

**NEWTOWNMOUNTKENNEDY TOWN CENTRE  
REFURBISHMENT PROJECT – RIVERSIDE WALK**

**FOR WICKLOW COUNTY COUNCIL**

**PLANNING REPORT**

**W335-OCSC-XX-XX-RP-C-0003**

**JUNE 2022**



**OCSC**

O'CONNOR | SUTTON | CRONIN

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**DOCUMENT CONTROL & HISTORY**

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**WICKLOW COUNTY COUNCIL  
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PROJECT NO. W335**

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## 1. INTRODUCTION

O'Connor Sutton Cronin Multidisciplinary Consulting Engineers (OCSC) was commissioned by Wicklow County Council to develop a design for the completion of the Newtownmountkennedy Town Centre Refurbishment Project – Riverside Walk. The Project comprises a new walkway beside the Glendarragh Stream and the Newtownmountkennedy River, and a pedestrian crossing of the R772 Dublin Road.

This Planning Report sets out the objectives, design, and characteristics of the proposed Project.

## 2. PROJECT DESCRIPTION

The Project comprises a new walkway beside the Glendarragh Stream and the Newtownmountkennedy River, and a pedestrian crossing of the R772 Dublin Road. The route extends from the R772 at Main Street, eastwards beside the Glendarragh Stream as far as the Newtownmountkennedy River and then north as far as the R772 Dublin Road. The sections of the walkway approaching the R772 at both ends will comprise an elevated walkway on structure. Where the walkway is provided at grade, it will comprise a gravel footpath.

The proposed walkway joins the R772 Main Street at a location identified in the Draft County Development Plan as a 'civic space' (Objective NK8 in Draft CDP). The proposed elevated walkway is designed to form a balcony adjacent to the existing footpath on Main Street; it is proposed to remove a section of existing boundary wall between the existing footpath and the proposed balcony.

The proposed walkway joins the R772 Dublin Road at the location of a pedestrian entrance to the Newtownmountkennedy Wood. It is proposed to remove a section of existing boundary wall and form a new pedestrian crossing of the R772 to provide a link between the proposed Riverside Walk and the existing paths in Newtownmountkennedy Wood.

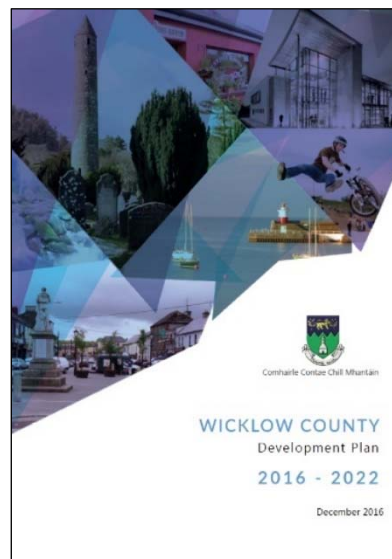
Further details of the Project proposals are presented in the accompanying drawings.

### 3. BACKGROUND

The Wicklow County Development Plan 2016-2022 (CDP), Appendix 8 Green Infrastructure Development Plan Strategy, sets out Specific Green Infrastructure Objectives, including:

*"5: To facilitate the development and enhancement of suitable access to and connectivity between areas of interest for residents, wildlife and biodiversity, with focus on promoting river corridors, Natura 2000 sites, nature reserves and other distinctive landscapes as focal features for linkages between natural, semi natural and formalised green spaces where feasible and ensuring that there is no adverse impact (directly, indirectly or cumulatively) on the conservation objectives of Natura 2000 sites.*

*"6: To identify and facilitate the provision of linkages along and between river corridors within the county and adjoining counties to create inter connected routes and develop riverside parks and create linkages between them to form 'necklace' effect routes including development of walkways, cycleways and wildlife corridors where feasible and ensuring that there is no adverse impact (directly, indirectly or cumulatively) on the conservation objectives of Natura 2000 sites."*



#### **Objective T29** of the CDP:

*"To support the development of new and existing walking, cycling and driving routes / trails, including facilities ancillary to trails (such as sign posting and car parks) and the development of linkages between trails in Wicklow and adjoining counties..."*

#### **Objective T34** of the CDP:

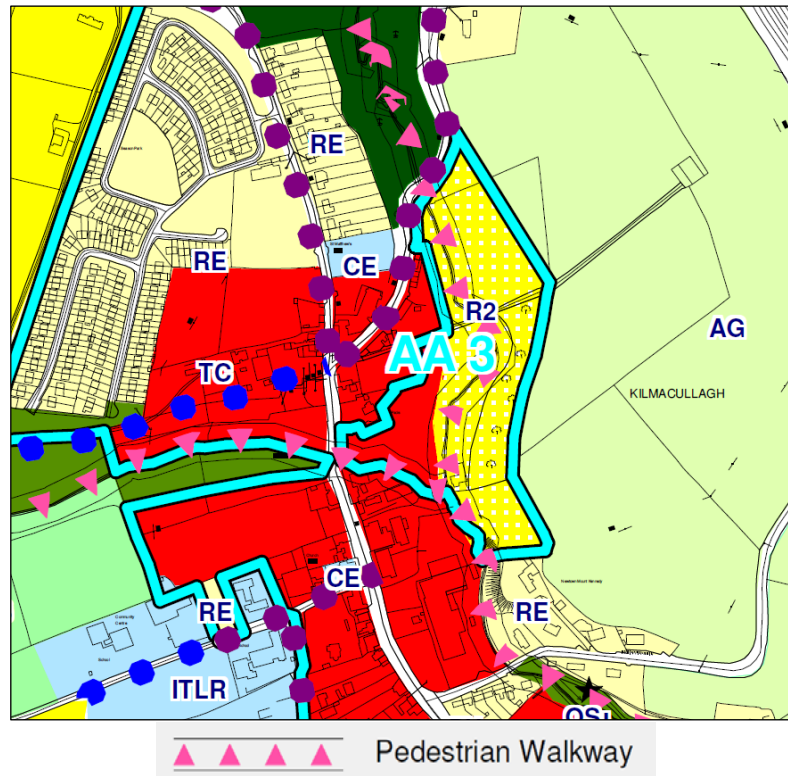
*"To promote and encourage the recreational use of coastline, rivers and lakes and the development of 'blueways'<sup>4</sup> in the County subject to normal environmental protection and management criteria. Where such recreational uses involve the development of structures or facilities, the Planning Authority will ensure that the proposals will respect the natural amenity and character of the area, listed views and prospects onto and from the area in question. Where possible, such structures should be set back an appropriate distance from the actual amenity itself and should not adversely affect the unique sustainable quality of these resources."*



**Objective TR13** of the CDP:

*"To facilitate the development of a cycling and walking amenity routes throughout the County."*

The route of the proposed Riverside Walk is identified in the 2008 Newtownmountkennedy Local Area Plan (LAP) – see *Figure 1*.



*Figure 1: Extract from Newtownmountkennedy LAP Map1. The proposed Riverside Walk comprises part of the identified "Pedestrian Walkway"*

The route of the proposed Riverside Walk is through an area identified in the LAP as Action Area 3. The LAP includes the following objectives:

*"A linear riverine park, which shall be open to the public, shall be provided in Action Area 3"*

*"The Council will encourage and facilitate the linking of the existing amenity walk in the Coillte forest at Season Park to the new riverine park in AA3 and from there onto the river valley to the south of the Kilcoole Road (as shown on Map 1 – pink line)"*

The Draft Wicklow County Development Plan 2022-2028 (Draft CDP) Core Strategy (Chapter 3) identifies Newtownmountkennedy as one of five 'Self-Sustaining Towns', which are described as towns that "require targeted 'catch up' investment to become more self-sustaining".



The Self-Sustaining Town Plans (Draft CDP Volume 2, Part 1) states that Self-Sustaining Towns "require contained growth, focusing on driving investment in services, employment growth and infrastructure whilst balancing housing delivery". The vision for Newtownmountkennedy described in the Draft CDP includes:

- "To ensure a high-quality living environment for existing and future residents;
- Sustain a revitalised town centre with commercial, residential and community developments being consolidated and promoted within this area;
- Create increased connectivity between a revitalised town core and the existing and proposed residential areas within the town;
- Develop the tourism potential of the area as a visitor / tourist destination in itself and in its role as a 'gateway' to surrounding attractions such as Wicklow Mountains, the Vartry Reservoir and Druids Glen Resort;
- Facilitate and encourage the development of the local forests and rivers as a key tourism and recreation asset;
- Protect the built and natural heritage of the area;
- Facilitate a transition to a low carbon settlement."

The Self-Sustaining Town Plans (Draft CDP Volume 2, Part 1) states:

*"Good quality public realm can provide the venue for multiple activities, including commercial, recreational, educational and of course, fun and enjoyment for residents and visitors alike.*

*"The road improvement schemes which were carried out previously regularised car parking along the main street and focused on the convenience of car users rather than visually improving the public realm or enhancing the safety or convenience of pedestrians and cyclists. As a result, the town centre is somewhat dominated by parked cars, available road space is not suitably shared between users (i.e. the on street car parking spaces occupy space that could be alternatively used for cycle lanes and / or wider footpaths) and adequate visibility / sightlines are not available particularly at junctions.*

*“Further development of the public realm of Newtownmountkennedy would contribute to the quality of life of those living and visiting the town would include, the improved appearance of the streetscape, landmark buildings and appearance of principal junctions / gateways; building frontages, in particular materials, colours and shop fronts, the introduction of urban open space and parks, improved footpaths, lighting, seating and other street ‘furniture’.”*

**Objective NK8** of the Draft CDP aims to deliver:

- *“the provision of mechanisms to slow traffic through this area [Main Street];*
- *alterations to the layout of the road carriageway and on-street car parking to allow for the provision of new or improved pedestrian and cycling facilities and additional pedestrian crossing points;*
- *the creation of new civic spaces at suitable locations and in particular at the existing plaza at the Parkview Hotel;*
- *improved hard and soft landscaping and tree planting, lighting, seating and other street ‘furniture’;*
- *the improvement of safety and appearance of key junctions, for example at the entrance to the car park at Dunnes Stores, the Roundwood Road junction at the Church leading up to the schools and the junction at the Woodstock Road;*
- *the provision of improved facilities for public transport providers and users, including improved access to bus stops (particularly crossing points for passengers), shelters, covered bicycle parking, information points with maps, routes, timetables, real-time information and designated taxi ranks at/near the bus stops on Main Street;*
- *The provision of bicycle parking and electric car charging points.”*

**Objective NK9** of the Draft CDP aims to:

*“avail of opportunities to remove public on-street car-parking on the Main Street, subject to due consideration of the commercial needs of Main Street, including loading parking”.*

**Objective NK10** of the Draft CDP aims to:

*“support opportunities to create better linkages between the Main Street, the river and nearby forests”.*

The Self-Sustaining Town Plans (Draft CDP Volume 2, Part 1) states:

*“With respect to transportation and movement, one of the key issues arising in Newtownmountkennedy relates to the vehicular dominance of the main street, and its alignment / design which allows for high*

*speeds thereon, which is diminishing safety for pedestrians / cyclist and the overall experience and function of the town centre. In addition, on-street car-parking is available along the length of the main street which is attractive to users due to ease of access and abundance, but which clutters the town and makes it hard to merge from properties along the main street and in particular from the car park at Dunnes Stores. It also makes it very dangerous for pedestrians crossing the street as they are crossing behind parked cars making it harder for drivers to see them. Clearly, there is a need to review and possibly redesign the parking along the main street.*

*"It is key goal during the lifetime of this plan to see significant improvements in this area, to reduce car speeds, enhance pedestrian and cycling safety, eliminate on-street car-parking where necessary and overall to improve the public realm."*

*"Footpaths are provided within the settlement and they link the north of the town at Garden Village to the southern section of the town at Newcastle Hospital. The majority of the footpaths however tend to be narrow in nature and not suitable for those with limited mobility. In addition, there are limited cycling lanes in the town; it is objective of this plan to facilitate and support projects to improve pedestrian and cycling infrastructure and support a modal shift to these more sustainable active modes for local journeys and / or to connect with public transport options."*

**Objective NK15** of the Draft CDP aims to:

*"improve existing or provide new footpaths and cycleways on existing public roads, as funding allows, and to facilitate the development of a cycling and walking amenity routes throughout the town in accordance with the NTA's "Permeability Best Practice Guide" and National Cycle Manual including foot and cycleways off road (e.g. through open spaces, along established rights-of-way etc), in order to achieve the most direct route to the principal destination (be that town centre, schools, community facilities or transport nodes), while ensuring that personal safety, particularly at night time, is of the utmost priority.*

*"In particular, to improve existing and provide new footpaths and cycleways (as funding allows) at the following locations and ensure developments along these routes are so designed as to provide for the delivery of required improvements:*

- *"Along the R772 from Garden Village to Newcastle Hospital*
- *"Along regional road R765 from St. Joseph's Church to the Moneycarroll link road and local road L5048 in order to provide safe routes to existing primary schools..."*

**Objective NK16** of the Draft CDP aims to:

*“maintain / upgrade and provide new regional and local routes as may be necessary, in accordance with the Principles of Road Development as set out in Section 5.8.3 of the NTA Transport Strategy with overall objective to:”*

- *“Enhance pedestrian and cycle safety through the provision of safer road junctions, improved pedestrian crossing facilities and the incorporation of appropriate cycle measures including signalised crossings where necessary;*
- *“Address localised traffic delay locations, in cases where the primary reason for intervention is to address safety or public transport issues at such locations;*
- *“Implement various junction improvements and local reconfigurations on the regional and local road network.”*

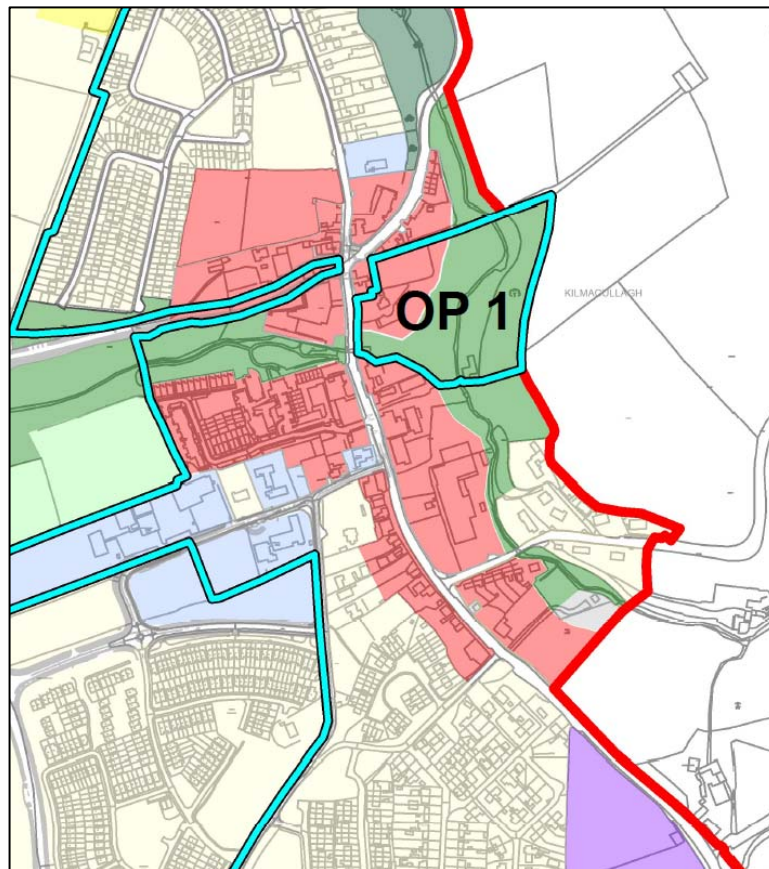
**Objective NK18** of the Draft CDP aims to:

*“improve the public realm of the town centre of Newtownmountkennedy in order to deliver a high level of priority and permeability for all modes of transport in order to create accessible, attractive, vibrant and safe places to work, live, shop and engage in all areas of community life.”*

**Objective NK23** of the Draft CDP aims to:

*“promote the development of a series of open spaces and recreational areas linked by green corridors in the Newtownmountkennedy area as follows:”*

- *“Glendarragh Stream (east): Along both banks of this watercourse from the Main Street (R772) to its meeting with the Newtownmountkennedy River on the grounds of Valle Pacis. It is an objective to secure the development of a riverine park on these lands – the old Mill is located in this area which shall be protected and enhanced in the delivery of any park in this area.*
- *“Newtownmountkennedy River (north): Along both banks of this watercourse from the forest, across the R772, continuing as far as the Woodstock Road; it is an objective of this plan to provide for a new ‘gateway’ and pedestrian crossing feature on the R772 to allow for safe passage between the two parts of this green route;...”*



*Figure 2: Extract from Draft Wicklow County Development Plan 2022-2028, Newtownmountkennedy Town Plan, Map No.1 Land Use Zoning Objectives*

Map No.2 of the Newtownmountkennedy Town Plan (Draft CDP Volume 2, Part 1) identifies a number of protected structures within the plan area, ten of which are adjacent to the proposed public realm improvements. The Map also identifies one View at the location of the proposed civic space – see *Figure 3*.

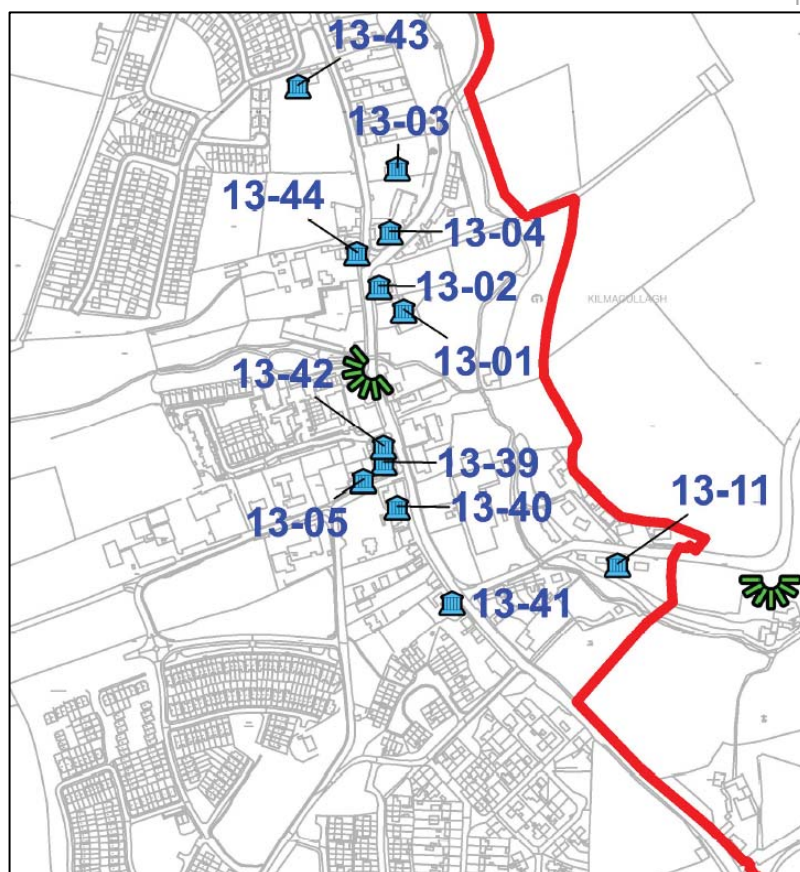


Figure 3: Extract from Draft Wicklow County Development Plan 2022-2028, Newtownmountkennedy Town Plan, Map No.2 Heritage Objectives

The Draft CDP Town & Village Centres Placemaking & Regeneration (Chapter 5) references the Framework for Town centre Renewal (Retail Consultation Forum), which recognises eleven key attributes for successful town centres. The Draft CDP identifies that:

*“The two attributes which are of particular importance in terms of planning and the built environment are ‘Place Making Strategy’ and ‘Visual Appearance Strategy’... The visual appearance of a town has an immediate impact on the perception of a town. Interventions in the public realm can have a transformative effect and act as a catalyst for regeneration and future improvements.”*

The Draft CDP Town & Village Centres Placemaking & Regeneration (Chapter 5) states:

*“It is increasingly recognised that investing in quality public spaces and the public realm generates tangible benefits including stimulating economic growth. High quality public realm generates confidence and makes an area attractive to potential investors and visitors. Measures to improve the public realm include harmonising signage and reducing overall visual clutter by adopting a consistent approach in terms of street furniture, lighting, paving etc. Other measures include planting,*

*landscaping, boundary treatments, painting buildings, clean and safe streets, undergrounding of wires and accessible footpaths."*

The Draft CDP Town & Village Centres Placemaking & Regeneration (Chapter 5) identifies Town and Village Regeneration & Rejuvenation Priorities, which for Newtownmountkennedy comprises:

*"Placemaking project for Newtownmountkennedy that will address the need to deliver catch-up facilities and regeneration of the town centre. The project includes provision of a new community centre and sports facilities, public realm improvements, and improvements in permeability. Extension of the existing riverine park into lands to the east of the main street, via a shared main street plaza, with green connections to other watercourses and recreational lands such as the Coillte forest to the north of the town."*

**Objective CPO5.7** of the Draft CDP aims to:

*"identify and pursue transformational regeneration and renewal proposals and public realm initiatives that revitalise town and village centres, encourage more people to live in town and village centres, facilitate and incentivise new economic activity and provide for enhanced recreational spaces."*

**Objective CPO5.16** of the Draft CDP aims to:

*"actively pursue and implement environmental and public realm improvements and provision of amenities that create more attractive places and encourage healthier lifestyles for all ages and abilities."*

**Objective CPO5.19** of the Draft CDP aims to:

*"implement environmental and public realm improvements in town and village centres to a high standard and finish."*

**Objective CPO5.23** of the Draft CDP aims to:

*"require that new town centre development particularly public realm improvement works incorporates the principles of universal design to create an environment that is accessible, usable, convenient and a pleasure to use for all users."*



#### **4. PURPOSE & OBJECTIVE**

As described in Section 3 earlier, the need for the Project has been identified in the County Development Plan, the Local Area Plan and the Draft County Development Plan.

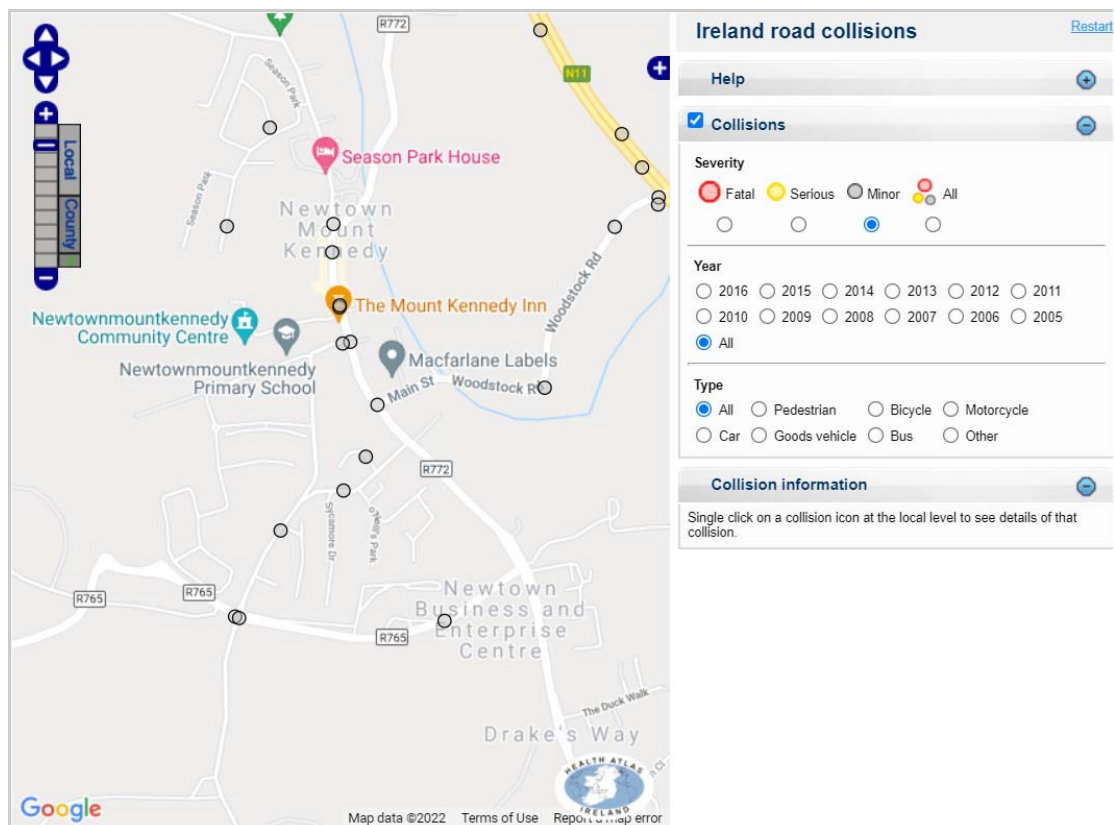
The overall purpose of the Project is to enhance the public realm, with amenities that are complimentary to the overall vision for Newtownmountkennedy town centre and enhance safe access to and from the town centre, through estate linkages and safe walk/cycle ways.

The Project will provide:

- improved and safer transport and pedestrian facilities for all users.
- off road foot and cycle way, while ensuring that personal safety is the utmost priority.
- a recreational amenity that promotes and encourages healthy living and wellness through walking and cycling.

## 5. COLLISION HISTORY

OCSC interrogated the Road Safety Authority (RSA) website <https://www.rsa.ie/road-safety/statistics/collisions> in order to ascertain the number, location, date, and severity of collisions recorded in the area in recent years. The site provides details of all accidents by year between 2005 and 2016 (latest available statistics). Collisions/accidents are categorised by severity i.e. fatal, serious, and minor. The statistics also identify what the collision type was i.e. vehicle only, pedestrian, cyclist/motorcyclist etc. *Figure 4* shows an extract from the dataset for the Project environs.



*Figure 4: Extract RSA Collision Data*

OCSC collated the raw collision data into a table in order to assist in the assessment of same. This is shown in Table 1 over. The table summarises only those recorded accidents which took place along the existing R772 within the extents of the Project.

<b>RSA Collision History</b>				
<b>Year</b>	<b>Fatal</b>	<b>Serious</b>	<b>Minor</b>	<b>Total</b>
2005	0	0	0	0
2006	0	0	0	0
2007	0	0	0	0
2008	0	0	0	0
2009	0	0	0	0
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	0	0	0	0
2014	0	0	0	0
2015	0	0	0	0
2016	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

*Table 1: RSA Collision Data Project Study Area*

The dataset shows zero accidents within the site extents of the Project.

The Project includes a new pedestrian crossing of the R772 Dublin Road. To the north and south of the pedestrian crossing, there will be minor alteration of the carriageway to regularise carriageway width and alignment on approach to the crossing to ensure compliance with the Design Manual for Urban Roads and Streets (DMURS).

## 6. CONSTRAINTS

The following constraints were considered in the preliminary design process:

- Available Mapping & Photography;
- Extents of Study Area;
- Land Ownership;
- Granted & Pending Planning Permissions;
- Archaeology;
- Ecology;
- Topography;
- Soils & Geology;
- Site Investigation;
- Traffic;
- Flood risk management and drainage.

In addition to the above headline items, regard was had to the existing built environment along with various objectives of the Wicklow Draft County Development Plan 2022-2028.

## 7. GEOMETRY & DESIGN STANDARDS

### Design Standards

The Project is located within the urban area of Newtownmountkennedy. The Project has been designed to urban standards in accordance with the *Design Manual for Urban Roads and Streets* (DMURS), published by the Department of Transport, Tourism and Sport and the Department of Environment, Community and Local Government in 2013. To manage the change in road environment on approach to the town centre, reference is made to Transport Infrastructure Ireland's *The Treatment of Transition Zones to Towns and Villages on National Roads* (DN-GEO-03084). The current speed limit along the R772 is 50 kph and the proposed speed limit along the Project is taken herein as being the same.

The design philosophy adopted for the Project applies a balanced and integrated approach to street design by applying, as far as possible, the four design principles of DMURS i.e. connected networks; multi-functional streets; pedestrian focus; and multidisciplinary approach. Where DMURS contains insufficient design guidance, alternative guidance documents are used, e.g. for drainage design, the Greater Dublin Strategic Drainage Strategy has been used as the standard.

### Gradient

With reference to DMURS Section 4.4.6, the gradient of the proposed Riverside Walk will have a maximum gradient of 5%. On the R772 Dublin Road, where it is proposed to regularise the alignment of the existing road, gradients will match existing road gradients.

### Road Classification

On the R772 Dublin Road, where it is proposed to regularise the alignment of the existing road, the road will be designed as an Arterial Street. The route will serve as a public transport route, cater for private vehicular traffic, and will include facilities for pedestrians. The road within the scope of the Project is therefore being classified in accordance with Table 3.1 of DMURS as an Arterial Street. Table 3.1 of DMURS is reproduced in Table 2.

DMURS Description	Roads Act/TII DMRB	Traffic Management Guidelines	National Cycle Manual
Arterial	National	Primary Distributor Roads	Distributor
Link	Regional <sup>1</sup>	District Distributor Local Collector <sup>1&amp;2</sup>	Local Collector
Local	Local	Access	Access

**Notes:**

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

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

Table 2: DMURS Table 3.1, Terminology

Within the scope of the Project, the R772 includes Rural Fringe and Transition sections, as described by Transport Infrastructure Ireland's *The Treatment of Transition Zones to Towns and Villages on National Roads* (DN-GEO-03084). This will inform the provision of a 'Gateway' at the interface of Rural Fringe and Transition and also the selection of appropriate carriageway and footpath widths.

### Road Design Speed

The road within the Project extents will have a Speed Limit of 50 kph. The Design Speed for the proposed works are derived from Table 4.1 of DMURS which is reproduced in Table 3 below.

		Pedestrian Priority		Vehicle Priority		
Function	Arterial	30-40 kph	40-50 kph	40-50 kph	50-60 kph	60-80 kph
	Link	30 kph	30-50 kph	30-50 kph	50-60 kph	60-80 kph
	Local	10-30 kph	10-30 kph	10-30 kph	30-50 kph	60 kph
		Centre	Neighbourhood	Suburban	Business/ Industrial	Rural
		Context				

Table 3: DMURS Table 4.1, Design Speed

### Riverside Walk Cross Section

The width of the River Side Walk is determined by reference to DMURS Section 4.3.1 and Figure 4.55 which is reproduced in *Figure 6* later. DMURS describes a minimum footpath width of 1.8m as allowing "the minimum space for two people to pass comfortably; areas of low pedestrian activity". It is proposed to provide the Riverside Walk with a minimum width of 2.0m.

### Road Cross Section

With reference to DMURS Section 4.4.1, the carriageway lane widths for the R772 Dublin Road, where it is proposed to regularise the alignment of the existing road, were selected from Figure 4.55 of DMURS, which is reproduced in Figure 5 over, for standard carriageway widths for Arterial Streets. The proposed carriageway width will be 6.0m.

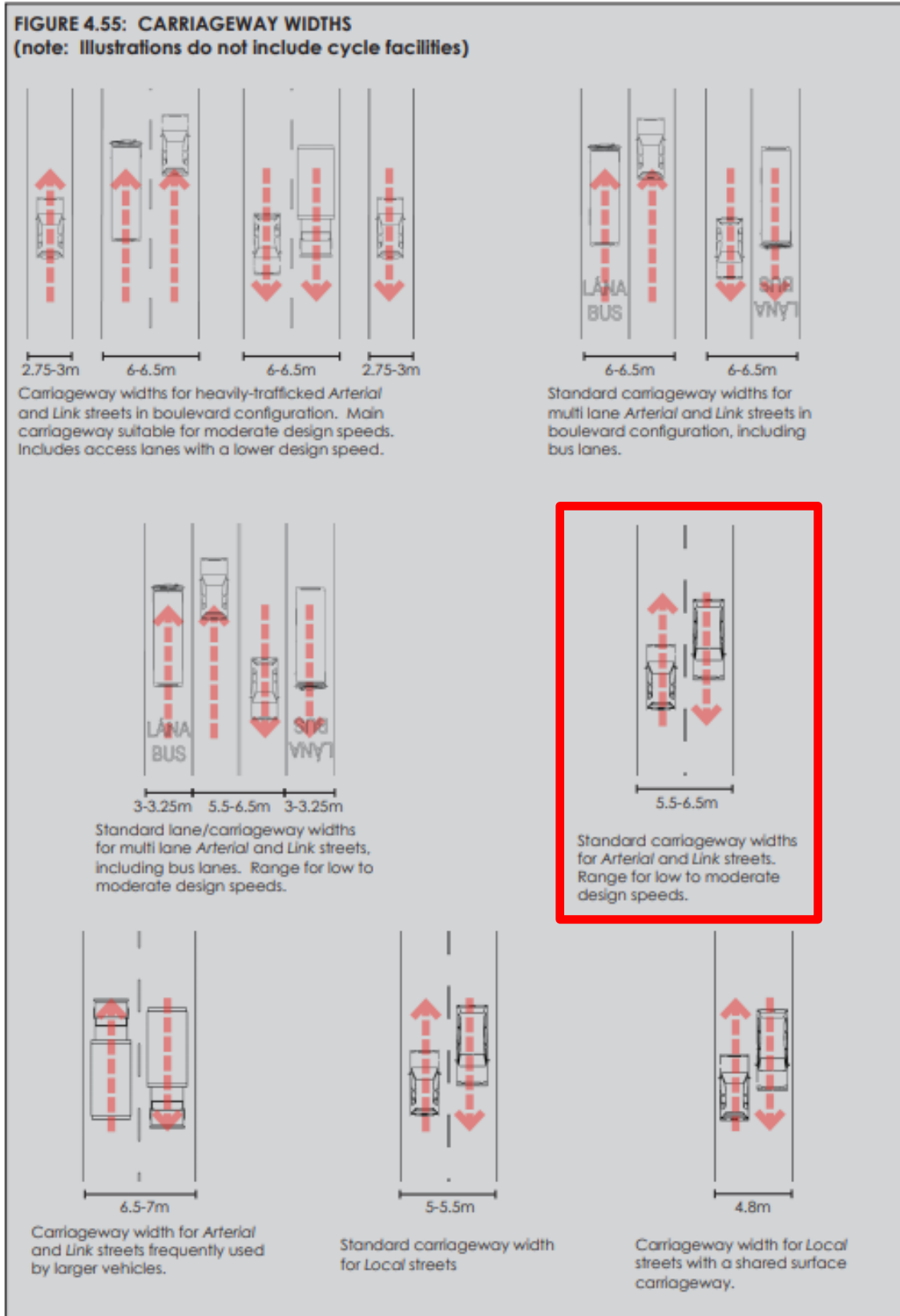


Figure 5: DMURS Carriageway Widths



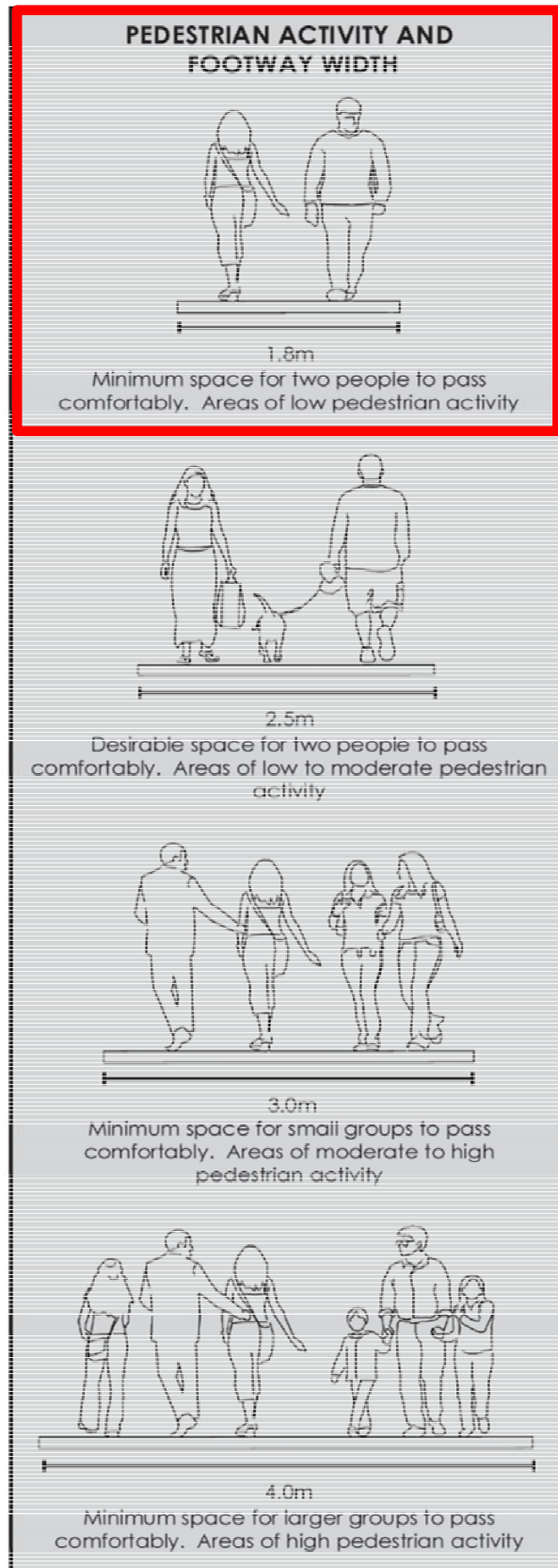


Figure 6: DMURS Footpath Widths

## Principle Geometric Parameters

The principal geometrics for the proposed Project are set out below in Table 4.

Design Heading	Design Element	Requirement	Standards Ref.
Road Type	Road Type	Arterial Street	Table 3.1 DMURS/ NRA TD 9/07
	Design Standard	Urban	DMURS
Design Speed	Mandatory Speed Limit	50 kph	Table 4.1 DMURS
	Design Speed	50 kph	Table 4.1 DMURS
Sight Distance	Stopping Sight Distance	45 m	Table 4.2 DMURS
	Stopping Sight Distance on Bus Route	49 m	Table 4.2 DMURS
Horizontal Alignment	Road Camber	2.5%	DMURS 4.4.6
	Superelevation	2.5%	DMURS 4.4.6
	Min. R (no s/e)	104m	Table 4.3 DMURS
	Des. Min. R	82m	Table 4.3 DMURS
Vertical Alignment	1-step below Des. Min. R	56m	Table 4.3 DMURS
	Des. Min. K Crest	4.7	Table 4.3 DMURS
	Des. Min. K Sag	6.4	Table 4.3 DMURS
	1-step Below Des. Min. K	4.1	Table 4.3 DMURS
	Des. Max. Gradient	5%	DMURS 4.4.6
	Max. Gradient with Relaxation	8.3%	DMURS 4.4.6
Cross-Section & Headroom	Cross-Section	3.00m traffic lane width	DMURS 4.4.1
		3.0m/2.5m footpath	DMURS 4.4.1
Junctions	Arterial Street	Signalised: Yes	DMURS 4.4.3

Table 4: Principle Geometric Parameters

## 8. DRAINAGE

### Design Guidelines Overview

The development is required to adhere to Local Authority requirements i.e. the Wicklow County Development Plan 2016-2022 and the Greater Dublin Strategic Drainage Study (GSDSDS).

### Existing Site Drainage

The Newtownmountkennedy River flows generally from north to south in the vicinity of the Project area. At the northern end of the Project area, the R772 Dublin Road crosses over the Newtownmountkennedy River, while the R772 Main Street runs roughly parallel with the River. A second watercourse, known as the Glendarragh Stream flows generally from west to east and joins the Newtownmountkennedy River in the grounds of Valle Pacis. Main Street crosses over the Glendarragh Stream at the location where the proposed Riverside Walk joins Main Street. There are existing surface water drains discharging to the Newtownmountkennedy River and the Glendarragh Stream.

Where it is proposed to regularise the alignment of the existing road, the R772 Dublin Road currently sheds surface water directly to the Newtownmountkennedy River via outlets in the parapet wall. The route of the proposed Riverside Walk is currently in agricultural use or private open space; the surface is generally grassed and sheds excess surface water to the adjacent Newtownmountkennedy River and Glendarragh Stream.

### Proposed Drainage Strategy

With consideration of the narrow cross sectional width and the permeable nature of the pathway, the proposed Riverside Walk will be drained over-the-edge to the existing grassed area adjacent, maintaining the existing drainage path to the adjacent Newtownmountkennedy River and Glendarragh Stream.

Where it is proposed to regularise the alignment of the existing road, surface water runoff from the R772 Dublin Road will be collected in road gullies. All road gullies will be trapped, to help prevent sediment and gross pollutants from entering the surface water network, thus improving the water quality discharging from site. The grated covers are to have a minimum load classification of D400, for frequent vehicular traffic, and shall be lockable – see Figure 7. Existing outfall locations will be retained.

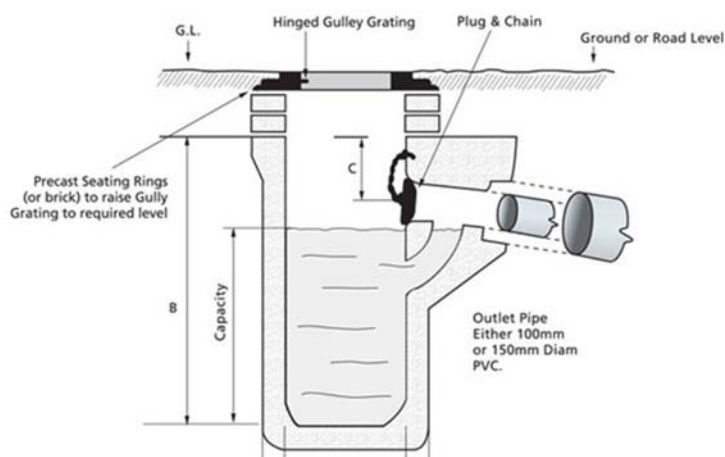


Figure 7: Trapped Road Gully (Typical Detail)

Parameter	Value
Annual Average Rainfall (AAR) Value	1045mm
Rainfall M5-60 Value	19.70mm
Rainfall M5-2D Value	73.5mm
Climate Change Allowance	+20%
Jenkinson's r	0.268
Impermeability Factor for paved areas	1.0
Time of Entry	4 minutes
Smallest pipe diameter to use for carriageway drainage	150mm
Roughness Coefficient	0.6
Minimum permissible velocity (self-cleansing velocity)	1.0 m/s
Maximum velocity	2.99 m/s
Minimum cover to pipes (unprotected)	1200mm
Pipe Levels	Soffit-to-Soffit
Return Period for no surcharge	5 years
Return Period for no flooding	100 years

Table 5: Summary of Drainage Design Parameters

## 9. WATER AND WASTEWATER

There is no proposal for new water appliances requiring a connection to public mains water or wastewater infrastructure.

## 10. PAVEMENT DESIGN

### General

The pavement design will be prepared in accordance with TII/NRA Addendum to HD 24/06. This Addendum amends Standard HD24/06 – Pavement Design and Maintenance: Traffic Assessment of the DMRB. The preliminary design of capping layer, sub-base and pavement layers follow the requirements of TII/NRA HD 25-26/10 – Pavement and Foundation Design. The pavement materials to be used will further be in accordance the requirements of Series 700 to 1000 inclusive of the TII/NRA Specification for Road Works contained within Volume 1 of the Manual of Contract Documents for Road Works.

The design recommendations for the foundation layers of 'capping' and sub-base are given in the design standard TII/NRA HD 25-26/10 and are based on the strength of the sub- grade, measured as its 'CBR' value. Capping is used to improve weak sub-grade material. Where deemed necessary and within the detailed design phase of the project, it may be proposed to use a capping layer using granular material conforming to Series 600 of the TII/NRA Specification for Road Works. The thickness of same will be as required by the above standard as appropriate to the CBR value of the sub-grade and selected pavement type.

### Pavement Typology

Given the relatively short length of carriageway involved, and that the noise characteristics of concrete pavements would be inappropriate in the surrounding environment, the use of a concrete pavement option for the Project is discounted.

### Traffic Growth Rates & Expansion Factors

Traffic growth will be applied based on PAG Unit 5.3 – Travel Demand Projections (October 2021) guidelines which set out a standard approach to traffic growth rates as shown in Figure 8 over. The growth rates in Table 6.2 (Link-Based Growth Rates: County Annual Growth Rates) can be applied.

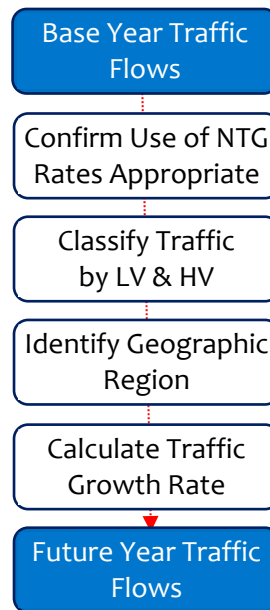


Figure 8: Application of National Traffic Growth Forecasts

Based on the foregoing and allowing that the Project is located in Co. Wicklow, the following traffic national growth figures apply:

National Traffic Growth Forecasts: Annual Growth Factors [East]						
Period	Low Growth		Central Growth		High Growth	
	LV	HV	LV	HV	LV	HV
2016 – 2030	1.0140	1.0361	1.0157	1.0377	1.0189	1.0412
2030 – 2040	1.0033	1.0153	1.0051	1.0173	1.0091	1.0211
2040 – 2050	1.0029	1.0185	1.0047	1.0204	1.0110	1.0305

Table 6: National Traffic Growth Factors for Co. Wicklow

AADT Expansion Factors can be calculated based on PAG Unit 16.1 - *Expansion Factors for Short Period Traffic Counts*.

### Project Pavement Design

TII/NRA Addendum to HD 24/06 specifies a formula for calculating traffic loading which in turn is used to calculate the required design thickness of combined asphalt layers. This formula is as follows:

$$T_i = W \times P \times 10^{-6} \times 365 \times F_o \times Y \times G \quad (\text{msa})$$

The definitions for the above symbols and corresponding values used are as follows:

Symbol	Definition	Value
$T_i$	Pavement traffic loading for each individual class of vehicle over the design period (msa)	TBC
W	Wear Factor for each traffic class	2.7
P	Percentage of vehicles in the heaviest loaded lane	100%
$F_o$	Annual Average Daily Flow of traffic (AADF) for each traffic class in the year of opening	TBC
Y	Design Period (Years)	20
G	Growth Factor	TBC

*Table 7: HD24/06 Symbols*

The following notes are made with respect to the calculation in this instance:

- Design Traffic (T) typically equals the  $\sum T_i$ , where  $T_i$  is the traffic calculated for a specific class of vehicle. However, where insufficient data is available to make a separate calculation for every vehicle class, a combined approach may be adopted using a single calculation, so that  $T = T_i$ ;
- TII/NRA Addendum to HD 24/06 specifies the  $W_m$  values in HD 24/06 Table 2.3 be used which does not allow a factor for combined vehicle type assessments. However, HD 24/06 was superseded by CD 224 in March 2020. This updated design document includes a wear factor for "all commercial vehicles" in Table 2.18, and this may be used for this calculation;
- The Project is proposed to have a single traffic lane in each direction meaning the value for P is taken as 100%;
- The Growth factor may be calculated based on PAG Unit 5.3 as outlined earlier. While the design period is noted as 20 years, the growth factor may make additional provision for time between year of assessment and year of opening.



This Design Traffic figure will be applied to Figure 4.2 of TII *Pavement & Foundation Design* DN-PAV-03021, to estimate the design thickness of combined asphalt layers for fully flexible design – reproduced in Figure 9.

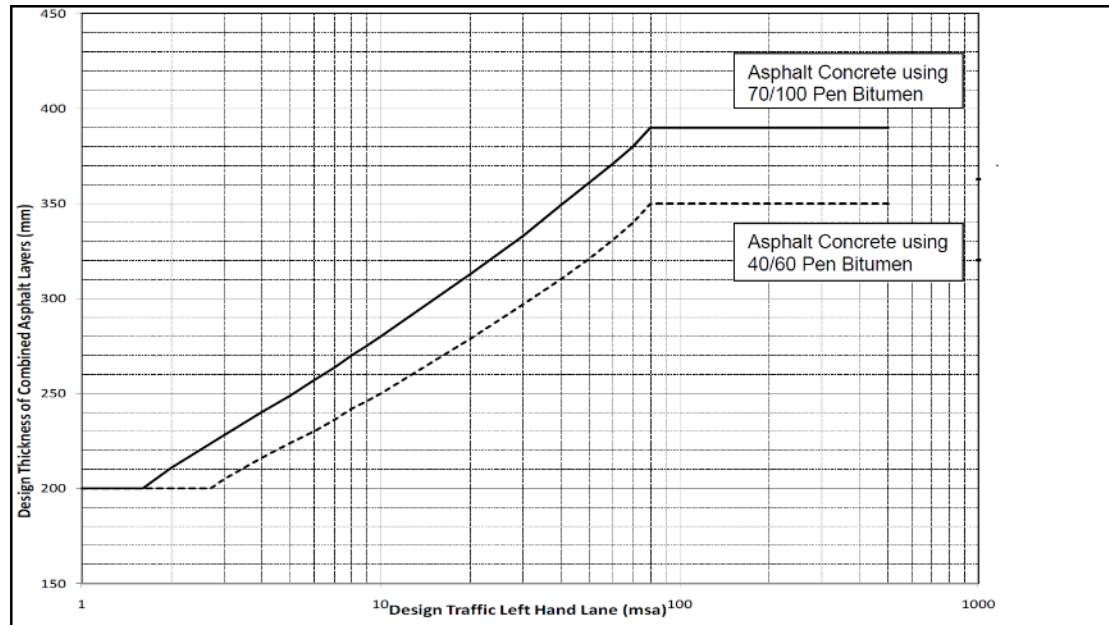


Figure 9: Design Traffic Estimate to TII Design Thickness Chart

#### Summary Pavement Thickness Design

Based on the predicted traffic loading, the process described above will be used to determine the total pavement depth. Based on proposals for arterial routes elsewhere in the Wicklow County Council jurisdiction, a total pavement depth of 245mm is proposed for preliminary purposes. The recommended pavement thickness make-up is presented in Table 8.

Pavement Course	Clause	Mixture Designation/ Material	Thickness (mm)
Surface Course	5	PMSMA 10 surf PMB 65/105-60 des	45
Binder Course	3	AC 20 dense bin 40/60 des	60
Base	3	AC 32 dense bas 40/60 des	140
Sub-base	808	Granular Material Type B	150
Total Pavement Thickness (excl. Sub-base)			245

Table 8: Preliminary Pavement Thickness

## 11. SIGNAGE & DELINEATION

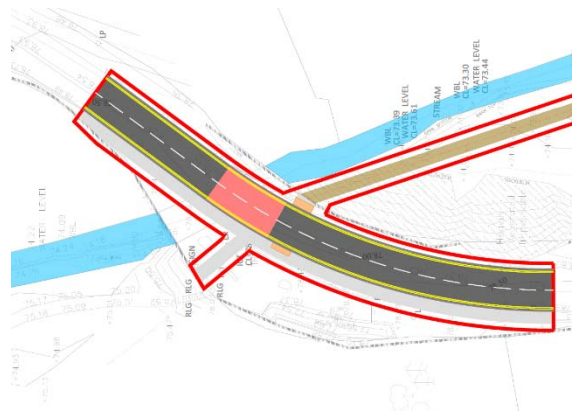
Directional and Regulatory Signage for the Project will be provided in accordance with the Department of Transport, Tourism & Sport 'Traffic Signs Manual' (TSM) August 2019. All Regulatory and Warning signage will be consistent with the design speed of the mainline and secondary roads.

Directional information signage will be consistent with the classification and design speed of the mainline and secondary roads. The R772 Dublin Road is designated as a Regional Road, so directional information signage will comprise black lettering, symbols, and borders on a white background. Any Tourism signage (e.g. to Glendalough) will comprise white lettering, symbols, and borders on a brown background. All Regulatory



Signage will be provided in accordance with Chapter 5 of the TSM with all Warning Signs provided in accordance with Chapter 6 of the TSM. It is not envisaged that any Variable Message Signing (VSM) will be required on the Project.

Road markings, reflective markings and studs will be provided in accordance with Chapter 7 of the TSM and in accordance with the Specification for Road Works Series 1200 - Traffic Signs and Road Markings - CC-SPW-01200 (January 2019) as published by the TII.



Temporary traffic signs during construction will comply with the TSM and in accordance with Series 1200 of the 'Specification for Road Works' as published by the NRA.

Tactile paving with a blister surface is to be provided at the proposed pedestrian crossing of the R772 Dublin Road to provide information to vision impaired people. The tactile paving shall be provided in accordance with the guidance set out in the Guidance on the use of Tactile Paving Surfaces (2005) published by the UK Department of the Environment, Transport, and the Regions. "L" shaped tactile paving shall be laid across the full width of the drop kerb with the stem extending to the back of the footway.

## 12. PUBLIC LIGHTING

The design of public lighting for the Project will be in accordance with the requirements of BS 5489-1 (2020) Lighting of Roads and Public Amenity Areas – Code of Practice and I.S. EN13201-2 (2015) Road Lighting Part 2, Performance Requirements.

The height of lighting columns will be selected to accord with the scale of the built and planned environment. In accordance with DMURS 4.2.5, only white light sources will be considered in the design of street lighting (metal halide, white SON, Cosmopolis and LED). The installation of the lighting network will comply with the requirements of Series 1300 and 1400 of the Specification for Road Works as published by TII and in accordance with the recommendations of BS5489 and BS5649.

Full cut-off lanterns will be utilised to minimise night-time visual intrusion if required by the Environmental Assessment.

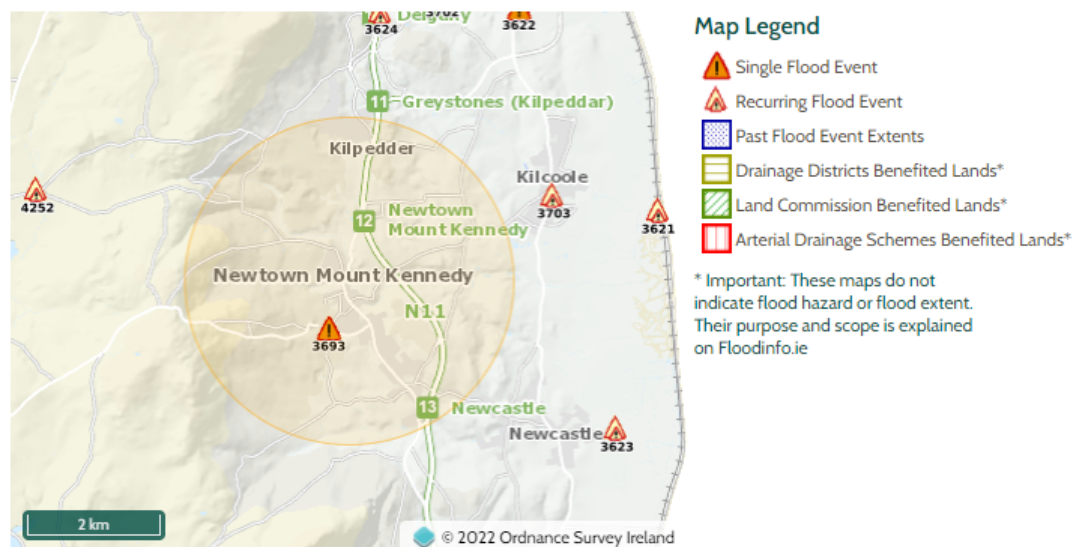
### 13. FLOOD RISK ASSESSMENT

The Office of Public Works (OPW) collates available reports on flooding from all sources (e.g. fluvial, pluvial, coastal, infrastructure) on a nationwide basis. The OPW’s floodinfo.ie website was consulted to obtain reports of historical flooding within the vicinity of the subject site. The Summary Report present in Figure 10 lists reports of historical flooding within 2.5km of the subject site. There was no record available of flooding impacting the Project area.


#### Past Flood Event Local Area Summary Report

This Past Flood Event Summary Report summarises all past flood events within 2.5 kilometres of the map centre.

This report has been downloaded from www.floodinfo.ie (the "Website"). The users should take account of the restrictions and limitations relating to the content and use of the Website that are explained in the Terms and Conditions. It is a condition of use of the Website that you agree to be bound by the disclaimer and other terms and conditions set out on the Website and to the privacy policy on the Website.



1 Results

Name (Flood_ID)	Start Date	Event Location
1.  Monalin, Newtownmountkenedy Oct 2005 (ID-3693)	01/10/2005	Approximate Point

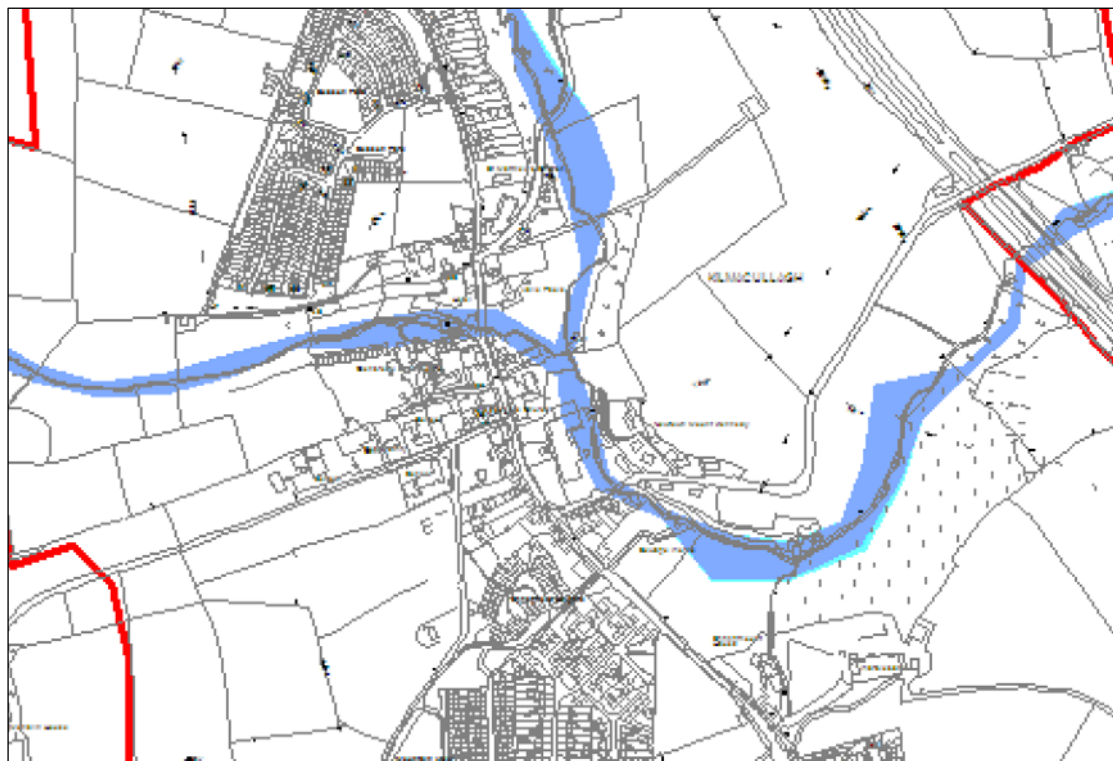
Additional Information: [Reports \(2\)](#) [Press Archive \(0\)](#)

Figure 10: OPW Past Flood Event Local Area Summary Report

There is no Catchment Flood Risk Assessment and Management (CFRAM) study available for the Project area.

The OPW's Draft National Preliminary Flood Risk Assessment (Draft PFRA) shows potential flooding on the Newtownmountkennedy River, including on the R772 where it crosses over the River. However, the Draft PFRA used approximations of topography and ignored the presence of structures such as the bridge and embankment that carries the R772 over the River.

OCSC inspected the CDP Appendix 11 Strategic Flood Risk Assessment and SFRA Map No.1 Flood Risk Identification Assessment. The SFRA also provides Flood Zone mapping for settlements, including Newtownmountkennedy – see *Figure 11*.



*Figure 11: Extract from CDP Flood Zones map*

OCSC inspected the Draft CDP Appendix 8 Strategic Flood Risk Assessment and Map No.2 Indicative Flood Zones of the Newtownmountkennedy Town Plan (Draft CDP Volume 2, Part 1) – see Figure 12. The Indicative Flood Zones on the Newtownmountkennedy River reproduce the approximate flood extents in the OPW's Draft PFRA. There are also Indicative Flood Zones shown for the Glendarragh Stream, which similarly extend across the R772 Main Street.

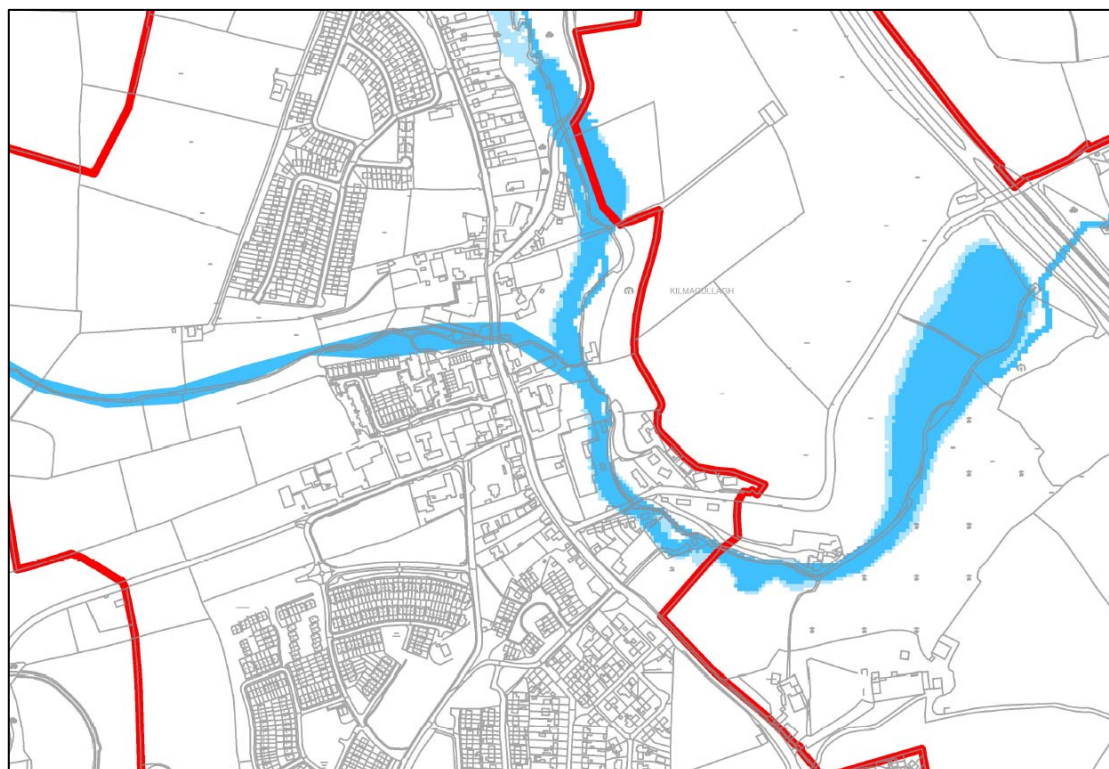


Figure 12: Extract from Draft CDP Indicative Flood Zones map

It is evident from the above that the route of the proposed Riverside Walk traverses Flood Zones A, B and C. Planning permission is currently being sought for a proposed Riverside Walk. The proposals include no new buildings. The Riverside Walk will be primarily a recreational trail alongside the Newtownmountkennedy River and the Glendaragh Stream. Therefore, its function is dependent on its location adjacent to the watercourses and, as such, is a water-based recreational facility. The proposed development is therefore classed as a “water-compatible development” in accordance with Table 3.1 of *The Planning System and Flood Risk Management Guidelines for Planning Authorities* (published by DOEHLG, November 2009). It is therefore considered that the proposed development is “appropriate” in the context of the Guidelines.

By its nature, intended purpose and materials used, the proposed development is flood resilient. At detailed design stage, reference may be made to the *Code of Practice for Flood Resilience and Adaptation Measures* (DCC Flood Resilience City Final Report, Volume 3 Appendix B) and the UK

guidance documents *Preparing For Floods* (Office of the Deputy Prime Minister, 2003) and *Improving the Flood Performance of New Buildings* (EA & DEFRA, 2007). Materials design and specification will ensure suitability for short-term immersion, where appropriate.





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