

Client:

Kilkenny County Council



Project:

# N24 Carrick Road Improvement Scheme

Report:

## 177AE Planning Application Report Particulars relating to Construction, Planning & Environment Report

(in Accordance with Section 177AE of Planning and Development Act 2000 (as Amended))



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## SECTION 1: INTRODUCTION

Barry Transportation have been appointed by Kilkenny County Council (KCC) as Consulting Engineers to prepare this Planning Report to support an application for approval under Section 177AE of the Planning and Development Act 2000 (as amended) (hereafter referred to as 'the Act') in respect of the N24 Carrick Road Improvement Scheme, Co. Kilkenny.

This application is being made to An Bord Pleanála under Section 177AE of the Act. Section 177AE of the Act requires that local authority developments that require appropriate assessment must be submitted for approval to An Bord Pleanála, accompanied by a Natura Impact Statement. The N24 Carrick Road Improvement Scheme has been screened for appropriate assessment and it has been determined that a Stage II Appropriate Assessment (NIS) is required.

The proposed N24 Carrick Road Improvement Scheme located near Mooncoin, Co. Kilkenny is approximately 2.2km (northwest- southeast) in length. The scheme involves both offline and online works, approximately 950m of the road scheme will run along the existing N24 and the remaining 1.25km of the scheme requires realignment.

The proposed scheme involves:

- Surface water drainage.
- Provision of 2no. attenuation ponds, with 2m high palisade fencing, one on the western side of the scheme and other on the eastern.
- Provision of a construction compound at the location of the proposed eastern attenuation pond.
- Proposed realignment of the Skelpstown 16 stream which flows through the site with box culvert for stream crossing.
- Provision of a combined underbridge and cattle underpass.
- Provision of 1.5m footpath underneath the road at the location of underpass.
- Provision of a timber post and tension mesh fences along much of the scheme length, as well as 2.5m wide shared surface/ footpath either side of the carriageway.
- Provision of agricultural access tracks and adjacent field access tracks.

A full description of the proposed development is contained within Section 3 of this report and documentation accompanying this report.

The purpose of this report is to provide the Board with appropriate information to assist in its determining whether approval should be granted for the proposed development under section 177AE.

### 1.1 Structure of Report

The structure of this planning report is as follows:

**Chapter 1: Introduction** – Report context, purpose and structure.

**Chapter 2: Site Location**

**Chapter 3: Proposed Development** (i.e. N24 Carrick Road Improvement Scheme).

**Chapter 4: Legislative Context** – Section 177AE and related matters.

**Chapter 5: Policy Context** – European, national, regional, local and planning guidance documents.

**Chapter 6: Consultation in the Design Process**

**Chapter 7: Proposed Development Planning Review** – An analysis of planning applications within the study area.

**Chapter 8: Air Quality and Climate**

**Chapter 9: Noise and Vibration****Chapter 10: Land, Soils and Geology****Chapter 11: Water****Chapter 12: Material Assets****Chapter 13: Archaeology, Architecture and Cultural Heritage****Chapter 14: Traffic****Chapter 15: Biodiversity****Chapter 16: Landscape and Visual****Chapter 17: Agronomy****Chapter 18: Population and Human Health****Chapter 19: Conclusions**

This report draws on information provided in the following reports, prepared by Barry Transportation and our nominated specialist subconsultants i.e., Ecofact Environmental Consultants Ltd, AWN Consulting, and John Cronin and Associates:

*N24 Carrick Road Improvement Scheme Natura Impact Statement (Ecofact, 2022);*

*N24 Carrick Road Improvement Scheme Ecological Impact Assessment Report (Ecofact, 2022);*

*N24 Carrick Road Improvement Scheme Bat Survey Report (Ecofact, 2022);*

*N24 Carrick Road Improvement Scheme Air Quality & Climate Impact Assessment (AWN, 2022);*

*N24 Carrick Road Improvement Scheme Noise and Vibration Impact Assessment (AWN, 2021);*

*N24 Carrick Road Improvement Scheme, County Kilkenny Archaeological, Architectural and Cultural Heritage Impact Assessment (JCA, 2022)*

*Environmental Impact Assessment Screening Report (Barry Transportation, 2022); and*

*Flood Risk Assessment Report (Barry Transportation, 2022).*

This report also draws on information provided in the following reports:

*Preliminary Design Report (Tramore House Regional Design Office (THRDO), 2021);*

*Maintenance Plan for Surface Water Drainage Infrastructure (THRDO, 2022);*

*Route options – Archaeological, Architectural and Cultural Heritage Impact Assessment Report (Transport Infrastructure Ireland (TII), 2019); and*

*Archaeological Consultancy Services Contract Stage (i) Geophysical Surveys (Earthsound Geophysics, 2021)*

## SECTION 2: SITE LOCATION

The N24 is a National Primary Route located in County Waterford, County Kilkenny, County Tipperary and County Limerick, with an overall total length of approximately 116km. The cities and towns located on or adjacent to the N24 are Waterford (City), Carrick-on-Suir, Clonmel, Cahir, Tipperary and Limerick (City). There are also numerous villages located along the N24 route and it provides a vital link in the region to both the M9 and M8 Motorways in the counties of Kilkenny, Waterford, Tipperary and Limerick.

The proposed N24 Carrick Road Improvement Scheme is located near Mooncoin, Co. Kilkenny, as shown in Figure 2-1. The section under consideration is a single carriageway of varying cross-section and is approximately 2.2km in length. The scheme is surrounded predominantly by agricultural land.

The scheme aims to improve the capacity and efficiency of the N24, to improve the journey times and to provide for road alignment to meet current and future needs.



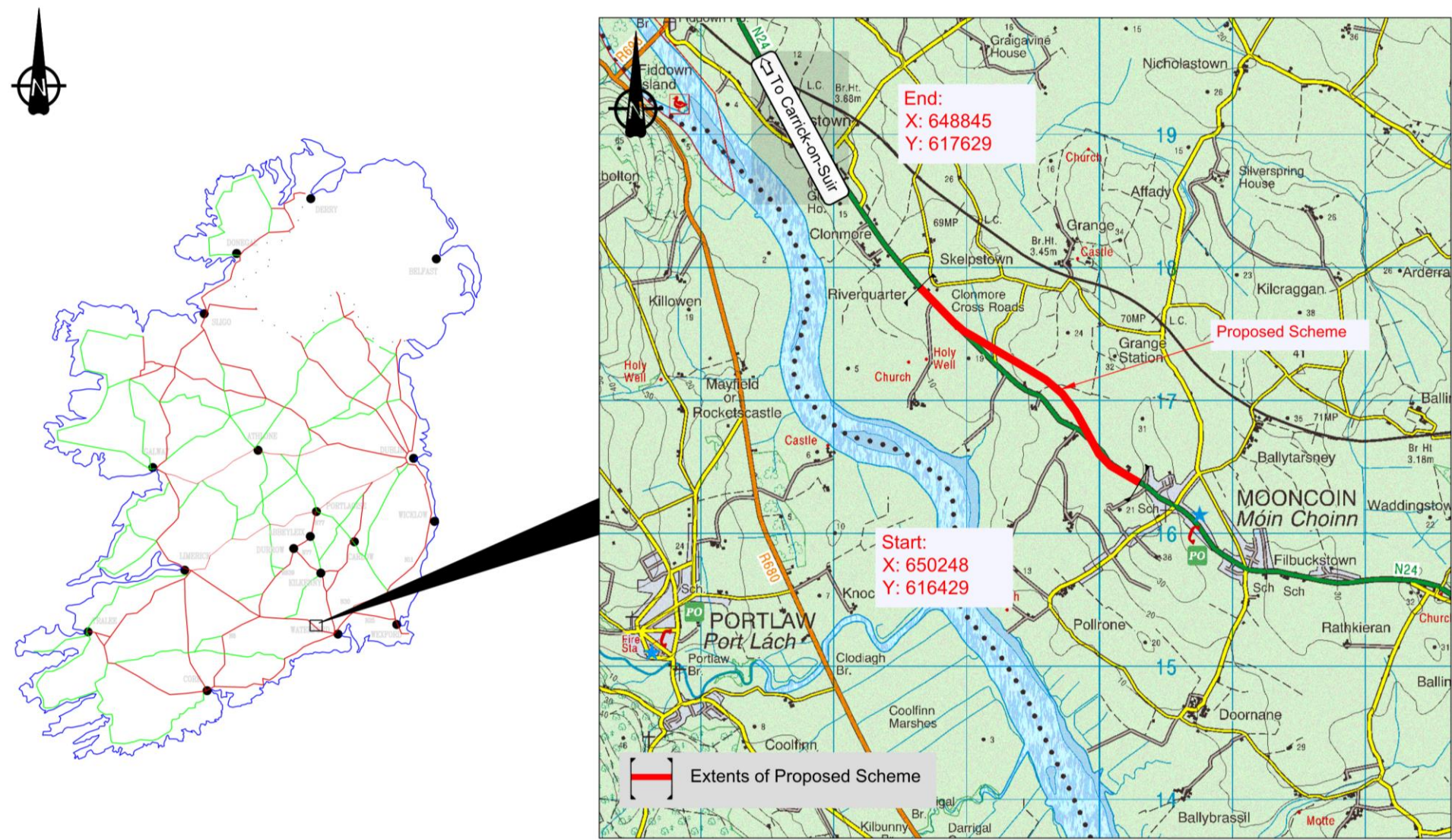


Figure 2-1: Site Location

## SECTION 3: PROPOSED DEVELOPMENT

### 3.1 Rationale

The existing road on the section of the N24 under consideration has a restricted capacity due to its limited cross section and sub-standard alignment. These constraints contribute to the absence of overtaking opportunities and inconsistent traffic flow regimes on the route. There is a record of accidents arising on the stretch of road under consideration.

The existing section of the N24 which is under consideration is a narrow rural single carriageway road with average driving lane widths in the order of 3.2m and hardstrips typically  $\leq 0.5$ m. There are two different speed limits over the extents of the scheme. From the western tie in toward the L7416 local road (circa 700m), the speed limit is 100kph. The remainder of the scheme has a speed limit of 80kph. The existing verge widths vary but are again predominantly narrow and sub-standard and they allow little or no scope for widening within the existing roadbed and for the provision of forgiving roadsides. The narrow nature of the cross-section effectively means that Vulnerable Road Users (VRUs) are typically in close proximity to vehicular traffic, with cyclists using the vehicular driving lanes. However, it is noted that there is an existing footpath in the verge from Mooncoin village adjacent to the westbound carriageway extending for a distance of circa 600m to Polerone Lane. Access, in terms of VRUs such as pedestrians and cyclists is quite limited, due to the existing road cross-section, with narrow raised verges and no hard shoulders.

The provision of an improved section of road, designed to contemporary standards and providing safe overtaking opportunities, will increase the overall consistency and efficiency of the route. The N24 Carrick Road Improvement Scheme will also provide safer journeys as well as more reliable and reduced journey times. The provision of an improved section of road, designed to contemporary standards will provide safer access for VRUs. The scheme proposes to replace this 1.5m wide footpath, between Ch 0 and Ch415, by a new 2.5m shared surface. The remaining 1.5m wide footpath will be upgraded to 2.5m out to Polerone Lane. The proposed realignment will replace all the existing direct accesses, some 46 in total, with a total of 8 new direct accesses. Full access to existing residences and landholdings toward the north west extents of the scheme will be maintained with the provision of an underbridge at circa Ch 1500. Without the provision of the underbridge both motorized and non-motorized users from the north western extents of the scheme would have to utilize longer substandard residual routes to access Mooncoin Village. These provisions are expected to improve the localised environment for residents, and reduce journey times and provide safer journeys to motorized and non-motorized users.

### 3.1 Options Assessment

A Scheme Feasibility and Route Options Report and the Project Appraisal Plan was prepared by THRDO (2019) in accordance with TII Project Management Guidelines (PMG) Unit 12 to consider the context of the scheme in terms of key planning policies, to identify significant engineering / environmental constraints, to determine and evaluate route options, and ultimately to identify a preferred route. Various constraints / considerations were identified along the scheme as part of the assessment process. Nine Alignment or Preliminary Design Options were developed within three corridor options and these were appraised under the following criteria; Environment, Economy, Safety, Accessibility and Social Inclusion, Integration, and Physical Activity. Full details are presented in THRDO Report entitled *N24 Carrick Road Improvement Scheme - Scheme Feasibility & Route Options Report* submitted as part of this planning application (Appendix K). 'Corridor 1 (Blue)' emerged from the selection process as the preferred route. Key environmental considerations associated with the preferred route are assessed in further detail as part of this report.

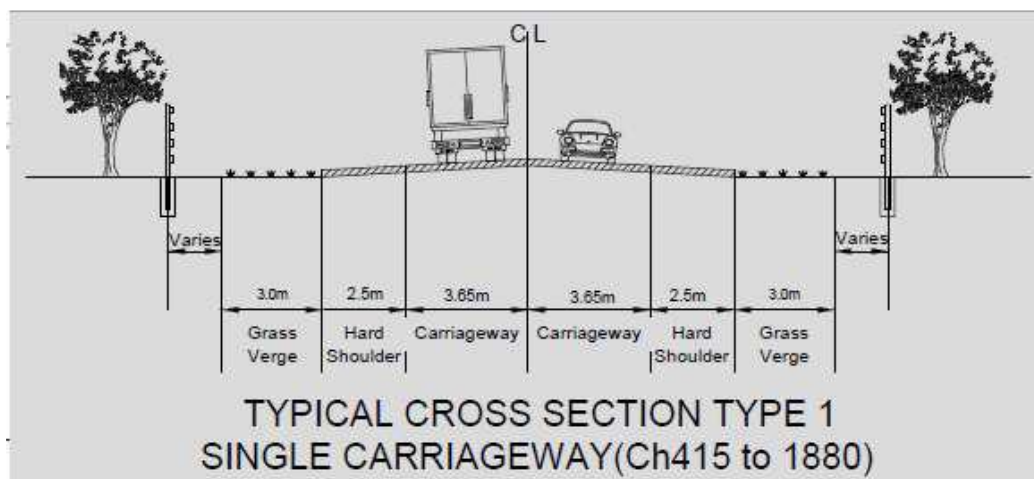
### 3.2 Details of the Proposed Scheme

In 2002, Kilkenny County Council completed a 9.3 km improvement of the N24 between Three Bridges (South Tipperary / Kilkenny County Boundary) and Clonmore Cross, immediately west of the N24 Carrick Road Improvement Scheme extents. This wide single carriageway improvement bypassed the villages of Piltown and Fiddown. In 2006, a two plus one carriageway retrofit (Type 3 Dual Carriageway) was carried out along the full extent of the bypass, as a pilot project trialling this type of cross-section. The N24

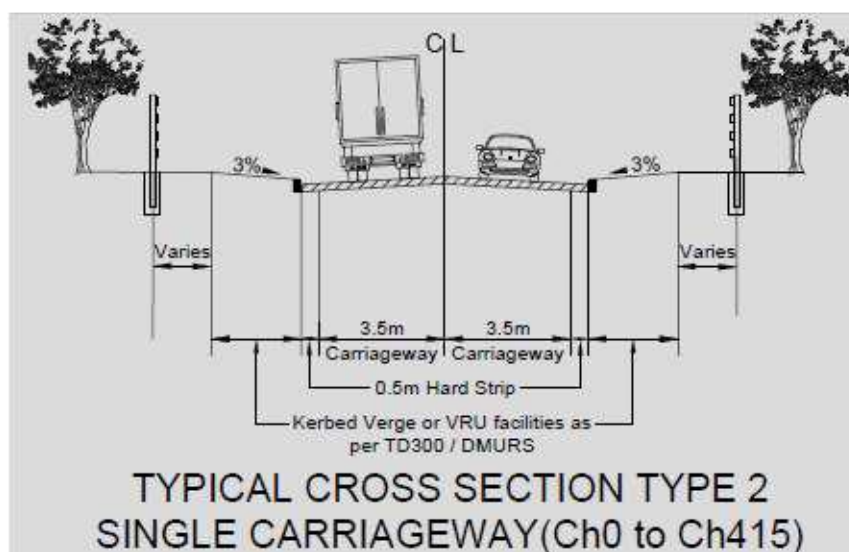


Carrick Road Improvement Scheme will interface with the bypass and the two plus one carriageway. The location and extent of the proposed scheme is presented in Figure 2-1.

The western extents of the scheme are proposed to tie into the existing Piltown Bypass with a Type 1 Single Carriageway (see Figure 3-1). Starting from the western extents, the Type 1 Single Carriageway (100kph) will continue east toward Mooncoin realigned online for the first circa 400m. The realignment then moves offline north of the existing N24 carriageway for a further circa 1.3km before coming back online to meet the existing N24. Over these extents circa Ch 2100 at the western end to circa Ch 450, the provision of the Standard Type 1 Single Carriageway (100kph), requires only 3 accesses; two accesses for farm tracks and an access to the attenuation pond. Where the proposed new offline section meets the existing N24 at circa Ch 450, the realignment will need to be online to Ch 0 in order to tie-in in advance of Mooncoin Village. Due to the number of accesses at this location and its proximity to Mooncoin Village, it is proposed that this section will be Type 2 Single Carriageway (see Figure 3-2) with the provision of 2.5m wide shared surfaces either side for Vulnerable Road User Access. Additionally, 2.5m wide shared surfaces raised 125mm high shall be provided either side of the N24 from Ch 0 out to the junction between the offline realignment and the existing N24 at Ch 450. The existing 1.5m wide footpath along the existing N24 out to Polerone Lane will be upgraded to a 2.5m wide shared surface. In addition to this, the existing N24 carriageway will be reduced in width to 5m by the provision of the 2.5m wide shared surface for VRUs at the northern side.



**Figure 3-1: Type 1 Single Carriageway Road Cross Section**



**Figure 3-2: Type 2 Single Carriageway Road Cross Section**

The proposed works also include the realignment of the Skelpstown 16 Stream, provision of two attenuation ponds, fencing, safety barriers and kerbs along with all associated ancillary works. One attenuation pond is proposed each on the eastern and western side of the scheme.

### 3.3 Environmental

The *N24 Carrick Road Improvement Scheme Ecological Impact Assessment Report* included in the application documentation (Appendix G) concludes that with the implementation of the mitigation measures outlined therein, it is considered unlikely that there will be any residual impacts as a result of the proposed development.

### 3.4 Safety

TII produce collision maps of the national road network that indicate the safety ranking of the network relative to the national average collisions for particular road types. Figure 3-3 taken from the PDR illustrates the results for a 3-year period from 2015-2017 along the N24 and includes Material Damage Collisions. The local Municipal District Office is also aware of Material Damage Collisions in recent months. Within the extents of N24 Carrick Road Improvement Scheme, it is noted that Kilkenny County Council has an 80kph speed limit zone in force since around 2008/2009. In addition, Kilkenny County Council also implemented low-cost safety measures in 2012.

The safety objective is to maintain the existing collision rankings at below or twice below the national average rates, with an improvement in average mainline speeds within the project extents.



**Figure 3-3: TII Network Safety Ranking 2015 to 2017 (PDR, 2021)**

The PDR provided a summary of collision information within the subject area from 2004 to 2016, as listed in Table 3-1.

**Table 3-1: Collision History 2004 – 2016**

<b>Year</b>	<b>Fatal</b>	<b>Serious</b>	<b>Minor</b>	<b>Total</b>
2004	1	0	0	1
2005	0	0	0	0
2006	0	0	0	0
2007	0	0	0	0
2008	0	0	0	0
2009	1	0	1	2
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	0	0	1	1
2014	0	0	0	0
2015	0	0	0	0
2016	0	0	1	1
<b>Total</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>5</b>

### 3.5 Proposed Works

The estimated time frame for construction works is approximately 15 months. The works are likely to be phased in sections due to accessibility and seasonal constraints regarding instream works (where needed) and in accordance with best practice and any conditions that may be attached to the decision.

The final construction methodology will be subject to conditions of planning, the construction procurement process, best practice construction standards (including health and safety requirements), and also the methodology adopted by the main Contractor for the scheme. Notwithstanding this an overview of the likely construction methodology, based on the works requirements which have been developed as part of the scheme design process, is provided below.

Prior to the commencement of the works, the Contractor will be required to develop a Temporary Traffic Management Plan. The Temporary Traffic Management Plan will also be developed with an aim to minimise disruption to local traffic and the general public. The Contractor will commence the construction phase by mobilising the construction team on site and establishing a site compound.

The compound site requirements are proposed at the location of eastern attenuation pond (Approximate Chainage 300). Works will commence with site clearance involving the removal of redundant items such as road signage, boundary treatment and any necessary areas of verge topsoil. The works will be undertaken using a combination of operatives using hand tools, mechanical excavators, dumper trucks and other plant typical to road construction schemes.

The diversion of Overhead ESB cables will be undertaken by ESB in advance of any construction activities and drawings of diversions will be made available to the Contractor. The Contractor will be obliged to follow ESB guidelines when working in the vicinity of overhead powerlines.

Road construction activities will include the excavation and removal of soil to proposed design levels along the scheme. The excavation will be largely undertaken by mechanical means, with spoil arisings loaded into Heavy Goods Vehicles (HGV) tipper trucks for removal off site or to be reused on the scheme

where testing confirms suitability. Where not constructed from site-won material, embankments will be constructed from acceptable imported material.

The contractor is required to abide by the requirements set out in the Construction Environmental Management Plan (CEMP) during the construction phase. The purpose of the CEMP will be to outline the site procedures to deliver each mitigation measure listed in both the *Natura Impact Statement* (NIS) and the *Ecological Impact Assessment* (EcIA) for the proposed scheme. An *Outline CEMP* (OCEMP) is provided in Appendix J, based on which the Contractor will develop a detailed CEMP during construction phase.

The above construction proposals are anticipated at this stage. These construction methodologies may be subject to changes during the detailed design of the proposed scheme while not compromising the intent of the mitigation measures proposed.

## SECTION 4: LEGISLATIVE CONTEXT

### 4.1 Section 177AE, Planning and Development Act 2000 (as amended)

This application for approval is being made to An Bord Pleanála (the Board) under 177AE of the Planning and Development Act 2000 (as amended). Section 177AE of the Act states:

*"(1) Where an appropriate assessment is required in respect of development —*

*(a) by a local authority that is a planning authority, whether in its capacity as planning authority or in any other capacity, or*

*(b) by some other person on behalf of, or jointly or in partnership with, such a local authority, pursuant to a contract entered into by that local authority whether in its capacity as a planning authority or in any other capacity,*

*within the functional area of the local authority concerned, (hereinafter in this section referred to as 'proposed development'), the local authority shall prepare, or cause to be prepared, a Natura impact statement in respect thereof.*

*(2) Proposed development in respect of which an appropriate assessment is required shall not be carried out unless the Board has approved it with or without modifications.*

*(3) Where a Natura impact statement has been prepared pursuant to subsection (1), the local authority shall apply to the Board for approval and the provisions of Part XAB shall apply to the carrying out of the appropriate assessment."*

The application has followed the procedural requirements of Section 177AE(4) of the Act and Article 249 of the Planning and Development Regulations 2001 (as amended) (hereafter referred to as 'the Regulations').

The documents and drawings enclosed as part of this application have also been prepared and checked in accordance with the Act and the Regulations.

### 4.2 Environmental Impact Assessment Screening

The EIA requirements derive from EU Directive 2014/52/EU. Known as the EIA Directive, it amends the previous directive (2011/92/EU) on the assessment of the effects of certain public and private projects on the environment (hereafter referred to as the 'EIA Directive').

Article 4(1) and Annex I of the EIA Directive lists projects for which an EIA is mandatory, whereas Article 4(2) and Annex II lists project types for which EIA may be required. For Annex II projects, Member States may set national thresholds and/or examine such projects on a case-by-case basis. Criteria to determine whether projects listed in Annex II should be subject to an EIA are set out in Article 4(3) and Annex III of the directive and include the characteristics of projects, the location of projects, and the type and characteristics of the potential impact.

The EIA Directive has been transposed into Irish legislation by the Planning and Development Act 2000 (as amended), and Planning and Development Regulations 2001 (as amended). Section 172(1) of the Act provides the statutory basis for EIA. It states the following:



*"An environmental impact assessment shall be carried out by the planning authority or the Board, as the case may be, in respect of an application for consent for proposed development where either—*

- (a) the proposed development would be of a class specified in—*
- (i) Part 1 of Schedule 5 of the Planning and Development Regulations 2001, and either—*
  - (I) such development would equal or exceed, as the case may be, any relevant quantity, area or other limit specified in that Part, or*
  - (II) no quantity, area or other limit is specified in that Part in respect of the development concerned,*

*or*

- (ii) Part 2 of Schedule 5 of the Planning and Development Regulations 2001 and either—*
  - (I) such development would equal or exceed, as the case may be, any relevant quantity, area or other limit specified in that Part, or*
  - (II) no quantity, area or other limit is specified in that Part in respect of the development concerned,*

*or*

*(b)(i) the proposed development would be of a class specified in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 but does not equal or exceed, as the case may be, the relevant quantity, area or other limit specified in that Part, and*

*(ii) it is concluded, determined or decided, as the case may be,—*

- (I) by a planning authority, in exercise of the powers conferred on it by this Act or the Planning and Development Regulations 2001 (S.I. No. 600 of 2001),*
- (II) by the Board, in exercise of the powers conferred on it by this Act or those regulations,*
- (III) by a local authority in exercise of the powers conferred on it by regulation 120 of those regulations,*
- (IV) by a State authority, in exercise of the powers conferred on it by regulation 123A of those regulations,*
- (V) in accordance with section 13A of the Foreshore Act, by the appropriate Minister (within the meaning of that Act), or*
- (VI) by the Minister for Communications, Climate Action and Environment, in exercise of the powers conferred on him or her by section 8A of the Minerals Development Act 1940,*

*that the proposed development is likely to have a significant effect on the environment."*

The EIA Directive transposed into Irish Legislation, in context of road schemes, is through the European Union (Planning and Development) (Roads Act 1993) (Environmental Impact Assessment) (Amendment) Regulations (S.I. 279 of 2019). Projects for which an EIA is mandatory under Annex I of the Directive have been listed under Part 1 of Schedule 5 to the Planning and Development Regulations. Similarly, Part 2 of Schedule 5 outlines thresholds for other projects which also require EIA, as per Annex II of the Directive.

Projects requiring Environmental Impact Assessment are transposed from the EIA Directive into Irish Legislation through Section 172 of the Act. An initial determination is to be undertaken to examine



whether the proposal is a project as understood by this transposition of the directive. If a proposed project is not of a type covered, there is no statutory requirement for it to be subject to Environmental Impact Assessment. In determining if the proposed project is of a type it is also necessary to go beyond the general description of the project and to consider the component parts of the project and/or any processes arising from it.

Furthermore, the current requirements for EIA are set out in Part IV of the Roads Act, 1993 (as amended), and Part V of the Roads Regulations, 1994 - 2019 (S.I. No. 119 of 1994). In particular, sections 50 and 51 of the Act (as amended) deal with EIA. These sections have been amended through the European Communities (EIA) Regulations, the Planning and Development Acts, and the Roads Act. Consequently, the project should be screened to determine whether the project falls within the scope of or exceeds the thresholds set out in the legislation.

The proposed development is not considered to have a mandatory requirement for an EIA as it does not satisfy the criteria included in Section 50 of the Roads Act, and it does not meet any of the criteria listed under Part 1 or 2 of Schedule 5 of the Regulations. It should be noted that the overriding consideration in determining whether a project should be subject to EIA is the likelihood of significant environmental effects. As a result of this, under the precautionary principle an EIA screening exercise has been undertaken by Barry Transportation.

The overall determination of this EIA Screening Report is that the proposed development individually and cumulatively with associated existing and approved development will not result in the potential for significant impacts to arise on the environmental receptors as a result of the proposed development. As such it is concluded that an Environmental Impact Assessment Report (EIAR) is not required.

The EIA screening also concluded that following the implementation of the mitigation measures outlined above, it is considered unlikely that there will be any residual impacts as a result of the proposed development. The EIA Screening Report is enclosed in the application documentation, see Appendix I.

### 4.3 Appropriate Assessment (NIS)

The Habitats and Birds Directives (Directive 92/43/EEC and Directive 2009/147/EC) are the cornerstones of the European Union's (EU) nature conservation policy. They set out various procedures and obligations in relation to nature conservation management in EU member states in general, and habitats and species of European Importance, in particular.

The project at an early stage was subject to Screening for Appropriate Assessment (Ecofact, 2022) and the conclusion and adopting the precautionary approach in accordance with current guidance, recommended that the assessment progress to stage 2 Appropriate Assessment and production of the Natura Impact Statement, which allows for the inclusion of mitigation measures.

Following on from this, a *Natura Impact Statement* (NIS) (Ecofact, 2022) in support of Appropriate Assessment was carried out to assess the adverse effect on the integrity of any European site(s) as a result of the proposed development. The *Appropriate Assessment Screening Report* and *Natura Impact Statement Report* are enclosed in the application documentation, see Appendix F.

A number of European sites were identified within the Zone of Influence (ZoI) of the proposed development via the following effect pathways:

- Surface water pollution;
- Impacts to Qualifying Interest (QI) Otter territory; and
- Non-native invasive species impacts.

To minimise, or even eliminate, the negative impacts on European sites that are likely to arise as a result of the proposed development, mitigation measures have been recommended. These mitigation measures provide recommendations for surface water management, invasive species management, emergency responses and environmental training, and site management during construction and operation of the

proposed development. Provided the full implementation of mitigation measures, it is envisaged that there will be no significant residual effects on the integrity of any European sites.

It has been concluded in the NIS:

*"The proposed road scheme on the N24 Carrick Road in County Kilkenny is located c. 510m straight line distance northeast of the Lower River Suir SAC. This is the only Natura 2000 site that could potentially be affected by the proposed road scheme as established in the previous Screening for Appropriate Assessment Report (Ecofact, 2022a). The proposed scheme consists of a 2.2km section on the N24 and includes a c. 1.25km realignment of the road.*

*The Lower River Suir SAC is designated for a number of aquatic species including Sea Lamprey, River Lamprey, Twaite Shad, Atlantic Salmon and Otter. Water quality impacts could arise during the construction phase of the proposed scheme which could significantly impact these water dependent species. Other impacts identified which may arise during the construction phase of the project and were considered in the current NIS are non-native invasive species, noise and disturbance and air quality and dust impacts.*

*During the operational improved drainage designs including treatment and attenuation for road run-off and salt / grit via the proposed attenuation pond will positively affect the SAC in the study area. At present the existing N24 fragments the landscape, some habitat connectivity is facilitated with new road design which includes a proposed combined underbridge and a cattle underpass at the location of the Local Road L7416 and a box culvert crossing over the realigned Skelpstown 16 stream.*

*Taking cognisance of the sensitivity of the water-dependent Annex II species and habitats listed as qualifying interests of the SAC, mitigation measures have been prepared for implementation on the site to protect water quality and minimise risks of disturbance, dust impacts and invasive species introduction. With mitigations proposed, there will be no impacts arising which would have the potential to adversely affect the conservation objectives or the integrity of the River Suir SAC.*

*The provisions of Article 6 of the 'Habitats' Directive 92/43/EC (2000) defines 'integrity' as the 'coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and / or population of species for which the site is or will be classified'. The mitigation measures proposed are considered to be sufficient to ensure that impacts regarding water quality, noise and dust, disturbance and invasive species introduction are reduced to imperceptible in scale. From the evidence presented in the current assessment, it is concluded that provided all mitigation measures are adhered to, direct, indirect and cumulative impacts that may arise from the proposed road improvement works on the N24 in Co. Kilkenny will be avoided and therefore will not affect the integrity of the Lower River Suir SAC.."*

## 4.4 Land Requirement

The proposed scheme will be developed mainly offline (1.25km) with ca. 950m constructed online from the existing N24. The proposed scheme will require the acquisition of 9.9445 Ha. This includes 9.9084 Ha of permanently acquired land (made up of 7.3834 Ha agricultural land and 2.484 Ha of roadway). In

addition, 0.0361 Ha of land will be temporarily acquired (of which 0.025Ha will be agricultural lands). Further information in relation to agricultural land take is included in Section 17 - Agronomy.

## SECTION 5: POLICY CONTEXT

### 5.1 National Context

#### National Planning Framework – Project Ireland 2040

The National Planning Framework (NPF) – Project Ireland 2040 was published by the Government in February 2018. It sets out a new strategic planning and development context for Ireland and all of its regions up to 2040, setting a high-level framework for the co-ordination of a range of national, regional and local authority policies and activities, planning and investment, both public and private. The NPF is structured around a set of National Strategic Outcomes (NSOs) or goals. One of these NSOs which is directly related to the proposed road development is:

‘Enhanced Regional Accessibility’ i.e. National Strategic Outcome 2

Under Enhanced Regional Accessibility the NPF states the following national strategic outcomes of the plan for Inter – Urban Roads:

*“Maintaining the strategic capacity and safety of the national road network including planning for future capacity enhancements; and*

*Improving average journey time targeting an average inter-urban speed of 90kph.”*

The N24 Carrick Road Improvement Scheme supports the goals and targets contained within the NPF in relation to enhanced accessibility, strategic capacity and safety.

#### National Development Plan – Project Ireland 2040

The National Development Plan (NDP) 2021 to 2030 demonstrates the Government’s commitment to meeting Ireland’s infrastructure and investment needs through a total public investment estimated at €165 billion over the ten-year period. The revised NDP sets out the ten-year capital ceilings to 2030 which will support economic, social, environmental and cultural development across all parts of the country under Project Ireland 2040, in parallel with the National Planning Framework (NPF) which sets the overarching spatial strategy for the next twenty years.

#### National Investment Framework for Transport in Ireland 2021

The Department of Transport (DoT) published National Investment Framework for Transport in Ireland (NIFTI) in December 2021. NIFTI is DoT’s high-level strategic framework to support the consideration and prioritisation of future investment in land transport. The proposed scheme aligns with types of outcomes that transport investment as a result of NIFTI can deliver or enable in support of Project Ireland 2040 including; ‘Facilitating safe, accessible, reliable and efficient travel on the network.’ The proposed scheme will directly contribute one of the four investment priorities contained within this Framework ‘Enhanced Regional and Rural Connectivity’.

#### Smarter Travel – A Sustainable Transport Future 2009 – 2020

Smarter Travel, A Sustainable Transport Future 2009 - 2020, presents a transport policy framework for Ireland covering the period up to 2020. The policy, launched by the Department of Transport in 2009, sets out a vision, goals and targets to be achieved, and outlines 49 actions that form the basis for achieving a more sustainable transport future. One of the key goals of the initiative is:

*“Improve economic competitiveness through maximising the efficiency of the transport system and alleviating congestion and infrastructural bottlenecks.”*

This key goal as defined within the policy document, in relation to maximising the efficiency of the transport system is consistent with the ambitions of the subject improvement scheme on the N24.

Policies for improvements to public transport within Smarter Travel distinguish between Significant Urban Areas and Rural Areas. For public transport, the focus in urban areas is a transfer from car use to fast

and frequent public transport services in order to reduce congestion and emissions in densely populated areas. For rural areas, public transport attracts less demand as a result of the dispersed population, and hence there is limited congestion or environmental benefit to be realised. Instead, rural services are focused more on filling a social need, providing for those who do not have access to private means of transport. The proposed scheme assumes that the existing rural public transport facilities will be maintained and / or enhanced, with the benefits of improvements to journey times and consistency of speeds for inter-urban bus users and operators due to the scheme.

### **Ireland's Government Road Safety Strategy 2021 – 2030**

The Road Safety Strategy (RSS) 2021 – 2030 considers the road safety priorities for the next decade, while recognising the benefits of aligning these with other core government priorities, including health, decarbonisation, climate action and sustainability, and economic recovery. RSS has set a target to reduce road deaths and serious injuries by 50% by 2030.

The plan sets out as 'Safe System' approach which includes seven priority intervention areas such as; safe roads and roadsides, safe speeds, safe vehicles, safe road use, post-crash response, safe and healthy modes of travel, and safe work-related road use. The provision of an upgraded section of national road proposed as part of this project would support and complement this strategy.

## **5.2 Regional Context**

### **Regional Spatial and Economic Strategy: For the Southern Region 2020**

The Regional Spatial and Economic Strategy for the Southern Region (RSES) came into effect from 31<sup>st</sup> January 2020.

The Southern Region: Ireland 2040 sets out a clear strategy to enhance and upgrade accessibility between urban centres of populations and their regions, and in the South-East this will be aided by projects like "Upgrading of the N24 to Waterford".

The RSES is a strategic plan which identifies regional assets, opportunities and pressures and provides appropriate policy responses in the form of Regional Policy Objectives. At a strategic level the RSES provides a framework for investment to better manage spatial planning and economic development throughout the Region.

The RSES sets out Regional Policy Objectives (RPOs), which are aligned with international, EU and national policy. These RPOs set the framework for city and council development plans.

## **5.3 Local Context**

### **Kilkenny City and County Development Plan 2021-2027**

The subject site is located within the administrative area of KCC and is governed by the Kilkenny City and County Development Plan 2021-2027 (the Development Plan). The Development Plan provides the spatial framework for the county in the context of national and regional policy frameworks and outlines qualitative and quantitative development management standards against which all development proposals will be assessed.

The Kilkenny County Development Plan 2021 – 2027 is the current development Plan for County Kilkenny. Section 12.11.6 of the Development Plan under National Road improvement projects references the N24 Carrick Road Improvement Scheme, as below:

*"National Roads projects such as the N24 are of strategic importance to facilitate inter- and intraregional accessibility and the Council, with the support of Transport Infrastructure Ireland (TII), supports and is progressing/developing a number of schemes within County Kilkenny as follows:*

*N24 Carrick Road Improvement Scheme..."*

## Archaeological & Architectural Heritage

Relevant objective published in the Kilkenny City and County Development Plan 2021-2027 in relation to the protection and promotion of the archaeological and architectural heritage resource of the county and with particular relevance to the current scheme are as follows:

"9C        *To protect archaeological sites and monuments (including their setting), underwater archaeology, and archaeological objects, including those that are listed in the Record of Monuments and Places, and in the Urban Archaeological Survey of County Kilkenny or newly discovered sub-surface and underwater archaeological remains."*

The development management requirements include:

*"To endeavour to preserve in situ all archaeological monuments, whether on land or underwater, listed in the Record of Monuments and Places (RMP), and any newly discovered archaeological sites, features, or objects by requiring that archaeological remains are identified and fully considered at the very earliest stages of the development process and that schemes are designed to avoid impacting on archaeological heritage."*

*To require archaeological assessment, surveys, test excavation and/or monitoring for planning applications in areas of archaeological importance if a development proposal is likely to impact upon in-situ archaeological monuments, their setting and archaeological remains."*

*To ensure that development within the vicinity of a Recorded Monument is sited and designed appropriately so that it does not seriously detract from the setting of the feature or its zone of archaeological potential. Where upstanding remains of a Recorded Monument exist a visual impact assessment may be required to fully determine the effect of any proposed development."*

*"To have regard to the Architectural Heritage Protection Guidelines when assessing proposals for development affecting a protected structure and buildings listed in the NIAH."*

An Archaeological, Architectural and Cultural Heritage Assessment has been completed for the scheme as detailed in the Section 13. The assessment concludes that there is no archaeological, architectural or cultural heritage reason why the proposed N24 Carrick Road Improvement Scheme works should not proceed. A series of mitigation measures are recommended to ensure a detailed record is made of the existing features before they are impacted upon, and to ensure that pre-construction archaeological test excavations are carried out to identify and record any previously undocumented features or remains that might be located within the lands acquired for construction.

## SECTION 6: CONSULTATION IN THE DESIGN PROCESS

### 6.1 Consultation with the Public

Public Consultation prior to formal application under Section 177AE of the Planning and Development Act 2000 (as amended) is not a statutory requirement. However, as part of the N24 Carrick Road Improvement Scheme, a series of public information events took place to provide information on the scheme proposals.

Public consultation was undertaken at two stages during the route selection process. Initially during November and December 2018, a public consultation was undertaken of the Route Corridor Options. A further public consultation was undertaken on the Preferred Route Corridor in July and August 2019.

Members of the Project Team were available to present the scheme drawings, discuss all aspect of the scheme and answer questions. Feedback received was generally related to agricultural, drainage and biodiversity impacts with a reoccurring objection relating to the proposed closure of the L7416 (Grange Road). It should be noted that the current scheme includes for a structure to maintain access along the L7416 (Grange Road), included following the public consultation process.

### 6.2 Consultation with Landowners

Individual landowners have been contacted at various occasions for access to their land for site inspections and third party surveys.

KCC will also contact the landowners listed in Compulsory Purchase Order (CPO) prior to the lodgement of application so they are aware of it.

### 6.3 Consultation with Elected Representatives

Kilkenny County Councillors have been briefed about the project through monthly reports and through their own Municipal District Meetings.



## SECTION 7: PROPOSED DEVELOPMENT PLANNING REVIEW

Based on a review of Kilkenny County Council online planning search facility, this section of the planning report sets out the recent planning permissions in the immediate vicinity of the study area. These sources include:

- An Board Pleanála database ([www.pleanala.ie](http://www.pleanala.ie) - accessed February 2022);
- EIA Portal ([www.housinggovie.maps.arcgis.com](http://www.housinggovie.maps.arcgis.com), accessed February 2022);
- Kilkenny City and County Development Plan 2021-2027 (KCC, 2021); and
- The National Planning Application database ([www.myplan.ie](http://www.myplan.ie) – accessed February 2022).

The following projects have been identified in the vicinity of the proposed scheme.

- Planning Reference 19841, located 170m west of the proposed scheme: For the construction of a milking parlour, dairy, plant room, drafting area, collecting yard, meal bin and underground slurry storage tank and all associated site works. The development has conditional permission valid until February 2025.
- Planning Reference 17223, located 170m west of the proposed scheme: For Machinery Shed, and all associated site works. The development has conditional permission valid until June 2022.
- Planning Reference 19848, located 270m west of the proposed scheme: For one number existing single storey detached garage to the rear of existing property. The development has conditional permission valid until February 2025.
- Planning Reference 20710, located 350m west of the proposed scheme: For extension to dwelling house, an planning permission for garage and all associated site works. The development has conditional permission valid until June 2026.
- Planning Reference 20223, located 350m west of the proposed scheme: To retain indefinitely existing single storey extensions to the front and rear of dwelling. Permission to retain existing garage/store and greenhouse. Permission to construct a single storey extension to the rear of dwelling and all ancillary site works. The development has conditional permission valid until October 2025.
- Planning Reference 18655, located 150m to east of the proposed scheme: To retain indefinitely the following: Extension to the side and rear of dwelling; Conversion of the attic area and; Detached domestic garage and all associated works. The development has conditional permission valid until January 2024.
- Planning Reference 18109, located 150m to east of the proposed scheme: For indefinite retention of existing boundary wall and widened entrance and for planning permission for renovation and extension of existing dressing room building into a new club house, construction of three playing pitches with ball stop netting, perimeter security fence, outdoor gym, children's play area, walking path, parking area, septic tank and all associated works. The development has conditional permission valid until August 2023.
- Planning Reference 19868, located 150m to east of the proposed scheme: For change of design of the club house building and all associated site works. Planning permission was previously granted under planning application 18/109. The development has conditional permission valid until February 2025.
- Planning Reference 19219, located 150m south west of the proposed scheme: The erection of a detached single storey temporary demountable building containing 1 No. classroom, 1 No. special needs unit, associated site works and ancillary related works. The development has conditional permission valid until November 2024.
- Planning Reference 17214, located 280m to the east of the proposed scheme: To construct new parking spaces, boundary wall and entrance, footpath and all associated works. The development has conditional permission valid until June 2022.
- Planning Reference 20761, located 1.5km west of the proposed scheme on the other side of the River Suir in Killowen: Development at existing Composting and Anaerobic Digestion Facility. This development will facilitate an increase in the intake of materials at the facility from 40,000 tonnes to 80,000 tonnes per annum. The proposed development includes all ancillary site development and boundary treatment works above and below ground. This application relates to development for the purposes of an activity requiring a licence under the Industrial Emissions Directive. An Environmental Impact Assessment Report and a Natura Impact Statement will be submitted to the Planning Authority with the application.



- Planning Reference 217, located 75m to the east of the proposed scheme: On 13 January 2021 an application was made to KCC for extension to existing dwelling house, to include kitchen / dining / living area, bathroom, 3 No. bedrooms and entrance porch, and all associated site works. The decision was declared in April 2021 with a conditional permission valid until May 2026. However, it is not expected that this planning application will have any additional impacts on the N24 scheme. Refer to Figure 7-1 for the location of the planning application.



**Figure 7-1: Location of Planning Applications**

No permitted development has been found to hinder the construction of structures, embankments, or any other proposed works associated with the N24 Carrick Road Improvement Scheme.

## SECTION 8: AIR QUALITY & CLIMATE

### 8.1 Introduction

This section presents a brief overview of the receiving environment with regards to air quality and climate, the identification of any potential constraints associated with the proposed scheme and proposed mitigation measures / recommendations. Awn Consulting have been commissioned to assess the potential air quality and climate impacts associated with the proposed N24 Road Improvement Scheme as presented in the detailed report in Appendix A: Air Quality and Climate Impact Assessment Report. This chapter summarises the report findings. This assessment has been completed in accordance with *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes* (TII/NRA, 2011).

### 8.2 Receiving Environment

The baseline environment is presented in detail in Section 3 of Appendix A, and a summary is provided below.

#### Baseline Air Quality

The most recent annual report on air quality in Ireland is *Air Quality In Ireland 2020* published by Environmental Protection Agency (EPA) in 2021. The report defines four air quality zones (Zone A, Zone B, Zone C and Zone D) in Ireland for air quality management and assessment purposes, as part of the implementation of the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002). The proposed scheme is within Zone D, which represents rural Ireland but also includes all towns with a population of less than 15,000.

A conservative estimate of the current background NO<sub>2</sub> concentration for the region of the proposed scheme is 10 µg/m<sup>3</sup> and a conservative estimate of the current background PM<sub>10</sub> concentration in the region of the proposed scheme is 16 µg/m<sup>3</sup>.

#### Baseline Climate

For 2020, total national Greenhouse Gas Emissions (GHG) are estimated to be 57.70 million tonnes carbon dioxide equivalent (Mt CO<sub>2</sub>eq) with 44.38 MtCO<sub>2</sub>eq of emissions associated with the ESD (Effort Sharing Decision) sectors for which compliance with the EU targets must be met. Transport sector is the second largest contributor in recent years. Emission reduction have been recorded in the 6 of the last 10 years. However, compliance with the annual EU targets has not been met for five years (2016 – 2020) in a row.

The projections in *Ireland's GHG Emissions Projections Report 2020 – 2040*, published in 2021, indicate that Ireland can meet its non-ETS (Emissions Trading Sector) EU targets over the period 2021 – 2030 assuming full implementation of the 2019 Climate Action Plan (and updated 2021 Climate Action Plan) and the use of the flexibilities available.

### 8.3 Impact Assessment

The impact assessment is presented in detail in Section 5 of Appendix A, and a summary is provided below.

#### Construction Phase

##### Air Quality

The main source of air quality impact during the construction phase will be from construction dust emissions and the potential for nuisance dust and PM<sub>10</sub>/PM<sub>2.5</sub> emissions. These emissions can impact the nearby sensitive receptors, predominantly residential properties in close proximity to the proposed scheme. In addition, traffic emissions have likely potential to impact air quality in the short-term over the construction phase, particularly due to HGVs accessing the site. However, the construction stage

traffic is predicted to have imperceptible, localised, neutral and short-term impact on air quality as discussed in Appendix A.

### Climate

The construction phase of the proposed scheme will result in GHG emissions from various sources. TII carbon tool (v2, 2020) was used to account for the embodied carbon associated with the proposed scheme. The proposed road development will result in total construction phase emissions of 116.1 tonnes CO<sub>2</sub>e over the 15-month construction period. This amounts to 0.0002% of Ireland's national GHG emissions in 2020 or 0.0003% of Ireland's 2030 target. Embodied CO<sub>2</sub> emissions are predicted to be significantly below Ireland's EU 2030 target. The predicted impact to climate during the construction phase is short-term, negative but overall, not significant.

### Operational Phase

#### Air Quality

Using the assessment criteria outlined in TII guidelines (2011), the impact of the proposed development has been assessed by modelling emissions from the traffic derived air pollutants generated as a result of the road development. The air quality modelling assessment concludes that the levels of air pollutants generated from the change in traffic will not exceed the ambient air quality standards either with or without ('Do-Nothing' scenario) the proposed scheme in place. The overall impact on ambient air quality in the operational stage, as a result of the proposed scheme, is long-term, localised, positive and imperceptible.

### Climate

The proposed development has no significant impact on climate during the operational phase as the existing traffic will divert to the new route and do-nothing traffic is same as that for the do something scenario. However, there is a change in predicted increase in the average speed travelled along the new alignment. The predicted change concentrations of CO<sub>2</sub> emissions are significantly less than the GHG targets set out under EU legislation. The impact on climate during the operational stage is considered to be long-term, negative and imperceptible.

## 8.4 Mitigation Measures

The mitigation measures are presented in detail in Section 6 of Appendix A, and a summary is provided below.

In order to minimise the potential impact on air quality and climate, series of measures have been prepared in accordance with recommendations and guidance contained in the Institute of Air Quality Management (IAQM) document *Guidance on the Assessment of Dust from Demolition and Construction* (2014). These measures are detailed in Appendix A. If these dust minimisation measures are adopted, the air quality impacts during the construction phase will not be significant.

The operational phase air quality impact is considered imperceptible and therefore no site-specific mitigation measures are required. In general mitigation measures in relation to traffic-derived pollutants have focused generally on improvements in both engine technology and fuel quality. The impact on climate during the operational period will be imperceptible and therefore no site-specific mitigation measures are required. In general, improvements in climate are likely over the next few years as a result of the on-going comprehensive vehicle inspection and maintenance program, fiscal measures to encourage the use of alternatively fuelled vehicles and the introduction of cleaner fuels.

## 8.5 Conclusion

There is the potential for some dust emissions to occur during the construction phase of the scheme. With the implementation of the mitigation measures outlined in Air Quality and Climate report in Appendix A, dust impacts will be short-term and imperceptible and will pose no nuisance issue at nearby sensitive receptors. The embodied CO<sub>2</sub> emissions associated with the construction materials and their transport to site are considered insignificant in terms of Ireland's total annual GHG emissions.

Overall, during operation, the proposed scheme will have an imperceptible impact on air quality at all worst-case receptors assessed. There is a predicted improvement in air quality at the majority of receptors assessed due to the proposed alignment being further from the properties than the existing alignment. While this is considered a positive impact, it is overall imperceptible. As there are no predicted changes to the traffic flows along the proposed alignment when compared with the do-nothing scenario the predicted change in emissions is associated with increased vehicles speeds along the proposed alignment. The operational phase traffic emissions will be significantly below Ireland's national EU 2030 target.

## SECTION 9: NOISE AND VIBRATION

### 9.1 Introduction

This section presents a brief overview of the receiving environment with regards to noise and vibration, the identification of any potential constraints associated with the proposed scheme and proposed mitigation measures / recommendations. AWN Consulting have been commissioned to assess the potential noise impacts associated with the proposed N24 Road Improvement Scheme as presented in the detailed report in Appendix B: Noise & Vibration Impact Assessment Report. This chapter summarises the report findings. This assessment has been completed in accordance with *Guidelines for the Treatment of Noise and Vibration in National Road Schemes* (TII/NRA, 2004) and *Good Practice Guide for the Treatment of Noise during the Planning on National Road Schemes* (TII/NRA, 2014).

### 9.2 Receiving Environment

The baseline environment is presented in detail in Section 4 of Appendix B, and a summary is provided below.

Baseline noise monitoring survey has been undertaken in the vicinity of the proposed road development to measure the existing traffic noise levels at the closest properties within the study area and to determine the main contributors to the existing environment. The survey comprised of one unattended and five attended survey locations along the relevant portion of the existing N24. The results of the baseline survey confirm that properties along the existing road network experience traffic noise levels above 60 dB Lden. Road traffic noise from the existing N24 was the primary noise contributor. Minor noise from a nearby site was a secondary contributor.

### 9.3 Impact Assessment

The impact assessment is presented in detail in Section 5 of Appendix B, and a summary is provided below.

#### Construction Phase

Predictive calculations associated with construction have been estimated in accordance with British Standard BS 5228 *Code of Practice for Noise and Vibration Control on Construction and Open Sites Part 1 – Noise (2009 +A1 2014)*. Construction noise calculations have been conducted at distances of 10 to 80m from the works for the main work phases. The results state that at distances of up to 25m from the works, there is potential for the noise criterion to be exceeded in the absence of noise mitigation. A small number of properties along the eastern end of the proposed road development are within 25m of the proposed works. Hence, the use of localised screening and the range of best practice mitigation measures will be employed to ensure the construction noise limits are not exceeded along the length of the scheme.

#### Operational Phase

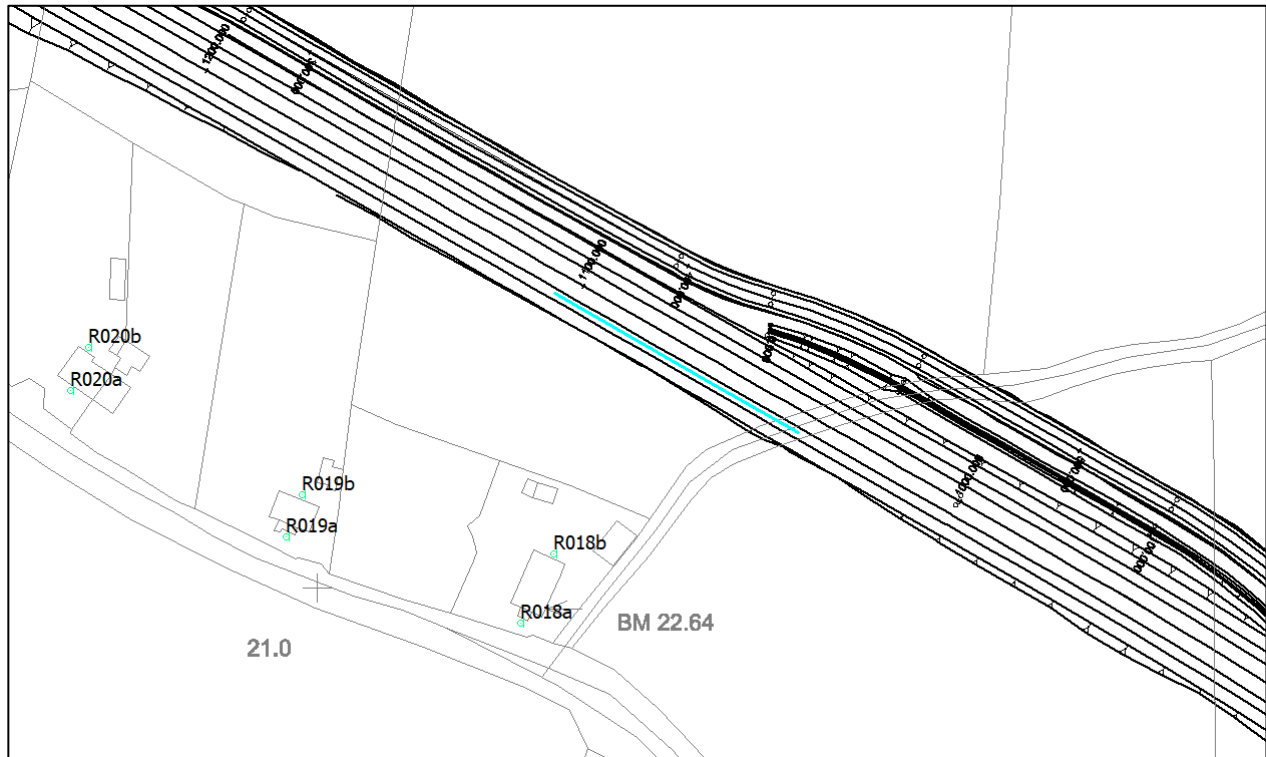
The potential noise impact of the proposed road development during the operational phase was determined by a computer-based noise prediction model that has been developed to quantify the traffic noise level for the future years 2024 (opening year) and 2039 (design year). The results of the traffic noise predictions are compared against the three TII criteria for determining the requirement for noise mitigation. The result of the assessment states that of the 25 locations assessed, a total of two locations during the opening year (R023, R024); and a total of three locations (R023, R024, R018b) during the design year satisfy the TII requirement for noise mitigation. R018b is likely to experience a major change in noise level during the long term period while others are likely to experience minor changes.

### 9.4 Mitigation Measures

The mitigation measures are presented in detail in Section 6 of Appendix B, and a summary is provided below.

A series of guidance have been prepared in accordance with BS 5228 2009+A1 2014 Parts 1 and 2 on measures to control construction noise, including selection of quiet plant, noise control at source, screening and working hours. This guidance is detailed in Appendix B. In order to reduce operational noise levels at R018b it is proposed to introduce a noise barrier along the road edge closest to this property (see Figure 9-1 below and drawings in Appendix M). The noise barrier is modelled to reduce the traffic noise levels to below the TII design goal of 60 dB Lden.

The residual impacts of the proposed scheme were assessed considering the recommended noise mitigation measures. The inclusion of the recommended noise mitigation measures during the operational phase will ensure that traffic noise levels associated with the proposed road are sufficiently reduced at location R018b.



**Figure 9-1: Location of Noise Mitigation**

## 9.5 Conclusion

A baseline noise survey was undertaken to measure existing traffic noise levels at the closest properties within the study area. The results of the baseline survey confirm that properties along the existing road network experience traffic noise levels above 60 dB Lden with traffic noise from the existing N24 being the primary noise contributor. Road traffic noise levels were predicted at 25 properties within the study area using the projected traffic flows for the two assessment years. It was determined that mitigation is required to reduce traffic noise levels at one location, R018b comprising a noise barrier 1.25m high from chainage 1+040 to 1+100. With the proposed mitigation in place, it may be concluded that the project complies with the appropriate guidance in relation to noise, hence the associated impact is considered acceptable.

The application of noise limits, restricted hours of operation, along with implementation of appropriate noise control measures, have indicated that the construction noise impact will be a short-term moderate to major impact. The assessment has determined that, once operational, the noise impact associated with the new road alignment will result in a negligible to moderate negative impact during the long-term period at some assessment locations. A number of locations experience a major positive noise impact as the proposed road scheme is at a greater distance than the existing road.



## SECTION 10: LAND, SOILS AND GEOLOGY

### 10.1 Introduction

This section presents a preliminary overview of the receiving environment with regards to land, soils and geology, the identification of any potential constraints associated with the proposed scheme and proposed mitigation measures / recommendations. Ground conditions have been assessed through the completion of a desk-based study, including a review of all available geotechnical reports prepared following a comprehensive ground investigation undertaken along the route of the proposed scheme. This assessment has been undertaken in accordance with relevant best practice guidance from the Institute of Geologists of Ireland (IGI) *Guidelines for the preparation of the Soils, Geology and Hydrogeology chapters of an Environmental Impact Assessment Report* (2013), albeit it is noted that this report is not an Environmental Impact Assessment Report.

The desk-based study involved reviewing information from the following sources:

- Geological Survey of Ireland (GSI) webpage using the online mapping tool (GSI, 2022);
- Ordnance Survey of Ireland (OSI) webpage to assess the surface topography, landforms and historic mapping (OSI, 2022);
- Kilkenny City and County Development Plan 2021-2027 (KCC, 2021);
- N24 Road Improvement Scheme, Ground Investigation Contract, Interpretative Report (Priority Geotechnical Limited, 2018);
- N24 Road Improvement Scheme, Ground Investigation Contract, Factual Report (Priority Geotechnical Limited, 2018);
- N24 Road Improvement Scheme, Preliminary Design Report (THRDO, 2021);
- N24 Road Improvement Scheme, Site Investigation Report (Site Investigations Ltd, 2020);
- N24 Road Improvement Scheme, Scheme Feasibility & route Options Report (THRDO, 2019).

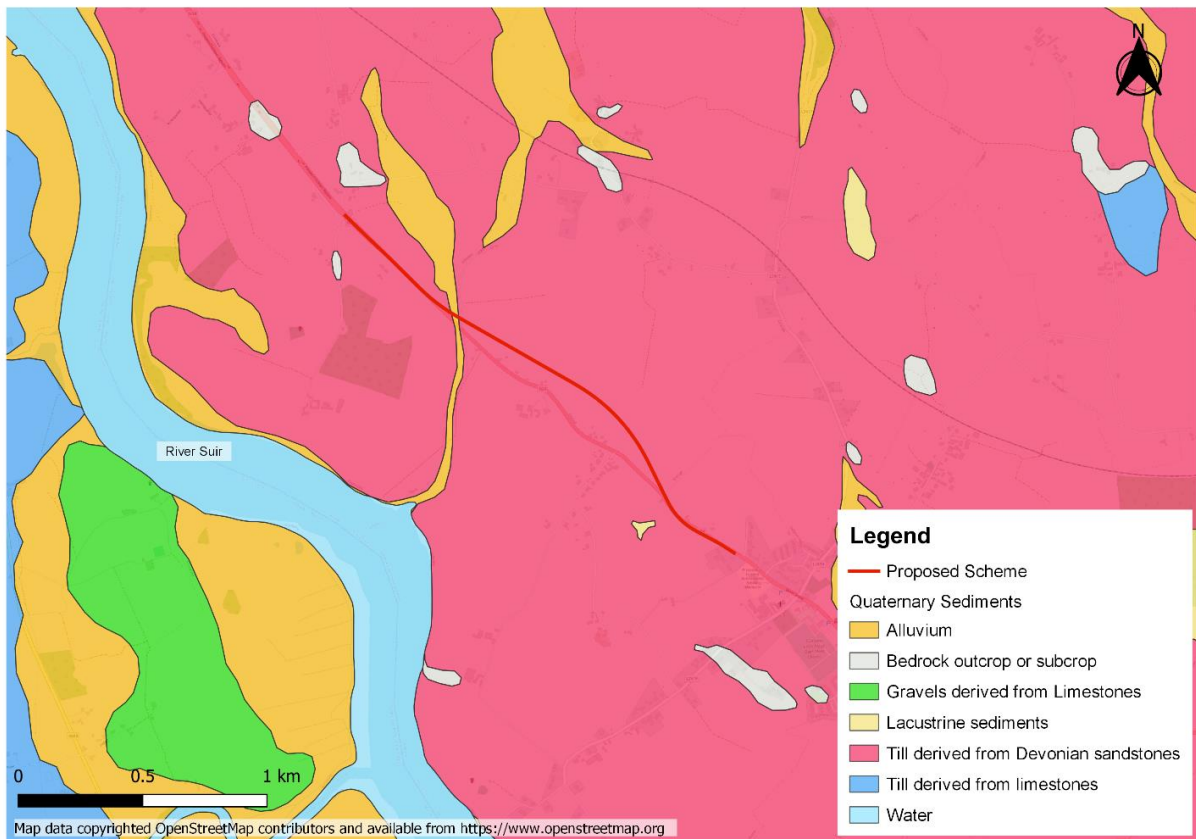
The total land take area is 9.9445 Ha.

### 10.2 Receiving Environment

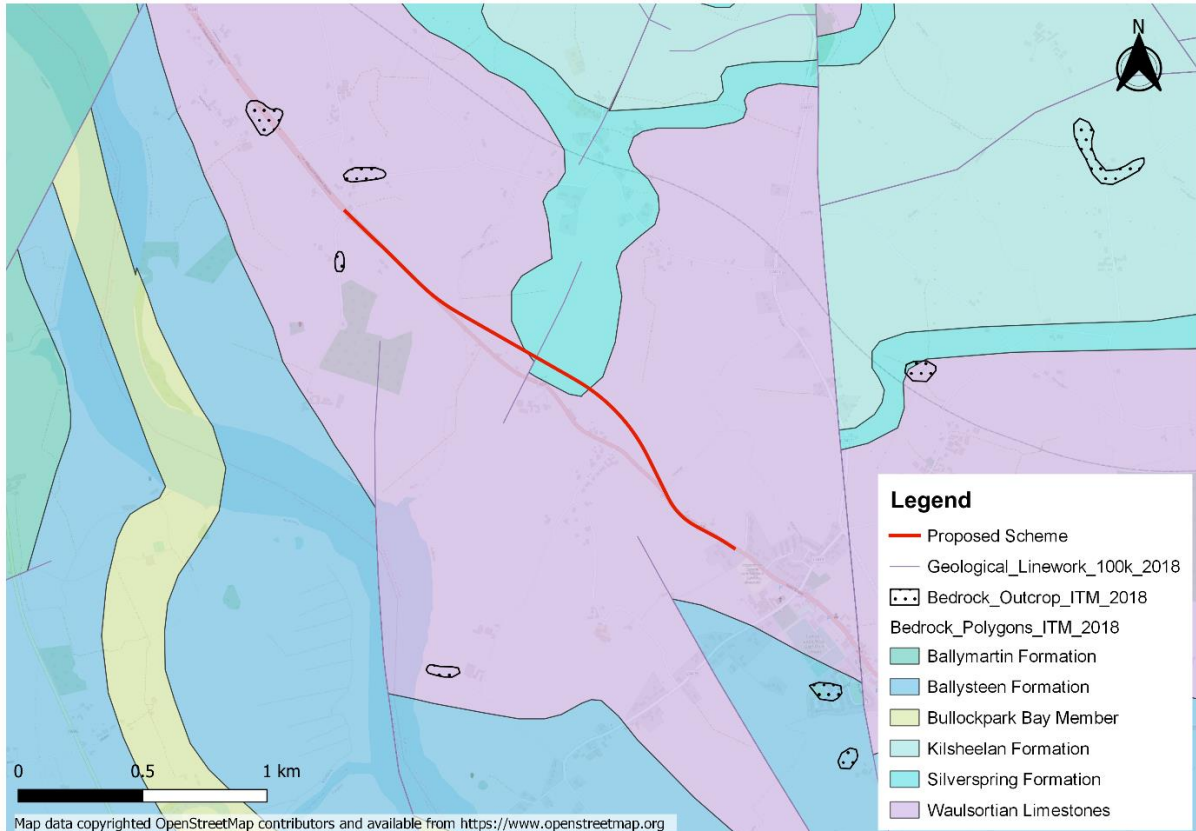
The N24 Carrick Road Improvement Scheme is largely within an agricultural area. The quaternary sediment underlying the proposed scheme is predominantly till derived from Devonian sandstone. Alluvial deposits were identified associated with the water courses in the vicinity of the N24 road. Localized pockets of bedrock were identified to be in the vicinity of the scheme. Refer to Figure 10-1:.

Bedrock underlying the proposed scheme is from the Waulsortian Limestones, described as 'Massive unbedded lime-mudstone' (GSI, 2022). A small section in the centre of the scheme is underlain by Silverspring Formation, described as 'Bedded chert and dark-grey limestone' (GSI, 2022). Refer to Figure 10-2:.

There are no reported karst features or potential landslide risk area along the proposed scheme. The closest karst features include a spring located approximately 1.8km northeast within the Ballysteen Limestone Formation and a borehole approximately 1.9km northwest of the proposed scheme. Refer to Figure 10-3:.. Evidence of potential karst was identified using the 3no. rotary coreholes during the site investigations completed by Site Investigations Ltd (2020). The proposed realignment traverses across a regionally important aquifer that includes some karstification. As detailed in the N24 Road Improvement Scheme, Site Investigation Report (Site Investigations Ltd, 2020) there is also evidence on across the site of some small depressions that could be caused by karstification. The Site Investigation Report (Site Investigations Ltd, 2020) further outlines that in areas where bedrock is shallow, i.e. RC107, it would be anticipated that the risk of further karstification due to the construction of the carriageway is a medium risk and that the use of geogrids in construction to spread the loadings of the carriageway across the soils from the embankments. In areas where the bedrock is deeper, i.e. RC105 and RC106, any additional pressures from the construction of the carriageway will be dissipated within the overburden. Therefore, the risk of karstification will be low in these areas and the use of geogrid will not be required.

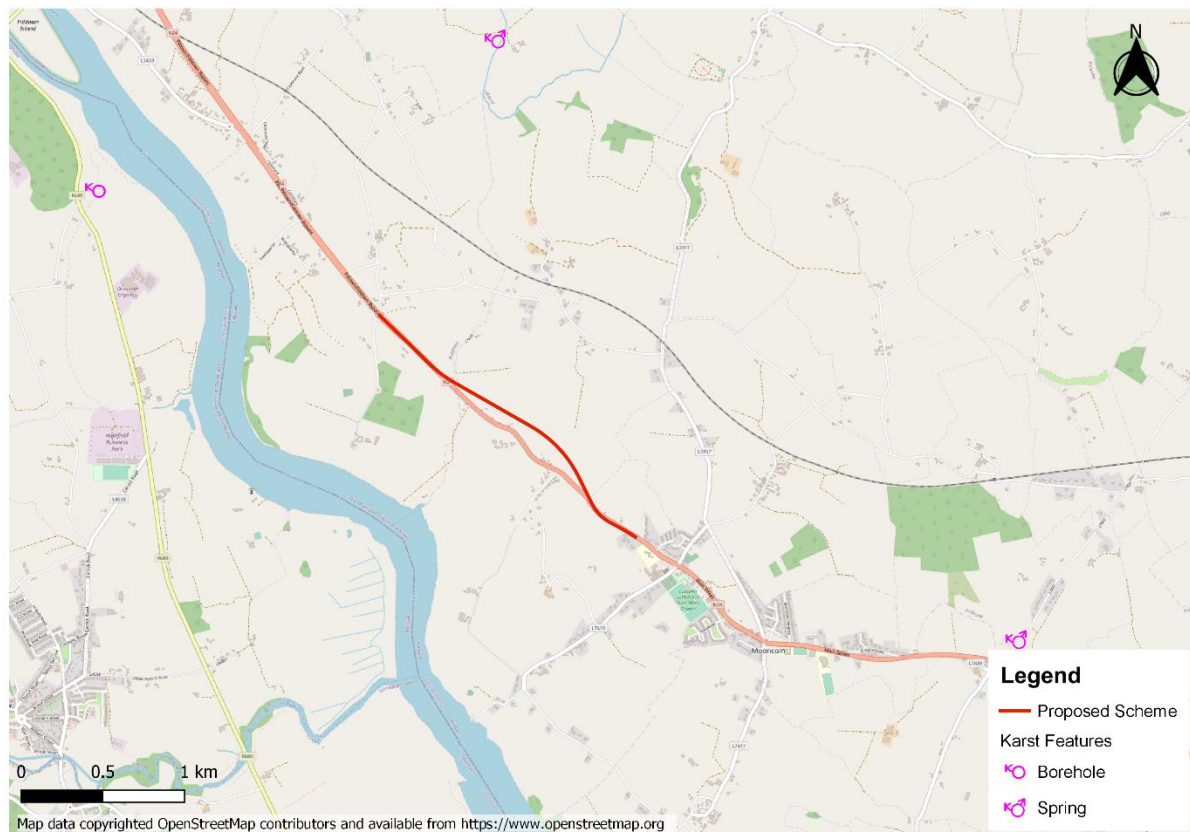


**Figure 10-1: Quaternary Sediments within the vicinity of the Proposed Scheme**



**Figure 10-2: Bedrock Geology within the vicinity of the Proposed Scheme**





**Figure 10-3: Karst Features within the vicinity of the Proposed Scheme**

There are no reported Geological Heritage Sites along the proposed scheme. The closest reported Geological Heritage Area is Piltown Borehole and Quarry (Site Code: KK013), located approximately 7.2km northeast of the proposed scheme (GSI, 2022).

Historical land-use beneath the proposed scheme is largely agricultural in nature and more recently includes the existing N24 road. The Ormonde Organics Limited (Portlaw), an EPA Industrial Emissions licensing (IEL) facility (Licence number W0287-01), and Messrs Pat Moloughney And Philip De Vere Hunt, an EPA licenced Integrated Pollution Control (IPC) facility (Licence number P0234-01 Licence Type-Surrendered), are located approximately 1.5km northwest of the proposed scheme. There is also a Section 4 Discharges licenced facility approximately 4.5km northwest of the scheme. No other land uses associated with historic or recent potential sources of contamination, including waste facilities, or historic mines, are identified along the proposed scheme or its immediate vicinity.

2 no. ground investigations were carried out by Priority Geotechnical Limited (PGL, 2018) and Site Investigations Ltd. (2020) as part of the proposed scheme development. The geology of the proposed scheme is described as follows:

- Topsoil, slightly gravelly sandy silt was encountered along the length of the proposed scheme to depths 200mm below ground level (bgl) up to 600mm bgl. The topsoil was underlain by slightly sandy (slightly) gravelly clay with low cobble content encountered to depth of 3.0m bgl;
- Made ground was encountered at a number of locations. At these locations slightly sandy gravelly silt with inclusions of blocks and waste material were observed to depths between 0.8m bgl and 1.0m bgl. Where encountered elsewhere the made ground functioned as assumed drainage backfill or underdetermined granular fill/ unbound surfacing 400mm to 800mm thick.
- Glacial deposits were described as slightly sandy gravelly clay of intermediate plasticity; and,
- Bedrock was encountered at varying levels from 3.50mbgl in rotary corehole RC107 to 26.00mbgl in rotary corehole RC106 with the locations relatively close to each other so rock level undulates across the site. The bedrock consisted of strong to very strong, light grey limestone with frequent calcite veins, occasional fossils and micro-karst features and is fresh to slightly weathered. In addition to

the micro-karst features identified in the core, voids were recorded in RC106 and these were 300mm and 400mm thick.

### Potential Constraints

The N24 Carrick Road Improvement Scheme will involve an excavation volume of ca. 21,484 m<sup>3</sup> (not including 11,185m<sup>3</sup> Topsoil) and a fill volume of ca. 108,061 m<sup>3</sup>. It is anticipated that ca. 15,139 m<sup>3</sup> of the excavated material is suitable for reuse onsite without further processing and therefore ca. 5,819 m<sup>3</sup> will require offsite disposal to a licensed facility or further processing to make suitable for on-site works. The contractor will be responsible for the management of waste, including construction and demolition (C&D) waste, during the construction works in compliance with the requirements of the Waste Management Act 1996 (as amended) and associated regulations and with regard to *Draft Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects* (EPA, 2021) and TII guidelines including *The Management of Waste from National Road Construction Projects* (GE-ENV-01101) December 2017.

Rock outcrops can be difficult to engineer and require increased effort to excavate and are therefore a potential constraint. There is no bedrock outcrop or sub crop on proposed scheme reported by GSI (2020). The Ground Investigation indicates that there is a low likelihood that bedrock will be encountered during the construction phase, however as published GSI data has indicated rock outcrops near the site bedrock may be encountered in localised areas. According to the GSI (2020), groundwater vulnerability rating in the vicinity of the proposed scheme is 'low' with a small area to the north of the scheme described as 'moderate'. Low permeability suggests that there is 10m depth of low permeability till (boulder clay) and moderate permeability suggests that there is greater than 10m depth of moderately permeable till (boulder clay) (GSI, 2022). Further details are presented in Chapter 11 - Water.

## 10.3 Impact Assessment

### Construction Phase

The scheme will be constructed along the existing road network (950m) with the remainder (1.25km) located within agricultural lands. Within the proposed scheme there is one main embankment area along the route, with the largest located over the L7416 (Grange Road) extending to heights of approximately 9.1m (At Ch 1510). The maximum depth of excavation is anticipated to be 1.7m bgl (At Ch950). At the deepest area of cut the depth to bedrock is likely to be ca. 1.1 m bgl (TP107). Therefore, localised rock is anticipated to be encountered during construction. A preliminary earthworks table outlining the materials to be excavated and the materials to be used during construction is included in Table 10-1 below.

Waste management during the construction phase is detailed further within Chapter 12 – Material Assets. The proposed scheme will not have a significant adverse effect on local soils and geology during the construction phase. A number of potential risks to local soils and underlying bedrock during the construction phase have been considered including potentially unidentified areas of karst (such as voids, infill cavities, extensive fracturing / extensive weathering) which may be within vicinity of the scheme. Such risks include; accidental leaks or spillages of fuel, oil, paint or varnish; soils compaction, slope stability and contaminated land. However, these potential risks will be addressed through the implementation of standard construction mitigation measures, as detailed below.

**Table 10-1: Preliminary Earthworks (THRDO,2020)**

Fill					Location	Excavation					
General	Selected					Acceptable		Unacceptable			
	Embankments (class 1,2) (m³)	Fill to Gabions (m³)	6F2 Capping (m³)			Limestone Quarry Dust (m³)	Total Fill (m³)	5A Topsoil (m³)	Total Acceptable other than 5A (m³)	U1 Hard Material (m³)	U2 (m³)
7040	0	7854	0	14894	N24 Carrick Road Improvement Scheme	3750	11358	3927	0	15286	1088
65509	0	4281	0	69790	Mainline Ch 0 to 1220	3791	0	648	0	648	648
2474	0	2365	0	4839	Mainline Ch 1220 to 1760	632	1688	1244	0	2932	822
334	140	266	0	600	Mainline Ch 1760 to End	232	765	0	0	956	0
15154	0	326	178	15658	Attenuation Eastern	1452	0	0	0	0	0
0	0	2280	0	2280	Attenuation Western	1328	1328	0	0	1660	0
90511	140	17972	178	108061	Farm Access Roads	11185	15139	5819	0	21484	2550
					Total (m³)						

## Operational Phase

A number of potential risks to local soils during the operational phase have been considered as follows:

- Accidental fuel leaks or spillages;
- Accidental leaks of fuel; and
- Oil or paint during road maintenance works.

However, all storm water run-off will be attenuated, and pollution control measures will be put in place prior to discharge including bypass petrol interceptors at outfalls. A manual shut off valve will also be fitted to the outfall pipe to assist in the event of any accidental spillages. Any maintenance works required are likely to be of short duration and temporary in nature. Therefore, the proposed scheme will not have a significant adverse effect on local soils and geology during the operational phase.

## 10.4 Mitigation Measures

The employment of good construction management practices, which are also detailed in Chapter 11 - Water, will serve to minimise the risk of pollution from construction activities at the proposed development in line with the following guidance:

- Control of Water Pollution from Construction sites, Guidance for Consultants and Contractors – C532 (Construction Industry Research and Information Association (CIRIA), 2001);
- Control of Water Pollution from Linear Construction Projects, Site Guide – C649 (CIRIA, 2006); and

- Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes (TII/NRA, 2005).

Specifically, with regard to soils and geology, the following will be adhered to:

- Fuels, lubricants and hydraulic fluids for equipment used on the construction site, as well as any solvents, oils, and paints will be carefully handled to avoid spillage, will be properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice;
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the scheme site for appropriate disposal;
- Any spillage of fuels, lubricants or hydraulic oils will be immediately contained and the contaminated soil removed from the proposed development and properly disposed of;
- All site vehicles used will be refuelled in bunded areas in the construction compound;
- Strict supervision of Contractors will be adhered to in order to ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the site. This will minimise the risk of soils and bedrock becoming contaminated through site activity;
- Soils on the proposed development may become unnecessarily compacted by machinery during construction. In order to protect against this, accesses and haulage roads will be clearly defined;
- Should karst features be encountered during construction works, they shall be assessed by an appropriately experienced geologist / geotechnical engineer to determine suitable remedial actions (if required);
- In the event that contaminated ground (i.e. soils, perched water or weathered bedrock) is encountered during the construction works the following specific environmental management procedures will be adhered to:
  - Any contaminated material will be fully characterised by an appropriately qualified and experienced environmental consultant in terms of lateral and vertical extent, and a detailed assessment of the potential environmental and human health impacts will be undertaken in accordance with industry standard best practice; and,
  - All soil for offsite disposal will be tested prior to disposal offsite.
- The following general precautionary measures will also be implemented:
  - All excavated materials will be stored away from any excavations, in an appropriate manner at a safe and stable location; and,
  - A comprehensive monitoring and supervisory regime including monitoring of excavations and stability assessments as required will be put in place to ensure that the proposed construction works do not constitute a risk to the stability of the site.

All of the above mitigation measures are included in the *Outline CEMP* (Appendix J) and will form part of a site-specific iteration of Construction Environmental Management Plan to be prepared by the Contractor in advance of commencing the works.

## 10.5 Summary

The mitigation measures as outlined in Section 10.4 will reduce any potential impacts on land, soil and geology. Therefore, there are no significant residual impacts anticipated on land, soils and geology from the proposed scheme.

## SECTION 11: WATER

### 11.1 Introduction

This section presents a preliminary overview of the receiving environment with regards to flood risk screening, hydrology and hydrogeology, the identification of any potential constraints associated with the proposed scheme and proposed mitigation measures / recommendations. This desk-based assessment has been completed in accordance with relevant best practice EIAR guidance from the Institute of Geologists of Ireland (IGI) *Guidelines for the preparation of the Soils, Geology and Hydrogeology chapters of an Environmental Impact Assessment Report* (2013), albeit it is noted that this report is not an Environmental Impact Assessment Report.

The desk-based study involved reviewing information from the following sources:

- Geological Survey of Ireland Datasets Public Viewer and Groundwater web mapping ([www.gsi.ie](http://www.gsi.ie)) (GSI, 2022);
- Environmental Protection Agency web mapping ([www.epa.ie](http://www.epa.ie)) (EPA, 2022);
- Office of Public Works (OPW) National Flood Hazard mapping web site (OPW, 2022);
- National Parks and Wildlife Service (NPWS) Map Viewer (NPWS, 2020);
- Water Framework Directive Ireland web mapping (<http://www.wfdireland.ie/>) (WFDI, 2020);
- Kilkenny City and County Development Plan 2021-2027 (KCC, 2021);
- N24 Road Improvement Scheme, Ground Investigation Contract, Interpretative Report (Priority Geotechnical Limited, 2018);
- N24 Road Improvement Scheme, Ground Investigation Contract, Factual Report (Priority Geotechnical Limited, 2018);
- N24 Road Improvement Scheme, Preliminary Design Report (THRDO, 2021);
- N24 Road Improvement Scheme, Site Investigation Report (Site Investigations Ltd, 2020); and
- Kilkenny County Council Climate Change Adaptation Strategy (2019-2024).

### 11.2 Receiving Environment

#### Flood Risk Screening

A *Stage 1 Flood Risk Assessment Report* has been prepared (JBB, 2022) which is included as part of this planning application (Appendix C). This assessment has identified that the section of the N24 proposed for road improvements is not at risk of fluvial flooding from the Skelpstown 16 Stream or the River Suir. Accordingly, the preparation of a Stage 2 Flood Risk Assessment is not required.

#### Hydrology

The proposed scheme is located approximately 700m northeast of the River Suir and also crosses Skelpstown 16 stream which is an open watercourse and discharges directly into the River Suir. The River Suir flows in a southerly direction and discharges into the Waterford harbour approximately 25km south of the scheme. River Suir forms the part of the Lower River Suir SAC. Refer to Figure 11-1:.

The Skelpstown Stream has been assigned an 'Unassigned' status under the Water Framework Directive (WFD) for 2013-2018 monitoring period and the waterbody risk status is also under review.





**Figure 11-1: Water Features in the vicinity of the Scheme**

### Hydrogeology

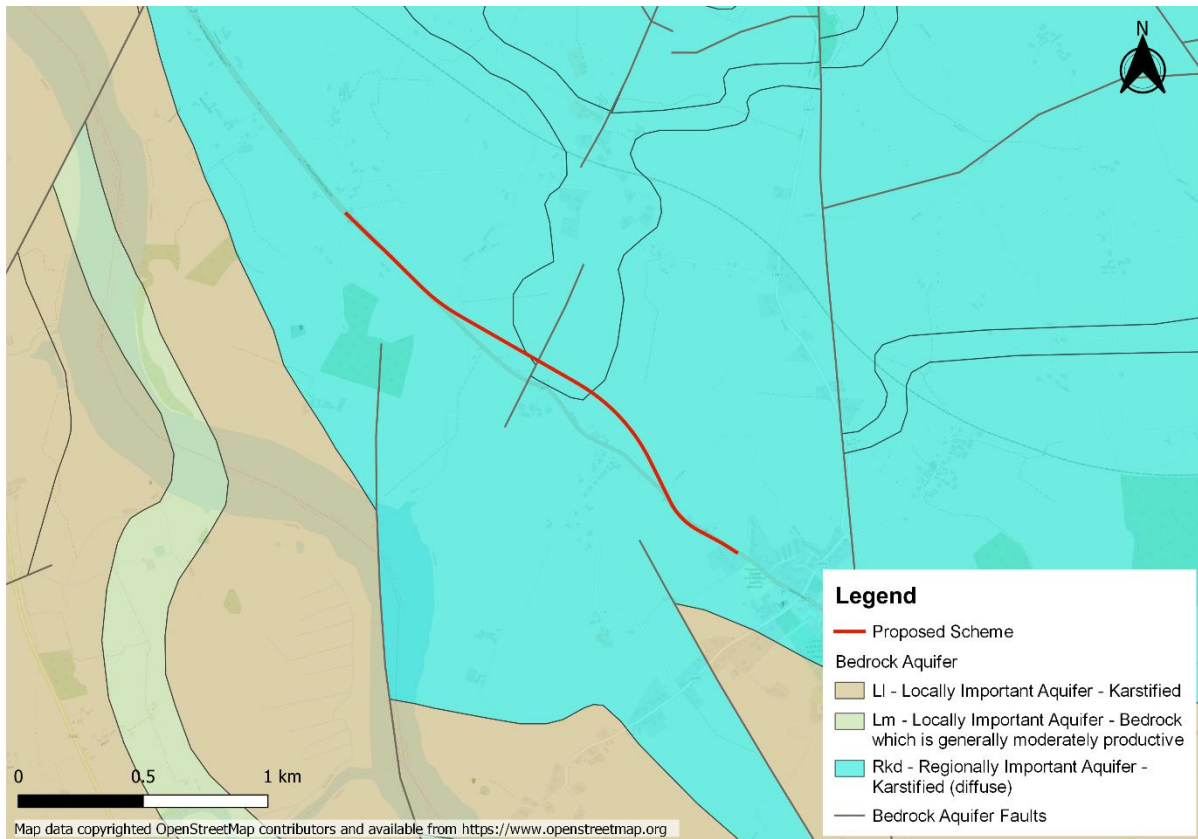
The proposed scheme is underlain by a 'Regionally important bedrock aquifer- karstified (diffuse)' (GSI 2022), as shown in Figure 11-2:.

The national vulnerability mapping indicated the area is classified as of 'low vulnerability'. Areas of high to extreme vulnerability are identified northwest of Mooncoin and along the N24 route south of Turkstown possibly associated with shallow depth to bedrock. There are no designated Source Protection Areas (SPAs) within the general vicinity of the scheme. The nearest SPA is Pilltown-Fiddown public water supply located approximately 7.5km to the northeast of the scheme.

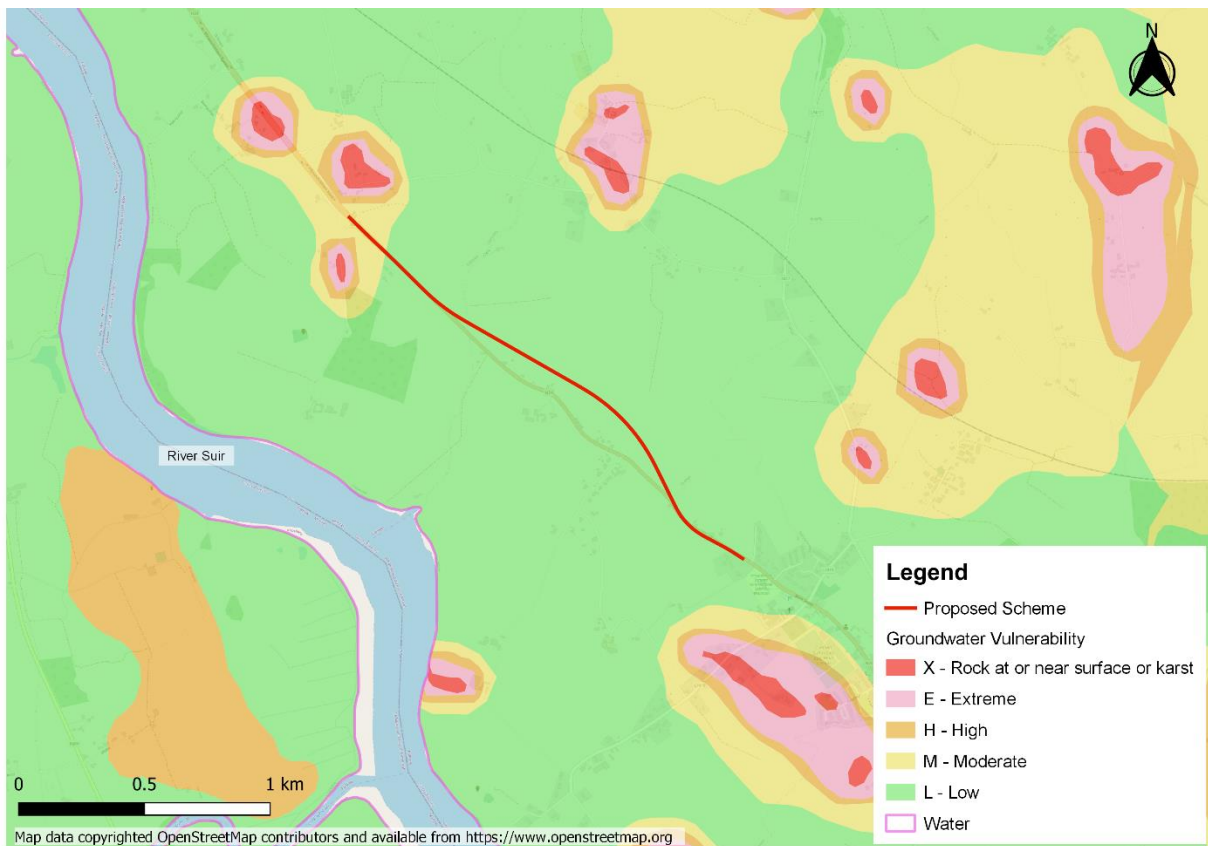
Ground Investigation Interpretative Reports (Priority geotechnical, 2019) and Site Investigation Report (Site Investigations Ltd, 2020) were reviewed to determine the potential for groundwater to be encountered and potentially impacted during the construction phase of the proposed scheme. Groundwater ingresses were noted at one borehole location at 1.80mbgl and one trial pit at 2.80mbgl when a seepage was noted. The remaining locations remained dry during the excavations with no groundwater ingresses.

As discussed previously there were only two water strikes in the borehole and trial pits, at 1.80mbgl and 2.80mbgl, respectively. There is always considerable uncertainty as to the likely rates of water ingress into excavations in cohesive soil sites due to the possibility of localised unforeseen sand and gravel lenses acting as permeable conduits for unknown volumes of water. However, based on the information at the exploratory hole locations to date, it is considered likely that any seepage into excavations of the clay will be slight.

If groundwater is encountered during excavations, then mechanical pumps will be required to remove the groundwater from sumps. Sumps shall be carefully located and constructed to ensure that groundwater is efficiently removed from excavations and trenches.



**Figure 11-2: Bedrock Aquifer beneath the Proposed Scheme and vicinity**



**Figure 11-3: Groundwater Vulnerability in the general vicinity of the Scheme**

## 11.3 Impact Assessment

### Construction Phase

Potential impacts during the construction phase have been considered in terms of surface water / groundwater quality and resources, surface water levels and flows, and groundwater supply. The Contractor's compound will include self-contained welfare facilities; therefore no potential risks to surface water or groundwater quality associated with the temporary compound are identified. A number of potential risks to local surface water and groundwater quality during the construction phase have been considered as follows; accidental leaks or spillages of fuel, oil, paint or varnish; slope stability and contaminated land. However, these potential risks will be addressed through the implementation of standard construction mitigation measures, as detailed below, as well as the mitigation measures set out in the Outline CEMP prepared by BT (and summarised in Chapter 15 - Biodiversity). Given the localised and small-scale nature of excavation works required on the project there is a potential risk to groundwater quality / resources on a very localised scale. Furthermore, the water supply within the scheme study area is via a 100mm watermain running parallel to the existing N24. This reduces the risk to groundwater supply in vicinity of the scheme as the majority of landowners are serviced via the public water supply.

Based on the proposed design there will be a realignment of the Skelpstown 16 stream which will flow through the site along with the construction of a new box culvert. It is planned that two systems will be used for surface water. Firstly, any road surface run-off will be collected in a closed drainage system and be transferred into two lined attenuation ponds and draining from these to outfall locations. Secondly, any rainfall falling outside the road surface, i.e. on embankment surfaces, will be collected in filtered drains and these will also drain into the various outfall points. Using the Geological Survey of Ireland's online database, it is identified that the soils across the site have a low permeability and the aquifer has a low vulnerability. With the use of the attenuation ponds and the filter drains then any risk to the Regionally Important Aquifer will be minimised.

There will be no impact to regional groundwater resources in the vicinity of the proposed scheme. Accordingly, subject to the implementation of mitigation measures as set out in Section 11.4, the proposed scheme will not result in significant adverse effects on surface water or groundwater quality, river flow rates or regional groundwater resources to them receiving environment, during the construction phase.

### Operational Phase

Storm water discharge to the River Suir will be attenuated to greenfield run-off rates; therefore, the proposed scheme will not impact baseline surface water flows in the vicinity.

A number of potential risks to local surface water and groundwater during the operational phase have been considered as follows:

- Accidental fuel leaks or spillages along the road;
- Accidental leaks of fuel, oil or paint during maintenance works; and
- Impacts to groundwater quality and groundwater levels at private supply wells which may be present in the immediate vicinity of the proposed scheme.

However, all storm water run-off will be attenuated, and pollution control measures will be put in place prior to discharge including petrol interceptors and a manual shut off valve. Any maintenance works required are likely to be of short duration and temporary in nature. Therefore, the only potential impacts which could arise during the operational phase relate to potential impacts to private supply wells on a local scale; however as outlined previously water supply in the vicinity is generally thought to be provided via the public water supply. Notwithstanding, a pre-construction well survey will be carried out at all properties within 150m of the proposed scheme. Any wells which may potentially be at risk (via. resource / quality impacts) during the construction or operational phases will be identified and appropriate measures implemented in order to protect any vulnerable groundwater supplies within the vicinity.



Accordingly, subject to the implementation of mitigation measures as set out in Section 11.4, the proposed scheme will not result in significant adverse effects on surface water or groundwater quality, river flow rates or regional groundwater resources to the receiving environment, during the operational phase.

## 11.4 Mitigation Measures

- A pre-construction well survey will be carried out at all properties within 150m of the proposed scheme. Any wells which may potentially be at risk (via. resource / quality impacts) during the construction or operational phases will be identified and appropriate measures implemented in order to protect any vulnerable groundwater supplies within the vicinity;
- The construction management of the site shall take account of the recommendations of the CIRIA guide *Control of Water Pollution from Construction sites* (2001) to minimise as far as possible the risk of pollution;
- In the unlikely event that contaminated shallow perched water / groundwater is encountered during the construction phase, works will immediately cease. Advice will be sought from a qualified environmental consultant regarding the appropriate management of contaminated water, and any emergency containment measures required. Appropriate measures as set out under Section 10.4 (Land, soils and Geology) will be implemented;
- The following specific mitigation measures regarding temporary oil / chemical storage and refuelling shall be adhered to:
  - All oils, paints and varnishes stored on site will be kept in a locked and bunded area;
  - Generators, pumps and similar plant will be placed on drip-trays to prevent contamination by oil;
  - All site vehicles used will be refuelled in bunded areas at the site compound which is at least 50m from the Skeplstown stream;
  - All temporary construction fuel tanks will also be located in a suitably bunded area and all tanks will be double skinned. In addition, oil absorbent materials will be kept onsite in close proximity to any fuel storage tanks or bowzers during proposed site development works;
  - All deliveries to on-site oil storage tanks will be supervised;
  - Records will be kept of delivery dates and volumes;
  - All valves shall be of steel construction and the open and close positions shall be clearly marked;
- The production, transport and placement of all cementitious materials shall be strictly planned and supervised. Uncontaminated U1 material can be reprocessed on site, within areas designated appropriate for stockpiling of materials as above, for reuse; unacceptable U2 type contaminated material will either be removed directly from site and brought to an existing licensed waste facility or stored temporarily within areas designated appropriate for stockpiling of materials as above, and then removed and brought to an existing licensed waste facility;
- Any mixing of concrete / cement or other materials required for the works will also be undertaken within the site compound, with all wash water and waste / grey water stored securely on site; and,
- Any stockpiling of materials will be 50m back from any watercourses, with bunding and silt fences, the location for stockpiling of materials will be agreed before the project is finalised.
- Silt fences will be erected around works adjacent to the Skelpstown 16 stream and the site compound, see drawings in Appendix M. Terrastop Premium Silt Fences, or an equivalent alternative, will be used to intercept any run-off from these areas. Silt fencing will be used around the works area, silt fences will be placed on the outside of instream works areas first, with sand bags placed inside to ensure no impacts regarding suspended solids arise. Details of the sandbags, if required, will be included in the CEMP.

These mitigation measures will form part of the site-specific iteration of *Construction Environmental Management Plan* which will be in operation during the construction phase. All mitigation measures as detailed in the *Ecological Impact Assessment* (Ecofact 2022) which accompanies this planning application also apply with respect to minimising the potential for surface water or groundwater impacts and associated ecological impacts.

## 11.5 Summary

Taking account of the proposed mitigation measures the scheme will not have a significant adverse effect on hydrology or hydrogeology within the receiving environment. Based on the results of the Stage 1 Flood Risk Screening (Appendix C), no flood risk has been identified arising from or to the scheme.

## SECTION 12: MATERIAL ASSETS

### 12.1 Introduction

Material assets are defined by the EPA (2017) as, built services and infrastructure. This assessment involves a review of the following: Built Services, Waste Management, and Roads and Traffic. Roads and Traffic are considered further within Chapter 17 – Traffic.

### 12.2 Receiving Environment

#### Built Services

Existing services within the proposed scheme extent include Eircom, ESB and Water services present within the existing road network. Potential service conflicts will involve the maintenance and protection of these services with occasional diversions required.

Details of existing utilities within the vicinity of the proposed scheme are further detailed within the *Preliminary Design Report* (THRDO, 2021) submitted as part of the planning process (Appendix L). Such services include Eircom and water services along the verges of the existing N24, ESB overhead cables which are common along the scheme. These services will require predominantly maintenance and protection with occasional diversions required.

#### Waste Management

The maximum excavation depth of the proposed scheme is anticipated to be approximately 1.7m bgl (approx. Ch950). In addition to excavated soils, the construction phase of the development will generate waste such as construction and demolition waste, Mixed Municipal Waste (MMW), Recyclables such as plastic wrapping, wooden pallets, paper and/or waste electrical and electronic equipment (WEEE).

All waste streams will be managed in accordance with the following key objectives from the Kilkenny City and County Development Plan 2021-2027 (KCC, 2021):

*“10G To implement the Southern Region Waste Management Plan.”*

A site-specific Resource and Waste Management Plan (RWMP) will be prepared by the preferred contractor in accordance with Environmental Protection Agency’s *Draft Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects* (2021) and Transport Infrastructure Ireland’s, *The Management of Waste from National Road Construction Projects* (2017). The Guidelines provide a practical and informed mechanism to document the prevention and management of C&D wastes and resources from design to construction or demolition of a project. They provide a common approach to preparing and determining Resource and Waste Management Plans for the construction and demolition sector in Ireland. Given the nature and scale of the proposed scheme, it is likely this project will exceed the following threshold and therefore the Contractor will be obliged to prepare a bespoke Resource and Waste Management Plan; *“Larger scale projects, above the thresholds...require a bespoke RWMP”. “RWMP thresholds...New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 1,250m<sup>2</sup>.”*

Specifically, in relation to waste soils, excavated soils will generally comprise native soils with some made ground (fill material). Native soils will be reused onsite where possible. Any surplus soils including unsuitable fill material will be disposed of offsite in accordance with all requirements of the relevant waste management regulations, (Waste Management Acts, 1996 to 2019) and all subsequent amendments. Any encountered made ground / waste soil requiring offsite disposal will also be transported and disposed of in accordance with all relevant waste management legislation. All waste soils / material removed from site will need to be classified in accordance with EPA guidelines (2018); soils testing will be required; the results of which should inform the preparation of a waste classification tool (to determine the appropriate List of Waste (LoW) code), and then screened against relevant waste acceptance criteria to determine the appropriate regulated disposal / recovery facility for each waste

stream. All other construction waste will be segregated and removed from site for disposal or recycling, in accordance with all relevant Waste Management Legislation.

The potential risk to soils and underlying bedrock from accidental leaks or spillages of fuel, oil, paint or varnish during the construction works will be mitigated by the implementation of site-specific control measures, as detailed in Chapter 10 – Land, Soils and Geology. These will be set out in the Construction Environmental Management Plan (which will be prepared by the Contractor prior to construction works commencing).

## 12.3 Impact Assessment

### Construction Phase

There will be a requirement to relocate occasional utility services as outlined in Section 12.2 within the proposed scheme extent. Potential service conflicts will involve the maintenance and protection of these services with occasional diversions required. Residual risks associated with utility diversions will be further developed at the detailed design stage.

## 12.4 Mitigation Measures

A project Resource and Waste Management Plan will be prepared by the preferred contractor in accordance with Environmental Protection Agency's *Draft Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects* (2021) and Transport Infrastructure Ireland's, *The Management of Waste from National Road Construction Projects* (2017), in advance of commencing the works, as the proposed scheme likely exceeds the relevant thresholds for the preparation of such plans.

All waste soils / material removed from site will need to be classified in accordance with EPA guidelines (2015); soils testing will be required; the results of which should inform the preparation of a waste classification tool (to determine the appropriate List of Waste (LoW) code), and then screened against relevant waste acceptance criteria (to determine the appropriate regulated disposal / recovery facility for each waste stream). All other construction waste shall be segregated and removed from site for disposal or recycling, in accordance with all relevant Waste Management Legislation.

All waste-related control measures set out in Chapter 10 – Land, Soils and Geology will apply during the construction phase.

## 12.5 Summary

There will be a requirement to relocate occasional utility services as outlined in Section 12.2 within the proposed scheme extent. Potential service conflicts will involve the maintenance and protection of these services with occasional diversions required. Residual risks associated with utility diversions will be further developed at the detailed design stage.

Taking account of the waste management controls which will apply to the construction phase of the proposed scheme, waste generated during the proposed works will not have a significant effect on the receiving environment.

## SECTION 13: ARCHAEOLOGY, ARCHITECTURE AND CULTURAL HERITAGE

### 13.1 Introduction

This section presents a preliminary overview of the existing environment with regards to archaeology, architecture and cultural heritage. This assessment evaluates any potential impacts on the existing environment due to the proposed scheme and identifies appropriate mitigation strategies. John Cronin and Associates have been commissioned to assess the potential archaeology, architecture and cultural heritage impacts associated with the proposed N24 Road Improvement Scheme as presented in the detailed report in Appendix E: Archaeological, Architectural and Cultural Heritage Impact Assessment Report. This assessment includes summaries of relevant assessments of the scheme which have been carried out to date, including an assessment of route options prepared by the Transport Infrastructure Ireland (TII) Project Archaeologist in 2019 (included in Appendix E) and the results of a geophysical survey of green field areas within the boundary of the preferred option and its close environs which was carried out by Earthsound Archaeological Geophysics (EAG) in 2021 (included in Appendix E).

This chapter summarises the report findings. The assessment was carried out in accordance with *Guidelines for the Assessment of Archaeological Heritage Impacts of National Road Schemes* (TII, 2005) and *Guidelines for the Assessment of Architectural Heritage Impacts of National Road Schemes* (TII, 2005). The detailed methodology is presented in Section 1 of Appendix E.

### 13.2 Receiving Environment

The baseline environment is presented in detail in Section 2 of Appendix E, and a summary is provided below. All Cultural Heritage Sites (CHS) are listed in Table 4 of Appendix E.

The proposed scheme is located within the Civil Parishes of Clonmore and Pollrone, both of which are in the Barony of Iverk, and it extends into the townlands of Clonmore, Grange and Pollrone. The proposed scheme crosses one section of a boundary between two civil parishes and three sections of boundaries between townlands.

The Record of Monuments and Places (RMP) and Sites and Monuments Record (SMR) do not list any recorded archaeological sites within the study area. The nearest known archaeological site to the proposed scheme is a holy well (CHS-03, KK042-007----) in Clonmore townland and this is located 330m to the south of the west end of the scheme.

There are no Protected Structures or National Inventory of Architectural Heritage (NIAH) listed structures located within the study area and the nearest examples comprise the 19th century St. Kieran's Church (RPS ref. C282/NIAH 12328004) and the adjacent former Presentation Convent (RPS ref. C521/NIAH 12328009) which are located in the village of Mooncoin and are approximately 250m to the southeast of the eastern end of the proposed scheme. There are no ACAs located within the study area or its environs.

The Geophysical Survey conducted in 2021 identified anomalies in eight locations that are likely to be of archaeological significance as detailed in Appendix E.

### 13.3 Impact Assessment

The impact assessment is presented in detail in Section 3 of Appendix E, and a summary is provided below.

#### Construction Phase

The impact assessment identified direct impacts to four Cultural Heritage Sites and indirect impacts to three Cultural Heritage Sites. The impact assessment is detailed in Table 8 of Appendix E.

## Operational Phase

It is envisioned that following the successful implementation of the pre-construction mitigation measures outlined in Section 4 of Appendix E (summarised in Section 13.4 of this report), in combination with the absence of predicted impacts on the recorded and designated archaeological and architectural heritage resources, the proposed scheme will not result in any predicted adverse impacts on the archaeological, architectural and cultural heritage resource during the operation phase.

## 13.4 Mitigation Measures

The mitigation measures are detailed in Section 4 of Appendix E, and a summary is provided below.

### Pre-Construction Phase

All cultural heritage assessment and mitigation services should be carried out in accordance with the provisions of the National Monuments Acts (1930 – 2014) and the *Code of Practice for Archaeology agreed between TII and the Minister for Arts, Heritage, Regional, Rural and Gaeltacht Affairs* (2017).

Given the identification of anomalies of archaeological origin in the geophysical survey and the potential for discovery of previously unknown archaeological sites within the footprint of the scheme, it is recommended that a programme of archaeological test excavations be carried out within the lands to be acquired for the proposed road development, prior to the construction phase.

Detailed surveys of Cultural Heritage Sites impacted by the scheme are also recommended.

CHS-30 comprises the Skelpstown Stream which extends under the N24 via a bridge / culvert feature (CHS-15). It is recommended that a pre-construction underwater/wading survey, to include a metal detecting survey, of the section of the stream within the scheme boundary, and this should incorporate a survey of the adjacent bridge / culvert to include a written, drawn and photographic record. These surveys should be carried out by a suitably experienced underwater archaeologist under licences issued by the NMS.

It is recommended that a Type A Townland Boundary Survey of remnant traces of townland boundaries between Clonmore and Grange (CHS 28) and Grange and Pollrone (CHS 29) be carried out in advance of the construction phase.

### Construction and Operation Phases

The modern roadside memorial (CHS-27) should be documented and reconstructed/reinstated during the construction phase.

## 13.5 Summary

The proposed scheme will result in direct impacts on a number of anomalies of archaeological significance identified during the geophysical survey. While the proposed scheme may result in localised significant impacts on these potential archaeological sites, no significant adverse impacts on the known archaeological resource within the area are predicted to occur.

The adverse effects on undesignated sites are concluded as being slight in significance.

The proposed mitigation measures for the undesignated Cultural Heritage Sites located within the scheme boundary include the compilation of pre-construction licensed underwater/wading survey of Skelpstown Stream (CHS-30), to include the bridge / culvert feature under the N24 (CHS-15), the compilation of records of historic boundaries (CHS-28 and CHS-29) and the relocation of a modern roadside memorial feature (CHS-27). It is also recommended that a suitably qualified and experienced Archaeological Consultant be appointed to undertake a program of archaeological test excavation within the lands acquired for construction of the road project.



## SECTION 14: TRAFFIC

### 14.1 Introduction

This section of the report reviews the current receiving environment in terms of existing road traffic characteristics and quantifies the associated baseline scenario whilst undertaking an assessment of the proposed development to identify its likely effects on the traffic environment. The traffic information was obtained from the following 2no. reports:

- N24 Carrick Road Improvement Scheme, Preliminary Design Report (THRDO, 2021); and
- N24 Carrick Road Improvement Scheme, Project Appraisal Plan (TII, 2018).

### 14.2 Receiving Environment

#### Site Location

The proposed road improvement scheme involves the realignment of c. 2.2km of the N24 Carrick Road near Mooncoin in County Kilkenny and to the northeast of the River Suir Middle Estuary.

The cities and towns located on or adjacent to the N24 are Waterford (City), Carrick-on-Suir, Clonmel, Cahir, Tipperary and Limerick (City). There are also numerous villages located along the N24 route and it provides a vital link in the region to both the M9 and M8 Motorways in the counties of Kilkenny, Waterford and Tipperary.

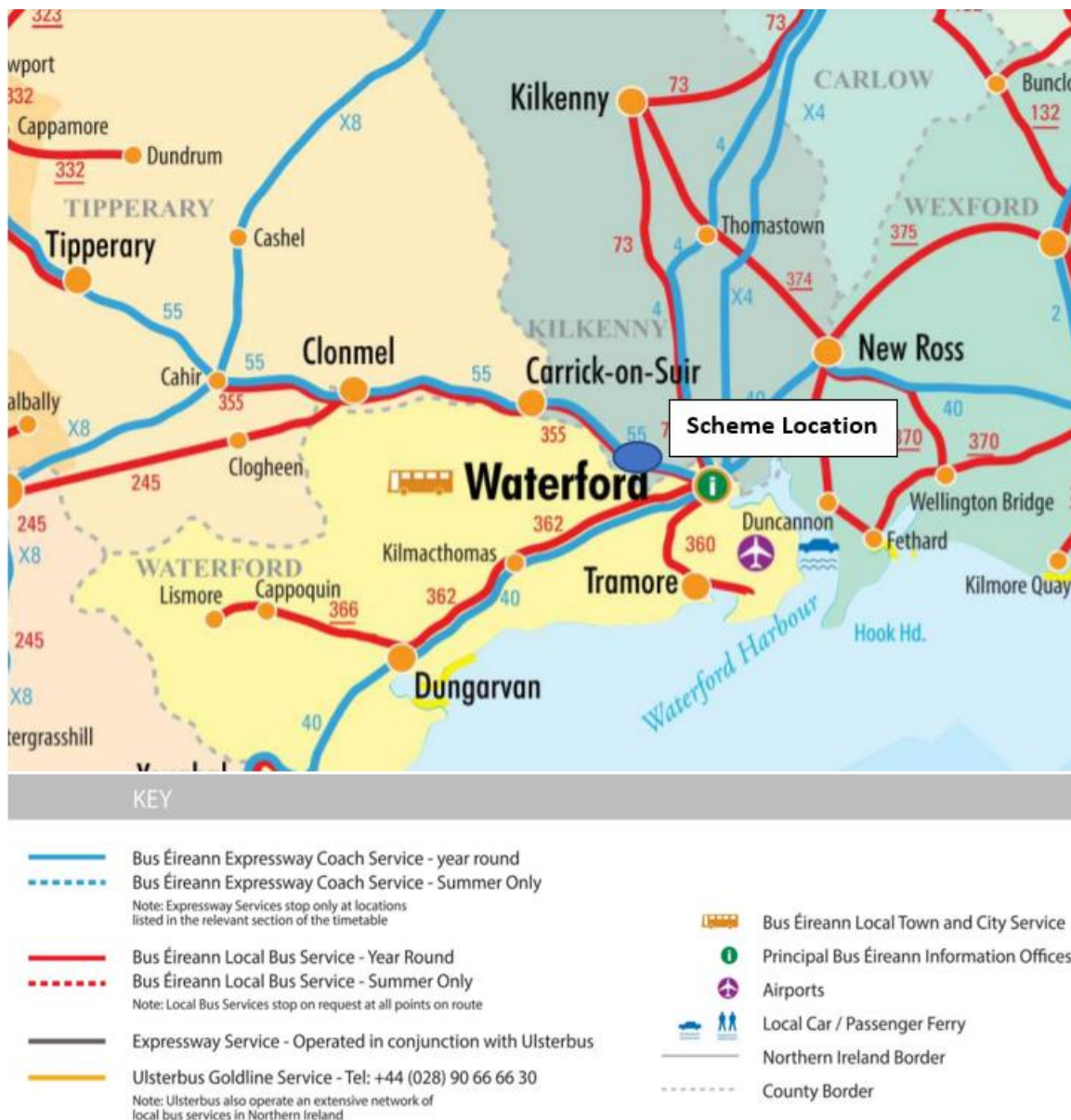
#### Pedestrian and Cyclist Facility

There is no provision for cyclists or pedestrians on the existing N24, and it is considered that this section of road would be particularly hazardous for these vulnerable road users, due to the nature and geometry of the road and the exiting narrow cross section.

#### Existing Public Transport

The section of N24 that is being considered is rural in nature and located immediately northwest of the village of Mooncoin in County Kilkenny. This section of the existing N24 under consideration carries mainly traffic accessing private dwellings and local townlands in addition to long distance traffic travelling between the larger settlements of Waterford (City), Carrick-on-Suir, Clonmel, Cahir, Tipperary and Limerick (City). There are also numerous villages located along the N24 route and it provides a vital link in the region to both the M9 and M8 Motorways in the counties of Kilkenny, Waterford and Tipperary. Figure 14-1 below identifies public transport routes within the scheme and surrounding environs.

There are no specific current objectives for future public transport services in terms of rail networks or public bus routes to service the N24.



**Figure 14-1: Public Transport Routes**

### Existing Road Network

The existing section of the N24 near Mooncoin is characterised by the following features.

- Core lengths vary between 150mm and 300mm underlain with Clause 804. In general, the integrity of the existing pavement seems satisfactory with no apparent cracking. However, hidden dips within the vertical alignment of the pavement along with the narrow cross-section means that forward visibility is poor with no overtaking opportunities. Visibility is also sub-standard for a considerable number of the existing private domestic and field accesses.
- There exist two different speed limits over the extents of the scheme. From the western tie in toward the L7416 local road (circa 700m), the speed limit is 100kph. The remainder of the scheme has a speed limit of 80kph.
- It is a narrow rural single carriageway road with average driving lane widths in the order of 3.2m and hardstrips typically  $\leq 0.5$ m. The existing verge widths vary but are again predominantly narrow and sub-standard and they allow little or no scope for widening within the existing roadbed and for the provision of forgiving roadsides. The narrow nature of the cross-section effectively means that Vulnerable Road Users are typically in close proximity to vehicular traffic, with cyclists using the vehicular driving lanes. However, it is noted that there is an existing footpath in the verge from

Mooncoin village adjacent to the westbound carriageway extending for a distance of circa 600m to Polerone Lane.

- There are numerous private property entrances and field accesses along the route; 17 domestic access locations, 23 field access locations, 1 commercial access location, 2 pedestrian access locations and 3 local road junctions.

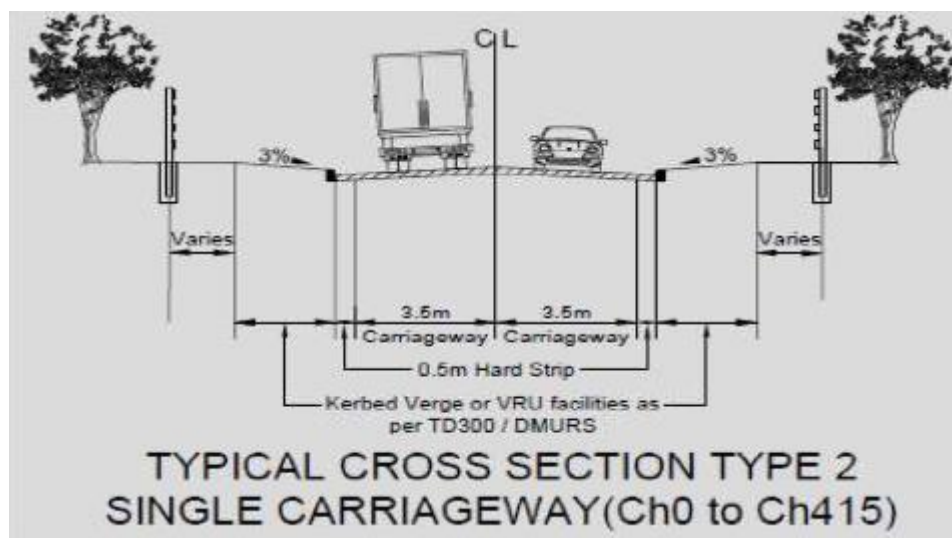
The combined effects of these features resulted in 3no. minor collisions (2004-2016), 2no. fatal collisions (2004-2016), a poor driving quality experience, slow travel speeds, delayed journey times and an overall lower level of safety for all road users. In addition, the slow travel speeds and delayed journey times have negative economic impacts reducing the route's adequacy as a 'strategic linking network'.

### 14.3 Proposed Scheme

The proposed scheme will provide a road which is designed to comply with current TII design standards and technical publications.

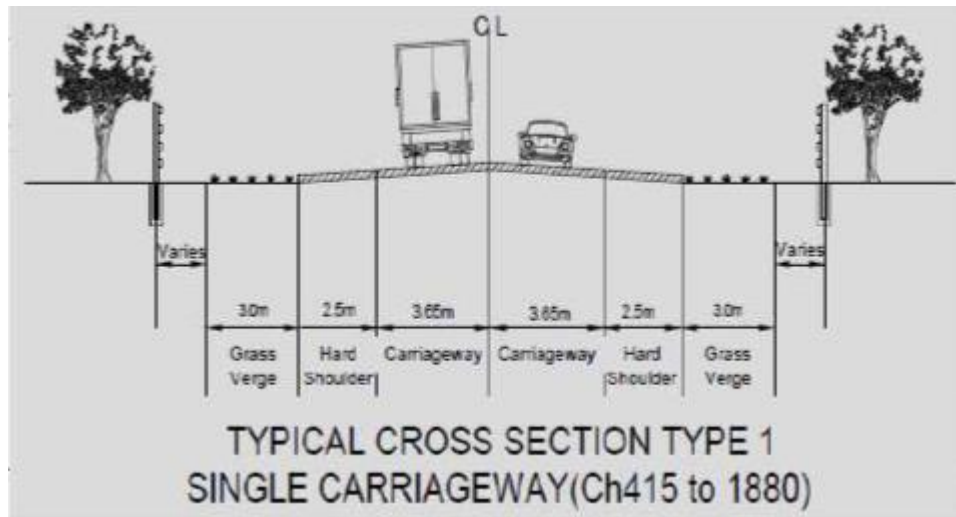
The proposed scheme has the following characteristics:

- Length of proposed mainline: 2.2 km;
- Proportion online / offline: The scheme involves both offline and online works, approximately 950m of the road scheme will run along the existing N24 and the remaining 1.25km of the scheme requires realignment; and
- Mainline cross-section: From Ch 0 to Ch 415 the carriageway comprises of a Type 2 Single Carriageway (reference Figure 14-2: below), with the provision of footpaths either side and designed in accordance with DN-GEO-03031<sup>1</sup>. From Ch 415 to Ch 435, it transitions from a Type 2 Single carriageway to a Type 1 Single Carriageway. From Ch 435 to circa Ch 1890, the cross-section remains a Type 1 Single Carriageway (reference Figure 14-3: below) and from Ch 1890 to Ch 2100, it transitions to join the existing N24 Piltown Bypass Type 3 Dual Carriageway in accordance with Figure 8.5 of DN-GEO-03031.



**Figure 14-2: Type 2 Single Carriageway**

<sup>1</sup> TII Publications Rural Road Link Design (DN-GEO-03031), April 2017.



**Figure 14-3: Type 1 Single Carriageway**

## 14.4 Impact Assessment

### Construction Phase

During the Construction phase there will be an increased level of traffic on the National, Regional and Local Road networks, due to the requirement to import and export materials for the scheme.

All construction activities will be managed and directed by a Construction Traffic Management Plan (CTMP). The details of the CTMP will be agreed with the roads department of the Local Authority in advance of construction activities commencing on-site. The objective of the CTMP is to ensure that the impacts of all related construction activities generated during the construction phase of the proposed development upon both the public off-site and internal on-site construction workers environments are fully considered and proactively managed and scheduled with full consideration of the requirements of key stakeholders. This will ensure that the safety, health and well-being of both the public and construction workers is maintained at all times.

The duration of the construction period is anticipated to be in the region of 15 months. The number of staff on site will fluctuate over the construction phase of the subject development. The levels of construction traffic will be greatest during the period when mass earthworks, structural works and pavement works are being undertaken.

In terms of deliveries to the site, these would likely be expected to arrive at a steady rate during the course of the day over the entire duration of the construction phase. The majority of deliveries would be expected to be rigid HGVs with inert material. The main haul routes for deliveries will generally arrive from the direction of the existing national or regional road network.

The potential impact during the construction phase is considered to have a short-term slight impact on the surrounding network. The implementation of the CTMP and active management of traffic generated by construction workers and deliveries will reduce these potential impacts.

### Operational Phase

#### Establishment of the Traffic Model

A Project Appraisal Plan was prepared by THRDO in August 2018 which outlines the proposed traffic modelling methodology, the data requirements and appraisal methodology appropriate for the proposed scheme. The proposed scheme is classified as a Minor Project (€5m to €20m) in accordance with the TII Project Appraisal Guidelines. Therefore, a simple static traffic model was proposed and agreed to cover the proposed modelling years necessary for the appropriate appraisal of this scheme. The traffic modelling assessment was carried out for each year identified below for the time periods of two peaks; AM and PM peak hour.

- Opening Year 2024
- Design Year (opening year +15 yrs.) 2039; and
- Forecast year (opening year +30 yrs.) 2054.

## 14.5 Mitigation Measures

All construction activities shall be managed and directed by a Construction Traffic Management Plan, as produced by the appointed Contractor. The details of the CTMP will be agreed with the roads department of the Local Authority in advance of construction activities commencing on-site.

Recommendations set out in Chapter 8 – Air Quality & Climate and Chapter 9 – Noise & Vibration will also apply.

## 14.6 Summary

The proposed scheme will improve journey time savings for the strategic traffic and improve road user safety, and thus bring a positive impact in this regard. Given the nature of the scheme, rural road improvement /realignment traffic, volume increases due to standard growth over the appraisal period of 30 years are not considered to be significant and all proposed road network and junction strategy are considered to be of sufficient capacity to cater for the predicted traffic. Therefore, it is not anticipated that the proposed scheme will have a significant impact on traffic.

## SECTION 15: BIODIVERSITY

### 15.1 Introduction

The biodiversity section of this report has been informed by the following ecological reports, which are included as part of this planning application: -

- N24 Carrick Road Improvement Scheme, Screening for Appropriate Assessment Report (Ecofact, 2022), refer to Appendix F;
- N24 Carrick Road Improvement Scheme, Natura Impact Statement (Ecofact, 2022), refer to Appendix F;
- N24 Carrick Road Improvement Scheme, Ecological Impact Assessment Report (Ecofact, 2022), refer to Appendix G; and
- N24 Carrick Road Improvement Scheme, Bat Assessment Report 2022 (Ecofact, 2022), refer to Appendix G.

The following section contains the findings of the desk-based studies undertaken which identify the potential ecological constraints associated with the scheme. Recommendations and proposed mitigation measures are also outlined within this section of the report.

This section has been prepared in line with the guidance set out in *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (TII/NRA, 2009). The sources of data used include the following: -

- National Parks and Wildlife Service (NPWS):
  - Information on sites designated for nature conservation, including spatial data;
  - Habitats and species data; and
  - Wildfowl Sanctuaries.
- National Biodiversity Data Centre (NBDC):
  - Protected species records; and
  - Invasive species records.
- Environmental Protection Agency:
  - Watercourses and lake spatial files;
  - Water quality data; and
  - Corine land cover data.
- Ordnance Survey Ireland:
  - Historic mapping.
- Birdwatch Ireland:
  - Bird count data from the Irish Wetland Bird Survey (IWeBS).
- Wetland Survey Ireland:
  - Information on identified wetland habitats within the study area.
- OPW Wildlife Service Report (1990):
  - Wildlife Sanctuaries; and
  - Tree preservation orders.
- Irish Peatland Conservation Trust:



- Teagasc:
  - Ireland Peatland Maps.
- National Heritage Plan; and
- Ramsar sites information service.

## 15.2 Ecological Site Setting

The proposed road improvement is located in County Kilkenny and to the northeast of the River Suir Middle Estuary and River Suir Special Area of Conservation. In general, the habitats on the proposed development site are of Local Importance and are habitats that are widespread and common across Ireland. A total of 11 habitats were recorded on the proposed development site: Arable Crops (BC1), Wet Grassland (GS4), Amenity Grassland (improved) (GA2), Improved Agricultural Grassland (GA1), Buildings and Artificial Surfaces (BL3), Hedgerows (WL1), Mixed Broadleaved / Conifer Woodland (WD2), Horticultural Land (BC2), Treelines (WL2), Scrub (WS1), Eroding / upland Rivers (FW1). No records of Fossitt Wetlands are located within the study area. No Annex I Habitats occur within the proposed development site. No rare plants, protected species or protected habitats occur on the proposed development site.

The proposed N24 Carrick Road Improvement Scheme does not lie within any SAC or SPA. However, the Lower River Suir SAC is located approximately 510m southwest of the development, and c. 660m via the Skelpstown 16 stream which runs through the site, so there are pathways for potential effects.

The River Suir is located within Hydrometric Area 16 (Suir) and the South Eastern River Basin District. The Middle Suir Estuary has a 'Poor' Ecological Status 2010-2015 (EPA, 2018). The Transitional Water Quality Status 2010-2012 assigned to the Suir Estuary is 'Eutrophic'. The Transitional Waterbodies Risk assessment of the Middle Suir Estuary is 'At risk'. The nearest upstream Q-rating assigned to the channel was upstream of Carrick-on-Suir in 2017, c. 13rkm (river Km) upstream of the Skelpstown 16 stream (RS: 16S02 2850); a 'Q3 – Brackish' Q-rating was recorded, which indicates 'Poor' water quality. The Skelpstown 16 stream is not a salmonid watercourse and lampreys are not present.

## 15.3 Sites Designated for Nature Conservation

Sites designated for nature conservation reviewed in context with the proposed scheme included both internationally (Natura 2000 sites, Ramsar sites) and nationally designated conservation areas (National Heritage Areas, proposed National Heritage Areas, Nature Reserves).

Sites designated for nature conservation within the Zone of Influence (ZoI) of the scheme were reviewed during the preparation of this assessment. The zone of influence for a project is the area over which ecological features may be subject to significant effects as a result of the proposed N24 Road Scheme and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries. The zone of influence will vary for different ecological features depending on their sensitivity to an environmental change (*Guidelines for Ecological Impact Assessment in the UK and Ireland*, Chartered Institute of Ecology and Environmental Management (CIEEM) 2018).

A distance of 15km is currently recommended in the case of plans, as a potential zone of influence, and this distance is derived from UK guidance (Scott Wilson et al, 2006). For certain projects, the distance could be much less than 15km, and in some cases less than 100m, but National Parks and Wildlife Service guidance advises that this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project and the sensitivities of the ecological receptors.

## Natura 2000 Sites

The Natura 2000 network is comprised of both Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) for birds; these sites are designated for the protection of biodiversity across the European Union. SACs are designated under the EU Habitats Directive (92/43/EEC), as transcribed into Irish law by the European Communities (Birds and Natural Habitats) Regulations, 2011, while SPAs are designated under the EU Birds Directive (79/4089/EEC; and as amended 2009/147/EC). SACs are sites of international importance due to the presence of Annex I habitats and/or Annex II species listed under the EU Habitats Directive (92/43/EEC). SPAs are designated for the protection of bird species listed on Annex I of the Birds Directive (2009/147/EC), regularly occurring populations of migratory species and areas of international importance for migratory birds.

The proposed scheme does not lie within any Natura 2000 site. The closest Special Area of Conservation is the Lower River Suir SAC (Site Code: 002137), located c. 510m straight line to the southwest of the development. This site will be considered further in relation to potential impacts arising from the proposed development. Hugginstown Fen SAC (Site Code: 000404) lies approximately 13.2km northeast of the proposed development. The Lower River Suir SAC and the Hugginstown Fen SAC are the only Special Areas of Conservation within 15km of the proposed development. The Hugginstown Fen SAC will not be considered further in the screening due to a lack of pathways for effects and the geological separation from the proposed development. No Special Protection Areas lie within 15km of the proposed development.

The Natura 2000 sites within the potential zone of influence (ZoI) of the scheme are listed in Table 15-1: below.

**Table 15-1: Natura 2000 Sites within the Potential Zone of Influence of the Proposed Scheme**

Natura 2000 Site	Conservation Interests	AA Required	Distance (km)
Lower River Suir SAC (002137)	Atlantic salt meadows ( <i>Glaucopuccinellietalia maritimae</i> ) [1330]	Yes (Hydrological connection; located far from the site downstream of Waterford according to NPWS Conservation Objectives Map 3, but potential pathway exists)	510m from the SAC at its closest point and 660m upstream from the SAC boundary via the Skelpstown 16 stream.
	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	Yes (Hydrological connection; not mapped by NPWS for this SAC but likely to be present downstream; potential pathway for impacts)	
	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]	No (No potential pathways for effects; not mapped by NPWS for this SAC but is a freshwater habitat; estuarine habitat located downstream of the proposed development; no potential for this habitat to occur in the Skelpstown 16 stream at the site)	
	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	No (No potential pathways for effects; not present in study area; not mapped by NPWS for this SAC but terrestrial habitat not present at the site)	

	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	No (No potential pathways for effects; not present in study area; located upstream near Clonmel according to the NPWS Conservation Objectives Map 4)
	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0]	Yes (Potential hydrological connection; the areas mapped in the NPWS Conservation Objectives Map 5 are upstream but it is also noted in the Conservation Objectives as likely to be present downstream too; potential pathway for impacts)
	<i>Taxus baccata</i> woods of the British Isles [91J0]	No (No potential pathways for effects; not present in study area; not mapped by NPWS for this SAC but terrestrial habitat not present at the site or in the vicinity)
	Freshwater Pearl Mussel ( <i>Margaritifera margaritifera</i> ) [1029]	Yes (No potential pathways for direct effects; only present in the Clodiagh River, according to NPWS Conservation Objectives Map 6; However, require salmon for survival and salmon have the potential to be impacted)
	White-clawed Crayfish ( <i>Austropotamobius pallipes</i> ) [1092]	No (Freshwater species not present downstream of the site, according to NPWS the NPWS Conservation Objectives Map 7; no potential pathway for impacts. Also unlikely to be present in the River Suir at all due to crayfish plague)
	Sea Lamprey ( <i>Petromyzon marinus</i> ) [1095]	Yes (Hydrological connection, no suitable nursery habitat downstream due to tidal habitats but likely to pass through the River Suir travelling upstream; potential pathway for impacts)
	Brook Lamprey ( <i>Lampetra planeri</i> ) [1096]	No (Freshwater species would not be present downstream due to tidal habitats, generally non-migratory species; no potential pathway for impacts)
	<i>Lampetra fluviatilis</i> (River Lamprey) [1099]	Yes (Hydrological connection, no suitable nursery habitat downstream due to tidal habitats but may pass through the River Suir travelling

		upstream; potential pathway for impacts)	
	Twaite Shad ( <i>Alosa fallax fallax</i> ) [1103]	Yes (Hydrological connection, no suitable nursery habitat downstream due to tidal habitats but likely to pass through the River Suir travelling upstream; potential pathway for impacts)	
	Salmon ( <i>Salmo salar</i> ) [1106]	Yes (Hydrological connection, no suitable nursery habitat downstream due to tidal habitats but likely to pass through the River Suir travelling upstream; potential pathway for impacts)	
	Otter ( <i>Lutra lutra</i> ) [1355]	Yes (Hydrological connection; may even utilise the Skelpstown 16 stream on the site; potential pathway for impacts)	
Hugginstown Fen SAC (000404)	Alkaline fens [7230]	No (No pathways for effects; geographical separation)	13.2km Northeast

The Lower River Suir SAC is the Natura 2000 site approximately 510m southwest of the alignment of the N24 which have the potential to be impacted by the proposed road improvement scheme. The AA screening report provides a detailed assessment of potential impacts the scheme may have on the protected habitats and species associated with the Natura 2000 sites. The NIS provides detailed measures to be undertaken during the construction and operational phases of the road scheme to mitigate for potential negative impacts on the Lower River Suir SAC designated site. A summary of mitigation measures is also outlined within this report.

### Natural Heritage Areas

There are no Natural Heritage Areas (NHAs) located within 5km of the proposed scheme.

The closest pNHA to the proposed realignment is the Lower River Suir (Coolfinn, Portlaw) pNHA (Site Code: 000399), ca. 1km southwest, followed by the Fiddown Island pNHA (Site Code: 000402), located ca. 1.7km northwest. As part of the boundary of the Lower River Suir (Coolfinn, Portlaw) pNHA is located within the Lower River SAC, impacts on the pNHA are similar to those affecting the SAC. Impacts on the Lower River Suir SAC are summarised above and are discussed and assessed in the Screening and Natura Impact Statement Reports. Based on information provided in the NIS, it was concluded that after mitigation, there is no potential for residual effects on any of the affected Natura 2000 Sites.

### Other Habitats of Ecological Value

There are no National Nature reserves, National or wetland sites designated under the Convention of Wetlands, i.e. Ramsar Sites within 5km of the proposed development site.

A habitat survey was undertaken within the study area of the proposed route and is detailed within the scheme's Ecological Impact Assessment which accompanies this report. The habitats within the footprint of the proposed scheme are summarised as follows:

- Arable Crops (BC1)- this habitat type is found mainly to the south of the scheme northwest of Mooncoin town, with one section located to the north of scheme on the left-hand side.
- Wet Grassland (GS4)- this habitat occurs in the northern section of the scheme mostly to the right hand side, with one small section located on the left hand side just north of the scheme. This habitat is found to be generally species-poor and of low quality in the study area.
- Amenity Grassland (improved) (GA2)- this habitat occurs mostly to the southern and middle sections of the scheme, in the form of recreational or landscaped grasslands. It is also present in the form of residential gardens, but are all of a small size. It mainly consists of well managed grass.
- Improved Agricultural Grassland (GA1)- most abundant habitat type on the proposed development site. This is used primarily for grazing and is well managed. Common species Meadow grasses are found in abundance here.
- Buildings and Artificial Surfaces (BL3)- present on the site in the form of roads, residential housing and commercial buildings.
- Hedgerows (WL1)- common in the study area however those located close to the N24 road were considered to be sparse, highly maintained and of poor quality. Species such as Hawthorn and Gorse are common throughout the study area. Many of the hedgerows are low in height and are only present to delineate field boundaries.
- Mixed Broadleaved / Conifer Woodland (WD2)- occurs on the site in small scattered sections with the most notable section located on the right hand side to the north of the scheme. This habitat type is very fragmented in the study area and typical species include Common Ash *Fraxinus excelsior* and Willow *Salix* sp.
- Horticultural Land (BC2)- this habitat exists on the proposed development site on the left hand side of the scheme to the north. This habitat type is present in the form of orchards.
- Treelines (WL2)- relatively sparse and scattered on the proposed development site and occur mostly to the north of the scheme. The most common species present here include Common Ash *Fraxinus excelsior* and Sycamore *Acer pseudoplatanus*.
- Scrub (WS1)- this habitat is sparse within the proposed development area and occurs in scattered areas mostly to the southern section of the scheme. The most common species encountered were Hawthorn *Crataegus monogyna* and Gorse *Ulex* sp.
- Eroding / upland Rivers (FW1)- The Skelpstown 16 stream on the proposed development site is classified as an Eroding / Upland River and is located within the Suir catchment. This stream flows from northeast to southwest and crosses through the scheme at Ch 1530.

The eroding/ upland rivers (FW1), Treelines (WL2), Hedgerows (WL1) and Mixed Broadleaved/Conifer Woodlands (WD2) are considered to be of 'Local Ecological Importance (Higher Value)'. All other habitats listed above (aside from BL3) are considered to be of 'Local Ecological Importance'. Buildings and Artificial Surfaces (BL3) are considered to be of 'No Ecological Importance'.

Note: The geographical context for determining the value of ecological receptors followed recommendations as outlined in the *Guidelines for Assessment of Ecological Impacts of National Roads Scheme* (TII/NRA, 2009).

### Documented rare and Protected Species

This section of the report outlines species that have been recorded within and around the area of the proposed scheme. NBDC datasets of rare and protected species records for OS 10km x 10km grid squares in the area of the scheme were examined to provide a detailed account of species previously recorded for the period 2000-2020. A review of species records was undertaken within the following OS grid squares: - S41. The protected species recorded during the ecological surveys undertaken for the proposed scheme are also included within this section of the report.

No signs of Otter *Lutra lutra* holts were found in the vicinity of the scheme. The existing bridge over the Skelpstown 16 stream within the site was found to be blocked, with a wooden crate present which would block access for Otters through the bridge to gain access to areas upstream. No otter spraints or footprints were noted in the vicinity of this bridge during the current surveys. Further downstream, some areas of the Skelpstown 16 stream close to where it flows into the Suir were inaccessible due to dense vegetation. However, most of this watercourse corridor was walked and no signs of otter activity was recorded. As with any watercourse there is some potential that Otters could use it for occasional

commuting, but it is very unlikely to be regularly used by Otters. According to the NBDC database Otter has been recorded in the 1km grid square (S4917) which covers the section of the Skelpstown 16 stream within the proposed development site. However, the date of the last record of the species at this location was in 1981 (Otter Survey of Ireland, 1982) and this record was almost certainly from the River Suir. The stream is not considered to be large enough to be of any fisheries importance, and therefore could not be of use to Otter for foraging.

Rabbit *Oryctolagus cuniculus* is the most common mammal species in the study area. Rabbits were found to be using agricultural fields adjacent to the proposed road development site. Rabbit burrows and droppings were common in parts of the study area, as can be seen in the plates in the *Ecological Impact Assessment Report* (Appendix G). Rabbit is widespread and common throughout Ireland and is not a protected species. During the walkover survey fox droppings were also found which indicated that foxes are using the proposed development site. Road-kill remains of a fox were also observed on the existing N24. There are no fox dens in the footprint of the proposed scheme however. A dead Greater White-toothed Shrew *Crocidura russula* was also found during the October 2020 visit. Greater White-toothed Shrew is not a protected species; this is a non-native, medium impact, invasive species.

No evidence of Badger *Meles meles* setts were found during the site surveys and there are no badger setts in the study area. This species is present within the wider study area and Co. Kilkenny holds the highest badger density in Ireland (Chris Smal, 1995). However, they do not use the footprint of the road scheme – possibly due to the fragmentation of this area by the existing N24 and the generally poor cover in the area. The NBDC online maps also hold records of Badger within the study area. NBDC online maps also hold records of Irish Stoat *Mustela erminea hibernica* at Curraghmore House in Portlaoise which is located c. 3km southwest of the proposed development on the opposite side of the River Suir. It is possible that Stoats use the study area to prey on the numerous Rabbits.

No reptile habitat was recorded within the study area during the current survey. There are no records of Common Lizard *Lacerta vivipara* or Smooth Newt *Lissotriton vulgaris* within the study area according to the NBDC online maps. There are some records of Common Frog *Rana temporaria* from the 10km grid square from 2003 noting its presence in 'Skelpstown / Mooncoin', from the Irish National Frog Database. This is noted as frog spawn at grid reference S4718, which is the opposite side to the River Suir than the N24 and not within the vicinity of the proposed road scheme. It is noted that there is the potential for Common Frog to be present in the Skelpstown 16 stream due to suitable habitat.

The Bat Assessment Report suggests a number of bat species have been recorded (NBDC) within the area of the proposed road scheme which include; Common pipistrelle (*Pipistrellus pipistrellus*), Leisler's bat (*Nyctalus leisleri*), Natterer's bat (*Myotis nattereri*), Soprano pipistrelle (*Pipistrellus pygmaeus*), Brown long-eared bat (*Plecotus auratus*), Lesser horseshoe bat (*Rhinolophus hipposideros*), Whiskered bat (*Myotis mystacinus*), Daubenton's bat (*Myotis daubentonii*), Nathusius's pipistrelle (*Pipistrellus nathusii*). The National Bat Database of Ireland as viewed through the National Biodiversity Data Centre online maps does not show any records of bats along the proposed development site or the immediate surrounds. The closest record is near a bridge immediately west of Fiddown town. The species recorded here were Common pipistrelle, Soprano pipistrelle, Leisler's bat. There are other records closer to Portlaoise on the opposite side of the estuary, comprising of multiple records of Daubenton's bat, Soprano pipistrelle, Common pipistrelle, Leisler's bat and Brown long-eared bats. Approximately 4.5km east of Mooncoin town, there are records of a Brown long-eared bat once in 2006. The accompanying Ecological Impact Assessment (Ecofact, 2022) suggests that the bat activity surveys did not identify any roosts in the study area and bat activity was low-moderate. Three species of bat were recorded: Leisler's bat, Soprano pipistrelle, and Common pipistrelle. Overall no significant bat activity was recorded during the course of the survey.

According to the NBDC bird records for the 10km grid square S41, there are 10 red-listed Birds of Conservation Concern that have occurred within the 10km national grid square of the proposed development. There are records of 9 species listed on Annex I of the EU Birds Directive also. This area includes the River Suir Estuary where most of these records are expected to be from. Common Kingfisher



*Alcedo atthis* is one of the species recorded in the 10km square which occurs on freshwater rivers and streams. The only freshwater channel on the proposed development site is the Skelpstown 16 stream. This watercourse would not support Kingfisher, it is small, with no suitable nesting banks, and also poor quality and would not provide a sufficient supply of food (Ecofact, EcIA 2022). Raptor species such as Merlin *Falco columbarius* (EU Birds Directive Annex I), Peregrine Falcon *Falco peregrinus* (EU Birds Directive Annex I) and Barn Owl *Tyto alba* (Red-listed Bird of Conservation Concern) were also featured on the NBDC list. Barn owls and Peregrine falcons can be found in a range of habitats, however, the proposed road scheme area is not considered favourable or optimal and there is no suitable nesting opportunity for these species. The only raptors recorded during the current survey were Buzzards which were seen a number of times - and a few very occasional sightings of Kestrels. The other Annex I and red-listed species for which there are NBDC records are species associated with either estuaries or freshwater lakes / marshes, again the habitat on the proposed road scheme site is therefore not suitable to support such species. According to the Ecological Impact Assessment (Ecofact, 2022), during the current survey, Buzzards were observed soaring over the proposed development area on a number of occasions. There is no potential breeding or nesting habitat for Buzzards on the site. Buzzard is a widespread and common species throughout Ireland. The main bird species recorded in the study area were a variety of common passerine species associated with hedgerow, scrub and grassland habitats.

There are no records of butterflies from the proposed development site according to the Irish Butterfly Monitoring Scheme database. The Distribution Atlas of Butterflies in Ireland 1979 shows records of the following species in Portlaoise, c. 3km southwest of the proposed development site on the opposite side of the River Suir, all from 1976: Painted Lady, Red Admiral, Large White, Meadow Brown, Peacock and Silver-washed Fritillary. There are no recent records of these species. Approximately c. 18km north of the proposed development site, there is an area called Silverspring which also holds records of Butterflies from the Distribution Atlas. This shows records of the following species: Small tortoiseshell, Orange-tip, Ringlet, Silver-washed Fritillary, Peacock, Small Copper, Meadow Brown, Speckled Wood, Large White, Green-veined White, Common Blue, Red admiral, Painted Lady. The most recent of these records is from 1976.

More recently, there are records of the Holly blue (2011) and Clouded Yellow butterfly (2006) near Mooncoin from the Butterflies of Ireland database. Holly blue butterflies are generally found in woodlands and gardens. The Clouded Yellow butterfly can be found in various habitats such as hedgerows, meadows and woodlands but where flowers are plentiful. The proposed development site mainly consists of low-quality agricultural habitats with little vegetation variation and flowers. The existing N24 road also fragments the habitats, another undesirable characteristic for any sensitive invertebrates. The proposed development site does not support any protected or threatened species of interest. The terrestrial invertebrates expected to be present are those of a general farmland community that are not considered to be of any particular ecological or conservation importance. The current site survey determined that the terrestrial macroinvertebrate species present would be common species typical of the Co. Kilkenny countryside, no formal terrestrial invertebrate survey is required.

### Aquatic Species

The River Suir would be evaluated as being of 'International Importance', due to its designation as an SAC. The River Suir, however, is not within the proposed development site, it is located downstream, connected via the small Skelpstown 16 stream. The Skelpstown 16 stream provides the only aquatic habitat within the proposed development site. Aquatic Ecology in the study area is evaluated as being of 'Local Importance'.

Fish species for which the Lower River Suir SAC is designated are assessed in the accompanying Screening Report and Natura Impact Statement (NIS and AA, Ecofact 2022). The only stream on the proposed development site is the Skelpstown 16 stream, which is noted to be of a small size. As can be seen in the plates section, this stream is small and heavily vegetated in parts. The stream is too small to be of significant fisheries importance. Therefore, it is likely to support small common species such as

Three-spined Sticklebacks *Gasterosteus aculeatus*. Nonetheless, it is noted that this small stream does flow into the River Suir, c. 660m downstream, which would be considered to have significant fisheries importance, although out of the study area.

The EPA do not carry out biological monitoring on the Skelpstown 16 stream, likely because it is very small with little flow and a low gradient. This small stream does not provide suitable habitat for protected macroinvertebrates. There is no suitable habitat for salmonids, lampreys, or crayfish.

### Non-Native Species

No non-native invasive plant species were identified on the site during the site survey. However, due to hydrological connection via the Skelpstown 16 stream and the fact that works on this watercourse are proposed as part of the development it is possible that invasive plant species could be carried downstream and become established in the SAC and adversely affect the designated species. Biosecurity measures implemented during the proposed works will prevent the introduction of invasive species.

A dead Greater White-toothed Shrew *Crocidura russula* was found during the October 2020 visit. Greater White-toothed Shrew is not a protected species; this is a non-native, medium impact, invasive species.

## 15.4 Impact Assessment

The potential for impacts on nature conservation interests have been assessed in light of habitats and the species that are likely to be affected by the proposed road improvement scheme. The approach takes into account the following guidance: -

- Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Report (EPA, 2017);
- Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018);
- Guidelines for Assessment of Ecological Impacts of National Road Schemes, 2<sup>nd</sup> Edition (TII/NRA, 2009);
- Guidelines for the treatment of Otters Prior to the Construction of National Roads Schemes (TII/NRA, 2006);
- Guidelines for the treatment of Badgers Prior to the Construction of National Road Schemes (TII/NRA 2006);
- Requirement for the Protection of Fisheries Habitat During the Construction and Development Works at River Sites (Eastern Regional Fisheries Board, 2006); and
- Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes (TII/NRA, 2005).

Potential impacts from the proposed scheme on the protected sites, habitats and species (which are listed in Section 15.3 above) are outlined in this section. Potential direct and indirect impacts during both construction and operational phases of the proposed scheme are discussed. Impacts to Natura 2000 designated sites are also considered in detail within the accompanying AA and NIS prepared by Ecofact.

### Construction Phase

There are 2 no. Natura 2000 sites within the zone of influence of the proposed road scheme namely, Lower River Suir SAC and Hugginstown Fen SAC (the latter was not considered further in the screening due to a lack of pathways for effects and the geological separation from the proposed development). Whilst the proposed scheme is in close proximity of the Lower River Suir SAC, *direct* impacts (such as loss of habitat or mortality of species) on the qualifying interest habitats and species of the SAC/SPA are not anticipated during the construction phase of the road scheme as the works are predominately confined to the existing roadway (N24).

Freshwater Pearl Mussels are not present within the proposed works and will not be directly impacted. There is also no hydrological pathway for water quality impacts to affect this species which occurs in the Lower River Suir SAC only in the Clodiagh River. However, this species does rely on Salmon species as hosts for its larval form to complete its life cycle. Salmon do occur downstream of the proposed

development and impacts on Salmon would in turn impact on the designated Freshwater Pearl Mussel population of the SAC. Sea lampreys, river lampreys, twaite shad and salmon are not present within the proposed works area and will not be directly impacted. Otter from the SAC could use the Skelpstown 16 stream also; noise and disturbance could therefore impact this species if otters happen to be present in the watercourse in the vicinity of the proposed works. The Skelpstown 16 stream is not considered to provide favourable habitat for Otter and they are considered unlikely to be present in the vicinity of the works. Therefore, this risk is relatively low; some basic mitigation measures to limit the work hours, so that no work is completed during night-time hours, will be sufficient to ensure no indirect disturbance impacts arise that could affect this qualifying interest of the SAC. The proposed N24 Carrick Road Improvement Scheme is approximately 2.2km in length, with 950m of this being along the existing road. As well as the realignment, the proposal includes for a new box culvert, footpath and cattle access underneath the road and over the Skelpstown 16 stream which flows through the site. It is considered that Hedgerows and Treelines are likely to be severed during the construction of the proposed road scheme, as well as the habitat loss and disturbance of other habitats of 'Local Importance'. Providing mitigations and guidelines are followed correctly, residual impacts have been assessed as ranging from 'none' to 'imperceptible negative' at most (Ecofact EcIA, 2022).

There is potential for the proposed scheme to indirectly impact the Lower River Suir SAC during the construction phase given the proximity of these Natura 2000 sites. Indirect impacts can include a deterioration in water quality, the introduction of invasive species, or a deterioration in air quality. The construction phase of the proposed scheme also has the potential to cause disturbance related impacts that could affect local fauna particularly in the area of the River Suir and Skelpstown stream and its riparian corridor (disturbance to birds, bats etc.). A deterioration in water quality could arise through runoff of soil from excavated areas and soil deposition areas as well as dust generated by the works contributing to increased suspended solids, hydrocarbons (including fuels and lubricants) spilling from machinery, and waste materials such as concrete. Uncured concrete can kill fish and macroinvertebrates by altering the pH of the water. It is also considered that the Skelpstown 16 stream is a small watercourse with a low gradient and thereby has a relatively low capacity for transferring pollutants. Also the large size and dynamic nature of the receiving Middle Suir Estuary where this species occurs is expected to be capable of diluting and absorbing minor pollution. The risk of significant water quality impacts on this species is considered to be low but there is the potential for such impacts none-the-less. Best practice water quality protection mitigation will easily minimise these impacts. A deterioration in water quality also has the potential to impact Freshwater Pearl Mussel, Sea lampreys, river lampreys, twaite shad and salmon, all of which are aquatic interests designated as part of the Lower River Suir SAC.

During the construction phase of the proposed scheme mitigation measures will be introduced to reduce the potential for significant impact on SAC protected habitats and species. Mitigation measures for the SAC are detailed in the accompanying NIS. Mitigation measures for the pNHAs will be the same as mitigation measures for the Lower River Suir SAC as the pNHAs are within the site extents of the Natura 2000 sites and therefore share a similar potential for impacts arising from the proposed road scheme. Ecological mitigation measures are also outlined in detail within the Ecological Impact Assessment report prepared by Ecofact. Mitigation measures proposed for the scheme are summarised in **Error! Reference source not found.**

### Operational Phase

Potential significant impacts on Lower River Suir, during the operational phase of the proposed scheme, are identified as largely being from a degradation in water quality within the river as a result of contaminated road drainage entering the watercourse. No significant adverse impacts are anticipated to arise during the operational phase of the proposed development. The scale of the project is small; the N24 is an already existing and busy road, with only a relatively small 1.25km realignment proposed. The main hydrological pathway for impacts would be via the Skelpstown 16 stream which is a small low gradient watercourse. This makes it less likely to carry significant levels of pollution / contamination to the Suir which is c. 660m downstream. Minor impacts that may be conveyed via the Skelpstown 16 stream would easily be absorbed due to the dynamic and robust nature and the size of the receiving River Suir Estuary. Contamination of the River Suir could have a significant impact on both protected aquatic habitats and species. It is noted that a number of the SAC qualifying interest aquatic species are extremely vulnerable and sensitive to changes in the aquatic environment and rely on good quality water to survive.

It is in fact considered that there would be a positive operational phase impact as currently, drainage design measures such as an attenuation pond and petrol interceptors are not in situ for treatment of run-off from the N24. There already exists the risk of spillages occurring on the N24 road, including petrol, oil, lubricants and other chemical additives from HGVs. The new design for the N24 road has kept safety in mind and will improve current conditions to help lower the risk of accidents causing such spills. The drainage design for the proposed road development includes the direction of all surface water run-off through a controlled drainage system which includes attenuation ponds to allow for the settlement of run-off and capture of suspended solids and pollutants.

The current proposal will provide treatment and attenuation for road run-off to remove chemicals/grit /salt etc. The proposed drainage design requires two number attenuation ponds with bypass petrol interceptors at outfall which will result in improving treatment for road run-off before discharge. In relation to spillages, the proposed attenuation pond will have a manual shut off valve fitted to the outfall pipe, and the bypass interceptor will also be able to be closed, ensuring that any spillages, either petrol, oil etc., can be controlled in an emergency situation, prior to any surface water impacts via contaminated discharge.

It was also noted that there were barriers to passage upstream of the existing N24 via the Skelpstown 16 stream according to the current surveys, and no evidence of mammal activity was observed in the vicinity of the proposed road scheme. Therefore, there is unlikely to be any established otter areas or holts to the north side of the existing N24 which is where the proposed road realignment section will be located. It is also unlikely for the species to be attracted to the area due to the lack of favourable habitat. It is acknowledged that the Skelpstown 16 stream is of no particular fisheries importance and therefore is not suitable for Otter foraging. However, if otters do happen to pass up the watercourse on occasion, the N24 crossing over the watercourse will be designed to facilitated safe passage if otters under the proposed road scheme. It is considered that the proposed realignment of the Skelpstown 16 stream with a new box culvert may be a positive alteration to the watercourse for Otter. The proposed new culvert will facilitate clear passage under the N24, allowing Otter to access the upstream part of the stream safely and minimise that already low risk of Otter attempting to cross the road. Landscaping measures are proposed for the scheme which has been designed to mitigate for loss of hedgerows and trees. The proposed landscaping with hedgerows / tree lines of native species will have a positive impact in terms of restoring connectivity of the landscape and habitats. Landscape is detailed further in Chapter 16 – Landscape & Visual.

Given that ecological mitigation measures will be implemented no significant impacts on protected fauna are anticipated during the operational phase of the proposed road improvement scheme.

## 15.5 Mitigation Measures

An *Outline CEMP* (with respect to ecology) has been prepared, Appendix J. It will be necessary for this plan to be developed within a second iteration of Construction Environmental Management Plan by the appointed Contractor prior to the commencement of construction works. The mitigation measures within the *Outline CEMP* (with respect to Ecology) include but are not limited to;

- Appointment of Ecological Clerk of Works;
- Limiting works areas;
- Water Quality Protection measures;
- Air Quality Protection measures; and,
- Biosecurity Protocols.

Refer to the *Natura Impact Statement* (Ecofact, 2022) included in Appendix F for a full list of mitigation measures as set out in the *Outline CEMP* (with respect to ecology). Preconstruction ecological surveys, as detailed in the accompanying NIS and EcIA, are recommended to be undertaken during the appropriate seasonal windows.

There is potential for construction related dust emissions to impact on local surface water features and the associated aquatic habitats and species. In order to minimise dust emissions during construction a

series of mitigation measures have been prepared. Dust mitigation measures are outlined in detail within Chapter 8 of this report and are summarised in **Error! Reference source not found.** below.

A pre-construction bat survey is to be undertaken and recommendations from the survey will be incorporated into the CEMP. This bat survey will be targeted to locations at which hedgerows and treelines will be severed by the offline sections of the proposed road scheme.

Mitigation measures during the construction phase are summarised in **Error! Reference source not found.** below.

**Table 15-2: Mitigation Measures to be undertaken during the Construction Phase**

	Mitigation Measures
General	<p>All mitigation included in the NIS and the EcIA will be implemented on site through a Detailed Construction Environmental Management Plan to be prepared by the Contractor, based on the Outline Construction Environmental Management Plan appended to this report.</p> <p>Note: Preconstruction surveys information to be included in CEMP.</p>
	<p>An Ecological Clerk of Works (ECoW) will be appointed for the proposed works. The role of the EcoW will be to approve the contractors CEMP, ensure the CEMP contains all mitigation in the NIS and EcIA and ensure that it is implemented on site. The EcoW will also ensure that the silt fences (see drawing in Appendix M) and bunding are in place and are effectively managed to ensure any run-off from these areas is intercepted. The EcoW will also carry out water quality monitoring upstream and downstream of the works on the River Suir, and the Skelpstown 16 stream, to ensure water quality protection measures are effective.</p>
	<p>The site compound shall be located away from the Skelpstown 16 stream. The works area and site compound will also be fenced off and will also have security to deter theft, vandalism and unauthorized access. Machinery will not operate or be stored outside of delineated works area. The site compound is proposed at the location of eastern attenuation pond (as shown in Appendix M). It is located at a distance of at least 50m from the Skeplstown stream.</p>
	<p>Works within 50m of the Skelpstown 16 stream shall be limited to daytime hours to avoid potential disturbance to Otters that may be commuting using this watercourse. The EcoW will ensure that these restrictions are adhered to.</p>
	<p>Silt fences will be erected around works adjacent to the Skelpstown 16 stream and the site compound. Terrastop Premium Silt Fences, or an equivalent alternative, will be used to intercept any run-off from these areas. Silt fencing will be</p>

	<p>used around the works area, silt fences will be placed on the outside of instream works areas first, with sand bags placed inside to ensure no impacts regarding suspended solids arise. Details of the sandbags, if required, will be included in the CEMP. The EcoW will ensure that any sand bags and silt fences are erected correctly, if required.</p> <p>Any oils or fuels that may be required for minor machinery used during the proposed works will be stored appropriately in bunded tanks in the site compound to ensure no spillages occur. Machinery will be well-maintained and checked for leaks prior to its use on site.</p> <p>Any tool washing and waste / grey water from the site will be stored securely until it can be removed from site. Contained portaloo toilets will be used and all sewage appropriately removed from the site to an authorised treatment plant.</p> <p>Any stockpiling of materials will be 50m back from any watercourses, with bunding and silt fences. The location for stockpiling of materials will be agreed before the project has commenced and to be agreed upon with the EcoW.</p> <p>Storage areas for concrete / cement and grout required for the works will be included in the site compound. Waste from any site clearance works will be dealt with appropriately, at least 50m away from the Skelpstown 16 stream.</p> <p>No concrete / cement mixing will be carried out at the river bank area; mixing within a mixing area in the site compound will be controlled by the contractor, with all wash water, tool washings and any waste/grey water stored securely and removed; no waste will be stored beside the watercourse; concrete / cement work must be carried out behind the silt fencing and sandbags, in the dry works area. Storage areas for concrete / cement required for the works will be included in the site compound.</p>
Site Clearance	<p>Any excavated materials storage will be 50m back from any watercourses, with bunding and silt fences, the location for stockpiling of materials will be agreed upon with the EcoW.</p> <p>The appointed contractor shall make reasonable efforts to avoid any vegetation clearance works or tree felling outside of the bird nesting season, which runs from the 1<sup>st</sup> of March to the 31<sup>st</sup> of August each year.</p> <p>The proposed tree-felling shall follow the procedures outlined in <i>Guidelines for the Treatment of Bats during Construction of National Road Schemes</i> (TII/NRA, 2006). The features identified as having bat roost potential shall undergo a close-up re-inspection immediately</p>



	<p>prior to the commencing of felling / removal. If no indications of bat presence are found, removal can commence. If bats are found, works may not commence and NPWS will have to be contacted. A derogation licence will likely then be required under Regulation 25 of the European Communities (Natural Habitats) Regulations 1997 to be obtained from NPWS in advance of any works.</p> <p>The waste from any vegetation removal and spoil will also have to be dealt with appropriately away from the stream. These works will take place during dry weather and low flow conditions to minimise run-off and water contamination / sedimentation.</p>
Biossecurity	<p>Strict biossecurity measures will be employed during the construction of the proposed scheme to avoid the introduction of any non-native invasive species on site. Any hired equipment and machinery used on site will be treated with an approved biocide / cleaning agent prior to its arrival on site. The TII/NRA guidelines <i>The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads</i> (2010) are considered to be sufficient for the current project as no non-native invasive plant species were recorded in the study area during the current surveys.</p>
Air Quality	<p>Any road that has the potential to give rise to dust shall be regularly watered, as appropriate, during dry and/or windy conditions.</p> <p>Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.</p> <p>Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.</p> <p>Access gates to site shall be located at least 10m from sensitive receptors where possible.</p> <p>Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced site road, this will be 20 kph, and on hard surfaced roads as site management dictates.</p> <p>Vehicles delivering material with dust potential (soil, aggregates) will be enclosed or covered with tarpaulin at all times to restrict the escape of dust.</p> <p>Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.</p>

	<p>Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.</p> <p>Vehicles shall have engines switched off when stationary – no idling. Similarly, the use of diesel or petrol powered generators shall be avoided, and electricity or battery powered equipment shall be used when practical</p>
Landscaping	<p>Any planting or re-planting will be done using native Irish species and shall adhere to the TII/NRA guidelines <i>A Guide to Landscape Treatments for National Road Schemes in Ireland</i> (2006)</p> <p>Native Irish hedgerow species shall be planted linearly along the road side to ensure habitat connectivity is not lost.</p> <p>Landscaping shall be included in the works on the proposed scheme. Planting of native trees and hedgerows along the boundaries will be of benefit to bats in the local area, by enhancing the commuting and foraging habitat. Some sections of existing hedgerows in the surrounds of the scheme, along field boundaries and local lanes etc., may also be reinforced with planting of a native mix to enhance these features for bat commuting in the area.</p>
Lighting	<p>LED lighting is proposed for the improvement scheme extending from Mooncoin out to Store Road, a distance of c. 1.3km. Additional lighting shall follow <i>Bats &amp; Lighting: Guidance Notes for Planners, Engineers, Architects and Developers</i> (Bat Conservation Ireland, 2010). Light spill shall be minimised by using shields, masking or louvres. Light columns shall be kept as low as possible, with low height bollards preferred. Some light restrictions may be considered during dark hours, especially during the summer months when bats are active Motion sensor lights may also be considered.</p>

## 15.6 Summary

The *Natura Impact Statement* concludes- 'Taking cognisance of the sensitivity of the water-dependent Annex II species and habitats listed as qualifying interests of the SAC, mitigation measures have been prepared for implementation on the site to protect water quality and minimise risks of disturbance, dust impacts and invasive species introduction. With mitigations proposed, there will be no impacts arising which would have the potential to adversely affect the conservation objectives or the integrity of the River Suir SAC' (Ecofact, 2022).

Similarly, it is considered that no nationally important conservation sites will be impacted by the scheme. No habitats of high ecological value will be lost or impacted by the road scheme. The construction of the

scheme will involve the loss of hedgerows and treelines which will be compensated for within the landscape design.

An EcoW will be appointed for the construction phase of the proposed works to ensure that environmental protection measures as detailed in the Construction Environmental Management Plan and ecological mitigation measures as detailed in the scheme's NIS and EcIA are adhered to.

The River Suir and Skelpstown stream flows adjacent to and accepts drainage from the proposed scheme. Given the designed-in mitigation measures, and the surface water mitigation measures which will be implemented, no significant impacts on water quality or protected aquatic species are anticipated during the construction or operational phases of the proposed road improvement scheme.

## SECTION 16: LANDSCAPE & VISUAL

### 16.1 Introduction

This Landscape and Visual Impact Assessment was prepared by Barry Transportation.

Landscape and Visual Impact Assessment (LVIA) is used to identify and assess the likely significance of the effects of change resulting from a development. The two components of LVIA are:

- Assessment of landscape effects: assessing effects on the landscape as a resource in its own right; and
- Assessment of visual effects: assessing effects on specific views and on the general visual amenity experienced by people.

#### Study Area

The extent of the study area is defined by the Zone of Theoretical Visibility (ZTV) of the proposals which is defined as the area within 500m from the centreline of the proposed route; refer to Visual Effects drawing in Appendix H.

### 16.2 Methodology

The Landscape and Visual Impact Assessment was undertaken with reference to the following guidelines:

- Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2017);
- A Guide to Landscape Treatments for National Road Schemes in Ireland (TII/NRA, 2006);
- Guidelines for Landscape and Visual Impact Assessment, 3<sup>rd</sup> Edition, Oxon: Routledge (Landscape Institute and Institute of Environmental Management and Assessment, 2013);
- Project Appraisal Guidelines for National Roads Unit 7.0- Multi Criteria Analysis (TII, 2016);
- Landscape Character Assessment (LCA) and Landscape and Visual Impact Assessment (LVIA) of Proposed National Roads – Standard (TII, 2020); and
- Landscape Character Assessment (LCA) and Landscape and Visual Impact Assessment (LVIA) of Specified Infrastructure Projects – Overarching Technical Document (TII, 2020).

#### Baseline studies

##### Landscape Baseline

The baseline study was undertaken to identify and record the character of the landscape and the elements, features and aesthetic and perceptual factors which contribute to it. The baseline study also considered the landscape condition and the value attached to landscape. Sources of information for the desktop study included: site walkover survey, ordnance survey maps, aerial maps of the site and surrounding area, topography mapping, Google street view, existing landscape character assessments and relevant planning policy.

##### Visual Baseline

The aim of the visual baseline is to establish the area in which the development may be visible, the different groups of people who may experience views of the development. The Zone of Theoretical Visibility or areas of land from which the development may be potentially visible was identified as the area within 500m from the centreline of the proposed route. There are areas within the ZTV which views of the scheme do not have due to local variations in vegetation, built form and topography. The ZTV is not always precise and is an indication only of the area within which the most significant visual effects may be expected.

##### Assessment Years

The timescale over which effects of the scheme would be felt varies according to the nature of the impact and the time taken for mitigation to be fully effective. Short term effects include those during construction

only or declining after the end of construction due to completion of construction activities and the effect of mitigation measures; and long term is 15 years after construction (Future Year).

The scheme assessments have been made for the following years or periods:

- 2024; Opening Year: considers the operation of the scheme on a winter's day in the opening year before mitigation planting has begun to take effect: and
- 2039; Future Year: considers the effects of mitigation planting establishment on a summer's day in the fifteenth year after opening. Mitigation planting is assumed to be substantially effective.

### Landscape Assessment Criteria

The overall significance of effects is established by combining the separate judgements about sensitivity and magnitude of effects.

Sensitivity includes an assessment of the landscape receptor's susceptibility to change and value.

Magnitude includes an assessment of the impact on landscape receptors in terms of size or scale, geographical extent of the area influenced.

### Visual Assessment Criteria

The overall significance of effects is established by combining the separate judgements about sensitivity and magnitude of effects.

Sensitivity includes an assessment of the visual receptor's susceptibility to change and the value attached to views.

Magnitude includes an evaluation of the visual impact identified in terms of size or scale and geographical extent of the area influenced.

## 16.3 Project Description

The proposals are described and discussed in Chapter 2 – Scheme Description, the *Preliminary Design Report* (THRDO, 2021) and are summarised in terms of their physical appearance below.

The N24 is a National Primary Route located in County Waterford, County Kilkenny, County Tipperary and County Limerick, with an overall total length of approximately 116km. The proposed N24 Carrick Road Improvement Scheme is located near Mooncoin, Co. Kilkenny.

The section under consideration is a single carriageway of varying cross-section and is approximately 2.2km in length. The scheme includes provision for a bridge structure over the L7416 (Grange Road) at CH 1500 with approach embankments increasing to a maximum height of 9m above existing ground levels at Ch 1510. The remaining areas are generally cuts across lower slopes of agricultural landscape with strong tree-lines and hedgerows. The cut areas are generally localised with the maximum depth of excavation anticipated to be 1.7m bgl (At Ch 950). The scheme is surrounded predominantly by agricultural land. The scheme aims to improve the capacity, safety and efficiency of the N24, to improve the journey times and to provide for road alignment to meet current and future needs.

Landscape mitigation measures (refer also to Landscape Mitigation drawings – Appendix H) will include: continuous planting of a native species hedgerows and hedgerow trees alongside new boundary fencing, woodland and species rich grassland.

## 16.4 Planning Context

This section summarises relevant local landscape planning policy. Information on the KCC landscape character assessment and landscape designations is described under the landscape baseline under the heading Baseline Study – Landscape below.

The following objectives from the Kilkenny City and County Development Plan 2021-2027 are relevant to the proposed development:

### **Biodiversity Outside of Habitats Designated for Nature Conservation**

*To protect and where possible enhance wildlife habitats and landscape features which act as ecological corridors/networks and stepping stones, such as river corridors, hedgerows, and road verges, and to minimise the loss of habitats and features of the wider countryside (such as ponds, wetlands, trees) which are not within designated sites.*

*To ensure that appropriate mitigation and/or compensation measures to conserve biodiversity, landscape character and green infrastructure networks are required in developments where habitats are at risk or lost as part of a development.*

The scheme will provide significant amounts of new planting including: new hedgerows, hedgerow trees, woodland and species rich grassland to conserve landscape character and enhance biodiversity.

### **Woodland, Trees and Hedgerows**

*The Council will promote the planting of native tree and shrub species, by committing to using native species (of local provenance wherever possible) in its landscaping work and on County Council property and maximise the opportunity to enhance biodiversity within the City & County during the life time of the plan.*

The scheme will include significant amounts of native species tree and hedgerow planting.

### **Landscape Character Assessment**

*The Council will protect and sustainably manage the landscape character of County Kilkenny, having regard to the findings of the landscape character assessment and the Development Management Requirements as set out in this chapter for the sustainable development of the county and appropriate conservation of its landscape character.*

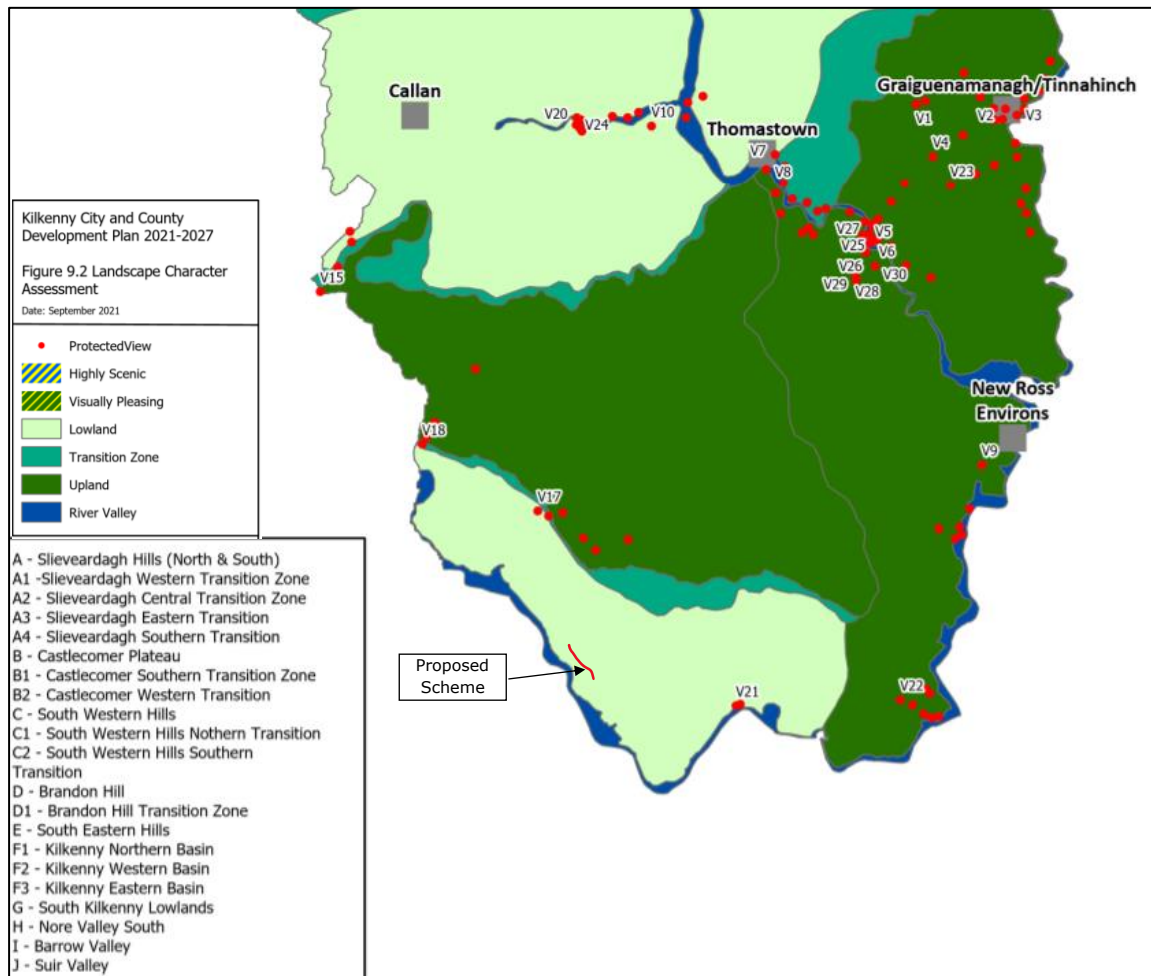
Design and landscape mitigation proposals have taken into account Kilkenny Landscape Character Assessment and management standards to protect landscape character and visual amenity.

### **Landscape Character Values**

The development plan refers 'The Landscape Character Assessment highlights the special landscape value of several of the Landscape Character Areas illustrated in Figure 9.2 – in particular Brandon Hill Uplands and the River Valley Areas of the Rivers Nore, Barrow and Suir have been identified as being highly scenic and visually pleasing, and as having significant visual amenity value and tourism potential within the county'.

Design and landscape mitigation proposals have taken into account Kilkenny Landscape Character Assessment and management standards to protect landscape character and visual amenity.



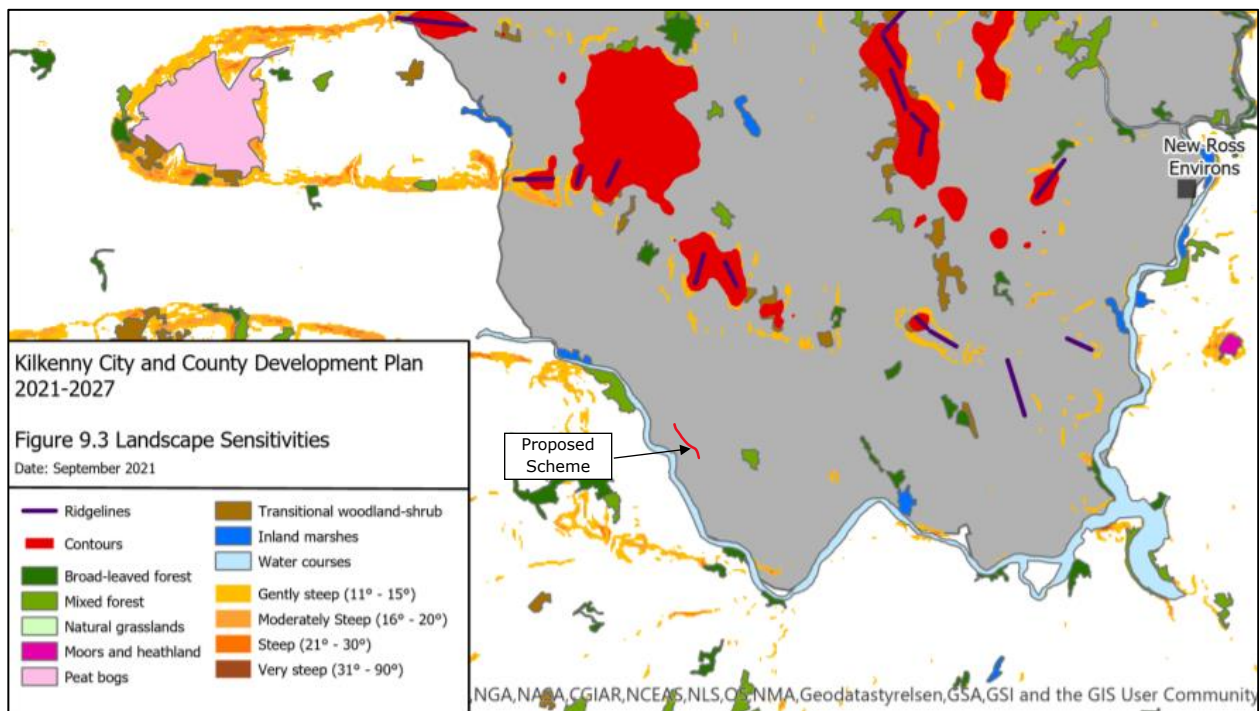


**Figure 16-1: Extract from Landscape Character Assessment Map (Figure 9.2, Kilkenny City and County Development Plan)**

### Landscape Character Sensitivity

The development plan refers 'The Landscape Character Assessment identified areas throughout the county that are highly sensitive to development and have a limited capacity for change. These areas are identified on Figure 9.3. These areas take account of areas of higher altitude in the county and of land cover'.

There are no areas identified in Figure 9.3 of the Development Plan within the study area, therefore there will be no effects on these areas as a result of the scheme. The nearest highly scenic/visually pleasing area is of the Suir valley approximately 700m to the southwest of the proposed scheme.



**Figure 16-2: Extract from Landscape Sensitivities Map (Figure 9.3, Kilkenny City and County Development Plan)**

### Views and Prospects

*The Council will preserve and support the improvement of places or areas from which views or prospects of special amenity value exist, as identified in Appendix H and on Figure 9.2 (of the development plan).*

The Landscape Character Plan says, 'Area bounded to north by N24 and to the south, south east by the River Suir' is a high amenity area in Kilkenny.'

## 16.5 Baseline Study – Landscape

The aim of the landscape baseline is 'to provide an understanding of the landscape in the area that may be affected, its constituent elements, its character and way it varies spatially, its geographic extent, its history, its condition and the way the landscape is experienced, and the value attached it' (Landscape Institute and Institute of Environmental Management and Assessment, 2013).

### Local Landscape Character Assessment

The study area is within the KCC Landscape Character Assessment summarised in Chapter 9 of the current County Development Plan. The KCC Landscape Character Assessment divides the landscape of the county into four Landscape Character Types which are further divided into 14 Landscape Character Areas.

The route corridor passes through one Landscape Character Area (LCA); G- South Kilkenny Lowlands Landscape Character Area and in close proximity, approximately 700m southwest, of J- The Suir Valley.

G- South Kilkenny Lowlands is a Lowland Landscape Character Type and J- The Suir Valley is a River Valley Landscape Character Type.

The descriptions below are a summary of the key characteristics of these character areas.

### **Landscape Character Area- G- South Kilkenny Lowlands**

Topography: Low lying. Smooth terrain.

The land uses in this area are predominately pasture although tillage and some large forestry estates can also be found. Open lands with medium sized field patterns allow good and extensive visibility to the surrounding environs. Settlement patterns in this area are linked to the presence of large towns such as Piltown and Mooncoin, with a dispersed scattering of farm dwellings throughout the rural area.

This area has open lands with regular (medium sized) field patterns. Medium sized hedgerows act as field boundaries where trees can also be found.

Settlement and Human Interaction: Numerous one-off rural dwellings. Presence of villages and towns such as Piltown and Mooncoin, with a dispersed scattering of farm dwellings throughout the rural area.

Cultural Influences: Elements of historic character include the historic field pattern, country lanes and minor roads.

Detracting elements: Views of industrial buildings. Views of existing roadside fencing not screened by hedgerows. Overhead electric cables.

Condition: Typical lowland agricultural landscape of good quality with predominantly intact elements.

### **Landscape Character Area- J- The Suir Valley**

Topography: Low lying and undulating.

Landcover and landscape features: The Suir valley lies at the southern County boundary, close to Waterford City. The valley moves in a west to northeast direction, parallel with the Waterford-Kilkenny boundary. It is a wide and fertile valley, traditionally associated with dairying and more recently with fruit and horticultural nursery sectors. The fertile valley area is well drained providing mixed uses such as agricultural and horticultural crops. Nevertheless, pasturelands generally occupy the riverbanks. Open lands with medium field parcels are generally delineated by medium sized hedgerows.

Settlement and Human Interaction: Dispersed settlement pattern, once outside the village boundaries. Large forestry plantations of mixed age occur at certain locations.

Cultural Influences: Elements of historic character include the historic field pattern.

Perceptual characteristics: The area is perceived as being scenic and special in landscape terms. The river valley is perceived as having special scenic and landscape value, in particular to the west, near the towns of Mooncoin and Fiddown, and to the east around Glenmore. The area is considered to have tourism development potential.

Detracting elements: Views of industrial buildings. Views of existing roadside fencing not screened by hedgerows. Large forestry plantations of mixed age occur at certain locations.

Condition: River valley landscape of high quality.

### **Landscape Designations**

The River Suir Valley LCA is identified as '*highly scenic and visually pleasing*' and described as having special scenic and landscape value, in particular to the west, near the towns of Mooncoin and Fiddown, and to the east around Glenmore (Kilkenny County Development Plan 2021-2027).

Area bounded to north by N24 and to the south, southeast by the River Suir is '*Area of High Amenity*' in County Kilkenny.

### Landscape Sensitivity (Value and Susceptibility)

The Landscape Character Assessment for the Kilkenny City and County Development Plan has categorised the value of the landscape character areas within the study area as follows.

The Kilkenny Landscape Character Assessment refers that the Suir Valley LCA *'is perceived as having special scenic and landscape value, in particular to the west, near the towns of Mooncoin and Fiddown, and to the east around Glenmore. The area is considered to have tourism development potential.'*

Kilkenny County Development Plan refers that the Suir Valley LCA (Refer to Figure 9.2, Kilkenny City and County Development Plan) as *'being highly scenic and visually pleasing, and as having significant visual amenity value.'*

The Kilkenny Landscape Character Assessment refers that South Kilkenny Lowlands LCA *'is perceived as being special in landscape terms, particularly around Piltown, Mooncoin and Kilmacow. The area is perceived as being generally suitable for tourism development, and other type of projects can be acceptable in the environs of Waterford City'.*

The Kilkenny Landscape Character Assessment also includes a Landscape Sensitivity Matrix which categorises the sensitivity of the various landscape types within the study area.

G- South Kilkenny Lowlands is a Lowland Landscape Character Type. Lowland type landscape is categorised as having normal (moderate) landscape sensitivity.

J- The Suir Valley is a River Valley Landscape Character Type. River Valleys (Corridors) are categorised as having the most landscape sensitivity.

The entire route will travel through the G- South Kilkenny Lowlands LCA, which it is judged would have high capacity to accommodate the proposed changes. The Kilkenny County Development Plan/ Kilkenny Landscape Character Assessment categorises this LCA *'as being special in landscape terms, particularly around Piltown, Mooncoin and Kilmacow'* and *'perceived as being generally suitable for tourism development, and other type of projects can be acceptable in the environs of Waterford City'*. It is therefore judged that G- South Kilkenny Lowlands would have Moderate landscape sensitivity to the proposed changes arising from the proposals.

The Kilkenny County Development Plan/ Kilkenny Landscape Character Assessment categorises the J- The Suir Valley Landscape Character Type *'as having special scenic and landscape value'*. It is therefore judged that J- The Suir Valley LCA would have High landscape sensitivity to the proposed changes arising from the proposals. The route itself however does not travel through the J- The Suir Valley Landscape Character Type, which is located approximately 700m to the west of the existing N24 Road. It therefore has very limited potential to influence this character area above the current influence from the existing N24 Road.

## 16.6 Baseline Study – Visual

The aim of the visual baseline is *'to establish the area in which the development may be visible, the different groups of people who may experience views of the development, the places where they will be affected and the nature of the views and visual amenity at those points'* (Landscape Institute and Institute of Environmental Management and Assessment, 2013).

### Zone of Theoretical Visibility

The Zone of Theoretical Visibility or areas of land from which the development may be potentially visible was identified as the area within 500m from the centreline of the proposed route. There are areas within the ZTV which do not have views of the scheme due to local variations in vegetation, built form and topography. The ZTV is not always precise and is an indication only of the area within which the most significant visual effects may be expected (refer to the Visual Effects drawing in Appendix H).

## Visual Receptors

### Public Roads

Public Roads within the study area includes the existing N24 Road and adjacent minor roads.

### Settlement

The settlement areas from which people will have views of the proposed scheme would include those dwellings immediately adjacent to the route corridor; intervening built development/ vegetation/ topography indicates the development would not readily be visible from large areas not immediately adjacent to the route corridor but within the Zone of Theoretical Visibility.

### Industrial

The storage facility on the existing N24 on the outskirts of Mooncoin faces directly onto the N24 Road scheme and will experience some effects.

## 16.7 Landscape Effects

This section describes the effects of the proposed development on landscape receptors and landscape character. The effects are detailed in Table 16-1.



**Table 16-1: Landscape Effects Schedule**

<b>Landscape Receptor</b>	<b>Potential Landscape Impact: Construction and Early-operational Stage</b>	<b>Impacts (without mitigation)</b>	<b>Recommended Mitigation</b>	<b>Predicted Residual Landscape impact (with mitigation)</b>	<b>Comment</b>
Topography	Route will generally follow existing contours except for localised ground modelling forming minor embankments or cuttings.  The scheme includes provision for a bridge structure over the L7416 (Grange Road) at CH 1500 with approach embankments increasing to a maximum height of 9m above existing ground levels at Ch 1510.	Construction- Minor Adverse Opening- Minor Adverse Future- Minor Adverse	Grading out cuttings and embankments to tie into surrounding lands.  Grass seeding and planting.	Construction- Minor Adverse Opening- Negligible Future- Negligible	There would be local adverse effects during construction forming the works.  On completion of the works, effects would have reduced further, as grading out of earthworks and seeding would blend the scheme into the surroundings.  By the future year impact on topography will be no overall change from opening year.
Hydrology	Excavation works, soil mounds during construction of attenuation pond/ swales.  Diversion of Skelpstown 16 stream  Attenuation pond provided.	Construction- Minor Adverse Opening- Minor Beneficial Future- Minor Beneficial	Planting to swales and around attenuation pond.	Construction- Minor Adverse Opening- Minor Beneficial Future- Minor Beneficial	There would be local adverse effects during construction forming the works to the stream diversion and attenuation pond construction.  Addition of attenuation pond and swales including planting will be beneficial features
Agriculture	Loss of agricultural land due to alignment of route.  Proposed road development cuts across lower slopes of agricultural landscape with strong tree-lines and hedgerows.	Construction- Minor Adverse Opening- Minor Adverse Future- Minor Adverse	Planting to road corridor.  Grading out of embankments/ cuttings.	Construction- Minor Adverse Opening- Minor Adverse Future- No Change	During construction there will be some permanent loss of agricultural land for alignment, especially in the offline sections of the route.  On completion of the works, planting and grading would begin to blend the route into the surroundings. Planting would not yet be mature to fully reduce adverse effects.  By future year effects will reduce as mitigation planting matures and blends the route into the surrounding agricultural landscape.
Landscape Pattern	Bisection of fields within offline section of the route.	Construction- Minor Adverse Opening- Minor Adverse Future- Minor Adverse	Hedge planting to restore severed field pattern.	Construction Minor Adverse Opening- Minor Adverse Future- No Change	Local changes to field pattern where road crosses green field rural landscape.  By future year effects will reduce as proposed hedgerows will mature and will restore field pattern.
Land Cover	Loss of roadside vegetation along the existing N24 Route and side roads.  Loss of hedgerows and grassland to offline sections of the route.	Construction- Moderate Adverse Opening- Moderate Adverse Future- Moderate Adverse	Mitigation planting/ including hedgerows, hedgerow trees, species rich grassland and woodland.	Construction- Moderate Adverse Opening- Moderate Adverse Future- Moderate Beneficial	The loss of existing vegetation during construction will have an initial moderate adverse effect.  On completion, the effects will not have reduced as mitigation planting will still not have established.  By the future year the overall significance will be moderate beneficial, as mitigation planting measures mature.
LCA G- South Kilkenny Lowlands	Combination of online and offline improvements to the existing N24 Road, through countryside north of Mooncoin.  Loss of roadside vegetation along the existing N24 Route and side roads. Loss of hedgerows and grassland to offline sections of the route	Construction- Moderate Adverse Opening- Moderate Adverse Future- Moderate Adverse	Grading out cuttings/ embankments.  Mitigation planting/ including hedgerows, hedgerow trees, species rich grassland and woodland.	Construction- Moderate Adverse Opening- Slight Adverse Future- Moderate Beneficial	The loss of existing vegetation and earthworks/ activities during construction will have an initial moderate adverse effect on local landscape character.  On completion, the effects will not have reduced as mitigation planting will still not have established.  By the future year the overall significance will be moderate beneficial, as mitigation planting measures mature which will compliment and improve the existing landscape character.



## 16.8 Visual Effects

This section describes the effects of the proposed development on visual receptors and assesses the significance of the effects identified.

The visual receptors most likely to be affected by the development include: residential properties immediately along and overlooking the route corridor.

The significance of the visual effect on receptors is shown in Table 16-2 below.

The location of residential and industrial receptors is illustrated in the Visual Effects drawing in Appendix H.

**Table 16-2: Visual Effects Schedule**

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R1	Views from a group of residential dwellings located in excess of 400m from the works.	Views south towards the N24	Medium (already experience close proximity open views of the existing N24)	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R2	Views from hall located to the east of the scheme	Views north towards the N24	Medium (already experience close proximity open views of the existing N24)	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R3	View from a one off rural residential dwelling located immediately adjacent to the N24 Road	Views to agricultural land and along local access road. The existing N24 is visible.	Medium (already experience close proximity open views of the existing N24)	The N24 road opposite the front of this property will be realigned to run in lands to the north circa 60m (from entrance) away from the property. The existing N24 road will then function as a local access road and therefore less traffic will be visible immediately opposite the dwelling. No existing vegetation will be removed in the immediate vicinity of the dwelling. The proposed offline section of the road will be visible in the distance and partially screened by existing vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows.	Construction- Minor Adverse Opening- Minor Beneficial Future- Minor beneficial	Planting of roadside hedgerows and trees	Construction- Minor Adverse Opening- Minor Beneficial Future- Moderate beneficial	Construction (2023) Slight Adverse. Short term views of construction works and removal of roadside vegetation Opening Year (2024) Slight beneficial: Views will remain similar to the existing situation but be improved mitigation planting Future Year (2039) Moderate beneficial: Planting as it matures will be noticeable and improve views from opening year.
R4	Views residential dwellings located to the east of the scheme	Views north towards the N24	Medium (already experience close proximity open views of the existing N24)	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R5	Views residential dwellings located to the east of the scheme	Views north towards the N24	Medium (already experience close proximity open views of the existing N24)	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R6	Views residential dwellings located to the east of the scheme	Views north towards the N24	Medium (already experience close proximity open views of the existing N24)	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R7	Views residential dwellings located to the east of the scheme	Views north towards the N24	Medium (already experience close proximity open views of the existing N24)	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R8	Views residential dwellings located to the east of the scheme	Views north towards the N24	Medium (already experience close proximity open views of the existing N24)	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R9	Views residential dwellings located to the east of the scheme	Views north/east towards the N24	Medium (already experience close proximity open views of the existing N24)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R10	Views to agricultural land and also partial views of the existing local Road	Views generally east / west	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R11	Views to agricultural land and also partial views of the existing local Road	Views generally east / west	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R12	Views to agricultural land and also partial views of the existing local Road	Views generally east / west	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R13	Views to agricultural land and also partial views of the existing local Road	Views generally east / west	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R14	Views to agricultural land and also partial views of the existing local Road	Views generally east / west	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R15	Views to agricultural land and also partial views of the existing local Road	Views generally east / west	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R16	Views to agricultural land and also partial views of the existing local Road	Views generally east / west	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R17	Views to agricultural land and also partial views of the existing local Road	Views generally east / west	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R18	Views to agricultural land and also partial views of the existing local Road	Views generally east / west	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R19	Views to agricultural land and also partial views of the existing local Road	Views generally east / west	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R20	Views to agricultural land and also partial views of the existing local Road	Views generally east / west	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R21	Views to agricultural land and also partial views of the existing local Road	Views generally east / west	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R22	Views to agricultural land and also partial views of the existing local Road	Views generally east / west	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R23	Views to agricultural land and also partial views of the existing local Road	Views generally east / west	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R24	Views from Care Centre to the east of the scheme (76pprox. 230m)	Views north towards the N24 / East towards local road – well screened	Medium (already experience close proximity open views of the existing N24/Local Road)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R25	Views from Church located to the east of the scheme (76pprox. 240m)	Views north towards the N24	Medium (already experience close proximity open views of the existing N24)	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R26	Views residential dwellings located to the east (Suir Crescent and Pollrone Green)	Views south towards the N24	Medium (already experience close proximity open views of the existing N24)	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R27	Views residential dwelling located to the south	Views south towards the N24	Medium (already experience close proximity open views of the existing N24)	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R28	Views residential dwelling located to the south	Views south towards the N24	Medium (already experience close proximity open views of the existing N24)	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R29	Views residential dwelling located to the south	Views south towards the N24	Medium (already experience close proximity open views of the existing N24)	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R30	Views residential dwelling located to the south	Views south towards the N24	Medium (already experience close proximity open views of the existing N24)	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R31	Views residential dwelling located to the south	Views south towards the N24	Medium (already experience close proximity open views of the existing N24)	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.



Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R32	Views residential dwelling located to the south	Views south towards the N24	Medium (already experience close proximity open views of the existing N24	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R33	Views residential dwelling located to the south	Views south towards the N24	Medium (already experience close proximity open views of the existing N24	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R34	Views residential dwelling located to the south	Views south towards the N24	Medium (already experience close proximity open views of the existing N24	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R35	Views residential dwelling located to the south	Views south towards the N24	Medium (already experience close proximity open views of the existing N24	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R36	Views residential dwelling located to the south	Views south towards the N24	Medium (already experience close proximity open views of the existing N24	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R37	Views residential dwelling located to the south – distance 78pprox. 80m from the works.	Views south towards the N24	Medium (already experience close proximity open views of the existing N24	Orientation away from the works will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R38	View from a one off rural residential dwelling located 60m north of the existing N24 Road	Views to agricultural land and also partial views of the existing N24 to the front of the property.	High (Existing Rural Views)	The proposed offline section of the road to the west will be partially screened by some established vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows. Views to the south towards the tie-in of the proposed scheme to the existing N24 will be visible during construction with the removal of hedgerows to facilitate the tie-in to the existing N24.	Construction- Slight Adverse Opening- Slight adverse Future- Neutral	Planting of roadside hedgerows and trees	Construction- Slight Adverse Opening- Slight adverse Future- Slight Positive	Construction (2023) Slight Adverse. Short term views of construction works and removal of distant hedgerows/ vegetation to the rear of the property at the proposed tie-in location. Opening Year (2024) Slight Adverse: Views will remain similar to the existing situation but will be improved mitigation planting Future Year (2039) Slight Adverse: Planting as it matures will be noticeable and improve views from opening year.
R39	View from a one off rural residential dwelling located 50m north of the existing N24 Road	Views to agricultural land and also partial views of the existing N24 to the front of the property.	High (Existing Rural Views)	The proposed offline section of the road to the west will be partially screened by some established vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows. Views to the south towards the tie-in of the proposed scheme to the existing N24 will be visible during construction with the removal of hedgerows to facilitate the tie-in to the existing N24.	Construction- Slight Adverse Opening Slight adverse Future Neutral	Planting of roadside hedgerows and trees	Construction- Slight Adverse Opening- Slight adverse Future- Slight Positive	Construction (2023) Slight Adverse. Short term views of construction works and removal of distant hedgerows/ vegetation to the rear of the property at the proposed tie-in location. Opening Year (2024) Slight Adverse: Views will remain similar to the existing situation but will be improved mitigation planting Future Year (2039) Slight Adverse: Planting as it matures will be noticeable and improve views from opening year.
R40	View from a one off rural residential dwelling located 60m north of the existing N24 Road	Views to agricultural land and also partial views of the existing N24 to the front of the property.	High (Existing Rural Views)	The proposed offline section of the road to the west will be partially screened by some established vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows. Views to the south towards the tie-in of the proposed scheme to the existing N24 will be visible during construction with the removal of hedgerows to facilitate the tie-in to the existing N24.	Construction- Slight Adverse Opening- Slight adverse Future- Neutral	Planting of roadside hedgerows and trees	Construction- Slight Adverse Opening- Slight adverse Future- Slight Positive	Construction (2023) Slight Adverse. Short term views of construction works and removal of distant hedgerows/ vegetation to the rear of the property at the proposed tie-in location. Opening Year (2024) Slight Adverse: Views will remain similar to the existing situation but will be improved mitigation planting Future Year (2039) Slight Adverse: Planting as it matures will be noticeable and improve views from opening year.

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R41	View from a one off rural residential dwelling located 60m north of the existing N24 Road	Views to agricultural land and also partial views of the existing N24 to the front of the property.	High (Existing Rural Views)	The proposed offline section of the road to the west will be partially screened by some established vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows. Views to the south towards the tie-in of the proposed scheme to the existing N24 will be visible during construction with the removal of hedgerows to facilitate the tie-in to the existing N24.	Construction- Slight Adverse Opening- Slight adverse Future- Neutral	Planting of roadside hedgerows and trees	Construction- Slight Adverse Opening- Slight adverse Future- Slight Positive	Construction (2023) Slight Adverse. Short term views of construction works and removal of distant hedgerows/ vegetation to the rear of the property at the proposed tie-in location. Opening Year (2024) Slight Adverse: Views will remain similar to the existing situation but will be improved mitigation planting Future Year (2039) Slight Adverse: Planting as it matures will be noticeable and improve views from opening year.
R42	View from a one off rural residential dwelling located 90m north of the existing N24 Road	Views to agricultural land and also partial views of the existing N24 to the front of the property.	High (Existing Rural Views)	The proposed offline section of the road to the west will be partially screened by some established vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows. Views to the south towards the tie-in of the proposed scheme to the existing N24 will be visible during construction with the removal of hedgerows to facilitate the tie-in to the existing N24.	Construction- Slight Adverse Opening- Slight adverse Future- Neutral	Planting of roadside hedgerows and trees	Construction- Slight Adverse Opening- Slight adverse Future- Slight Positive	Construction (2023) Slight Adverse. Short term views of construction works and removal of distant hedgerows/ vegetation to the rear of the property at the proposed tie-in location. Opening Year (2024) Slight Adverse: Views will remain similar to the existing situation but will be improved mitigation planting Future Year (2039) Slight Adverse: Planting as it matures will be noticeable and improve views from opening year.
R43	View from a one off rural residential dwelling located 90m north of the existing N24 Road	Views to agricultural land and also partial views of the existing N24 to the front of the property.	High (Existing Rural Views)	The proposed offline section of the road to the west will be partially screened by some established vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows. Views to the south towards the tie-in of the proposed scheme to the existing N24 will be visible during construction with the removal of hedgerows to facilitate the tie-in to the existing N24.	Construction- Slight Adverse Opening- Slight adverse Future- Neutral	Planting of roadside hedgerows and trees	Construction- Slight Adverse Opening- Slight adverse Future- Slight Positive	Construction (2023) Slight Adverse. Short term views of construction works and removal of distant hedgerows/ vegetation to the rear of the property at the proposed tie-in location. Opening Year (2024) Slight Adverse: Views will remain similar to the existing situation but will be improved mitigation planting Future Year (2039) Slight Adverse: Planting as it matures will be noticeable and improve views from opening year.

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R44	View from a one off rural residential dwelling located 110m north of the existing N24 Road	Views to agricultural land and also partial views of the existing N24 to the front of the property.	High (Existing Rural Views)	The proposed offline section of the road to the west will be partially screened by some established vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows. Views to the south towards the tie-in of the proposed scheme to the existing N24 will be visible during construction with the removal of hedgerows to facilitate the tie-in to the existing N24.	Construction- Slight Adverse Opening- Slight adverse Future- Neutral	Planting of roadside hedgerows and trees	Construction- Slight Adverse Opening- Slight adverse Future- Slight Positive	Construction (2023) Slight Adverse. Short term views of construction works and removal of distant hedgerows/ vegetation to the rear of the property at the proposed tie-in location. Opening Year (2024) Slight Adverse: Views will remain similar to the existing situation but will be improved mitigation planting Future Year (2039) Slight Adverse: Planting as it matures will be noticeable and improve views from opening year.
R45	View from a one off rural residential dwelling located 120m north of the existing N24 Road	Views to agricultural land and also partial views of the existing N24 to the front of the property.	High (Existing Rural Views)	The proposed offline section of the road to the west will be partially screened by some established vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows. Views to the south towards the tie-in of the proposed scheme to the existing N24 will be visible during construction with the removal of hedgerows to facilitate the tie-in to the existing N24.	Construction- Slight Adverse Opening- Slight adverse Future- Neutral	Planting of roadside hedgerows and trees	Construction- Slight Adverse Opening- Slight adverse Future- Slight Positive	Construction (2023) Slight Adverse. Short term views of construction works and removal of distant hedgerows/ vegetation to the rear of the property at the proposed tie-in location. Opening Year (2024) Slight Adverse: Views will remain similar to the existing situation but will be improved mitigation planting Future Year (2039) Slight Adverse: Planting as it matures will be noticeable and improve views from opening year.
R46	View from school located 110m adjacent to the existing N24 Road	Views to existing N24 to the front of the development. Views of agricultural land to the rear. The existing N24 is visible.	Medium (already experience close proximity open views of the existing N24 (front) / High (Existing) Rural Views to the rear.	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R47	View from a one off residential dwelling located 50m immediately adjacent to the N24 Road	Views to existing N24, and agricultural lands	Medium (already experience close proximity open views of the existing N24	The N24 road opposite the front of this property will be widened and realigned generally to the north. The existing N24 road will be included in the scheme. The proposed section of the road will be visible during construction. On completion the views will remain as per the existing views.	Construction – slight negative. Opening / Future – None	None	Construction – slight negative. Opening / Future – None	Construction (2023) Slight Adverse. Short term views of construction works Opening Year (2024) Neutral – No 'additional' part of the works discernible. Future Year (2039) Neutral – No 'additional' part of the works discernible.

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R48	View from a one off residential dwelling located 30m immediately adjacent to the N24 Road	Views to existing N24, and agricultural lands	Medium (already experience close proximity open views of the existing N24	The N24 road opposite the front of this property will be widened and realigned generally to the north. The existing N24 road will be included in the scheme. The proposed section of the road will be visible during construction. On completion the views will remain as per the existing views.	Construction – slight negative. Opening / Future – None	None	Construction – slight negative. Opening / Future – None	Construction (2023) Slight Adverse. Short term views of construction works Opening Year (2024) Neutral – No 'additional' part of the works discernible. Future Year (2039) Neutral – No 'additional' part of the works discernible.
R49	View from a one off residential dwelling located 20m immediately adjacent to the N24 Road	Views to existing N24, and agricultural lands	Medium (already experience close proximity open views of the existing N24	The N24 road opposite the front of this property will be widened and realigned generally to the north. The existing N24 road will be included in the scheme. The proposed section of the road will be visible during construction. On completion the views will remain as per the existing views.	Construction – slight negative. Opening / Future – None	None	Construction – slight negative. Opening / Future – None	Construction (2023) Slight Adverse. Short term views of construction works Opening Year (2024) Neutral – No 'additional' part of the works discernible. Future Year (2039) Neutral – No 'additional' part of the works discernible.
R50	View from a one off residential dwelling located immediately adjacent to the N24 Road	Views to existing N24, and agricultural lands	Medium (already experience close proximity open views of the existing N24	The N24 road opposite the front of this property will be widened and realigned generally to the north. The existing N24 road will be included in the scheme. The proposed section of the road will be visible during construction. On completion the views will remain as per the existing views.	Construction – slight negative. Opening / Future – None	None	Construction – slight negative. Opening / Future – None	Construction (2023) Slight Adverse. Short term views of construction works Opening Year (2024) Neutral – No 'additional' part of the works discernible. Future Year (2039) Neutral – No 'additional' part of the works discernible.
R51	View from a one off residential dwelling located immediately adjacent to the N24 Road	Views to existing N24, and agricultural lands	Medium (already experience close proximity open views of the existing N24	The N24 road opposite the front of this property will be widened and realigned generally to the north. The existing N24 road will be included in the scheme. The proposed section of the road will be visible during construction. On completion the views will remain as per the existing views.	Construction – slight negative. Opening / Future – None	None	Construction – slight negative. Opening / Future – None	Construction (2023) Slight Adverse. Short term views of construction works Opening Year (2024) Neutral – No 'additional' part of the works discernible. Future Year (2039) Neutral – No 'additional' part of the works discernible.
R52	View from a one off residential dwelling located immediately adjacent to the N24 Road	Views to existing N24, and agricultural lands	Medium (already experience close proximity open views of the existing N24	The N24 road opposite the front of this property will be widened and realigned generally to the north. The existing N24 road will be included in the scheme. The proposed section of the road will be visible during construction. On completion the views will remain as per the existing views.	Construction – slight negative. Opening / Future – None	None	Construction – slight negative. Opening / Future – None	Construction (2023) Slight Adverse. Short term views of construction works Opening Year (2024) Neutral – No 'additional' part of the works discernible. Future Year (2039) Neutral – No 'additional' part of the works discernible.



Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R53	Views to agricultural land and also partial views of the existing local Road	Views generally east / west	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R54	Views to agricultural land and also partial views of the existing local Road	Views generally north/South	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R55	Views to agricultural land and also partial views of the existing local Road	Views generally east / west	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R56	View from industrial development located immediately adjacent to the N24 Road	Views to existing N24 to the front of the development. Views of agricultural land to the rear. The existing N24 is visible.	Medium (already experience close proximity open views of the existing N24 (front) / High (Existing) Rural Views to the rear.	The N24 road opposite the front of this development will be realigned to run in lands to the north circa 100m away from the property. The existing N24 road will then function as a local access road and therefore less traffic will be visible immediately opposite the dwelling. Some existing vegetation will be removed to the northeast to facilitate access to the proposed scheme. The proposed offline section of the road will be visible in the distance and partially screened by some established vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows.	Construction- Slight Adverse Opening- Moderate adverse Future- Moderate Adverse	Planting of roadside hedgerows and trees	Construction- Slight Adverse Opening- Slight adverse Future- Slight Adverse	Construction (2023) Slight Adverse. Short term views of construction works and removal of distant hedgerows/ vegetation to the north of the property Opening Year (2024) Slight Adverse: Views will be partially visible from the property but will be improved mitigation planting Future Year (2039) Slight Adverse: Planting as it matures will be noticeable and improve views from opening year.



Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R57	Views residential dwelling located to the south – distance 84pprox. 120m from the works.	Views north & east towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R58	Views residential dwelling located to the south – distance 84pprox. 140m from the works.	Views north & east towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R59	Views residential dwelling located to the south – distance 84pprox. 170m from the works.	Views north & east towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R60	Views residential dwelling located to the south – distance 84pprox. 190m from the works.	Views north & east towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R61	Views residential dwelling located to the south – distance 84pprox. 220m from the works.	Views north & east towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R62	Views residential dwelling located to the south – distance 85pprox. 240m from the works.	Views north & east towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R63	Views residential dwelling located to the south – distance 85pprox. 350m from the works.	Views north towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R64	Views residential dwelling located to the south – distance 85pprox. 300m from the works.	Views north towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R65	Views residential dwelling located to the south – distance 85pprox. 340m from the works.	Views north towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R66	Views residential dwelling located to the south – distance 85pprox. 290m from the works.	Views north towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R67	Views residential dwelling located to the south – distance 86pprox. 400m from the works.	Views north towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R68	Views residential dwelling located to the south – distance 86pprox. 220m from the works.	Views north towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R69	Views residential dwelling located to the south – distance 86pprox. 160m from the works.	Views north towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings, existing N24 and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R70	Views residential dwelling located to the south – distance 86pprox. 140m from the works.	Views north towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings, existing N24 and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R71	Views residential dwelling located to the south – distance 87pprox. 140m from the works.	Views north towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings, existing N24 and effect of distance will screen views to the works	Construction- Slight Adverse Opening- Slight adverse Future- Slight Adverse	Planting of roadside hedgerows and trees	Construction- Slight Adverse Opening- Slight adverse Future- Slight Adverse	Construction (2023) Slight Adverse. Short term views of construction works to the side of the property Opening Year (2024)Slight Adverse: Views will remain similar to the existing situation to north (albeit with reduced traffic) but road will be partially visible from the side of the property but will be improved mitigation planting Future Year (2039) Slight Adverse: Planting as it matures will be noticeable and improve views from opening year.
R72	View from a one off rural residential dwelling located immediately adjacent to the N24 Road	Views to existing N24 to the front of the property. Views of agricultural land to the rear. The existing N24 is visible.	Medium (already experience close proximity open views of the existing N24 (front) / High (Existing) Rural Views to the rear.	The N24 road opposite the front of this property will be realigned to run in lands to the north circa 100m away from the property. The existing N24 road will then function as a local access road and therefore less traffic will be visible immediately opposite the dwelling. No existing vegetation will be removed in the immediate vicinity of the dwelling. The proposed offline section of the road will be visible in the distance and partially screened by some established vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows.	Construction- Slight Adverse Opening- Moderate adverse Future- Moderate Adverse	Planting of roadside hedgerows and trees	Construction- Slight Adverse Opening- Slight adverse Future- Slight Adverse	Construction (2023) Slight Adverse. Short term views of construction works and removal of distant hedgerows/ vegetation to the rear of the property Opening Year (2024)Slight Adverse: Views will remain similar to the existing situation to front (albeit with reduced traffic) but road will be partially visible from the rear of the property but will be improved mitigation planting Future Year (2039) Slight Adverse: Planting as it matures will be noticeable and improve views from opening year.

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R73	View from a one off rural residential dwelling located immediately adjacent to the N24 Road	Views to existing N24 to the front of the property. Views of agricultural land to the rear. The existing N24 is visible.	Medium (already experience close proximity open views of the existing N24 (front) / High (Existing) Rural Views to the rear.	The N24 road opposite the front of this property will be realigned to run in lands to the north circa 100m away from the property. The existing N24 road will then function as a local access road and therefore less traffic will be visible immediately opposite the dwelling. No existing vegetation will be removed in the immediate vicinity of the dwelling. The proposed offline section of the road will be visible in the distance and partially screened by some established vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows.	Construction- Slight Adverse Opening- Moderate adverse Future- Moderate Adverse	Planting of roadside hedgerows and trees	Construction- Slight Adverse Opening- Slight adverse Future- Slight Adverse	Construction (2023) Slight Adverse. Short term views of construction works and removal of distant hedgerows/ vegetation to the rear of the property Opening Year (2024) Slight Adverse: Views will remain similar to the existing situation to front (albeit with reduced traffic) but road will be partially visible from the rear of the property but will be improved mitigation planting Future Year (2039) Slight Adverse: Planting as it matures will be noticeable and improve views from opening year.
R74	View from a one off rural residential dwelling located immediately adjacent to the N24 Road	Views to existing N24 to the front of the property. Views of agricultural land to the rear. The existing N24 is visible.	Medium (already experience close proximity open views of the existing N24 (front) / High (Existing) Rural Views to the rear.	The N24 road opposite the front of this property will be realigned to run in lands to the north circa 100m away from the property. The existing N24 road will then function as a local access road and therefore less traffic will be visible immediately opposite the dwelling. No existing vegetation will be removed in the immediate vicinity of the dwelling. The proposed offline section of the road will be visible in the distance and partially screened by some established vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows.	Construction- Slight Adverse Opening- Moderate adverse Future- Moderate Adverse	Planting of roadside hedgerows and trees	Construction- Slight Adverse Opening- Slight adverse Future- Slight Adverse	Construction (2023) Slight Adverse. Short term views of construction works and removal of distant hedgerows/ vegetation to the rear of the property Opening Year (2024) Slight Adverse: Views will remain similar to the existing situation to front (albeit with reduced traffic) but road will be partially visible from the rear of the property but will be improved mitigation planting Future Year (2039) Slight Adverse: Planting as it matures will be noticeable and improve views from opening year.
R75	Views residential dwelling located to the south - distance 88pprox. 130m from the works.	Views north towards the existing N24 are generally open occasionally slightly restricted by intervening vegetation, buildings and effect of distance. Views to	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction: Minor Adverse Opening Minor Beneficial Future Minor beneficial	Planting of roadside hedgerows and trees	Construction: Minor Adverse Opening Minor Beneficial Future Moderate beneficial	Construction (2023) Slight Adverse. Short term views of construction works and removal of roadside vegetation Opening Year (2024) Slight beneficial: Views will remain similar to the existing situation but be improved mitigation planting Future Year (2039) Moderate beneficial: Planting as it matures will be noticeable and improve views from opening year.



Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
		agricultural land also						
R76	Views residential dwelling located to the south - distance 89pprox. 150m from the works.	Views north towards the existing N24 are generally open occasionally slightly restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land also	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction- Minor Adverse Opening- Minor Beneficial Future- Minor beneficial	Planting of roadside hedgerows and trees	Construction- Minor Adverse Opening- Minor Beneficial Future- Moderate beneficial	Construction (2023) Slight Adverse. Short term views of construction works and removal of roadside vegetation Opening Year (2024) Slight beneficial: Views will remain similar to the existing situation but be improved mitigation planting Future Year (2039) Moderate beneficial: Planting as it matures will be noticeable and improve views from opening year.
R77	View from a one off rural residential dwelling located immediately adjacent to the N24 Road	Views to existing N24 to the front of the property. Views of agricultural land to the rear. The existing N24 is visible.	Medium (already experience close proximity open views of the existing N24 (front) / High (Existing) Rural Views to the rear.	The N24 road opposite the front of this property will be realigned to run in lands to the north circa 50m away from the property. The existing N24 road will then function as a local access road and therefore less traffic will be visible immediately opposite the dwelling. No existing vegetation will be removed in the immediate vicinity of the dwelling. The proposed offline section of the road will be visible in the distance and partially screened by existing well established vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows.	Construction- Moderate Adverse Opening- Moderate adverse Future- Moderate Adverse	Planting of roadside hedgerows and trees	Construction- Moderate Adverse Opening- Moderate adverse Future- Slight Adverse	Construction (2023) Moderate Adverse. Short term views of construction works and removal of distant hedgerows/ vegetation to the rear of the property Opening Year (2024) Moderate Adverse: Views will remain similar to the existing situation to front (albeit with reduced traffic) but road will be visible from the rear of the property but will be improved mitigation planting Future Year (2039) Slight Adverse: Planting as it matures will be noticeable and improve views from opening year.



Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R78	View from a one off rural residential dwelling located immediately adjacent to the N24 Road	Views to existing N24 to the front of the property. Views of agricultural land to the rear. The existing N24 is visible.	Medium (already experience close proximity open views of the existing N24 (front) / High (Existing) Rural Views to the rear.	The N24 road opposite the front of this property will be realigned to run in lands to the north circa 60m away from the property. The existing N24 road will then function as a local access road and therefore less traffic will be visible immediately opposite the dwelling. No existing vegetation will be removed in the immediate vicinity of the dwelling. The proposed offline section of the road will be visible in the distance and partially screened by existing well established vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows.	Construction- Moderate Adverse Opening- Moderate adverse Future- Moderate Adverse	Planting of roadside hedgerows and trees	Construction- Moderate Adverse Opening- Moderate adverse Future- Slight Adverse	Construction (2023) Moderate Adverse. Short term views of construction works and removal of distant hedgerows/ vegetation to the rear of the property Opening Year (2024) Moderate Adverse: Views will remain similar to the existing situation to front (albeit with reduced traffic) but road will be visible from the rear of the property but will be improved mitigation planting Future Year (2039) Slight Adverse: Planting as it matures will be noticeable and improve views from opening year.
R79	View from a one off rural residential dwelling located immediately adjacent to the N24 Road	Views to existing N24 to the front of the property. Views of agricultural land to the rear. The existing N24 is visible.	Medium (already experience close proximity open views of the existing N24 (front) / High (Existing) Rural Views to the rear.	The N24 road opposite the front of this property will be realigned to run in lands to the north circa 60m away from the property. The existing N24 road will then function as a local access road and therefore less traffic will be visible immediately opposite the dwelling. No existing vegetation will be removed in the immediate vicinity of the dwelling. The proposed offline section of the road will be visible in the distance and partially screened by existing well established vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows.	Construction- Moderate Adverse Opening- Moderate adverse Future- Moderate Adverse	Planting of roadside hedgerows and trees	Construction- Moderate Adverse Opening- Moderate adverse Future- Slight Adverse	Construction (2023) Moderate Adverse. Short term views of construction works and removal of distant hedgerows/ vegetation to the rear of the property Opening Year (2024) Moderate Adverse: Views will remain similar to the existing situation to front (albeit with reduced traffic) but road will be visible from the rear of the property but will be improved mitigation planting Future Year (2039) Slight Adverse: Planting as it matures will be noticeable and improve views from opening year.

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R80	View from a one off rural residential dwelling located immediately adjacent to the N24 Road	Views to existing N24 to the front of the property. Views of agricultural land to the rear. The existing N24 is visible.	Medium (already experience close proximity open views of the existing N24 (front) / High (Existing) Rural Views to the rear.	The N24 road opposite the front of this property will be realigned to run in lands to the north circa 60m away from the property. The existing N24 road will then function as a local access road and therefore less traffic will be visible immediately opposite the dwelling. No existing vegetation will be removed in the immediate vicinity of the dwelling. The proposed offline section of the road will be visible in the distance and partially screened by existing well established vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows.	Construction- Moderate Adverse Opening- Moderate adverse Future- Moderate Adverse	Planting of roadside hedgerows and trees	Construction- Moderate Adverse Opening- Moderate adverse Future- Slight Adverse	Construction (2023) Moderate Adverse. Short term views of construction works and removal of distant hedgerows/ vegetation to the rear of the property Opening Year (2024) Moderate Adverse: Views will remain similar to the existing situation to front (albeit with reduced traffic) but road will be visible from the rear of the property but will be improved mitigation planting Future Year (2039) Slight Adverse: Planting as it matures will be noticeable and improve views from opening year.
R81	View from a one off rural residential dwelling located immediately adjacent to the N24 Road	Views to existing N24 to the front of the property. Views of agricultural land to the rear. The existing N24 is visible.	Medium (already experience close proximity open views of the existing N24 (front) / High (Existing) Rural Views to the rear.	The N24 road opposite the front of this property will be realigned to run in lands to the north circa 45m away from the property. The existing N24 road will then function as a local access road and therefore less traffic will be visible immediately opposite the dwelling. No existing vegetation will be removed in the immediate vicinity of the dwelling. The proposed offline section of the road will be visible in the distance and partially screened by existing vegetation. Once mitigation planting matures the proposed road, embankment and traffic would be mostly screened by hedgerows.	Construction- Moderate Adverse Opening- Moderate adverse Future- Moderate Adverse	Planting of roadside hedgerows and trees	Construction- Moderate Adverse Opening- Moderate Adverse Future- Minor Adverse	Construction (2023) Moderate Adverse. Short term views of construction works and removal of hedgerows/ vegetation to the rear of the property Opening Year (2024) Moderate Adverse: Views will remain similar to the existing situation to front (albeit with reduced traffic) but road will be visible from the rear of the property but will be improved mitigation planting Future Year (2039) Minor Adverse: Planting as it matures will be noticeable and improve views from opening year.

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R82	View from a one off rural residential dwelling (derelict) located immediately adjacent to the existing N24 Road	Views to existing N24, agricultural land and along local access road.	Medium (already experience close proximity open views of the existing N24	The proposed N24 road opposite the front of this property will be located circa 55m from the property. The existing N24 road will then function as a local access road and therefore less traffic will be visible immediately opposite the dwelling. No existing vegetation will be removed in the immediate vicinity of the dwelling. The proposed offline section of the road will be visible in the distance and partially screened by existing vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows.	Construction- Moderate Adverse Opening- Moderate adverse Future- Neutral	Planting of roadside hedgerows and trees	Construction- Minor Adverse Opening- Minor Adverse Future- Minor beneficial	Construction (2023) Slight Adverse. Short term views of construction works and removal of roadside vegetation Opening Year (2024) Slight Adverse: Views will remain similar to the existing situation but be improved mitigation planting Future Year (2039) Moderate beneficial: Planting as it matures will be noticeable and improve views from opening year.
R83	View from a one off rural residential dwelling located adjacent to the existing N24 Road	Views to existing N24, agricultural land and along local access road.	Medium (already experience close proximity open views of the existing N24	The proposed N24 road will be located circa 90m from the property. The existing N24 road will then function as a local access road and therefore less traffic will be visible immediately opposite the dwelling. No existing vegetation will be removed in the immediate vicinity of the dwelling. The proposed offline section of the road will be visible in the distance to the east and partially screened by existing vegetation. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows. Views are generally to the east and are screened to the north (towards the proposed N24 at its closest point) by existing buildings / vegetation.	Construction- Slight Adverse Opening- Slight adverse Future- Moderate beneficial	Planting of roadside hedgerows and trees	Construction- Minor Adverse Opening- Minor Adverse Future- Minor beneficial	Construction (2023) Slight Adverse. Short term views of construction works and removal of roadside vegetation Opening Year (2024) Slight Adverse: Views will remain similar to the existing situation but be improved mitigation planting Future Year (2039) Moderate beneficial: Planting as it matures will be noticeable and improve views from opening year.

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R84	View from a one off rural residential dwelling located approximately 250m north of the existing N24 Road	Views south towards the N24 are generally restricted by intervening vegetation and effect of distance. Views to agricultural land also	High (Existing Rural Views)	The proposed N24 road will be located circa 270m from the property. No existing vegetation will be removed in the immediate vicinity of the dwelling and the dwelling is screening by 3 separate E-W orientated hedgerows. The proposed structure will be located south of the property at a level of 2.5m above existing ground level. Once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows.	Construction- Slight Adverse Opening- Slight adverse Future- Neutral	Planting of roadside hedgerows and trees	Construction- Slight Adverse Opening- Slight adverse Future- Slight Positive	Construction (2023) Slight Adverse. Short term views of construction works and removal of distant hedgerows/ vegetation to the rear of the property at the proposed tie-in location. Opening Year (2024) Slight Adverse: Views will remain similar to the existing situation but will be improved mitigation planting Future Year (2039) Slight Adverse: Planting as it matures will be noticeable and improve views from opening year.
R85	View from a one off rural residential dwelling located approximately 450m north of the existing N24 Road	Views east towards the N24 are generally restricted by intervening vegetation and effect of distance. Views to agricultural land also	High (Existing Rural Views)	The proposed N24 road will be located circa 470m from the property. Views are generally to the east and are screened to the north (towards the proposed N24 at its closest point) by existing buildings / vegetation.	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R86	View from a one off rural residential dwelling located approximately 410m north of the existing N24 Road	Views east towards the N24 are generally restricted by intervening vegetation and effect of distance. Views to agricultural land also	High (Existing Rural Views)	The proposed N24 road will be located circa 460m from the property. Views are generally to the east and are screened to the north (towards the proposed N24 at its closest point) by existing buildings / vegetation.	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R87	View from a one off rural residential dwelling located immediately adjacent to the N24 Road	Views to existing N24, agricultural land and along local access road.	Medium (already experience close proximity open views of the existing N24	The N24 road opposite the front of this property will be widened and realigned generally to the north with minor encroachment towards the property. The existing N24 road will be included in the scheme with a new entrance road provided to the northwest. Limited existing vegetation will be removed in the immediate vicinity of the N24. The proposed section of the road will be visible during construction and once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows.	Construction- Moderate Adverse Opening- Minor adverse Future- Minor beneficial	Planting of roadside hedgerows and trees	Construction- Minor Adverse Opening- Minor Beneficial Future- Moderate beneficial	Construction (2023) Slight Adverse. Short term views of construction works and removal of roadside vegetation Opening Year (2024) Slight beneficial: Views will remain similar to the existing situation but be improved mitigation planting Future Year (2039) Moderate beneficial: Planting as it matures will be noticeable and improve views from opening year.
R88	View from a one off rural residential dwelling located immediately adjacent to the N24 Road	Views to existing N24, agricultural land and along local access road.	Medium (already experience close proximity open views of the existing N24	The N24 road opposite the front of this property will be widened and realigned generally to the north with minor encroachment towards the property. The existing N24 road will be included in the scheme with a new entrance road provided to the northwest. Limited existing vegetation will be removed in the immediate vicinity of the N24. The proposed section of the road will be visible during construction and once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows.	Construction- Moderate Adverse Opening- Minor adverse Future- Minor beneficial	Planting of roadside hedgerows and trees	Construction- Minor Adverse Opening- Minor Beneficial Future- Moderate beneficial	Construction (2023) Slight Adverse. Short term views of construction works and removal of roadside vegetation Opening Year (2024) Slight beneficial: Views will remain similar to the existing situation but be improved mitigation planting Future Year (2039) Moderate beneficial: Planting as it matures will be noticeable and improve views from opening year.
R89	Views residential dwelling located to the south - distance 94pprox. 160m from the works.	Views north towards the N24 are generally open occasionally slightly restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land also	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction- Minor Adverse Opening- Minor Beneficial Future- Minor beneficial	Planting of roadside hedgerows and trees	Construction- Minor Adverse Opening- Minor Beneficial Future- Moderate beneficial	Construction (2023) Slight Adverse. Short term views of construction works and removal of roadside vegetation Opening Year (2024) Slight beneficial: Views will remain similar to the existing situation but be improved mitigation planting Future Year (2039) Moderate beneficial: Planting as it matures will be noticeable and improve views from opening year.



Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R90	Views residential dwelling located to the south - distance 95pprox. 120m from the works.	Views north towards the N24 are generally open occasionally slightly restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land also	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction- Minor Adverse Opening- Minor Beneficial Future- Minor beneficial	Planting of roadside hedgerows and trees	Construction- Minor Adverse Opening- Minor Beneficial Future- Moderate beneficial	Construction (2023) Slight Adverse. Short term views of construction works and removal of roadside vegetation Opening Year (2024) Slight beneficial: Views will remain similar to the existing situation but be improved mitigation planting Future Year (2039) Moderate beneficial: Planting as it matures will be noticeable and improve views from opening year.
R91	Views residential dwelling located to the south - distance 95pprox. 90m from the works.	Views north towards the N24 are generally open occasionally slightly restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land also	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction- Minor Adverse Opening- Minor Beneficial Future- Minor beneficial	Planting of roadside hedgerows and trees	Construction- Minor Adverse Opening- Minor Beneficial Future- Moderate beneficial	Construction (2023) Slight Adverse. Short term views of construction works and removal of roadside vegetation Opening Year (2024) Slight beneficial: Views will remain similar to the existing situation but be improved mitigation planting Future Year (2039) Moderate beneficial: Planting as it matures will be noticeable and improve views from opening year.
R92	Views residential dwelling located to the north- distance 95pprox. 60m from the works.	Views south / southeast towards the N24 restricted by intervening vegetation, buildings and effect of distance.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R93	Views residential dwelling located to the northwest – distance 95pprox. 90m from the works.	Views southwest towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land to the rear.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.



Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R94	Views residential dwelling located immediately northwest from the works.	Views southeast towards the N24 restricted by intervening buildings. Limited views to agricultural land and existing N24 to front of property.	Medium (already experience close proximity open views of the existing N24)	Intervening vegetation and buildings will screen views to the works as per the existing	Construction – slight negative. Opening / Future – None	None	Construction – slight negative. Opening / Future – None	Construction (2023) Slight Adverse. Short term views of construction works Opening Year (2024) Neutral – No 'additional' part of the works discernible. Future Year (2039) Neutral – No 'additional' part of the works discernible.
R95	Views residential dwelling located to the northwest – distance 96pprox. 190m from the works.	Views southwest towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land to the rear.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R96	Views residential dwelling located immediately north of the works.	Views south towards the N24 restricted by intervening vegetation. Views north to agricultural land, access road and housing.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R97	Views residential dwelling located to the north - distance 96pprox. 200m from the works.	Views south towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land also	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R98	Views residential dwelling located to the north - distance 96pprox. 160m from the works.	Views south towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land also	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R99	Views residential dwelling located to the north - distance 97pprox. 190m from the works.	Views south towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land also	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R100	View from a one off rural residential dwelling located adjacent to the N24 Road	Views to existing N24, agricultural land and along local access road.	Medium (already experience close proximity open views of the existing N24	The N24 road opposite the front of this property will be realigned with minimal encroachment towards the property. The existing access arrangements to properties will be retained. Limited existing vegetation will be removed in the immediate vicinity of the N24. The proposed section of the road will be visible during construction and once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows.	Construction- Minor Adverse Opening- Minor Beneficial Future- Minor beneficial	Planting of roadside hedgerows and trees	Construction- Minor Adverse Opening- Minor Beneficial Future- Moderate beneficial	Construction (2023) Slight Adverse. Short term views of construction works and removal of roadside vegetation Opening Year (2024) Slight beneficial: Views will remain similar to the existing situation but be improved mitigation planting Future Year (2039) Moderate beneficial: Planting as it matures will be noticeable and improve views from opening year.
R101	View from a one off rural residential dwelling located adjacent to the N24 Road	Views to existing N24, agricultural land and along local access road.	Medium (already experience close proximity open views of the existing N24	The N24 road opposite the front of this property will be realigned with minimal encroachment towards the property. The existing access arrangements to properties will be retained. Limited existing vegetation will be removed in the immediate vicinity of the N24. The proposed section of the road will be visible during construction and once mitigation planting matures the proposed road and traffic would be mostly screened by hedgerows.	Construction- Minor Adverse Opening- Minor Beneficial Future- Minor beneficial	Planting of roadside hedgerows and trees	Construction- Minor Adverse Opening- Minor Beneficial Future- Moderate beneficial	Construction (2023) Slight Adverse. Short term views of construction works and removal of roadside vegetation Opening Year (2024) Slight beneficial: Views will remain similar to the existing situation but be improved mitigation planting Future Year (2039) Moderate beneficial: Planting as it matures will be noticeable and improve views from opening year.
R102	Views residential dwelling located to the northwest – distance 97pprox. 290m from the works.	Views southeast towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.

Receptor	Types of View	View Description	Sensitivity (Opening year)	Predicted Impacts	Magnitude of Impacts (without mitigation)	Recommended Mitigation	Magnitude of Impact (with mitigation)	Significance of Visual Effect (with mitigation)
R103	Views residential dwelling located to the northwest – distance 98pprox. 400m from the works.	Views southeast towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R104	Views residential dwelling located to the northwest – distance 98pprox. 460m from the works.	Views southeast towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R105	Views from a group of residential dwellings located to the west – distance 98pprox. 460m from the works.	Views northeast towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.
R106	Views from a group of residential dwellings located to the west – distance 98pprox. 470m from the works.	Views northeast towards the N24 restricted by intervening vegetation, buildings and effect of distance. Views to agricultural land.	High (Existing Rural Views)	Intervening vegetation, buildings and effect of distance will screen views to the works	Construction / Opening / Future – None	None	Construction / Opening / Future – None	Construction (2023) Neutral – No part of the works discernible. Opening Year (2024) Neutral – No part of the works discernible. Future Year (2039) Neutral – No part of the works discernible.

## 16.9 Conclusions

Landscape mitigation measures (refer also to Landscape Mitigation drawings in Appendix H) will include: continuous planting of native species hedgerows and hedgerow trees alongside new boundary fencing, woodland and species rich grassland while also taking particular regard for clear zones, sightlines and safety implications (including potential effects of lighting, leaf fall and shade).

The principal impacts on landscape will be localised impacts which will occur along the length of the proposed road development, particularly in the vicinity of the embankments located over the L7416 (Grange Road) extending to heights of approximately 9.1m (At Ch 1510). Additional illumination is not a major feature of the proposed road development, nevertheless, the introduction of the road and its associated traffic will bring permanent change to specific locations within the offline section of the landscape corridor.

The proposed road development will also result in visual impacts as detailed in Table 16.2 above none of which however are deemed significant or profound.

To ensure successful establishment, a 5-year period of establishment landscape maintenance shall be undertaken after the installation of the capital works landscape scheme. If any plants die or are damaged during this period, they shall be replaced.

## SECTION 17: AGRONOMY

### 17.1 Receiving Environment

The Agronomy information was received from KCC. Agricultural lands impacted by the scheme are identified as follows.

- There are nine agricultural landowners that are actively farming lands affected by the scheme; and
- There are six agricultural landowners leasing lands which are affected by the scheme;

There are four occupiers of leased lands affected by the scheme that also own other lands affected by the scheme. There are two occupiers of leased lands affected by the scheme that do not own other lands affected by the scheme.

The parcels of land are currently being used for agricultural purposes including for dairy, beef, tillage and the curtilage of an orchard (the scheme does not affect any fruit trees). The total acquired land for the proposed scheme is 10.0347Ha.

This includes 9.6493Ha of permanently acquired land, which comprises of 7.1Ha agricultural land, 0.0251Ha stream/watercourse, 0.0011Ha curtilage from non-farm dwelling, 0.0084Ha from ruins of dwelling not fit for human habitation, 0.0761Ha of private road and 2.4386Ha of public road. In addition to this, there is 0.3384 Ha of land to be acquired for a permanent wayleave. This is set out in Table 17-1.

This also includes 0.047Ha of temporarily acquired land, which comprises of 0.0228Ha of agricultural Land, 0.0066Ha from stream/watercourse, 0.002Ha land from a non-farm dwelling and 0.0156Ha of Private Entrance. This is set out in the Table 17-2.

**Table 17-1: Total Permanently Acquired Land for the Proposed Scheme**

Type	Agricultural Land	Stream/ Watercourse	Curtilage – Non Agri Dwelling	Ruins of Dwelling	Private Road	Public Road	Wayleav e
Area (Ha)	7.1	0.0251	0.0011	0.0084	0.0761	2.4386	0.3384

**Table 17-2: Total Temporarily Acquired Land for the Proposed Scheme**

Type	Agricultural Land	Stream/ Watercourse	Land from Non-Farm Dwelling	–Private Entrance
Area (Ha)	0.0228	0.0066	0.002	0.0156

### 17.2 Impact Assessment

#### Construction Phase

The proposed scheme impacts fifteen agricultural landowners. The scheme does not impact the curtilage of a farm dwelling or farm yard.

Some of the land parcels may be negatively impacted during the construction phase of the development as access to lands could be potentially compromised in the short term. However, reasonable access suitable to the landowner/user will be maintained during the construction of the scheme until such time as the permanent access is provided.

A breakdown of all the land to be acquired that affects agronomy (i.e. agricultural lands only) is set out in Table 17-3.

**Table 17-3: Agricultural Land-Take**

Type	No. of Parcels	Area of Permanent Land-Take (Ha)	Area of Temporary Land-take (Ha)	Permanent Wayleave (Ha)	Total Area of Land-take (Ha)
Grass	13	6.7875	0.009	0.3384	7.1349
Tillage	1	0.2943	0	0	0.2943
Curtilage from Farm Dwelling	0	0	0	0	0
Curtilage from Farm Yard	0	0	0	0	0
Orchard	1	0.0182	0.0138	0	0.032
Total	15	7.1	0.0228	0.3384	7.4612

### Operational Phase

Land will be permanently acquired for the operation phase of the proposed scheme. A total of 30 No. individual agricultural land plots with a total area of 7.1Ha of land will be permanently acquired. From the permanent land acquired, 101pprox.. 17 No. land plots are used for dairy, 101pprox..10 No. land plots are used for beef farming, 2 No. plots for tillage and 1 No. plot is an orchard.

The following potential impacts apply during the operational phase, to the various land holdings that will be severed by the proposed scheme.

- Removal of treelines / hedgerows;
- Impact on existing water supply wastewater treatment;
- Reduction in acreage due to land take;
- Severance of land parcels;
- Severance of land from yard and animal handling facilities;
- Impact on existing access point;
- Impact on existing farm roadway and paddocking system;
- Impact on main access to dwelling house and farmyard; and
- Impact on farming operations.

## 17.3 Mitigation Measures

The following mitigation measures shall be included within the design to ensure that all severed agricultural lands are catered for in terms of connectivity throughout entire land holdings. Where applicable, the following are recommended for all of the 37 No. land plots, used for dairy, beef farming, maize tillage, orchard, being severed by the proposed scheme.

- Provide suitable access to the severed areas which will include allowance for daily movement of the dairy herd (where applicable);
- The farm infrastructure including farm / dwelling house access and/or roadway, water and power supply will need to be maintained and restored on the severed areas;
- The land drainage will need to be maintained and restored if affected;
- Ensure all of the lands remain stock proof;
- Provide animal handling facilities on severed area where the existing is not sufficient; and
- Access to be maintained throughout the construction phase for all landowners.



In general roadside fencing will be passively safe fencing in accordance with CC-SCD-00320/21 (RCD-300-20/21).

## 17.4 Conclusion

There will be an impact on a number of landholdings as a result of the proposed scheme; however, it is considered that these impacts can be mitigated through the implementation of the recommendations outlined in Section 17.3.

## SECTION 18: POPULATION & HUMAN HEALTH

### 18.1 Introduction

This section provides a description of the receiving environment with respect to population and human health and describes the potential impacts associated with the proposed scheme and proposed mitigation measures. This assessment has been prepared taking account of the findings of relevant chapters of this report, and the findings of a desk-based review of the following sources:

- Online Maps (2020); and,
- CSO (2020). Census 2016 SAPMAP Area: County Kilkenny.

### 18.2 Existing Environment

#### Collisions

As discussed in Section 3.4 Safety, the existing road on the section of the N24 under consideration has a restricted capacity due to its limited cross section and sub-standard alignment. These constraints contribute to the absence of overtaking opportunities and inconsistent traffic flow regimes on the route. There is a record of accidents arising on the stretch of road under consideration. The provision of an improved section of road, designed to contemporary standards and providing safe overtaking opportunities, will increase the overall consistency and efficiency of the route. The N24 Carrick Road Improvement Scheme will also provide safer journeys as well as more reliable and reduced journey times. Access, in terms of Vulnerable Road Users such as pedestrians and cyclists is quite limited, due to the existing road cross-section, with narrow raised verges and no hard shoulders. The provision of an improved section of road, designed to contemporary standards will provide safer access for VRUs.

#### Land use

The surrounding land-use of the proposed scheme has a number of rural houses dispersed along the proposed scheme, with a number of farming landholdings / properties within vicinity of the scheme.

#### Population

The proposed scheme is located partly within the Pollrone, Kilkenny electoral division. The population of this area in 2011 was reported as 1406. The population growth increased by 3.8% to 1461 in 2016 (CSO, 2020).

#### Air Quality

The baseline air quality within the vicinity of the proposed scheme is generally considered to be good based on the long-term air monitoring results carried out at 5no. Zone D locations; the urban locations of Castlebar, Enniscorthy and Claremorris (only for PM<sub>10</sub> monitoring) and the rural locations of Emo (only for NO<sub>2</sub> monitoring) and Kilkitt.

#### Noise

A survey comprising of one unattended and five attended survey locations was undertaken along the relevant portion of the existing N24. The results of the baseline survey confirm that properties along the existing road network experience traffic noise levels above 60 db Lden. Road traffic noise from the existing N24 was the primary noise contributor. Minor noise from a nearby site was a secondary contributor.

#### Water

The proposed scheme is located approximately 700m northeast of the River Suir which flows in a southerly direction where it discharges into the Waterford harbour. The proposed schemes also crosses an open watercourse, Skelpstown 16 stream that further discharges directly into the River Suir. There are no designated Source Protection Areas (SPAs) within the general vicinity of the scheme. The nearest SPA is Pilltown-Fiddown public water supply located approximately 7.5km to the northeast of the scheme.

The maximum depth of excavation is anticipated to be 1.7m bgl. If groundwater is encountered during excavations, then mechanical pumps will be required to remove the groundwater from sumps. Public water supply is generally supplied by 100mm diameter public water main.

### Land, Soils & Geology

The proposed scheme is located in lands which are predominantly (historically and currently) agricultural in nature, with small portions of made ground intercepted by the proposed scheme.

## 18.3 Impact Assessment

The proposed road will be utilised by all the local residents / workers within vicinity of the scheme, as well as the regular users of the road, including commuters and heavy goods vehicles (HGVs).

It is anticipated that there will be a positive, long-term impact on population and human health, as collision numbers will be reduced, public transport will be readily available along this stretch of road and journey times will be reduced for commuters and HGVs.

For the purposes of this report all residential properties and land holders within the vicinity of the proposed scheme are considered sensitive receptors with respect to potential changes in air quality and noise and vibration levels, land use and water (groundwater and surface water) quality and resources.

Following a review of the anticipated residual impacts of the proposed scheme on each of these environmental considerations (as detailed in previous chapters), the following impacts on human health and population have been considered during the construction and operational phases of the proposed scheme.

### Construction Phase

During the construction phase it is anticipated that the proposed scheme could potentially have negative impacts on the receiving environment i.e., local residents of the proposed scheme, as follows:

- The proposed scheme will impact a number of land holdings. These lands will be permanently changed in nature, impacting on access to, use of and maintenance of the landholdings and potentially agricultural practices. The proposed scheme has been designed in order to reduce the negative impacts on the landowners as much as is feasible.
- The results of the noise and vibration assessment have indicated that at distances of beyond 50m from the works, the construction daytime noise limit of 70 dB Laeq can typically be complied with for the scenarios assessed. At distances of up to 25m from the works, there is potential for the noise criterion to be exceeded in the absence of noise mitigation over and above the use of site hoarding. A small number of properties along the eastern end of the proposed road development are within 25m of the proposed works, hence the use of localised screening and the range of best practice mitigation measures set out in Section 9 and Appendix B: Noise & Vibration Impact Assessment Report will be employed if the construction noise limits are exceeded along the length of the scheme.
- There is the potential for some dust emissions to occur during the construction phase of the scheme. With the implementation of the mitigation measures which will form part of the second iteration of CEMP prepared by the contractor, dust impacts will be short-term and not significant and will pose no nuisance issue at nearby sensitive receptors.
- The proposed scheme is anticipated to have a minor impact on waste production. Any potential impacts on population and human health associated with waste production / removal will be minimised so far as possible via the implementation of a RWMP that will be prepared by the appointed Contractor prior to the commencement of construction works.
- The potential traffic impact during the construction phase is considered to have a short-term slight impact on the surrounding network. The implementation of the CTMP and active management of traffic generated by construction workers and deliveries will reduce these potential impacts.

## Operational Phase

During the operation phase of the proposed scheme, it is anticipated that there will be a number of potential impacts on the receiving environment, as follows:

- The embodied CO<sub>2</sub> emissions associated with the construction materials and their transport to site are considered insignificant in terms of Ireland's total annual GHG emissions. Construction stage climate impacts have been assessed to be short-term, negative, and imperceptible. Overall, during operation, the proposed scheme will have an imperceptible impact on air quality at all worst-case receptors assessed. As there are no predicted changes to the traffic flows along the proposed alignment when compared with the do-nothing scenario the predicted change in emissions is associated with increased vehicles speeds along the proposed alignment.
- Overall, during operation, the proposed scheme will have an imperceptible impact on air quality at all worst-case receptors assessed. There is a predicted improvement in air quality at the majority of receptors assessed due to the proposed alignment being further from the properties than the existing alignment. While this is considered a positive impact, it is overall imperceptible.
- The operational phase climate impact is considered long-term, negative, and imperceptible due to the proposed scheme. As there are no predicted changes to the traffic flows along the proposed alignment when compared with the do-nothing scenario the predicted change in emissions is associated with increased vehicles speeds along the proposed alignment.
- Land holdings will be impacted by the proposed scheme during the operational phase. Such impacts have been minimised so far as possible, within the design of the proposed scheme through the provision of accommodation works.
- The assessment has determined that, once operational, the noise impact associated with the new road alignment will result in a negligible to moderate negative impact during the long term period at some assessment locations. A number of locations experience a major positive noise impact as the proposed road scheme is at a greater distance than the existing road.

## 18.4 Mitigation Measures

In order to minimise, as far as possible, potential impacts on population and human health the mitigation measures / recommendations set out in the following sections will be implemented in full during the construction and operational phases of the scheme;

- Section 8 – Air Quality;
- Section 9 – Noise & Vibration;
- Section 10 – Land, Soils and Geology; and
- Section 11 – Water

## 18.5 Conclusion

It is anticipated that any potential impacts associated with population and human health will be mitigated with the implementation of all mitigation measures outlined in the various chapters of this report.

## SECTION 19: CONCLUSION

The proposed N24 Carrick Road Improvement Scheme accords with European, national and local planning policy and objectives.

The *EIA Screening Report* has concluded that the proposed development individually and cumulatively with associated existing and approved development will not result in the potential for significant impacts to arise on the environmental receptors as a result of the proposed development. As such it is concluded that an EIAR is not required.

It has been concluded in the NIS, *"The provisions of Article 6 of the 'Habitats' Directive 92/43/EC (2000) define 'integrity' as the 'coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and / or population of species for which the site is or will be classified'."*

*"The mitigation measures proposed are considered to be sufficient to ensure that impacts regarding water quality, noise and dust, disturbance and invasive species introduction are reduced to imperceptible in scale. From the evidence presented in the current assessment, it is concluded that provided all mitigation measures are adhered to, direct, indirect and cumulative impacts that may arise from the proposed road improvement works on the N24 in Co. Kilkenny will be avoided and therefore will not affect the integrity of the Lower River Suir SAC."*

### 19.1 Schedule of Environmental Commitments

A schedule of environmental commitments incorporating the mitigation measures from each chapter of the Planning Report, in addition to the mitigation measures identified in the NIS and EcIA, is included in Table 19-1 below.

### Table 19-1: Schedule of Environmental Commitments

Item Reference	Environmental Topic	Mitigation Measures / Recommendations	Construction Phase	Operational Phase
1	Air Quality and Climate	In order to minimise dust emissions during construction, a series of mitigation measures have been prepared. These follow recommendations contained in <i>Guidance on the Assessment of Dust from Demolition and Construction</i> (IAQM, 2014). Provided the dust minimisation measures outlined below are adhered to, the air quality impacts during the construction phase will not be significant. The measures which will be implemented will include:	✓	
		▪ Hard surface roads shall be swept to remove mud and aggregate materials from their surface while any un-surfaced roads shall be restricted to essential site traffic;	✓	
		▪ Any road that has the potential to give rise to fugitive dust shall be regularly watered, as appropriate, during dry and/or windy conditions;	✓	
		▪ Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads;	✓	
		▪ Vehicles using site roads shall have their speed restricted, and this speed restriction shall be enforced rigidly. On any un-surfaced site road, this will be 20 kph, and on hard surfaced roads as site management dictates;	✓	
		▪ Vehicles delivering material with dust potential (soil, aggregates) shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust;	✓	
		▪ Before entrance onto public roads, trucks shall be adequately inspected to ensure no potential for dust emissions;	✓	
		▪ Public roads outside the site shall be regularly inspected for cleanliness and cleaned, as necessary;	✓	
		▪ Material handling systems and site stockpiling of materials shall be designed and laid out to minimise exposure to wind. Water misting or sprays shall be used as required if particularly dusty activities are necessary during dry or windy periods;	✓	
		▪ Access gates to site shall be located at least 10 m from sensitive receptors where possible; and	✓	
		▪ Vehicles shall have engines switched off when stationary – no idling. Similarly, the use of diesel or petrol powered generators shall be avoided, and electricity or battery powered equipment shall be used when practical.	✓	
		At all times, these procedures will be strictly monitored and assessed by the site contractor. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust shall be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations. The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board shall also include head/regional office contact details. Community engagement before works commence on site shall be put in place, including a communications plan. All dust and air quality complaints shall be recorded and causes identified, along with the measures taken to reduce emissions.	✓	
		The embodied energy of construction materials is expected to be the dominant source of greenhouse gas emissions as a result of the construction phase of the development. Good practice to ensure emissions are reduced where possible is the prevention of on-site or delivery vehicles from leaving engines idling, even over short periods. Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site.	✓	
2	Noise and Vibration	The contract documents will clearly specify the construction noise criteria included in the Planning Report which the construction works must operate within. The Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures and comply with the recommendations of BS 5228-2009 +A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites, Parts 1 and 2 and the Noise and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001. These measures will ensure that:	✓	
		▪ No plant used on site will be permitted to cause an ongoing public nuisance due to noise;	✓	
		▪ The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations;	✓	
		▪ All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract;	✓	
		▪ Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers; and	✓	
		▪ Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use.	✓	



	<p>During the course of the construction programme, the contractor will be required to manage the works to comply with the limits detailed in <i>Guidelines for the Treatment of Noise and Vibration in National Road Schemes</i> (NRA/TII, 2004) and <i>Good Practice Guide for the Treatment of Noise during the Planning on National Road Schemes</i> (NRA/TII, 2014).</p>	✓	
	<p>In order to reduce operational noise levels at R018b it is proposed to introduce a noise barrier 1.25m high from chainage 1+040 to 1+100 on the northbound carriageway edge. The proposed mitigation measures consist of a noise barrier having a density of at least 10kg/m<sup>2</sup> and meeting category A3 in terms of absorptive characteristics as tested in accordance with BS EN 1793-1:2012 <i>Road Traffic Noise Reducing Devices. Test Method for Determining the Acoustic Performance Intrinsic Characteristics of Sound Absorption</i>.</p>	✓	✓
	<p><b>Selection of Quiet Plant</b></p> <p>The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item of plant will be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action will be to identify whether or not said item can be replaced with a quieter alternative.</p>	✓	
	<p>For static plant such as compressors and generators used at work areas such as construction compounds etc., the units will be supplied with manufacturers' proprietary acoustic enclosures where possible.</p>	✓	
	<p>The contractor will evaluate the choice of excavation, breaking or other working method taking into account various ground conditions and site constraints. Where possible, where alternative lower noise generating equipment that would economically achieve, in the given ground conditions, equivalent structural/ excavation/ breaking results, these will be selected to minimise potential disturbance.</p>	✓	
	<p><b>General Comments on Noise Control at Source</b></p> <p>If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source". This refers to the modification of an item of plant, or the application of improved sound reduction methods in consultation with the supplier or the best practice use of equipment and materials handling to reduce noise.</p>	✓	
	<ul style="list-style-type: none"> <li>Proposed techniques will also be evaluated in light of their potential effect on occupational health and safety. The following outline guidance relates to practical noise control at source techniques which relate to specific site considerations:</li> </ul>	✓	
	<ul style="list-style-type: none"> <li>For mobile plant items such as cranes, dump trucks, excavators and loaders, the installation of an acoustic exhaust and/or maintaining enclosure panels closed during operation can reduce noise levels by up to 10 dB. Mobile plant will be switched off when not in use and not left idling;</li> </ul>	✓	
	<ul style="list-style-type: none"> <li>For percussive tools such as pneumatic concrete breakers, noise control measures include fitting a muffler or sound reducing equipment to the breaker 'tool' and ensuring any leaks in the air lines are sealed and erection of localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries or other suitable forms of noise reduction;</li> </ul>	✓	
	<ul style="list-style-type: none"> <li>For all materials handling, the contractor will ensure that best practice site noise control measures are implemented including ensuring that materials are not dropped from excessive heights;</li> </ul>	✓	
	<ul style="list-style-type: none"> <li>Where compressors, generators and pumps are located in areas in close proximity to noise sensitive properties/ areas and have potential to exceed noise criteria, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation;</li> </ul>	✓	
	<ul style="list-style-type: none"> <li>Resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can be controlled by fixing resilient materials in between the surfaces in contact;</li> </ul>	✓	
	<ul style="list-style-type: none"> <li>Demountable enclosures can also be used to screen operatives using hand tools and may be moved around site as necessary; and</li> </ul>	✓	
	<ul style="list-style-type: none"> <li>All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.</li> </ul>	✓	
	<p><b>Screening</b></p> <p>A small number of properties along the eastern end of the proposed road development are within 25m of the proposed works, hence the use of localised screening and the range of best practice mitigation measures set out below will be employed to ensure the construction noise limits are not exceeded along the length of the scheme.</p>	✓	
	<p>Typically, screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to other forms of noise control. The effectiveness of a noise screen will depend on the height and length of the screen, its mass, and its position relative to both the source and receiver.</p>	✓	
	<p>The length of the screen should in practice be at least five times the height, however, if shorter sections are necessary then the ends of the screen will be wrapped around the source.</p>	✓	



**BARRY**  
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		<ul style="list-style-type: none"> <li>The construction management of the site shall take account of the recommendations of the CIRIA guide <i>Control of Water Pollution from Construction sites</i> (2001) to minimise as far as possible the risk of pollution;</li> <li>In the unlikely event that contaminated shallow perched water / groundwater is encountered during the construction phase, works will immediately cease. If groundwater is encountered during excavations, then mechanical pumps will be required to remove the groundwater from sumps. Advice will be sought from a qualified environmental consultant regarding the appropriate management of contaminated water, and any emergency containment measures required. Appropriate measures as set out under Section 10.4 (Land, soils and Geology) will be implemented;</li> <li>The following specific mitigation measures regarding temporary oil / chemical storage and refuelling shall be adhered to: <ul style="list-style-type: none"> <li>All oils, paints and varnishes stored on site will be kept in a locked and bunded area;</li> <li>Generators, pumps and similar plant will be placed on drip-trays to prevent contamination by oil;</li> <li>All site vehicles used will be refuelled in bunded areas at the site compound which is at least 50m from the Skeplstown stream;</li> <li>All temporary construction fuel tanks will also be located in a suitably bunded area and all tanks will be double skinned. In addition, oil absorbent materials will be kept onsite in close proximity to any fuel storage tanks or bowsers during proposed site development works;</li> <li>All deliveries to on-site oil storage tanks will be supervised;</li> <li>Records will be kept of delivery dates and volumes;</li> <li>All valves shall be of steel construction and the open and close positions shall be clearly marked;</li> </ul> </li> <li>The production, transport and placement of all cementitious materials shall be strictly planned and supervised. Uncontaminated U1 material can be reprocessed on site, within areas designated appropriate for stockpiling of materials as above, for reuse; unacceptable U2 type contaminated material will either be removed directly from site and brought to an existing licensed waste facility or stored temporarily within areas designated appropriate for stockpiling of materials as above, and then removed and brought to an existing licensed waste facility;</li> <li>Any mixing of concrete / cement or other materials required for the works will also be undertaken within the site compound, with all wash water and waste / grey water stored securely on site; and</li> <li>Any stockpiling of materials will be 50m back from any watercourses, with bunding and silt fences, the location for stockpiling of materials will be agreed before the project is finalised.</li> </ul> <p>A <i>Maintenance Plan for Surface Water Drainage Infrastructure</i> has been prepared (THRDO, 2022) which includes a description of all plans for management of surface water drainage infrastructure to be installed as part of the scheme, and the maintenance requirements for such infrastructure. This is attached in Appendix D.</p>	✓	
5	Material Assets	<p>A project Resource and Waste Management Plan will be prepared by the preferred contractor in accordance with Environmental Protection Agency's <i>Draft Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects</i> (2021) and Transport Infrastructure Ireland's, <i>The Management of Waste from National Road Construction Projects</i> (2017), in advance of commencing the works, as the proposed scheme likely exceeds the relevant thresholds for the preparation of such plans.</p> <p>All waste soils / material removed from site will need to be classified in accordance with EPA guidelines (2015); soils testing will be required; the results of which should inform the preparation of a waste classification tool (to determine the appropriate List of Waste (LoW) code), and then screened against relevant waste acceptance criteria (to determine the appropriate regulated disposal / recovery facility for each waste stream). All other construction waste shall be segregated and removed from site for disposal or recycling, in accordance with all relevant Waste Management Legislation.</p> <p>All waste-related control measures set out in Chapter 10 – Land, Soils and Geology will apply during the construction phase.</p>	✓	
6	Cultural Heritage (including Architecture & Archaeology)	<p>The mitigation measures are detailed in Section 4 of Appendix E. Detailed surveys of Cultural Heritage Sites identified below should be completed prior to the construction phase.</p> <ul style="list-style-type: none"> <li>CHS-30 comprises the Skeplstown Stream which extends under the N24 via a bridge / culvert feature (CHS-15). It is recommended that a pre-construction underwater/wading survey, to include a metal detecting survey, of the section of the stream within the scheme boundary, and this should incorporate a survey of the adjacent bridge / culvert to include a written, drawn and photographic record. These surveys should be carried out by a suitably experienced underwater archaeologist under licences issued by the NMS.</li> </ul>	✓	

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		<p>Landscaping shall be included in the works on the proposed scheme. Planting of native trees and hedgerows along the boundaries will be of benefit to bats in the local area, by enhancing the commuting and foraging habitat. Some sections of existing hedgerows in the surrounds of the scheme, along field boundaries and local lanes etc., may also be reinforced with planting of a native mix to enhance these features for bat commuting in the area.</p> <p><b>Lighting</b></p> <p>LED lighting is proposed for the improvement scheme extending from Mooncoin out to Store Road, a distance of c. 1.3km. Additional lighting shall follow <i>Bats &amp; Lighting: Guidance Notes for Planners, Engineers, Architects and Developers</i> (Bat Conservation Ireland, 2010). Light spill shall be minimised by using shields, masking or louvres. Light columns shall be kept as low as possible, with low height bollards preferred. Some light restrictions may be considered during dark hours, especially during the summer months when bats are active Motion sensor lights may also be considered.</p>	✓	✓
9	Landscape and Visual	<p>Landscape mitigation measures (refer also to Landscape Mitigation drawings in Appendix H) will include: continuous planting of native species hedgerows and hedgerow trees alongside new boundary fencing, woodland and species rich grassland.</p> <p>To ensure successful establishment, a 5-year period of establishment landscape maintenance shall be undertaken after the installation of the capital works landscape scheme. If any plants die or are damaged during this period they shall be replaced.</p>	✓	✓
10	Agronomy	<p>The following mitigation measures shall be included within the design to ensure that all severed agricultural lands are catered for in terms of connectivity throughout entire land holdings. Where applicable, the following are recommended for all of the 37 No. land plots, used for dairy, beef farming, maize tillage, orchard, being severed by the proposed scheme.</p> <ul style="list-style-type: none"> <li>Provide suitable access to the severed areas which will include allowance for daily movement of the dairy herd (where applicable);</li> <li>The farm infrastructure including farm / dwelling house access and/or roadway, water and power supply will need to be maintained and restored on the severed areas;</li> <li>The land drainage will need to be maintained and restored if affected;</li> <li>Ensure all of the lands remain stock proof;</li> <li>Provide animal handling facilities on severed area where the existing is not sufficient; and</li> <li>Access to be maintained throughout the construction phase for all landowners.</li> </ul> <p>In general roadside fencing will be passively safe fencing in accordance with CC-SCD-00320/21 (RCD-300-20/21).</p>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>
11	Population	<p>In order to minimise, as far as possible, potential impacts on population and human health the mitigation measures / recommendations set out in the following sections will be implemented in full during the construction and operational phases of the scheme;</p> <ul style="list-style-type: none"> <li>Section 8 – Air Quality;</li> <li>Section 9 – Noise &amp; Vibration;</li> <li>Section 10 – Land, Soils and Geology; and</li> <li>Section 11 – Water</li> </ul>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>



## Appendix A: Air Quality and Climate Impact Assessment 2022

Provided under separate cover.

## Appendix B: Noise and Vibration Impact Assessment 2021

Provided under separate cover.

## Appendix C: Stage 1 Flood Risk Assessment Report 2022

Provided under separate cover.

## Appendix D: Maintenance Plan for Surface Water Drainage Infrastructure 2022

Provided under separate cover.

## Appendix E: Archaeological, Architectural and Cultural Heritage Impact Assessment Report 2022

## Appendix F: Natura Impact Statement Report 2022, Appropriate Assessment Screening Report 2022 & Kilkenny County Council Habitats Directive Project Screening Assessment

Provided under separate cover.



## Appendix G: Ecological Impact Assessment Report 2022 & Bat Assessment Report 2022

Provided under separate cover.

## Appendix H: Landscape and Visual Drawings

Provided under separate cover.

## Appendix I: Environmental Impact Assessment Screening Report 2022 & Kilkenny County Council EIA Screening Determination

Provided under separate cover.

## Appendix J: Outline Construction Environmental Management Plan (OCEMP) 2022

Provided under separate cover.

## Appendix K: Scheme Feasibility & Route Options Report 2019

Provided under separate cover.

## Appendix L: Preliminary Design Report 2021

Provided under separate cover.



## Appendix M: Planning Application Drawings

Provided under separate cover.



General Arrangement Drawings (KK1613403-P3-GA-001 to KK1613403-P3-GA-008)

Departure Application Details (KK1613403-P3-DP-001)

Drainage Drawings (K K1613403-P3-DR-001 to KK1613403-P3-DR-008)

Layout of Proposed Silt Fencing at the Skelpstown Stream (KK1613403-P3-FE-001)

Proposed Lighting Extents (KK1613403-P3-LT-001)