Wastewater connection and discharge details

Question 23: Please indicate if a wastewater connection to a public sewer already exists for this site.

Question 23.1: Please indicate if this enquiry relates to an additional wastewater connection to one already installed.

Question 23.2: Please indicate if you are proposing to upgrade the wastewater connection to facilitate an increased discharge. Irish Water will determine what impact this will have on our infrastructure.

Question 24: Please specify the approximate date that the proposed connection to the wastewater infrastructure will be required.

Question 25: Please indicate what diameter of wastewater connection is required to service this development.

Question 26: Please indicate if more than one connection is required to service this development. Please indicate number required.

Question 27: If this enquiry relates to a business premises, please provide calculations for the wastewater discharge and include your calculations on the attached sheet provided. Business premises include shops, offices, hotels, schools, etc. Discharge rates (peak and average) are site specific. Average discharge is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). For design purposes, please refer to the Irish Water Codes of Practice for Wastewater Infrastructure.

Question 28: If this enquiry relates to an industrial premises, please provide calculations for the wastewater discharge and include your calculations on the calculation sheet provided. Discharge rates (peak and average) are site specific. Average discharge is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak discharge for sizing of the pipe network will be as per the specific business production requirements. For design purposes, please refer to the Irish Water Codes of Practice for Wastewater Infrastructure.

Question 29: Please specify the maximum and average concentrations and the maximum daily load of each of the wastewater characteristics listed in the wastewater organic load table (if not domestic effluent), and also specify if any other significant concentrations are expected in the effluent. Please complete the table and provide additional supporting documentation if relevant. Note that the concentration shall be in mg/l and the load shall be in kg/day. Note that for business premises (shops, offices, schools, hotels, etc.) for which only domestic effluent will be discharged (excluding discharge from canteens/ restaurants which would require a Trade Effluent Discharge licence), there is no need to complete this question.

Question 30: In exceptional circumstances, such as brownfield sites, where the only practical outlet for storm/ surface water is to a combined sewer, Irish Water will consider permitting a restricted attenuated flow to the combined sewer. Storm/surface water will only be accepted from brownfield sites that already have a storm/surface water connection to a combined sewer and the applicant must demonstrate how the storm/surface water flow from the proposed site is minimised using sustainable urban drainage system (SUDS). This type of connection will only be considered on a case by case basis. Please advise if the proposed development intends discharging surface water to the combined wastewater collection system.

Question 31: Please specify if the development needs to pump its wastewater discharge to gain access to Irish Water infrastructure.

Question 32: Please specify the ground level at the location where connection to the public sewer will be made. This is required to determine if the development can be connected to the public sewer via gravity discharge. Levels should be quoted in metres relative to Malin Head Ordnance Datum.

Question 33: Please specify the lowest floor level of the proposed development. This is required in order to determine if the development can be connected to the public sewer via gravity discharge. Levels should be quoted in metres relative to Malin Head Ordnance Datum.

Question 34: Please specify the proposed invert level of the pipe exiting the property to the public road.

Section F | Supporting documentation

Please provide additional information as listed.

Section G | Declaration

Please review the declaration, sign, and return the completed application form to Irish Water by email or by post using the contact details provided in Section G.

Notes

Supporting Documents Provided in Section F:

1. Irish Water - Water Utilities Network - Clonmel, Co. Tipperary (Drawing IW-AGG-2017-000) - Scale 1:1,200

2. Irish Water - Sewer Water Utilities Network - Clonmel, Co. Tipperary (Drawing IW-AGG-2017-000) - Scale 1:1,200

3. Proposed Suir Island Amenities Pavilion - Sections and Elevations - Scale 1:100 as per the Suir Island Masterplan, Clonmel

4. CSEA Proposed Sewer Connections and Pump Station Plan Layout (Drawing 20_071-CSE-GEN-XX-DR-C-1185, Scale 1:500)

Notes

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Dublin
A96KW29

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City.

www.water.ie

7 January 2022

Re: CDS21008413 pre-connection enquiry - Subject to contract | Contract denied

Connection for Housing Development of 71 unit(s) at The Quay Road, Suir Island, Co. Tipperary

Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Wastewater connection at The Quay Road, Suir Island, Co. Tipperary (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network(s) can be facilitated at this moment in time.

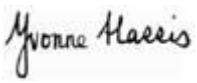
SERVICE	**OUTCOME OF PRE-CONNECTION ENQUIRY** **THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.**
Water Connection	
Wastewater Connection	Feasible Subject to upgrades
SITE SPECIFIC COMMENTS	
The design and construction of the Wastewater pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement.	

General Notes:

1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**
2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.
3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at https://www.water.ie/connections/get-connected/
5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.
6) Irish Water Connection Policy/ Charges can be found at https://www.water.ie/connections/information/connection-charges/
7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
9) To access Irish Water Maps email datarequests@water.ie
10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact Tim O'Connor from the design team on 022 52299 or email timoconnor@water.ie. For further information, visit **www.water.ie/connections.**

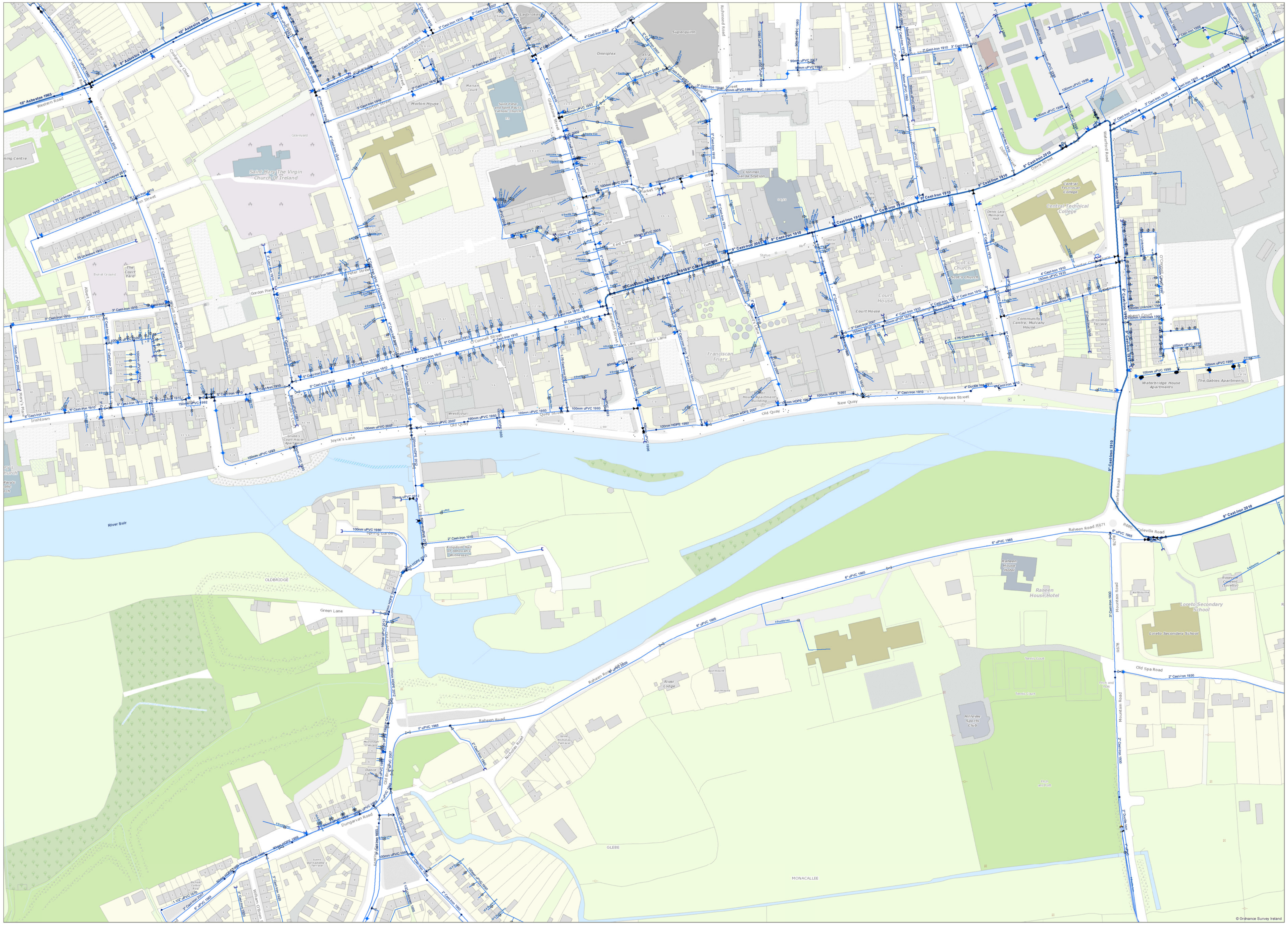
Yours sincerely,

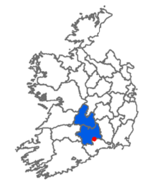


Yvonne Harris
Head of Customer Operations

Appendix D – Water Supply

Document Ref No.	Title
IW-AGG-2017-000	Water Utilities Network Clonmel – Co. Tipperary





Legend

- Bulk Meter
- PRV
- Sluice Valve Open
- Sluice Valve Closed
- Scour Valves
- Water Stop Valves
- Fire Hydrant
- Abstraction Point
- Cap
- Other Fittings

Water Distribution Mains Owned By

- Irish Water
- Irish Water
- Irish Water

0 20 40 80 Meters

Coordinate System: TM65 Irish Grid
Projection: Transverse Mercator

Scale @ A0:	1:1,200
Drawing No.:	IW-AGG-2017-000
Drawn By:	MBS
Checked By:	<Add Name>
Approved By:	<Add Name>
Drawn Date	25/08/2017
Checked Date:	<dd/mm/yyyy>
Approved Date:	<dd/mm/yyyy>

DRAFT

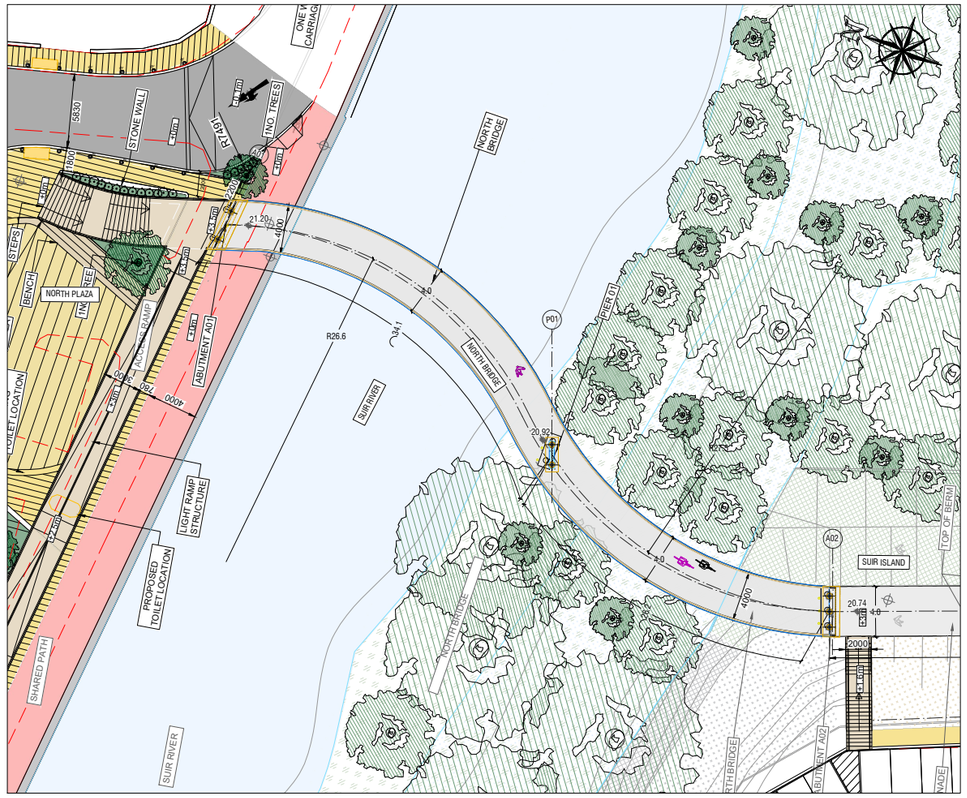
N

Map Template Design: kcarroll@water.ie

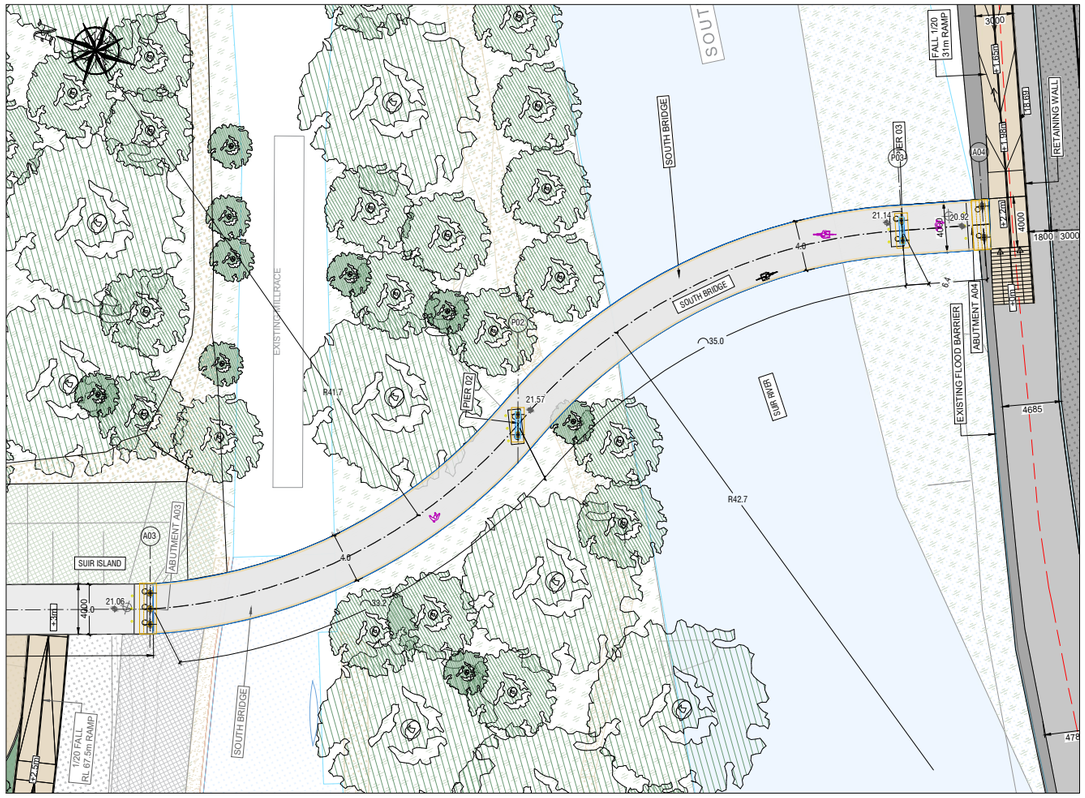
Water Utilities Network
Clonmel - Co. Tipperary

Appendix E – Bridge Design Drawings

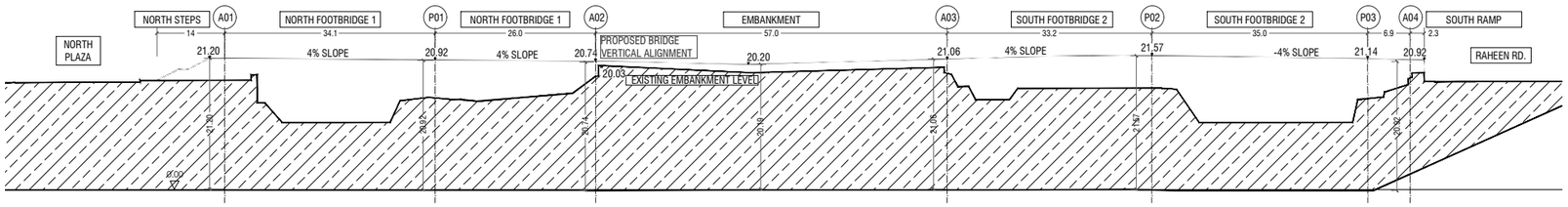
Document Ref No.	Title
20_071-CSE-GEN-XX-DR-C-2260	Proposed Option Bridge Plan & Elevations
20_071-CSE-GEN-XX-DR-C-2261	Proposed Option Bridge Sections
20_071-CSE-GEN-XX-DR-C-2262	Proposed Options Bridge Details
20_071-CSE-GEN-XX-DR-C-2270	Proposed Public Lighting Services Layout Plan
20_071-CSE-GEN-XX-DR-C-2271	Proposed Bridge Section & Handrail Section



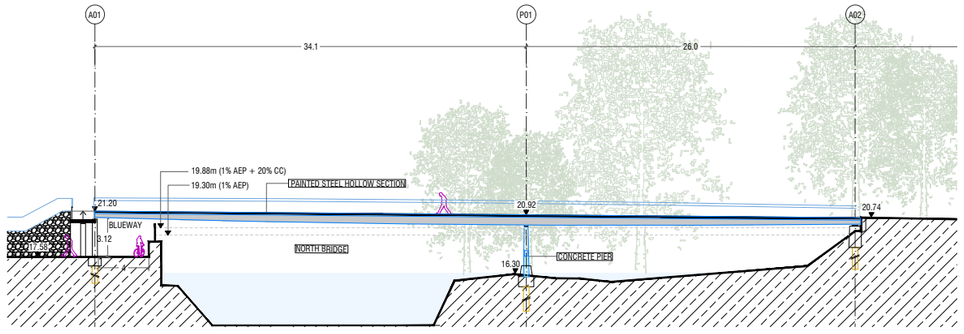
SITE PLAN NORTH BRIDGE 1/250



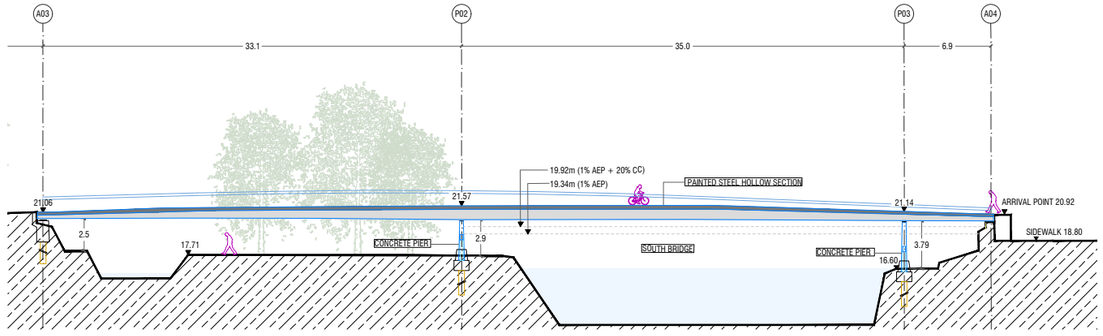
SITE PLAN SOUTH BRIDGE 1/250



VERTICAL ALIGNMENT 1/500



ELEVATION NORTH BRIDGE 1/250



ELEVATION SOUTH BRIDGE 1/250

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1

CLIENT

Comhairle Contae Thiobraid Árann
Tipperary County Council

ARCHITECTS

dhbarchitects

ARCHEOLOGISTS

CourtneyDeery
ARCHAEOLOGY & CULTURAL HERITAGE

BRIDGES

MARC MIMRAM
ARCHITECTURE
INGÉNIERIE

ENGINEERS

Clifton Scannell Emerson Associates

ENVIRONMENTAL CONSULTANTS

awnconsulting
A Tritelly Consultants Company

LIGHTING CONSULTANTS

Douglas Carroll
Consulting Engineers

NOTES:

A0X = ABUTMENT FOUNDATION NUMBER X
P0X = PIER FOUNDATION NUMBER X

Rev	Description	Drawn	Checked	Date
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PL01	ISSUED FOR PLANNING	FO	LP	22.09.23

Clifton Scannell Emerson Associates

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W. www.csea.ie

Client: TIPPERARY COUNTY COUNCIL

Project: SUIR ISLAND INFRASTRUCTURE LINKS

Dwg. Title: PREFERRED OPTION 01 BRIDGE PLAN & ELEVATIONS

Drawn By: FO | Date: SEPT 2023

Checked By: LP | Scale: AS INDICATED @ A1

CSEA Job No.: 20_071

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
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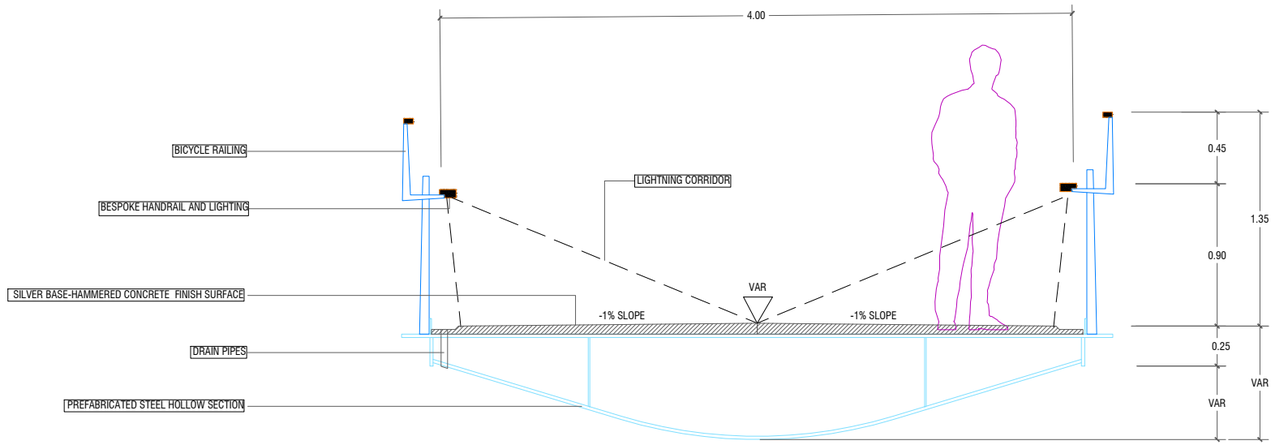
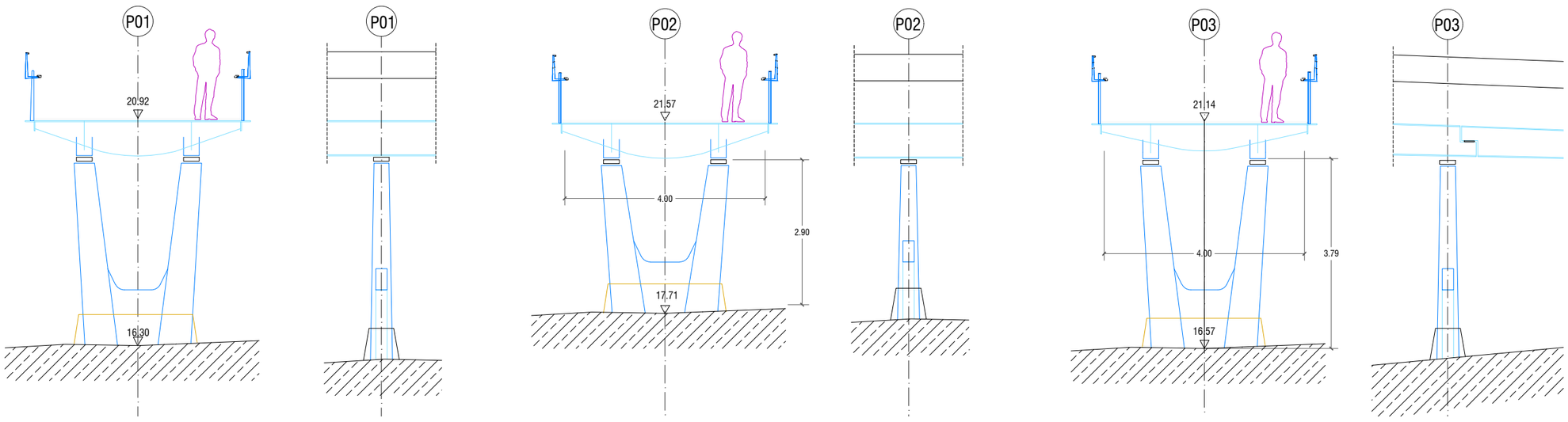
Revision: PL01 — Project Status: ISSUED FOR PLANNING



TYPICAL BRIDE SUPERSTRUCTURE CROSS SECTION 1/20



TYPICAL SUPPORT PIER CROSS SECTIONS 1/50

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1

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LIGHTING CONSULTANTS

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NOTES:

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P0X = PIER FOUNDATION NUMBER X

Rev	Description	Drawn	Checked	Date

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PL01	ISSUED FOR PLANNING	FO	LP	22.09.23

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F. +353 1 283 3466
E. info@csea.ie
W. www.csea.ie

Client: TIPPERARY COUNTY COUNCIL

Project: SUIR ISLAND INFRASTRUCTURE LINKS

Dwg. Title: PREFERRED OPTION 01 BRIDGE SECTIONS

Drawn By: FO | Date: SEP 2023

Checked By: LP | Scale: AS INDICATED @ A1

CSEA Job No.: 20_071

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
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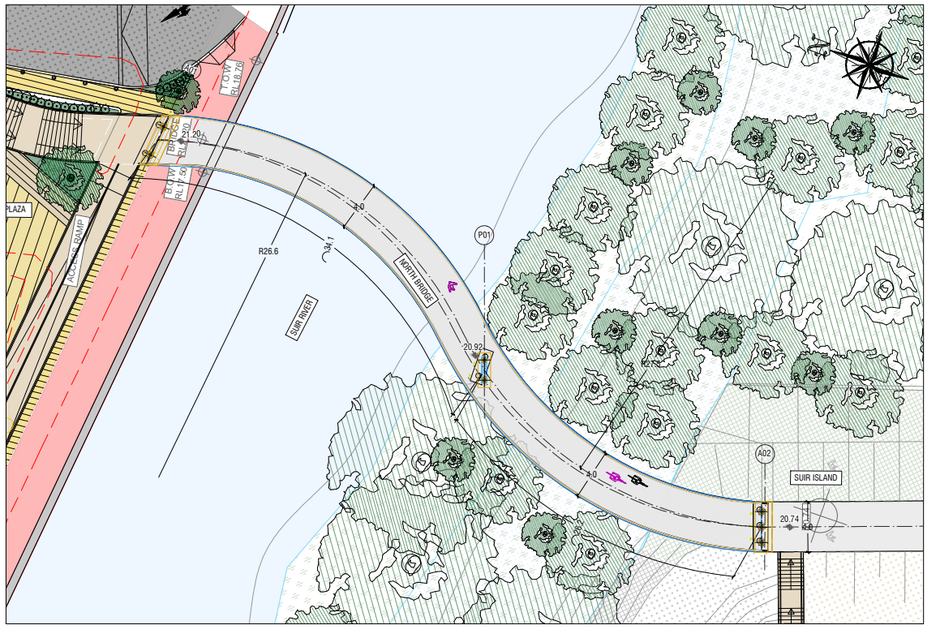
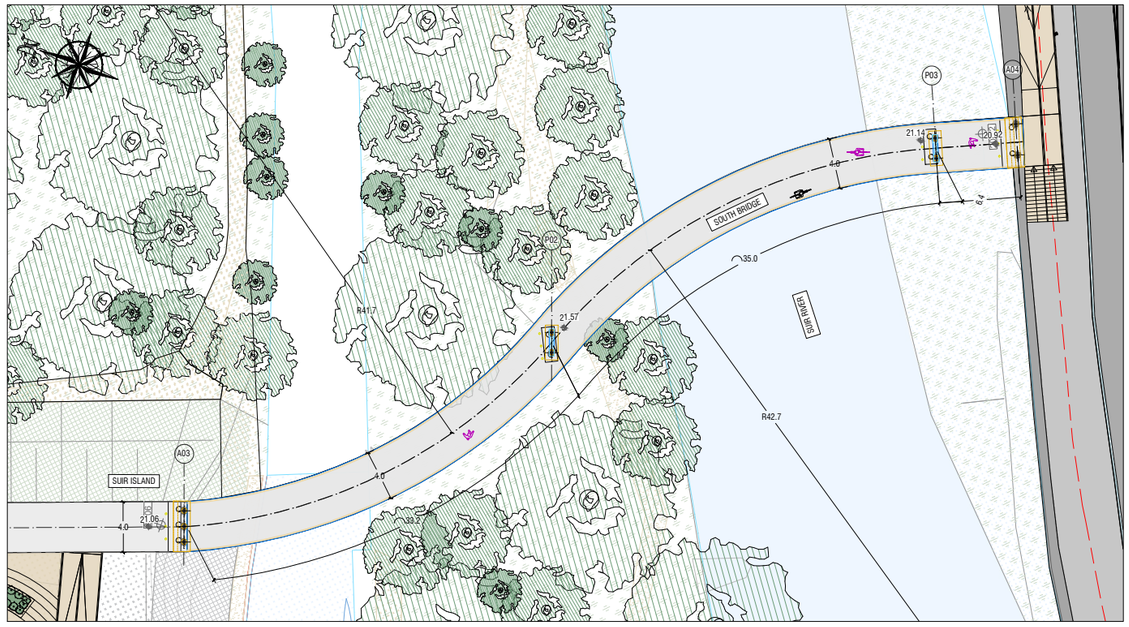
Status Code: S2 — SUITABLE FOR INFORMATION

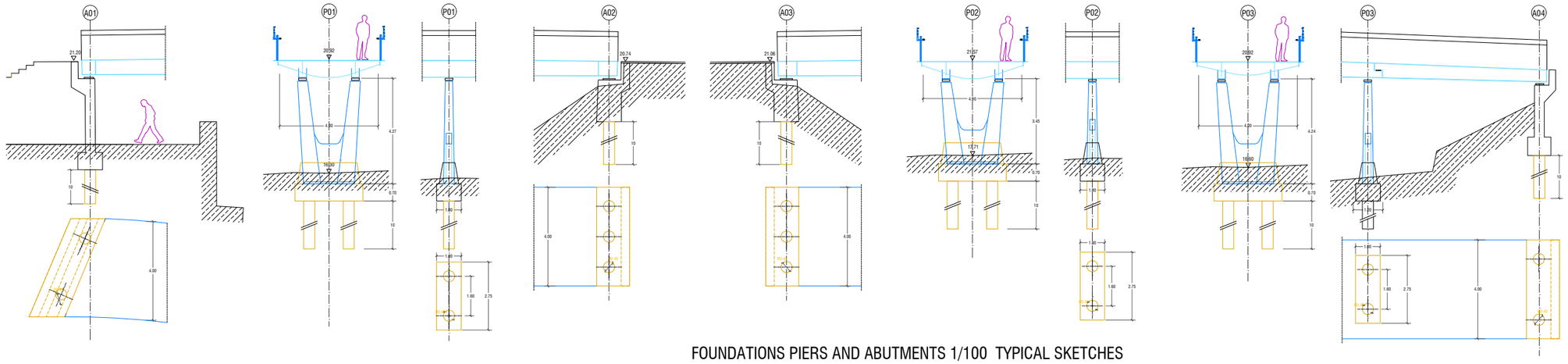
Revision: PL01 — Project Status: ISSUED FOR PLANNING



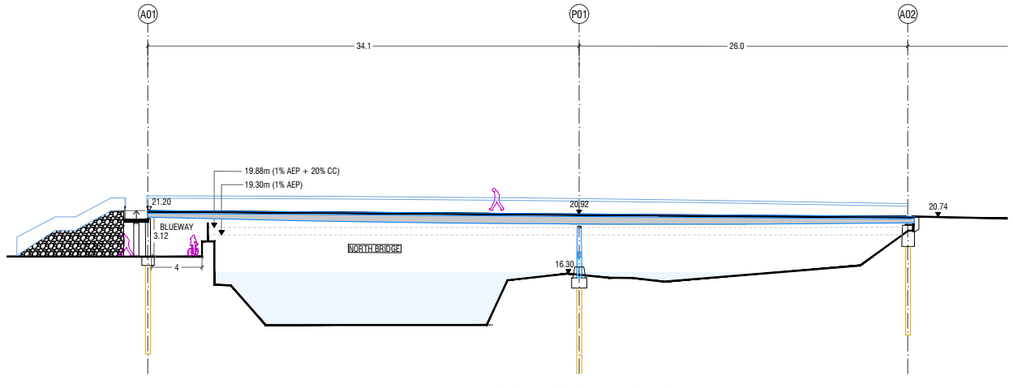
SITE PLAN NORTH BRIDGE 1/250



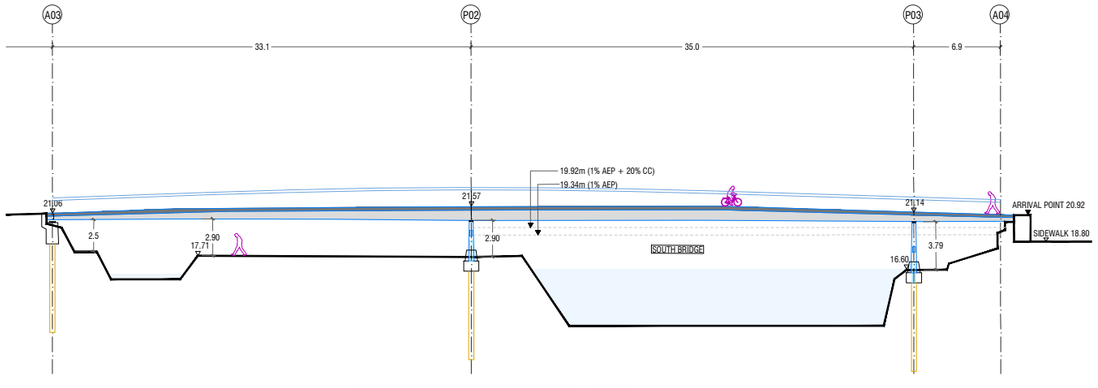
SITE PLAN SOUTH BRIDGE 1/250



FOUNDATIONS PIERS AND ABUTMENTS 1/100 TYPICAL SKETCHES



ELEVATION NORTH BRIDGE 1/250



ELEVATION SOUTH BRIDGE 1/250

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

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W. www.csea.ie

Client: TIPPERARY COUNTY COUNCIL

Project: SUIR ISLAND INFRASTRUCTURE LINKS

Dwg. Title: PREFERRED OPTION 01 BRIDGE DETAILS

Drawn By: FO | Date: SEPT 2023

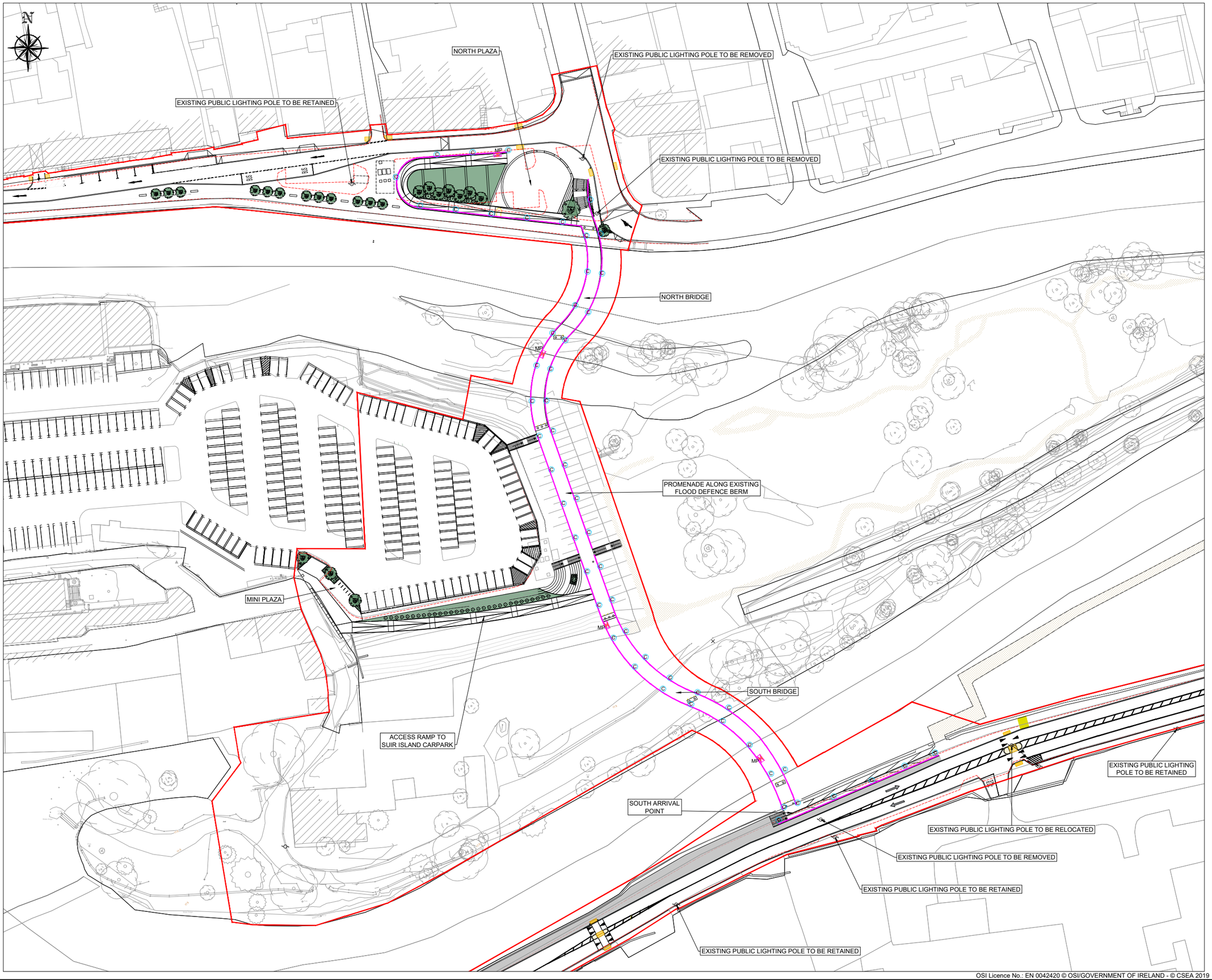
Checked By: LP | Scale: AS INDICATED @ A1

CSEA Job No.: 20_071

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
20_071	CSE	GEN	XX	DR	C	2262

Status Code: S2 — SUITABLE FOR INFORMATION

Revision: PL01 — ISSUED FOR PLANNING



DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

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ENVIRONMENTAL CONSULTANTS

awnconsulting
A Tritrity Consultants Company

LIGHTING CONSULTANTS

Douglas Carroll
Consulting Engineers

LEGEND:

- SITE BOUNDARY
- MP — DISTRIBUTION MINI PILLAR
- LIGHTING CONTROLLER TO BALUSTRADE LIGHTING
- LED BALUSTRADE HANDRAIL
- EXISTING PUBLIC LIGHTING POLE
- PROPOSED LOCATION TO RELOCATE PUBLIC LIGHTING POLE
- EXISTING PATH LINE

Rev	Description	Drawn	Checked	Date
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PL01	ISSUED FOR PLANNING	FO	LP	22.09.23

Clifton Scannell Emerson Associates

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Client: TIPPERARY COUNTY COUNCIL

Project: SUIR ISLAND INFRASTRUCTURE LINKS

Dwg. Title: PREFERRED OPTION 01 PUBLIC LIGHTING SERVICES LAYOUT PLAN

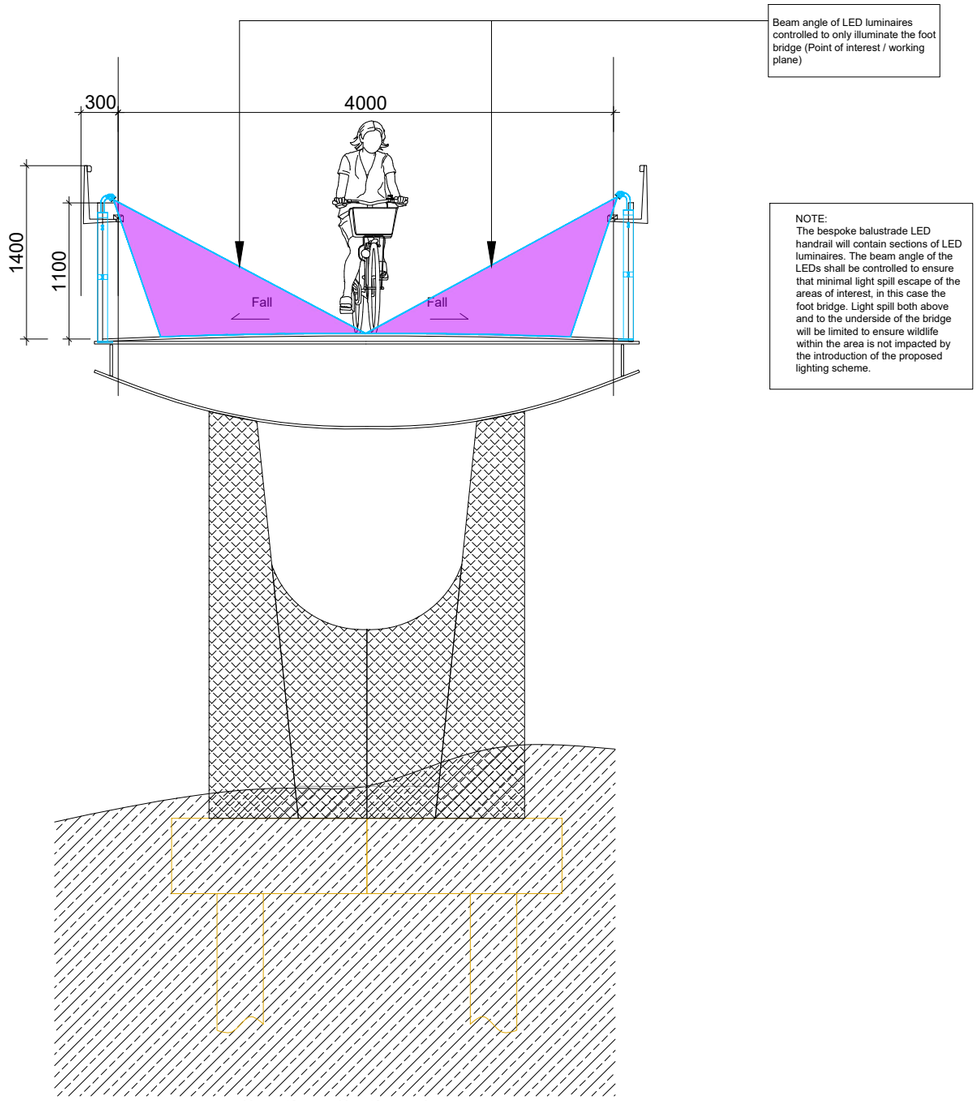
Drawn By: FO | Date: SEPT 2023

Checked By: LP | Scale: 1:500 @ A1 | CSEA Job No.: 20_071

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
20_071	CSE	GEN	XX	DR	C	2270

Status Code: S2 — SUITABLE FOR INFORMATION

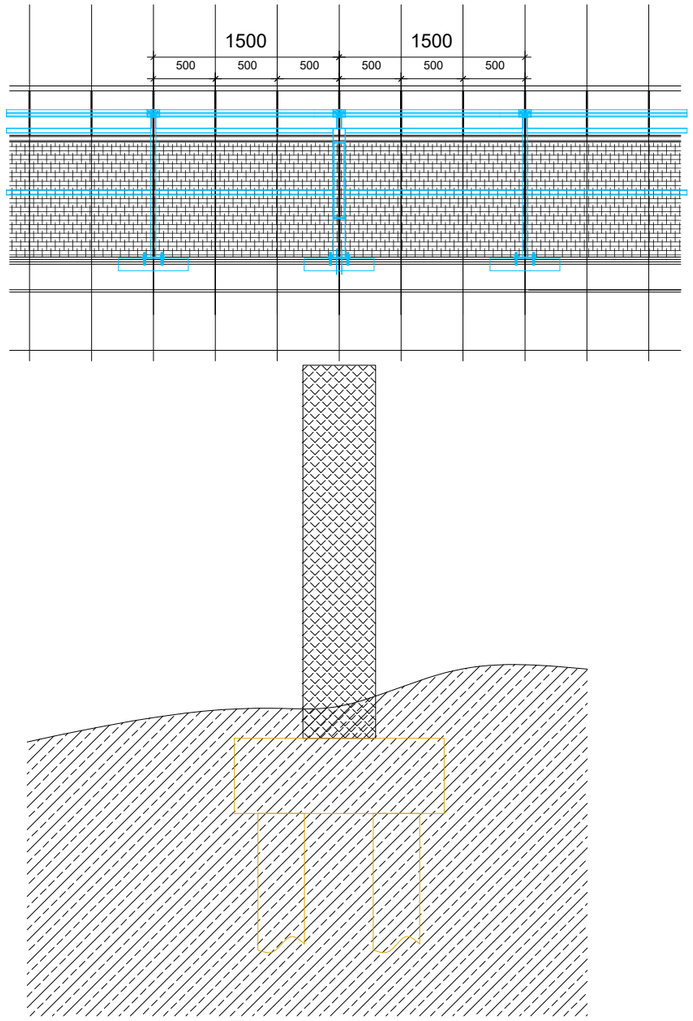
Revision: PL01 — ISSUED FOR PLANNING



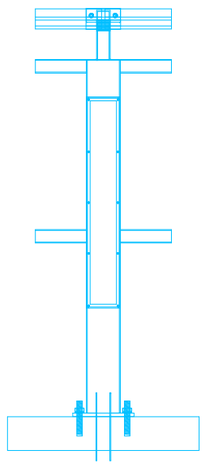
Beam angle of LED luminaires controlled to only illuminate the foot bridge (Point of interest / working plane)

NOTE:
The bespoke balustrade LED handrail will contain sections of LED luminaires. The beam angle of the LEDs shall be controlled to ensure that minimal light spill escape of the areas of interest, in this case the foot bridge. Light spill both above and to the underside of the bridge will be limited to ensure wildlife within the area is not impacted by the introduction of the proposed lighting scheme.

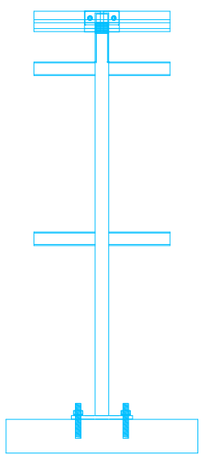
Section Option 1



Elevation Option 1



Control Panel Post Section



LED Standard Post Section

DRAWING IS PRODUCED USING THE IRISH TRANSVERSE MERCATOR (ITM) GEOGRAPHIC COORDINATE SYSTEM

A1

CLIENT
Comhairle Contae Thiobraid Árann
Tipperary County Council

ARCHITECTS
dhbarchitects

ARCHEOLOGISTS
CourtneyDeery
ARCHAEOLOGY & CULTURAL HERITAGE

BRIDGES
MARC MIMRAM
ARCHITECTURE
INGÉNIERIE

ENGINEERS
Clifton Scannell Emerson Associates

ENVIRONMENTAL CONSULTANTS
awnconsulting
A Tritrity Consultants Company

LIGHTING CONSULTANTS
Douglas Carroll
Consulting Engineers

Rev	Description	Drawn	Checked	Date
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Client: TIPPERARY COUNTY COUNCIL

Project: SUIR ISLAND INFRASTRUCTURE LINKS

Dwg. Title: PREFERRED OPTION 01 PUBLIC LIGHTING SERVICES SECTIONS

Drawn By: FO
Checked By: LP
Date: SEPT 2023
Scale: N.T.S @ A1
CSEA Job No.: 20_071

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
20_071	CSE	GEN	XX	DR	C	2271

Status Code: S2 — SUITABLE FOR INFORMATION
Revision: PL01 — ISSUED FOR PLANNING

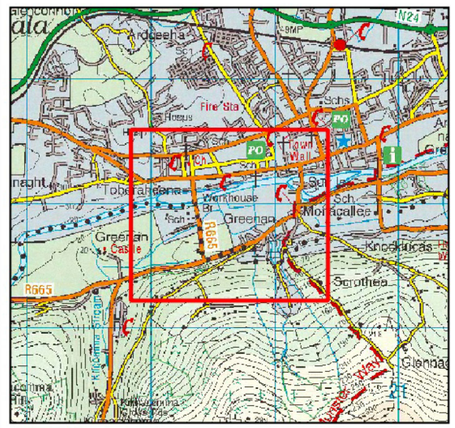
Appendix F – Flood Risk Maps

Document Ref No.	Title
o16cln_exfcd_f0_45	Clonmel Scheme Fluvial Flood Extent Map (Current)
o16cln_exfcd_f0_46	Clonmel Scheme Fluvial Flood Extent Map (Current)

Node Label	Water Level (mOD) 10% AEP	Flow (m3/s) 10% AEP	Water Level (mOD) 1% AEP	Flow (m3/s) 1% AEP	Water Level (mOD) 0.1% AEP	Flow (m3/s) 0.1% AEP
28	19.596	185.929	20.393	233.159	21.043	-
34	19.596	81.191	20.393	84.439	21.043	-
35	19.445	43.131	20.312	52.577	21.167	-
36	19.193	43.131	19.869	52.577	20.602	-
37	19.187	86.056	19.865	98.403	20.595	-
38	19.439	86.056	20.264	98.403	20.973	-
40	18.993	206.438	19.704	281.13	20.492	-
221	19.596	233.054	20.393	277.073	21.043	-
222	19.599	238.059	20.398	246.228	21.049	-
223	19.605	238.365	20.393	246.403	21.038	-
224	19.634	238.518	20.411	246.626	21.054	-
133	20.01	260.612	20.703	273.672	21.352	-

Node Label	Water Level (mOD) 10% AEP	Flow (m3/s) 10% AEP	Water Level (mOD) 1% AEP	Flow (m3/s) 1% AEP	Water Level (mOD) 0.1% AEP	Flow (m3/s) 0.1% AEP
40	18.993	206.438	19.704	281.13	20.492	-
42	18.842	206.436	19.541	281.123	20.358	-
235	20.045	260.926	20.72	274.244	21.365	-
224U	19.651	238.61	20.422	246.763	21.064	-
227A	19.697	47.996	20.44	49.31	21.075	-
227B	19.688	191.621	20.449	211.669	21.091	-
232A	20.01	48.422	20.703	49.972	21.352	-
232B	20.01	216.846	20.703	229.653	21.352	-
23A	18.522	151.072	19.414	217.63	20.257	-
24D	18.513	151.107	19.399	188.291	20.323	-
24U	19.37	151.107	20.127	188.291	20.698	-
31A	19.727	48.167	20.449	49.572	21.08	-
31B	19.77	216.411	20.524	228.842	21.17	-
33A	19.957	48.167	20.684	49.572	21.342	-
33B	19.871	216.411	20.622	228.842	21.276	-
37D	19.165	86.055	19.847	98.398	20.587	-
38A	19.486	86.057	20.304	98.412	20.996	-
39D	19.115	129.176	19.818	150.485	20.575	-
39D1	19.113	129.174	19.817	150.477	20.574	-
41U	19.165	129.18	19.847	150.511	20.587	-
45D	19.493	43.134	20.23	82.798	20.641	-

Location Plan:



LEGEND

- AFA Boundary
- Defended Area
- Modelled River Centreline
- Node Point
- 10% AEP Fluvial Extent (High Risk)
- 1% AEP Fluvial Extent (Medium Risk)
- 0.1% AEP Fluvial Extent (Low Risk)
- Flood Defence - Embankment
- Flood Defence - Wall
- Gate
- NODE123 — Node Label
- x.x% AEP — Standard of Protection of Flood Defence

IMPORTANT USER NOTE:
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

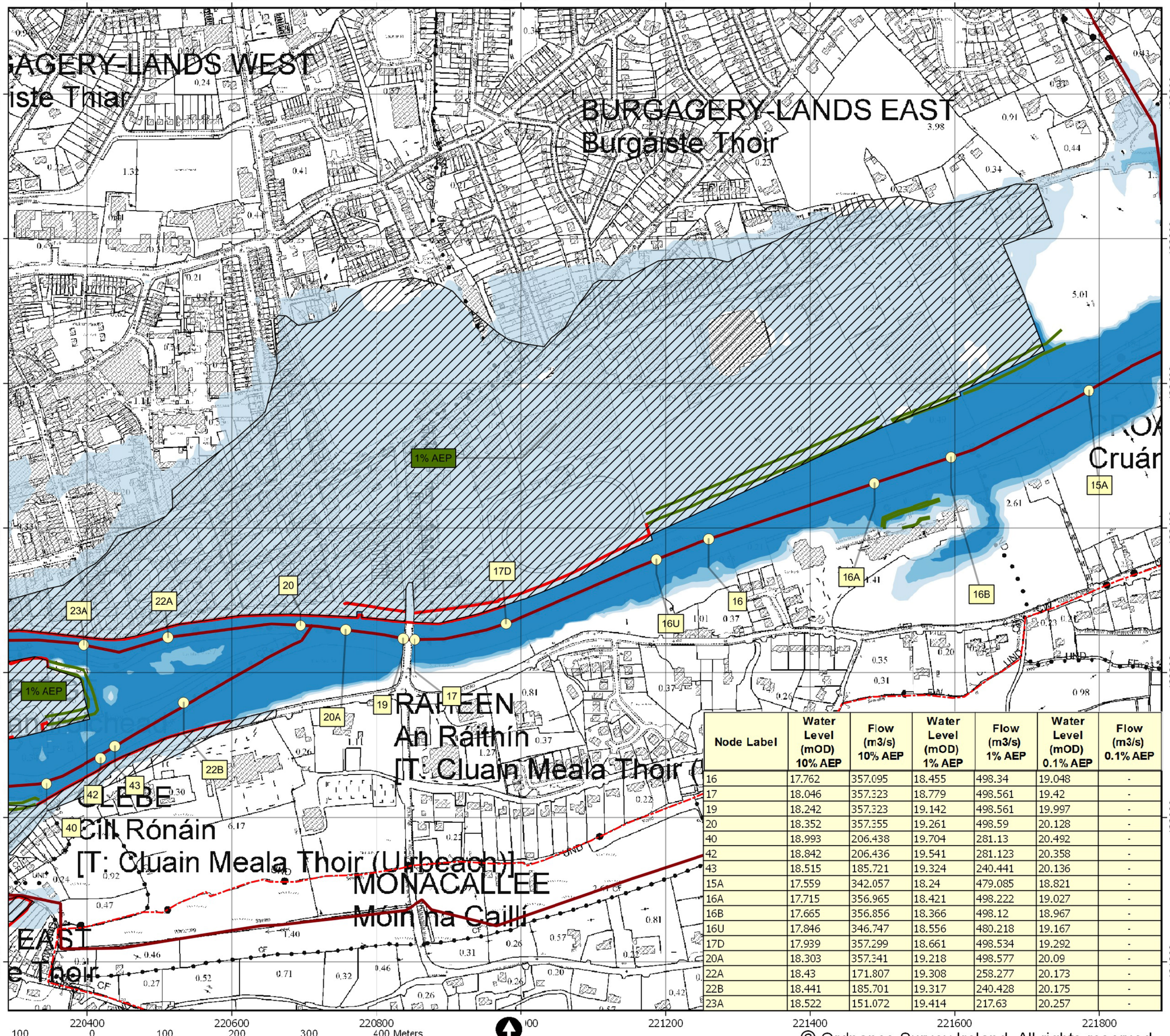
The Office of Public Works
Jonathan Swift Street
Trim
Co. Meath

Project:
SUIR CFRAM STUDY

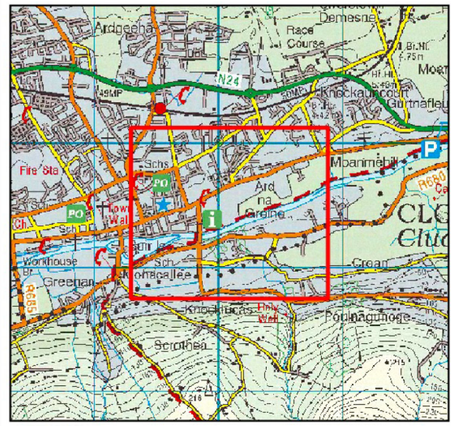
Map: **CLONMEL SCHEME FLUVIAL FLOOD EXTENT MAP**

Map Type:	EXTENT		
Source:	FLUVIAL		
Map Area:	HPW		
Scenario:	CURRENT		
Drawn by:	NMC	Date:	Sep - 2016
Checked by:	MC	Date:	Sep - 2016
Approved by:	GG	Date:	Sep - 2016

Map No.: O16CLN_EXFCD_F0_45
Revision: F0
Map Scale: 1:5,000 Plot Scale: 1:1 @ A3



Location Plan:



LEGEND

- AFA Boundary
- Defended Area
- Modelled River Centreline
- Node Point
- 10% AEP Fluvial Extent (High Risk)
- 1% AEP Fluvial Extent (Medium Risk)
- 0.1% AEP Fluvial Extent (Low Risk)
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- NODE123 — Node Label
- xx% AEP — Standard of Protection of Flood Defence

IMPORTANT USER NOTE:
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

Node Label	Water Level (mOD) 10% AEP	Flow (m3/s) 10% AEP	Water Level (mOD) 1% AEP	Flow (m3/s) 1% AEP	Water Level (mOD) 0.1% AEP	Flow (m3/s) 0.1% AEP
16	17.762	357.095	18.455	498.34	19.048	-
17	18.046	357.323	18.779	498.561	19.42	-
19	18.242	357.323	19.142	498.561	19.997	-
20	18.352	357.355	19.261	498.59	20.128	-
40	18.993	206.438	19.704	281.13	20.492	-
42	18.842	206.436	19.541	281.123	20.358	-
43	18.515	185.721	19.324	240.441	20.136	-
15A	17.559	342.057	18.24	479.085	18.821	-
16A	17.715	356.965	18.421	498.222	19.027	-
16B	17.665	356.856	18.366	498.12	18.967	-
16U	17.846	346.747	18.556	480.218	19.167	-
17D	17.939	357.299	18.661	498.534	19.292	-
20A	18.303	357.341	19.218	498.577	20.09	-
22A	18.43	171.807	19.308	258.277	20.173	-
22B	18.441	185.701	19.317	240.428	20.175	-
23A	18.522	151.072	19.414	217.63	20.257	-

OPW
Oifig na nOibreacha Poiblí
The Office of Public Works
The Office of Public Works
Jonathan Swift Street
Trim
Co. Meath

Project:
SUIR CFRAM STUDY

Map: **CLONMEL SCHEME**
FLUVIAL FLOOD EXTENT MAP

Map Type:	EXTENT	
Source:	FLUVIAL	
Map Area:	HPW	
Scenario:	CURRENT	
Drawn by:	NMC	Date: Sep - 2016
Checked by:	MC	Date: Sep - 2016
Approved by:	GG	Date: Sep - 2016

Map No.:
O16CLN_EXFCD_F0_46

Revision: F0

Map Scale: 1:5,000 Plot Scale: 1:1 @ A3

Appendix G – Lighting Assessment Report

Douglas Carroll
Consulting Engineers

W2062 Suir Island Public Realm – Stage 2A Report

Mark Pepper

W2062

15/09/2022

“W2062 Suir Island Public Realm –Stage 2A Report”

TABLE OF FIGURES

1 INTRODUCTION:

Douglas Carroll have been appointed by Tipperary Council via Clifton Scannell Emerson Associates (CSEA). Douglas Carroll will act as Mechanical & Electrical Engineers on the Suir Island Infrastructure Links project. The Report should be read in conjunction with the other reports as issued by CSEA & dhb Architects.

The report outlines the Mechanical and Electrical scope of works. It provides some optional additions and outline budgets, which require client direction prior to starting Stage 2A.

Please note, the budget figures provided for the Suir Island Infrastructure Links Project are provisional. The true valuation of the works cannot be determined until the full scope of works is agreed.

2 EXISTING UTILITIES:

Please see Appendix No.2 Utility Record Drawings - for all existing Utility services record Drawings.

A Topographical survey for the area of works will be procured during stage 2 design.

Douglas Carroll Consulting Engineers recommend that a Ground Penetrating Radar Survey (GPRS) be completed prior to the stage 2A reporting process.

Douglas Carroll have obtained the most up to date utility record information.

The following existing utility drawings are contained within Appendix No. 2:

- ESB
- EIR
- ENET
- VIRGIN MEDIA
- GAS NETWORKS IRELAND (GNI)

2.1 PROPOSED ELECTRICAL WORKS:

The proposed works include for the construction of a foot bridge traversing across the River Suir. The proposed footbridge will be illuminated via a bespoke balustrade LED handrail. As the river is a natural hub for Wildlife, the protection of same is of the utmost importance to the design process, as highlighted in Section 2.1.1.

The primary aim of the bespoke balustrade LED handrail is to ensure that the bridge itself is illuminated, with no light spilling over, above or below the bridge. This will ensure that any Wildlife habitats are undisturbed.

The illumination of the footbridge will be delivered complete with several dimming options.

- Option No. 1: LED balustrade is constantly illuminated at the 5% of its total power output to illuminate the bridge to 10 lux 0.2 uniformity.
- Option No. 2: LED Balustrade operate at 1% of its output until detection of a person, where LED balustrade ramps up to 5% set output for a time period of 10 minutes without further detection activated on the PIR.
- Option No. 3: LED Balustrade operate at 0% of its output (OFF) until detection of a person, where LED balustrade ramps up to 5% output for a time period of 10 minutes without further detection activated on the PIR.

The above options 1 – 3 are just some of the many options available for the balustrade LED luminaire but highlight the various control options available within the proposed design.

The lighting will also be controlled via Passive Infrared (PIRs) sensors. The PIRs will have the ability to detect the presence of any person who comes into the detection zone of the PIR and illuminate the section of the LED balustrade accordingly.

The lighting for the bridge will be designed so that there is no light spill to the water beneath the bridge and surrounding areas. The protection of the wildlife in the area is of the utmost importance to the success of the scheme.

Alterations to existing public lighting as shown on Drawing SIL-CSEA-GEN-XX-DR-9000 will be evaluated during the Stage 2B Phase.

2.1.1 LIGHTING DESIGN CONSIDERATIONS:

As part of the Stage 1 design for the works, a survey on Bat Activity was conducted by Doherty Environmental. The survey found that there was an extremely high level of Bat activity in the vicinity of the proposed foot bridge. Both Common Pipistrelle and Soprano Pipistrelle were found to be in high volumes along the river and riverbanks.

Typically bats congregate where there is a large volume of insects which they can feed on. This is why it's common for bats to be present near woodlands, hedgerows, ponds, slow moving rivers and marshes. Bats and their roosting site are protected under international and domestic legislation. The International protection agency has been transposed into national law by Wildlife Act 1976 – 2022.

Lighting and artificial lighting schemes in the vicinity of roosting site can lead to a roosting site being abandoned by the bats, which has the potential to have a significant impact on the bat population in a particular area. With that in mind, it is essential that any areas proposed for a new artificial lighting scheme are properly assessed for bat activity and roosting sites. (Institute of Lighting Professional – Bat Conservation Trust 08/18 Guidance Notes.)

A 5-step design process as shown in Figure No. 1 has been implemented to ensure that the artificial lighting proposals do not adversely impact on bat habitats.

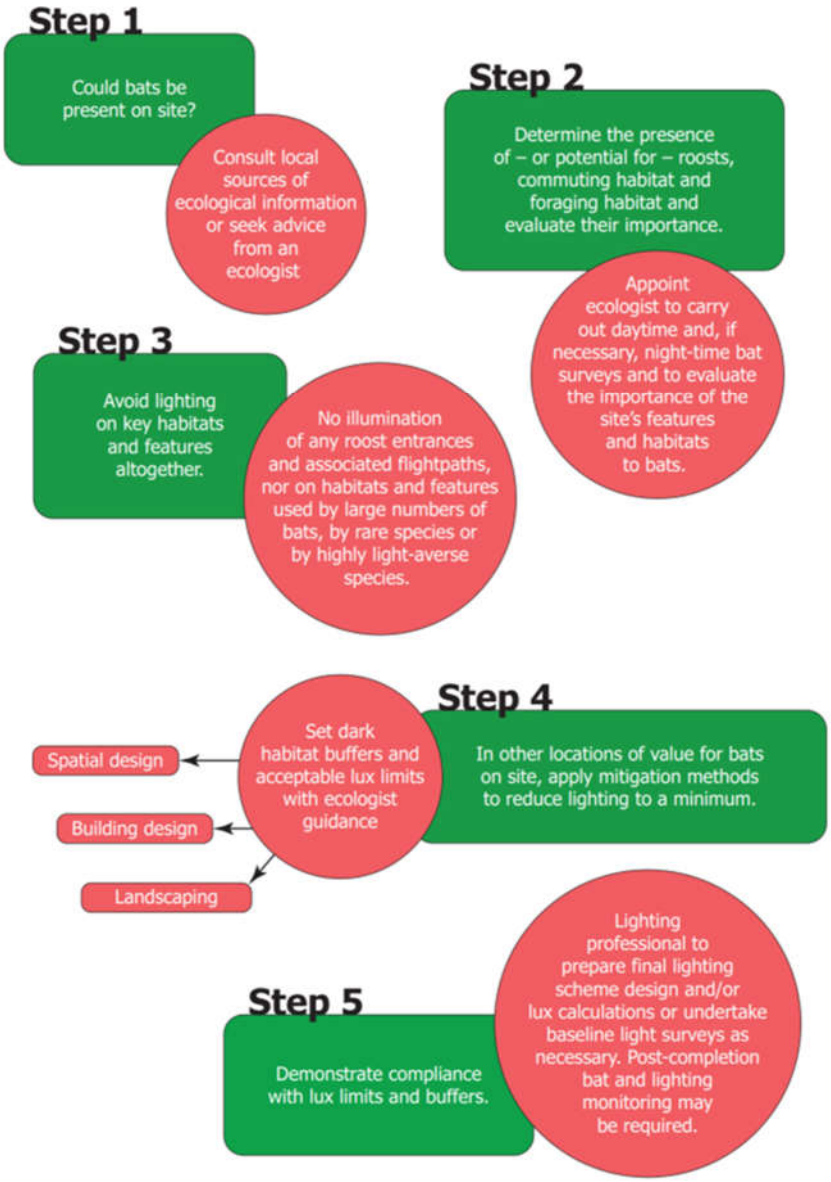

Figure 1 Institute of Lighting Professional – Bat Conservation Trust 08/18 Guidance Notes

5 Step Design Process

2.1.2 DIALUX EVO MODEL:

To ensure that the minimum lighting requirements for pedestrian safety are achieved whilst minimising light spill on ecological habitats, a Dialux Evo model was created to assess the lighting proposals for the pedestrian bridges. Refer to the Dialux Evo. Report included in Appendix No. 5.

Several simulations have been calculated through the Dialux evo model. The proposed setting for the balustrade lighting output will be 95% dim. This will allow the luminaires to illuminate the pathway of the bridge to 10lux 0.2 uniformity, while not allowing light generated from the balustrade to spill onto the sensitive areas of land and river below.

2.1.3 LED BALUSTRADE ELECTRICAL DESIGN:

2.1.3.1 ILP GUIDANCE NOTE 08/18 “BATS AND ARTIFICIAL LIGHTING IN THE UK” BATS AND THE BUILT ENVIRONMENT SERIES

Bats and other wildlife use the river as a migration route. All lighting installed must comply with ILP Guidance Note 08/18 “Bats and artificial lighting in the UK” Bats and the built environment series.

As the proposed site has the potential to support bats and other nocturnal wildlife, an ecologist was appointed to provide expertise and conduct a survey. The ecologist was appointed early in the design stage before the lighting design was commenced to ensure no abortive works were carried out. As the proposed site is adjacent to a river, there was a significant chance that Bats would be present in the area.

The ecologist visited site to record the habitats and features present and evaluate their importance to bats and assess the likelihood that bats could be affected by the introduction of artificial lighting both on and immediately adjacent to the proposed site. The ecologist visited the site at night, to determine the presence of roosts within nearby trees and to assess the use of the habitat by bats. This survey was conducted by means walking the site. The survey was conducted observing the recommendations within the Bat Conservation Trust’s Bat Survey for Professional Ecologists: Good Practice Guidelines. The findings from the ecologist’s survey confirmed the presence of bats on the proposed site. This information was then incorporated into the lighting design.

Within Public Realm areas, the presence of artificial lighting can increase the perception of safety and security. As the present of Bats has been confirmed on site, the lighting design shall be designed to be flexible and is capable of taking into account the presence of protected species and avoid impacts on the wildlife currently residing the proposed site.

Sources of lighting which can disturb bats is not limited to road lighting, or external pathway lighting. Light spill or light pollution be it permanent but sporadic operation. Glare in particular can have effect of bats over greater distances than the proposed target area (Link bridge) directly illuminated by the luminaires and was fully considered during the process of the lighting design.

As a buffer zone could not be determined, the ecologist informed the lighting designer that light spill off the ink bridge was to be limited. This was compiled by the selection of luminaire and additional guarding affixed to the link bridge and luminaires to limit glare and light spill.

All luminaires proposed for the Link bridge shall be LED. This is due to the sharp beam angle cut – off, lower intensity of lighting, good colour rendering and dimming capability. Additionally, all luminaire will be delivered with an upward lighting ratio of 0% and with excellent optic control.

Screening shall be provided along the link bridge to reduce light spill. To ensure the screening is not easily removed, it can be incorporated into the design of the link bridge and be affix to same via metal posts.

To demonstrate compliance, a light model was created using the lighting design software Dialux Evo. the lighting design incorporated a horizontal calculation plane, vertical calculation plane, light and beam angles included from all luminaires for the proposed area of illuminance and make and model of proposed luminaire.

2.1.3.2 LED BALUSTRADE DESIGN:

Each luminaire supplied shall come complete with a programmable driver, capable of carrying out the preferred switching / dimming requirements of the client.

All luminaires supplied must be marine grade to cope with the harsh installation environment. All luminaires are to be delivered with a protective primer applied by the manufacturer.

Typical illuminated handrails are shown in Figure 2.

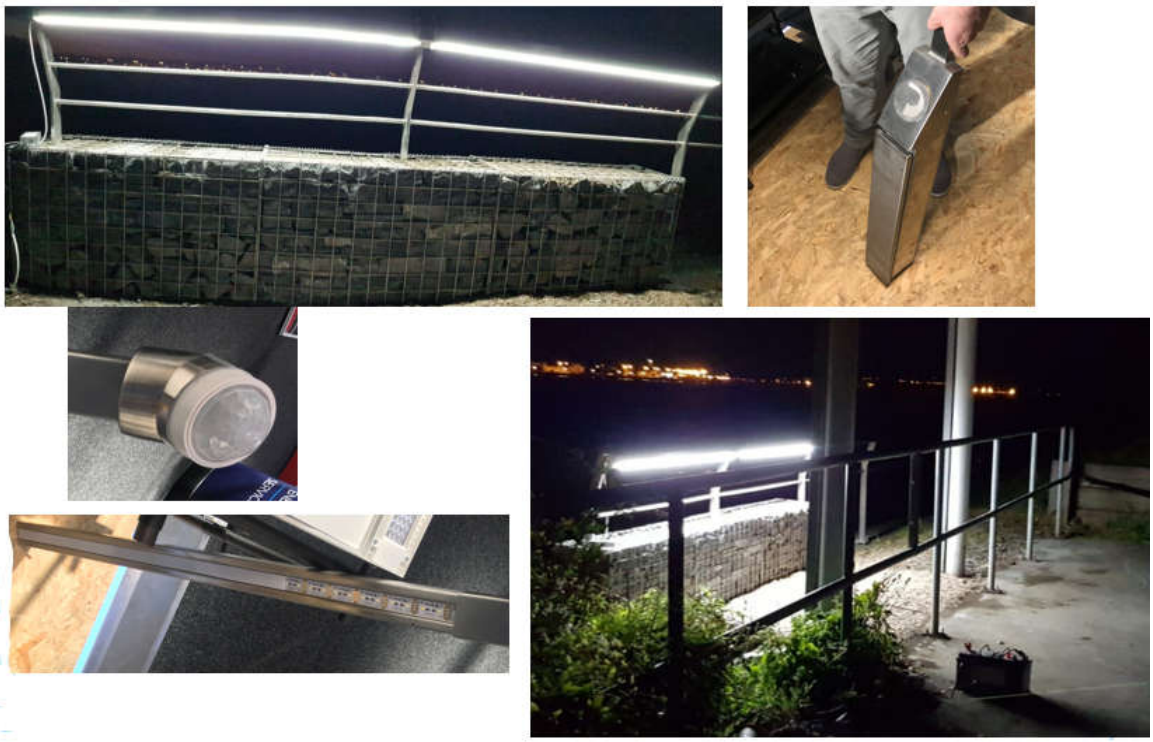

Figure 2 Typical LED Balustrade Detail

2.1.3.3 LUMINAIRES

General

All luminaires shall be supplied with lamps and control gear which are compatible.

Unless otherwise stated all luminaires shall be constructed to minimum IP65.

All non-current carrying metal parts of luminaires shall be effectively electrically continuous to a main earthing terminal which shall be provided within each fitting. Louvres shall be restrained to prevent them from falling out of the body of the luminaires under normal conditions and during relamping. Metal louvres shall be connected to the body of the luminaire or the earth terminal by an insulated flexible copper conductor.

All lighting supplies must meet the specifications of the TCC Public lighting requirements.

2.1.3.4 LED LUMINAIRES

General

LED luminaires shall be photometrically tested in accordance with 'IESNA LM-79-08, IES Approved Method for the Electrical and Photometric Measurement of Solid-State Lighting Products'. Results certificates shall be provided. LED modules shall be tested in accordance with 'IESNA LM-80-08, IES approved Method: Measuring Lumen Maintenance of Light Emitting Diode Light Sources'. Results certificates shall be provided.

LED luminaires shall have lifetimes extrapolated in accordance with 'IESNA TM-21-11, IES Approved Method: Making Useful LED Lifetime Projections'. LED modules and luminaires shall have product information displayed in accordance with 'IEC/PAS 62717 Performance requirements, LED modules for general lighting' and 'IEC/PAS 62722 Performance requirements, LED luminaires for general lighting'. Manufacturers of LED luminaires shall disclose information about the manufacturer of LED modules. A take off of all fixing details will be contained within the appendices of this tender pack indicating all of the required fixings, IP rated glands, welds and other associated fixing information

2.1.3.5 FULL HEIGHT HANDRAIL:

The full height handrail consists of sections 990 mm long and is to be located along the full length of the Bridge. The design details, and specification is located on the drawing number SIL-CSEA-GEN-XX-DR-E-9005. The LED drivers will be contained within a leg / column of the balustrade system. As a result this leg will be significantly bigger that all other supports. On sections where only 1No. driver is required, the uniformity of the handrail system shall be maintained by installing a dummy driver leg if required.

2.1.3.6 LUMINAIRE SECTIONS FOR HANDRAIL:

The luminaire section is a high-efficiency LED module, fully encapsulated complete with sections being easily removal for maintenance by Tipperary County Council. Electrical distribution point connections for the handrail are indicated on the electrical drawings reference SIL-CSEA-GEN-XX-DR-E-9000. Further details can be found on SIL-CSEA-GEN-XX-DR-E-9005

2.1.3.7 ASSEMBLY OF HANDRAIL:

The rail is proposed to be made from sectional components that assemble on site with little to no site welding to avoid contamination.

2.1.3.8 STEEL GRADE OF HANDRAIL:

The proposed steel to be used in the construction of the Balustrade Led handrail is to be galvanised Steel to BS EN ISO 1461. The steel is to include a galvacoat paint finish.

2.1.3.9 ANTI-VANDAL OF HANDRAIL:

Ease of tagging needs to be considered.
All the rail sections need to be repairable and the LED section need to have replaceable covers in the event of the cover being damaged.

2.1.3.10 SECTION REPLACEMENT:

All sections of the rail need to be replaced in the event of damage caused by either vandalism or accidental damage.

2.1.3.11 MAINTENANCE OF HANDRAIL:

The whole of the balustrade LED lighting system needs to be designed so that maintenance and replacement of sections of railings is easily achievable.
Led strip needs to be removable and replaceable from the rail sections.

The drivers need to be removable and replaceable from the rail sections.

The circuit cabling needs to be removable and replaceable from the rail sections.

The protection covers need to have a high light transmission rate and impact resistant for the sections and need to be removable and replaceable from the rail sections.

2.1.3.12 SPECIFICATION OF LED MODULES FOR BALUSTRADE:

- Unique co-extrusion technology (hollow chamber) IP68
  Very flexible (bend radius > 30 mm)

Dimmable
Effective heat dissipation
Excellent lumen/ Watt ratio
Binning ± 50k
UV, frost, seawater & chlorine vapour resistant

- LED Nichia
- Number of LEDs 7 per section / 70 per metre
- Light output 1008 lm/m
- LED efficiency 124 lm/W
- Beam angle 110˚
- Dimensions LxW12xH6 mm
- Section length10 cm
- Max. connection length 9 m
- Degree of protection IK08, IP40, IP68
- Voltage 24 V DC
- Power 8.1 W/m
- Material PVC
- Expected lifetime > 60,000 hours (B50/L70)

2.1.3.13 DRIVER SPECIFICATION FOR LED BALUSTRADE HANDRAIL.:

Drivers need to be inserted into and concealed in the underside of the handrail for ease of maintenance by Tipperary Co.Co.

The length of the circuit needs to be kept as short as possible for to ensure the best efficiency and longevity of the drivers.

The rail section is proposed to be in approximately 3mt section and it is recommended that 1 in 3 contain the driver so that the amount of Led is around 9mt per driver this will ensure best performance of both the LED and the drivers and allow ease of maintenance. The maximum number of drivers per circuit is to be MAX No. PSUs: 5 units (circuit breaker type B) / 9 units (circuit breaker type C) at 230 Volts AC.

2.1.3.14 LIGHTING OUTPUTS:

The LM output needs to meet the requirements set out in ILP Guidance Note 08/18 “Bats and artificial lighting in the UK” Bats and the built environment series.

2.1.3.15 DIMMING CONTROL SYSTEM FOR HANDRAIL:

The dimming control system is operated on individual circuits using 1 to 10 V PIR dimming controls working in tandem with the digital driver control systems contained in this design report.

2.1.3.16 TIME CONTROL SYSTEM FOR HANDRAIL:

The mains power control for the handrail system will have incorporated into the controls an Astro clock TR 642 top2 RC. (*Theben Astro Clock TR 642 top2 RC - Datasheet*) for which is contained in this document.

2.1.3.17 LIFETIME

LED luminaire service lifetime shall be specified in terms of hours at LxxFxx, where Lxx represents parametric failure and Fxx represents catastrophic failure. LED luminaires shall achieve a minimum of 60,000 hours at L70B10.

Colour Rendering Index

LED luminaires shall have an initial CRI as set out in the luminaire schedule.

Colour Temperature

LED luminaires shall have an initial CCT as set out in the luminaire schedule.

Chromaticity Tolerance

LED luminaire colour variation shall be within a 3-step MacAdam ellipse initially. LED luminaire colour variation shall be within a 3-step MacAdam ellipse through lumen maintenance, designated at a minimum of 6,000 hours. LED luminaire manufacturers shall provide a photometric code as defined within 'IEC/PAS 62717 Performance requirements, LED modules for general lighting' and 'IEC/PAS 62722 Performance requirements, LED luminaires for general lighting'.

LED Control Gear

Proposed driver current shall be stated, and this shall match with a driver current examined within 'IESNA LM-80-08, IES approved Method: Measuring Lumen Maintenance of Light Emitting Diode Light Sources' test results certificate. Driver currents in excess of what has been independently tested will not be acceptable. Power consumed by LED luminaires shall be stated inclusive of control gear losses. LED drivers shall conform to IEC 61347-2-13 and IEC 62384. Control options to allow fully functional DALI dimming shall be available.

Warranty

LED luminaire shall have an on-site replacement product warranty of five years minimum, as standard. This shall cover all luminaire components, inclusive of electronics, drivers, finishes, etc.

Lamps

All luminaires shall be supplied complete with lamps. Lamps shall be compatible with the luminaire for which they are intended and shall be of the wattage, type and colour specified. Different colour lamps shall not be used haphazardly in the same room and lamps in adjacent areas should not be of significantly different colour. In general, the colour of lamps shall be cool/natural in retail areas (4000K) throughout. The architect shall confirm the preferred arrangement.

Installation of Luminaires

Louvres and reflectors shall be packed separately from the luminaire body and protected against damage. They shall not be installed until after the building has been thoroughly cleaned.

Transformers shall be easily removed for maintenance or replacement. Where access is not provided, the transformer may be installed adjacent to fitting and access may be gained by removal of the fitting. Transformer shall be connected to the mains via a flexible heat resisting cord and 3-pin plug and socket arrangement. In-line plug and sockets shall be installed between transformers and luminaires. Where multi-point transformers are used, each luminaire shall be separately connected to the transformer. The cables from the transformers shall be sized to limit the volt drops to the minimum recommended by the manufacturers. The flexible cords form the transformers shall be long enough to enable each fitting connected to it, and the transformer itself, to be accessible for inspection and maintenance.

All luminaires shall be earthed in accordance with the ETCI Rules. Earth continuity shall be maintained from the conduit trunking system to the earth terminal in the light fitting.

3 LITERATURE REVIEW:

3.1 TIPPERARY COUNTY COUNCIL PUBLIC LIGHTING SPECIFICATIONS:

Tipperary County Council currently do not have a dedicated Public Lighting specification document. However, public lighting policy document "Tipperary County Council Adapted Public Lighting Policy dated 14th May 2018" shall be complied with for the proposed lighting scheme.

3.1.1 GENERAL PUBLIC LIGHTING REQUIREMENTS:

Public lighting is an important addition to any built environment. Lighting gives a sense of safety and security throughout the hours of darkness. However, careful consideration needs to be given to the location of any streetlight or other artificial lighting scheme, to avoid light pollution.

All Public lighting schemes installed throughout the Tipperary County Council shall comply with the guidance outlined in the Tipperary County Council Public Lighting policy document. All lighting designs must be approved by Tipperary County Council Public Lighting sector.

- The Irish Standard for road lighting is I.S EN 13201-Parts 1 - 5:2015.
- All Public lighting schemes must also comply with the requirements of I.S. 101010.
- I.S. 10101 was published by the National Rules for Electrical Installations and is the first major update of the national electrical standards in over 10 years.

ESB networks also have some specific requirements for Public Lighting installations. All the above specifications must be fully complied with in order for Tipperary County Council Public Lighting to approve any design.

LED luminaires shall be the primary luminaire considered for any public lighting design. All luminaires shall be capable of CMS control.

Pedestrian crossing, traffic lights and other associated street furniture are not permitted on any public lighting circuits. Such items of infrastructure shall be fed from a separate supply, with dedicated MPRN for same.

3.1.2 HEALTH & SAFETY:

TCC shall be consulted prior to the commencement of any works being carried out and shall be dependent on written approval by TCC.

The finalized lighting design will be submitted to Tipperary County Council for approval. This process will be carried out during stage 2C design.

All personnel working on a public lighting installation must have the necessary training and qualification in accordance with the Health Safety and Welfare at Work Act 2005. All personnel working on public lighting installation for Tipperary County Council Public Lighting must have also completed the

appropriate training provided under the Safety Health & Welfare at Work (Construction) 2013, including training in roadside working in accordance with Part 13 of the Safety Health & Welfare at Work (Construction) 2013 as amended and the ESB Networks code for practice for avoiding danger from Overhead Electricity lines.

3.1.3 LIGHTING DESIGN:

All lighting designs must comply with Tipperary County Council Public Lighting policy document. Engagement with TCC will commence during Stage 2C Design.

All lighting designs must, at a minimum, be in compliance with the following documents:

- I.S. EN 13201 – Parts 1 - 5 Road lighting
- S.I. No. 291 of 2013 – Safety, Health and Welfare at work (Construction) Regulations 2013.
- BS 5489-1:2013 – Code of Practice for the design of road lighting Part 1: Lighting of roads and Public Amenity spaces

All public lighting design must be capable of dimming down by 25% between the hours of 00:00 – 06:00 shall be applied to all residential developments.

No component of any public lighting infrastructure shall be installed on, or under private properties.

Pedestrian and cycle routes, that link areas or form parts of the overall routes shall be illuminated in line with the lighting levels planned for that area. pedestrian routes that are by their nature for amenity, shall not be provided with public lighting.

No changes to an existing public lighting scheme shall be made without the consent of Tipperary County public lighting. No luminaires shall be upgraded with a full lighting design being submitted and approved from Tipperary county Council Public Lighting. Dimming shall be considered for all public lighting schemes regardless of the application.

Luminaires shall be 3000K colour temperature in residential areas and 4000K in all other applications.

3.1.4 ELECTRICAL CONNECTIONS & SERVICES PILLARS:

All electrical circuits shall be sized to allow for 25% capacity for future expansion. The developer is responsible for ensuring all public lighting installation are in compliance with the relevant standards.

No changes shall be made to existing public lighting infrastructure owned or operated in any way by Tipperary Council, without the express permission of the appropriate council staff member.

3.1.4.1 UNMETERED SUPPLY PILLARS:

Customer pillars shall be installed in land that is open to the public. Customer pillars shall not be erected in ground which is private or inaccessible. A minimum separation distance of 2 meters must be achieved between an ESB Mini Pillar and Public lighting Micro Pillar. All micro pillars delivered shall be sheet steel construction, manufactured in 3mm steel, with minimum dimensions of 150mm x 450mm x 600 mm. all public lighting micro pillars have a root depth of 320mm. all supply pillars must come complete with a high voltage sticker attached to the front panel.

3.1.4.2 METERED SUPPLY PILLARS:

Any installation with a load greater than 2kVA must be supplied via a metered supply. All dual pillars delivered shall be hot-dipped galvanised. The ESB meter shall be installed in the top section, with the client distribution board installed in the bottom section. a standard enclosure shall come with a TN-S busbar system in the lower section.

3.1.5 ELECTRICAL DESIGN:

All electrical design works, and installation works shall be in compliance with I.S. 10101. A dedicated cable design shall be completed by the designer to calculate loadings which would typically contain 4 – 8No. luminaires. The provision for fault loop and disconnection calculations shall be completed as part of the design process. such information must be submitted to Tipperary County Council Public Lighting for approval.

Miniature circuit breakers (MCBs) are not permitted. All circuits shall be protected with BS 88 HRC fuses (Triple pole fuse breaker for metered supplies). The fuse shall have a minimum rupture capacity of 16kA. A local isolation device shall be installed within the column of each luminaire. Such devices shall be rated at 25 amp rated cut out loaded with 6A fuse. The 6a fuse shall be incorporated into the disconnection lever.

3.1.6 LED LUMINAIRE SPECIFICATION:

All luminaires shall consist of LED technology. All luminaires must comply with the relevant European Union standard and European Council Directives required by the CE Community Marketing Directive.

Both a TM21 & LM80 report must be provided to Tipperary County Council Public Lighting as part of the design process. Surge protection, with a breaking capacity of no less than 10kVa shall be provided for each luminaire. The surge protection must be the first component in the luminaire's internal circuitry. All light sources must be modular, to facilitate direct replacement on site.

3.1.7 PROTECTION OF FLORA AND FLORA AND FAUNA:

Wildlife is of the utmost importance to Tipperary County council. Wildlife is present throughout the urban, rural, and coastal regions. Much of this delicate eco structure is protected by national and international laws and as such, cannot be interfered with.

The research in these areas is ongoing to determine the effects of lighting, and the types of lighting and how they can impact on an ecological system. It is generally agreed that the strip of light evident in street lighting is in effect, a barrier to many species, regardless of colour temperature of strength of illuminance. Areas of concerns would be nesting areas, bat roosts, bat hunting grounds, bat commuting routes, rivers, spawning grounds and other areas with a similar ecological heritage.

The developer has a duty to ensure that any lighting installation will not have a negative impact on any protected, or endangered species or their applicable habitats.

3.2 WIFI INSTALLATION

Client to advise as to Public Wi-Fi requirements.

3.3 SECURITY

Client to advise as to public security requirements.

3.4 TRAFFIC LIGHTS & AUTOMATED BOLLARD SYSTEM

Not applicable, no scope defined yet.

3.5 METERING

Metering and public lighting Mini pillars will be as per Tipperary County Council Public Lighting Specification.

3.6 CAR PARKING MACHINES

Not applicable, no works defined yet to be developed in Stage 2A

3.7 ELECTRIC VEHICLE CHARGERS

No electric vehicle charging stations allowed for during the stage 1 Design. Client to advise as to requirements for same.

3.8 RECESSED POWER POP UPS

Not applicable, no works defined yet to be developed in Stage 2A

4 ELECTRICAL BUDGETS:

W2062: Suir Island Infrastructure Links				
Stage: Part 8 Electrical Budgets Date: 2022-05-20 **Description:**	Totals:		Electrical Equipment:	
Suir Island Infrastructure Links Bridge *Notes:*	€243,589.17		Bespoke Balustrade LED Lighting Electrical Infrastructure Strip Out of Existing Services Public WIFI & Power Distribution (Recessed Power Pop up) Electric Vehicle Charging station Design Contingency 10%	€192,804.70 €28,640.00 €0.00 €0.00 €0.00 €22,144.47
Car Park *Notes:* *No current scope for Douglas Carroll.*	€0.00		Lighting Electrical Infrastructure Strip Out of Existing Services Public WIFI & Power Distribution (Recessed Power Pop up) Electric Vehicle Charging station Design Contingency 10%	€0.00 €0.00 €0.00 €0.00 €0.00 €0.00
North Side *Notes:* *additional Pole mounted lighting required.*	€10,342.20		Lighting Electrical Infrastructure Strip Out of Existing Services Public WIFI & Power Distribution (Recessed Power Pop up) Electric Vehicle Charging station Design Contingency 10%	€6,952.00 €820.00 €1,630.00 €0.00 €0.00 €940.20
South Side *Notes:* *additional Pole mounted lighting required.*	€0.00		Lighting Electrical Infrastructure Strip Out of Existing Services Public WIFI & Power Distribution (Recessed Power Pop up) Electric Vehicle Charging station Design Contingency 10%	€1,301.00 €820.00 €0.00 €0.00 €0.00 €2,333.10
Total Public Realm Works:		€253,931.37		
Estimated Capital Contributions:				
Capital Contribution - ESB		€3,650.00		
Capital Contribution - EIR		€0.00		
Total Capital Contributions		€3,650.00		
Total Electrical Budget:		**€257,581.37**		

Excludes:
Builders Work
Preliminaries
VAT
Bond
CCTV
Digital Signage
Works outside Site Boundry

APPENDIX NO.1 STAGE 1 SKETCHES:

50 40 30 20 10 0 50

Scale in metres

NORTHERN CHANNEL OF THE RIVER SUIR

NEW QUAY

SUIR ISLAND CARPARK

SUIR ISLAND

FORMER TAILRACE

DENIS BURKE P

THE MILL

SUIR ISLAND GARDENS

SOUTHERN CHANNEL OF THE RIVER SUIR

RAHEEN ROAD

PLAZA

embankment planted with decid

NEW PUMP HOUSE

FLOOD DEFENCE BERM

TOP OF BERM

BOTTOM OF BERM

MP

NH

Symbols & Legends

- MP — Distribution Mini Pillar
- C — Lighting Controller to Ballustrade Lighting
- LED Balustrade Handrail

Revision	Date		Checked
Information	2022-07-08	i01	MP
Information	2022-05-23	i	MP

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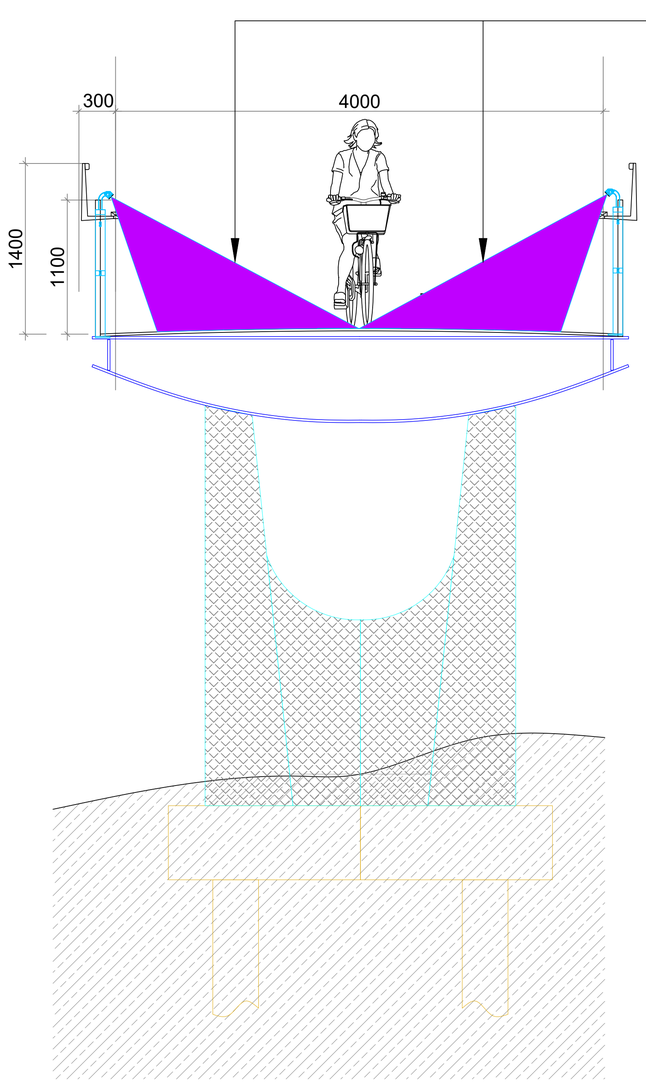
Douglas Carroll Consulting Engineers Ltd trading as Douglas Carroll Consulting Engineers

Project: Suir Island Infrastructure links Clonmel, Co. Tipperary.	Client: Tipperary County Council
Drawing Discipline: Electrical Services Installation	
Drawing Title: proposed Public Lighting Services Layout	Architect: DHB Architects

Scale	Drawing Size	Drawing By	Checked By	Date
Refer to Scalebar	A1	HE	MP	10-05-2022

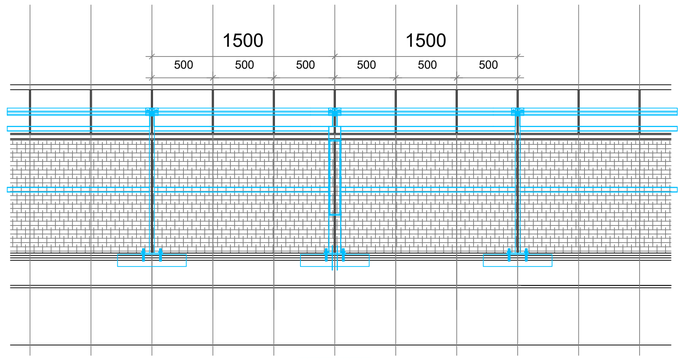
Drawing Number	Revision	Stage
SIL-CSEA-GEN-XX-DR-E-9000	i01	Information

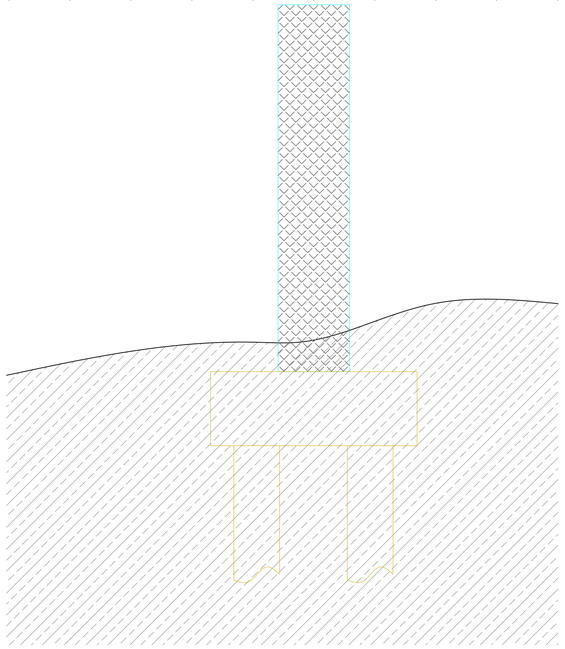


Beam angle of LED luminaires controlled to only illuminate the foot bridge (Point of interest / working plane)

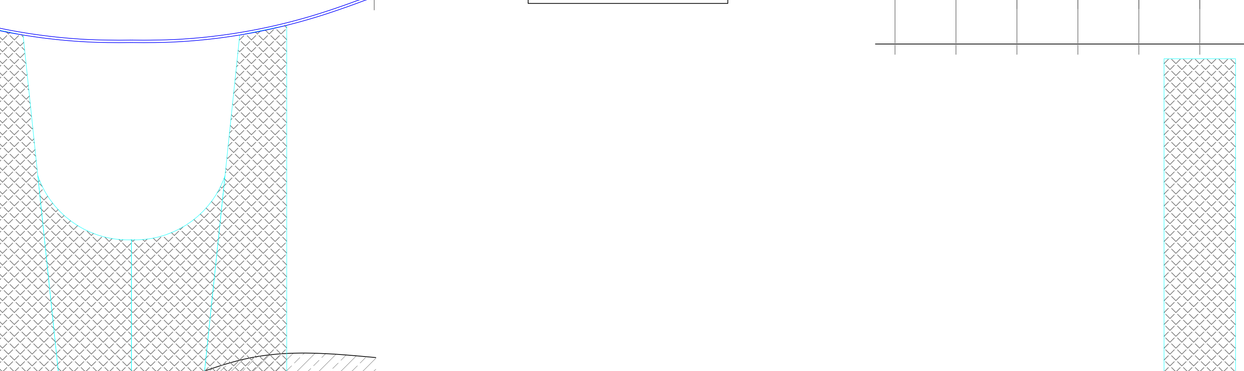
NOTE:
The bespoke balustrade LED handrail will contain sections of LED luminaires. The beam angle of the LEDs shall be controlled to ensure that minimal light spill escape of the areas of interest, in this case the foot bridge. Light spill both above and to the underside of the bridge will be limited to ensure wildlife within the area is not impacted by the introduction of the proposed lighting scheme.

Section Option 1

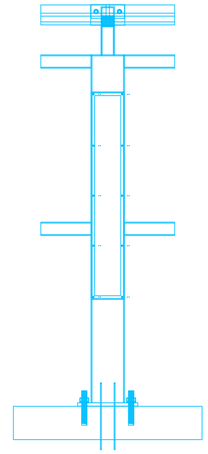




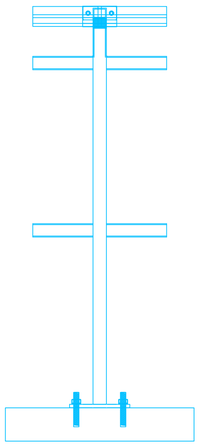
Elevation Option 1



Scale in metres



Control Panel Post Section



LED Standard Post Section

Revision	Date		Checked
Information	2022-07-08	i01	MP
Information	2022-05-23	i	MP

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Douglas Carroll Consulting Engineers Ltd trading as Douglas Carroll Consulting Engineers

Project: Suir Island Infrastructure links Clonmel, Co. Tipperary.	Client: Tipperary County Council
Drawing Discipline: Electrical Services Installation	Architect: DHB Architects
Drawing Title: Proposed Bridge section & Handrail detail	

Scale	Drawing Size	Drawing By	Checked By	Date
Refer to Scalebar	A1	HE	MP	10-05-2022
Drawing Number		**Revision**	**Stage**	
SIL-CSEA-GEN-XX-DR-E-9005		**i01**	**Information**	

APPENDIX NO.2 UTILITY RECORD DRAWINGS

ESB Networks

TITLE: 20220314-015_A3

COLOUR CODE:

- BLACK - 38KV & HIGHER VOLTAGE OVERHEAD LINES
- GREEN - MV(10KV/20KV) OVERHEAD LINES
- BLUE - LV (400V/230V) OVERHEAD LINES
- CYAN - 38KV & HIGHER VOLTAGE UNDERGROUND CABLE ROUTES
- RED - MV/LV (10KV/20KV/400V/230V) UNDERGROUND CABLE ROUTES

DATE: 14-Mar-2022

** SCALE: 1:1300

** SCALE WHEN PRINTED ON AN A3 PAGE
XY COORDINATES DISPLAYED IN IRISH GRID COORDINATE SYSTEM

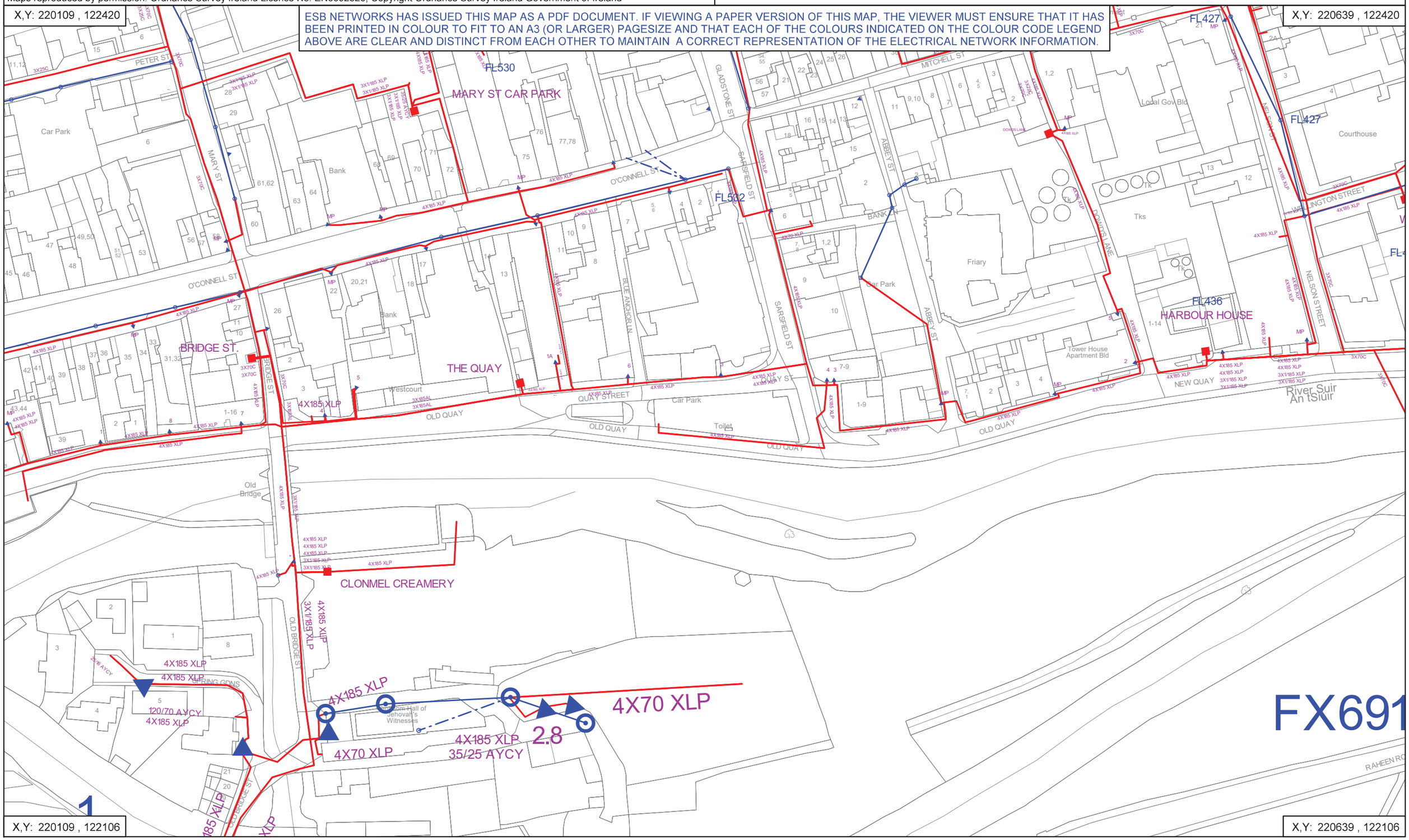
WARNING

THIS MAP INDICATES THE APPROXIMATE LOCATION OF ESB TRANSMISSION (400KV, 220KV, 110KV, 38KV) AND DISTRIBUTION (20KV, 10KV, 230V/400V) UNDERGROUND CABLES AND OVERHEAD LINES IN THE GENERAL AREA OF THE PROPOSED WORKS. ESB NETWORKS TAKES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE MAP. IT IS THE USER'S RESPONSIBILITY TO INDEPENDENTLY VERIFY THE INFORMATION AND THE LOCATION OF UNDERGROUND CABLES AND OVERHEAD LINES. LOW VOLTAGE (230V/400V) SERVICE CABLES (E.G. HOUSE SERVICES, FACTORY/SHOP SERVICES, PUBLIC LIGHTING LAMP SERVICES, ETC) ARE NOT INCLUDED BUT THEIR PRESENCE SHOULD BE ANTICIPATED. THE DEPTHS OF UNDERGROUND CABLES MUST NEVER BE ASSUMED. ADDITIONAL MORE DETAILED INFORMATION IS AVAILABLE FOR HIGH VOLTAGE TRANSMISSION UNDERGROUND CABLES (38KV, 110KV, 220KV, 400KV) FROM THE LOCAL ESB NETWORKS TRANSMISSION REPRESENTATIVE - SEE ATTACHED LIST FOR CONTACT DETAILS OR CALL 1850 372 757. NO WORK SHOULD BE CARRIED OUT IN THE VICINITY OF 38KV OR HIGHER VOLTAGE UNDERGROUND CABLES WITHOUT PRIOR CONSULTATION WITH ESB NETWORKS. BEFORE ANY MECHANICAL EXCAVATION IS UNDERTAKEN, THE ACTUAL LOCATION OF ALL UNDERGROUND ELECTRICITY CABLES MUST BE ESTABLISHED AND VERIFIED ON THE SITE USING: (A) UP-TO-DATE MAP RECORDS; (B) CABLE LOCATER EQUIPMENT OPERATED IN BOTH POWER AND RADIO MODES; (C) CAREFUL HAND DIGGING OF TRIAL HOLES USING 'SAFE DIGGING PRACTICE'. REFER ALSO TO 'HSA CODE OF PRACTICE FOR AVOIDING DANGER FROM UNDERGROUND SERVICES'. ESB TAKES NO RESPONSIBILITY FOR AND SHALL BEAR NO LIABILITY, HOWSOEVER ARISING, IN RELATION TO ANY DAMAGE, INJURY/DEATH OR LOSS OF SUPPLY AS A RESULT OF DAMAGE OR INTERFERENCE WITH ITS NETWORKS.

X,Y: 220109 , 122420

ESB NETWORKS HAS ISSUED THIS MAP AS A PDF DOCUMENT. IF VIEWING A PAPER VERSION OF THIS MAP, THE VIEWER MUST ENSURE THAT IT HAS BEEN PRINTED IN COLOUR TO FIT TO AN A3 (OR LARGER) PAGESIZE AND THAT EACH OF THE COLOURS INDICATED ON THE COLOUR CODE LEGEND ABOVE ARE CLEAR AND DISTINCT FROM EACH OTHER TO MAINTAIN A CORRECT REPRESENTATION OF THE ELECTRICAL NETWORK INFORMATION.

X,Y: 220639 , 122420



X,Y: 220109 , 122106

X,Y: 220639 , 122106

A3

O'CONNELL STREET

WOLFE TONE STREET

BRIDGE STREET

QUAY STREET

OLD QUAY

SHEMADENS LANE

FLAXLANE

SARSFIELD STREET

BANK LANE

ABBEY STREET

TOWNSEND LANE

JOYCE'S LANE

GRUBB'S COURT

Weir Gate

Spring Gardens

GREEN LANE

Weirview Villas

RAHEEN ROAD

RIVER SUIR

Old Bridge

Weir

Stretches Island

Little Island

Suir Island

Suir Island House

Car Park

Bank

Hotel

Friary

Suirmount

School

Area Und Construction

Grubb's Court House

open eir Civil Engineering Infrastructure Service		Scale: 1:1500	Irish National Grid Co-Ordinates Centre XY: 220286 m, 122160 m
		Date 14/03/2022	Smallworld Powered by GE

Drawing Produced: 14/03/2022 16:40

Description of Works:

New development

Project Reference:

Suir Island

Customer Name: Dana Adriano

Company: Douglas Carroll Consulting Eng

Disclaimer:

LEGEND

DUCT
THIRD PARTY DUCT

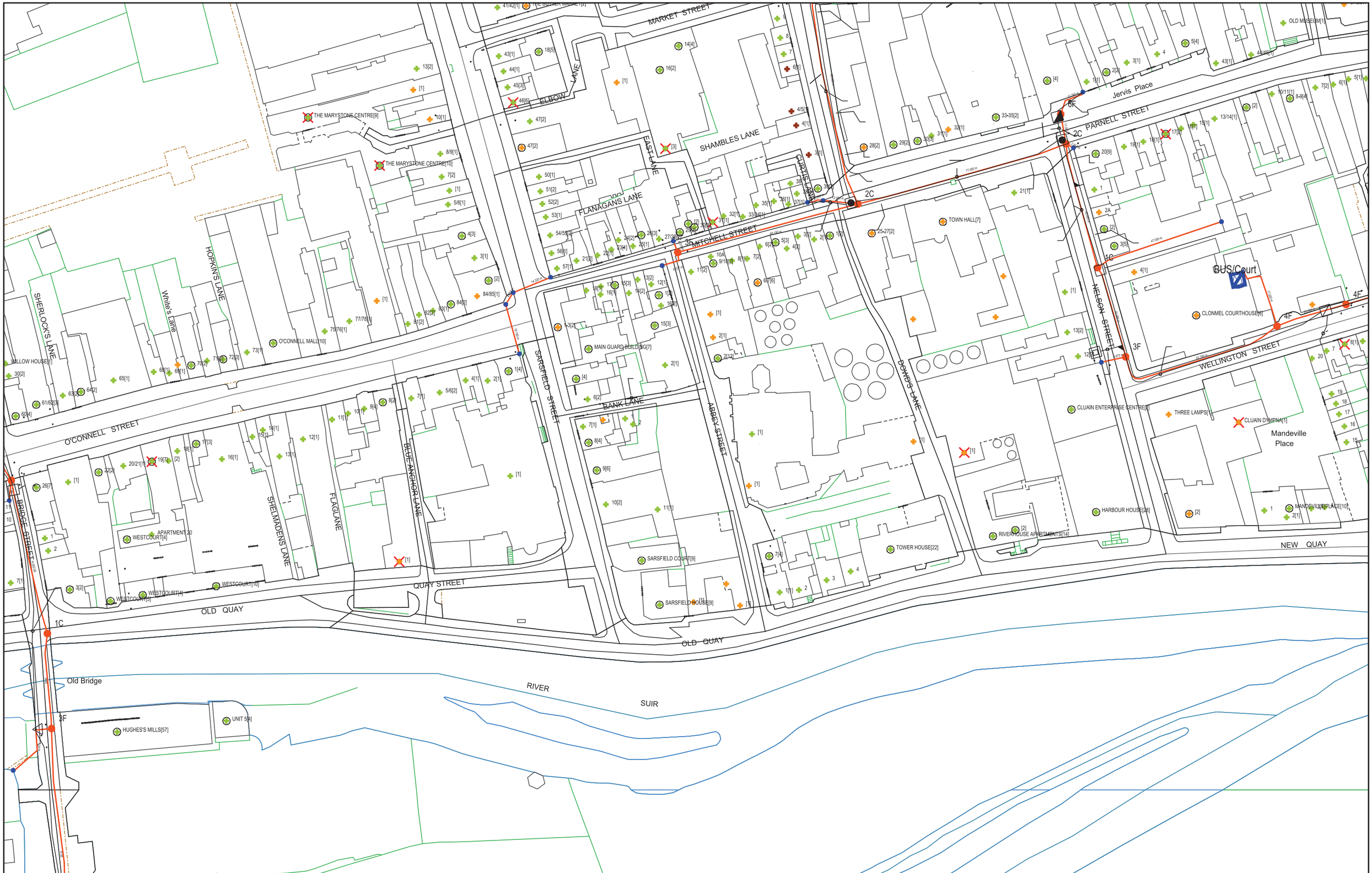
THIRD PARTY CHAMBER
CARRIAGEWAY CHAMBER (CW1)
CARRIAGEWAY CHAMBER (CW2)
CARRIAGEWAY CHAMBER (CW3)
FOOTWAY CHAMBER (FW1)
FOOTWAY CHAMBER (FW2)
FOOTWAY CHAMBER (FW3)
VERGECHAMBER (VW1)
VERGE CHAMBER (VW2)
VERGE CHAMBER (VW3)
CHAMBER LXXX
SWEPT T SWTXXX
CAP END CPXXX

SPLICE POINT
LOOPJOINT
DESCRIPTION
SPECIAL ENGINEERING DIFFICULTY
SWEPT TEE

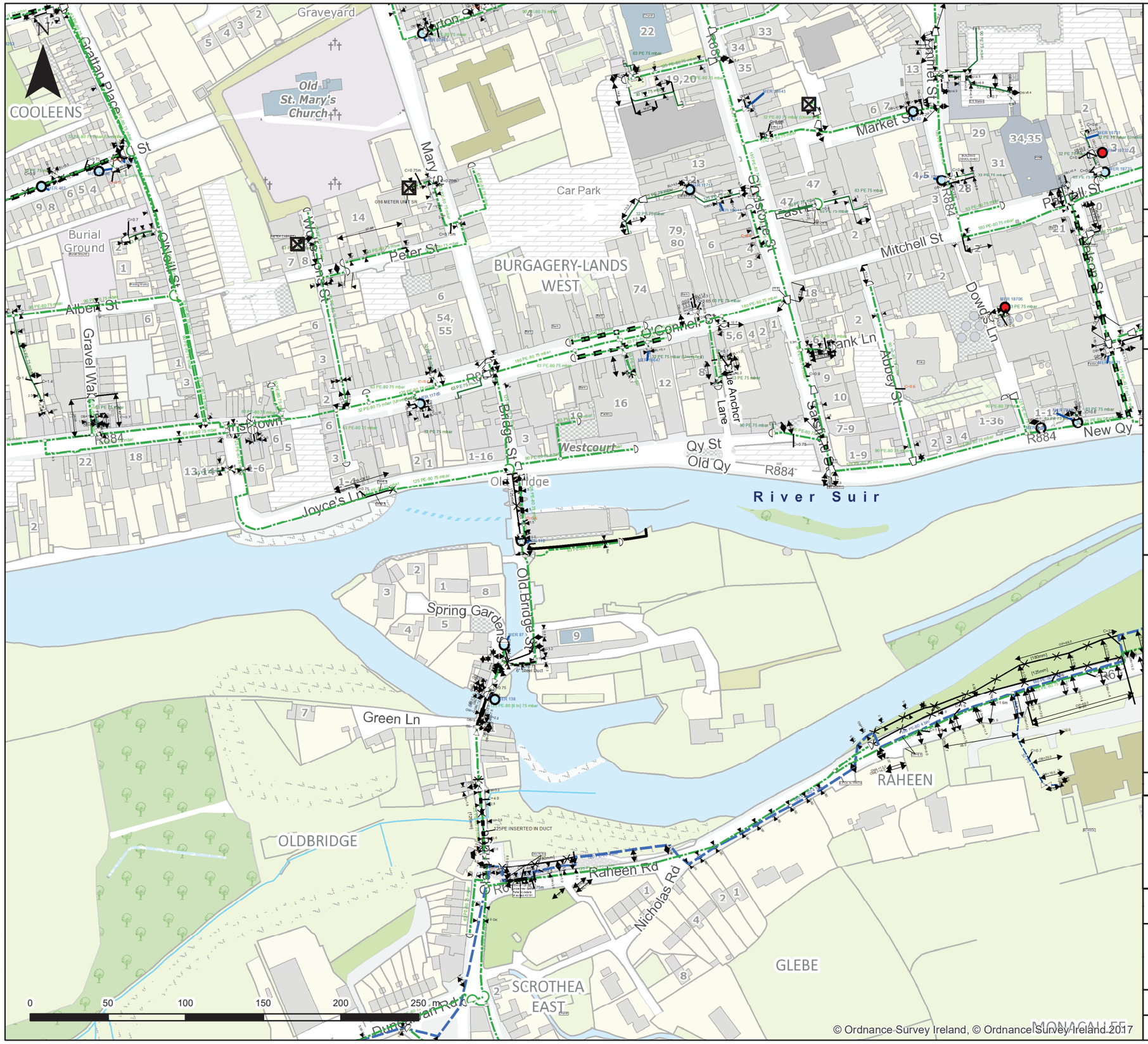
NOTES:
ALL DUCTS AT STANDARD DEPTH
600mm IN CARRIAGEWAY
450mm IN FOOTWAY/GRASS
UNLESS OTHERWISE SHOWN eg
350

SHEET SCHEMATIC
nnn
CPnnn
CUSTOMER PREMISES

DUCT CONFIGURATION
(4 X110mm WITH 1 DUCT SUBDUCTED)
COR1CH00_nnn-00_nnn



Virgin media Unit 7, Westgate Business Park, Ballymount, Dublin 24.	PROJECT NAME DESIGNED BY:	Ordnance Survey Ireland Licence No. EN0023805 (c) Ordnance Survey Ireland and Government of Ireland Produced on: 14/03/2022	@ A3



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Important Safety Notice: Damage to gas pipelines can result in serious injury or death. Gas network information is provided as a general guide. The exact location and depth of medium or low pressure distribution gas pipes must be verified on site by carrying out necessary investigations, including, for example, hand digging trial holes along the route of the pipe. Service pipes are not generally shown but their presence should always be anticipated.

High pressure transmission pipelines are shown in red. If a transmission pipeline is identified within 10m of any intended excavations then work must not proceed before GNI has been consulted. The true location and depth of a transmission pipeline must be verified on site by a representative of GNI. Contact can be made through 1800 427 747.

All work in the vicinity of the gas network must be completed in accordance with the current edition of the Health and Safety Authority publication, 'Code of Practice For Avoiding Danger From Underground Services' which is available from the Health and Safety Authority (1890 289 389) or can be downloaded at www.hsa.ie.

Legal Notice: Gas Networks Ireland (GNI) and its affiliates, accept no responsibility for the accuracy of any information contained in this document including data concerning location and technical designation of the gas distribution and transmission network (the"Information"). The Information should not be relied on for accurate distance or depth of cover measurements.

Any representations and warranties, express or implied, are excluded to the fullest extent permitted by law. No liability shall be accepted for any loss or damage including, without limitation,direct, indirect or consequential loss, arising out of or in connection with the use or re-use of the Information.

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Aurora Telecom Duct
Aurora Telecom Sub Duct
Aurora Telecom Inserted Gas Pipe

Aurora TELECOM

Aurora Telecom Queries - 01-8926166 (Office Hours)
Aurora_Network_Queries@gasnetworks.ie
Aurora Telecom Emergency Only 1800 427399 / 01 2030120

- Transmission Pipe (High Pressure)
- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted
- Abandoned Pipe

C=?	Cover (depth in metres)		Pressure Monitor
CP	CP Test Point		Protection (Slabbing)
	End Cap		Protection (Sleeve)
	Hot Tap		Reducer
	Installation		Service Terminator
	Valve		Tee
	Mains Verification**		Transition

** Please contact GNI on 1800-427747 for specific information

DIAL BEFORE YOU DIG 1800 42 77 47
In Emergency call 1800 20 50 50 Gas Networks Ireland

Gas Networks Ireland

GAS NETWORK INFORMATION

Description:

Location: 620197,622273

Plot Date: 14/03/2022 10:14	Scale: 2500 @ A3
Plotted By: 2148	Ref ID: *2148_14032022101450*

APPENDIX NO.3 TYPO SURVEY:

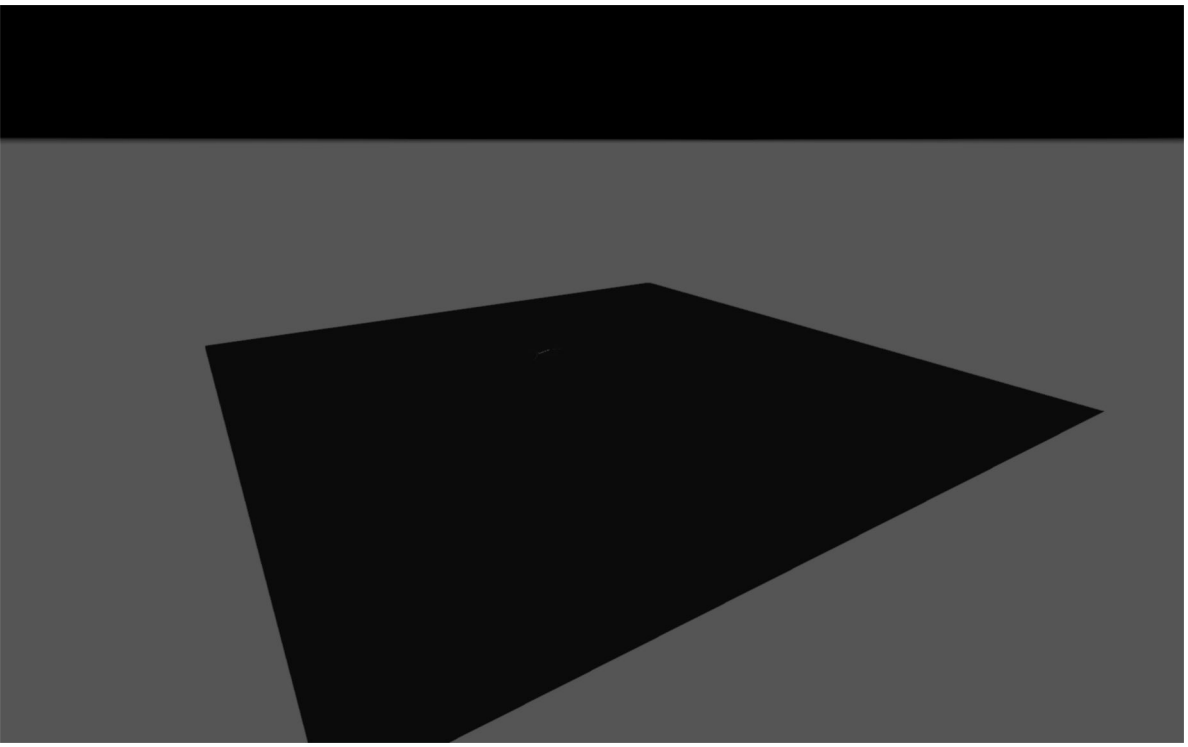
TYPO Survey to be completed during stage 2B design.

APPENDIX NO.4 SITE SURVEY:

Site Survey to be completed during stage 2B design.

APPENDIX NO.5 DIALUX EVO REPORT:

Date 20/05/2022



W2062 Suir Island Public Realm

Object
Clonmel, Co. Tipperary

Preliminary remarks

Notes on planning:

The energy consumption quantities do not take into account light scenes and their dimming levels.

Content

Product data sheets

Site 1

Site 1

Bridge - Straight Section

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Site 1

Ground Level - Underside of Bridge

Content

Contacts

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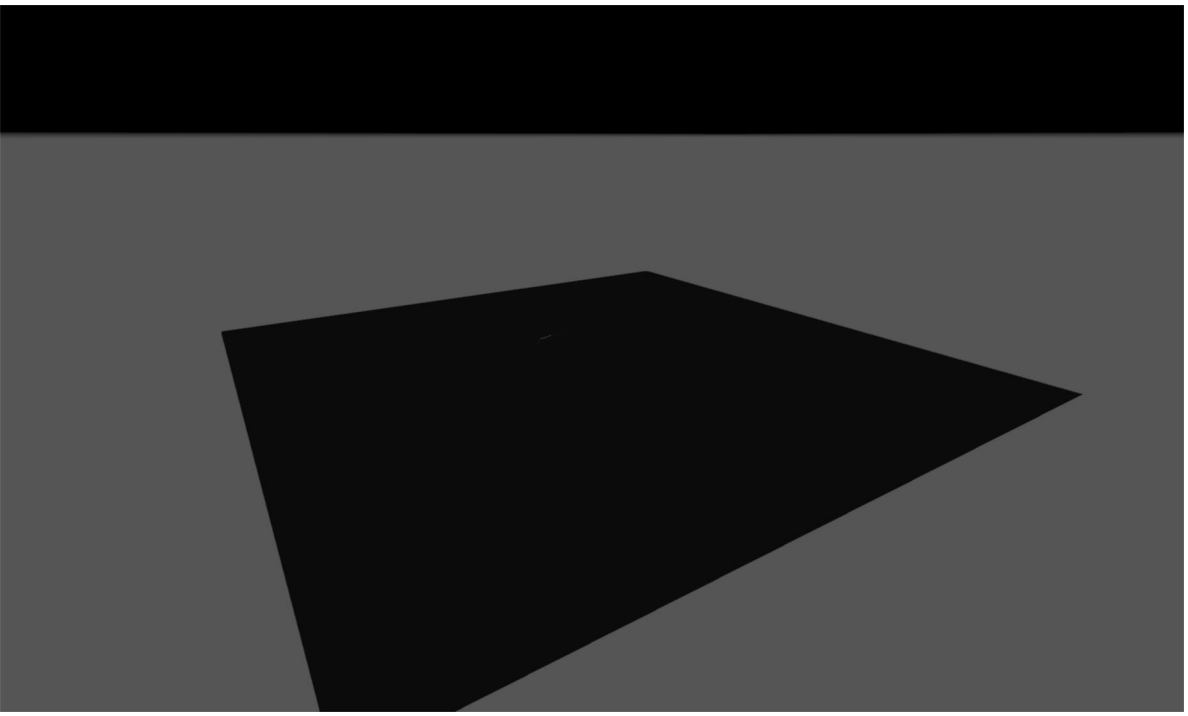

Description

The proposed works include for the construction of a foot bridge traversing across the River Suir. The proposed footbridge will be illuminated via a bespoke balustrade LED handrail. As the river is a natural hub for Wildlife, the protection of same is of the utmost importance to the design process. The introduction of artificial lighting to the river could have devastating effects on the wildlife in the area, in particular the natural migration and roosting of Bats.

The primary aim of the bespoke balustrade LED handrail is to ensure that the bridge itself is illuminated, with no light spilling over, above or below the bridge. This will ensure that any Wildlife habitats are undisturbed.

Electrical Engineer
Mark Pepper

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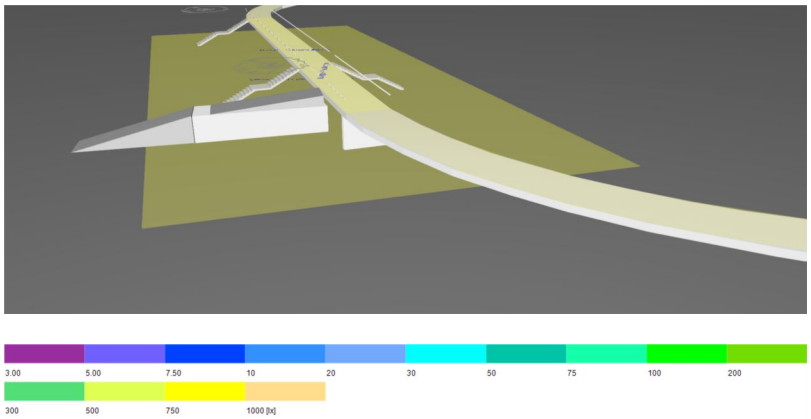
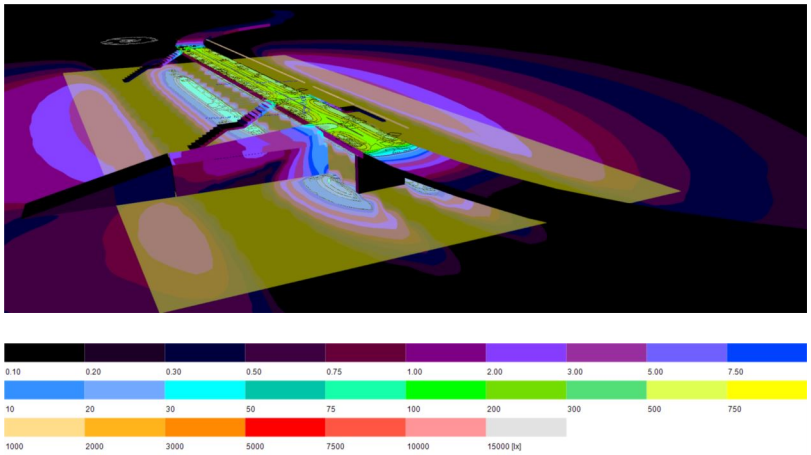
Images

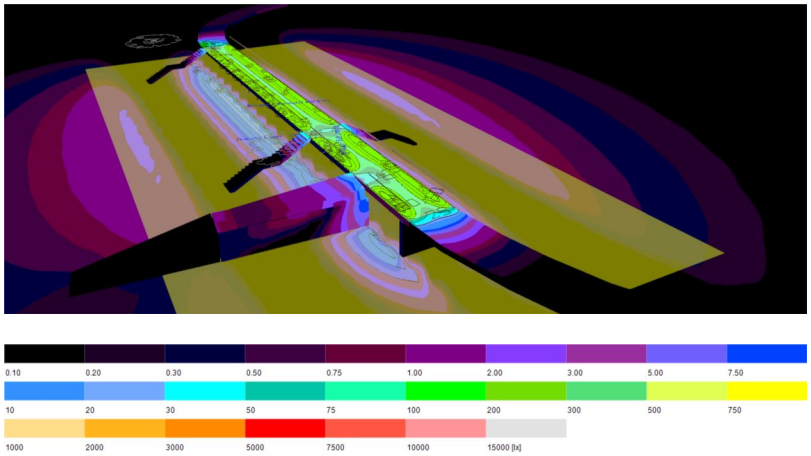
Base Model



Base Model 100 % Output

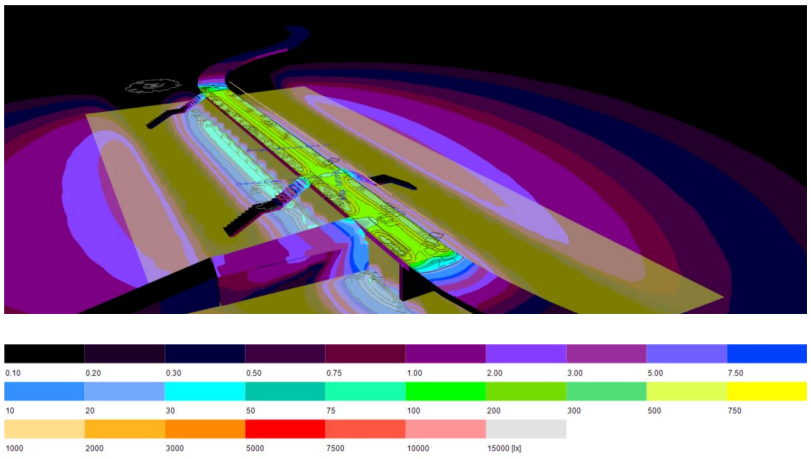


Base Model 50% Output



Images

Base Model 75 % Output



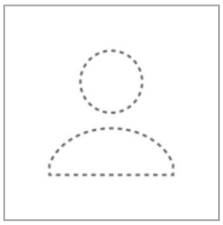
Luminaire list

Φ_{total}	P_{total}	Luminous efficacy
108000 lm	874.8 W	123.5 lm/W

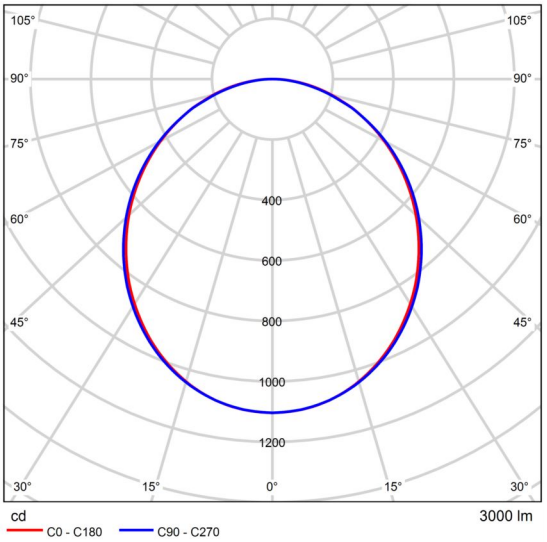
pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
36	Not yet a DIALux member	2340132	T_Line 3000 HE	24.3 W	3000 lm	123.4 lm/W

Product data sheet

Not yet a DIALux member - T_Line 3000 HE



Article No.	2340132
P	24.3 W
$\Phi_{Luminaire}$	3000 lm
Luminous efficacy	123.4 lm/W
CCT	4000 K
CRI	80



Polar LDC

Glare evaluation according to UGR

ρ Ceiling		70	70	50	50	30	70	70	50	50	30
ρ Walls		50	30	50	30	30	50	30	50	30	30
ρ Floor		20	20	20	20	20	20	20	20	20	20
Room size X	Y	Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis				
2H	2H	21.2	22.6	21.5	22.8	23.0	21.3	22.6	21.6	22.9	23.1
	3H	22.8	24.0	23.1	24.3	24.6	22.8	24.1	23.1	24.3	24.6
	4H	23.4	24.6	23.8	24.9	25.2	23.4	24.6	23.8	24.9	25.2
	6H	24.0	25.1	24.3	25.4	25.7	23.9	25.0	24.3	25.3	25.6
	8H	24.2	25.2	24.6	25.6	25.9	24.1	25.1	24.5	25.5	25.8
	12H	24.3	25.3	24.7	25.7	26.0	24.2	25.2	24.6	25.5	25.9
4H	2H	21.9	23.0	22.2	23.3	23.6	21.9	23.1	22.3	23.4	23.7
	3H	23.7	24.7	24.1	25.0	25.3	23.7	24.7	24.1	25.0	25.4
	4H	24.5	25.4	24.9	25.7	26.1	24.5	25.4	24.9	25.7	26.1
	6H	25.2	25.9	25.6	26.3	26.7	25.1	25.9	25.5	26.2	26.6
	8H	25.4	26.1	25.8	26.5	27.0	25.3	26.0	25.7	26.4	26.8
	12H	25.6	26.3	26.1	26.7	27.1	25.5	26.1	25.9	26.6	27.0
8H	4H	24.8	25.5	25.2	25.9	26.3	24.8	25.5	25.2	25.9	26.3
	6H	25.6	26.2	26.1	26.7	27.1	25.6	26.2	26.0	26.6	27.1
	8H	26.0	26.5	26.5	27.0	27.5	25.9	26.4	26.4	26.9	27.3
	12H	26.3	26.8	26.8	27.2	27.7	26.1	26.6	26.6	27.1	27.6
12H	4H	24.8	25.5	25.3	25.9	26.3	24.8	25.5	25.3	25.9	26.3
	6H	25.7	26.3	26.2	26.7	27.2	25.6	26.2	26.1	26.6	27.1
	8H	26.1	26.6	26.6	27.1	27.6	26.0	26.5	26.5	26.9	27.4

Variation of the observer position for the luminaire distances S

S = 1.0H	+0.1 / -0.1	+0.1 / -0.1
S = 1.5H	+0.2 / -0.3	+0.2 / -0.3
S = 2.0H	+0.3 / -0.6	+0.4 / -0.6
Standard table	BK06	BK06
Correction summand	8.7	8.7

Corrected glare indices referring to 3000lm Total luminous flux

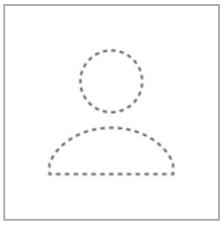
UGR diagram (SHR: 0.25)

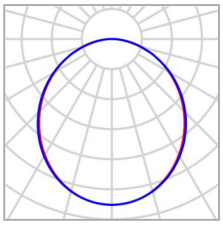
Site 1

Luminaire layout plan

Site 1

Luminaire layout plan





Manufacturer	Not yet a DIALux member
Article No.	2340132
Article name	T_Line 3000 HE
Fitting	4x LLE_24_1300_LV_ADV 5 @160 69.3%

P	24.3 W
$\Phi_{Luminaire}$	3000 lm

12 x Not yet a DIALux member T_Line 3000 HE

Type	Line arrangement
1st luminaire (X/Y/Z)	196.928 m / 170.008 m / 4.750 m
X-direction	12 pcs., Centre - centre, 2.852 m
Arrangement	A1

X	Y	Mounting height	Luminaire
196.928 m	170.008 m	4.750 m	1
197.876 m	167.319 m	4.750 m	2
198.823 m	164.629 m	4.750 m	3
199.770 m	161.939 m	4.750 m	4
200.717 m	159.249 m	4.750 m	5
201.665 m	156.560 m	4.750 m	6
202.612 m	153.870 m	4.750 m	7
203.559 m	151.180 m	4.750 m	8
204.506 m	148.491 m	4.750 m	9
205.454 m	145.801 m	4.750 m	10
206.401 m	143.111 m	4.750 m	11
207.348 m	140.421 m	4.750 m	12

Site 1

Luminaire layout plan

12 x Not yet a DIALux member T_Line 3000 HE

Type	Line arrangement
1st luminaire (X/Y/Z)	200.027 m / 173.091 m / 4.750 m
X-direction	12 pcs., Centre - centre, Distances not equal
Arrangement	A2

X	Y	Mounting height	Luminaire
200.027 m	173.091 m	4.750 m	13
201.027 m	170.245 m	4.750 m	14
202.027 m	167.400 m	4.750 m	15
203.027 m	164.554 m	4.750 m	16
204.027 m	161.708 m	4.750 m	17
205.028 m	158.863 m	4.750 m	18
206.028 m	156.017 m	4.750 m	19
207.028 m	153.171 m	4.750 m	20
208.028 m	150.326 m	4.750 m	21
209.028 m	147.480 m	4.750 m	22
210.029 m	144.634 m	4.750 m	23
211.029 m	141.789 m	4.750 m	24

3 x Not yet a DIALux member T_Line 3000 HE

Type	Line arrangement
1st luminaire (X/Y/Z)	208.952 m / 135.891 m / 4.750 m
X-direction	3 pcs., Centre - centre, 2.737 m
Arrangement	A3

X	Y	Mounting height	Luminaire
208.952 m	135.891 m	4.750 m	25
209.846 m	133.304 m	4.750 m	26
210.740 m	130.717 m	4.750 m	27

6 x Not yet a DIALux member T_Line 3000 HE

Type	Line arrangement

X	Y	Mounting height	Luminaire

Site 1

Luminaire layout plan

1st luminaire (X/Y/Z)	212.679 m / 137.089 m / 4.750 m
X-direction	6 pcs., Centre - centre, 2.917 m
Arrangement	A4

X	Y	Mounting height	Luminaire
212.679 m	137.089 m	4.750 m	28
213.646 m	134.337 m	4.750 m	29
214.612 m	131.585 m	4.750 m	30
215.579 m	128.833 m	4.750 m	31
216.545 m	126.082 m	4.750 m	32
217.511 m	123.330 m	4.750 m	33

2 x Not yet a DIALux member T_Line 3000 HE

Type	Line arrangement
1st luminaire (X/Y/Z)	212.765 m / 124.933 m / 4.750 m
X-direction	2 pcs., Centre - centre, 3.089 m
Arrangement	A5

X	Y	Mounting height	Luminaire
212.765 m	124.933 m	4.750 m	34
213.789 m	122.019 m	4.750 m	35

Individual luminaires

X	Y	Mounting height	Luminaire
195.412 m	174.766 m	4.750 m	36

Site 1

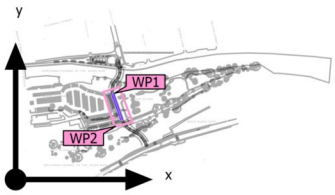
Luminaire list

Φ_{total}	P_{total}	Luminous efficacy
108000 lm	874.8 W	123.5 lm/W

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
36	Not yet a DIALux member	2340132	T_Line 3000 HE	24.3 W	3000 lm	123.4 lm/W

Site 1 (Bridge Light Scene 10% Dim - Straight Section)

Calculation objects



Site 1 (Bridge Light Scene 10% Dim - Straight Section)

Calculation objects

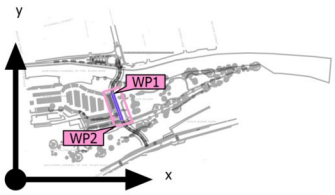
Working planes

Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	222 lx (≥ 5.00 lx) ✓	45.5 lx	333 lx	0.20	0.14	WP1
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	4.73 lx (≥ 5.00 lx) ✗	0.000 lx	53.8 lx	0.00	0.00	WP2

Utilisation profile: DIALux presetting, Standard (outdoor transportation area)

Site 1 (Bridge Light Scene 50% Dim - Straight Section)

Calculation objects



Site 1 (Bridge Light Scene 50% Dim - Straight Section)

Calculation objects

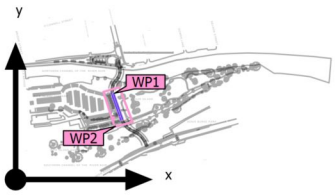
Working planes

Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	123 lx (≥ 5.00 lx) ✓	25.3 lx	185 lx	0.21	0.14	WP1
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	2.63 lx (≥ 5.00 lx) ✗	0.000 lx	29.9 lx	0.00	0.00	WP2

Utilisation profile: DIALux presetting, Standard (outdoor transportation area)

Site 1 (Bridge Light Scene 75% Dim - Straight Section)

Calculation objects



Site 1 (Bridge Light Scene 75% Dim - Straight Section)

Calculation objects

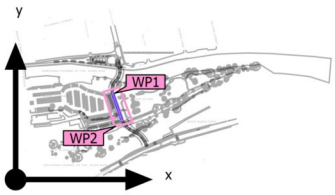
Working planes

Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	246 lx (≥ 5.00 lx) ✓	50.6 lx	371 lx	0.21	0.14	WP1
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	5.26 lx (≥ 5.00 lx) ✓	0.000 lx	59.8 lx	0.00	0.00	WP2

Utilisation profile: DIALux presetting, Standard (outdoor transportation area)

Site 1 (Bridge Light Scene 90% Dim - Straight Section)

Calculation objects



Site 1 (Bridge Light Scene 90% Dim - Straight Section)

Calculation objects

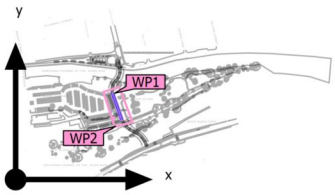
Working planes

Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	24.6 lx (≥ 5.00 lx) ✓	5.06 lx	37.1 lx	0.21	0.14	WP1
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	0.53 lx (≥ 5.00 lx) ✗	0.000 lx	5.98 lx	0.00	0.00	WP2

Utilisation profile: DIALux presetting, Standard (outdoor transportation area)

Site 1 (Bridge Light Scene 95% Dim - Straight Section)

Calculation objects



Site 1 (Bridge Light Scene 95% Dim - Straight Section)

Calculation objects

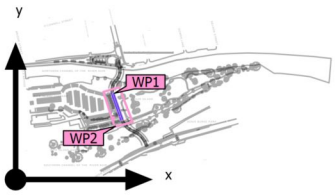
Working planes

Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	12.3 lx (≥ 5.00 lx) ✓	2.53 lx	18.5 lx	0.21	0.14	WP1
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	0.26 lx (≥ 5.00 lx) ✗	0.000 lx	2.99 lx	0.00	0.00	WP2

Utilisation profile: DIALux presetting, Standard (outdoor transportation area)

Site 1 (Bridge Light Scene 99% Dim - Straight Section)

Calculation objects



Site 1 (Bridge Light Scene 99% Dim - Straight Section)

Calculation objects

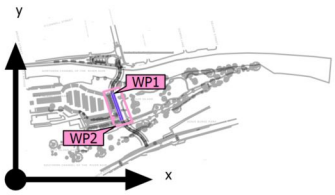
Working planes

Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	2.46 lx (≥ 5.00 lx) ✗	0.51 lx	3.71 lx	0.21	0.14	WP1
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	0.053 lx (≥ 5.00 lx) ✗	0.000 lx	0.60 lx	0.00	0.00	WP2

Utilisation profile: DIALux presetting, Standard (outdoor transportation area)

Site 1 (Main Profile)

Calculation objects



Site 1 (Main Profile)

Calculation objects

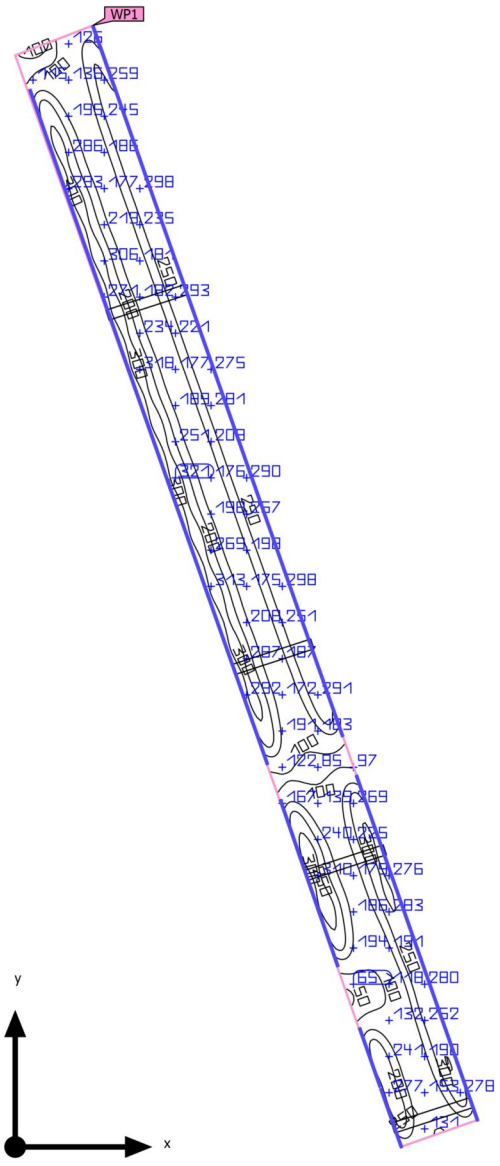
Working planes

Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	246 lx (≥ 5.00 lx) ✓	50.6 lx	371 lx	0.21	0.14	WP1
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	5.26 lx (≥ 5.00 lx) ✓	0.000 lx	59.8 lx	0.00	0.00	WP2

Utilisation profile: DIALux presetting, Standard (outdoor transportation area)

Bridge - Straight Section (Bridge Light Scene 10% Dim - Straight Section)

Summary



Bridge - Straight Section (Bridge Light Scene 10% Dim - Straight Section)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{perpendicular}$	222 lx	≥ 5.00 lx	✓	WP1
	g_1	0.20	-	-	WP1
Consumption values	Consumption	2550 kWh/a	max. 7650 kWh/a	✓	
Room	Lighting power density	3.91 W/m²	-	-	
		1.76 W/m²/100 lx	-	-	

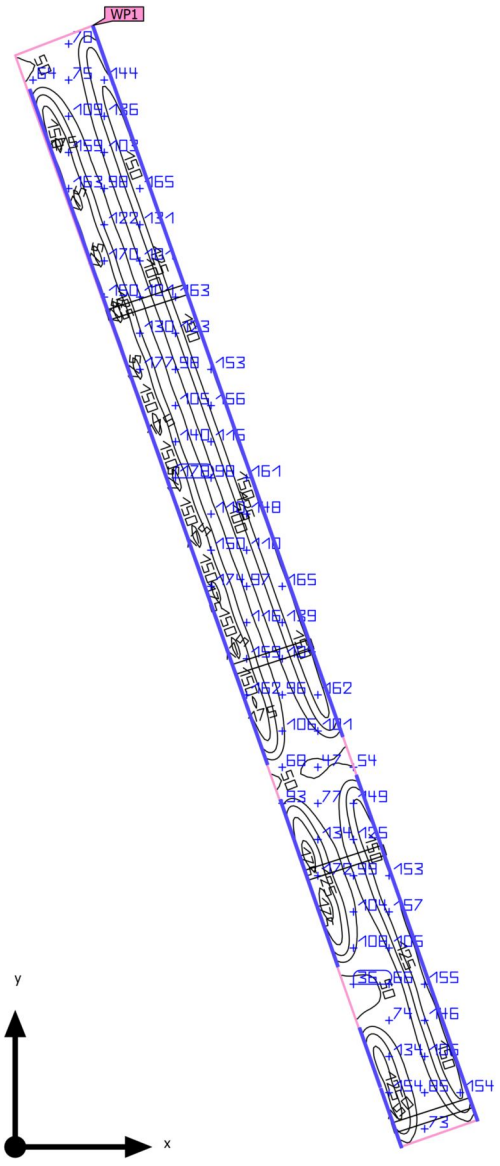
Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Luminaire list

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
35	Not yet a DIALux member	2340132	T_Line 3000 HE	24.3 W	3000 lm	123.4 lm/W

Bridge - Straight Section (Bridge Light Scene 50% Dim - Straight Section)

Summary



Bridge - Straight Section (Bridge Light Scene 50% Dim - Straight Section)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{perpendicular}$	123 lx	≥ 5.00 lx	✓	WP1
	g_1	0.21	-	-	WP1
Consumption values	Consumption	2550 kWh/a	max. 7650 kWh/a	✓	
Room	Lighting power density	3.91 W/m²	-	-	
		3.17 W/m²/100 lx	-	-	

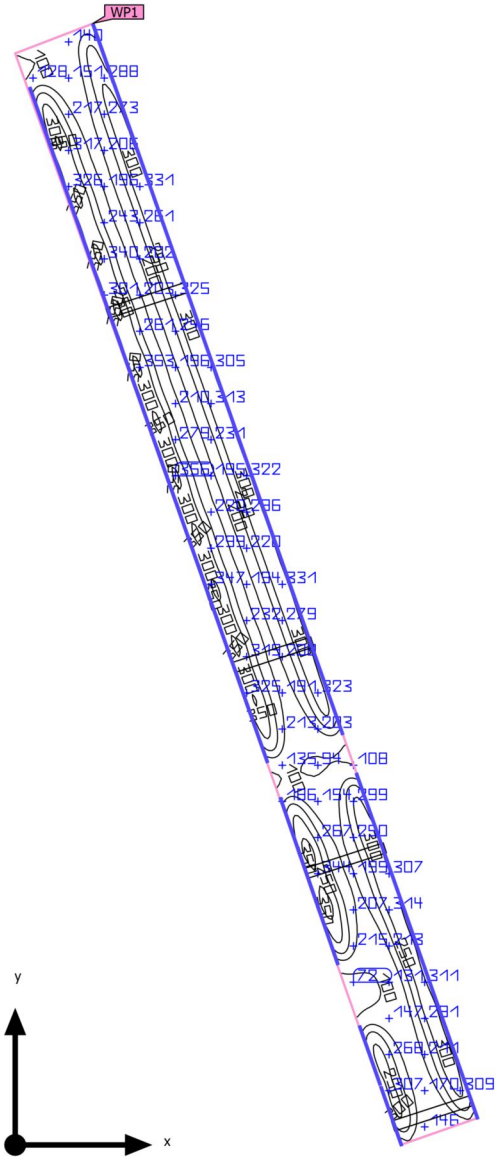
Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Luminaire list

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
35	Not yet a DIALux member	2340132	T_Line 3000 HE	24.3 W	3000 lm	123.4 lm/W

Bridge - Straight Section (Bridge Light Scene 75% Dim - Straight Section)

Summary



Bridge - Straight Section (Bridge Light Scene 75% Dim - Straight Section)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{perpendicular}$	246 lx	≥ 5.00 lx	✓	WP1
	g_1	0.21	-	-	WP1
Consumption values	Consumption	2550 kWh/a	max. 7650 kWh/a	✓	
Room	Lighting power density	3.91 W/m²	-	-	
		1.59 W/m²/100 lx	-	-	

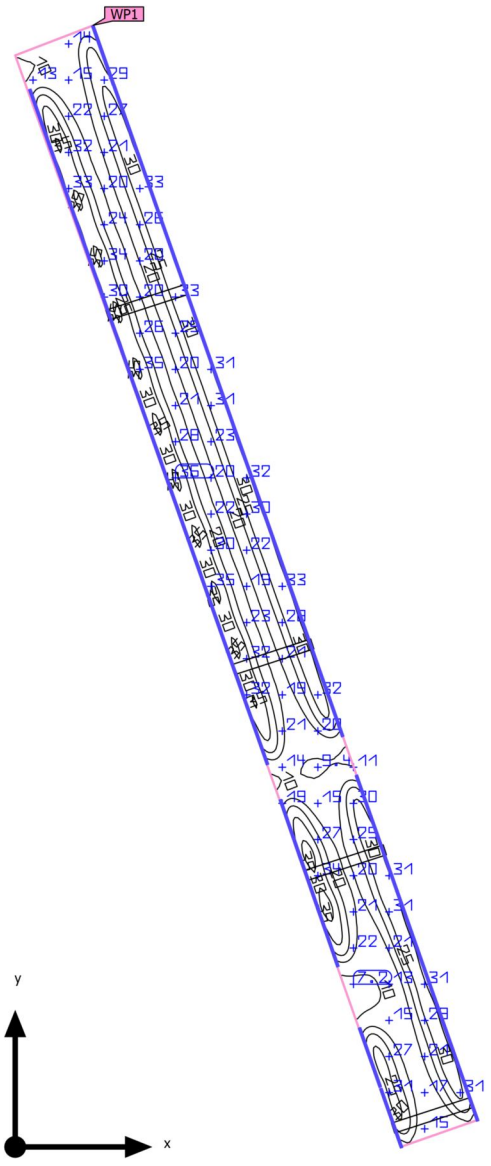
Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Luminaire list

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
35	Not yet a DIALux member	2340132	T_Line 3000 HE	24.3 W	3000 lm	123.4 lm/W

Bridge - Straight Section (Bridge Light Scene 90% Dim - Straight Section)

Summary



Bridge - Straight Section (Bridge Light Scene 90% Dim - Straight Section)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{perpendicular}$	24.6 lx	≥ 5.00 lx	✓	WP1
	g_1	0.21	-	-	WP1
Consumption values	Consumption	2550 kWh/a	max. 7650 kWh/a	✓	
Room	Lighting power density	3.91 W/m²	-	-	
		15.85 W/m²/100 lx	-	-	

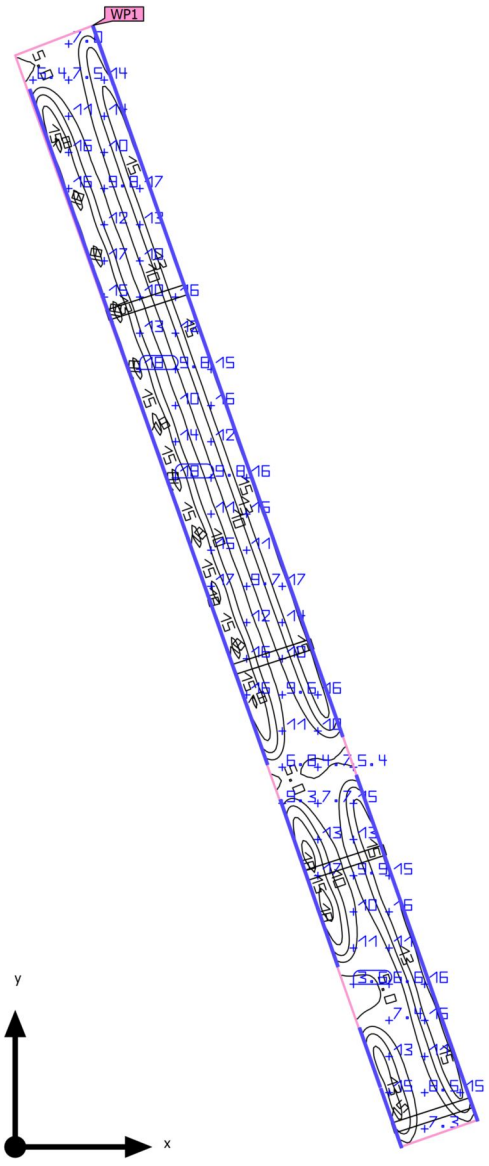
Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Luminaire list

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
35	Not yet a DIALux member	2340132	T_Line 3000 HE	24.3 W	3000 lm	123.4 lm/W

Bridge - Straight Section (Bridge Light Scene 95% Dim - Straight Section)

Summary



Bridge - Straight Section (Bridge Light Scene 95% Dim - Straight Section)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{perpendicular}$	12.3 lx	≥ 5.00 lx	✓	WP1
	g_1	0.21	-	-	WP1
Consumption values	Consumption	2550 kWh/a	max. 7650 kWh/a	✓	
Room	Lighting power density	3.91 W/m²	-	-	
		31.70 W/m²/100 lx	-	-	

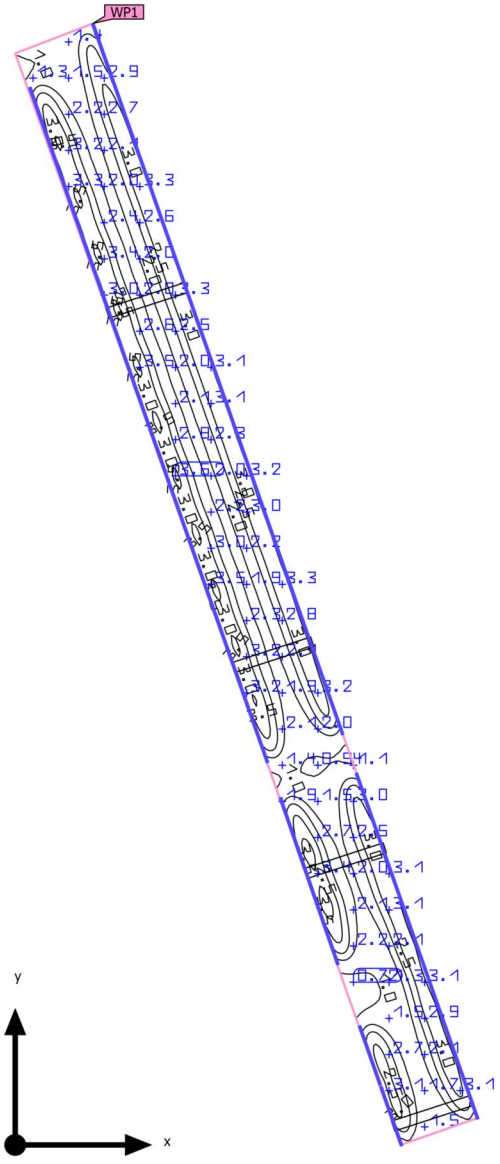
Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Luminaire list

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
35	Not yet a DIALux member	2340132	T_Line 3000 HE	24.3 W	3000 lm	123.4 lm/W

Bridge - Straight Section (Bridge Light Scene 99% Dim - Straight Section)

Summary



Bridge - Straight Section (Bridge Light Scene 99% Dim - Straight Section)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{perpendicular}$	2.46 lx	≥ 5.00 lx	✗	WP1
	g_1	0.21	-	-	WP1
Consumption values	Consumption	2550 kWh/a	max. 7650 kWh/a	✓	
Room	Lighting power density	3.91 W/m²	-	-	
		158.51 W/m²/100 lx	-	-	

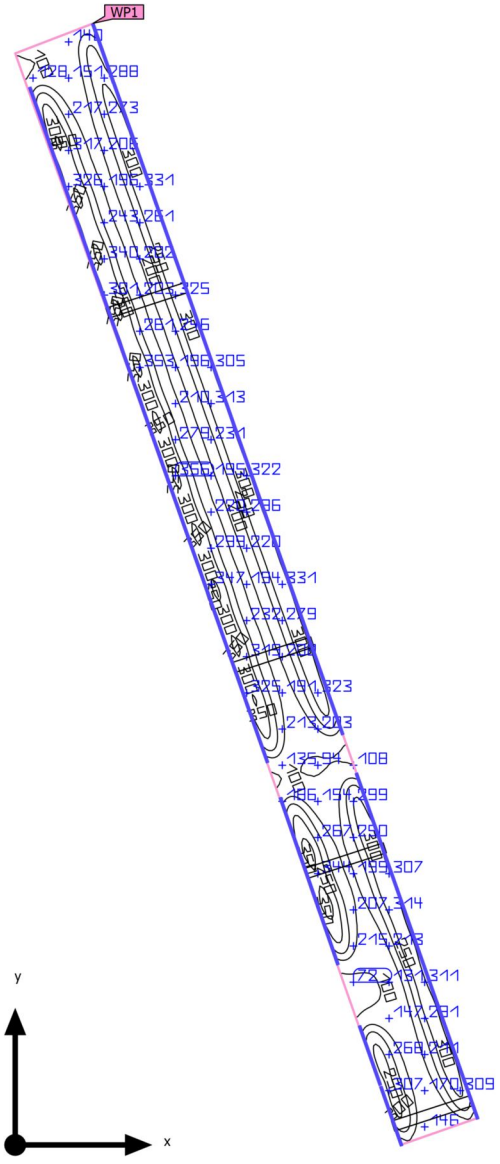
Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Luminaire list

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
35	Not yet a DIALux member	2340132	T_Line 3000 HE	24.3 W	3000 lm	123.4 lm/W

Bridge - Straight Section (Main Profile)

Summary



Bridge - Straight Section (Main Profile)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{perpendicular}$	246 lx	≥ 5.00 lx	✓	WP1
	g_1	0.21	-	-	WP1
Consumption values	Consumption	2550 kWh/a	max. 7650 kWh/a	✓	
Room	Lighting power density	3.91 W/m²	-	-	
		1.59 W/m²/100 lx	-	-	

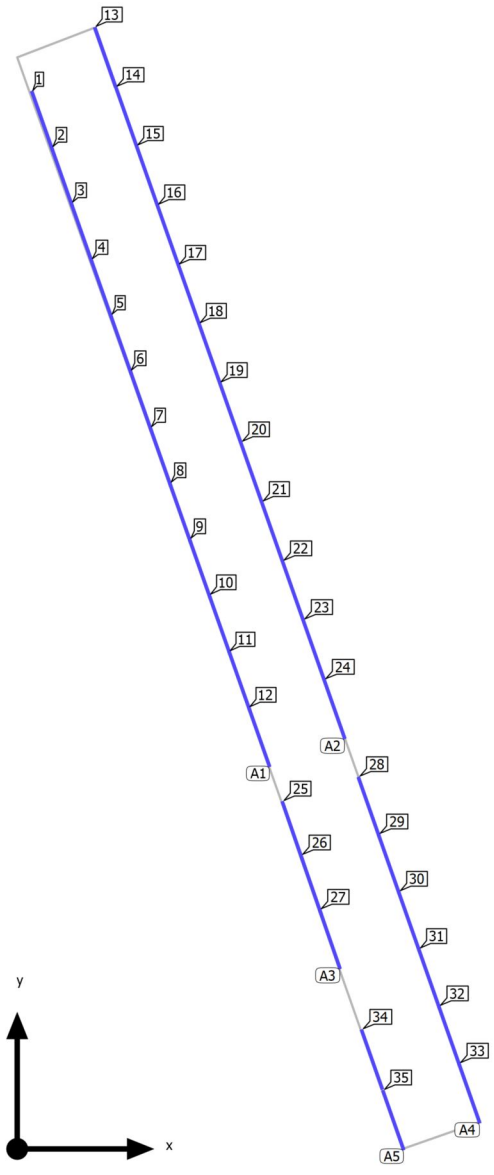
Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Luminaire list

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
35	Not yet a DIALux member	2340132	T_Line 3000 HE	24.3 W	3000 lm	123.4 lm/W

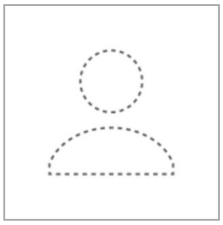
Bridge - Straight Section

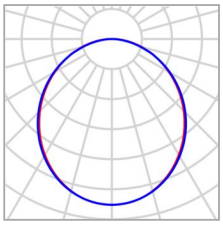
Luminaire layout plan



Bridge - Straight Section

Luminaire layout plan





Manufacturer	Not yet a DIALux member
Article No.	2340132
Article name	T_Line 3000 HE
Fitting	4x LLE_24_1300_LV_ADV 5 @160 69.3%

P	24.3 W
$\Phi_{Luminaire}$	3000 lm

12 x Not yet a DIALux member T_Line 3000 HE

Type	Line arrangement
1st luminaire (X/Y/Z)	1.167 m / 49.359 m / 1.250 m
X-direction	12 pcs., Centre - centre, 2.852 m
Arrangement	A1

X	Y	Mounting height	Luminaire
1.167 m	49.359 m	1.250 m	1
2.114 m	46.669 m	1.250 m	2
3.061 m	43.979 m	1.250 m	3
4.009 m	41.290 m	1.250 m	4
4.956 m	38.600 m	1.250 m	5
5.903 m	35.910 m	1.250 m	6
6.851 m	33.220 m	1.250 m	7
7.798 m	30.531 m	1.250 m	8
8.745 m	27.841 m	1.250 m	9
9.692 m	25.151 m	1.250 m	10
10.640 m	22.462 m	1.250 m	11
11.587 m	19.772 m	1.250 m	12

Bridge - Straight Section

Luminaire layout plan

12 x Not yet a DIALux member T_Line 3000 HE

Type	Line arrangement
1st luminaire (X/Y/Z)	4.265 m / 52.441 m / 1.250 m
X-direction	12 pcs., Centre - centre, Distances not equal
Arrangement	A2

X	Y	Mounting height	Luminaire
4.265 m	52.441 m	1.250 m	13
5.266 m	49.596 m	1.250 m	14
6.266 m	46.750 m	1.250 m	15
7.266 m	43.904 m	1.250 m	16
8.266 m	41.059 m	1.250 m	17
9.266 m	38.213 m	1.250 m	18
10.266 m	35.367 m	1.250 m	19
11.267 m	32.522 m	1.250 m	20
12.267 m	29.676 m	1.250 m	21
13.267 m	26.830 m	1.250 m	22
14.267 m	23.985 m	1.250 m	23
15.267 m	21.139 m	1.250 m	24

3 x Not yet a DIALux member T_Line 3000 HE

Type	Line arrangement
1st luminaire (X/Y/Z)	13.191 m / 15.241 m / 1.250 m
X-direction	3 pcs., Centre - centre, 2.737 m
Arrangement	A3

X	Y	Mounting height	Luminaire
13.191 m	15.241 m	1.250 m	25
14.085 m	12.654 m	1.250 m	26
14.979 m	10.067 m	1.250 m	27

6 x Not yet a DIALux member T_Line 3000 HE

Type	Line arrangement

X	Y	Mounting height	Luminaire

Bridge - Straight Section

Luminaire layout plan

1st luminaire (X/Y/Z)	16.918 m / 16.440 m / 1.250 m
X-direction	6 pcs., Centre - centre, 2.917 m
Arrangement	A4

X	Y	Mounting height	Luminaire
16.918 m	16.440 m	1.250 m	28
17.885 m	13.688 m	1.250 m	29
18.851 m	10.936 m	1.250 m	30
19.817 m	8.184 m	1.250 m	31
20.784 m	5.432 m	1.250 m	32
21.750 m	2.680 m	1.250 m	33

2 x Not yet a DIALux member T_Line 3000 HE

Type	Line arrangement
1st luminaire (X/Y/Z)	17.004 m / 4.284 m / 1.250 m
X-direction	2 pcs., Centre - centre, 3.089 m
Arrangement	A5

X	Y	Mounting height	Luminaire
17.004 m	4.284 m	1.250 m	34
18.028 m	1.369 m	1.250 m	35

Bridge - Straight Section

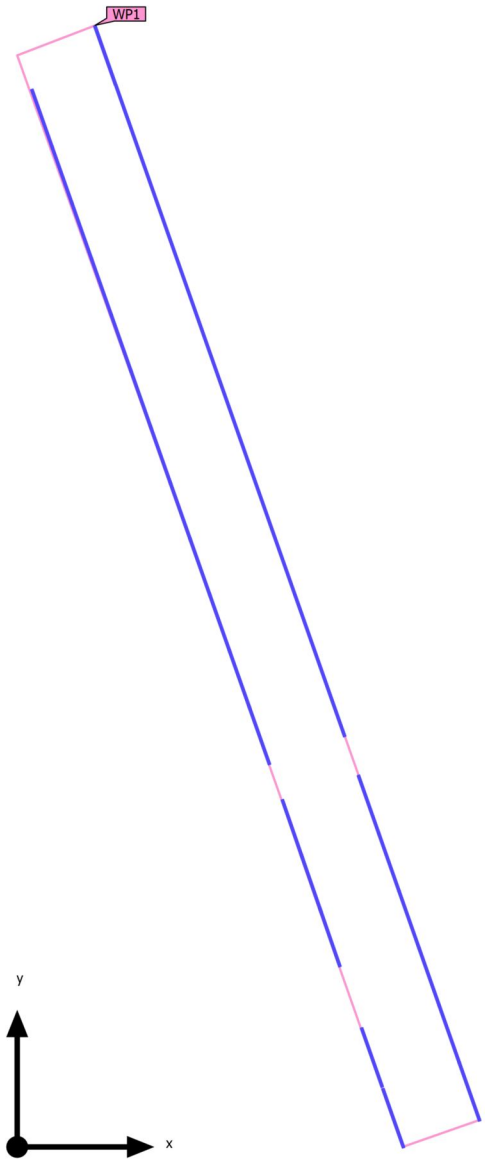
Luminaire list

Φ_{total}	P_{total}	Luminous efficacy
105000 lm	850.5 W	123.5 lm/W

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
35	Not yet a DIALux member	2340132	T_Line 3000 HE	24.3 W	3000 lm	123.4 lm/W

Bridge - Straight Section (Bridge Light Scene 10% Dim - Straight Section)

Calculation objects



Bridge - Straight Section (Bridge Light Scene 10% Dim - Straight Section)

Calculation objects

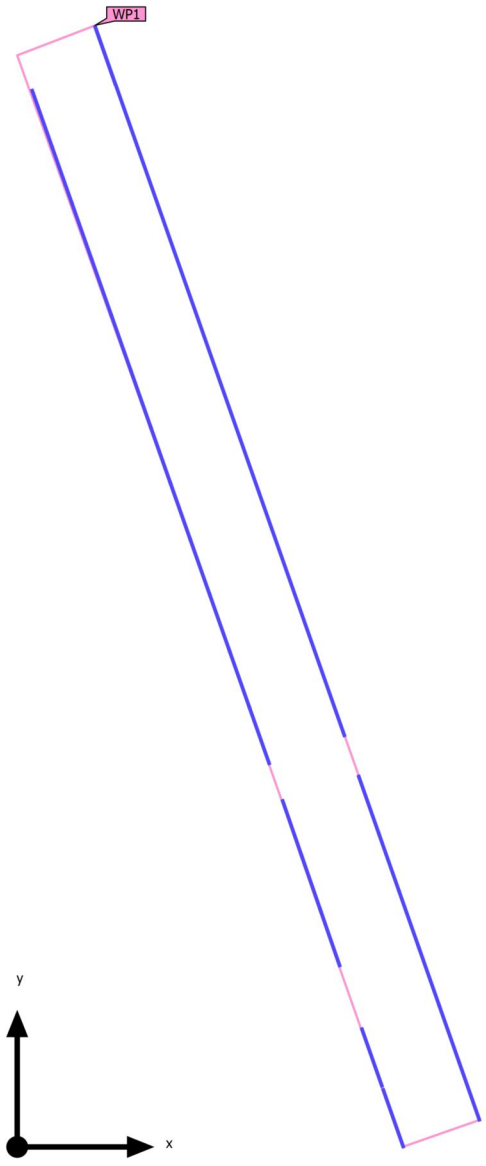
Working planes

Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	222 lx (≥ 5.00 lx) ✓	45.5 lx	333 lx	0.20	0.14	WP1

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Bridge - Straight Section (Bridge Light Scene 50% Dim - Straight Section)

Calculation objects



Bridge - Straight Section (Bridge Light Scene 50% Dim - Straight Section)

Calculation objects

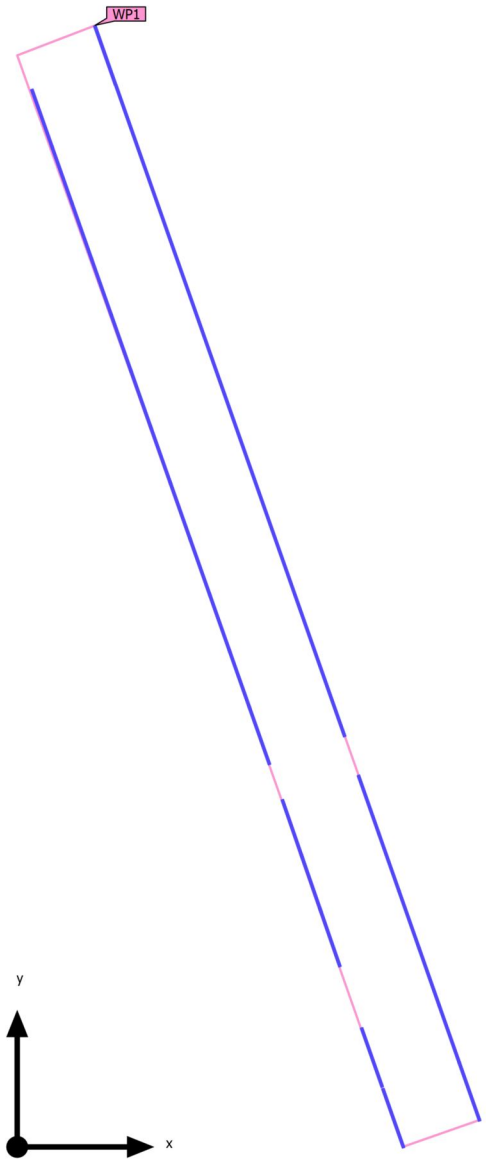
Working planes

Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	123 lx (≥ 5.00 lx) ✓	25.3 lx	185 lx	0.21	0.14	WP1

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Bridge - Straight Section (Bridge Light Scene 75% Dim - Straight Section)

Calculation objects



Bridge - Straight Section (Bridge Light Scene 75% Dim - Straight Section)

Calculation objects

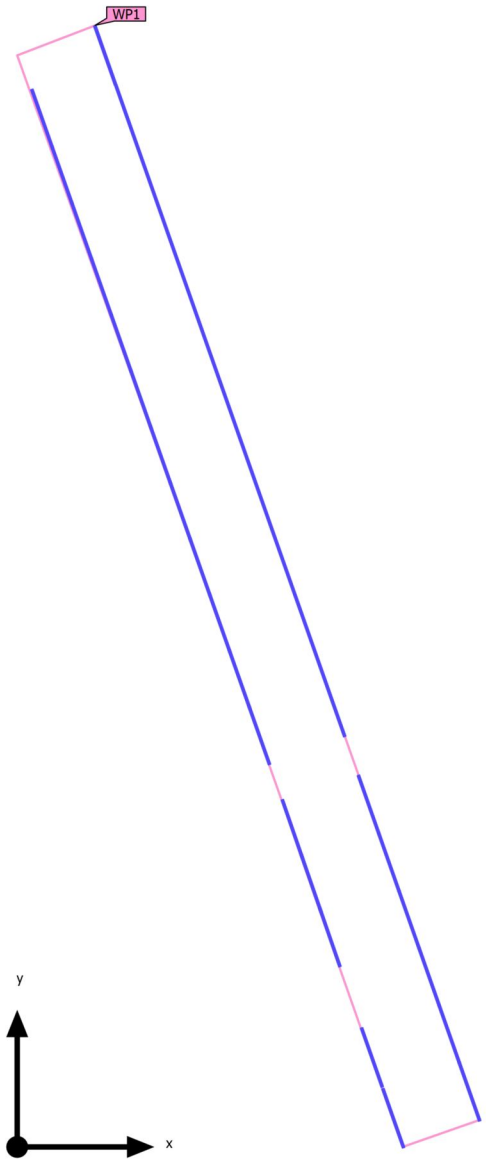
Working planes

Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	246 lx (≥ 5.00 lx) ✓	50.6 lx	371 lx	0.21	0.14	WP1

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Bridge - Straight Section (Bridge Light Scene 90% Dim - Straight Section)

Calculation objects



Bridge - Straight Section (Bridge Light Scene 90% Dim - Straight Section)

Calculation objects

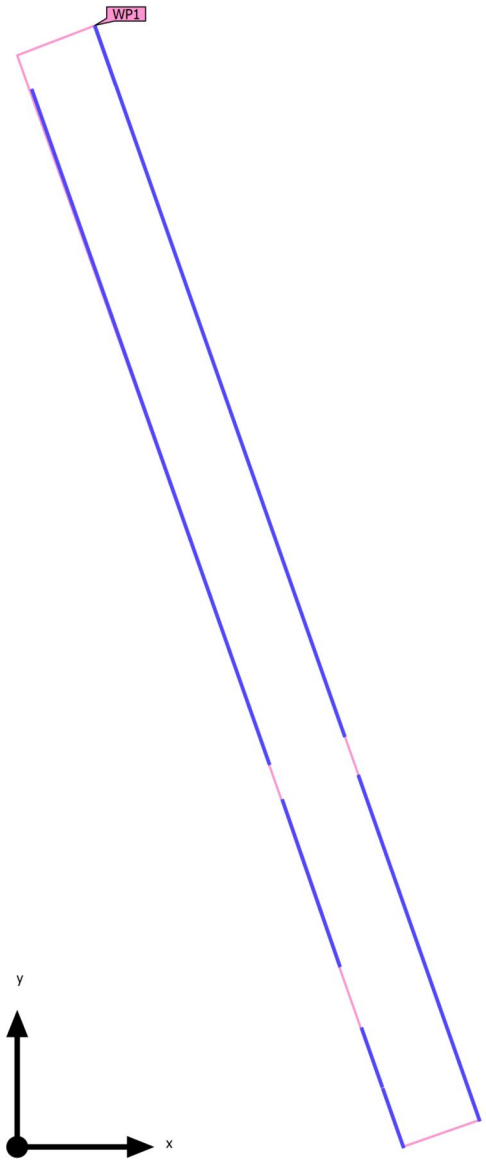
Working planes

Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	24.6 lx (≥ 5.00 lx) ✓	5.06 lx	37.1 lx	0.21	0.14	WP1

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Bridge - Straight Section (Bridge Light Scene 95% Dim - Straight Section)

Calculation objects



Bridge - Straight Section (Bridge Light Scene 95% Dim - Straight Section)

Calculation objects

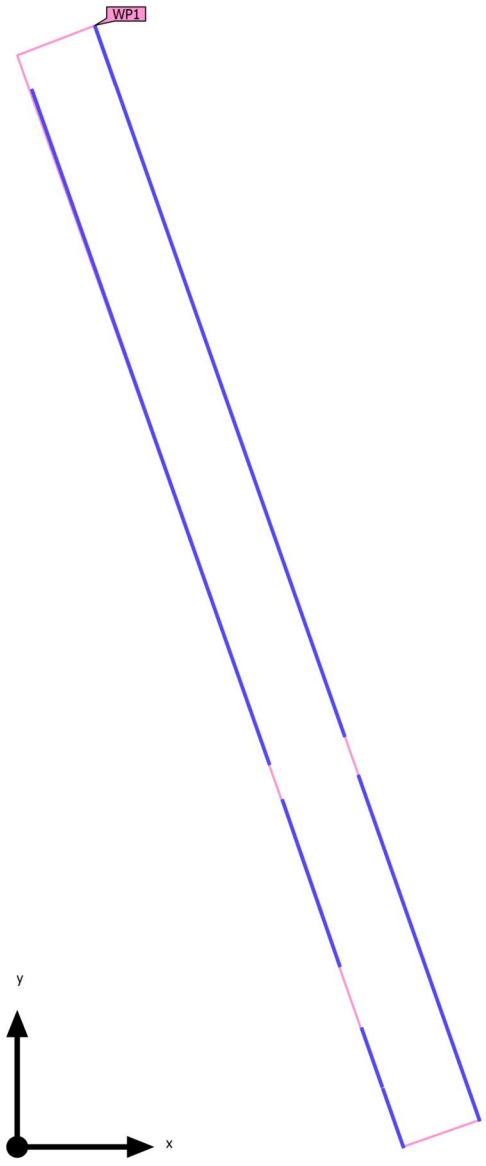
Working planes

Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	12.3 lx (≥ 5.00 lx) ✓	2.53 lx	18.5 lx	0.21	0.14	WP1

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Bridge - Straight Section (Bridge Light Scene 99% Dim - Straight Section)

Calculation objects



Bridge - Straight Section (Bridge Light Scene 99% Dim - Straight Section)

Calculation objects

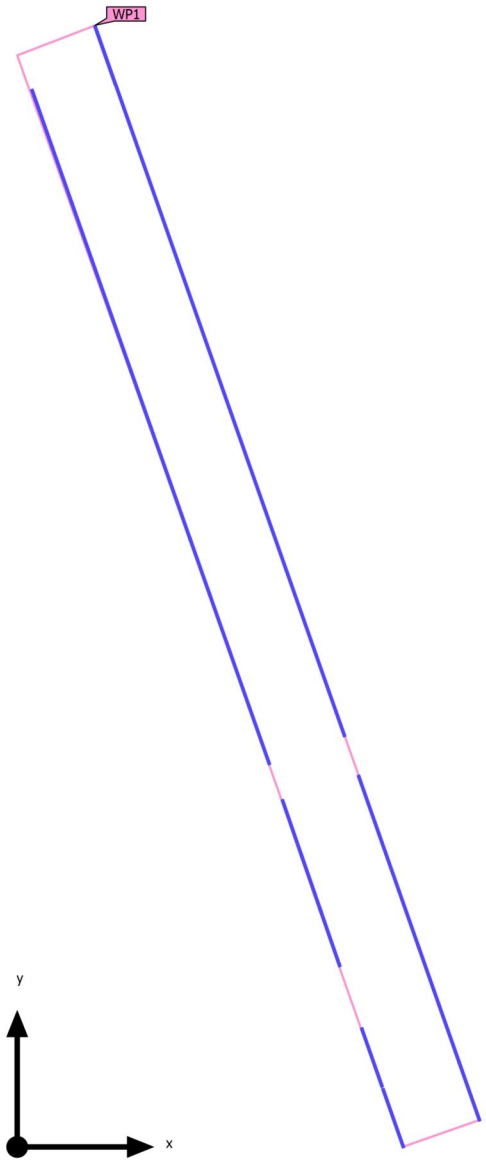
Working planes

Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	2.46 lx (≥ 5.00 lx) ✗	0.51 lx	3.71 lx	0.21	0.14	WP1

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Bridge - Straight Section (Main Profile)

Calculation objects



Bridge - Straight Section (Main Profile)

Calculation objects

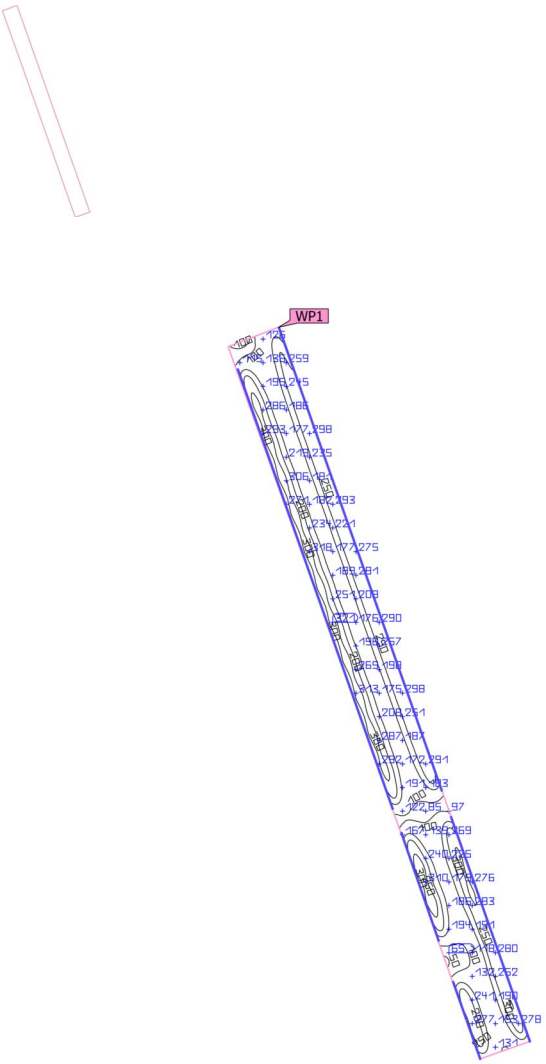
Working planes

Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	246 lx (≥ 5.00 lx) ✓	50.6 lx	371 lx	0.21	0.14	WP1

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Bridge - Straight Section (Bridge Light Scene 10% Dim - Straight Section)

Working plane (Bridge - Straight Section)

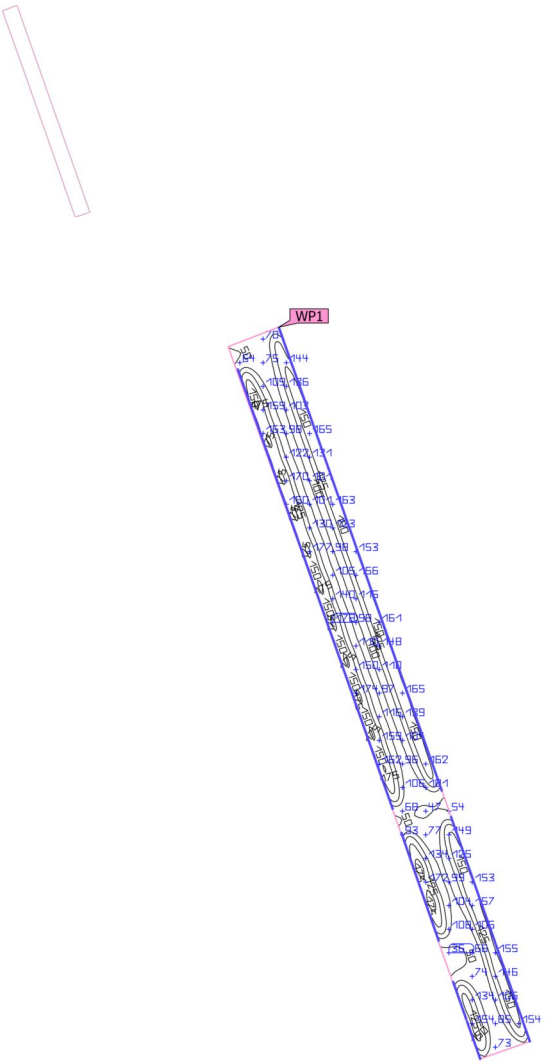


Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	222 lx (≥ 5.00 lx) ✓	45.5 lx	333 lx	0.20	0.14	WP1

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Bridge - Straight Section (Bridge Light Scene 50% Dim - Straight Section)

Working plane (Bridge - Straight Section)

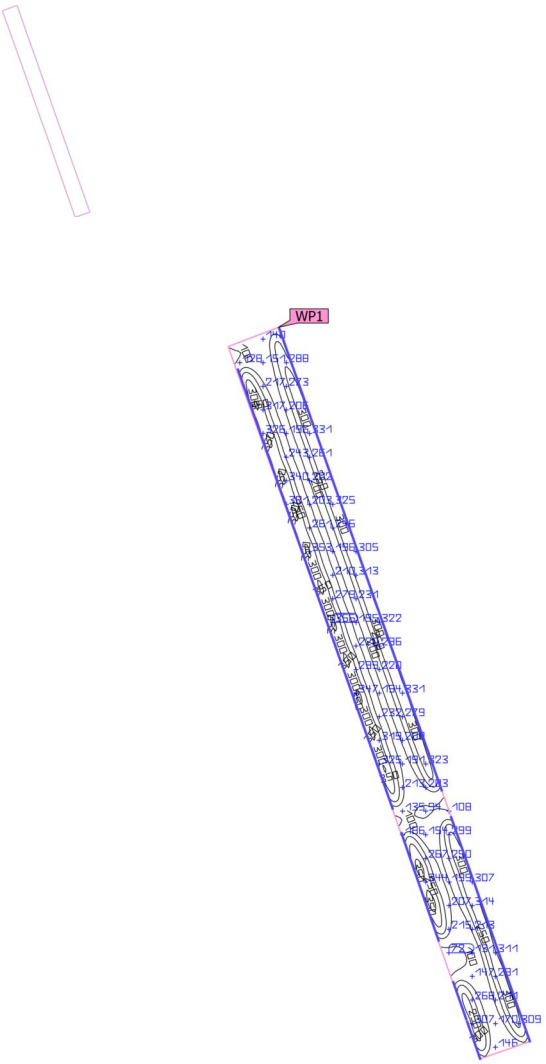


Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	123 lx (≥ 5.00 lx) ✓	25.3 lx	185 lx	0.21	0.14	WP1

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Bridge - Straight Section (Bridge Light Scene 75% Dim - Straight Section)

Working plane (Bridge - Straight Section)

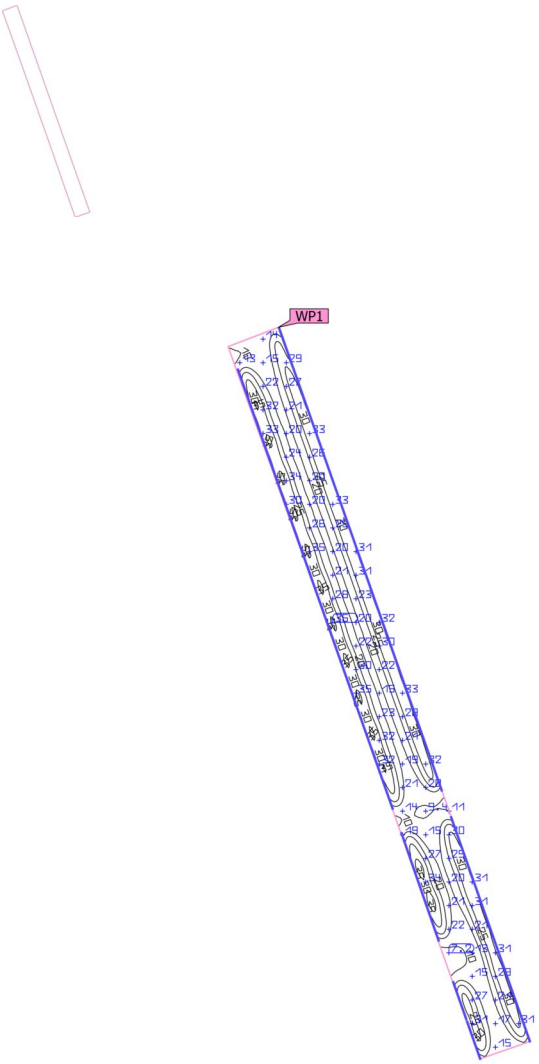


Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	246 lx (≥ 5.00 lx) ✓	50.6 lx	371 lx	0.21	0.14	WP1

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Bridge - Straight Section (Bridge Light Scene 90% Dim - Straight Section)

Working plane (Bridge - Straight Section)

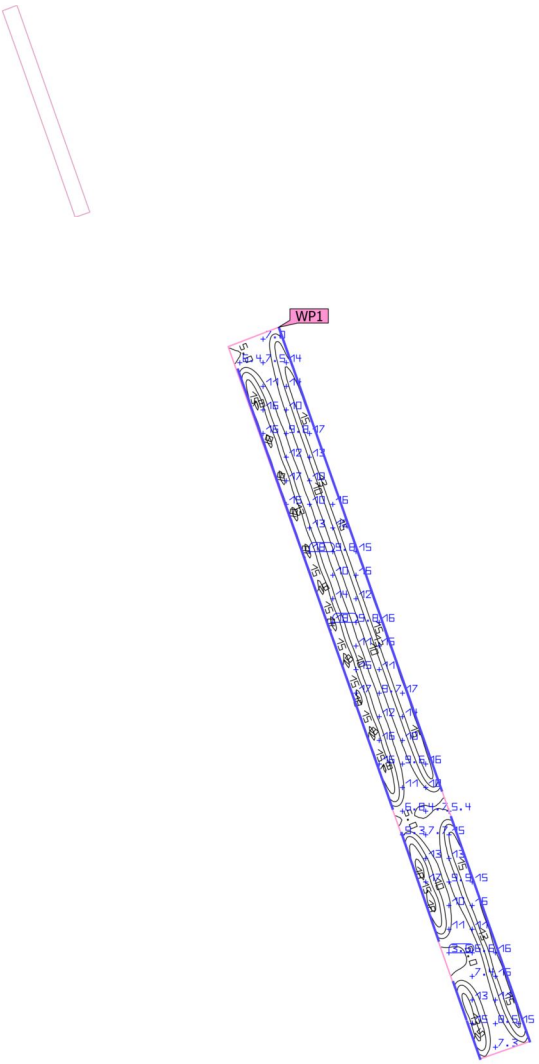


Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	24.6 lx (≥ 5.00 lx) ✓	5.06 lx	37.1 lx	0.21	0.14	WP1

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Bridge - Straight Section (Bridge Light Scene 95% Dim - Straight Section)

Working plane (Bridge - Straight Section)

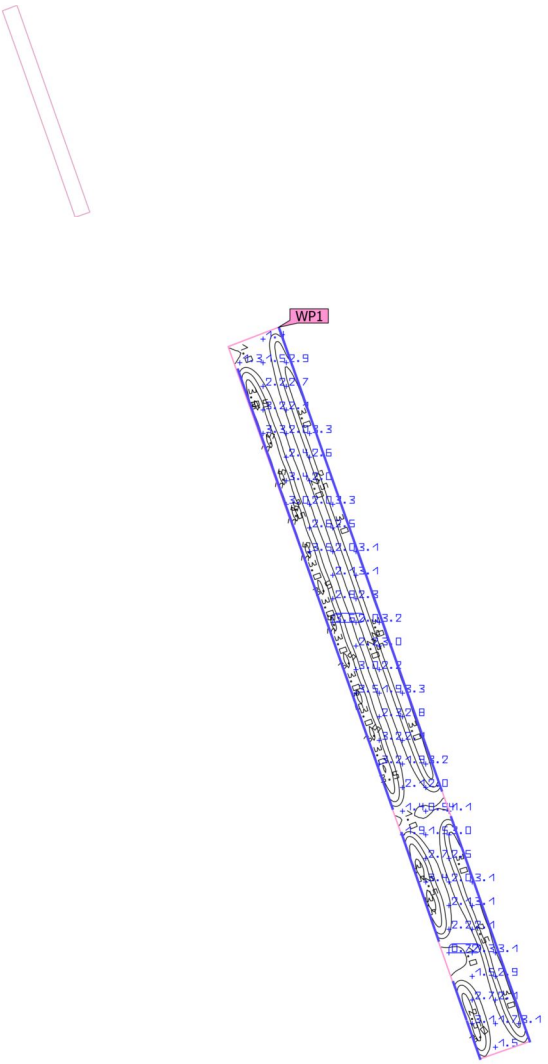


Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	12.3 lx (≥ 5.00 lx) ✓	2.53 lx	18.5 lx	0.21	0.14	WP1

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Bridge - Straight Section (Bridge Light Scene 99% Dim - Straight Section)

Working plane (Bridge - Straight Section)

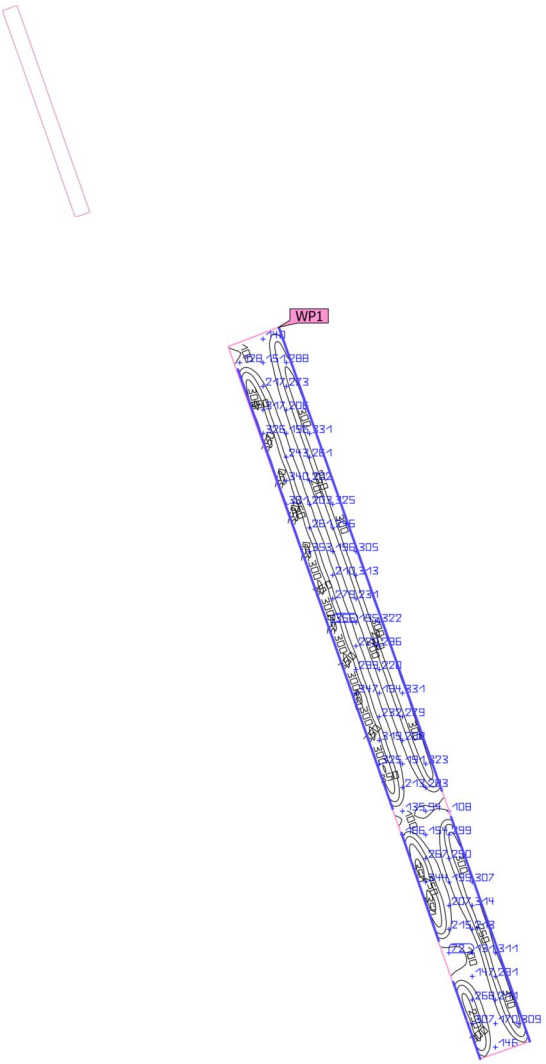


Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	2.46 lx (≥ 5.00 lx) ✗	0.51 lx	3.71 lx	0.21	0.14	WP1

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Bridge - Straight Section (Main Profile)

Working plane (Bridge - Straight Section)

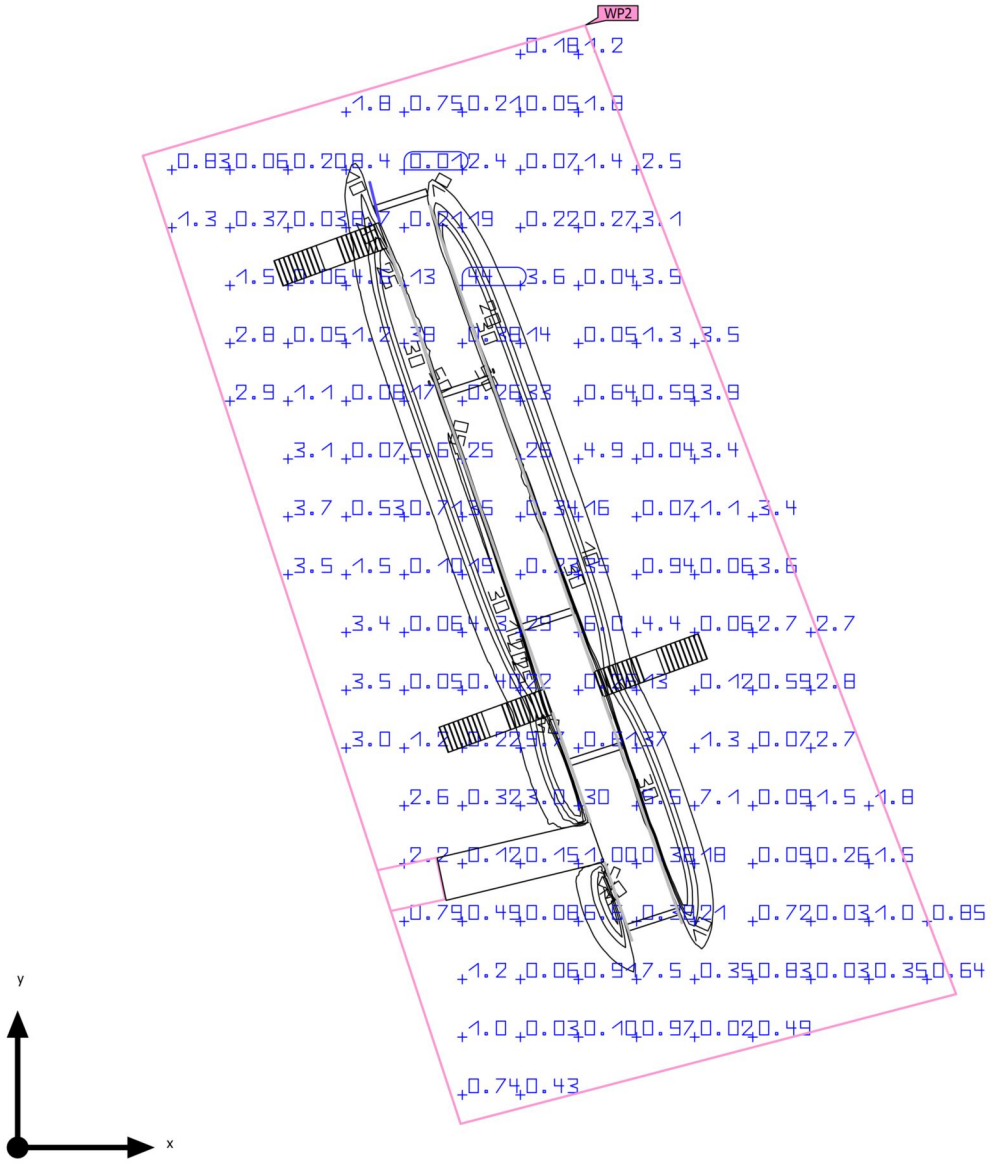


Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Bridge - Straight Section) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	246 lx (≥ 5.00 lx) ✓	50.6 lx	371 lx	0.21	0.14	WP1

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Ground Level - Underside of Bridge (Bridge Light Scene 10% Dim - Straight Section)

Summary



Ground Level - Underside of Bridge (Bridge Light Scene 10% Dim - Straight Section)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{perpendicular}$	4.73 lx	≥ 5.00 lx	✗	WP2
	g_1	0.00	-	-	WP2
Consumption values	Consumption	210 kWh/a	max. 101350 kWh/a	✓	
Room	Lighting power density	0.01 W/m²	-	-	
		0.19 W/m²/100 lx	-	-	

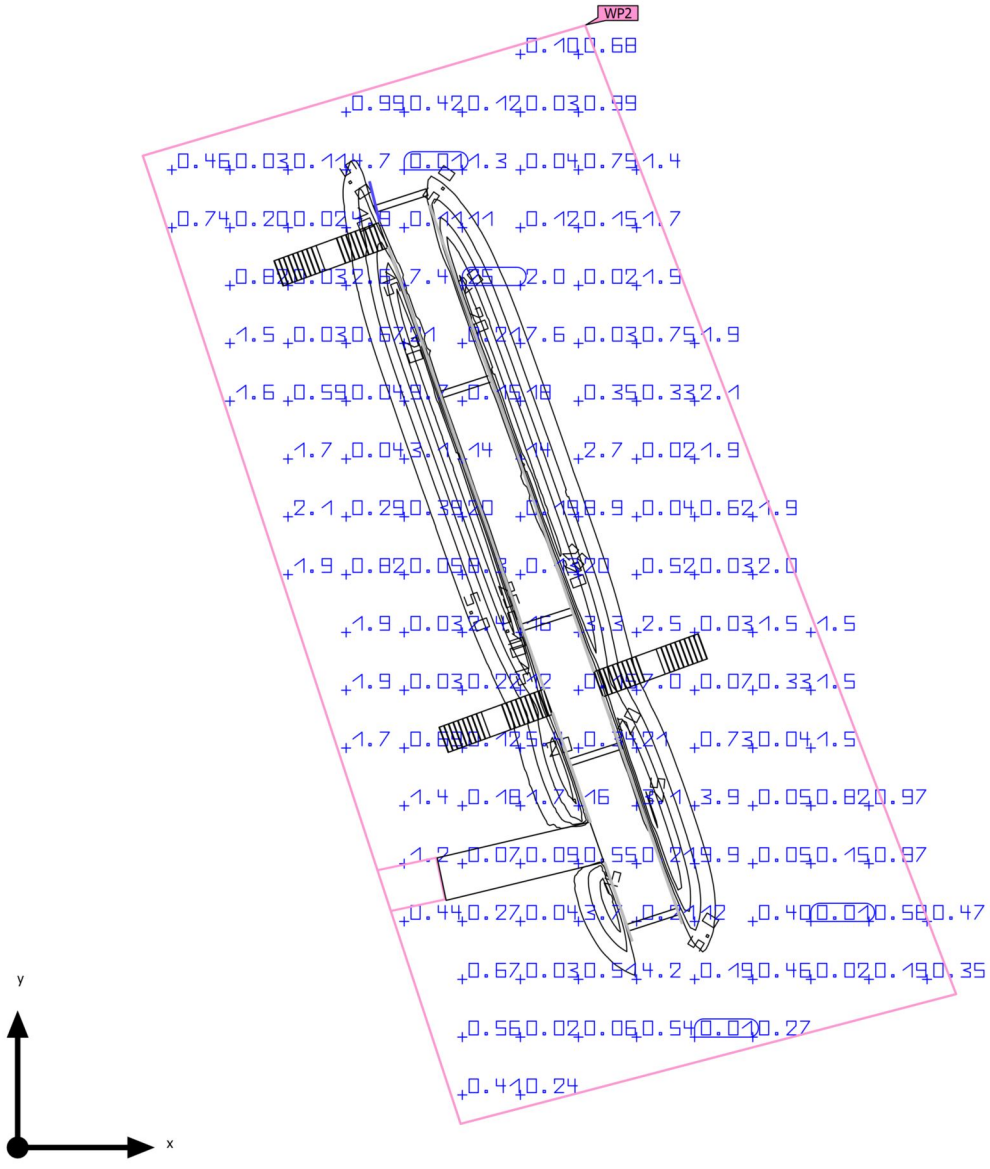
Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Luminaire list

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
1	Not yet a DIALux member	2340132	T_Line 3000 HE	24.3 W	3000 lm	123.4 lm/W

Ground Level - Underside of Bridge (Bridge Light Scene 50% Dim - Straight Section)

Summary



Ground Level - Underside of Bridge (Bridge Light Scene 50% Dim - Straight Section)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{perpendicular}$	2.63 lx	≥ 5.00 lx	✗	WP2
	g_1	0.00	-	-	WP2
Consumption values	Consumption	210 kWh/a	max. 101350 kWh/a	✓	
Room	Lighting power density	0.01 W/m²	-	-	
		0.35 W/m²/100 lx	-	-	

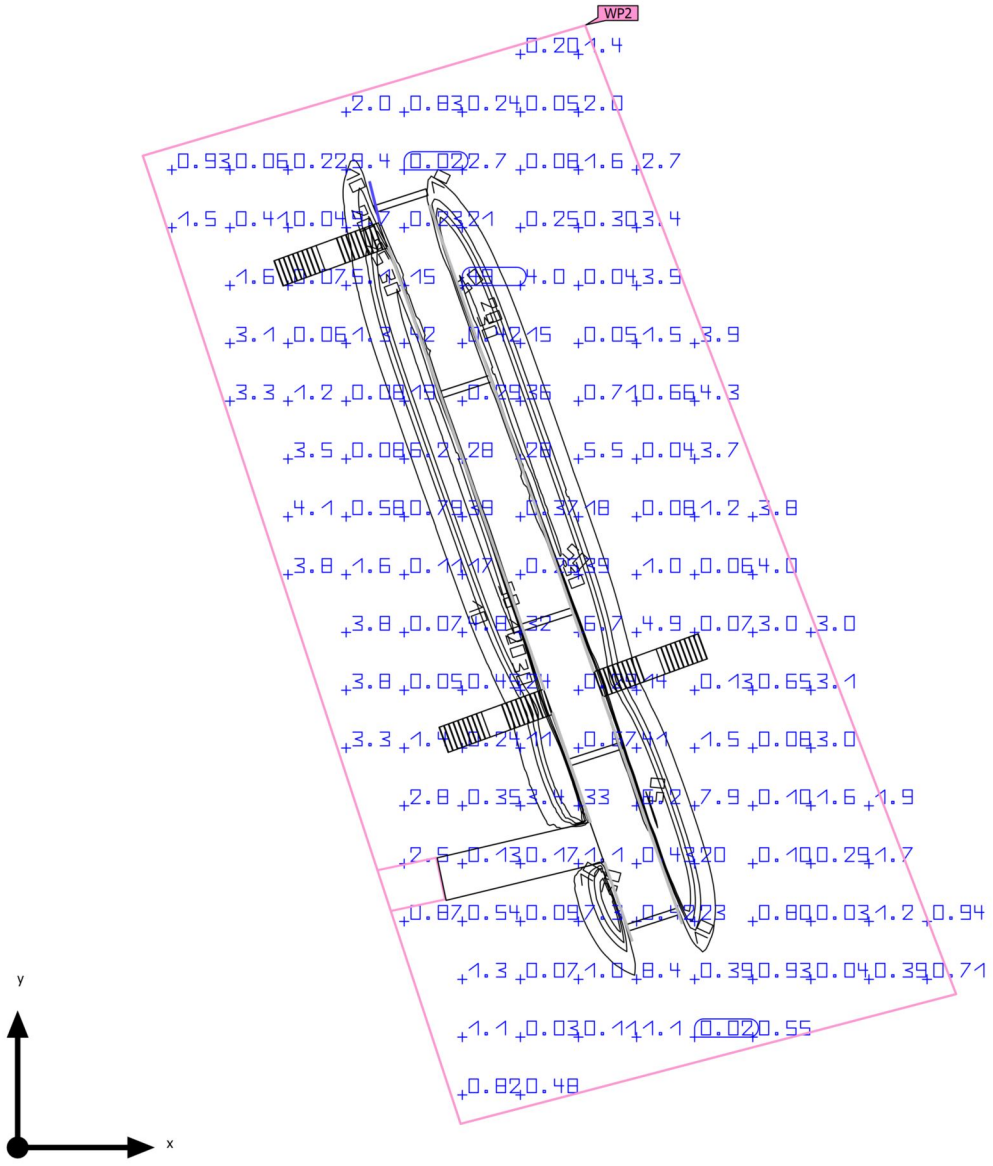
Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Luminaire list

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
1	Not yet a DIALux member	2340132	T_Line 3000 HE	24.3 W	3000 lm	123.4 lm/W

Ground Level - Underside of Bridge (Bridge Light Scene 75% Dim - Straight Section)

Summary



Ground Level - Underside of Bridge (Bridge Light Scene 75% Dim - Straight Section)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{perpendicular}$	5.26 lx	≥ 5.00 lx	✓	WP2
	g_1	0.00	-	-	WP2
Consumption values	Consumption	210 kWh/a	max. 101350 kWh/a	✓	
Room	Lighting power density	0.01 W/m²	-	-	
		0.17 W/m²/100 lx	-	-	

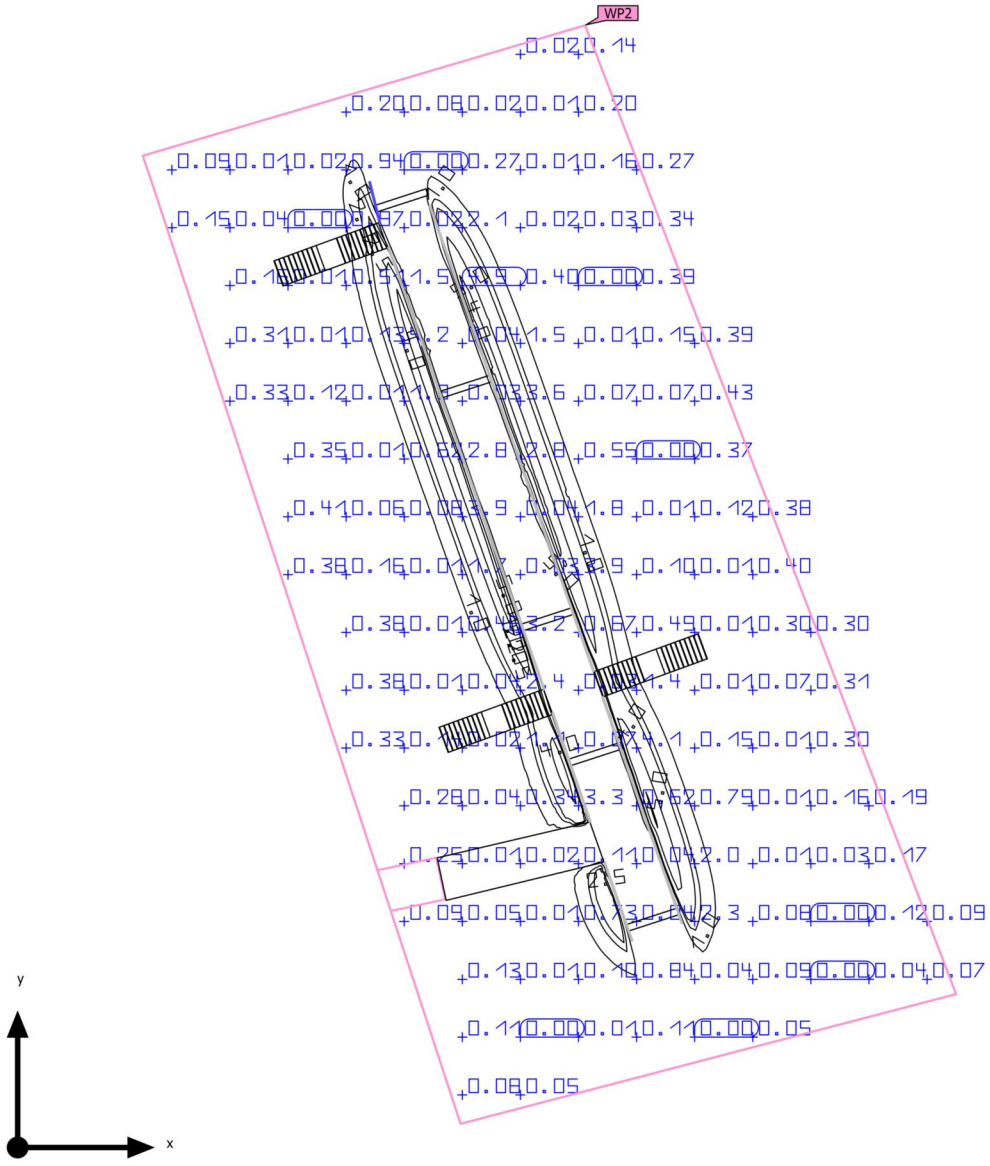
Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Luminaire list

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
1	Not yet a DIALux member	2340132	T_Line 3000 HE	24.3 W	3000 lm	123.4 lm/W

Ground Level - Underside of Bridge (Bridge Light Scene 90% Dim - Straight Section)

Summary



Ground Level - Underside of Bridge (Bridge Light Scene 90% Dim - Straight Section)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{perpendicular}$	0.53 lx	≥ 5.00 lx	✗	WP2
	g_1	0.00	-	-	WP2
Consumption values	Consumption	210 kWh/a	max. 101350 kWh/a	✓	
Room	Lighting power density	0.01 W/m²	-	-	
		1.73 W/m²/100 lx	-	-	

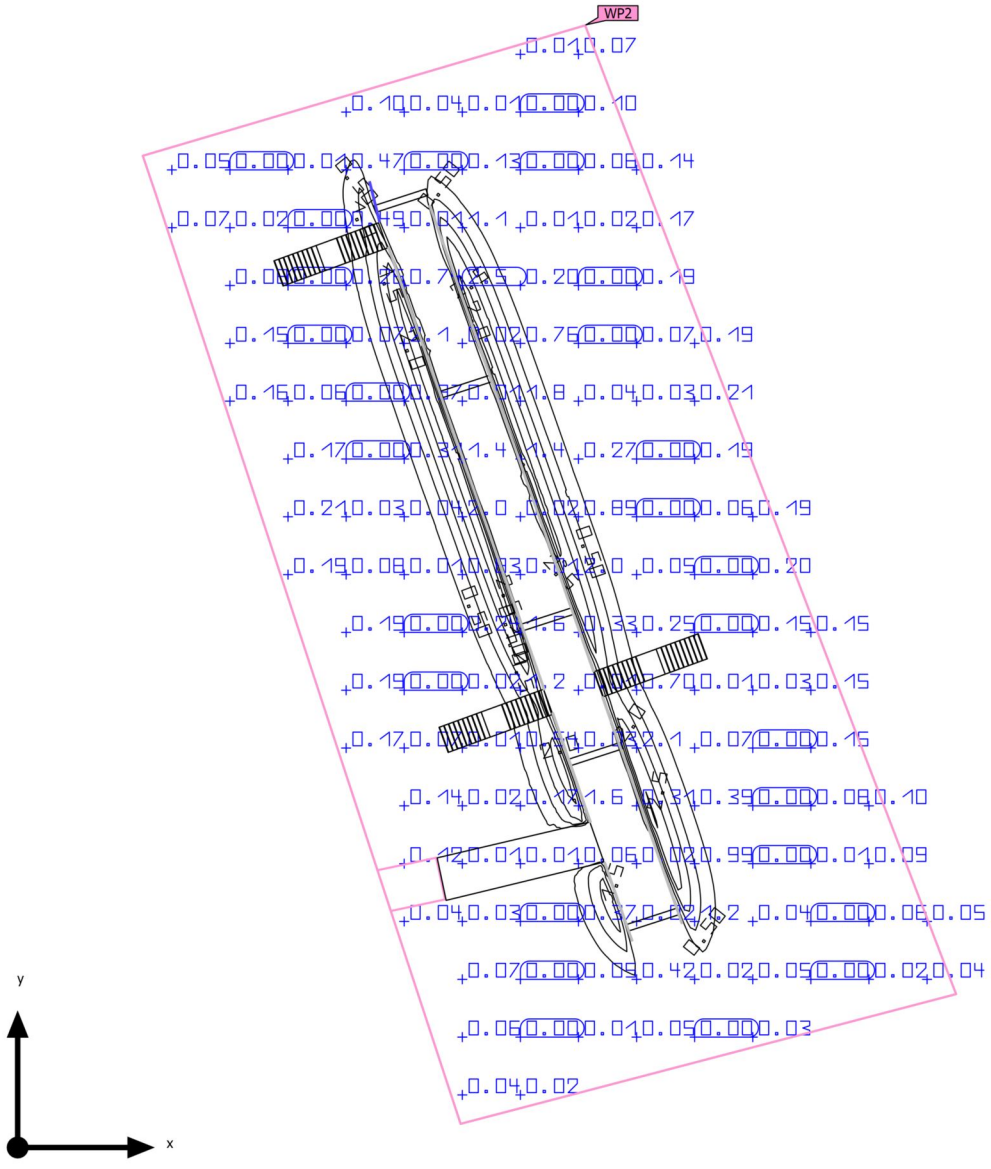
Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Luminaire list

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
1	Not yet a DIALux member	2340132	T_Line 3000 HE	24.3 W	3000 lm	123.4 lm/W

Ground Level - Underside of Bridge (Bridge Light Scene 95% Dim - Straight Section)

Summary



Ground Level - Underside of Bridge (Bridge Light Scene 95% Dim - Straight Section)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{perpendicular}$	0.26 lx	≥ 5.00 lx	✗	WP2
	g_1	0.00	-	-	WP2
Consumption values	Consumption	210 kWh/a	max. 101350 kWh/a	✓	
Room	Lighting power density	0.01 W/m²	-	-	
		3.45 W/m²/100 lx	-	-	

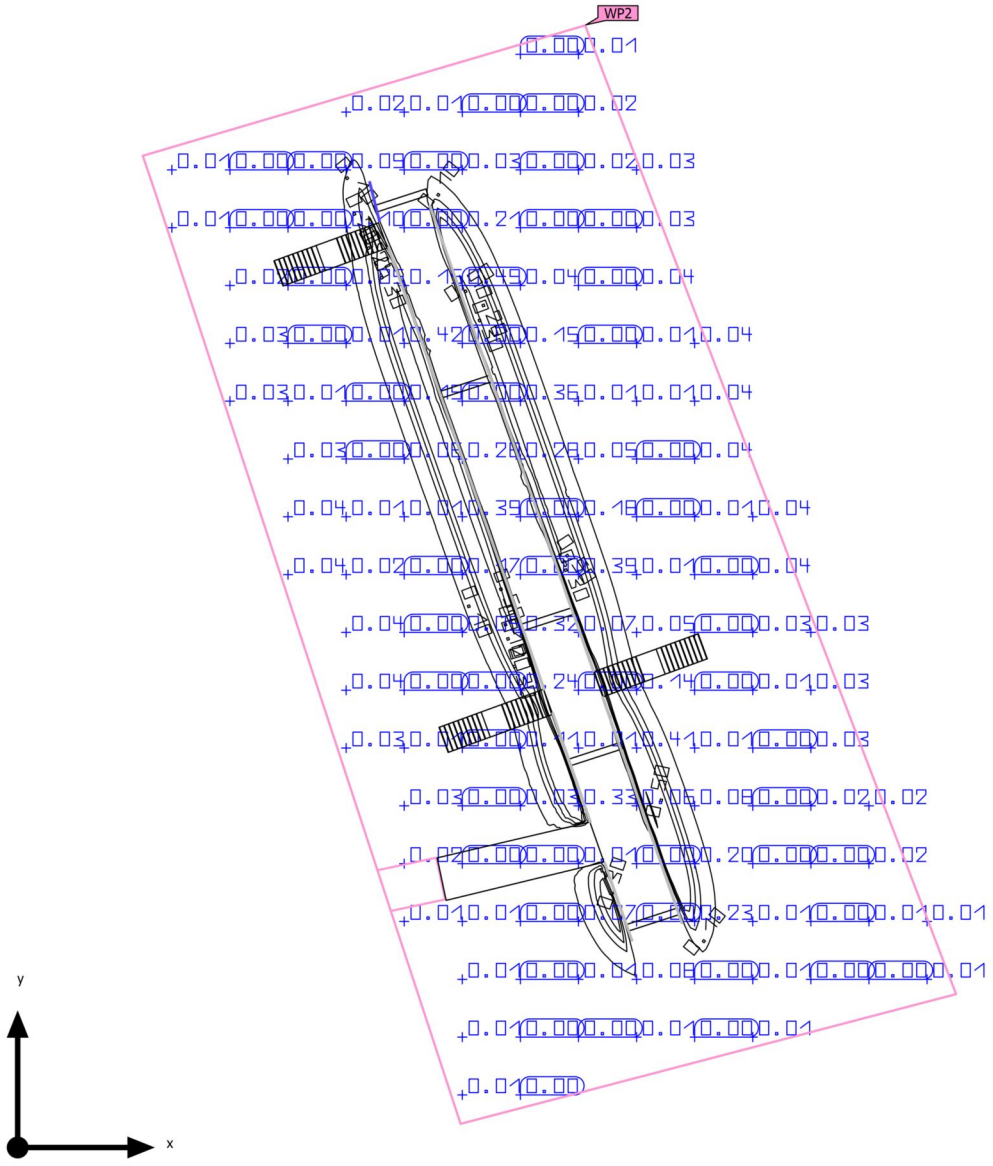
Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Luminaire list

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
1	Not yet a DIALux member	2340132	T_Line 3000 HE	24.3 W	3000 lm	123.4 lm/W

Ground Level - Underside of Bridge (Bridge Light Scene 99% Dim - Straight Section)

Summary



Ground Level - Underside of Bridge (Bridge Light Scene 99% Dim - Straight Section)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{perpendicular}$	0.053 lx	≥ 5.00 lx	✗	WP2
	g_1	0.00	-	-	WP2
Consumption values	Consumption	210 kWh/a	max. 101350 kWh/a	✓	
Room	Lighting power density	0.01 W/m²	-	-	
		17.26 W/m²/100 lx	-	-	

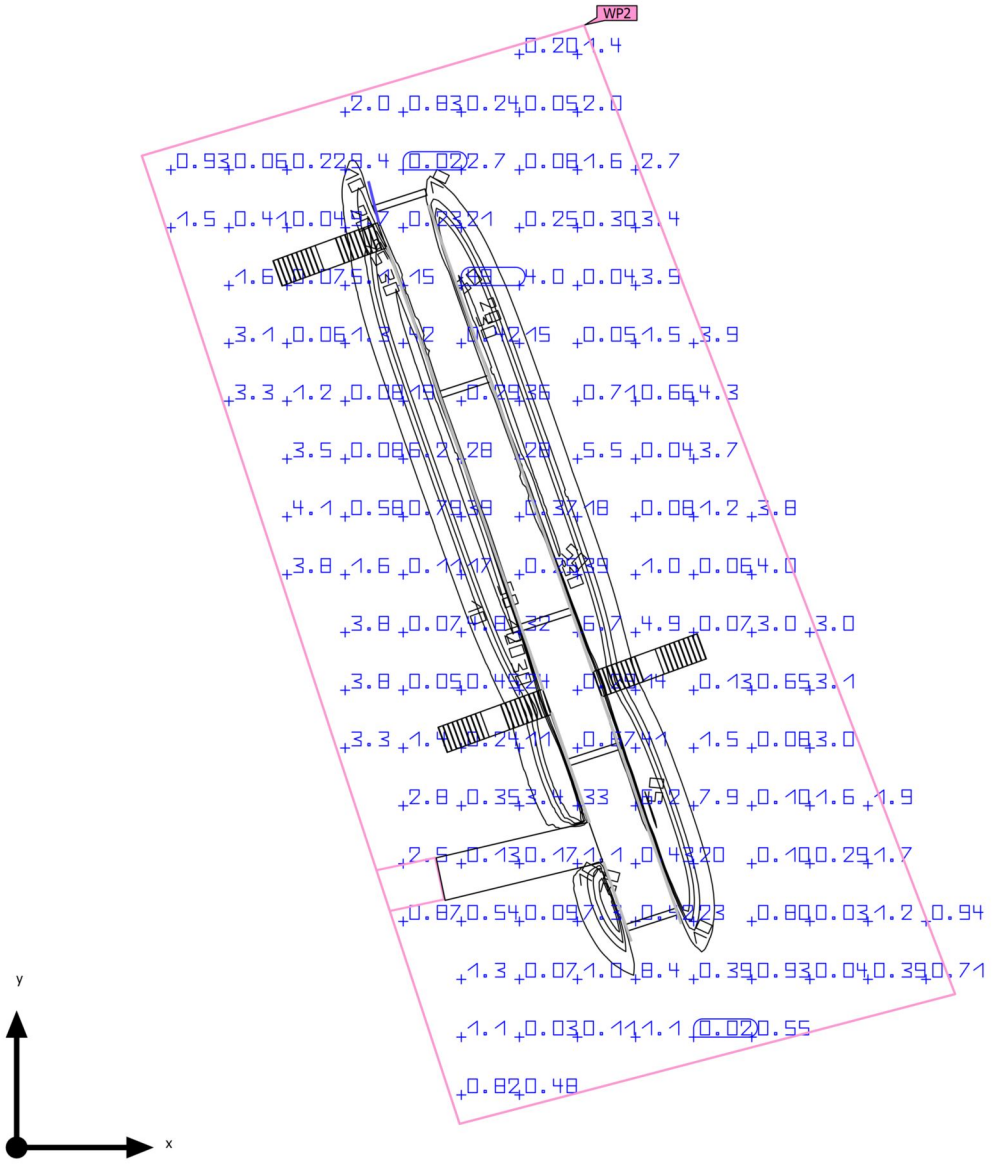
Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Luminaire list

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
1	Not yet a DIALux member	2340132	T_Line 3000 HE	24.3 W	3000 lm	123.4 lm/W

Ground Level - Underside of Bridge (Main Profile)

Summary



Ground Level - Underside of Bridge (Main Profile)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{perpendicular}$	5.26 lx	≥ 5.00 lx	✓	WP2
	g_1	0.00	-	-	WP2
Consumption values	Consumption	210 kWh/a	max. 101350 kWh/a	✓	
Room	Lighting power density	0.01 W/m²	-	-	
		0.17 W/m²/100 lx	-	-	

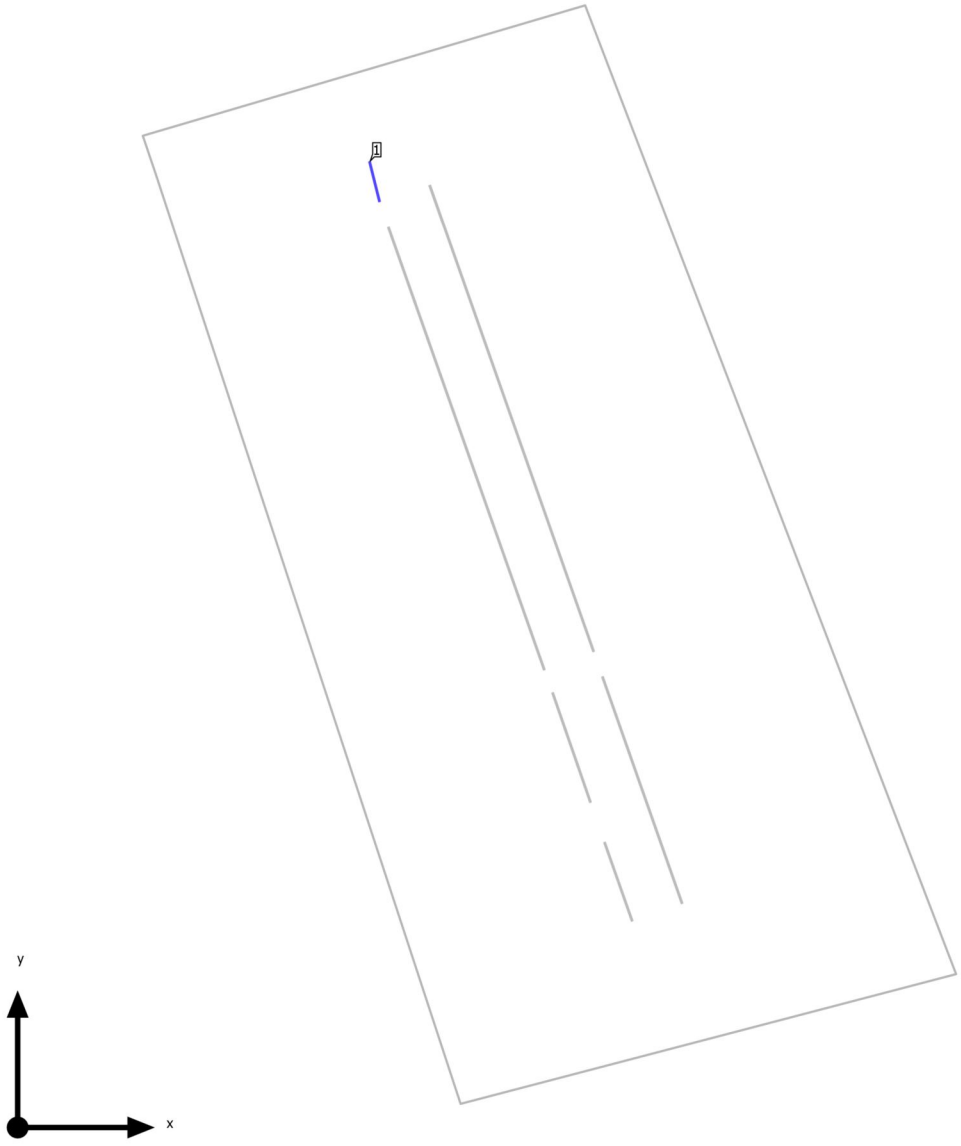
Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Luminaire list

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
1	Not yet a DIALux member	2340132	T_Line 3000 HE	24.3 W	3000 lm	123.4 lm/W

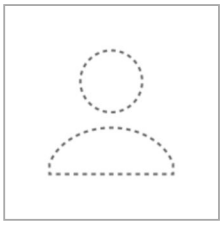
Ground Level - Underside of Bridge

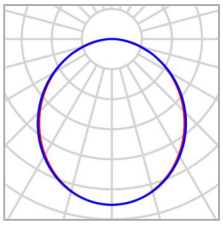
Luminaire layout plan



Ground Level - Underside of Bridge

Luminaire layout plan





Manufacturer	Not yet a DIALux member
Article No.	2340132
Article name	T_Line 3000 HE
Fitting	4x LLE_24_1300_LV_ADV 5 @160 69.3%

P	24.3 W
$\Phi_{Luminaire}$	3000 lm

Individual luminaires

X	Y	Mounting height	Luminaire
26.116 m	69.284 m	4.750 m	1

Ground Level - Underside of Bridge

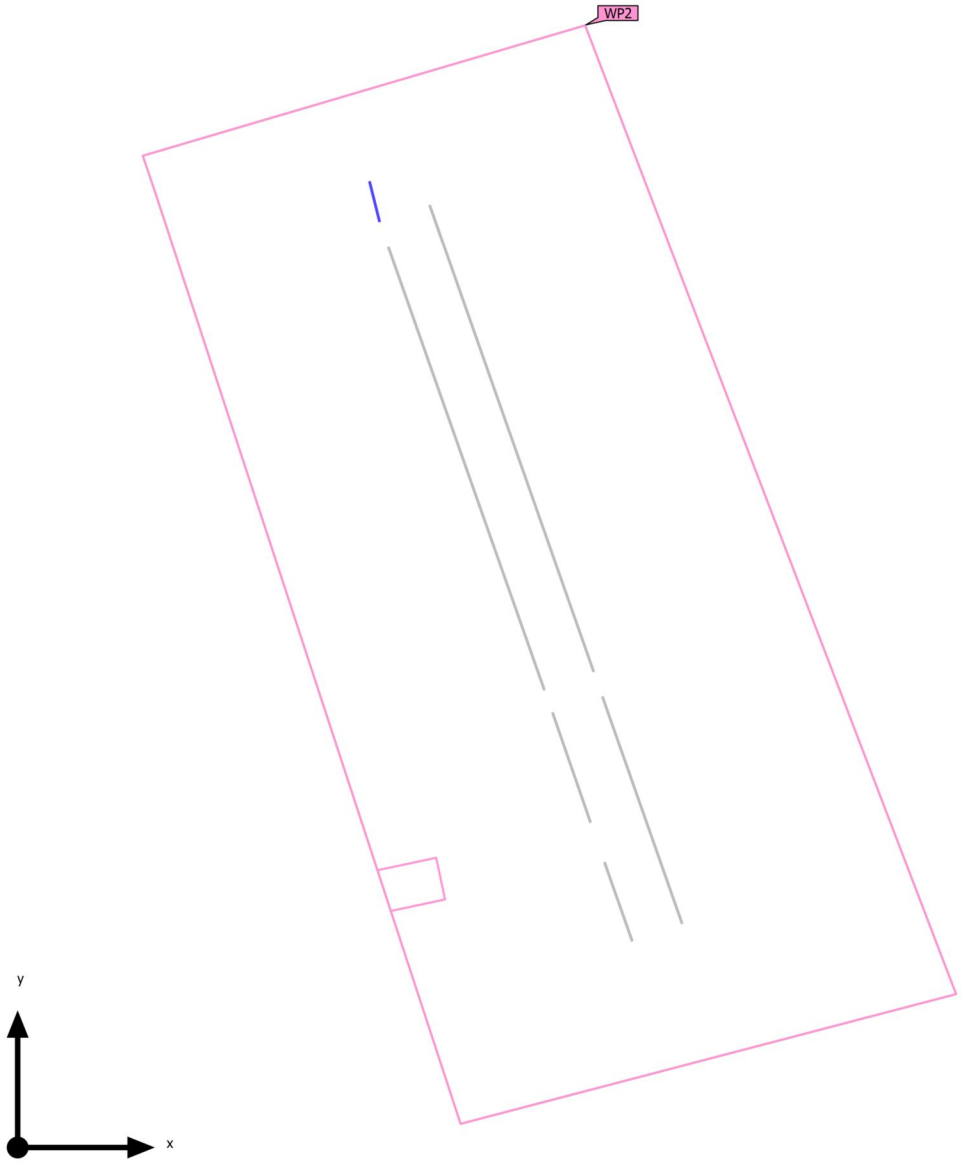
Luminaire list

Φ_{total}	P_{total}	Luminous efficacy
3000 lm	24.3 W	123.5 lm/W

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
1	Not yet a DIALux member	2340132	T_Line 3000 HE	24.3 W	3000 lm	123.4 lm/W

Ground Level - Underside of Bridge (Bridge Light Scene 10% Dim - Straight Section)

Calculation objects



Ground Level - Underside of Bridge (Bridge Light Scene 10% Dim - Straight Section)

Calculation objects

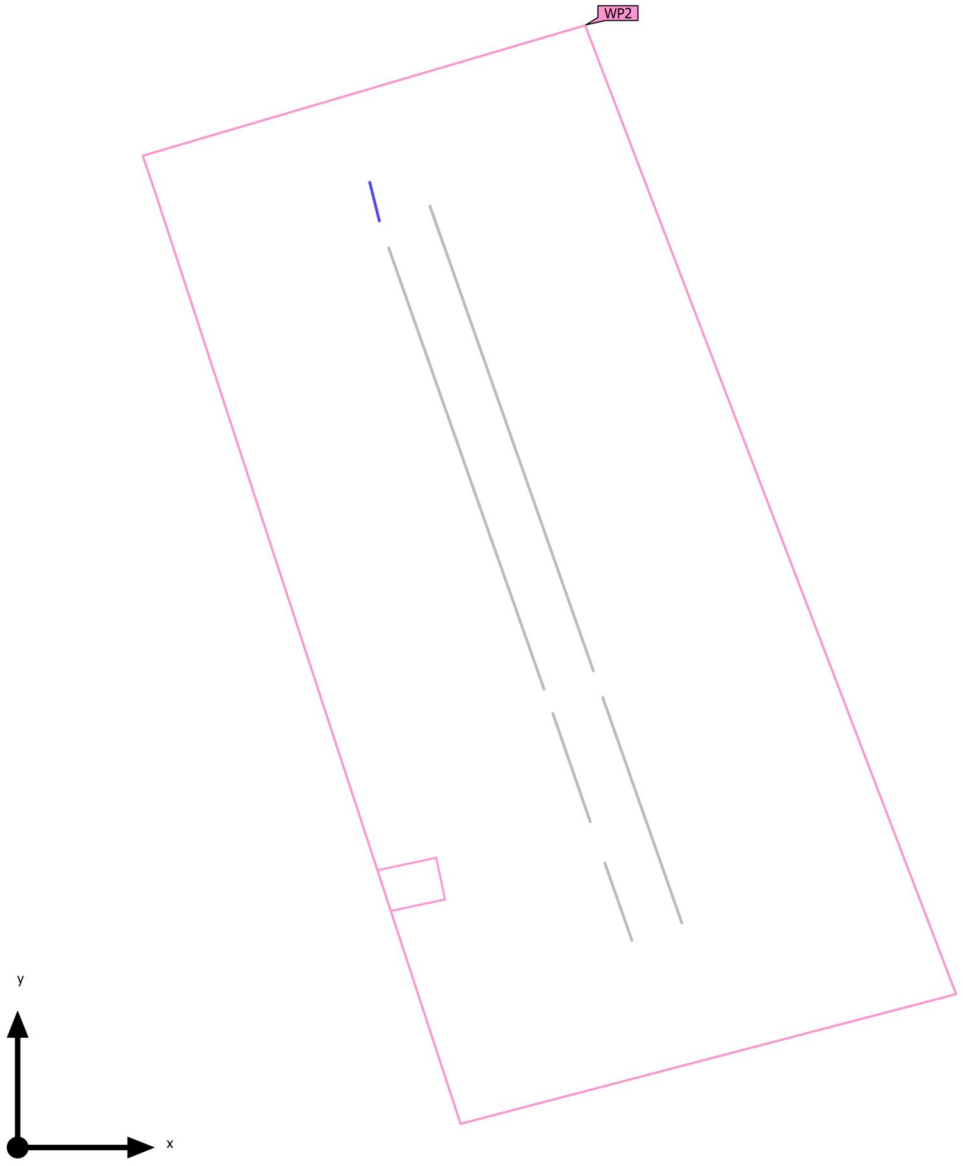
Working planes

Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	4.73 lx (≥ 5.00 lx) ✗	0.000 lx	53.8 lx	0.00	0.00	WP2

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Ground Level - Underside of Bridge (Bridge Light Scene 50% Dim - Straight Section)

Calculation objects



Ground Level - Underside of Bridge (Bridge Light Scene 50% Dim - Straight Section)

Calculation objects

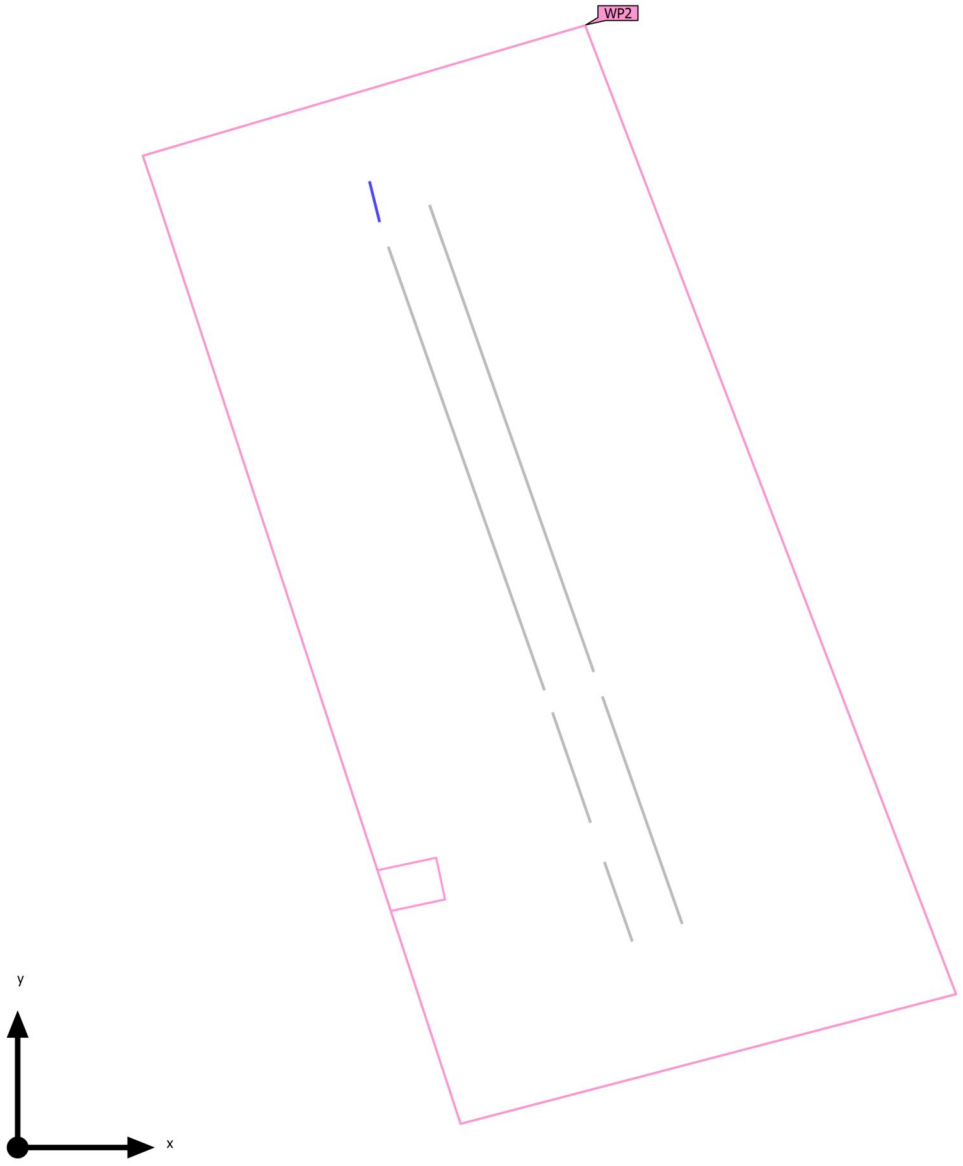
Working planes

Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	2.63 lx (≥ 5.00 lx) ✗	0.000 lx	29.9 lx	0.00	0.00	WP2

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Ground Level - Underside of Bridge (Bridge Light Scene 75% Dim - Straight Section)

Calculation objects



Ground Level - Underside of Bridge (Bridge Light Scene 75% Dim - Straight Section)

Calculation objects

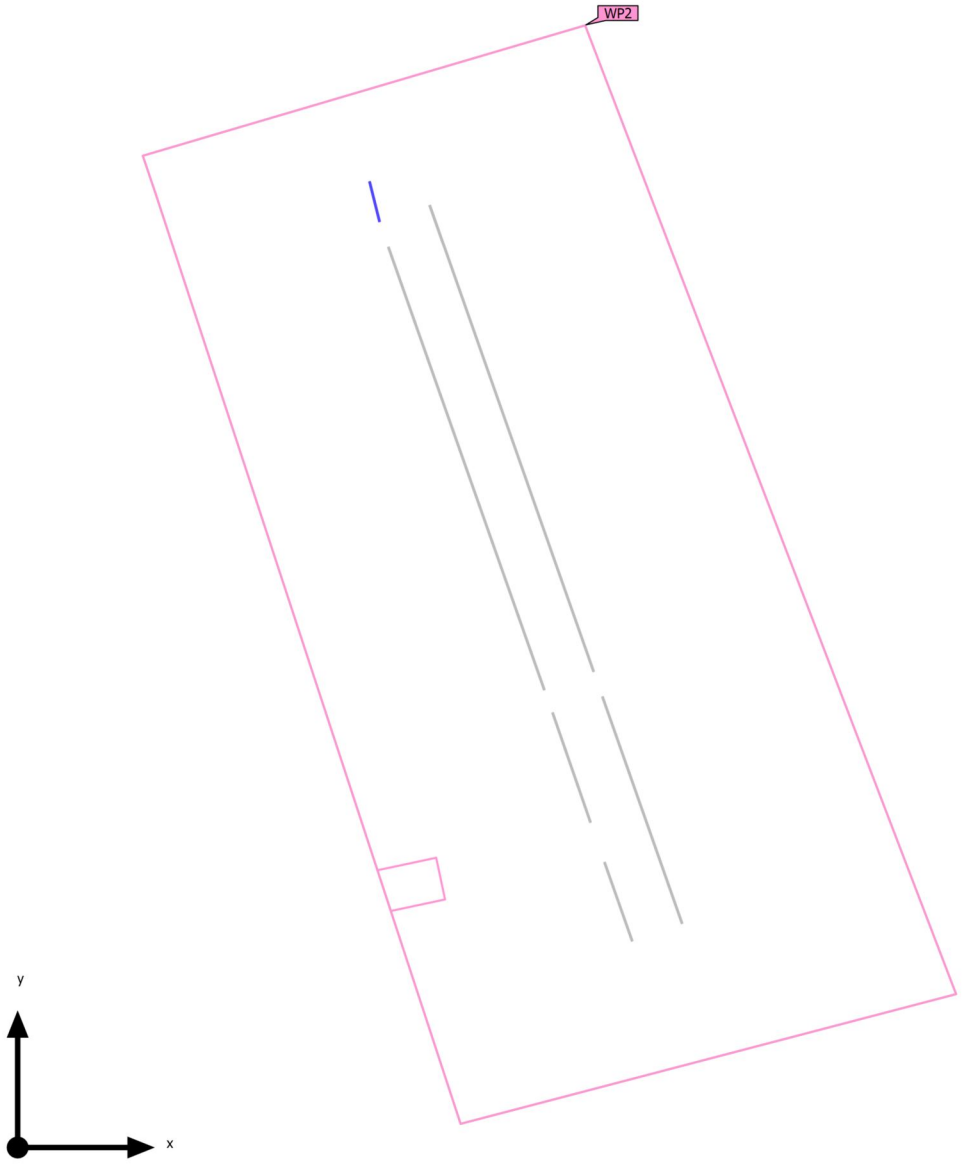
Working planes

Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	5.26 lx (≥ 5.00 lx) ✓	0.000 lx	59.8 lx	0.00	0.00	WP2

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Ground Level - Underside of Bridge (Bridge Light Scene 90% Dim - Straight Section)

Calculation objects



Ground Level - Underside of Bridge (Bridge Light Scene 90% Dim - Straight Section)

Calculation objects

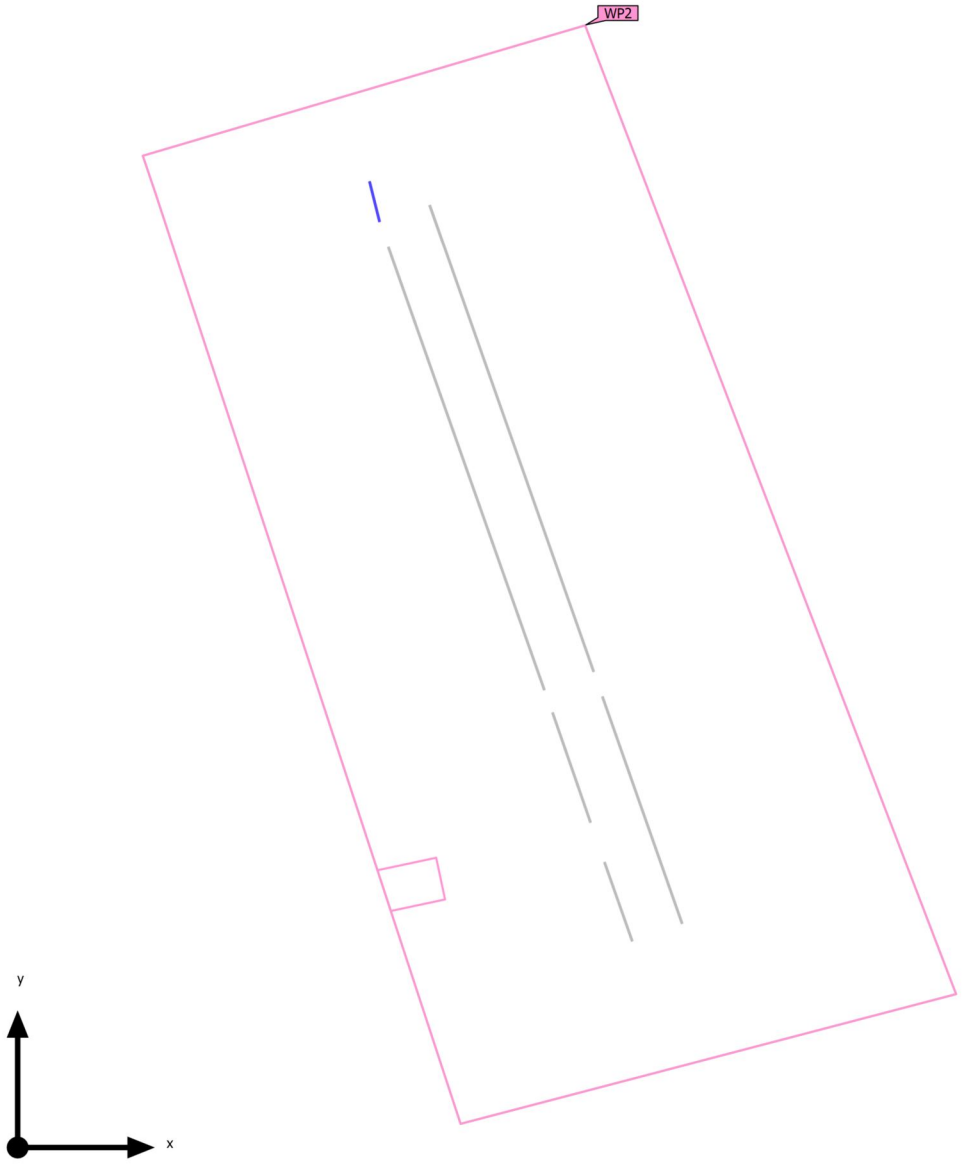
Working planes

Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	0.53 lx (≥ 5.00 lx) ✗	0.000 lx	5.98 lx	0.00	0.00	WP2

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Ground Level - Underside of Bridge (Bridge Light Scene 95% Dim - Straight Section)

Calculation objects



Ground Level - Underside of Bridge (Bridge Light Scene 95% Dim - Straight Section)

Calculation objects

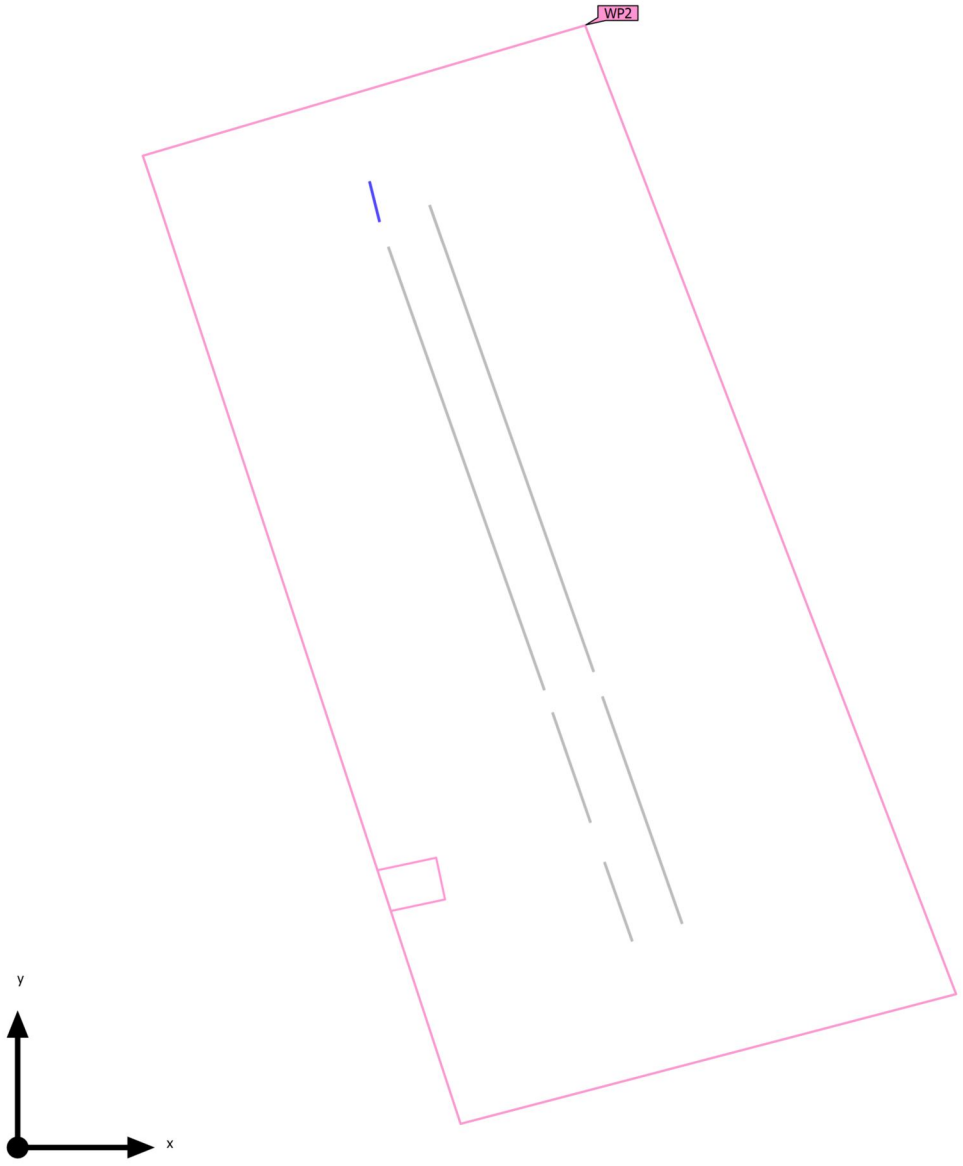
Working planes

Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	0.26 lx (≥ 5.00 lx) ✗	0.000 lx	2.99 lx	0.00	0.00	WP2

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Ground Level - Underside of Bridge (Bridge Light Scene 99% Dim - Straight Section)

Calculation objects



Ground Level - Underside of Bridge (Bridge Light Scene 99% Dim - Straight Section)

Calculation objects

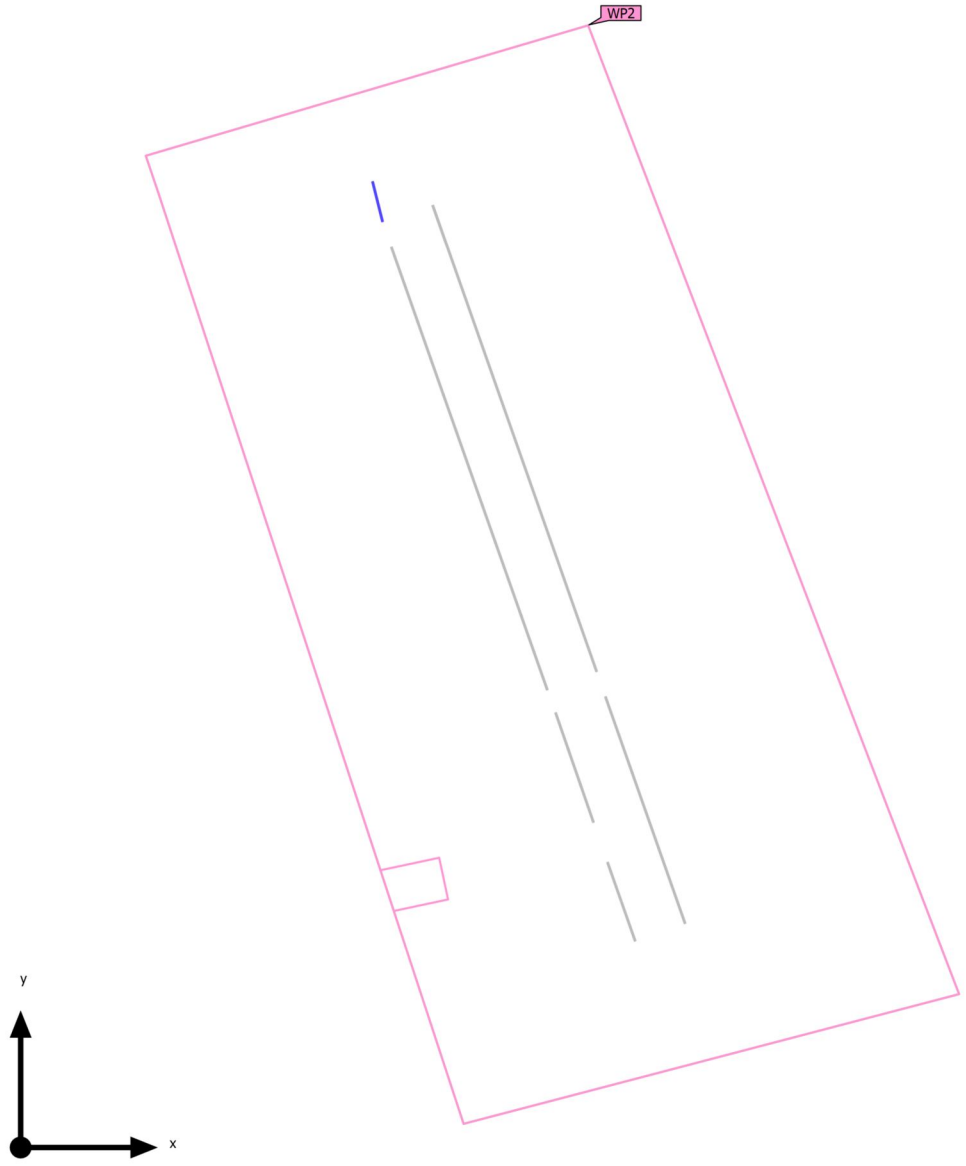
Working planes

Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	0.053 lx (≥ 5.00 lx) ✗	0.000 lx	0.60 lx	0.00	0.00	WP2

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Ground Level - Underside of Bridge (Main Profile)

Calculation objects



Ground Level - Underside of Bridge (Main Profile)

Calculation objects

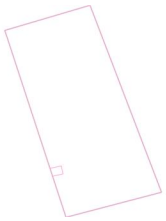
Working planes

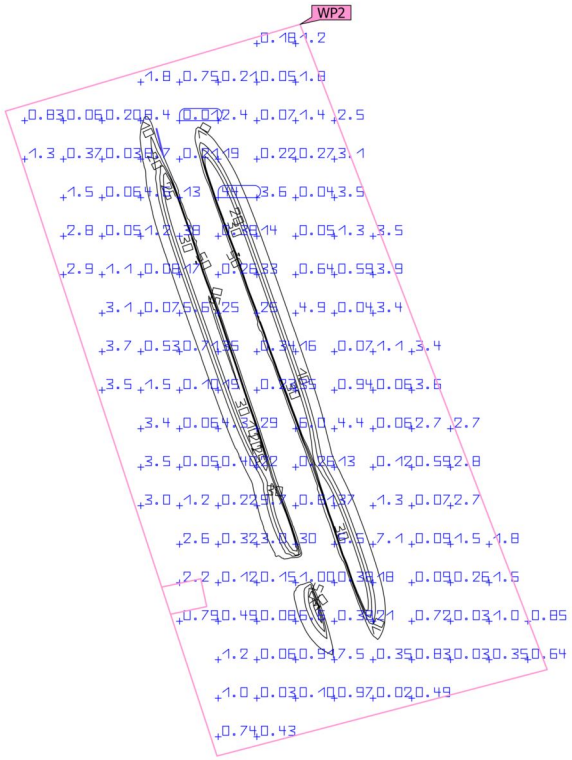
Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	5.26 lx (≥ 5.00 lx) ✓	0.000 lx	59.8 lx	0.00	0.00	WP2

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Ground Level - Underside of Bridge (Bridge Light Scene 10% Dim - Straight Section)

Working plane (Ground Level - Underside of Bridge)



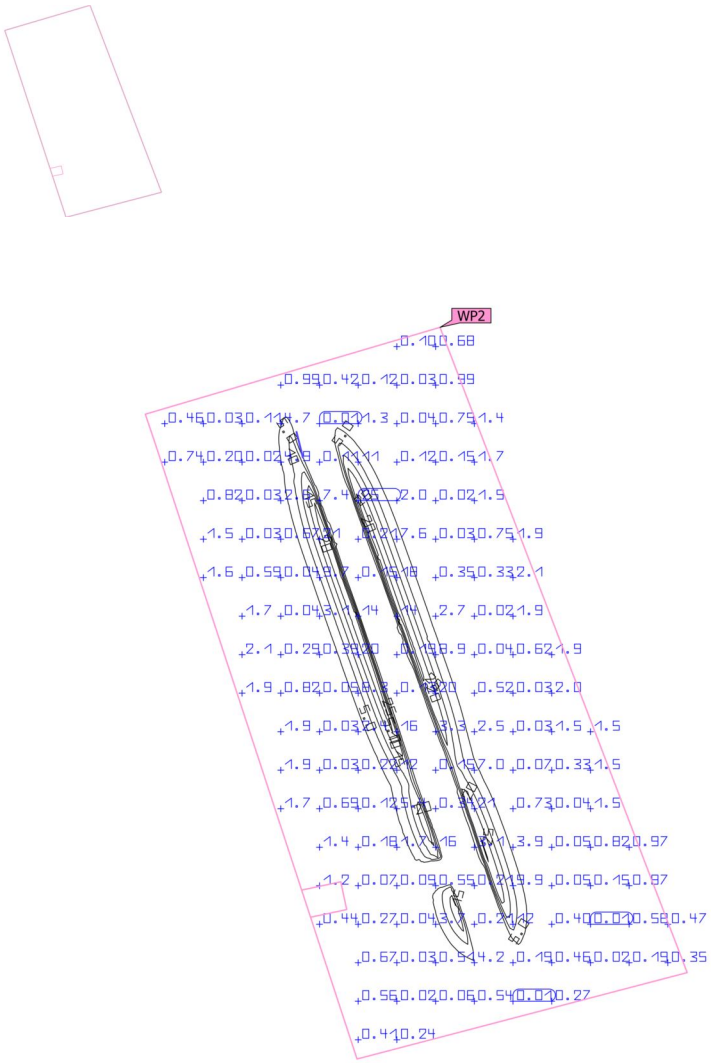


Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	4.73 lx (≥ 5.00 lx) ✗	0.000 lx	53.8 lx	0.00	0.00	WP2

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Ground Level - Underside of Bridge (Bridge Light Scene 50% Dim - Straight Section)

Working plane (Ground Level - Underside of Bridge)

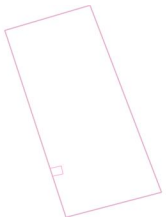


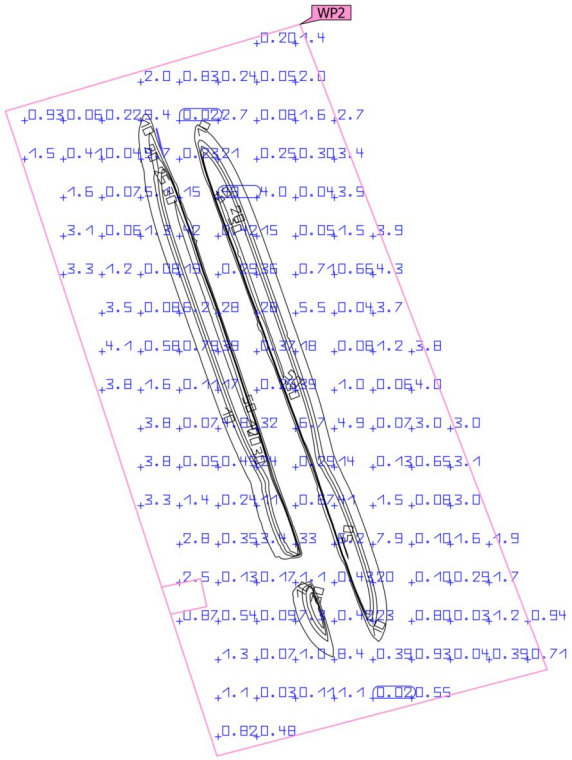
Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	2.63 lx (≥ 5.00 lx) ✗	0.000 lx	29.9 lx	0.00	0.00	WP2

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Ground Level - Underside of Bridge (Bridge Light Scene 75% Dim - Straight Section)

Working plane (Ground Level - Underside of Bridge)



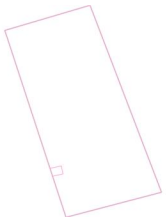


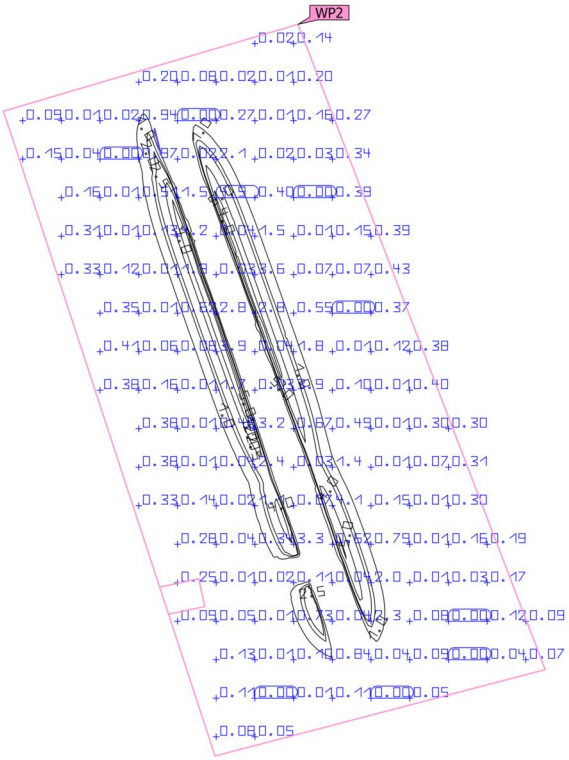
Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	5.26 lx (≥ 5.00 lx) ✓	0.000 lx	59.8 lx	0.00	0.00	WP2

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Ground Level - Underside of Bridge (Bridge Light Scene 90% Dim - Straight Section)

Working plane (Ground Level - Underside of Bridge)



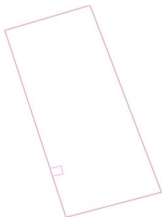


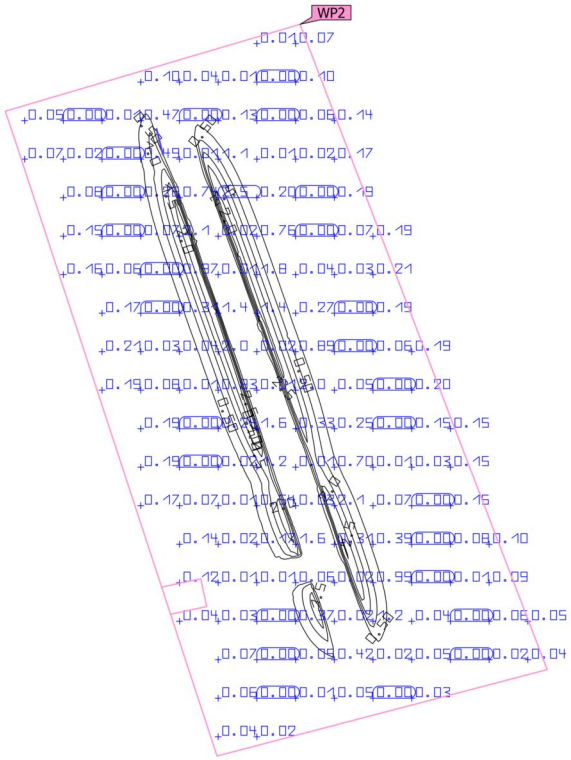
Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	0.53 lx (≥ 5.00 lx) ✗	0.000 lx	5.98 lx	0.00	0.00	WP2

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Ground Level - Underside of Bridge (Bridge Light Scene 95% Dim - Straight Section)

Working plane (Ground Level - Underside of Bridge)



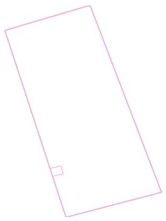


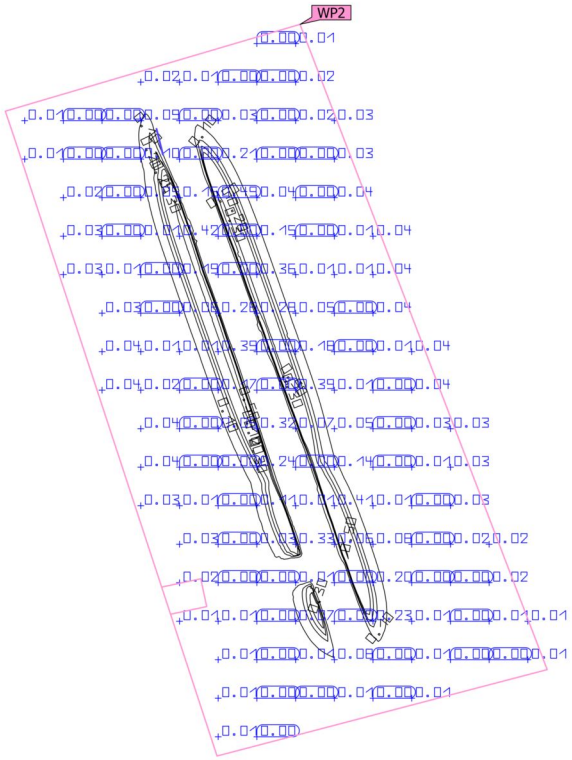
Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	0.26 lx (≥ 5.00 lx) ✗	0.000 lx	2.99 lx	0.00	0.00	WP2

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Ground Level - Underside of Bridge (Bridge Light Scene 99% Dim - Straight Section)

Working plane (Ground Level - Underside of Bridge)



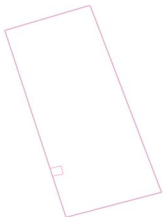


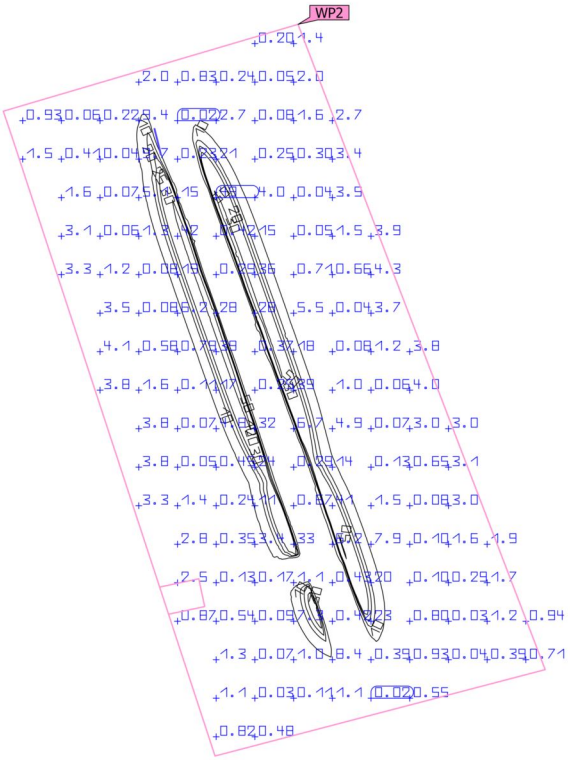
Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	0.053 lx (≥ 5.00 lx) ✗	0.000 lx	0.60 lx	0.00	0.00	WP2

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Ground Level - Underside of Bridge (Main Profile)

Working plane (Ground Level - Underside of Bridge)





Properties	Ē (Target)	E_{min}	E_{max}	g_1	g_2	Index
Working plane (Ground Level - Underside of Bridge) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	5.26 lx (≥ 5.00 lx) ✓	0.000 lx	59.8 lx	0.00	0.00	WP2

Utilisation profile: General circulation areas at outdoor workplaces, Walkways exclusively for pedestrians

Glossary

A

A	Formula symbol for a surface in the geometry

B

Background area	The background area borders the direct ambient area according to DIN EN 12464-1 and reaches up to the borders of the room. In larger rooms, the background area is at least 3 m wide. It is located horizontally at floor level.

C

CCT	(Engl. correlated colour temperature) Body temperature of a thermal radiator which serves to describe its light colour. Unit: Kelvin [K]. The lesser the numerical value the redder; the greater the numerical value the bluer the light colour. The colour temperature of gas-discharge lamps and semi-conductors are termed "correlated colour temperature" in contrast to the colour temperature of thermal radiators. Allocation of the light colours to the colour temperature ranges acc. to EN 12464-1: Light colour - colour temperature [K] warm white (ww) < 3,300 K neutral white (nw) ≥ 3,300 – 5,300 K daylight white (dw) > 5,300 K
Clearance height	The designation for the distance between upper edge of the floor and bottom edge of the ceiling (in the completely furnished status of room).
CRI	(Engl. colour rendering index) Designation for the colour rendering index of a luminaire or a lamp acc. to DIN 6169: 1976 or CIE 13.3: 1995. The general colour rendering index Ra (or CRI) is a dimensionless figure that describes the quality of a white light source in regards to its similarity with the remission spectra of defined 8 test colours (see DIN 6169 or CIE 1974) to a reference light source.

D

Daylight factor	Ratio of the illuminance achieved solely by daylight incidence at a point in the inside to the horizontal illuminance in the outer area under an unobstructed sky. Formula symbol: D (Engl. daylight factor) Unit: %

Glossary

Daylight quotient effective area	A calculation surface within which the daylight quotient is calculated.

E

Eta (η)	(light output ratio) The light output ratio describes what percentage of the luminous flux of a free radiating lamp (or LED module) is emitted by the luminaire when installed. Unit: %

G

g_1	Often also U_o (Engl. overall uniformity) Designates the overall uniformity of the illuminance on a surface. It is the quotient from E_{min} to $\bar{E}$ and is required, for instance, in standards for illumination of workstations.
g_2	Actually it designates the "non-uniformity" of the illuminance on a surface. It is the quotient of E_{min} to E_{max} and is generally only relevant for certifying the emergency lighting acc. to EN 1838.

I

Illuminance	Describes the ratio of the luminous flux that strikes a certain surface to the size of this surface ($lm/m^2 = lx$). The illuminance is not tied to an object surface. It can be determined anywhere in space (inside or outside). The illuminance is not a product feature because it is a recipient value. Luxometers are used for measuring. Unit: Lux Abbreviation: lx Formula symbol: E
Illuminance, adaptive	For the determining of the middle adaptive illuminance on a surface, this is rastered "adaptively". In the area of large illuminance differences within the surface, the raster is subdivided finer; within lesser differences, a rougher classification is made.
Illuminance, horizontal	Illuminance that is calculated or measured on a horizontal (level) surface (this can be for example a table top or the floor). The horizontal illuminance is usually identified by the formula letter E_h.
Illuminance, perpendicular	Illuminance that is calculated or measured plumb-vertical to a surface. This needs to be taken into account for tilted surfaces. If the surface is horizontal or vertical, then there is no difference between the perpendicular and the horizontal or vertical illuminance.

Glossary

Illuminance, vertical	Illuminance that is calculated or measured on a vertical surface (this can be for example the front of some shelves). The vertical illuminance is usually identified by the formula letter E_v.

L

LENI	(Engl. lighting energy numeric indicator) Lighting energy numeric indicator acc. to EN 15193 Unit: kWh/m² year
LLMF	(Engl. lamp lumen maintenance factor)/acc. to CIE 97: 2005 Lamp flux maintenance factor that takes the luminous flux reduction into account of a luminaire or an LED module in the course of the operating time. The lamp flux maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no luminous flux reduction existing).
LMF	(Engl. luminaire maintenance factor)/acc. to CIE 97: 2005 Luminaire maintenance factor that takes the soiling into account of the luminaire in the course of the operating time. The luminaire maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no soiling existing).
LSF	(Engl. lamp survival factor)/acc. to CIE 97: 2005 Lamp survival factor that takes the total failure into account of a luminaire in the course of the operating time. The lamp survival factor is specified as a decimal digit and can have a maximum value of 1 (no failures existing within the time concerned or prompt replacement after the failure).
Luminance	Dimension for the "brightness impression" that the human eye has of a surface. The surface itself can emit light thereby or light striking it can be reflected (emitter value). It is the only photometric value that the human eye can perceive. Unit: Candela per square metre Abbreviation: cd/m² Formula symbol: L
Luminous efficacy	Ratio of the emitted luminous flux Φ [lm] to the absorbed electrical power P [W] Unit: lm/W. This ratio can be formed for the lamp or LED module (lamp or module light output), the lamp or module with control gear (system light output) and the complete luminaire (luminaire light output).

Glossary

Luminous flux	Dimension for the total light output that is emitted from one light source in all directions. It is thus an "emitter value" that specifies the entire emitting output. The luminous flux of a light source can only be determined in a laboratory. A difference is made between the lamp or LED module luminous flux and the luminaire luminous flux. Unit: Lumen Abbreviation: lm Formula symbol: Φ
Luminous intensity	Describes the intensity of the light in a certain direction (emitter value). The luminous intensity is a matter of the luminous flux Φ that is emitted in a certain spherical angle Ω. The radiation characteristics of a light source are presented graphically in a light distribution curve (LDC). The luminous intensity is an SI base unit. Unit: Candela Abbreviation: cd Formula symbol: I

M

Maintenance factor	See MF
MF	(Engl. maintenance factor)/acc. to CIE 97: 2005 Maintenance factor as decimal number between 0 and 1 that describes the ratio of the new value of a photometric planning parameter (e.g. of the illuminance) to a maintenance value after a certain time. The maintenance factor takes into account the soiling of luminaires and rooms as well as the luminous flux reduction and the failure of light sources. The maintenance factor is taken into account either overall or determined in detail acc. to CIE 97: 2005 by the formula RMF x LMF x LLMF x LSF.

P

P	(Engl. power) Electric power consumption Unit: watt Abbreviation: W

R

Reflection factor	The reflection factor of a surface describes how much of the striking light is reflected back. The reflection factor is defined by the colour of the surface.

Glossary

RMF	(Engl. room maintenance factor)/acc. to CIE 97: 2005 Room maintenance factor that takes the soiling into account of the space encompassing surfaces in the course of the operating time. The room maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no soiling existing).

S

Surrounding area	The ambient area directly borders the area of the visual task and should be planned with a width of at least 0.5 m according to DIN EN 12464-1. It is at the same height as the area of the visual task.

U

UGR (max)	(unified glare rating) Measure for the psychological glare effect in interiors. In addition to luminaire luminance, the UGR value also depends on the position of the observer, the viewing direction and the ambient luminance. Among other things, EN 12464-1 specifies maximum permissible UGR values for various indoor workplaces.
UGR observer	Calculation point in the room, for the DIALux the UGR value is determined. The location and height of the calculation point should correspond to the typical observer position (position and eye level of the user).

V

Visual task area	The area that is needed for carrying out the visual task in accordance with DIN EN 12464 -1. The height corresponds with the height at which the visual task is executed.

W

Wall zone	Circumferential area between working plane and walls which is not taken into account for the calculation.
Working plane	Virtual measuring or calculation surface at the height of the visual task that generally follows the room geometry. The working plane may also feature a wall zone.

Appendix H – Stage 1 and 2 Road Safety Audit

23075-01-001

Suir Island Infrastructure Links

ROAD SAFETY AUDIT STAGE 1/2

June 2023

ROADPLAN CONSULTING

7, Ormonde Road
Kilkenny
R95 N4FE

Tel: 056 7795800
info@roadplan.ie
www.roadplan.ie

1. INTRODUCTION

1.1 This report describes a Stage 1/2 Road Safety Audit carried out at Suir Island, Clonmel on behalf of Clifton Scannell Emerson Associates Consulting Engineers (CSEA). The audit was carried out on 22nd June 2023 in the offices of Roadplan Consulting, Kilkenny.

1.2 The audit team members were as follows:

- Ray Butler, BE CEng MIEI
  Auditor Number RB210538

- George Frisby, BE CEng MIEI
  Auditor Number GF51255

1.3 Both audit team members visited the site on the 12th June 2023. The audit comprised an examination of the drawings relating to the scheme supplied by CSEA and an examination of the site.

1.4 The scope of the works is the Suir Island Infrastructure Links project.

1.5 The speed limit of roads within the scheme extents 50 km/h.

1.6 This Stage 1/2 Audit has been carried out in accordance with the relevant sections of TII GE-STY-01024. The team has examined only those issues within the design relating to the road safety implications of the scheme and has therefore not examined or verified the compliance of the design to any other criteria.

1.7 All problems described in this report are considered by the audit team to require action in order to improve the safety of the scheme and minimise accident occurrence.

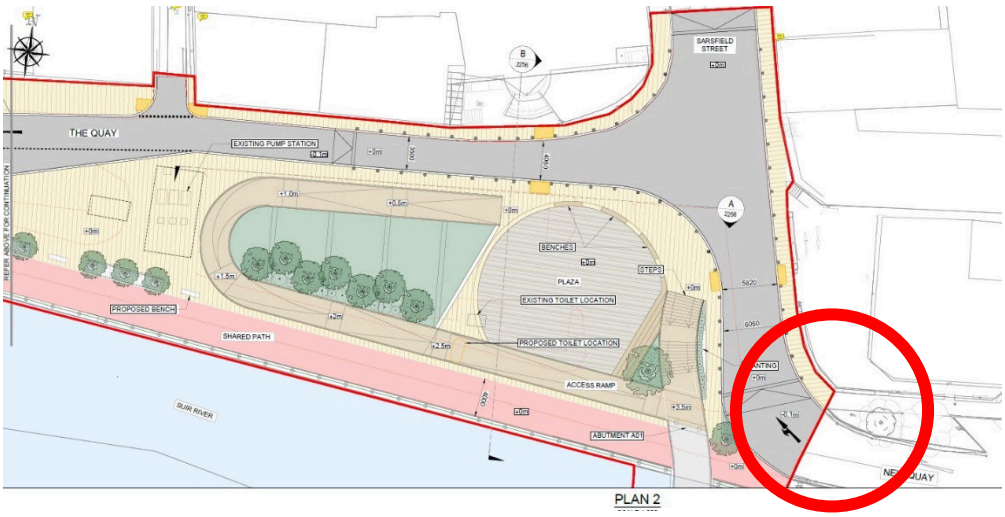
1.8 Appendix A describes the audited drawings.

2. STAGE 1/2 AUDIT

Location: New Quay

2.1 **Problem**

It is not clear how cyclists on New Quay are to join the shared facility at the Plaza. Cyclists risk of collision with motor vehicles is increased if they remain on the road carriageway.



PLAN 2

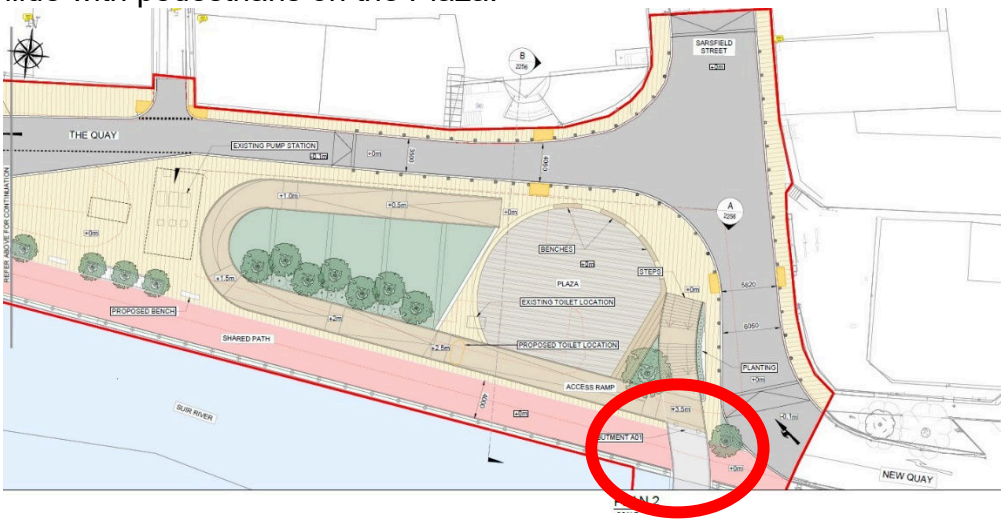
Recommendation

Provide safe access onto the shared facility for cyclists.

Location: Plaza

2.2 **Problem**

The ramp from the overbridge leads directly into the Plaza. Cyclists may be travelling at an inappropriate speed as they exit onto the Plaza and may collide with pedestrians on the Plaza.



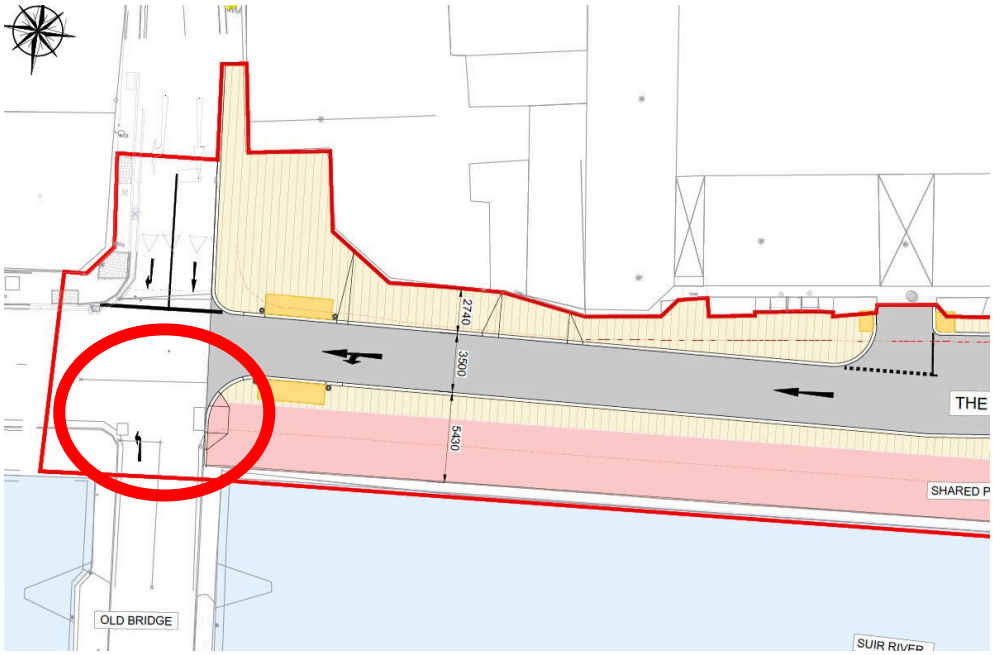
Recommendation

Provide measures to ensure cyclists are travelling at slow speeds on the bridge access ramp downhill direction.

Location: Old Bridge Junction

2.3 **Problem**

It is not clear how cyclists are to rejoin the carriageway at the Old Bridge junction to continue along the R678 or turn left onto Old Bridge. They may be at risk of collision with motor vehicles if their access back onto the carriageway is not clear to all road users.



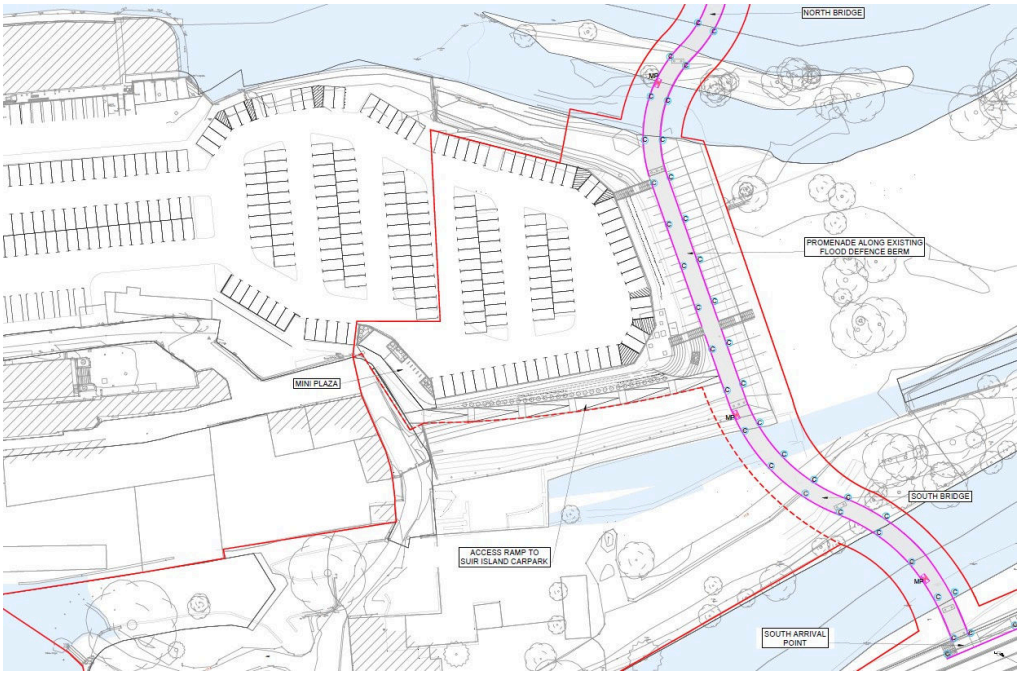
Recommendation

Provide safe access onto the carriageway for cyclists with clear directions as to vehicle priority at the junction.

Location: Carpark Mini Plaza

2.4 Problem

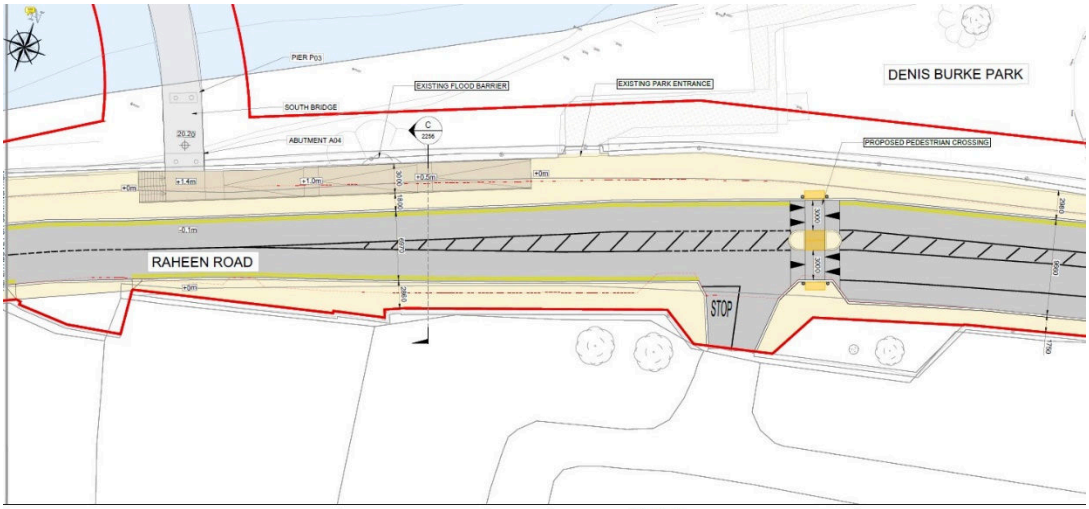
The parking spaces for people with disabilities are located close to the carpark exit, remote from the Mini Plaza. People with disabilities wishing to access the Mini Plaza or the access ramp to the promenade must traverse the carpark access roads to do so putting them at risk of injury.



Recommendation
Provide safe access from the parking spaces for people with disabilities to the Mini Plaza.

Location: Raheen Road

2.5 **Problem**
It is not clear how cyclists on Raheen Road will access the South Bridge access ramp. They may be at risk of loss of control collisions if they attempt to mount a full height kerb to access the shared surface.



PLAN 5

Recommendation
Provide safe access onto the shared surface for cyclists.

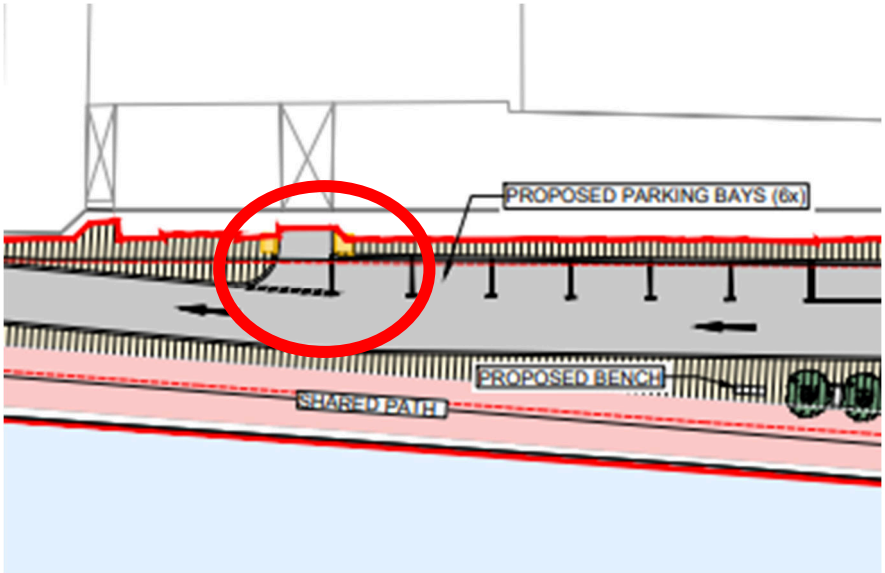
Location: New Quay

2.6 **Problem**
The existing “Straight Ahead” and “Turn Right” road markings are not shown to be removed on New Quay approach to the proposed scheme. The retained road markings may lead to driver confusion as the straight-ahead lane will be closed.

Recommendation
Remove the existing road markings.

Location: The Quay

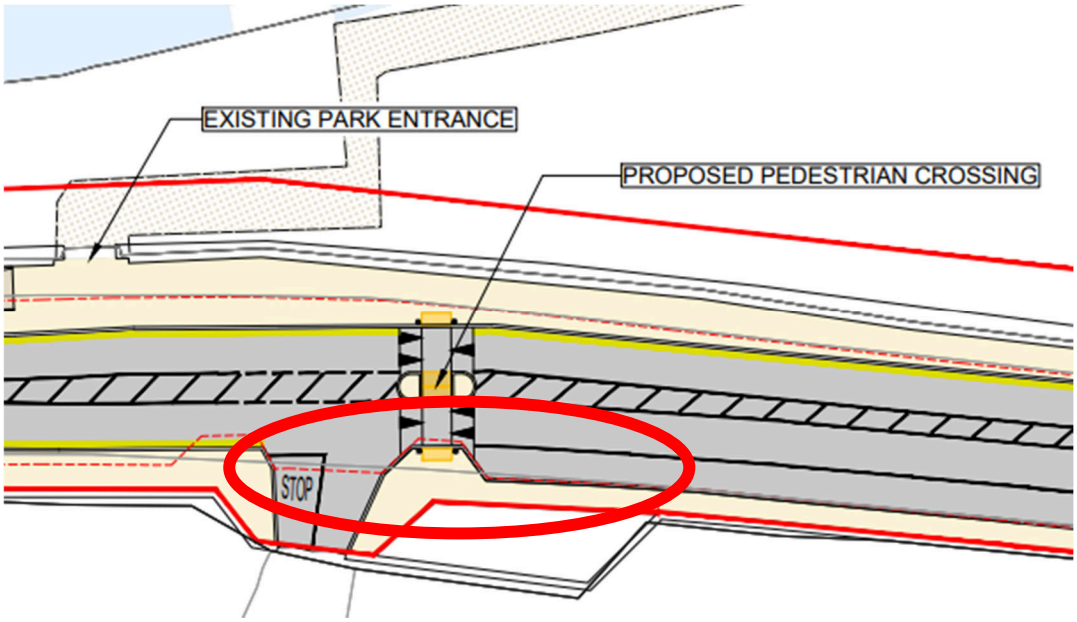
2.7 **Problem**
Visibility for drivers of vehicles exiting the archway may be restricted by parked vehicles in the adjacent parking spaces. In additional, exiting drivers may not realise that they are exiting onto a one-way street and may exit left in error.



Recommendation
Provide adequate visibility splays for drivers of vehicles exiting onto The Quay and provide measures to deter drivers of vehicles exiting left onto The Quay.

Location: Raheen Road

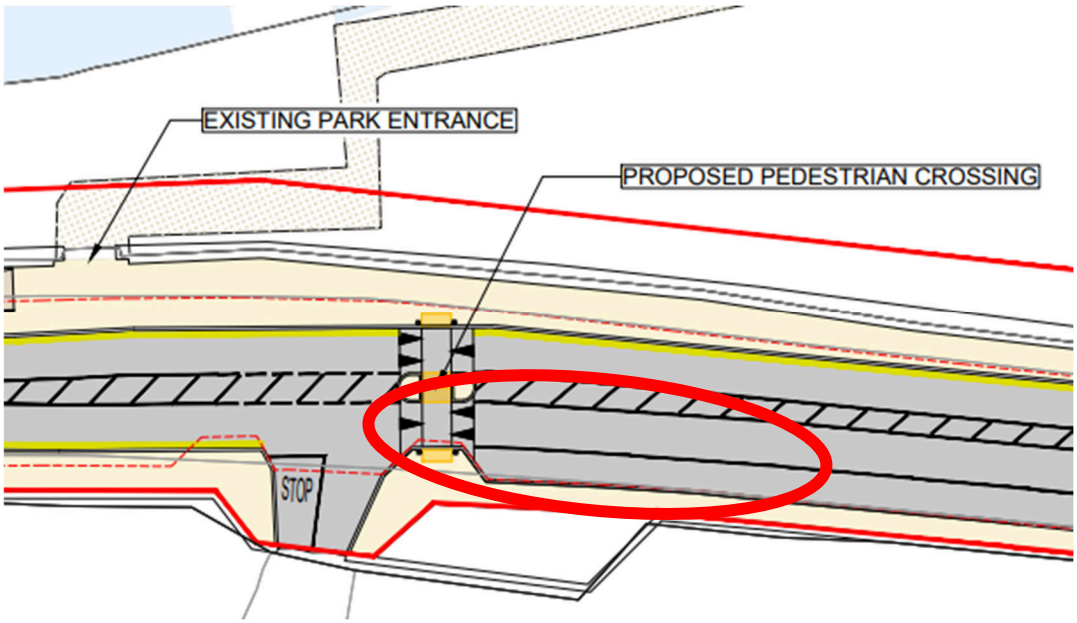
2.8 **Problem**
Visibility for drivers of vehicles exiting Raheen College onto Raheen Road may be restricted by parked vehicles in the adjacent parking spaces.



Recommendation
Provide adequate visibility splays for drivers of vehicles exiting onto Raheen Road from Raheen College.

Location: Raheen Road

2.9 **Problem**
Intervisibility between pedestrians crossing at the proposed pedestrian crossing on Raheen Road and westbound drivers of vehicles approaching the crossing may be restricted by parked vehicles in the adjacent parking spaces.



Recommendation
Provide adequate intervisibility between pedestrians crossing at the proposed pedestrian crossing on Raheen Road and westbound drivers of vehicles approaching the crossing.

Location: Raheen Road

2.10 **Problem**
The proposed layout of uncontrolled raised pedestrian crossings is to consist of a raised ramp with longitudinal markings across the carriageway. Priority at these locations may be unclear and as a result pedestrians may step out in front of an oncoming vehicle expecting them to give way. Approaching drivers of vehicles may not be expecting a pedestrian to cross out in front of them at these locations. A lack of clear priority at these locations may lead to confusion which may contribute to a pedestrian collision.

Recommendation
Omit the longitudinal road markings across the carriageway at the uncontrolled crossing locations to remove any confusion as to who has priority.

Location: Throughout the Scheme

2.11 **Problem**
Appropriate signs, road markings and tactile paving is not shown to be provided at the interface of the proposed shared surface with the existing / proposed footpaths. A lack of appropriate warning may contribute to a collision between a cyclist and pedestrian at these locations.

Recommendation
Provide adequate measures to inform and warn pedestrians and cyclists of the interfaces of the shared surfaces with footpaths.

3. AUDIT TEAM STATEMENT

3.1 We certify that we have examined the drawings listed in Appendix A and have inspected the site. This examination has been carried out with the sole purpose of identifying any features of the design that could be removed or modified to improve the safety of the scheme.

Signed……..... Ray Butler

Date ..... 22nd June 2023……...

Signed……..... George Frisby

Date ..... 22nd June 2023……...

APPENDIX A

List of Drawings Examined

The following drawings have been provided electronically in PDF format by CSEA:

Drawing number	Rev	Drawing title
20_071 - CSE - 00 - XX - DR - C - 2001	P02	Site Location Map
20_071 - CSE - 00 - XX - DR - C - 2251	P03	Preferred Option 01 Overall Plan
20_071 - CSE - 00 - XX - DR - C - 2252	P03	Preferred Option 01 North Plaza Plan Sheet 1 of 4
20_071 - CSE - 00 - XX - DR - C - 2253	P03	Preferred Option 01 North Plaza Plan Sheet 2 of 4
20_071 - CSE - 00 - XX - DR - C - 2254	P03	Preferred Option 01 North Plaza Plan Sheet 3 of 4
20_071 - CSE - 00 - XX - DR - C - 2255	P03	Preferred Option 01 North Plaza Plan Sheet 4 of 4
20_071 - CSE - 00 - XX - DR - C - 2256	P02	Preferred Option 01 Typical Sections A, B & C
20_071 - CSE - 00 - XX - DR - C - 2258	P02	Preferred Option 01 Details Sheet 1 of 2
20_071 - CSE - 00 - XX - DR - C - 2259	P02	Preferred Option 01 Details Sheet 2 of 2
20_071 - CSE - 00 - XX - DR - C - 2260	P02	Preferred Option 01 Bridge Plan & Elevation
20_071 - CSE - 00 - XX - DR - C - 2261	P02	Preferred Option 01 Bridge Section
20_071 - CSE - 00 - XX - DR - C - 2262	P02	Preferred Option 01 Bridge Details
20_071 - CSE - 00 - XX - DR - C - 2270	P01	Preferred Option 01 Public Lighting Services Layout Plan
20_071 - CSE - 00 - XX - DR - C - 2271	P01	Preferred Option 01 Public Lighting Services Sections
20_071 - CSE - 00 - XX - DR - C - 3901	P02	Existing & Proposed Raheen Road Plan

SAFETY AUDIT FEEDBACK FORM

Scheme: Suir Island Infrastructure Links

Document Number: 23075-01-001

Audit Stage: 1/2

Date Audit Completed: 22nd June 2023

Paragraph No. in Safety Audit Report	To Be Completed By Designer			To Be Completed by Audit Team Leader
	Problem accepted (yes/no)	Recommended measure accepted (yes/no)	Describe alternative measure(s). Give reasons for not accepting recommended measure. Only complete if recommended measure is not accepted.	Alternative measures or reasons accepted by auditors (yes/no)
2.1	Yes	Yes	Drop-kerb to be added to allow cyclists on New Quay to access the proposed shared-path.	-
2.2	Yes	Yes	Central bollard to be added to reduce cyclist speeds on bridges. On ramps, central handrail to be added as per the Irish Wheelchair Association access guidelines.	-
2.3	Yes	Yes	Existing drop kerb shown on drawings west of Old Bridge. Cyclists will be required to obey road rules and vehicle right of way as per the existing layout. Appropriate signage to be added at the end of shared path at the junction to alert users of the shared path's termination.	-
2.4	Yes	Yes	2 No. disabled parking spaces to be added adjacent to mini-plaza.	-
2.5	Yes	Yes	Pedestrian crossings provided on either side of access ramp to be used. Additional drop-kerb will not be provided. Cyclists are to access the footpath and traverse slowly to bridge access ramps making use of provided pedestrian crossings. Tactile Paving and signage to be added on the path adjacent to the bottom of the ramp and also to the east of the pedestrian crossing to indicate to cyclists that the northern path beyond those points are for pedestrians only.	-
2.6	Yes	Yes	Although not shown on drawing, existing arrows will be removed and a new arrow as indicated will replace the removed arrows.	-
2.7	Yes	Yes	Right-turn only signage and arrow to be added. Parking bay closest to the laneway to be removed.	-
2.8	Yes	Yes	Existing road markings to be retained and extended which prevents vehicles parking too close to college entrance and thus limiting sight-distances.	-
2.9	Yes	Yes	Same response as Item 2.8	-
2.10	Yes	Yes	Longitudinal line markings to be reviewed and amended in accordance with DMURS to indicate vehicle right-of-way.	-
2.11	Yes	Yes	Review of whole scheme to be undertaken and amendments to include appropriate signage and tactile paving throughout.	-

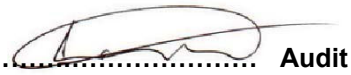
Safety Audit
Signed off …  …… **Design Team Leader**

Print Name **LAURA PEARE** **Date** **04.07.2023**

Safety Audit

Signed off …  …… **Employer**

Print Name Gillian Flynn **Date** 05.07.2023

Safety Audit
Signed off …  …… **Audit Team Leader**

Print Name ……Ray Butler……. **Date** 05-07-2023

Please complete and return to:

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7, Ormonde Road
Kilkenny
E-mail: info@roadplan.ie

Clifton Scannell Emerson Associates Limited, Civil & Structural Consulting Engineers

3rd Floor, The Highline, Bakers Point, Pottery Road, Dun Laoghaire, Co. Dublin, A96 KW29

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Appendix 2.2: Outline Construction Methodology (RPT-20_071-020)

Clifton Scannell Emerson Associates

Outline Construction Methodology

Suir Island Infrastructure Links

Comhairle Contae Thiobraid Árann
Tipperary County Council

Client: Tipperary County Council

Date: September 2023

Job Number: 20_071

CONSULTING ENGINEERS

Civil Engineering | Structural Engineering | Transport Engineering | Environmental Engineering | Project Management | Health and Safety

Clifton Scannell Emerson Associates

Clifton Scannell Emerson Associates Limited,

Consulting Engineers, 3rd Floor, The Highline, Bakers Point, Pottery Road, Dun Laoghaire, Co. Dublin, A96 KW29

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Document Control Sheet

Project Name:	Suir Island Infrastructure Links
Project Number:	20_071
Report Title:	Outline Construction Methodology
Filename:	RPT-20_071-020

Issue No.	Issue Status	Date	Prepared by	Checked by
0	Final	22.09.2023	HB	LP

Table of Contents

Table of Figures

1 Introduction

1.1 Purpose of the Document

The purpose of this Construction Methodology is to:

- Highlight the site location and describe the proposed development;
- Provide an overview of the construction phase duration, working hours and procurement strategy;
- Highlight the outline methodology and works sequence for construction phase; and
- Summarise pertinent outline reports which will inform the appointed contractor of the minimum requirements for environmental and waste management plans to be compiled.

1.2 Site Location and Description

The Suir Island Infrastructure proposed development is located in the centre of Clonmel town, with the development encompassing areas located on The Quay, Quay Steet, and New Quay (i.e. The Quays), Suir Island and Raheen Road. Refer to Figure 1-1 for the locality and site extent map. The proposed development drawings are included in Volume C of the Environmental Impact Assessment Report (EIAR).

Clonmel is a large town located on the River Suir at the foot of the Comeragh Mountains. Suir island is low-lying, consisting of four islands: Little Island, Suir Island, Willow Island and Stretches Island. It has been an important crossing point since medieval times, linking the Anglo-Norman walled town of Clonmel to County Waterford on the southern side of the river.

The island is surrounded by the River Suir on all sides and is accessible from the town centre via Old Bridge Road located to the west of the island. The island, from its mid-section to eastern end is largely undeveloped and overgrown. The proposed development will encompass areas zoned as “Town Centre” located on The Quays and Suir Island car park and areas zoned for Amenity located to the east of the Suir Island car park and including a small section of Denis Burke Park. The northern bank of the island is fully bordered by the River Suir and Clonmel town. To the south of the site, the area consists mainly of residential areas and agricultural lands as well as Raheen College. Clonmel has experienced significant flooding in the past. Flood risk is addressed in the Environmental Impact Assessment Report (EIAR) Chapters, along with the Flood Risk Assessment Stage 1 and 2 Report and Hydraulic Modelling Report completed as part of the environmental assessment.

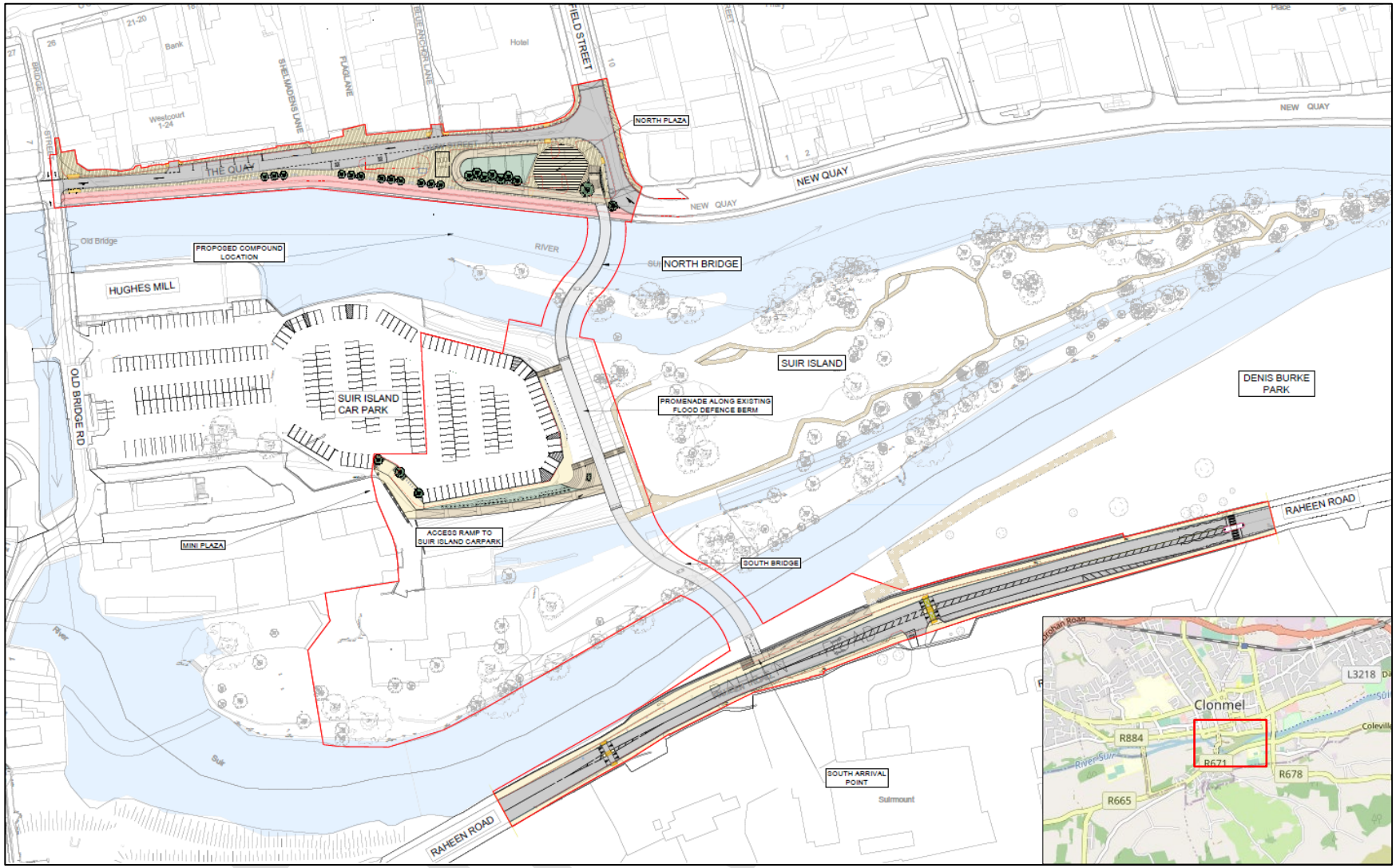

Figure 1-1: Project locality map and layout extent

1.3 Description of Proposed Development

The proposed development will consist of:

- Two pedestrian bridges, the first bridge linking the proposed North Plaza on The Quay/Quay St/Sarsfield St Junction to Suir Island, and the second bridge connecting Suir Island to Raheen Road.
- The pedestrian bridges will be 4-metre-wide consisting of a double curvature alignment, which allow users to discover Suir Island 'from up high' by walking seamlessly between the trees while linking the project elements (North Plaza, the berm embankment, and the south riverbank) along one sinuous route. The first bridge follows the geometry of Sarsfield Street and arrives on the island following the line of the berm embankment, which then links onto the second bridge facilitating a link to Denis Burke Park on Raheen Road, creating a direct connection for pedestrians/cyclists between the park and the Town Centre.
- Provision of a new public open space called the North Plaza which will be aligned with Sarsfield Street. The steps and ramp will be visible from O'Connell Street creating a new landmark in the town of Clonmel and will encourage pedestrian movement towards the River Suir. The bicycle access ramp is designed to be as transparent as possible so as not to block the view of Suir Island from Sarsfield Street.
- Modification of traffic direction and carriageway width around the North Plaza and The Quay and Quay St.
- Provision of a bus stop on the western side of the North Plaza located on Quay Street with five benches providing comfortable facilities for public transport users.
- Upgrading of the existing 2-metre-wide sidewalk along Quay Street into a 4-metre-wide shared pedestrian/cycle path which will provide unencumbered access to the proposed plaza area underneath the elevated access ramp.
- Provision of a sloping landscaped terrace with public seating, located inside the hairpin-shaped access ramp leading up to the northern bridge crossing.
- Provision of three benches and a 9-metre-long stepped promenade seating area integrated into the circular-shaped plaza.
- Planting of various native tree species around the North Plaza to integrate the proposed development with the existing scenery of Suir Island and complement the visual experience of users.
- Provision of a pedestrian path or promenade along the existing berm embankment across Suir Island linking the two pedestrian bridges, to facilitate access between Denis Burke Park on Raheen Road and the proposed North Plaza on The Quay.
- Construction of a pedestrian/bicycle ramp from the link promenade onto Suir Island Carpark. The ramp is fully integrated into the landscape by using the existing slope of the berm.
- Construction of three sets of steps connecting the link promenade to Suir Island carpark and the eastern end of Suir Island.
- Provision of a mini public space within Suir Island Carpark at the entrance to the proposed Suir Island Gardens.
- Provision of a south arrival point for the second bridge connecting Suir Island to the Raheen Road. The South Arrival Point will consist of one access ramp to the east and one set of steps to the west, integrated with the bridge landing level and running parallel to the footpath. These elements will be located outside the existing flood barrier.
- Road improvements for the safety of pedestrians/cyclists at the South Arrival Point, including the footpaths being widened and the road narrowed to accommodate 3.0-metre-wide lanes. Removal of three carparking spaces from the southern edge of the road to allow for wider footpaths.
- Installation of two uncontrolled pedestrian crossings positioned at either ends of the proposed access ramp and flight of steps to provide traffic calming at the South Arrival Point. This bridge arrival point

will be located close to the school entrance of Raheen College, providing safe and convenient access for the schoolchildren.

- Access ramps and steps are located behind the flood barriers to allow access even during flood events.
- Construction of a new foul pumping station to be located within Suir Island car park which will facilitate future Irish Water connections. Wastewater will be pumped 0.1km approx. via rising main along the proposed bridge linking Suir Island to the proposed North Plaza where it will connect into the existing public network along The Quay.
- Ancillary site development works to include, but not limited to, surface water drainage, lighting and associated electrical works, hard and soft landscaping, road works to include surfacing and line marking, landscaping and installation of street furniture.
- All associated site works.

1.4 Project Receiving Environment

The site comprises of various environmental sensitive receptors as shown in Figure 1-2. The study area includes part of the European site, Lower River Suir Special Area of Conservation (SAC), site code 002137. The site is also situated in a Zone of Archaeological Potential (Figure 1-3) as designated by the National Inventory of Architectural Heritage (NIAH), with a number of other sites of cultural and architectural heritage significance in the surrounding area. The receiving environment is addressed in the various EIAR Chapters.

Figure 1-2: Lower River Suir Special Area of Conservation (SAC, Code 002137)

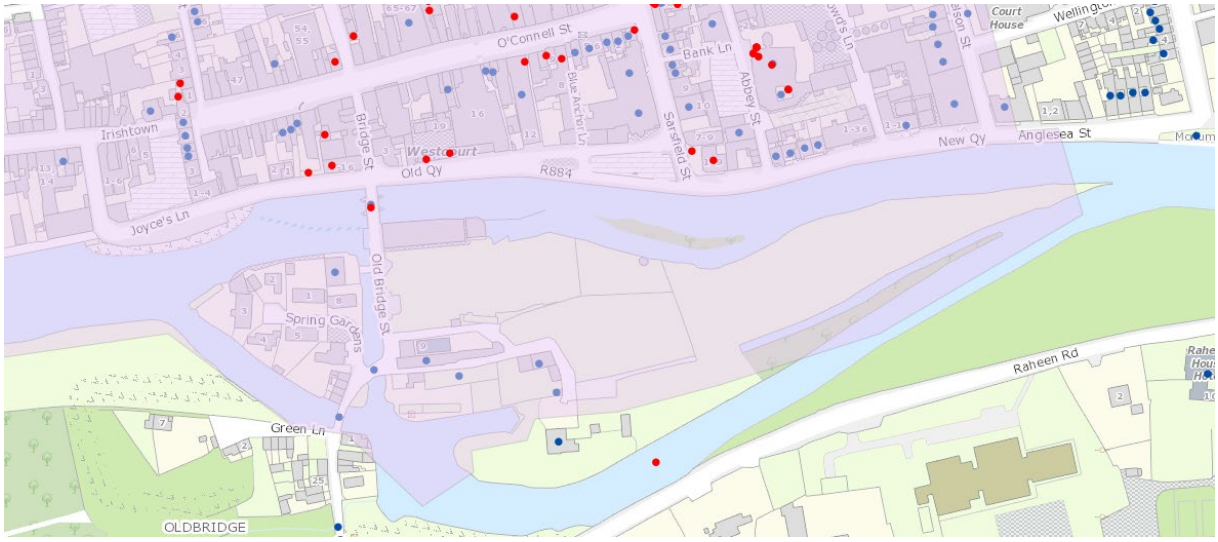

Figure 1-3: Zone of Archaeological Potential (National Inventory of Architectural Heritage (NIAH))

2 Construction Overview

2.1 Construction Procurement Procedure

It is envisaged that the construction of the proposed development will be tendered under a Public Works Contract for Civil Engineering Works Designed by the Employer.

The advantage of the Employer Designed Works contract is that the design team who has undertaken the design and environmental assessment continue with the detailed design and site supervision, ensuring a continuity of knowledge through the remaining phases of the project, construction commencement to completion and final handover.

2.2 Timescale for Construction

The construction of the proposed development will be progressed as a single construction contract with the construction phase potentially lasting approximately 18 months. It is recommended that the construction period starts in early summer, to ensure that foundations are constructed when the Suir River water-level is at its lowest, which will ensure safe access and minimise the impact on flood risk when constructing temporary sheet piling which will restrict the river flow area.

Tipperary County Council consulted with Inland Fisheries Ireland (IFI) in June 2023 in relation to the allowable timeframes to carry out the pier construction works. IFI confirmed that the works to be carried out which encroaches on the riverbanks should be carried out during the months of July to September.

2.3 Working Hours

The timing of construction activities, core working hours and the rate of progress of construction works are a balance between efficiency of construction and minimising nuisance and significant effects. The core construction working hours for the proposed development will be:

- 7am – 7pm: Monday to Friday;
- 8am – 2pm: Saturday (Approval required by Tipperary County Council)

The contractor may require a period of up to one hour before and one hour after core working hours for start-up and shut down activities in working areas. Activities permitted may include deliveries and unloading of materials, movement of staff to their place of work, maintenance and general preparation

works. The use of plant or machinery likely to cause disturbance, other than for piling, will not be permitted outside of the core working hours.

The permitted working hours for piling in the SAC as set out by the National Parks and Wildlife Services (NPWS) and Inland Fisheries Ireland (IFI) is as below:

- Mondays to Fridays: 08:00am to 18:00pm
- Saturdays, Sunday and Bank Holidays: Not permitted

It may be necessary in exceptional circumstances to undertake certain activities outside of the construction core working hours. Any construction outside of the construction core working hours will be agreed by the contractor in advance with Tipperary County Council and scheduling of such works shall have regard to nearby sensitive receptors.

In the case of work required in an emergency or which if not completed would be unsafe or harmful to construction staff, the public or local environment, Tipperary County Council will be informed as soon as reasonably possible of the reasons and likely duration and timing (outside of the core working hours).

2.4 Control of Documents and Records

The Site Environmental Manager (appointed by the contractor) shall ensure that all project environmental documents and records are maintained to demonstrate conformance to relevant environmental legislation, planning conditions and contract specifications and shall include the following:

- Environmental Operating Plan, which includes a Construction Environmental Management Plan (CEMP) and Incident Response Plan (IRP);
- Construction Demolition and Waste Management Plan;
- Noise and Vibration Management Plan;
- Air Quality Monitoring and Management Plan;
- Invasive Species Management Plan;
- Traffic Management Plan;
- Communication Plan;
- Waste records;
- Details of subcontracted environmental specialists;
- Training records;
- Audits;
- Complaints;
- Environmental incidents; and,
- Environmental monitoring records including the following:
    - Monthly reports
    - Noise and vibration monitoring
    - Air quality monitoring
    - Water quality monitoring

3 Construction Sequence

3.1 Sequence of Works

- Stage 1 – Site establishment, clearance and construction of temporary structures
- Stage 2 – Construct piles and pile-caps
- Stage 3 – Construct reinforced concrete piers and abutments
- Stage 4 – Land bridge superstructure sections on supports
- Stage 5 – Construct bridge landings, steps, and ramps

- Stage 6 – Complete bridge ancillary works, drainage and road works for the North Plaza, Suir Island and Raheen Road
- Stage 7 – Site clearance, rehabilitation, and landscaping

An indicative construction sequencing or phasing is shown on Drawings 20_071-CSE-00-XX-DR-C-2450 to 2452 included in the Volume C – Drawings of the EIAR.

3.1.1 Stage 1 - Site Establishment, Clearance and Construction of Temporary Structures

Temporary construction compound sites will be required in the vicinity of the development. Any changes to the location or size of the proposed site compound must comply with all requirements stated within this EIAR and must have approval from TCC. For the purpose of the EIA, the following areas have been assessed as potential locations of site compounds:

- Suir Island Parking Area – Utilisation of the existing Suir Island Parking area will act as the main construction compound and would provide minimal disruption to the population with a total area of approximately 2,865 m^2 ; and
- The Quays carpark – The existing parking area on the North Plaza that will be developed, which can be temporarily used as a storage area for bridge deck sections and construction plant consisting of an approximate area of 1,020 m^2.
- Temporary bridge assembling area located in Denis Burke Park adjacent to the proposed southern bridge crossing.

The proposed main site compound on the Suir Island, as presented on Drawing 20_071-CSE-00-XX-DR-C-2286 of this EIAR, will include offices, materials storage areas, plant storage and parking for site and staff vehicles. The site is likely to remain in place for the duration of the contract but may be scaled up or down during particular activities on site. The compound(s) may be used either in full, in part, not at all, or another location could be selected, in agreement with Tipperary County Council, subject to compliance with all environmental, planning and legal requirements. The proposed bridge superstructure will be manufactured off-site and transported via abnormal loads to site in sections, where the steel bridge sections will be temporarily stored and assembled on the North Plaza, Suir Island and the western extent of Denis Burke Park.

The construction compound(s) shall incorporate the protection and mitigation measures outlined in this EIAR and shall conform to the requirements specified in the Outline Construction Environmental Management Plan (CEMP), Natura Impact Statement (NIS) and planning conditions.

The contractor will erect hoarding of a minimum 2.4m in height around the site compound(s) and all work areas. The hoarding shall be a high gloss printed finish with information and graphics about the project or as otherwise agreed with TCC.

The following temporary structures will be required to ensure safe access for construction equipment and protection against flooding whilst working in close proximity of the Suir River banks:

i. Traffic accommodation for works located in North Plaza and Raheen Road;
ii. Access ramp will be constructed over the existing flood protection berm on Suir Island, for access from the site compound to the North Bridge Pier 1 constructed from granular material to provide a hardstanding surface for construction equipment;
iii. Sheet piling around North Bridge Pier 1 located on Suir Island and South Bridge Pier 2 and 3 located on either bank of the southern river reach as shown on Drawing 20_071-CSE-GEN-XX-DR-C-2460 included in the EIAR Volume C – Drawings.

The appointed contractor shall design and provide details of the above temporary works structures in the detailed construction method statements, which will be approved by the Employer's Representative

and Environmental Specialists appointed by the Employer prior to the commencement of any construction activities.

3.1.2 Stage 2 - Construct Piles and Pile Caps

The construction of piles and pile caps will be required in the following areas:

i. North Bridge Abutment 1 on the North Plaza (The Quay);
ii. North Bridge Pier 1 on Suir Island;
iii. North Bridge Abutment 2 on the northern corner of the existing flood protection berm (Suir Island);
iv. South Bridge Abutment 3 on the southern corner of the existing flood protection berm (Suir Island);
v. South Bridge Pier 2 located on Suir Island;
vi. South Bridge Pier 3 located on the southern bank of the Suir River, in front of the existing flood protection wall located on Raheen Rd.

Cased piles will be used to prevent the use of bentonite and will be cast using ready-mix concrete trucks transported to site and pumped into the casings due to restricted access for concrete trucks. No batching plants will be allowed on site. Upon completion of the reinforced concrete piles, the piles shall be cut to the correct elevation and reinforced concrete pile caps will be constructed, that acts as the platform for the bridge piers and abutments. Refer to Drawing 20_071-CSE-00-XX-DR-C-2256 to 2262 showing the locations of the pier and abutment structures.

3.1.2.1 Construction of Pier No. 1 (North Bridge)

The northern bridge crossing will require the construction of a single pier support (Pier No. 1) which is located on a small island within the northern river reach. During the summer months or when the River Suir is not in spate, the small island is accessible from Suir Island. During times when the water level rises above base-flow conditions, the access to the small island is inundated with water with depths ranging from 100mm to 500mm. Considering the above and to provide safe access for construction staff and machinery to construct the bridge support, the works sequence of Pier No. 1 will entail the following:

i. A 4m-wide temporary access road will be constructed over the existing earthfill embankment flood defence berm located on Suir Island which connects to the Suir Island carpark/contractor's compound;
ii. To facilitate the movement of piling rigs over the embankment, temporary soil reinforcement layers will be used to support the additional loading and mitigate any potential to undermine the performance of the flood defence berm during the works. Soil reinforcement layers will consist of geotextiles, reinforced trackbed separators and high-density polyethylene (HDPE) geocells filled with uniformly crushed rock to provide a suitable platform for the movement of construction plant and personnel;
iii. To cross the ephemeral channel to the small island, a precast concrete box culvert will be installed by crane from the contractor's compound to ensure water can continue to flow which may be required for ecological water uses as well as to reduce any potential impacts on flood water levels;
iv. Following the installation of the box culverts, temporary sheetpiling will be installed either side of the culvert on the upstream and downstream faces. The height of the sheetpiling will be limited to provide a safe working area for the 1-in-2-year recurrence interval (50% AEP) flood event plus an additional 300mm freeboard. Sheetpiling will commence from the access road on the berm to the culvert and finally to the small island and will be sequentially filled with uniformly crushed rock;

v. Upon completion of the access arrangements to the island, vegetation will be cleared and similarly to the above, localised sheetpiling will be installed around the proposed pier location to create a working platform for consequent piling operations;
vi. A total of two (2) end-bearing piles, typically ranging from 150-300mm in diameter will be required for the pier foundation, which will be installed by rotatory casing drilling methods;
vii. Preassembled high-yield steel reinforcement will be lowered into the piled casing, and ready-mix concrete will be pumped into position from the contractor's compound via a concrete pump to finish the piling operations for Pier No. 1;
viii. Following the completion and appropriate curing time for the piled foundations, the piles will be cut to the required level for the construction commencement of the pile caps which will consist of concrete formwork, steel reinforcement and concrete works similarly to the abovementioned sequence;
ix. Following the completion of the reinforced concrete pile caps, the reinforced concrete pier will be constructed similarly to the above operations up to the level on which the bridges are to be landed;
x. Prior to landing the bridge sections on the supports (Section 3.1.4 below), the temporary access arrangements including the sheetpiling, crushed rock infills and precast concrete culverts will be removed;
xi. Access for construction staff and small equipment to the island will be facilitated by the installation of a temporary platoon or small barge over the ephemeral channel. This will be relatively short-term to ensure the area is accessible for staff to access the pier during the bridge landing stage and any rehabilitation works that will be required;

The abovementioned proposed temporary works are shown on Drawing 20_071-CSE-GEN-XX-DR-C-2460 included in the EIAR (Volume C – Drawings).

3.1.3 Stage 3 - Construct Reinforced Concrete Piers and Abutments

The reinforced concrete piers and abutments will be constructed in the areas listed above, to support the bridge deck superstructure. Special concrete to steel bridge isolating bearing connections will be required on piers and abutments to accommodate any movement of the bridge superstructure. The piers and abutments will be cast with ready-mix concrete transported to site and pumped into the formwork.

3.1.4 Stage 4 - Land Bridge Superstructure

The bridge superstructure will be constructed as follows:

i. The steel bridge superstructure will be prefabricated in sections at an off-site premises and transported to the site in abnormal load convoys via road networks;
ii. The bridge sections will be assembled on site on the North Plaza, Suir Island and the western most point of Denis Burke Park (temporary storage and assemble area);
iii. Following the completed assemblies of the bridge superstructure sections, it will be landed on the support abutments and piers in lengths of approximately 30m (4 No. lifts in total).

The procedure for landing the bridge superstructure and crane access is shown on Drawing 20_071-CSE-00-XX-DR-C-2453, which will consist of the following:

i. North Bridge – Section 1 will span from Abutment 1 to Pier 1 located on Suir Island with the crane stationed on the North Plaza behind the existing flood protection wall;
ii. North Bridge – Section 2 will span from Pier 1 to Abutment 2 located on the existing flood protection berm with the crane stationed in the site compound area;
iii. South Bridge – Section 1 will span from Abutment 3 to Pier 2 with the crane positioned on Suir Island next to the southern river reach;

iv. South Bridge – Section 2 will span from Pier 2 to Pier 3 with the craned stationed in the temporary assembly area located on the southern bank of the Suir River.

3.1.5 Stage 5 - Construct Bridge Landings, Ramps and Steps

Following to completed bridge superstructure, the following can be completed:

i. North Plaza access steps, ramp and landings;
ii. Suir Island access steps, ramp and landings;
iii. Raheen Road access steps, ramp and landings.

3.1.6 Stage 6 - Complete Bridge Ancillary Works and North Plaza/Raheen Rd Surfacing

The following ancillary works will be constructed to complete the bridge crossings:

i. North Bridge and North Plaza handrails and surfacing;
ii. Suir Island flood protection berm filling, surfacing retaining walls;
iii. Suir Island ramp filling and surfacing;
iv. South Bridge and Raheen Road handrails;

The following works will be completed prior to the final surfacing on the North Plaza, Suir Island car park and Raheen Road:

i. Construction of the proposed surface water drainage systems as shown on Drawings 20_071-CSE-GEN-XX-DR-C-2501 and 2504.
ii. Construction and commissioning of a new reinforced concrete pumping station, emergency storage and control kiosk including power supply/telemetry for future Suir Island foul drainage requirements;
iii. Installation of the 125mm diameter foul sewer rising main across the North Bridge and connection to an existing DN300 foul sewer pipeline located on the New Quay which drains to the main DN900 foul pipeline;

The purpose of the proposed foul sewer system and pumping station is to upgrade the existing foul sewer system on Suir Island, which consists of septic tanks with raw sewerage overflows to the river. The proposed upgrading is shown on Drawing 20_071-CSE-GEN-XX-DR-C-2501 and 2502.

Following the completion of the bridge structures and the Suir Island foul sewer connection, the surfacing works can be completed on the North Plaza, Suir Island and Raheen Road.

3.1.7 Stage 7 - Rehabilitation and Landscaping

Upon completion of the key works described in Stage 1 to Stage 6 above, the following sequence of works will occur:

- All temporary access roads, construction platforms and temporary flood protection sheet piling must be removed and reinstated to pre-construction conditions. Flood protection sheet piles can be removed following the completion of Stage 5;
- Landscaping will be completed on the North Plaza and Suir Island as per the Landscaping Consultant/Architect specifications;

All construction areas not scheduled for landscaping shall be rehabilitated as per the Construction Environmental Management Plan (CEMP), Natura Impact Statement (NIS) and planning conditions.

4 Environmental Management Plans

The following Outline Environmental Management Plans will be used by the Contractor to develop the Detailed Environmental Management Plans. These documents are considered to be “live” and shall be

updated on a regular basis as the works and site conditions change. The outline plans have been prepared as part of the EIAR suite of documents and will inform the Contractor of the information to be contained in the detailed plans.

4.1.1 Environmental Operating Plan (EOP)

Before the commencement of any construction activities, the Contractor will be required to compile an EOP in accordance with the Transport Infrastructure Ireland (TII)/National Roads Authority (NRA) Guidelines for the Creation and Maintenance of an Environmental Operating Plan. The EOP will set out the Contractors approach to manage environmental issues associated with the various construction activities and provides a documented account to the implementation of the environmental commitments set out in the EIAR. Details in the plan will include:

- All environmental commitments and mitigation measures included as part of the planning approval process and any requirements of statutory bodies such as the NPWS and IFI as well as a method documenting compliance with the measures;
- A list of all applicable environmental legislation requirements and a method of documenting compliance with these requirements; and
- Outline methods by which construction work will be managed to avoid, reduce or remedy potential adverse impacts on the environment.

To oversee the implementation of the EOP, the Contractor will be required to appoint a suitably competent Site Environmental Manager (SEM) to ensure that the mitigation measures included in the EIAR, the EOP and the statutory approvals are executed in the construction of the works and to monitor that those mitigation measures employed are functioning properly. The EOP contains the Outline Incident Response Plan (IRP) which describes the procedures, lines of authority and processes that will be followed to ensure that incident response efforts are prompt, efficient, and appropriate to particular circumstances.

4.1.2 Construction Environmental Management Plan (CEMP)

In addition to the EOP, the Contractor will be required to compile a CEMP, which sets out the overall management and administration of the construction activities and project. The CEMP will be prepared prior to the commencement of any construction activities to ensure commitments in the statutory approvals are adhered to, and that it integrates the requirements of the outline CEMP, EOP and Construction and Demolition Waste Management Plan (CDWMP). The CEMP shall include the following headings but not limited to:

- Site Compounds;
- Normal working days and working hours;
- Incident Response Plan in the event of fire, chemical spillage, cementitious spillage, structure collapse and failure of equipment or road traffic incidents occurring within the area of traffic management. The plan must include contact names and telephone numbers for: Local Authority (all sections/departments), Ambulance, Gardaí and Fire Services;
- Details of chemical/fuel storage and loading areas including bunding to contain spillages/leakages;
- Details of construction plant storage, temporary offices;
- Traffic Management Plan (to be developed in conjunction with the TCC road section) including details of routing, closures, signal strategy and signage, programme of vehicular arrivals, on-site parking for vehicles and workers, road cleaning, other traffic and management requirements;
- Truck wheel wash details (including measures to reduce and treat runoff);
- Dust management to prevent nuisance (demolition and construction);

- Site run-off management;
- Noise and vibration management to prevent nuisance (demolition and
- construction);
- Landscape management;
- Management of demolition of all structures and assessment of risks for same;
- Stockpiles;
- Project procedures and method statements for;
    - Demolition and removal of buildings, services, pipelines (including risk assessment and disposal);
    - Diversion of services;
    - Excavation ;
    - Piling;
    - Construction of pipelines;
    - Temporary hoarding and lighting;
    - Temporary works including sheet piling and construction of access roads;
    - Disposal of surplus geological material (peat, soils, rock etc.);
    - Earthworks material improvement; and
    - Protection of watercourses from contamination and silting during construction.

The production of the CEMP will also detail areas of concern with regards to health and safety and any environmental issues that require attention during the construction phase. Adoption of good management practices on site during the construction and operation phases will also contribute to reducing environmental impacts.

4.1.3 Construction and Demolition Waste Management Plan (CDWMP)

The CDWMP will be included within the CEMP, clearly setting out the Contractor's proposals regarding the treatment, storage and disposal of waste. An outline CDWMP has been prepared for the proposed development. The outline CDWMP is a live document that will be amended and updated to reflect current conditions on site as the project progresses. The obligation to develop, maintain and operate a CDWMP will form part of the contract documents for the project. The plan itself will contain, but not be limited to, the following measures:

- Details of waste storage to be provided for different waste;
- Details of where and how materials are to be disposed of - landfill or other appropriately licensed waste management facility;
- Details of storage areas for waste materials and containers;
- Details of how unsuitable excess materials will be disposed of where necessary; and
- Details of how and where hazardous wastes such as oils, diesel and other hydrocarbon or other chemical waste are to be stored and disposed of in a suitable manner.

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Appendix 2.3: Environmental Operating Plan (RPT-20_071-064) and Incident Response Plan (RPT-20_071-065)

Clifton Scannell Emerson Associates

Outline Environmental Operating Plan

Suir Island Infrastructure Links

Comhairle Contae Thiobraid Árann
Tipperary County Council

Client: Tipperary County Council

Date: September 2023

Job Number: 20_071

CONSULTING ENGINEERS

Civil Engineering | Structural Engineering | Transport Engineering | Environmental Engineering | Project Management | Health and Safety

Clifton Scannell Emerson Associates

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Document Control Sheet

Project Name:	Suir Island Infrastructure Links
Project Number:	20_071
Report Title:	Outline Environmental Operating Plan
Filename:	RPT-20_071-064

Issue No.	Issue Status	Date	Prepared by	Checked by
0	Final	22.09.2023	HB	LP

Table of Contents

1 Introduction

This document is a project-specific outline Environmental Operating Plan (EOP). It is presented to inform and provide practical experience of developing, submitting and maintaining an EOP for the construction and operation of the Suir Island Infrastructure Links proposed development.

1.1 Purpose and Scope

This outline EOP sets out the mechanism by which environmental protection is to be achieved on the Suir Island Infrastructure Links proposed development. This EOP describes the Environmental Management System (EMS) of the proposed development, which will be devised according to the criteria of ISO 14001:2004 – Environmental Management Systems and developed in line with the Transport Infrastructure Ireland (TII) document "*Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan*".

The purpose of this outline document is to highlight the minimum requirements and content which shall be included in the appointed contractor's EOP. This outline EOP will be complemented by General Procedures, Work Procedures, various Management Plans and Operations Instructions. These documents will be appended to this document, making this document the overarching index of all environmental procedures and plans.

1.2 Dynamic Nature of the EOP

The EOP will be a dynamic document and the main contractor shall ensure that it remains valid for the duration of the project. The EOP shall be updated continuously during the life cycle of the construction works to take account of monitoring results, legislative changes, outcomes of third-party consultations, etc. Additional appendices may be added to the EOP to accommodate monitoring results, waste permits, planning permissions, etc.

1.3 Environmental Policy Statement

Environmental management is fundamental to the successful operation of construction activities. Therefore, the Environmental Policy must, as a priority, be understood by all parties involved in the contract and adhered to throughout the course of the works to allow for legal compliance and continuous improvement.

The appointed contractor shall include their Environmental Policy Statement in **Appendix B** of this report.

2 General Project Details

The inclusion of general project information in the EOP will make it easier for those without in-depth knowledge of the project to quickly understand the important aspects of the project. The inclusion of such information will make it easier for those who need to scrutinise, review, or audit the EOP to quickly ascertain the scope and importance of the works.

This section will be completed by the successful contractor once appointed:

Table 2-1: Project details template

General Project Details
Project Name: Suir Island Infrastructure Links
Project Description: The proposed development will consist of: • Two pedestrian bridges, the first bridge linking the proposed North Plaza on The Quay/Quay St/Sarsfield St Junction to Suir Island, and the second bridge connecting Suir Island to Raheen Road. • Provision of a new public open space called the North Plaza which will be aligned with Sarsfield Street. The steps and ramp will be visible from O'Connell Street creating a new landmark in the town of Clonmel and will encourage pedestrian movement towards the River Suir. The bicycle access ramp is designed to be as transparent as possible so as not to block the view of Suir Island from Sarsfield Street. This plaza is an ideal setting for impromptu performances and social gathering. • Modification of traffic direction and carriageway width around the North Plaza and The Quay and Quay St. • Provision of a bus stop on the western side of the North Plaza located on Quay Street with five benches providing comfortable facilities for public transport users. • Upgrading of the existing 2-metre-wide sidewalk along Quay Street into a 4-metre-wide shared pedestrian/cycle path which will provide unencumbered access to the proposed plaza area underneath the elevated access ramp. • Provision of a sloping landscaped terrace with public seating, located inside the hairpin-shaped access ramp leading up to the northern bridge crossing, offering unencumbered views of the plaza area. • Provision of three benches and a 9-metre-long stepped promenade seating area integrated into the circular-shaped plaza, offering exceptional views of the proposed development. • Planting of various native tree species around the North Plaza to integrate the proposed development with the existing scenery of Suir Island and complement the visual experience of users. • Installation of a 4-metre-wide curved pedestrian bridge, which allow users to discover the island 'from up high' by walking seamlessly between the trees while linking the project elements (Sarsfield Street, the berm embankment, and the south riverbank) along one sinuous route. The first bridge follows the geometry of Sarsfield Street and arrives on the island following the line of the berm embankment, which then links onto the second bridge facilitating a link to Denis Burke Park on Raheen Road, creating a direct connection for pedestrians/cyclists between the park and the Town Centre.

- Provision of a pedestrian path or promenade along the existing berm embankment across Suir Island linking the two pedestrian bridges, to facilitate access between Denis Burke Park on Raheen Road and the proposed North Plaza on The Quay.
- Construction of a pedestrian/bicycle ramp from the link promenade onto Suir Island Carpark. The ramp is fully integrated into the landscape by using the existing slope of the berm.
- Construction of three sets of steps connecting the link promenade to Suir Island carpark and the eastern end of Suir Island.
- Provision of a mini public space within Suir Island Carpark at the entrance to the proposed Suir Island Gardens.
- Provision of a south arrival point for the second bridge connecting Suir Island to the Raheen Road. The South Arrival Point will consist of one access ramp to the east and one set of steps to the west, integrated with the bridge landing level and running parallel to the footpath. These elements will be located outside the existing flood barrier.
- Road improvements for the safety of pedestrians/cyclists at the South Arrival Point, including the footpaths being widened and the road narrowed to accommodate 3.0-metre-wide lanes. Removal of three carparking spaces from the southern edge of the road to allow for wider footpaths.
- Installation of two uncontrolled pedestrian crossings positioned at either ends of the proposed access ramp and flight of steps to provide traffic calming at the South Arrival Point. This bridge arrival point will be located close to the school entrance of Raheen College, providing safe and convenient access for the schoolchildren.
- Access ramps and steps are located behind the flood barriers to allow access even during flood events.
- Construction of a new foul pumping station to be located within Suir Island car park which will facilitate future Irish Water connections. Wastewater will be pumped 0.1km approx. via rising main along the proposed bridge linking Suir Island to the proposed North Plaza where it will connect into the existing public network along The Quay.
- Ancillary site development works to include, but not limited to, surface water drainage, lighting and associated electrical works, hard and soft landscaping, road works to include surfacing and line marking, landscaping and installation of street furniture.
- All associated site works.

Location of all Work Sites, Offices, Compounds, Material Laydown Areas:

(Contractor to attach map)

Duration of the Project:

(Contractor to state duration in years/months)

(Contractor to append construction programme in **Appendix C**)

3 Contact Details

This section of the EOP shall detail key contact personnel as per the below examples:

Table 3-1: Contact sheet template

Position Title	Name	Mobile Number	Email
Project Manager			
Programme Manager			
Construction Manager			
Environmental Manager			
Alt. Environmental Manager			
Site Agents			
Forepersons			
Safety Officers			
Site Emergency Number			
24H Emergency Contact Details			

Table 3-2: Employer Contacts

Position Title	Name	Mobile Number	Email
Project Resident Engineer			
Regional Design Office			
Local Authority Representative			
Ecological Clerk of Works			
Employer's Representative			

Table 3-3: Third-party contacts

Position Title	Name	Mobile Number	Email
Inland Fisheries Ireland			
Office of Public Works			
National Parks and Wildlife Services			
Environmental Protection Agency			
Local Authority (state department)			

Health & Safety Authority			
Other, as appropriate			

4 Reference Documents

A reference document section should be included within the EOP to indicate the documents referred to in its development. Reference documents may be divided into two categories: Scheme Specific Reference documentation and General Reference and Guidance documentation as shown below:

Table 4-1: Project Specific Reference Documents

Report Reference	Document Name
(To be confirmed)	Contract Documents (Specification etc)
NIS	Natura Impact Statement
AA	Screening Report for Appropriate Assessment
EIAR Chapters	(Contractor to add all chapters of project EIAR)
(TBC)	Construction Environmental Management Plan
(TBC)	Construction and Demolition Waste Management Plan
(TBC)	Health & Safety Plan
(TBC)	Construction Method Statements
(TBC)	Quality Plan
Other, as appropriate	

Table 4-2: General Reference Documents

Report Reference	Document Name (add other, as appropriate)
Environmental Management and Construction Guidelines	
Example	Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes(National Roads Authority, 2005)
Waste Management	
Example	Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects (EPA, 2022)
Water Management	
Example	C532Control of water pollution from construction sites: guidance for consultants and contractors (Masters-Williams et al, 2001)
General Management	
Example	Design Manual for Roads and Bridges (Volume 10: Environmental Design and Management) (Highways Agency)

5 Organisational Structure Duties and Responsibilities

5.1.1 Organisational Structure

The reporting and hierarchical structure of the primary contractor shall be shown in the organogram. The primary contractor staff's duties and responsibilities should be outlined in the EOP with reference to this organogram. The organogram's inclusion will also make it easier for those auditing and reviewing the EOP to determine the size and shape of the main contractor's project organisation as well as the responsibilities of the different main contractor employees.

[Insert Organogram Here)

5.1.2 Duties and Responsibilities

The EOP should clearly indicate the duties and responsibilities of the main contractor's members of staff. The assignment and communication of duties and responsibilities to individual named members will help ensure the successful implementation of the Plan. The Project Team, including the Project Manager, Construction Manager and Environmental Manager, should liaise during the formulation of the EOP to assign individual duties and responsibilities bearing in mind the overall organisational structure; the nature of Environmental Commitments and Requirements and the national road scheme project's specific characteristics.

[Insert Duties and Responsibilities Here)

Refer to Section 3.4 of the OCEMP for more information.

6 Environmental Commitments

Environmental Commitments may emanate from, inter alia:

- The Contract documents (in particular, the Works Requirements (WR));
- The Natura Impact Statement (NIS);
- The conditions or modifications imposed by An Bord Pleanála (ABP) in their consent for the proposed development;
- The Schedule of Commitments;
- Relevant environmental legislation, and/or
- Legally or contractually prescribed third party consultation (e.g. "Consult and comply" provisions contained within the Contract).

The Environmental Manager shall create a summary table (example set out Table 6-1) in which each Environmental Commitment is noted. Once the Environmental Commitments have been entered, the Environmental Manager shall input the method by which it is proposed to ensure that the Environmental Commitment is met (e.g. a reference to the relevant site-specific Method Statement or Environmental Control Measures.

Table 6-1: Schedule of Environmental Commitments

Environmental Commitment	**Reference to Source of Environmental Commitment (e.g. paragraph number of the EIS, section of an Act, etc.)**	**Reference to Method by which the Environmental Commitment will be met (e.g. site-specific Method Statement or Environmental Control Measure).**	**Reference to Documentary Proof that Environmental Commitment has been met (e.g. signed off site specific Method Statement, signed off Consultation Certificate, Results of Monitoring).**
e.g. Protection of Lower-Suir SAC Qualifying Fish Species	Natura Impact Statement (page 40)	Ecological Management Plan	Audit, Inspection, ECoW review references

7 Environmental Control Measures

The appointed contractor shall detail their Environmental Control Measures (ECM) to be implemented to meet the Environmental Commitments/Requirements listed in **Section 6** of this EOP. Environmental Control Measure Sheets shall be inserted as per the example shown in Table 7-1.

Environmental Control Measure Sheets are relevant sheets listing Environmental Control Measures according to environmental impact type (e.g. Impacts on Bats, Otters, Badgers, Water Crossings, etc.). Refer to Section 3 of the OCEMP for the Lowe-River SAC Qualifying Interests to be addressed in this section of the EOP. Refer to Section 6 of the OCEMP for more information.

Table 7-1: Example of Environmental Control Measures

Environmental Control Sheet 01 – Protection of Otters
Environmental Control Measures – Review Pre-Construction Otter Surveys • The Environmental Manager should review information on any pre-construction Otter surveys completed to date.
Environmental Control Measures – Pre-Construction Ecological Walkover • The Environmental Manager should ensure that signs of otter activity are assessed during the Pre-Construction Ecological Walkover.
Environmental Control Measures – Consultation Prior to their commencement, all works impacting on otters and their breeding or resting places should be agreed and documented in consultation with the relevant statutory authority: • National Parks and Wildlife Service (NPWS) of the Department of the Environment, Heritage and Local Government. Such consultation should take place at the earliest opportunity in order to avoid any delay in obtaining licences or disruption to the works programme.
Environmental Control Measures – Compliance with relevant Licences, Approvals and Legislation All works impacting on otters and their breeding or resting places should be carried out in accordance with relevant licences, approvals and legislation. • Otters, along with their breeding and resting places, are protected under the provisions of the Wildlife Act, 1976, as amended by the Wildlife (Amendment) Act, 2000. Otters have additional protection because of their inclusion in Annex II and Annex IV of the Habitats Directive, which is transposed into Irish law in the European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94 of 1997), as amended. • Otters, along with their breeding and resting places, are protected under the provisions of the Wildlife Act, 1976, as amended by the Wildlife (Amendment) Act, 2000. Otters have additional protection because of their inclusion in Annex II and Annex IV of the Habitats Directive, which is transposed into Irish law in the European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94 of 1997), as amended.
Environmental Control Measures – Otter Holt Protection • A map (at an appropriate scale) should be attached to the Environmental Operation Plan showing the general locations of otter holts and otter crossing-points, where applicable. The map should be available to Site Agents, Forepersons and Monitoring Staff.

Site-specific Method Statements – Otters

- Otters, along with their breeding and resting places, are protected under the provisions of the Wildlife Act, 1976, as amended by the Wildlife (Amendment) Act, 2000. Otters have additional protection because of their inclusion in Annex II and Annex IV of the Habitats Directive, which is transposed into Irish law in the European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94 of 1997), as amended.
- Otters, along with their breeding and resting places, are protected under the provisions of the Wildlife Act, 1976, as amended by the Wildlife (Amendment) Act, 2000. Otters have additional protection because of their inclusion in Annex II and Annex IV of the Habitats Directive, which is transposed into Irish law in the European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94 of 1997), as amended.

Environmental Control Measures – Post-Construction Monitoring and Mitigation

- Quarterly monitoring of mitigation measures should take place after completion of construction. Monitoring should be continued for at least one year after construction work ceases.

Responsibility

The Environmental Manager is responsible for ensuring:

- Third party consultations take place;
- Liaison with the Designated Licence Holders and ensuring that the removal of otters from affected holts and subsequent destruction of these holts is conducted under licence;
- A pre-construction survey is carried out;
- Environmental Control Measures are drawn up;
- Site Agents and Forepersons are made aware of requirements, and
- Post-mitigation monitoring takes place.

References

Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes (National Roads Authority, 2006).

8 Site-Specific Method Statements

The appointed contractor shall insert all their site-specific construction method statements into this section. The Environmental Manager should examine which elements of Works carry the likelihood of significant environmental damage. Having established which elements of the Works carry such a risk, the Environmental Manager should assist in the production of site-specific Method Statements.

As previously outlined in **Chapter 7**, the Method Statement should refer to relevant Environmental Control Measure Sheets and incorporate relevant Environmental Control Measures. The Method Statement should include:

- The proposed method of construction and how impacts shall be mitigated;
- Contingency plans and emergency plans to limit damage caused by accidents, spills or other unforeseen events, and
- Notification procedures to the relevant Authorities, Utilities and Service Providers.

9 Environmental Awareness Training

Environmental Awareness Training is designed to make sure that every member of the primary contractor's site staff and subcontractors are equipped with the necessary skills for carrying out the EOP. Without such training, those involved in the scheme's construction would not be aware of the necessary environmental control measures, which would lead to a failure to meet environmental commitments and requirements. All of the primary contractor's site personnel and subcontractors must therefore receive pertinent and suitable training.

The Environmental Manager shall include the following pertinent details during the Environmental Awareness Training:

- EOP, NIS and Contractual Requirements Briefing;
- Environmental Induction Training; and
- Task-Specific Training.

Where a site-specific Method Statement, (one which incorporates Environmental Control Measures) has been devised for a Works activity, all main contractor site personnel involved in that activity should be given a toolbox talk outlining the Environmental Control Measures. The Foreperson is responsible for providing the toolbox talk and for providing signed training records to the Environmental Manager.

Refer to Section 4.1 of the OCEMP for more information.

10 Communication Plan

The appointed contractor shall include their project-specific Communication Plan in this section. Refer to Section 3.5 of the OCEMP for more information.

11 Inspection, Auditing and Monitoring Compliance

The Environmental Manager shall carry out environmental inspections at appropriate intervals. Where appropriate and when required, the Environmental Manager shall arrange to be accompanied on these environmental inspections by qualified and accredited environmental professionals, whose knowledge and experience may cover the fields of landscape architecture, ecology, noise and other environmental sciences. The Environmental Manager shall append the reports of the environmental inspections to the EOP. Refer to Section 4.3 of the OCEMP for more information.

12 Construction Environmental Management Plan

The Construction Environmental Management Plan (CEMP) provides the environmental management framework for the appointed contractors and subcontractors as they incorporate the mitigating measures as detailed in the various Environmental Impact Assessment Report Chapters prepared for the proposed development, to ensure that the work is carried out with minimal impact to the environment.

The construction management team and contractor's staff must comply with the requirements and constraints set forth in the Outline Construction Environmental Plan (OCEMP) prepared for the proposed development Environmental Impact Assessment. The OCEMP has been appended to the **Suir Island EIAR Chapter 7 Hydrology, Appendix 7.1** for planning purposes.

The implementation of the OCEMP will ensure that the construction phase of the project is carried out in accordance with the commitments made by Tipperary County Council in the planning application, the Environmental Impact Assessment Report and as required under the conditions of the planning consent.

Following construction commencement, the CEMP is considered to be a live document that will be updated according to the changing circumstances of the project and to reflect current construction

activities. The CEMP will be reviewed on an ongoing basis during the construction process and will include information on the review procedures.

The appointed contractor shall include the detailed CEMP in this section of the EOP.

13 Construction and Demolition Waste Management Plan

A Construction and Demolition Waste Management Plan (CDWMP) will be prepared to ensure that waste arising during the construction and demolition phase of the development on site will be managed and disposed of in a way that ensures the provisions of the Waste Management Act 1996 as amended and associated Regulations, Environmental Protection Agency Act 1992 as amended, Litter Pollution Act 1997 as amended and the Southern Region Waste Management Plan 2015 – 2021 are complied with and to ensure that optimum levels of reduction, re-use and recycling are achieved.

An Outline CDWMP has been prepared, consistent with mitigation measures as contained within the EIAR and the Schedule of Commitments and shall be used to inform the appointed contractor to compile the detailed CDWMP for the proposed development. The appointed contractor shall refer to **EIAR Chapter 12 Material Assets: Resource and Waste Management, Appendix 12.1 for the Outline CDWMP**.

The aforementioned Outline CDWMP has been prepared based on the 'Best Practice Guidelines for the Preparation of Resource & Wate Management Plans for Construction & Demolition Projects' published in 2021 by the Environmental Protection Agency.

The appointed contractor shall include their detailed CDWMP in this section of the EOP or in an added appendix.

14 Incident Response Plan

This document describes the procedures, lines of authority and processes that will be followed to ensure that incident response efforts are prompt, efficient, and appropriate to particular circumstances.

An outline Incident Response Plan is contained in **Appendix A** of this EOP. The appointed contractor shall include their Incident Response Plan in **Appendix A**.

15 Other Plans (as required)

Further to the above, the contractor is required to develop the following plans, and any others considered relevant, and incorporate accordingly into the detailed EOP;

- Heritage Management Strategy;
- Construction Compound Management Plan;
- Noise and Vibration Management Plan;
- Water Quality Management Plan;
- Dust Management Plan;
- Construction and Demolition Waste Management Plan;
- Traffic and Pedestrian Management Plans;
- Invasive Species Management Plan; and
- Protected Species Management Plan;

16 Handover of the Final EOP to the Engineer

Two copies of the final and complete EOP shall be supplied to the Engineer immediately following the end of the defects notification period.

APPENDIX A

CONTRACTOR'S INCIDENT RESPONSE PLAN

(Outline Incident Response Plan provided in Appendix A)

Clifton Scannell Emerson Associates

Outline Incident Response Plan

Suir Island Infrastructure Links

Comhairle Contae Thiobraid Árann
Tipperary County Council

Client: Tipperary County Council

Date: September 2023

Job Number: 20_071

CONSULTING ENGINEERS

Civil Engineering | Structural Engineering | Transport Engineering | Environmental Engineering | Project Management | Health and Safety

Clifton Scannell Emerson Associates

Clifton Scannell Emerson Associates Limited,
Consulting Engineers, 3rd Floor The Highline, Bakers Point,
Dun Laoghaire, Co. Dublin, Ireland A96 KW29

Document Control Sheet

Project Name:	Suir Island Infrastructure Links
Project Number:	20_071
Report Title:	Outline Incident Response Plan
Filename:	RPT-20_071-065

Issue No.	Issue Status	Date	Prepared by	Checked by
0	Final	22.09.2023	HB	LP

Table of Contents

1 INTRODUCTION

This Outline Incident Response Plan (IRP) describes the procedures, lines of authority and processes that will be followed to ensure that incident response efforts are prompt, efficient, and appropriate to particular circumstances. It has been developed to provide the information that each employee may need in order to respond to an emergency and to handle it effectively.

2 OBJECTIVE OF PLAN

The primary objective of this document is to:

- Ensure the health and safety of workers and visitors at and in proximity to the site;
- Minimise any impacts to the environment and to ensure protection of the water quality and the aquatic species dependant on it;
- Protect property and operations at the proposed site and to minimise the impact on the continuity of business; and,
- Establish procedures that enable personnel to respond to incidents with an integrated multi-departmental effort and in a manner that minimises the possibility of loss.

3 RESPONSIBILITY

It is the responsibility of the Site Environmental Manager to maintain and update this Outline IRP as required.

This Outline IRP will be reviewed on an ongoing basis and amended, as necessary, when one or more of the following occur:

Applicable regulations are revised:

- The Plan fails in an emergency;
- The project changes in its design, construction, operation, maintenance, or other circumstance in a way that materially increases the potential for impacts on the environment, workers or visitors to the site; and/or,
- Amendments are required by a regulatory authority.

4 OTHER PLANS

Tipperary County Council has a Major Emergency Plan prepared in accordance with the Government's Major Emergency Management Framework. This plan details the initial contact that should be made in the case of an emergency incident as well as those responsible for following up once an emergency event is declared. This plan will be available to the Contractor and may be referred to during both the construction and operation phases. The Plan is presented in **Appendix A**.

5 OUTLINE INCIDENT RESPONSE PLAN

Name and address of the Client:
Tipperary County Council
Civic Offices, Clonmel, County Tipperary
The contact within the Client organisation is Mr. James Murray (tel. 0818 065000 Ext: 5285).
Site Location:
The proposed development is located in Clonmel town; The Quays, Suir Island and Raheen Road.

Description of the proposed development:

The proposed development will consist of:

- Two pedestrian bridges, the first bridge linking the proposed North Plaza on The Quay/Quay St./Sarsfield St. Junction to Suir Island, and the second bridge connecting Suir Island to Raheen Road.
- Provision of a new public open space called the North Plaza which will be aligned with Sarsfield Street. The steps and ramp will be visible from O'Connell Street creating a new landmark in the town of Clonmel and will encourage pedestrian movement towards the River Suir. The bicycle access ramp is designed to be as transparent as possible so as not to block the view of Suir Island from Sarsfield Street. This plaza is an ideal setting for impromptu performances and social gathering.
- Modification of traffic direction and carriageway width around the North Plaza and The Quay and Quay St.
- Provision of a bus stop on the western side of the North Plaza located on Quay Street with five benches providing comfortable facilities for public transport users.
- Upgrading of the existing 2-metre-wide sidewalk along Quay Street into a 4-metre-wide shared pedestrian/cycle path which will provide unencumbered access to the proposed plaza area underneath the elevated access ramp.
- Provision of a sloping landscaped terrace with public seating, located inside the hairpin-shaped access ramp leading up to the northern bridge crossing, offering unencumbered views of the plaza area.
- Provision of three benches and a 9-metre-long stepped promenade seating area integrated into the circular-shaped plaza, offering exceptional views of the proposed development.
- Planting of various native tree species around the North Plaza to integrate the proposed development with the existing scenery of Suir Island and complement the visual experience of users.
- Installation of a 4-metre-wide curved pedestrian bridge, which allow users to discover the island ‘from up high’ by walking seamlessly between the trees while linking the project elements (Sarsfield Street, the berm embankment, and the south riverbank) along one sinuous route. The first bridge follows the geometry of Sarsfield Street and arrives on the island following the line of the berm embankment, which then links onto the second bridge facilitating a link to Denis Burke Park on Raheen Road, creating a direct connection for pedestrians/cyclists between the park and the Town Centre.
- Provision of a pedestrian path or promenade along the existing berm embankment across Suir Island linking the two pedestrian bridges, to facilitate access between Denis Burke Park on Raheen Road and the proposed North Plaza on The Quay.
- Construction of a pedestrian/bicycle ramp from the link promenade onto Suir Island Carpark. The ramp is fully integrated into the landscape by using the existing slope of the berm.
- Construction of three sets of steps connecting the link promenade to Suir Island carpark and the eastern end of Suir Island.

- Provision of a mini public space within Suir Island Carpark at the entrance to the proposed Suir Island Gardens.
- Provision of a south arrival point for the second bridge connecting Suir Island to the Raheen Road. The South Arrival Point will consist of one access ramp to the east and one set of steps to the west, integrated with the bridge landing level and running parallel to the footpath. These elements will be located outside the existing flood barrier.
- Road improvements for the safety of pedestrians/cyclists at the South Arrival Point, including the footpaths being widened and the road narrowed to accommodate 3.0-metre-wide lanes. Removal of three carparking spaces from the southern edge of the road to allow for wider footpaths.
- Installation of two uncontrolled pedestrian crossings positioned at either ends of the proposed access ramp and flight of steps to provide traffic calming at the South Arrival Point. This bridge arrival point will be located close to the school entrance of Raheen College, providing safe and convenient access for the schoolchildren.
- Access ramps and steps are located behind the flood barriers to allow access even during flood events.
- Construction of a new foul pumping station to be located within Suir Island car park which will facilitate future Irish Water connections. Wastewater will be pumped 0.1km approx. via rising main along the proposed bridge linking Suir Island to the proposed North Plaza where it will connect into the existing public network along The Quay.
- Ancillary site development works to include, but not limited to, surface water drainage, lighting and associated electrical works, hard and soft landscaping, road works to include surfacing and line marking, landscaping and installation of street furniture.
- All associated site works.

Potential Incidents:

- Fuel and oil spills;
- Road traffic accidents involving chemical or biological spills;
- Earth slippages;
- Extreme rainfall events, causing flooding of the River Suir;
- Fires;
- Activities resulting in noise and vibration, air pollution, hazardous substances or impacts on waterbodies;
- Waste management; and,
- Discharge of effluent.

The Contractor will update the list of potential incidents based on their proposed construction methods and programme for the Suir Island Infrastructure Links proposed development and include, as a minimum, the following:

- The measures to be taken to avoid or reduce the risk potential;
- Procedures to be put in place to deal with the risk;
- Person responsible for dealing with incidents;
- Procedures for alerting key staff;
- Standby/rota systems;
- Clearly defined roles and responsibilities;
- Names of staff and contractors trained in incident response;
- The types and location of emergency response equipment available and appropriate personal protective equipment to be worn;
- A system of response coordination;

• Off-site support; and, • Particular emergency service or persons to be notified in case of incident.	
Date and Version of the Plan: September 2022 Version 1.0.0	Name or position of person responsible for compiling/approving the plan: Ronan Geoghegan and Laura Peare Clifton Scannell Emerson Associates
Review Date:	Date of next revision:
Objectives of the IRP: To ensure works are carried out in such a way as to avoid injury, health hazards or pollution incidents, however, should any such incident occur, procedures and measures will be implemented to contain, limit and mitigate the effects as far as reasonably practicable.	
List of external organisations consulted in the preparation of the IRP: TBC by appointed contractor when preparing the IRP in accordance with relevant guidelines and regulations.	

Distribution of the IRP

Recipient:	No. of Copies:	Version:

6 EXTERNAL CONTACTS

Contact	Contact Numbers	Address
External Contacts		
Clonmel Fire Services	(052) 613 4614	Heywood Rd, Cooleens, Clonmel, Co. Tipperary
Clonmel Garda Station	(052) 617 7640	20 Emmet St, Oldbridge, Clonmel, Co. Tipperary
Tipperary University Hospital	052 6177000	Clonmel, Tipperary, E91 VY40
EPA Regional Inspectorate	(053) 916 0600	Johnstown Castle Estate, County Wexford, Y35 W821
Tipperary County Council Emergency Planning Department	0818 06 5003	
ESB Networks	1800 372 999 +353 21 238 2410	
Bord Gáis	1800 20 50 50	
Waste Management Contractor	TBC	
Specialist Advise	TBC	

Specialist Clean-up Contractor	TBC	
Tipperary County Council	+353 (0) 818 06 5000	Civic Offices, Clonmel, County Tipperary
Inland Fisheries Ireland	To be agreed with IFI	
National Parks & Wildlife Services	To be agreed with NPWS	

7 INTERNAL CONTACTS

Contact	**Contact Numbers**	**Address**
Internal Contacts		
Names and positions of staff authorised /trained to activate and coordinate the IRP	TBC	
Other Staff		
Managing Director		
Site Manager		
Health & Safety Manager		
Site Environmental Manager		
Ecological Clerk of Works		

8 CHEMICAL PRODUCTS AND WASTE INVERNTORY

Inventory of Chemical Products and Wastes						
Trade Name/ Substance	Solid/ Liquid/ Gas or Powder	UN Number	Maximum Amount	Location marked on Site Plan	Type of Containment	Relevant health and environmental problems

9 POLLUTION PREVENTION EQUIPMENT INVERNTORY

Inventory of Pollution Prevention Equipment (on- and off-site resources)			

10 DRAWINGS

The appointed contractor shall include all relevant emergency response drawings in the section of the IRP.

11 RESPONSE PLANNING

11.1 Incident Response Plan

The Contractor's Environmental Operating Plan (EOP) will include an Incident Response Plan, which will detail the controls to be adopted to manage the risk of pollution incidents and procedures to be followed in the event of any pollution incidents.

11.2 Incident Respond Plan Structure

- Reference to the Method Statements and Management Plans for other construction activities, insofar as they are relevant for the purposes of mitigating against health and safety and pollution incidents;
- Procedures to be adopted to contain, limit and mitigate any adverse effects, as far as reasonably practicable, in the event of a health and safety or pollution incident;
- Details of spill clean-up companies appropriate to deal with pollution incidents associated with the materials being used or stored on site.
- Procedures to be followed and appropriate information to be provided in the event of any incident, such as a spillage or release of a potentially hazardous material;
- Procedures for notifying appropriate emergency services, authorities, the Employer's Representative and personnel on the construction site;
- Procedures for notifying relevant statutory bodies, environmental regulatory bodies, local authorities and local water and sewer providers of pollution incidents, where required;
- Maps showing the locations, together with address and contact details, of local emergency services facilities such as garda stations, fire authorities, medical facilities and other relevant authorities; and,
- Contact details for the persons responsible on the construction site and within the Contractor's organisation for pollution incident response.

11.3 Monitoring

The Contractor will investigate and provide reports on any health and safety or pollution incidents to the Employer's Representative, including, as appropriate:

- A description of the incident;
- Contributory causes;
- Adverse effects;
- Measures implemented to mitigate adverse effects; and,
- Effectiveness of measures implemented to prevent pollution.

The Contractor will undertake appropriate monitoring of the procedures and measures set out in the management plans for construction activities required to prevent health and safety or pollution incidents to ensure they are being adequately implemented.

The Contractor will monitor the effectiveness of the procedures and measures implemented in the event of an incident and the effectiveness of the response procedures set out in the Incident Response Plan to identify any areas where improvement is required.

APPENDIX A

TIPPERARY COUNTY COUNCIL MAJOR EMERGENCY PLAN

Tipperary County Council

MAJOR EMERGENCY PLAN

2014

Comhairle Contae Thiobraid Árann
Tipperary County Council

Title:	**Major Emergency Plan**
Version:	**No. 1**
Status:	**Approved**
Approved By:	**Joe MacGrath, Chief Executive, Tipperary County Council**
Date:	**1st June 2014**

Record of Issues and Amendments

Amendment No.	Version No.	Date	Section Amended	Amended By
1.				
2.				
3.				
4.				
5.				
6.				
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Foreword

The importance of an effectively managed and co-ordinated response when dealing with a major emergency cannot be over-emphasised and the development of this Plan for dealing with major emergencies in Tipperary has been the focus of our attention since the Government decision in July 2011 to establish a unified County Council in Tipperary. It is anticipated that this Plan will enable Tipperary County Council to fulfil its commitments locally, regionally and nationally in Major Emergency Management.

The Plan has been prepared in accordance with the requirements of the Government approved document '*A Framework for Emergency Management'* (2006). It is issued for the guidance of local authority staff involved in responding to a major emergency and it sets out the basis for a structured response to any major emergency that may occur in County Tipperary.

In recognising the need for effective inter-agency co-operation during the response phase, the Plan integrates with the Plans of the other Principal Response Agencies, namely An Garda Síochána and the Health Service Executive.

The key elements in addressing a major emergency are to:

- be prepared to respond quickly,
- restore order and normality,
- learn from the experience and
- promote confidence both within the local authority and amongst the general public.

This Plan comes into effect from the 1st June 2014 and it will be continually reviewed to keep pace with the changing and dynamic times we live in and to ensure we learn from other events in Ireland and overseas.

Joe MacGrath,
Chief Executive,
Tipperary County Council.

Contents

Contents (Cont.)

*Note: Due to the size of this section, the Appendices will be held separately to the plan. Reference should also be made to the mem website: www.mem.ie for national guidance

Section 1

Introduction to Plan

1.1 An introduction to the Plan

A Major Emergency is any event which, usually with little or no warning, causes or threatens death or injury, serious disruption of essential services or damage to property, the environment or infrastructure beyond the normal capabilities of the principle emergency services in the area in which the event occurs, and requires the activation of specific additional procedures and the mobilisation of additional resources to ensure an effective, co-ordinated response.

1.2 Background

In 2006 the government approved a two-year Major Emergency Development Programme 2006-2008 (MEDP) to allow for the structured migration from current arrangements to an enhanced level of preparedness via the new emergency management process. The purpose of this Plan is to put in place arrangements that will enable the three principle emergency response agencies, An Garda Síochána, the Health Service Executive and the Local Authorities to co-ordinate their efforts whenever a major emergency occurs.
The systems approach to Major Emergency Management involves a continuous cycle of activity. The principal elements of the systems approach are:

- Hazard Analysis/Risk Assessment;
- Mitigation/Risk Management;
- Planning and Preparedness;
- Co-ordinated Response; and
- Recovery.

Fig 1.1: Five Stage Emergency Management Paradigm

1.3 The objectives

The objective of this Plan is to protect life and property, to minimise disruption to the area, and to provide immediate support for those affected. To achieve this aim the Plan sets out the basis for a co-ordinated response to a major emergency and the different roles and functions to be performed by the various agencies. The fact that procedures have been specified in the Plan should not restrict the use of initiative or common-sense by individual officers in the light of prevailing circumstances in a particular emergency.

1.4 The scope of the Major Emergency Plan

The scope of the Major Emergency Plan is such that it provides for a co-ordinated inter-agency response to major emergencies beyond the normal capabilities of the principal emergency services. Emergencies that severely impact on the day to day operation of the local authority or the welfare of the community may require the activation of the Major Emergency Plan.

1.5 The relationship / inter-operability of the Major Emergency Plan with other emergency plans.

An Garda Síochána, the Health Service Executive and Tipperary County Council are the Principle Response Agencies (PRA's) charged with managing the response to emergency situations which arise at a local level.
In certain circumstances, the local response to a major emergency may be scaled up to a regional level, activating the Plan for Regional Level Co-ordination. If this is activated, the PRA's are An Garda Síochána, the Health Service Executive and Mid West Region Local Authorities (Tipperary, Clare, Limerick), members of which all sit on the Regional Steering Committee.

1.6 The language / terminology of the Plan;

In situations where different organisations are working together, there is a need for common vocabulary to enable them to communicate effectively. This is particularly the case where the principal emergency services and a range of other bodies are working together under the pressures that a major emergency brings. Therefore a full set of relevant terms and acronyms are provided in *Appendix A1,* which should be used by **all** agencies.

1.7 The distribution of the Plan

Copies of the Plan will be distributed to all Sections of Tipperary County Council, appropriate Heads of Service, Emergency Planning Team members, each Principal Response Agency, neighbouring local authorities and other bodies as determined by the Major Emergency Management Committee. A complete Distribution List for the plan is provided in *Appendix A4.*

1.8 The status of the Plan and when and how it will be reviewed / updated

The Plan is an amalgamation of the North and South Tipperary Plans and has been approved by the Council's Major Emergency Development Committee. It will be reviewed and updated on a regular basis and also following any exercises or incidents.

- Plan Implementation Date: 1st June 2014
- Plan Review Date: May 2015 every year thereafter.

1.9 Public access to the Plan

The Plan is available for inspection at the following offices of Tipperary County Council:

- The Civic Offices, Limerick Road, Nenagh, Co. Tipperary or
- County Hall, Emmet Street, Clonmel, Co. Tipperary

The Plan is also available on the Council's website (www.tipperarycoco.ie).

Note: Information of a private nature relating to any of the individuals and/or companies listed in the plan and the associated appendices are not be available to the general public.

Section 2

Tipperary County Council and its Functional Area

2.1 Role of Tipperary County Council

The functional area of this Plan is the administrative county of Tipperary. Tipperary County Council incorporates the Tipperary Municipal Districts of Templemore-Thurles, Nenagh, Cashel-Tipperary, Clonmel and Carrick-on-Suir.
In the event of a major emergency the role of Tipperary County Council is to ensure life safety by providing a top class emergency service in the form of the Fire Service and Civil Defence. Other sections of the Local Authority will also be required to manage business continuity and ensure that the general needs of the community are addressed to the best of their ability in an emergency situation. Tipperary County Council will ensure that danger areas are made safe in order to permit other agencies to undertake their recovery and rehabilitation operations. In the immediate aftermath of an incident principal concerns include support for the other emergency services, support and care for the local and wider community, and the use of its resources to mitigate the effects of the emergency and co-ordination of the voluntary organisations. In the 'recovery' phase the local authority will be responsible to lead and co-ordinate the rehabilitation of the community and the restoration of the environment.

2.2 Boundaries and characteristics of area.

Tipperary is a landlocked county bordering the counties of Laois, Offaly, Galway, Clare, Limerick, Cork, Waterford and Kilkenny.
Tipperary has a population of 156,000. The important urban centres include Clonmel, Nenagh, Thurles, Roscrea, Carrick-on-Suir, Cashel, Cahir, and Tipperary Town. *(See Appendix B1- Tipperary Risk Assessment for a more detailed assessment of the characteristics of the area).*

2.3 Partner principal response agencies

Other agencies responsible for Emergency Services in this area are: -

(a) Health Service Executive: South region comprising of counties Kerry, Cork, Waterford, Wexford, Carlow, Kilkenny and Tipperary South
Health Service Executive: West region comprising of counties Galway, Limerick Clare and Tipperary North.

(b) An Garda Síochána: Tipperary Division.

2.4 Regional Preparedness

Under certain specific circumstances regional level major emergencies may be declared, with a Plan for Regional Level Co-ordination activated. This will provide for mutual aid,

support and co-ordination facilities to be activated in a region, the boundaries of which are determined to suit the exigencies of the particular emergency. There are eight regions in total that have been created for Major Emergency purposes. The regions are indicated in Figure 2.1 below.

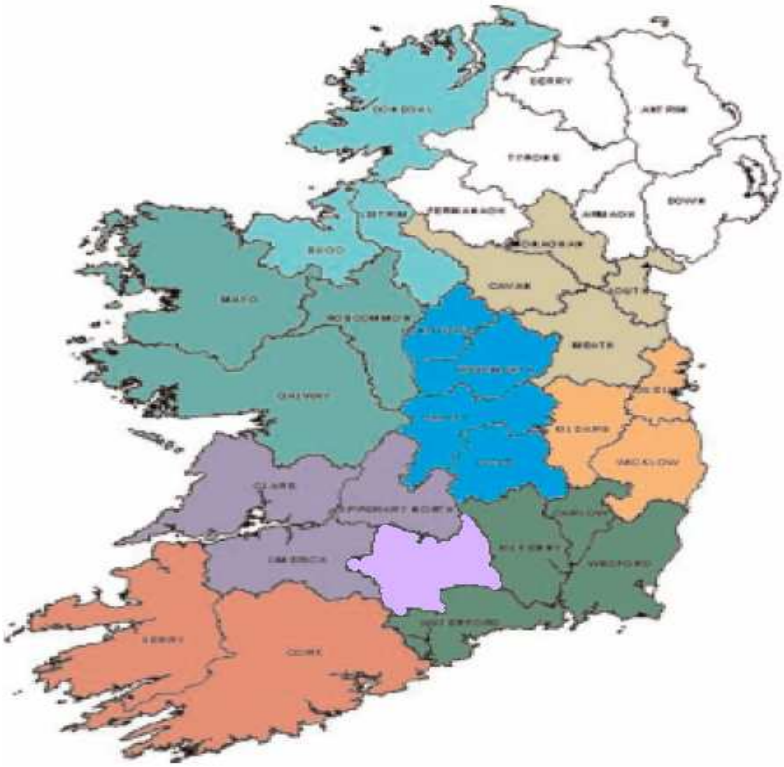

Figure 2.1: Map of the Major Emergency Management Regions

Tipperary County Council belongs to the Mid-West MEM region. This region incorporates the following counties;

- Tipperary
- Limerick
- Clare

An inter-agency Regional Steering Group is in place for the Mid-West Major Emergency Region with representatives of senior management from each of the Principal Response Agencies (PRAs).
A Regional Working Group on Major Emergency Management has also been established to support and progress major emergency management in the Mid-West Region.

Section 3

Risk Assessment for the Area

3.1 History of area in terms of emergency events.

To prepare effectively to deal with potential emergencies it is necessary to have regard to specific risks faced by a community. Risk Assessment is a process by which the hazards facing a particular community are identified and assessed in terms of the risk which they pose. *(See Appendix B1 for detailed Risk Assessments)*
Major emergencies by their very nature are relatively rare. A major emergency has, to date, never been declared in Tipperary. However, the county has experienced a number of emergency events over the years:

- Contamination of the drinking water supply in the Clonmel Area (2007)
- 5-car pile up on N8 near Cahir (2004)
- Large scale urban flooding in Clonmel (2004/2009/2010)
- Severe weather (2010/2011/2014) – leading to shortage of water supplies within the county
- Large gorse fires in Clonmel and Cahir areas (2007)

3.2 The general and specific risks that may be faced locally and regionally.

A number of risk holdings were identified and risk assessments have been carried out on these premises/areas. The risk assessment groups can be broken into the following areas;

1) Hazardous Sites Emergencies:

The European Communities (Control of Major Accident Hazards Involving Dangerous Substance) Regulations, 2006, apply to sites that hold certain quantities of specified dangerous substances. These are classified as upper tier and lower tier.
Merck Sharpe & Dohme (MSD), Ballydine is the only upper-tier site in Tipperary County Council functional area. These regulations require MSD to have Internal and External Emergency Plans, which will be linked to the MEP. The plans have identified credible scenarios *(see Appendix B1)* and the plans will be tested through various exercises, on an ongoing basis.

2) Critical Infrastructure Emergencies:

1. National Primary Roads e.g. N24, N7/M7 and N8/M8.
2. Iarnród Éireann: Main Cork-Dublin rail line running through the county.
3. Tipperary General Hospital, Clonmel.

3) Flooding /Pollution/Animal disease emergencies:

1. Tipperary County Council
2. Water supply contamination

4) Utility company emergencies:

1. Bord Gáis 2. E.S.B 3. Eircom

5) Aviation & CBRN emergencies:

Following international terrorist incidents in recent years, a number of Government Departments are involved in planning for emergencies on a national level for emergencies that involve aviation and CBRN (Chemical, Biological, Radiological & Nuclear agents). Aviation emergencies such as collisions have also been identified in the risk assessment process.

6) Civil Hazards

- Civil disorder / disturbance
- Major crowd safety – nightclub / event
- Mass shooting
- Food situation crisis
- Oil shortage
- Epidemics and pandemic
- Financial crisis

3.3 Scenarios

The following have been selected as exemplars on which preparedness for Tipperary has been based *(See Appendix B1, for detailed Risk Assessment)*

- Urban Flooding
- Aircraft Collision / Loss
- Water Contamination
- Credible scenario incidents at Merck Sharp & Dohme
- Fire / Major Crowd Safety and Civil Disorder
- Major RTA (Road Traffic Accident) / Hazardous Material (Hazmat)
- Natural Gas Explosion along the main Cork-Dublin Gas Line
- Loss of Critical IT Infrastructure
- Rail Incident

3.4 Risk management / mitigation / risk reduction strategies

There are several risk prevention and mitigation strategies in place in relation to the potential hazards listed above, through the day-to-day functions of the Local Authority and relevant stakeholders as well as various regulations in place. Information on these strategies is provided in Tipperary County Council's Risk Assessment Document, contained in *Appendix C1* to this plan.

3.5 Associated Plans and their compatibility with the Major Emergency Plan.

Associated with this Plan are Section Plans for: *(see Appendix A2):*
Fire Service
Civil Defence
Housing
Roads Section
Environment Section
Water Services
Community & Entreprise
Municipal District Plans

A separate appendix deals with the External Emergency Plan for Merck Sharpe & Dohme in accordance with the European Communities (Control of Major Accident Hazards Involving Dangerous Substance) Regulations, 2006 *(Appendix A3)*. The credible scenarios recognised for this site have been considered in the Tipperary Risk Assessment *(Appendix B1).*

Other such plans linked to Tipperary's Major Emergency Plan include 'Emergency Plan for Blizzard Conditions', 'Plan for the protection of Public Water Supplies' and the 'Flood Response Plan' *(Appendix A2)*.

This major emergency plan will take supremacy over any conflict with the existing plans. It is the responsibility of the relevant Sections to ensure that the existing plans are updated to ensure compatibility with this plan.

National Guidelines for generic incidents will be issued on an on-going basis on the national major emergency website: www.mem.ie

Section 4

Resources for Emergency Response

4.1 Structure / resources / services of the Council

The organisational structure of Tipperary County Council consists of the Elected Members (of which there are 40) and the County Manager and his/her staff. Details of these can be found on the Tipperary County Council website (www.tipperarycoco.ie).

The Fire and Rescue Service of Tipperary County Council maintains fire brigades at the following 12 locations:

Borrisokane
Cahir
Carrick-on-Suir
Cashel
Clonmel
Cloughjordan
Nenagh
Newport
Roscrea
Templemore
Thurles
Tipperary Town

The Fire Service in Tipperary is a Retained Fire Service. Additionally, two Senior Fire Officers are rostered on call at all times to assist in the management of emergency incidents.

4.2 Special staffing arrangements during a Major Emergency

Any Tipperary County Council staff requested to carry out functions in relation to a Major Emergency will be mobilised in accordance with pre-determined procedures. In addition, Civil Defence, under the Authority of Tipperary County Council can be mobilised through pre-determiners arrangements.

4.3 How resources of the Council are matched to the functions assigned to it

Tipperary County Council has identified, matched and formally nominated competent individuals and alternates to the key roles to enable the Council to function in accordance with the common arrangements set out in this plan.
Support teams have been put in place for key roles, and operational protocols have been established setting out the arrangements which enable the Council's support teams

mobilise and operate. *(see Appendix C2 also see Appendix F5 of the document 'A Framework for Major Emergency Management)*

4.4 Other organisations / agencies that may be mobilised to assist

There are a number of organisations and agencies, which may be called upon to assist the principal response agencies in responding to major emergencies in addition to specialist national and local organisations. These organisations are:

- Civil Defence
- Defence Forces
- Irish Coast Guard
- Irish Red Cross
- Voluntary Emergency Services (SEMRA (South Eastern Mountain Rescue Association), River Rescue, SRDA (Search and Rescue Dog Association), I.C.R.O. (Irish Cave Rescue Organization), Order of Malta).
- Community Volunteers
- Utility companies (ESB, Bord Gáis, Bus Éireann etc.)
- Private contractors

(See Appendix C1- Tipperary Voluntary Emergency Resources).

4.4.1 Civil Defence

Civil Defence, which is part of the Local Authority, is a body of trained volunteers in the disciplines of first aid, rescue, firefighting, welfare, water based activities, search and recovery. There are currently 236 registered active members in Tipperary. A call out system is in place in the event of an emergency. Civil Defence is available to help with any area assigned to them to assist the local authority or other Statutory Service, subject to the availability of volunteers. *(See Appendix C1)*

4.4.2 The Defence Forces

The Defence Forces can provide significant support in a major emergency response. However, these capabilities are primarily deployed in a military role at home and in peace support operations overseas and their deployment in a major emergency situation may require a lead in time to facilitate redeployment. Provision of Defence Forces capabilities is dependent on the exigencies of other demands and on prior agreed arrangements through Memorandums of Understanding and Service Level Agreements between the Department of Defence, the Defence Forces and relevant Government Departments.
It is recognised that assistance requested from the Defence Forces should be either in Aid to the Civil Power (An Garda Síochána), primarily an armed response or in Aid to the Civil Authority (Local Authority or Health Service Executive) unarmed response.

All requests for Defence Forces assistance should be channelled through An Garda Síochána to Defence Forces Headquarters (DFHQ) in accordance with the relevant MOUs or SLAs.

4.4.3 The Irish Red Cross

The Irish Red Cross is established and regulated under the Red Cross Acts, 1938-54. These statutes define a role for the Irish Red Cross as an auxiliary to the state authorities in time of emergency and also provide a specific mandate to assist the medical services of the Irish Defence Forces in time of armed conflict. The main relationship with the principal response agencies in major emergency response is as an auxiliary resource to the ambulance services. Subsidiary search and rescue and in-shore rescue units of the Irish Red Cross also support An Garda Síochána and the Irish Coast Guard. *(See Appendix C1)*

4.4.4 Voluntary Emergency Services Sector

The normal range of voluntary emergency services includes the Order of Malta Ambulance Corps, St. John's Ambulance Service, Lake Rescue Units (Lough Derg), RNLI, South Eastern Mountain Rescue Association, Carrick-on-Suir River Rescue, Search and dog Association, Cahir River Rescue/Diving Unit, Irish Cave Organization etc. Their ongoing service to the public includes attendance at public events, as well as searches for missing persons and rescue of persons in distress. The majority of these voluntary services are linked to the principal response agencies of An Garda Síochána and the HSE. The Civil Defence is the main voluntary emergency service linked to Tipperary County Council. *(See Appendix C1)*

4.4.5 The community affected

It is recognised that communities that are empowered to be part of the response to a disaster, rather than allowing themselves to be simply victims of it, are more likely to recover and to restore normality quickly, with fewer long-term consequences.

At an early stage the On-Site Co-ordinator, in association with the other Controllers, should determine if ongoing assistance is required from 'casual volunteers' within the community, so that An Garda Síochána cordoning arrangements can take account of this. Where the On-Site Co-ordinator determines that casual volunteers should be integrated into the response, it is recommended that the service tasking them, or confirming them in tasks on which they are engaged, should request volunteers to form teams of three to five persons, depending on the tasks, with one of their number as team leader. Where available, orange armbands emblazoned with the word 'Volunteer' or suitable abbreviation, e.g. 'VOL', will be issued by Civil Defence, with whom they will be offered a temporary volunteer status.

4.4.6 Utilities

Utilities are frequently involved in the response to emergencies, usually to assist the PRAs in making situations safe. They may also be directly involved in restoring their own services, for example, electricity supply in the aftermath of a storm.

It is important that there is close co-ordination between the PRAs and utilities involved in or affected by an emergency. Utilities operate under their own legislative and regulatory frameworks but, during the response to an emergency, they need to liaise with the On-Site Co-ordinator. It is also recommended that representatives of individual utilities on site should be invited to provide a representative for the On-Site Co-ordination Group. It is recommended that individual utilities be invited to attend and participate in relevant work of Local Co-ordination Groups *(See Appendix C2- Resource Contact Personnel and Telephone Numbers)*.

4.4.7 Private Sector

Private sector organisations may be involved in a major emergency situation in a number of ways, through, for example, ownership of the site where the emergency has occurred or through ownership of some element involved in the emergency e.g. an aircraft, bus, factory, etc. They may also be called on to assist in the response to a major emergency by providing specialist services and equipment, which would not normally be held or available within the PRAs. *(See Appendix C2)*

4.5 How mutual-aid will be sought from neighbours

The Local Co-ordination Group may request assistance via mutual aid arrangements from a neighbouring county. Such support is not equivalent to the activation of the Plan for Regional Level Co-ordination and will often precede the activation of the regional plan. Support is most likely to be requested initially from the bordering counties: Clare, Galway, Limerick, Offaly, Laois, Cork, Waterford and Kilkenny.

4.6 Regional level of co-ordinated response

The local response to a major emergency may be scaled up to a regional level where the nature of an emergency is such that:

- the resources available in the local area where the emergency happens do not appear to be sufficient to bring the situation under control in an expeditious and efficient manner; or
- the consequences of the emergency are likely to impact significantly outside of the local area; or
- the emergency is spread across more than one Local Authority or Division of An Garda Síochána; or
- the emergency occurs at or close to a boundary of several of the principal response agencies.

In the event of a regional level response the lead agency, which has declared the regional level emergency, will convene and chair the Regional Co-ordination Group. Depending on the circumstances, the goal of regional co-ordination may be achieved by using a single Regional Co-ordination Centre.

The method of operation of a Regional Co-ordination Centre will be similar to that of a Local Co-ordination Centre. *(See Section 9 of this document)*

4.7 National / international assistance

The Mid-West Regional Co-ordination Group should identify and dimension the level/type of assistance likely to be required and its duration. It should also seek to identify the possible options for sourcing such assistance, be that from neighbouring Regions, elsewhere in the state, the United Kingdom or from other EU member states.

The Mid-West Regional Co-ordination Group may also request assistance from Government. National resources will be available in the event of a major emergency at local or regional level. Requests for assistance should be developed at local or regional co-ordination level and directed by the lead agency to the lead Government Department.

The European Community has established a Community Mechanism to facilitate the provision of assistance between the member states in the event of major emergencies. The chair of the Tipperary Local Coordination Group or the Mid-West Regional Coordination Group should make requests for such assistance to the National Liaison Officer at the Department of the Environment, Community and Local Government.

Section 5

Preparedness for Major Emergency Response

5.1 The incorporation of major emergency management into the Council's business planning process

The development of the Tipperary County Council Major Emergency Plan is part of an emergency management programme which was developed to ensure that all necessary arrangements; systems, people and resources are in place to discharge the functions assigned to it. The plan therefore does not stand-alone but is in fact incorporated into the Council's management programme. This management programme is designed to maintain a continuous level of preparedness within the county.

5.2 Assignment of responsibility

The implementation of the Major Emergency Management Programme within Tipperary County Council has been assigned to the Director of Services with responsibility for Emergency Services supported by the Chief Fire Officer and staff members within the fire services. All sections within the Local Authority are involved in preparing the Plan and a Major Emergency Development Committee consisting of senior local authority staff meets on a regular basis.

5.3 Documentation of a major emergency development programme

Documentation of the major emergency development programme is held in the Tipperary Fire & Rescue Headquarters, Fire Station, Limerick Road, Nenagh.

5.4 Key roles identified in the Major Emergency Plan

Tipperary County Council has nominated competent individuals and alternates to the key roles to enable the Council to function in accordance with the common arrangements set out in the Major Emergency Plan. The key roles identified include:

- Controller of Operations
- On-Site Co-ordinator
- Chair of Crisis Management Team
- Chair of Local Co-ordination Group
- Chair of Regional Co-ordination Group
- Information Management Officers
- Media Liaison Officers

5.5 Support teams for key roles

Support teams will be formed to support and assist individuals in key roles and will prepare Operational Protocols setting out the arrangements which will enable the agency's support teams to be mobilised and function in accordance with the arrangements set out in the Major Emergency Plan.

5.6 Staff development programme

The provisions of the Framework and the tasks arising from the new major emergency management arrangements involve a significant level of development activity, both within Tipperary County Council and jointly with our regional partners.
In parallel with risk assessment and mitigation processes and the preparation of the Major Emergency Plan, Tipperary County Council will initiate an internal programme to develop its level of preparedness, so that in a major emergency it will be in a position to respond in an efficient and effective manner and discharge the assigned functions in accordance with the Framework.

It is also imperative that we not only develop within our own agency but that we also continue to work with the other PRA's through continued training and inter-agency exercises. To achieve this on a national level, personnel from each of the PRAs within a region will be appropriately trained and these trainers will deliver training at both local and regional level. Inter-agency exercises will also be held on a regular basis, allowing each of the agencies to develop working relationship prior to the declaration of a Major Emergency, should one arise.

5.7 Training programme

All personnel involved in the Major Emergency Plan organisation will be required to participate in inter-agency training and exercises in order to ensure effective co-operation between agencies during a Major Emergency.

5.8 Internal exercises

Internal exercises will be used to raise awareness, educate individuals on their roles and the roles of others and promote co-ordination and cooperation, as well as validating plans, systems and procedures.

5.9 Joint / inter-agency training and exercise

Joint inter-agency training will be provided at both local and regional level, co-ordinated by the Mid-West Regional Working Group. Exercises will help to develop competence in tandem with this training in order to improve awareness and educate all involved in the roles and functions of the PRA's in the event of an emergency. Exercises will be undertaken on a three-yearly cycle.

5.10 The allocation of specific resources including a budget for preparedness.

Tipperary County Council and the Mid-West Regional Steering Group will put the necessary arrangements in place to provide resources including a budget for major emergency preparedness, which reflects the expenditure required to meet the costs of implementing the Council's internal preparedness, as well as the Council's contribution to the regional level inter-agency preparedness.

5.11 Procurement Procedures

The arrangements to authorise procurement and use of resources (including engaging third parties) to assist in response to major emergencies are governed by the Local Government Act 2001: Part 12: Section 104.
Designated officers, including Controllers of Operations, are authorised to procure goods or services and deploy resources necessary to deal with the situation when a major emergency is declared and where the normal procurement processes are not relevant or applicable.

5.12 Annual appraisal of preparedness

Tipperary County Council will carry out and document an annual internal appraisal of its preparedness for major emergency response, and will appraise and update this Plan annually or as required. On completion, an appraisal report shall then be sent to the Department of Environment, Community and Local Government in accordance with the Appraisal Document.
An annual appraisal of the Mid-West Regional level preparedness shall also be documented in accordance with the Appraisal Document.

5.13 Steps taken to inform the public as to what action they should take in the event of an emergency.

There may be situations where it will be necessary for Tipperary County Council to provide timely and accurate information directly to the public on an emergency situation. This will be especially important where members of the public may perceive themselves and their families to be at risk and are seeking information on actions that they can take to protect themselves and their families.
The Local Co-ordination Group will take over the task of co-ordinating the provision of information to the public as soon as it meets. This activity will be co-ordinated by the lead agency. The Local Co-ordination Group may establish a sub-group for this purpose and use all available channels to make concise and accurate information available. This may include the use of dedicated "help-lines", web-pages, Aertel, automatic text messaging, as well as through liaison with the media.

Section 6

The Command, Control and Co-ordination Systems

6.1 Command arrangements

The Chief Executive of Tipperary County Council is responsible for the Council's major emergency management arrangements and preparedness, as well as for the effectiveness of the Council's response to any major emergency which occurs in its functional area.

6.1.1 Within individual services belonging to the Council.

Tipperary County Council will exercise command over its own services in accordance with its normal command structure. At the site of an emergency, it will exercise control over not only its own services but also any additional services (other than the PRA's) which the Council mobilises to the site. The Controller of Operations will exercise control of the Local Authority services at the site of the Emergency.

6.2 Control arrangements

Tipperary County Council will appoint a Controller of Operations at the site (or at each site) of the emergency. The officer in command of the initial response of each Principal Emergency Service should be the PRA's Controller of Operations until relieved through the agency's pre-determined process.
Please see section 6.3.4.2 for arrangements where an emergency affects an extensive area or occurs near the Council's borders.

6.2.1 Control of all services / sections of the Council which respond

Controller of services/sections and Controller of Operations

The Controller of Operations is empowered to make all decisions relating to his/her agency's functions, but must take account of decisions of the On-Site Co-ordination Group in so doing.
The role of the Controller of Operations is set out below:

- To make such decisions as are appropriate to the role of controlling the activities of the Council's services at the site (controlling in this context may mean setting priority objectives for individual services; command of each service should remain with the officers of that service);
- To meet with the other two Controllers and determine the lead agency;
- To undertake the role of On-Site Co-ordinator, when the Council is identified as the lead agency;
- To participate fully in the site co-ordination activity, including the establishment of a Site Management Plan;

- Where another service is the lead agency, to ensure that the Council's operations are co-ordinated with the other PRAs, including ensuring secure communications with all agencies responding to the major emergency at the site;
- To decide and request the attendance of such services as s/he determines are needed;
- To exercise control over such services as s/he has requested to attend;
- To operate a Holding Area to which personnel from the Council will report on arrival at the site of the major emergency and from which they will be deployed;
- To requisition any equipment s/he deems necessary to deal with the incident;
- To seek such advice as s/he requires;
- To maintain a log of the Council's activities at the incident site and decisions made;
- To contribute to and ensure information management systems operate effectively;
- To liaise with the Council's Crisis Management Team on the handling of the major emergency.

On-Site Co-ordinator

On-site decisions should be arrived at generally by the consensus of the On-Site Co-ordinating Group. Where consensus is not possible, the On-Site Co-ordinator should only make decisions after hearing and considering the views of the other two Controllers. The mandate of the On-Site Co-ordinator is set out below:

- To assume the role of On-Site Co-ordinator when the three controllers determine the lead agency. Once appointed s/he should note the time and that the determination was made in the presence of the two other controllers on site;
- To inform all parties involved in the response that s/he has assumed the role of On-Site Co-ordinator;
- To determine which facility should be used as the On-Site Co-ordination Centre. Depending on the circumstance, this may be a vehicle designated for the task, a specific, purpose-built vehicle, a tent or other temporary structure or an appropriate space/building adjacent to the site, which can be used for coordination purposes;
- To ensure involvement of the three PRA's and the PES's (and others, as appropriate) in the On-Site Co-ordination Group;
- To ensure that mandated co-ordination decisions are made promptly and communicated to all involved;
- To ensure that a Scene Management Plan is made, disseminated to all services and applied;
- To develop an auditable list of Actions (an Action Plan) and appoint an Action Management Officer where necessary;
- To determine if and what public information messages are to be developed and issued;
- To ensure that any media briefings are co-ordinated;
- To ensure that pre-arranged communications (technical) links are put in place and operating;

- To ensure that the information management system is operated, including the capture of data for record-purposes at regular intervals;
- To ensure that the ownership of the lead agency role is reviewed, and modified as appropriate;
- To ensure that inter-service communication systems have been established and that communications from the site to the Local Co-ordination Centre have been established and are functioning;
- To exercise an over-viewing role of all arrangements, to mobilise additional resources to the site of the major emergency, and to track the status of mobilisation requests, and deployment of additional resources;
- To ensure that, where the resources of an individual PRA do not appear to be sufficient to bring a situation under control, or the duration of an incident is extended, that support is obtained via mutual aid arrangements with neighbouring PRAs;
- To determine, at an early stage, if ongoing assistance is required from casual volunteers, so that An Garda Síochána cordoning arrangements can take account of this;
- To co-ordinate external assistance into the overall response action plan;
- To ensure that, where appropriate, pastoral services are mobilised to the site and facilitated by the PRAs in their work with casualties;
- To work with the Health Service Executive Controller to establish the likely nature, dimensions, priorities and optimum location for delivering any psycho-social support that will be required, and how this is to be delivered and integrated with the overall response effort;
- To decide to stand down the major emergency status of the incident at the site, in consultation with the Controllers of Operations, and the Local Co-ordination Group;
- To ensure that all aspects of the management of the incident are dealt with before the response is stood down; and,
- To ensure that a report on the co-ordination function is prepared in respect of the major emergency after it is closed down, and circulated (first as a draft) to the other services that attended.

Local co-ordination Group:

Once the Local Co-ordination Group has been activated their mandate is as follows:

- To establish high level objectives for the situation, and give strategic direction to the response;
- To determine and disseminate the overall architecture of response co-ordination;
- To anticipate issues arising;
- To provide support for the on-site response;
- To resolve issues arising from the site;
- To ensure the generic information management system is operated;
- To take over the task of co-ordinating the provision of information for the public as soon as it meets and to use all available channels to make concise and accurate information available;

- To decide and to take action to manage public perceptions of the risks involved, as well as managing the risks, during emergencies that threaten the public;
- To co-ordinate and manage all matters relating to the media, other than on-site;
- To establish and maintain links with the Regional Co-ordination Centre (if involved);
- To establish and maintain links with the lead Government Department/National Emergency Co-ordination Centre;
- To ensure co-ordination of the response activity, other than the on-site element;
- To decide on resource and financial provision; and
- To take whatever steps are necessary to plan for recovery.

Crisis Management Team

The Council's Crisis Management Team is a strategic level management group which is assembled during a major emergency to:

- Manage, control and co-ordinate the Council's overall response to the situation;
- Provide support to the Council's Controller of Operations on site and mobilise resources from within the Council or externally as required;
- Liaise with relevant Government Departments on strategic issues; and
- Ensure appropriate participation of the Council in the inter-agency co-ordination structures.

The members of the Crisis Management Team as designated in *Appendix C2,* will meet at the new Fire Training and Development Building, Heywood Road, Clonmel in the case of major emergencies occurring in South Tipperary, or at the Council Chamber, Civic Offices, Limerick Road, Nenagh in the case of major emergencies in North Tipperary. The use of the Crisis Management Team facilitates the mobilisation of senior staff to deal with the crisis, in light of the evolving situation, rather than leaving multiple roles to a small number of individuals who hold key positions. In this way, the objectives of prioritising and managing a protracted crisis can be dealt with effectively, while keeping the day-to-day business running.

The Crisis Management Team provides support to the Council's representative at the Local Co-ordination Group, supports the Council's Controller of Operations on site and maintains the Council's normal day-to-day services that the community requires.

6.2.2 Control of external organisations / agencies mobilised to assist the Council during the response.

There are a number of organisations and agencies, which may be called on to assist the council in responding to major emergencies. At the site of an emergency, Tipperary County Council will exercise control over not only its own services but also any additional services (other than the PRAs), which the Local Authority mobilises to the site.

6.2.3 Support arrangements for the Control function.

Tipperary County Council staff will respond to any major emergency in accordance with pre-determined agreements. The Crisis Management Team will control all Council personnel that respond to the emergency.

6.3 Co-ordination Arrangements

The co-ordination of the efforts of all services is recognised as a vital element in successful response to major emergencies.

6.3.1 Lead Agency

The concept of the Lead Agency is accepted as the method for establishing which PRA has initial responsibility for the coordination of all services at the various levels of response to a Major Emergency. The pre-determined and default lead agencies for different types of emergencies are set out in *Appendix D1*.

6.3.2 On Site Co-ordination function, including arrangements for support teams

The On-Site Controller of Operations and the On-Site Co-ordination Group facilitate on-site Co-ordination. The rolls of the On-site Co-ordinator and the On-Site Co-ordination Group have been outlined in *section 6.2.1 of this document*.

6.3.3 Co-ordination function at the Local/Regional Co-ordination Centres

When a major emergency has been declared and the lead agency determined, the relevant personnel of the lead agency should implement a Local Co-ordination Group mobilisation procedure. The representative of the lead agency will chair the Local Co-ordination Group, located in the Local Co-ordination centre, and will exercise the mandates associated with this position. The Local Coordination Group will comprise representatives of the other two PRA's, an Information Management Officer, a Media Liaison Officer, an Action Management Officer (where considered necessary), and representatives of other agencies and specialists, as appropriate.
The Chair of the Local Co-ordination Group may declare a regional level emergency and activate the Plan for Regional Level Co-ordination.
Any one of the nominated Local Co-ordination Centres may be used as a Regional Coordination Centre, or a specific Regional Centre may be designated for this purpose. The choice of location will be determined in each situation by the Chair of the Local Coordinating Group declaring the regional level emergency and will depend on the location and nature of the emergency and any associated infrastructural damage.

6.3.4 Co-ordination in other specific circumstances

In order to achieve co-ordination in other specific circumstances, if considered appropriate representatives from other agencies and specialists will be invited to participate in the co-ordination process.

6.3.4.1 Mutual aid and regional level co-ordination

Each Controller of Operations should ensure that, where the resources of his/her individual principal response agency do not appear to be sufficient to bring a situation under control, or the duration of an incident is extended, support is obtained via mutual aid arrangements with neighbouring PRAs. As national organisations, the Crisis Management Teams of the Health Service Executive and An Garda Síochána should arrange to provide the additional support required. Local Authorities will support each other on a mutual aid basis. *See section 4.5 and 4.6 of this document.*

6.3.4.2 Incidents occurring on the Council boundaries

Attendance at emergency incidents by the Fire Service is determined by Pre-Determined Attendance procedures (PDA's) in operation through the Minster Regional Communications Centre (MRCC). As such, incidents on the Council boundaries will be dealt with through these procedures.

6.3.4.3 Multi-site or wide area emergencies

Multi-site or wide area emergencies may require the setting up of multiple Local Co-Ordination Groups. During such an emergency each Local Co-ordination Group will be in contact with the lead Government Department and, in such a situation, the decision on whether the activities of a number of Local co-ordination Groups should be co-ordinated via a Regional co-ordination Centre or via the lead Government Department will be taken in light of the prevailing circumstances.

6.3.4.4 Links with National Emergency Plans

Links with National Emergency Plans are shown in figure 6 with further detail provided in Section 10.

6.3.4.5 Links with National Government

Contact with the Government will be made through the Local Coordination Group.

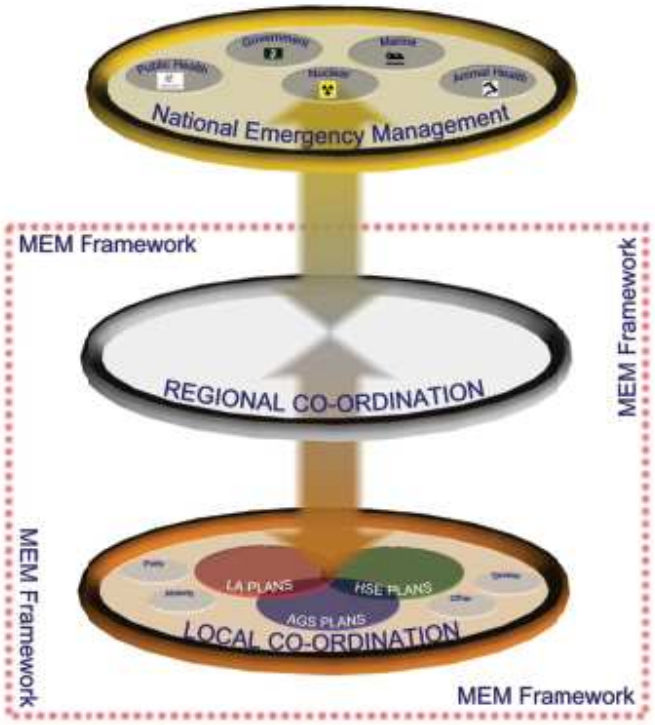

Figure 6: Linking Major Emergency Plans with National Plans and Other Plans

Section 7

The Common Elements of Response

7.0 Sub-sections containing common elements of the response to any major emergency

7.1 Declaring a Major Emergency

7.2 Initial Mobilisation

7.3 Command, Control and Communication Centres

7.4 Co-ordination Centres

7.5 Communications Facilities

7.6 Exercising the Lead Agency's Co-ordination Roles

7.7 Public Information

7.8 The Media

7.9 Site Management Arrangements

7.10 Mobilising Additional Resources

7.11 Casualty and Survivor Arrangements

7.12 Emergencies involving Hazardous Materials

7.13 Protecting Threatened Populations

7.14 Early and Public Warning Systems

7.15 Emergencies arising on Inland Waterways

7.16 Safety, Health and Welfare Considerations

7.17 Logistical Issues/ Protracted Incidents

7.18 Investigations

7.19 Community/ VIPs/ Observers

7.20 Standing-Down the Major Emergency

Section 7.1

Declaring a Major Emergency

7.1.1 Declaring a Major Emergency

The Major Emergency Plan should be activated by whichever of the following agencies first becomes aware of the major emergency:-
Tipperary County Council *(see Appendix E1 for persons authorised to activate plan)*
An Garda Síochána
Health Service Executive
A typical message to declare a major emergency should be in the following format:

This is …….. (Name, rank and service) ……..
A ……. (Type of incident) ……. has occurred/is imminent at ……
(Location) …….……
As an authorised officer I declare that a major emergency exists.
Please activate the mobilisation arrangements in the …….. (Agency) …….. Major Emergency Plan.

7.1.2 Standard format of the information message

After the declaration is made the Officer should then use the mnemonic **METHANE** to structure and deliver an information message.

M	**Major Emergency Declared**
E	**Exact location of the emergency**
T	**Type of Emergency (Transport, Chemical, etc.)**
H	**Hazards, present and potential**
A	**Access / egress routes**
N	**Number and type of Casualties**
E	**Emergency service present and required**

Section 7.2

Initial Mobilisation

7.2.1 Major Emergency Mobilisation Procedure

Tipperary County Council's Major Emergency Mobilisation Procedure will be implemented immediately on notification of the declaration of a major emergency. When this Plan has been activated, each Council service requested shall respond in accordance with pre-determined arrangements. *See Appendix E1*

In some situations, there may be an early warning of an impending emergency. Mobilisation within Tipperary County Council may include moving to a standby/alert stage for some of its services or specific individuals, until the situation becomes clearer.

There may also be circumstances where the resources or expertise of agencies other than the PRAs will be required. In these situations the relevant arrangements outlined in the Major Emergency Plan will be invoked. No third party should respond to the site of a major emergency unless mobilised by one of the principal response agencies through an agreed procedure.

Section 7.3

Command, Control and Communication Centres

7.3.1 Command, control and communication centre(s) to be used

In the event of a Major Emergency being declared initial mobilisation will be provided by the Munster Regional Control Centre, who will communicate with the personnel on-site until such a time as the Crisis Management Team and Co-ordination Group have been established in accordance with pre-determined arrangements. *Please refer to Section 6 of this document for further details on the functions of these Teams/Groups*.

After the declaration of a major emergency and the setting up of co-ordination centres and teams, communication with the MRCC will come from the Local Authority Crisis Management Team (located off site), with On-site Co-ordination personnel reporting to the Local Co-ordination Centre and their relevant Crisis Management Teams, as detailed in Figure 7

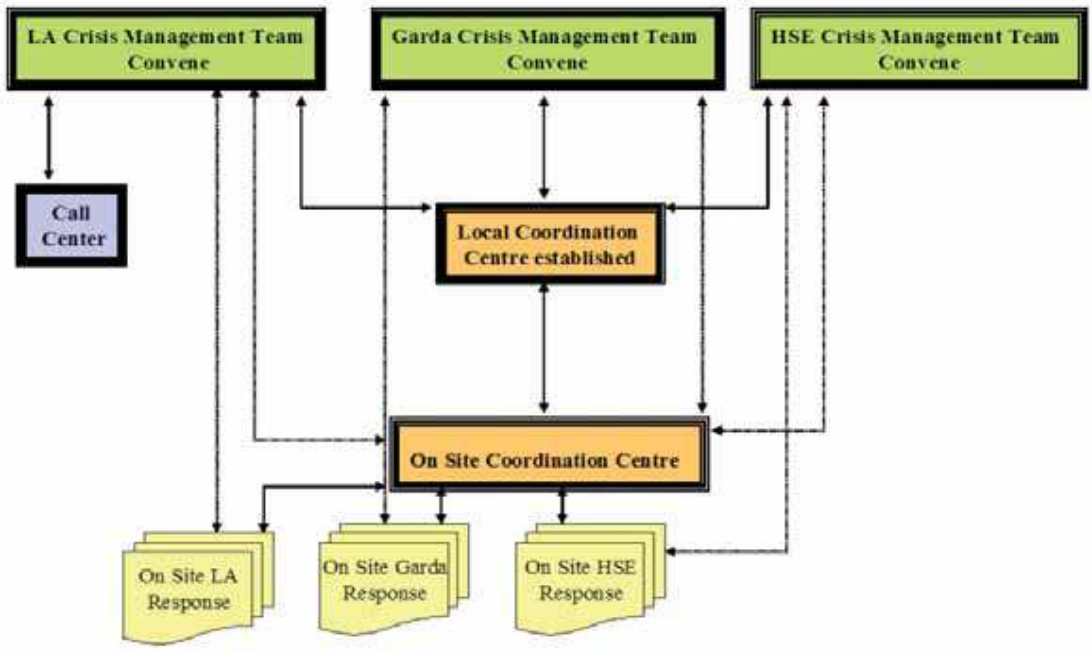

Figure 7. Communication Structure in a Major Emergency

Section 7.4

Co-ordination Centres

7.4.1 On-Site Co-ordination

An onsite co-ordination centre will be deployed in the event of a major emergency for onsite operational command and support. This may be a dedicated MEM vehicle, tent or an adjacent building that will accommodate all PRA's.

7.4.2 Crisis Management Team

The Crisis Management Team is a strategic level management group within each PRA, which is assembled during a major emergency. It provides support to the PRA's representative at the Local Co-ordination Group, supports their own Controller of Operations on site and maintains the agency's normal day-to-day services that the community requires.
Please refer to Section 6.2.1 of this document for further details.

7.4.3 Location of pre-determined Local Co-ordination Centres

PRA's within Tipperary have identified the following locations as suitable for the Local Co-ordination Centre for strategic level co-ordination;

- Tipperary Fire Service New Training Building, Heywood Rd, Clonmel, or
- Civic Offices, Nenagh, depending on the location of the emergency.

These buildings have been chosen to facilitate the effective working of the Local Co-ordination Group and Local Authority Crisis Management Team. *Please refer to (1) Section 6 of this document, (2) 'Guidance to setting up a Co-ordination Centre' on www.mem.ie, and (3) Appendix C2 for further details.*

7.4.4 Location of the predetermined Regional Co-ordination Centre(s)

The Local Co-ordination Centre will have the capacity to act as a Regional Co-ordination Centre, should the major emergency be scaled up to a regional level.

7.4.5 Information management

Information Management Officers will be assigned to facilitate the gathering, sharing, processing and use of information arising from the major emergency through the use of a generic Information Management System outlined in Appendix F10 of 'A Framework for Major Emergency Management' and through the training they have received.

Section 7.5

Communications Facilities

7.5.1 Communications systems

Generally, all Tipperary County Council personnel that are may be required to respond to a major emergency carry mobile phones. In addition, the following communications systems are available:

- Fire service
  All front line appliances are equipped with radios (VHF) and have the ability to communicate within the functional area of Tipperary. There are also hand-held UHF radios UHF available for on-site communications. A number of satellite phone are also available for use through the fire service in the event of a major emergency
- Civil Defence
  Civil Defence operates both mobile radio (VHF) for communication between vehicles and communication centres and hand-portable radio (UHF) for communication on site. A digital multi-line phone and fax service is also available at Civil Defence Headquarters. There are also a number of handheld and fixed Marine VHF radios (held in the North of the County) allowing communication with the Irish Coast Guard.

7.5.2 Inter-agency communication on site, including protocols and procedures

Communication systems serve command structures within services and it is neither necessary nor desirable that there is inter-agency radio communication at all levels. However, it is critical that robust arrangements for inter-agency communication on site(s) are provided for at Controller of Operations level as a minimum. For this purpose, the fire service will bring hand-portable radios and satellite phones, dedicated specifically to inter-agency communication, to the site of the emergency.

It is also crucial that there are appropriate communication links between different elements of the site management, as described in Section 7.9.

7.5.3 Communications between site and coordination centres

All communication between On-site Co-ordination and the Local Co-ordination will pass between the Controller of Operations/On-site Co-ordinator to the Local Co-Ordination group, supported by the work of trained Information Management Officers at the co-ordination centres. Communications between the site and the Co-ordination Centre will be facilitated by way of radio/phone/fax/e-mail systems available to relevant personnel at

the time. Resilient communication may also be achieved by used of satellite telephones at each co-ordination centre. Further guidance is contained in the Communications Plan (see *Appendix G7*).

Section 7.6

Exercising the Lead Agency's Co-ordination Roles

7.6.1 Lead Agency

One of the three PRA's will be designated as the lead agency for any emergency and will assume responsibility for leading co-ordination. *See Section 6.3.1 of this Document.*

7.6.2 Review and transfer of the Lead Agency

The lead agency role may change over time, to reflect the changing circumstances of the major emergency. Ownership of the lead agency mantle should be reviewed at appropriate stages of the major emergency. All changes in lead agency designation emanating from the site, and the timing thereof, will be by agreement of the three Controllers of Operations, and should be recorded and communicated as per the initial determination, informing the Local Co-ordinating group. As the emphasis of operations may shift from the site to other areas, the Local Co-ordination Group may review the issue and determine a change in the lead agency, as appropriate.

7.6.3 Council's co-ordination function as a "Lead Agency"

In the event of Tipperary County Council being assigned the Lead Agency role, it will be assigned the responsibility for the co-ordination function (in addition to its own functions) and it should lead all the co-ordination activity associated with the emergency both on-site and off-site, and make every effort to achieve a high level of co-ordination. The function of the lead agency for any emergency includes ensuring:

- involvement of the three PRA's and the Principal Emergency Services in sharing information on the nature of the emergency situation;
- involvement of the range of organisations (other than PRA's) who may be requested to respond in co-ordination activities and arrangements;
- mandated co-ordination decisions are made promptly and communicated to all involved;
- site management issues are addressed and decided;
- public information messages and media briefings are co-ordinated and implemented;
- pre-arranged communications (technical) links are put in place and operating;
- operating the generic information management systems;
- ownership of the lead agency role is reviewed, and modified as appropriate;
- all aspects of the management of the incident are dealt with before the response is stood down;
- a report on the co-ordination function is prepared in respect of the emergency after it is closed down, and circulated (first as a draft) to the other services which attended.

Section 7.7

Public Information

7.7.1 Early warning / Special Public warning arrangements

There are circumstances when it may be necessary to protect members of the public who are in the vicinity of an emergency event. This protection is usually achieved by moving people temporarily to a safe area, by evacuation where appropriate or feasible, or by advising affected individuals to take shelter in an appropriate place. The On-Site Co-ordinator will take the decision on how best to protect a threatened population, after consultation with the other Controllers of Operations.
The Local Co-ordination Group should manage the task of co-ordinating the provision of information to the public as soon as it meets. This activity should be co-ordinated by the lead agency.

7.7.2 Public Notices

Early warning and special public notices will be relayed in the event of an emergency. The Public can be kept informed by use of the following;

- Internet service (www.tipperarycoco.ie);
- Local broadcasters;
- Emergency helpline service.

On a national level the public can be informed by use of Television and Radio. Arrangements exist whereby emergency announcements may be made on RTÉ television and radio channels.

Please refer to a 'Guide to working with the Media' for further information (see www.mem.ie). *See Appendix C3 for useful phone numbers.*

Section 7.8

The Media

7.8.1 Arrangements for liaison with the media.

The media will respond quickly to a large-scale incident and this media presence may extend into days or weeks. It is the responsibility of the lead agency to establish a Media Centre at or near the site of the emergency for use by the PRA's in dealing with the media at the site. The Local Co-ordination Group will be responsible for official media statements and press releases off/on-site. *Please refer to a 'Guide to working with the Media' for further information (www.mem.ie).* *See Appendix A2 Sub-plans - Inter-Agency Public Communication Plan: Media Liaison*

7.8.2 Arrangements for media on-site

A Media Liaison Officer will be appointed at both the On-site and Local Co-ordination Centres. The Media Liaison Officer must keep accurate and timely information on the emergency so that, in consultation with the local Co-ordination Groups, h/she should:

- Be the point of contact for all media enquiries.
- Answer information queries from the general public.
- Obtain and provide information from/to Rest Centres, other agencies, press officers, local radio, press etc.
- Be responsible for setting up an information helpline.
- Liaise with other Media Liaison Officers.

7.8.3 Arrangements for media at Local and /or Regional Co-ordination centres

The Local/Regional Co-ordination Group should take the lead in terms of working with the media, away from the site, during a major emergency. As with arrangements at the site, each PRA should designate a Media Liaison Officer at the Local Coordination Centre and their activities should be co-ordinated by the Media Liaison Officer of the lead agency. All statements to the media at this level should be cleared with the chair of the Local/Regional Co-ordination Group.

7.8.4 Arrangements for media at other locations associated with the emergency.

In many situations media attention will move quickly away from the site to other locations, including the Local Co-ordination Centre, hospitals and mortuaries. The Local Co-ordination Group will take the lead in terms of working with the media and will hold media briefings in a designated area of the Local Coordination Centre. Media personnel attending other locations (hospitals etc.) should be directed to this location.

Section 7.9

Site Management Arrangements

7.9.1 Generic site management elements/arrangements

Tipperary County Council will appoint a Controller of Operations at the site (or at each site) of the emergency, *see section 6.2 of this document*. The initial important task of the Controller of Operations in association with the other two Controllers is the development of a Site Management Plan. Once agreed, the resulting site plan should be implemented and communicated to all responding groups.

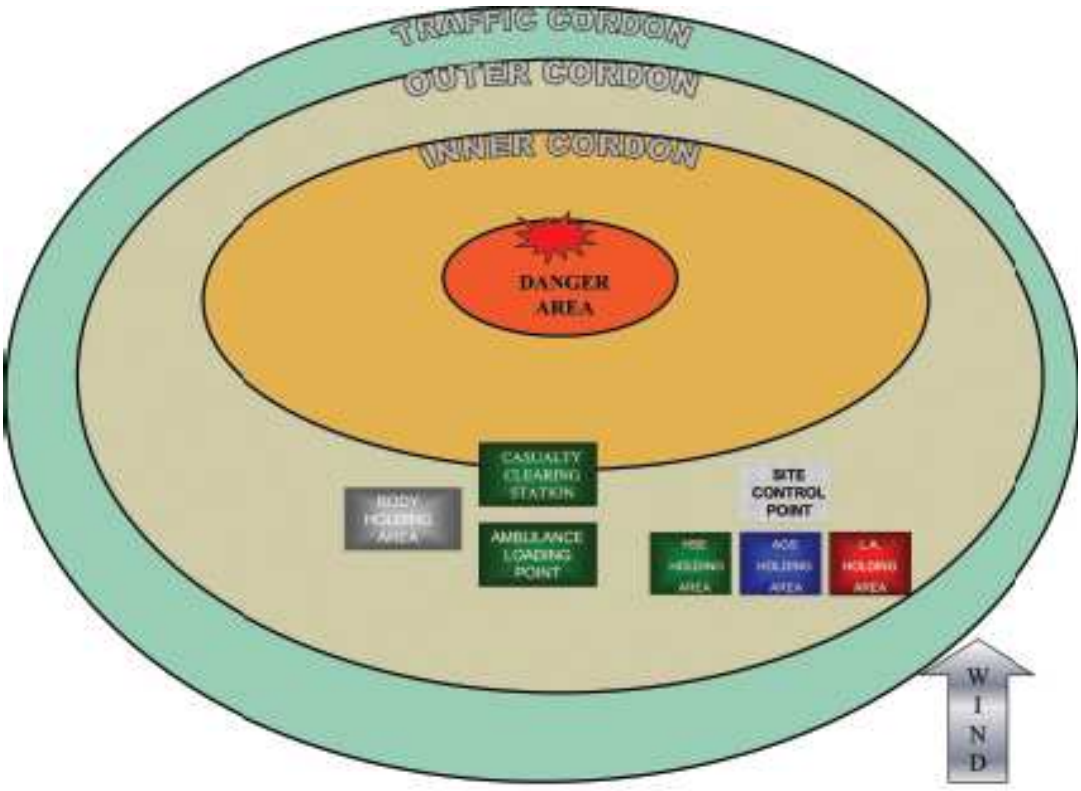

Figure 7.1: Idealised Scene Management Arrangements

The main components of a typical Site Plan should contain some or all of the following: *(See Appendix E2 for detailed information on Scene Management)*

- Inner, Outer and Traffic Cordons;
- A Danger Area, if appropriate;
- Cordon and Danger Area Access Points;
- Rendezvous Point;
- Body Holding Area;
- Survivor Reception Centre;
- Friends and Relative Reception Centre; and

- Site Access Routes;
- Holding Areas for the Different Services;
- Principal Response Agency Control Points;
- On-Site Co-ordination Centre;
- Media Centre.
- Ambulance Loading Area;
- Casualty Clearing Station;
- Site Control Point;

7.9.2 Control of access/identification of personnel and services of the Council

In order to control access to the site of a major emergency, an Inner, Outer and Traffic Cordon will be established along with access cordon points as quickly as possible *(see Appendix E2)*. This will be undertaken by An Garda Síochána after a decision by and agreement with the On-site Co-Ordination Group.

All personnel responding to the site of a major emergency should wear (or carry) the form of identification issued to them by their agency, and should ensure that their vehicles are adequately identified. Responding personnel should be aware that they will be requested to identify themselves at the Outer Cordon Access Point by An Garda Síochána, and may not be allowed through the Outer Cordon without such identification. Where identification is not permanently retained on the person or vehicle, it should be obtained from the relevant Holding Area or Control Point. The identification carried by key personnel should be of the 'photo id' type and should clearly identify their employer and job title.

Identification of Personnel at the Site of a Major Emergency

All uniformed personnel, responding to the site of a major emergency, should wear the prescribed uniform, including high visibility and safety clothing, issued by their agency. The service markings on this clothing should be made known in advance to the other organisations that may be involved in the response. Senior personnel who are acting in key roles, such as the On-Site Co-ordinator and the Controllers of Operations, should wear bibs designed and coordinated as follows:

Organisation	Bib Colour	Wording
Health Service Executive	Green and White Chequer	HSE Controller
Local Authorities	Red and White Chequer	Local Authorities Controller
An Garda Síochána	Blue and White Chequer	Garda Controller

When the lead agency has been determined, the On-Site Co-ordinator should don a distinctive bib with the words On-Site Co-ordinator clearly visible front and back. Below is an example of how the bibs should look for each of the responding agencies.

Non-Uniformed Personnel

Non-uniformed personnel from Tipperary County Council should attend the scene in high visibility jacket with the name Tipperary County Council and their job function clearly displayed.

7.9.3 Air exclusion zones

Where the principal response agencies consider it appropriate and beneficial, the On-Site Co-ordinator may request, through An Garda Síochána, that an Air Exclusion Zone be declared around the emergency site by the Irish Aviation Authorities. When a restricted zone above and around the site is declared, it is promulgated by means of a "Notice to Airmen" - NOTAM - from the Irish Aviation Authorities.

Section 7.10

Mobilising Additional Resources

7.10.1 Arrangements for mobilising organisations

The Voluntary Emergency Services sector can provide additional equipment and support in the event of a major emergency. Details of local Voluntary Emergency Services, the resources they can provide and their mobilisation procedure is outlined in *Appendix C1*. The Voluntary Emergency Services will link to the Principal response Agencies in accordance with Table below.

Principal Response Agency	**Linked Voluntary Emergency Service**
An Garda Siochána	Irish Mountain Rescue Association Irish Cave Rescue Association Search and Rescue Dogs Sub-Aqua Teams River Rescue
Health Service Executive	Irish Red Cross Order of Malta Ambulance Corps
Local Authority	Civil Defence

7.10.1.1 Mobilisation of Civil Defence

Please refer to section 4.4.1 of this document, details also given in Appendix C1

7.10.1.2 Mobilisation of Defence Forces

Please refer to section 4.4.2 of this document, details also given in Appendix C1

7.10.1.3 Mobilisation of The Irish Red Cross

Please refer to section 4.4.3 of this document, details also given in *Appendix C1*

7.10.1.4 Mobilisation of Voluntary Emergency Services

Each Principal Response Agency with a linked Voluntary Emergency Service is responsible for the mobilisation of that service and their integration into the overall response. The internal command of volunteer organisations resides with that organisation.

7.10.1.5 Mobilisation of Utilities

Utilities are frequently involved in the response to emergencies, usually to assist the principal response agencies in making situations safe. They may also be directly involved in restoring their own services, for example, electricity supply in the aftermath of a storm. Utilities operate under their own legislative and regulatory frameworks but, during the response to an emergency, it is important that they are involved in the co-ordination arrangements. Utilities may be requested to provide representatives and/or experts to the On-Site Co-ordination Group, the Local Coordination Group and/or the Regional Co-ordination Group, as appropriate. A list of utilities and their emergency/out of hours contact arrangements are listed in *Appendix C3. Please refer to section 4.4.6 of this document for further details.*

7.10.1.6 Mobilisation of Private Sector

Private sector organisations may be involved in a major emergency through ownership of the site where the emergency has occurred or through ownership of some element involved in the emergency e.g. an aircraft, bus, factory, etc. They may also be called on to assist in the response to a major emergency, by providing specialist services and/or equipment. Private sector representatives and/or experts may be requested to support the work of the On-Site Co-ordination Group, the Local Co-ordination Group and/or the Regional Co-ordination Group, as appropriate. A list of experts and equipment within the private sector is detailed in *Appendix C3.*

7.10.2 Arrangements for identifying and mobilising additional organisations

The Local Authority Controller of Operations should ensure that, where the resources of the authority do not appear to be sufficient to bring a situation under control, or the duration of an incident is expected to be extended, the levels, types and duration of assistance/ support are identified, and that the request for support is passed to either the authority's Crisis Management Team or the Local Co-ordination Centre who will arrange to obtain the support via mutual aid arrangements with neighbouring authorities.
Where resources that are held at a national level are required, as part of the management of the incident, requests for those resources should be directed by the lead agency to the Lead Government Department.

7.10.3 Arrangements for liaison with utilities

Please refer to section 4.4.6 of this document, details also given in *Appendix C3.*

7.10.4 Arrangements for integration of casual volunteers as appropriate

Please refer to section 4.4.5 of this document.

7.10.5 Arrangements for command, control, co-ordination and demobilisation of organisations mobilised to the site

The On-Site Coordinator has the task of coordinating all external support and assistance into the overall response action plan. The Controller of Operations of the service which requested mobilisation of the external resource has responsibility for managing and integrating the contribution of these resources to the tasks identified in the response.

Generally, all responding agencies should be made aware of the site management arrangements and should report as directed to the relevant Holding Area. Attempts should be made to assign external assistance units to tasks in a way that does not involve pooling or sharing equipment. Special attention may be required for both the welfare and safety needs of external agencies. External agencies should be made aware of and should comply with the principal response agencies' arrangements for liaising with the media. *Please refer to section 4.4.1 through 4.4.7 and section 7.10.1 of this document.*

7.10.6 Mutual aid arrangements

Tipperary County Council is supported by and supports neighbouring local authorities on a mutual aid basis. Requests for additional resources can be made through the Munster Regional Communications Centre. *Please refer to section 4.5 of this document.*

7.10.7 Requests for out-of-region assistance

The decision to seek assistance from outside the region will be made by the lead agency, in association with the other principal response agencies, at the Local/Regional Coordination Centre. *Please refer to section 4.7 of this document.*

7.10.8 Requests for international assistance

A Regional Co-ordination Group may also request assistance from Government. National resources will be available in the event of a major emergency at local or regional level. Requests for assistance should be developed at local or regional co-ordination level and directed by the lead agency to the lead Government Department. *Please refer to section 4.7 of this document.*

Section 7.11

Casualty and Survivor Arrangements

7.11.1 General

The primary objective of any response to a major emergency is to provide effective arrangements for the rescue, care, treatment and rehabilitation of all those who are affected by the emergency. As well as making provision for casualties and survivors, the PRA's should also make arrangements for the reception, facilitation and support of the friends and relatives of some or all of these individuals.
Please refer to a 'Guide to dealing with Mass Casualties', 'Guide to setting up a friends and relative centre', 'Guide to setting up a Survival Reception Centre', at www.mem.ie.

7.11.1.1 Casualties and Survivors and the Local Authority's role

The On-Site Co-ordinator, in association with the other Controllers, will need to make an early assessment of the casualty situation and identify if there are particular aspects which may impact on casualty management, such as, significant numbers of disabled, sick or immobile persons involved, and take action accordingly. Individuals may be divided into two main categories as follows:

- *Casualties*, including persons who are killed or injured,
- *Survivors*, including all those individuals who are caught up in an emergency but not injured, such as, uninjured passengers from a transport accident or evacuees.

7.11.2 Injured

At the site of a major emergency, the priorities of the PRA's are to save life, prevent further injury, rescue those who are trapped or in danger, triage casualties, provide appropriate treatment and transport them to the appropriate hospital(s) where necessary.

7.11.2.1 Arrangements for the triage

Triage is a dynamic process of assessing casualties and deciding the priority of their treatment, using a two-stage process of triage sieve and triage sort. Following initial triage, casualties will normally be labelled, using Triage Cards, and moved to a Casualty Clearing Station. The purpose of this labelling is to indicate the triage category of the casualty, to facilitate the changing of that category, if required, and to record any treatment, procedure or medication administered. A standard card with Red (Immediate), Yellow (Urgent), Green (Delayed) and White (Deceased) sections is normally used.

7.11.2.2 Transporting lightly injured and uninjured persons from the site

It should be noted that while some casualties will be transported to the Receiving Hospital(s) by the Ambulance Service with assistance from the Local Authority, some casualties may leave the site by other means and may arrive at the designated Receiving Hospital(s), or other hospitals by other means (in cars, buses, etc.).

7.11.2.3 Casualty Clearing

Patients must be moved to the Casualty clearing station, which will be established by the ambulance service, in consultation with the Health Service Executive. At this location the casualties are collected, further triaged, treated as necessary, and prepared for transport to hospital. The Health Service Executive Controller will, in consultation with the Site Medical Officer and the designated receiving hospitals, decide on the hospital destination of casualties.

7.11.3 Fatalities

The recovery of the dead and human remains is part of an evidence recovery process and, as such, is the responsibility of An Garda Síochána acting as agents of the Coroner. The Local Authority can assist An Garda Síochána in this function. *Please refer to www.mem.ie for guidance on planning for Mass Fatalities.*

7.11.3.1 Coroners role

The Coroner is an independent judicial officer, who has responsibility for investigating all sudden, unexplained, violent or unnatural deaths. It is the task of the Coroner to establish the 'who, when, where and how' of unexplained death. All such deaths in Ireland are investigated under the Coroners' Act, 1962. The Local Authority will support the Coroner by establishing a Body Holding Area and/or a Temporary Mortuary where necessary, *Please refer to www.mem.ie for guidance on planning for Mass Fatalities.*

7.11.3.2 Arrangements for dealing with fatalities, both on and off-site

The bodies of casualties, which have been triaged as dead, should not be moved from the incident site unless this is necessary to affect the rescue of other casualties. The only other circumstance where bodies should be moved, before the Garda evidence collection process is complete, is if they are likely to be lost or damaged due to their location or the nature of the incident.

Body holding Area

The On-Site Co-ordinator, in association with the other Controllers, will decide if it is necessary to establish a Body Holding Area at the site. The Body Holding Area, if established, should be situated close to the Casualty Clearing Station. Members of An

Garda Síochána will staff this area and they will maintain the necessary logs to ensure the continuity of evidence.
It should be noted that the Body Holding Area is not the appropriate place for the prolonged storage of the dead and appropriate arrangements should be made to ensure minimal delay in moving bodies to a mortuary (temporary or otherwise).

Temporary Mortuaries

It is the responsibility of the Local Authorities in consultation with the District Coroners and health service Pathologists to provide a Temporary Mortuary, if required.
The likely commissioning time for a Temporary Mortuary is of the order of twenty-four hours, and this may extend to forty-eight hours when victim numbers are extensive. It should be noted that a Temporary Mortuary might be required to operate for weeks or months after an incident. *Please refer to www.mem.ie for guidance on planning for Mass Fatalities.*

7.11.3.3 Identification of the deceased

The Coroner, with the assistance of An Garda Síochána, has overall responsibility for the identification of bodies and remains and s/he is entitled to exclusive possession and control of a deceased person until the facts about their death have been established. A full post-mortem and forensic examination will be carried out on every body from a major emergency and each death will be the subject of an inquest. The post-mortem is carried out by a Pathologist, who acts as the 'Coroners Agent' for this purpose.

7.11.4 Survivors

Survivor Reception Centre should be designated and established at the earliest possible opportunity. Transport from the Survivor Reception Centre to home/meet relatives/safe place will be arranged as soon as it is practicable. This responsibility will lie with Tipperary County Council. *Please refer to 'Guide to setting up a Survival Reception Centre' for further information. source www.mem.ie.*

7.11.4.1 Arrangements for dealing with uninjured survivors who require support

A Survivor Reception Centre should be designated and established at the earliest possible opportunity. The On-Site Co-ordinator, in conjunction with the other Controllers, should determine if such a centre is to be established, and its location in the site management plan. It is the responsibility of Tipperary County Council to establish and run this centre.
Tipperary County Council has identified the following as generally suitable buildings for setting up a survivor centre:

- Recreation Centres
- Parish Halls
- Local Churches
- Local Schools
- Any other building that is large enough to accommodate large amounts of people.

All those who have survived the incident uninjured can be directed to the Survivor Centre, where their details will be documented and collated by An Garda Síochána. Provision should be made at this centre for the immediate physical and psychosocial needs of survivors (e.g. hot drinks, food, blankets, telephones, first aid for minor injuries, etc.).
The assistance of Civil Defence and the voluntary emergency services may be required to provide a variety of services at the Survivor Reception Centre. The Survivor Reception Centre should be secure from any unauthorised access and provide the maximum possible privacy for survivors. *See Appendix E3, for Temporary Accommodation List.*

7.11.5 Casualty Information

Gathering of casualty information will be the responsibility of An Garda Síochána.

7.11.5.1 Casualty Bureau

In the event of a major emergency involving significant numbers of casualties, An Garda Síochána will establish a Casualty Bureau to collect and collate the details (including condition and location) of all casualties and survivors.

7.11.5.2 Provision of Casualty information

To facilitate this, the Casualty Bureau, a liaison/casualty officer will normally be sent by An Garda Síochána to each hospital, survivor reception centre and casualty reception centre where casualties are being treated. The local Authority may assist in the collection and collation of casualty data. This information may then be used to provide to family and friends. Any information collected on any casualty is transferred via An Garda Síochána to the Casualty Bureau, who will generally set up an information hot line, in order that concerned family/friends may enquire about individuals.

7.11.6 Friends and Relatives Reception Centres

The purpose of a reception centre is to provide a comfortable area where friends and relatives of those involved in the incident (primarily the casualties and survivors) can be directed for information. The Local Co-ordination Group will determine the need for and arrange for the designation and operation/staffing of such centres.
A building used as a Reception Centre for relatives and friends should be secure from media intrusion and contain sufficient room to afford privacy to families receiving information about relatives. There will also be a need for a reliable process to establish the credentials of friends and relatives. *Please refer to a 'Guide to setting up a friends and relative centre' for further information. Source www.mem.ie.*

7.11.7 Non-National Casualties

In some incidents an emergency may involve significant numbers of casualties from other jurisdictions. In such circumstances the Local Co-ordination Centre should notify the relevant embassy if the nationality of the victims is known. The Department of Justice should be approached if assistance is required in obtaining interpreters from private sector providers. The Department of Foreign Affairs (which operates an out of hours Duty Officer System) should also be approached for appropriate assistance and liaison purposes. *See Appendix C2 for contact numbers.*

7.11.7.1 Foreign language communication resources

Advice may be sought from An Garda Síochána as to the use of interpreters. Generally the local Garda Station will have a list of approved interpreters, which may be called upon in the event of an emergency. Advice may also be sought from the Department of Foreign Affairs. *See Appendix C2.*

7.11.8 Pastoral and Psycho-social Care

The On-Site Coordinator will ensure that, where appropriate, pastoral services are mobilised to the site and facilitated by the PRAs in their work with casualties and survivors. Similarly, individual services should make arrangements for necessary pastoral services at any other locations associated with the emergency, such as hospitals.

7.11.8.1 Responsibility of Pastoral and psycho-social support arrangements

Pastoral and psycho-social support arrangements for casualties and other affected members of the public are the responsibility of the Health Service Executive. Requests for such care can be made through HSE Crisis Management Team, which will make the appropriate arrangements.

It is the responsibility of each principal response agency to ensure that it has an appropriate structured programme in place to monitor and provide psychosocial support, as appropriate, to all members of staff who are involved in the emergency.

Section 7.12

Emergencies involving Hazardous Materials

7.12.1 Arrangements for dealing with major Hazardous Materials incidents

The Local Authority is the lead agency for response to hazardous materials incidents, with the exception of those involving biological agents. Where terrorist involvement is suspected, An Garda Síochána will act as the lead agency. The Defence Forces, when requested, will assist An Garda Síochána in an Aid to the Civil Power role with Explosive Ordnance Disposal teams. Details of specific actions to be taken in the event of a CCBRN incident are contained in the '*Protocol for Multi-Agency Response to Suspect Chemical and Biological Agents'* (*www.mem.ie.)*

7.12.2 CCBRN incidents

Details of specific actions to be taken in the event of a CCBRN (*CCBRN meaning terrorist incidents involving C - conventional explosives; C - chemical substances; B - biological agents; R - radiological and N - nuclear material)* incident are detailed in the '*Protocol for Multi-Agency Response to Suspect Chemical and Biological Agents'* (*www.mem.ie.)* . These protocols deal with a range of matters relevant to managing such incidents, including the identification of the materials involved. They also provide for involvement of the National Poisons Information Centre and the National Virus Reference Laboratory. Where terrorist involvement is suspected, An Garda Síochána will act as the lead agency.

7.12.3 Biological incidents

Details of specific actions to be taken in the event of a biological incident are detailed in the '*Protocol for Multi-Agency Response to Suspect Chemical and Biological Agents'. (www.mem.ie.)*

7.12.4 National Public Health (Infectious Diseases) Plan

For infectious diseases such as Avian Flu, Pandemic Flu, Foot and Mouth there will be a link to the National Plan as outlined by the government. Tipperary County Council will provide assistance under the command of the lead government department. Please refer to the '*National Flu Pandemic Plan'* (*www.mem.ie.)*

7.12.5 Nuclear Accidents

Details of specific actions to be taken in the event of a local radiological emergency or the activation of the National Emergency Plan for Nuclear Accidents are detailed in the *'Protocol for Multi-Agency Response to Radiological/Nuclear Emergencies'. (www.mem.ie.)*

7.12.6 Decontamination

The On-Site Co-ordinator, in association with the other Controllers of Operations, will establish the need for decontamination. The Health Service Executive has responsibility for providing clinical decontamination and medical treatment to casualties affected by hazardous materials. The fire services have responsibility for providing other forms of physical decontamination of persons at the site. The Health Service Executive will be responsible for decontamination where required to protect health service facilities, such as hospitals, from secondary contamination.

Where emergency decontamination of the public is required, the Local Authority fire service may use its fire-fighter decontamination facilities, or improvised equipment may be used prior to the arrival of dedicated equipment. Where it is decided that persons should undergo this practice, it should be carried out under the guidance of medical personnel. It should be noted that emergency decontamination carries risks for vulnerable groups, such as the elderly and the injured. It may be more appropriate in certain circumstances for outer clothing to be removed and blankets provided as a temporary measure to alleviate potential harm through surface contact with contaminants.

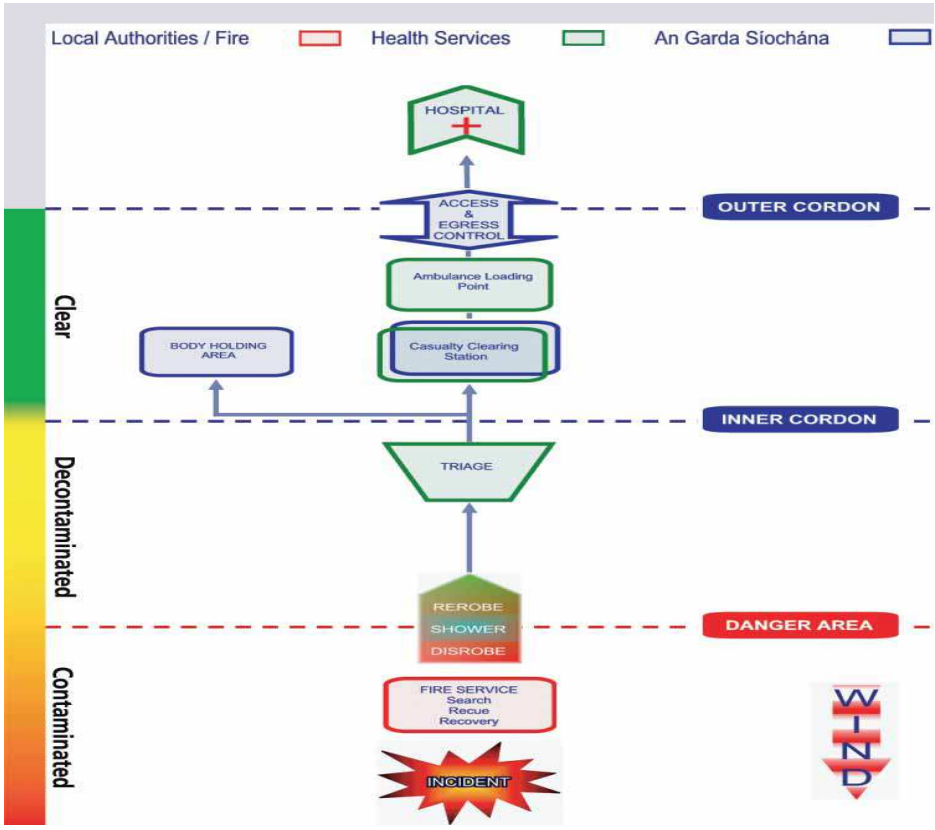

Fig 7.2: Managing Hazards Material Incidents

Section 7.13

Protecting Threatened Populations

7.13.1 Threatened Population

The On-Site Co-ordinator will take the decision on how best to protect a threatened population, after consultation with the other Controllers of Operations. This protection is usually achieved by moving people temporarily to a safe area, by evacuation where appropriate or feasible, or by advising affected individuals to take shelter in an appropriate place.

7.13.2 Evacuation arrangements

The On-Site Co-ordinator will take the decision on how best to protect a threatened population, after consultation with the other Controllers of Operations. Evacuation is usually undertaken on the advice of the Local Authority or Health Service Executive. Where decided upon, An Garda Síochána will undertake the process of evacuation, with the assistance of the other services. In some circumstances, personnel from all services may have to assist in carrying it out. A suitable evacuation assembly point will need to be established and the establishment of rest centres will be the responsibility of Tipperary County Council.

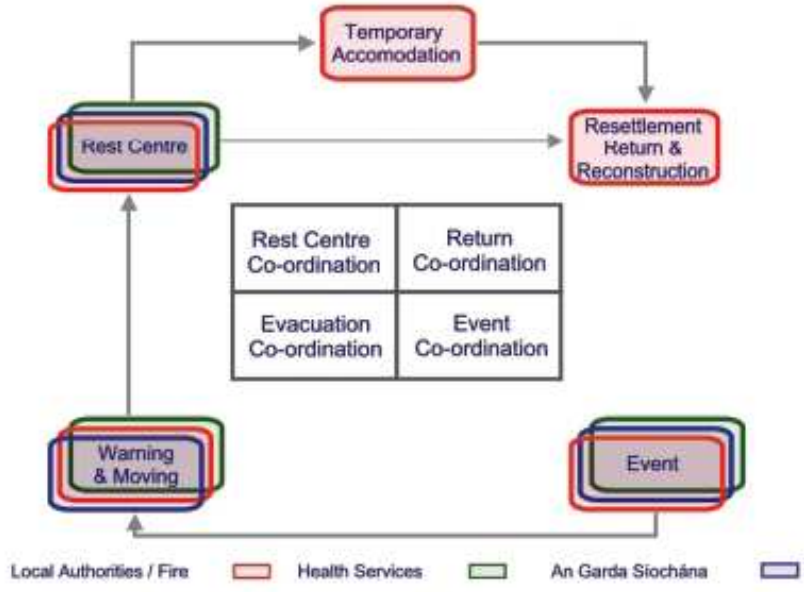

Figure 7.3: Structure of Evacuation

Personnel from the local authority and from voluntary agencies will staff rest centres. The centres will provide security, welfare, communication, catering and medical

facilities. Evacuees should be documented and basic details passed to the Casualty Bureau. The Local Authority will assist in this role.
Please see sections 7.11and 7.17.3 for further details on evacuee welfare, also refer to 'A Guidance to Mass Evacuation' (www.mem.ie) and Appendix A2 for Tipperary's Mass Evacuation Plan.

7.13.3 Arrangements for the involvement of the public health service

Where an emergency results in a real or perceived threat to public health by, for example, the release of chemical, radioactive or biological agents, the contamination of water or food supplies, or the spread of contaminated flood water, it can be anticipated that there will be considerable concern among both the persons immediately affected and the wider public. In such situations, the Health Service Executive Controller should ensure that the local public health services are informed of the situation as soon as possible so that they can become involved in the response at the earliest possible stage.

Section 7.14

Early and Public Warning Systems

7.14.1 Monitoring potentially hazardous situations

Early warning systems are currently set in place for Severe Weather forecasts. This is a 24-hour service provided by Met Éireann. There may be a need to inform the public of the current situation or of possible evacuation. *Please refer to Section 11.1 of this document.*
Other such warning systems are in place for flooding and water contamination etc., and detailed in the relevant Flood Response Plan, Water Contamination *(Appendix A2).*

7.14.2 How warnings are to be disseminated

The Local Co-ordination Group should take over the task of coordinating the provision of information to the public as soon as it meets. This activity should be coordinated by the lead agency. The Local Coordination Group may establish a sub-group for this purpose and use all available channels to make concise and accurate information available. This may include the use of dedicated 'help-lines' as well as through liaison with the media.

The lead agency may request the media to carry Public Information Notices during a major emergency to disseminate important messages, such as how individuals may help themselves and their neighbours in a particular situation. This will be facilitated by the Local Authority Media Liaison Officer as designated in the Local Authority Mobilisation Procedure in *Appendix A.*

Section 7.15

Emergencies arising on Inland Waterways

7.15.1 Liaison with the Irish Coast Guard

The Irish Coast Guard may be contacted through the Munster Regional Communications Centre.
Tipperary County Council can provide assistance in the form of the Civil Defence for water rescue/recovery. There are also some inland water rescue volunteer organisations that may be asked to provide assistance such as River Rescue. *Please refer to Appendix C1 for further details on resources.*

7.15.2 Mobilising of resources to inland waterway emergencies

The Irish Coast Guard has responsibility for receiving 999/112 calls and the mobilising of resources to Inland Waterway emergencies. An Garda Síochána should be the PRA to undertake initial co-ordination at inland waterway emergencies. After the initial response, this role may be re-assigned, following consultation between the Irish Coast Guard and An Garda Síochána.

Section 7.16

Safety, Health and Welfare Considerations

7.16.1 Safety, health and welfare of staff

Each PRA (and other responding organisation) is responsible for the Safety, Health and Welfare of its staff responding to emergencies and should operate its own safety (including personal protective equipment) and welfare management procedures. *Please refer to 'Local Authority Organisational Safety Statement' for further information.*

7.16.2 Safety of the Council's rescue personnel

When working in the environment of a Major Emergency the On-Site Coordinator will apply normal incident and safety management arrangements and a 'Safety Officer' will generally be appointed having responsibility for the oversight and management of the safety of the Council's rescue personnel. The Controller of Operations will ensure that any issues arising are addressed. However, it is the responsibility of every individual to assess any risks affecting them, to monitor their colleague's welfare, and to report any issues to the Controller of Operations. All other relevant officers will continue to exercise command over their own personnel working in the area.

7.16.3 Operating within the 'Danger Area'.

A 'Danger Area' may be declared at the site where there is a definite risk to rescue personnel over and above that which would normally pertain at emergency operations. The Council is responsible for the health and safety of its staff when they operate within the 'Danger Area'.
Each service should establish from the On-Site Co-ordinator if a Danger Area has been defined (*see Section 7.9.1 of this document*) as part of site management arrangements and, if so, what particular safety provisions may apply.

7.16.4 Procedures and evacuation signal for the 'Danger Area'

Where a situation deteriorates to a point where the officer in charge of the Danger Area decides that it is necessary to withdraw response personnel from a Danger Area, a signal, comprising repeated sounding of a siren for ten seconds on, ten seconds off, will be given. All personnel should withdraw on hearing this signal to a pre-determined safe zone.

7.16.5 Physical welfare of responders (food, shelter, toilets)

Please refer to section 7.17.3 of this document. (Also see Appendix A2 Civil Defence Section Plan)

7.16.6 Psycho-social support for personnel

Council personnel who are traumatised by the events of a major emergency may require skilled professional help. This will be provided by Tipperary County Council.

Section 7.17

Logistical Issues/ Protracted Incidents

7.17.1 Arrangements for rotation of front line rescue / field staff

Front line rescue/field staff will be relieved at protracted incidents in accordance with the Local Authority Safety, Health and Welfare arrangements. Crews from the Mid-West region may be called upon to assist and support the emergency.

7.17.2 Re-organising normal emergency and other services cover

Tipperary County Council personnel not involved in the major emergency may be placed on standby in their station or area office in order to provide quick response to any normal emergencies occurring in any other part of the county. Where this is not possible, a request may be made to a neighboring authority through mutual aid procedures in order to place similar personnel on standby.

7.17.3 Arrangements for initial and ongoing welfare for field staff

The Local Authority Controller should ensure that appropriate rest and refreshment facilities are provided for all response personnel at the site, as well as for survivors. Staff welfare will be considered at all times. Civil Defence may be called upon to provide or aid in the administration of such needs. Welfare facilities such as toilets etc. may also be required and supplied by Tipperary County Council.

Section 7.18

Investigations

7.18.1 Investigations arising from the emergency

An Garda Síochána are the primary response agency when an investigation is required if a crime has been identified or suspected in a Major Emergency. An Garda Síochána will need to obtain evidence of the highest possible standard and will require that all evidence is left in situ, unless a threat to life or health prevents this. Statements may be required from the members of Local Authority staff on their involvement.

7.18.2 Minimise disruption of evidence

The preservation of the site of a major emergency, which results from criminal action, is of paramount importance and should receive a priority rating from the outset by all PRAs. The first member(s) of An Garda Síochána to arrive at the site of a major emergency where a suspected crime has been committed automatically incurs the responsibility of preserving the site. While the priority is the protection of life, the provisions of the Framework are intended to assist An Garda Síochána investigative role.

7.18.3 Other parties with statutory investigation roles

Depending on the nature of the Major Emergency, agencies other than An Garda Síochána may require access to the site for the purposes of carrying out an investigation. These agencies include the Health and Safety Authority (HSA), the Air Accident Investigation Unit (AAIU) and the Environmental Protection Agency (EPA). An Garda Síochána is responsible for carrying out criminal investigations.
Any agency including the Local Authority, with an investigative mandate should liaise in the first instance with the On-Site Co-ordinator, who will direct them to the Controller of Operations of An Garda Síochána.

Section 7.19

Community / VIPs / Observers

7.19.1 Links with communities affected by an emergency

Where communities are affected by major emergency, efforts should be made to establish contacts/links with a community utilising established links such as Community Groups/ Public Representatives and Community Liaison Officers within the community.
A major emergency could generate a substantial number of enquiries to the Local Authority, involving the issue of regular press statements, setting up Helplines, the co-ordination of resources and liaison with Rest Centres, the Emergency Services and other agencies. The need to inform the public will need to be balanced to ensure that the release of the information is well coordinated and to ensure that:

- *Public alarm is not caused;*
- *Undue stress is not caused to casualties or their relatives / friends;*
- *The public are discouraged from 'sight seeing' at the scene;*
- *Reliable information is given to the public;*

When necessary, information centres could be set up in essential locations e.g. libraries, community centres, and public halls, as a method of distributing information and advice to local residents. Co-ordination with other involved agencies is essential for the provision of accurate

7.19.2 Receiving visiting VIP's

All requests for visits to the site or facilities associated with it should be referred to the Local Co-ordination Group. Requests for visits to agency specific locations should be referred to the Crisis Management Team. Public representatives and other dignitaries may wish to attend the site of the emergency, as well as associated facilities, such as hospitals, to express sympathy on behalf of the public to the injured and bereaved, and to support the emergency response workers.
Visits by dignitaries will usually require security arrangements and liaison with the media. It is important that the organisation of such visits does not distract from the response effort. As a general rule, VIPs should be advised not to visit sites where dangers still exist or where ongoing rescues are in progress.

7.19.3 National / international observers

National and International observers may request to attend the incident. The presence of experts from other regions or jurisdictions, who wish to act as observers at an incident, can greatly enhance the operational debriefings and facilitate the process of learning lessons from the emergency. The Local Co-ordination Group should make arrangements for any such observers.

Section 7.20

Standing-Down a Major Emergency

7.20.1 Standing down the status of an emergency

A decision to stand down the major emergency status of the incident at the site should be taken by the On-Site Co-ordinator, in consultation with the other Controllers of Operations at the site and the Local Co-ordination Group. Where organisations other than the PRAs have responded, they should be informed of the decision to stand them down by the Controller of Operations of the agency which mobilised them. Services operating at other locations should be stood down in a similar manner.
The plan may be stood down generally following agreement by the three PRAs responding to the emergency or in respect of all or certain local authority services following consultation with the other PRAs.

7.20.2 Operational debriefing and reporting of activity

Each principal response agency should carry out an operational debriefing of its involvement in the response to every declared major emergency and document this debriefing in a report. The three principal response agencies should review the inter-agency co-ordination aspects of the response after every declaration of a major emergency. This review should be hosted by the lead agency and involve all services which were part of the response. The purpose of the review should be to formulate the lessons learned from the incident in relation to coordination and to document these.
A composite report, based on appropriate input from each principal response agency's internal report and the report on co-ordination, on every declared major emergency should be compiled by the principal response agency which was the initial lead agency for submission within a reasonable timescale to the relevant Regional Steering Group and the National Steering Group.

Section 8

Agency Specific Elements and Sub-Plans

When planning and preparing for a major emergency it is important that the Major Emergency Plan ties in with existing plans such as Tipperary's Flood Response Plan and Emergency Plan for Blizzard Conditions etc. *(See Appendix A2 and A3and D2). Please refer to 'A Guide to Agency Specific Plan Interoperability' (www.mem.ie) for further details.*

Arising from the risk assessment process described in *Section 3*, Tipperary County Council's Major Emergency Plan has identified where specific plans/arrangements exist for responding to emergencies. These include local/regional/national and utility plans and are outlined in Appendix A2/A3 and D2 of this document

The response arrangements set out in the *Section 7*, will govern the PRA's response to such sites/events, whether a major emergency is declared or not. *(See Appendix B1).*

Section 9

Plan for Regional Level Co-ordination

9.1 Regional Level Co-ordination

Each PRA has participated in the preparation of a Plan for Regional Level Co-ordination, which sets out arrangements to respond at regional level. In certain circumstances, the local response to a major emergency may be scaled up to a regional level. This may occur where the nature of an emergency is such that the:

- Resources available in the local area where the incident occurs do not appear to be sufficient to bring the situation under control in an expeditious and efficient manner; or,
- Consequences of the emergency are likely to impact significantly outside of the local area; or,
- The incident(s) is spread over the area of more than one Local Authority or Division of An Garda Síochána; or,
- The incident occurs at or close to a boundary of several of the PRAs.

The Chair of the Local Co-ordination Group may declare a regional level emergency and activate the Plan for Regional Level Co-ordination. The key provision in ensuring co-ordination of the extended response is the activation of a "Regional Coordination Group". The primary function of the Regional Co-ordination Group is to maintain co-ordination of the PRAs involved from the extended “response region”.

The command and control arrangements at the site(s) of a regional major emergency will be the same as those for a standard major emergency including:

Please refer to section 6 of this document for a more in-depth look at a Regional Level Major Emergency Response and also ‘A Guide to Regional Level Co-ordination’. Guidance document 13: Section 9 (www.mem.ie).

9.2 Decision to Scale Up to a Regional Level Response

The decision to scale up from a local to a regional level response will be taken by the chair of the Local Co-ordination Group, in consultation with the chair of the On-Site Co-coordinating Group and the other members of the Local Co-ordination Group. This consultation may occur at a meeting of the Local Co-ordination Group, where such a group is in session or, alternatively, by means of a telephone conference call.
This decision will, by definition, involve specifying those extra principal response agencies which are to be involved in the regional response. *(See also section 4.6 of this document)*

Note: *In many Major Emergency situations, neighbouring Garda Divisions, HSE Areas and Local Authorities will provide support and resources to the Garda Division, HSE Area and Local Authority, which are primarily involved in the response. Such support is not equivalent to the activation of the Plan for Regional Level Co-ordination and, in fact, will often precede the activation of the regional plan.*

9.3 Response Region

The areas covered by the principal response agencies which are activated under the Plan for Regional Level Co-ordination will constitute the response region for the emergency.

Note: *The response region for a regional level major emergency need not coincide (and in many cases will not coincide) with one of the predetermined Major Emergency Management Regions set out in Appendix F4 of the Framework.*

9.4 Activation of a Regional Response

Once the decision has been taken, the chair of the Local Co-ordination Group will declare that a regional level emergency exists and will activate the Plan for Regional Level Co-ordination by:

- notifying each of the principal response agencies involved that the Plan for Regional Level Co-ordination has been activated;
- requesting that each of the principal response agencies, which has not already activated its Major Emergency Plan, should do so;
- delivering an information message to each principal response agency using the mnemonic METHANE; and
- providing each of the principal response agencies involved with a list of the agencies which are being activated to form the regional response

9.5 Wide area Major Emergency

Some major emergency events (e.g. severe storms, extensive flooding and/or blizzards) may impact over a wide area and, in such a situation, a number of Local Co-ordination Groups may be activated. Where the chair of a Local Co-ordination Group, which has been activated in response to a major emergency, becomes aware that one or more other Local Co-ordination Groups have also been activated, contact should be made with the other chair(s) with a view to considering the establishment of a Regional Co-ordination Centre. Such a Regional Co-ordination Centre will normally be located at the Local Co-ordination Centre which, in the view of the chairs, is best positioned (in terms of resources, communications and geography) to co-ordinate the activity of the different Local Co-ordination Groups which are active. In such a situation, these Local Co-ordination Groups will continue to act as per standard arrangements and will communicate with the Regional Co-ordination Centre through their chairs.

Note: *During a wide area major emergency, each Local Co-ordination Group will be in contact with the lead Government Department (in accordance with Section 5.4.5.5 of the*

Framework) and, in such a situation, the decision on whether the activities of a number of Local Co-ordination Groups should be co-ordinate via a Regional Co-ordination Centre or via the lead Government Department will be taken in light of the prevailing circumstances.

Section 10

Links with National Emergency Plans

10.1 National Emergency Plans:

Each PRA should provide for working with appropriate national bodies and responding to and activating appropriate aspects of their Major Emergency Plan following requests arising from national emergency situations. *Please refer to sections 6.3.4.4 and 6.3.4.5 for further details.*

10.1.1 National Emergency Plan for Nuclear Accidents

Details of specific actions to be taken in the event of a local radiological emergency or the activation of the National Emergency Plan for Nuclear Accidents are detailed in the *Protocol for Multi-Agency Response to Radiological/ Nuclear Emergencies* (*www.mem.ie*).

10.1.2 National Public Health (Infectious Diseases) Plan

Details of specific actions to be taken in the event of an activation of the National Public Health (Infectious Diseases) Plan are detailed in the *Protocol for Multi-Agency Response to Emergencies arising from Infectious Diseases Pandemics* (*www.mem.ie*).

10.1.3 Animal Health Plan

For infectious diseases such as Avian Flu, the Department of Agriculture and Food have an emergency plan designed to contain outbreaks of H5N1 avian influenza in poultry should it occur. In the event of an avian influenza outbreak the fire service may be required to co-operate with the Department of Agriculture and Food in the whole house gassing of poultry. Interim guidance has been provided to outline additional procedures to be used in conjunction with standard fire service training to ensure the health and safety of fire service personnel should they be called upon to engage in this essential task.

10.2 Activated on request from Irish Coast Guard

The Tipperary Major Emergency Plan may also be activated by any PRA in response to a request from the Irish Coast Guard, following a threatened or actual emergency in the Irish Maritime Search and Rescue Region.

10.3 Activation on request from a Minister of Government

The Major Emergency Plans of the PRAs may be activated by an agency in response to a request from a Minister of Government in light of an emergency/crisis situation.

Section 11

Severe Weather Plans

11.1 Sub-Plans for responding to severe weather emergencies

Severe weather emergencies may involve significant threats to infrastructure and support may be required for vulnerable sections of the community. It has been pre-determined that Local Authorities are the lead agency for co-ordinating the response to severe weather events.

Arrangements have also been put in place by Met Éireann to issue public service severe weather warnings to the Local Authorities. The target time for the issuing of a warning is 24 hours before the start of the event, but a warning may be issued up to 48 hours in advance. On Fridays before a holiday period Met Éireann may deem it appropriate to issue a preliminary warning or weather watch to Local Authorities.

Not all severe weather events will be major emergencies, but the principles and arrangements for co-ordinated response to major emergencies should inform all response agencies to severe weather events. Local Authorities should ensure that effective arrangements are in place to receive and respond promptly to public service severe weather warnings issued by Met Éireann.

The Local and/or Regional Co-ordination Centres for Major Emergency Management may be activated to manage the response to a severe weather event, whether a major emergency is declared or not.

11.1.1 Flooding Emergencies

Tipperary County Council in conjunction with a multi-agency collaboration has produced a 'Flood Response Plan' *(see Appendix A2).*

11.1.2 Severe Weather Conditions (Excluding Flooding Emergencies)

Tipperary County Council has produced a comprehensive 'Emergency Plan for Severe Weather' *(see Appendix A2).*

Section 12

Site and Event Specific Arrangements and Plans

12.1 Site and Event Specific Emergency Plans

There are both legislative and procedural arrangements, which require that emergency plans be prepared for specific sites or events (e.g. SEVESO sites, airports, ports, major sports events, etc.).

12.2 Seveso Sites

The Merck Sharp & Dohme site has been identified in the Tipperary under the European Communities (Control of Major Accident Hazards Involving Dangerous Substances) Regulations, 2006 S.I. No. 74 of 2006, as a top tier site.

The response arrangements as set out in the site-specific External Emergency Plan and *Section 7*, will also govern the PRA's response to this site, whether a major emergency is declared or not. *(See Appendix B1).*

Please refer to 'Guidance for dealing with Seveso Offsite Sites' (www.mem.ie) for further details.

(Please refer to the risks identified in Appendix B1 and Merck, Sharp & Dohme's internal and external plans in Appendix A2).

Section 13

The Recovery Phase

13.1 Supports for Individuals and Communities

Although the emergency response stage may have passed, the recovery stage is also important and includes consideration of many strategic issues, which need to be addressed, at both individual PRA and inter-agency level. The recovery phase can typically include:

- Assisting the physical and emotional recovery of victims;
- Providing support and services to persons affected by the emergency;
- Clean-up of damaged areas;
- Restoration of infrastructure and public services;
- Supporting the recovery of affected communities;
- Planning and managing community events related to the emergency;
- Investigations/inquiries into the events and/or the response;
- Restoring normal functioning to the PRAs; and
- Managing the economic consequences.

A structured transition from response to recovery is critical for agencies, both collectively and individually. The recovery stage may be as demanding on the Council resources and staff of the individual agencies as the emergency itself, as work may extend for a considerable time after the incident.

13.1.1 Supporting individuals and communities affected by the emergency

Following an emergency incident, assistance may be required by the victims of the emergency – not only those directly affected, but also family and friends, who may suffer bereavement or anxiety. A major emergency can have a serious effect on a community. The recovery phase should provide support and long-term care for individuals involved in the incident and the communities affected by the incident. It is imperative that the Council restores its critical service to a pre-emergency state as quickly and efficiently as possible. The services and staff the Council may be able to provide are based upon a wide range of skills and resources drawn from its day-to-day operations.

There specific requirements for each PRA in the recovery process are:

Local Authority

- Clean-up;
- Rebuilding the community and infrastructure;
- Responding to community welfare needs (e.g. housing); and
- Restoration of services.

An Garda Síochána

- Identification of fatalities;

- Preservation and gathering of evidence;
- Investigation and criminal issues;
- Dealing with survivors;
- Dealing with relatives of the deceased and survivors; and
- Provision of an appropriate response to the immediate public need.

Health Service Executive

- Provision of health care and support for casualties and survivors;
- Support for relatives of casualties and survivors;
- Responding to community welfare needs; and
- Restoration of health services.

13.1.2 Public appeals and external aid

There is a need for the co-ordination of emerging recovery issues, such as managing public appeals and external aid, from the earliest stages of the response phase. For this reason, the arrangements for co-ordination of response should continue to operate during the transition from the Response to Recovery stages.

13.2 Clean-Up

In the aftermath of an emergency, the clean-up operation and removal of debris and contaminated waste is assigned to the Local Authority. In consultation with the EPA and specialist companies Tipperary County Council will commence clean up of a site as soon as possible but without hindering the investigation process. Careful consideration must be provided for the removal of decontaminated debris to approved locations.

13.2.1 Arrangements for cleanup of sites / removal of debris / decontamination of sites of emergency and the Council's role

Tipperary County Council will ensure that the holder of waste material or polluting matter will be responsible for the clean-up of sites, the removal of debris and the decontamination of site. Following an incident, the holder of waste material or polluting matter will carry out a Risk Assessment in order to limit or prevent a risk to public health and safety and/or environmental pollution. The Risk Assessment will identify the hazards created as a result of the incident (both direct and indirect), all potential receptors and the possible interconnecting pathways. It will quantify the level of risk associated with the site (based on the significance of the hazard and the sensitivity of the identified receptors) and recommend remedial measures which shall be approved by Tipperary County Council.

The selection of remedial measures is dependent on the results of the quantitative risk assessment that will be site specific. It should be noted that prior to the risk assessment it is assumed that the waste material or polluting matter will be removed from the site unless it can be demonstrated that an alternative provides greater protection to public health and the environment. There are a number of Risk Assessment approaches and

tools available. Agreement on the most appropriate response shall be sought from Tipperary County Council at the outset.

13.3 Restoration of infrastructure and services and the Council's role

The Local Authority must ensure that its critical services are restored as quickly as possible. A Business Continuity Plan has been drawn up to meet these demands.

13.3.1 Procedures and arrangements for monitoring the situation

At a point when the issues on the agendas of Co-ordination Groups are largely recovery focussed, it may be appropriate to re-title the group as the Local, Regional or National Recovery Co-ordination Group. From the earliest stage, it may be appropriate also for the Local, Regional or National Co-ordination Group to appoint a Recovery Working Group to plan ahead. These groups will be responsible for the co-ordination of the recovery phase, managing resources and monitoring the situation until the issues arising are more appropriately dealt with by the normal management processes.

13.3.2 Procedure for liaison with utilities

The utility companies may need to be mobilised in the recovery phase in order to provide essential services such as gas, water and electrical supplies and communications facilities. The Local Authority ICT Section also has a role to play in the recovery phase and will need to liaise with utilities in order to bring services back on line, such as communication links etc.

13.3.3 Determining the order of priorities

It is the responsibility of the Local, Regional or National Recovery Co-ordination Group together with the Recovery Working Group to prioritise events during the recovery phase. It should be noted that staff welfare arrangements needs to be given priority in the recovery stage of an incident, so that the needs of all staff, both emergency response teams and general staff (including management), are catered for. In addition, the needs of staff that are not directly involved in responding to the incident should also be considered.

13.3.4 Protection measures against continuing hazards

Protection measures put in place against continuing hazards will be subject to a review of the response to a major emergency. Short term protection measures will be carried out by monitoring of the hazard by the appropriate Council services.

Section 14

Review of the Major Emergency Plan

14.1 Internal Review Process

Tipperary County Council will undertake an internal review of the Major Emergency Plan on a yearly basis. The review should be held on the annual date of implementing the plan and also following any exercises or incidents. This will include:

- Reviewing current risk assessments and update as required.
- Incorporating any changes recommended from report on incident/exercises.
- Reviewing and updating the roles of individuals that hold key positions.
- Updating the risk holders within the functional area of Tipperary County Council
- Updating the list of names and contact details.

Please Refer to section 1.8 of this document.

14.2.1 External Review of the Plan (1) with the other PRA's

The Council's appraisal will be reviewed and validated by the Mid-West Regional Steering Group (RSG) on Major Emergency Management. The following general process will apply to this undertaking:

- The RSG should establish a programme for the completion of appraisals by each of the principal response agencies in the region and the return of the completed agency appraisal reports to the chair of the RSG;
- The completed agency appraisal reports should be reviewed, either by the entire RSG or, alternatively, by a specific sub-group, acting on behalf of the group, which will report to the full group;
- Any issues arising from the review should be returned to the principal response agency concerned for appropriate action;
- In case of disagreement between a principal response agency and a RSG, the National Steering Group should be consulted and should decide on the issue; and
- Subject to the above, the RSG should indicate to each principal response agency that its appraisal has been validated.

14.2.1 External Review of the Plan (2) by the Department of Environment, Community and Local Government

The Council's appraisal shall be reviewed and validated by the Department of Environment, Community & Local Government. The following general process shall apply to the undertaking of a review within the Department:

- A person / team with appropriate background, knowledge and experience of emergency management should be nominated to undertake the review;

- Any issues arising from the review should be returned to the local authority concerned for appropriate action; and
- Subject to the above, the Department should indicate to each principal response agency that its appraisal has been validated

14.3.1 Major Emergency Plan review after every activation

Each principal response agency should carry out an operational debriefing of its involvement in the response to every declared major emergency and document this debriefing in a report.

14.3.2 External Reviewing and Reporting of the Co-ordination function

The three principal response agencies should review the inter-agency co-ordination aspects of the response after every declaration of a major emergency. This review should be hosted by the lead agency and involve all services which were part of the response. The purpose of the review should be to formulate the lessons learned from the incident in relation to coordination and to document these.
A composite report, based on appropriate input from each principal response agency's internal report and the report on co-ordination, on every declared major emergency,--+ should be compiled by the principal response agency which was the initial lead agency for submission within a reasonable timescale to the relevant Regional Steering Group and the National Steering Group.

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APPENDIX B

CONTRACTOR'S ENVIRONMENTAL POLICY STATEMENT

APPENDIX C

CONTRACTOR'S WORKS PROGRAMME

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