Naas Inner Relief Road

Environmental Impact Assessment Screening Report

Doherty Environmental

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1.0 INTRODUCTION

Doherty Environmental Consultants (DEC) Ltd. was commissioned in 2017 by Kildare County Council to undertake an Environmental Impact Assessment Screening Report for the proposed Naas Inner Relief Road, Naas, Co. Kildare (see Figure 1.1 for location and Appendix 1 for proposed scheme drawings).

The findings of the EIA Screening assessment for the Naas Inner Relief Road are presented in this report.

1.1 PURPOSE OF THIS REPORT

This EIA screening report contains necessary information to enable the competent authority, in this case Kildare County Council, to undertake an EIA screening assessment and determine whether an EIA is required for the proposed road development. The findings of the EIA screening assessment are presented in this report and will inform the determination by Kildare County Council for the proposed Naas Inner Relief Road (to be referred to throughout this report as "the project").

The purpose of this Report is to determine whether or not the project is likely to have significant effects on the environment and, as such, requires an EIA to be carried out and an EIAR to be prepared. This Report provides an overview of the project (section 3), the existing baseline environment (section 4) and then assesses the potential environmental impacts and the mitigation measures to address same and the residual impacts (Section 5)..

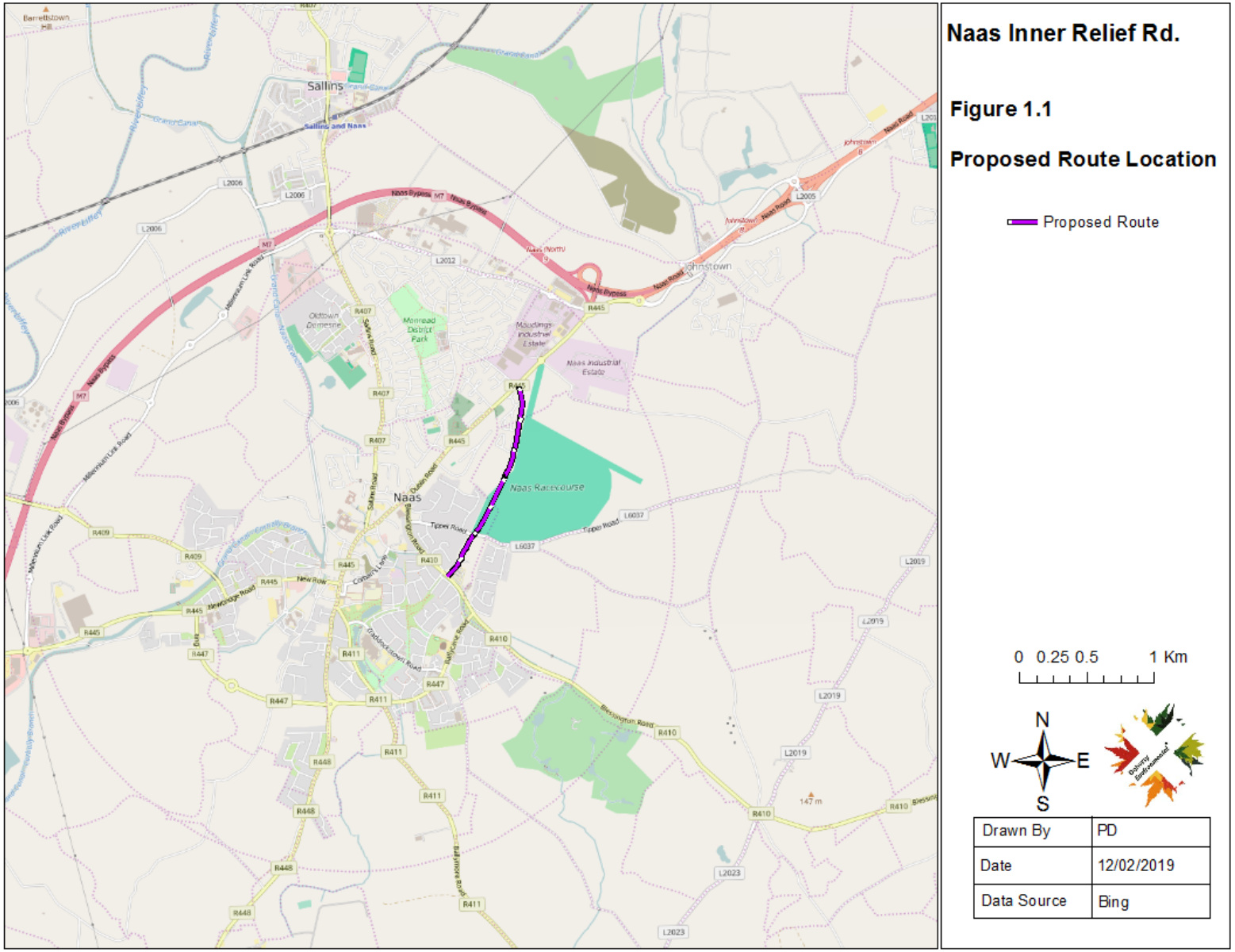
1.2 SPECIALIST INPUTS

The report has been compiled by Pat Doherty (BSc, MSc, MCIEEM) of DEC Ltd. and has been reviewed by Ruth Minogue (BSco Sci, MA, MCIEEM) of Minogue Associates. Specialist inputs have been relied during the assessment provided in this Report. Specialist inputs have been provided by:

- Clifton Scannell Emerson Associates in association with John Bligh & Associates for Material Assets

- Clifton Scannell Emerson Associates in association with Steer Consultants for Traffic Assessment;
- AWN Consulting Ltd for Land, Soils and Geology; Water & Hydrology; Noise; and Air & Climate
- DEC Ltd for Biodiversity assessment
- Austin Associates for Landscape and Visual Impacts;
- Corporate Health Ireland for Population and Human Health; and
- Archer Heritage Planning for Cultural Heritage assessments.

All of the contributors are experienced professionals, each with over 10 years of experience completing assessments in their respective fields of competency.


Naas Inner Relief Rd.
Figure 1.1
Proposed Route Location
Proposed Route
Sallins
Naas
Naas Racecourse
Johnstown
0 0.25 0.5 1 Km
N
W
E
S
Drawn By PD
Date 12/02/2019
Data Source Bing

1.3 BACKGROUND TO THE NAAS INNER RELIEF ROAD

In January 2004, RPS Consulting Engineers were commissioned by Kildare County Council to undertake the preliminary design for the proposed Naas Inner Relief Road located between the R445 Dublin Road and R410 Blessington Road based on Movements M28 and M29 of the Naas Development Plan (1999).

On the 27th of February 2006, the original Naas Inner Relief Road Scheme received full Part 8 approval in line with the Planning and Development Act 2000 and the Planning and Development Regulations 2001 Part 8.

Due to funding constraints, the original 2006 Part 8 Approval for the Naas Inner Relief Scheme did not progress any further.

In accordance with the Naas Town Development Plan 2011 - 2017, a new Roads objective RP04 has been identified and ultimately proposed. Under Section 7.8.4 'Roads Programme Objective', Roads objective RP04, the Naas Inner Relief Road objective would fall under the following statement;

'*To construct a distributor road linking the R445 Dublin Road to the Blessington Road via Tipper Road'*.

The proposed Naas Inner Relief Road scheme will be designed and constructed with the overall objective being to provide a functional piece of road infrastructure that all road users, including pedestrians and cyclists, will embrace and be ultimately attracted too when brought into full service.

1.4 PURPOSE OF THE NAAS INNER RELIEF ROAD

1.4.1 Planning Context

The development of a road link to the east of Naas town, between the R445 Dublin Road and the R410 Blessington Road has long been an objective of Kildare County Council. Roads Programme Objective "RP04" was identified in the Naas Town Development Plan 2011 – 2017, and subsequently in Table 6.1 "Priority Road and Bridge Projects" in the Kildare

County Development Plan (CDP) 2017-2023. It seeks 'To construct a distributor road linking the Dublin Road to the Blessington Road via Tipper Road'. The provision of the proposed Naas Inner Relief Road is supported by objective RSO5 of the CDP which states:

"Maintain corridors free from development to facilitate future roads, cycle facilities and other transport infrastructure improvement in order to facilitate road and bridge projects set out in Table 6.1, with the further progression of those road projects subject to assessment against the 'Principles of Road Development' criteria set out in Section 5.3.3 of the Transport Strategy for the Greater Dublin Area 2016-2035. Where the road project is an orbital road around a town centre, its development needs to be accompanied by and facilitate enhanced public transport, cycling and pedestrian facilities in the relevant centre, as required by Section 5.8.2 of the Transport Strategy for the Greater Dublin Area 2016-2035.

The Kildare County Development Plan 2017-2023 was subject to SEA and AA.

In relation to Objective RSO5 the SEA Environmental Report stated that potential adverse effects would be mitigated by the measures which have been integrated into the Plan (see Section 9) and any additional requirements arising through lower tier assessments or granting of permission.

The NIR of the draft CDP identified the provision of road schemes listed in the CDP, which include the proposed Naas Inner Relief Road as having the potential to result in habitat loss, disturbance to key species and changes to indicators of environmental quality. A range of objectives of the CDP were identified as having the potential to mitigate the potential impact of roads to European Sites. It is noted that a Screening Statement for Appropriate Assessment has been undertaken for the project and has concluded that the project is not likely, alone or in-combination with other plans or projects, to have a significant effect on any European Sites in view of their Conservation Objectives and on the basis of best scientific evidence and there is no reasonable scientific doubt as to that conclusion.

1.4.2 Objectives & Benefits of the Scheme

The objectives of the proposed Naas Inner Relief Road are as follows:

Economy: It is an objective of the Naas Inner Relief Road project to reduce traffic congestion on the R445 Dublin Road Corridor and provide connectivity to the existing Naas Outer Ring Road. The scheme also sets out to reduce journey times and improve journey time reliability. This will generate positive economic benefits to businesses and consumers. It is also an objective to support Smarter Travel objectives by providing a safe new road link for pedestrians, cyclists and buses within the town networks.

Safety: It is an objective of the project to provide improved road safety by delivering a road to the current standards and by removing traffic volumes from an existing road which has a large number of direct accesses thereby reducing the potential number of conflicting movements. The proposed road scheme shall be designed and constructed as an urban distributor road in accordance with the relevant current standards/guidelines. Consequently the number of direct accesses shall be limited thus reducing the potential for vehicular conflicts and conflict with vulnerable road users.

Physical Activity: It is an objective of the project to provide increased opportunity for the residents of Naas to engage in Physical Activity through the provision of high quality cycle and pedestrian facilities. This will assist in encouraging modal shift from vehicular traffic to healthier modes of travel such as walking and cycling.

The lack of cycling infrastructure along existing roads in the vicinity of the proposed scheme, including the R445 Dublin Road and R410 Blessington Road, is neither consistent with current policies of encouraging Smarter Travel, nor with the increasing trend among commuters to seek alternative active modes of travelling.

The proposed road supports Smarter Travel objectives by closely following the alignment of a proposed "Minor Greenway" as noted in the *Greater Dublin Area Cycle Network Plan* published by the NTA in 2013.

Environment: The large volume of slow moving traffic (and associated braking and accelerating due to congestion) in Naas Town has an adverse environmental impact on air quality and noise. It is anticipated that any scheme to remove traffic from Naas Town Centre and reduce congestion will reduce NO_2, CO_2 and particulate emissions along the main street in Naas and the existing R445 Dublin Road Corridor. The R445 Dublin Road Corridor and

R410 Blessington Road carry significant volumes of traffic. This impacts on the amenity of the town centre and negatively affects vulnerable road users (i.e. pedestrians and cyclists).

Accessibility & Social Inclusion: The proposed Naas Inner Relief Road project will improve road based transport at a local level by reducing congestion and improving safety along the R445 Dublin Road Corridor, Blessington Road. The road will be designed and meet the required standards to provide high quality infrastructure for all road users including the mobility impaired and those with other disabilities. The project will also address the objectives of the Kildare County and Naas Town Development Plans, National Spatial Strategy and the Transport Strategy for the Greater Dublin Area 2016 - 2035 to generally improve quality of life and improve accessibility to work, education and other activities for both motorised and non-motorised modes of travel.

Integration: It is an objective of the project to integrate with the surrounding National Secondary Road network and Regional Road network to minimise delays and journey times on these neighbouring routes. The proposed project is intended to improve access to the Naas Outer Ring Road and reduce traffic congestion on the R445 Dublin Road Corridor. The project will also allow Naas to expand and facilitate further housing development potential in the area, which would have positive economic implications.

The Naas Inner Relief Road has been approved for funding from the Local Infrastructure Housing Activation Fund. Together with the other benefits of the scheme outlined above, the scheme will facilitate future housing development in Naas.

2.0 LEGISLATIVE CONTEXT

Directive 2011/92/EU as amended by Directive 2014/52/EU (the EIA Directive) sets out the requirements for environmental impact assessment ("**EIA**"), including screening for EIA. Projects listed in Annex I of the EIA Directive require a mandatory EIA while projects listed in Annex II require screening to determine whether an EIA is required. The proposed development does not require a mandatory EIA under the provisions of the EIA Directive as it is not a project listed in Annex I.

The prescribed classes of development and thresholds or criteria that trigger the need for an EIA are set out in Schedule 5 of the Planning and Development Regulations, 2001, as amended. A review of the classes of development was carried out to determine whether the proposed development falls into any of the development classes which require an EIA. The proposed development does not fall into any of the classes described in Schedule 5 of the Planning and Development Regulations, 2001. The need for an EIA has therefore not been triggered under the requirements of the Planning and Development Regulations, 2001, as amended.

Section 50 of the Roads Act 1993 (as amended) outlines the requirements for EIA for "proposed road developments". An overview of the legislative requirements of section 50 of the Roads Act 1993 (as amended), and its applicability to Naas Inner Relief Road are outlined in Table 2.1 below.

Table 2.1: Screening for Mandatory EIA

Screening Question	Regulatory Reference	Response
Does the project comprise the construction of a motorway, busway or service area?	S.50(1)(a) of the Roads Act, 1993, as amended.	The proposed road development is not a motorway, busway or service area. This requirement for

		mandatory EIA is not triggered.
Is the project representative of a prescribed type of proposed road development consisting of the construction of a proposed public road or the improvement of an existing public road, where the prescribed types of road development comprise: • The construction of a new road of four or more lanes, or the realignment or widening of an existing road so as to provide four or more lanes, where such new, realigned or widened road would be eight kilometres or more in length in a rural area, or 500 metres or more in length in an urban area. • The construction of a new bridge or tunnel which would be 100 metres or more in length.	Article 8 of the Roads Regulations, 1994 (Road development prescribed for the purposes of S. 50(1)(a) of the Roads Act, 1993	The proposed road development does not involve the provision of a road of four or more lanes for a distance of 8km or more in a rural area or 500m or more in an urban area. The proposed development does not involve the construction of a bridge or tunnel. These requirements for mandatory EIA are not triggered.
Has a direction been issued by An Bord Pleanála (ABP) to the Road Authority to prepare an Environmental Impact Assessment Report (EIAR)?	S.50(1)(b) of the Roads Act, 1993	ABP has not directed the Road Authority (Kildare County Council) to prepare an EIAR for the proposed road development.
Where the road authority consider that the proposed road development would be	S.50(1)(c) of the Roads Act, 1993	Where Kildare County Council considers the proposed road development

likely to have significant effects on the environment it shall inform ABP in writing and where ABP concurs, it shall direct the road authority to prepare an EIAR?		would be likely to have significant effects on the environment, Kildare County council is to inform ABP in writing of this and await direction from the Board.
Is the proposed road development located on 'certain environmental sites' and has the road authority determined whether any significant effects are likely on the environment as a result?	S. 50(1)(d) of the Roads Act, 1993, as amended by reg. 56(7) of the European Communities (Birds and Natural Habitats) Regulations 2011)	No. An Appropriate Assessment Screening Report has been undertaken for the project and this Report concluded that the Naas Inner Relief Road will not have any likely significant effects, whether on its own or in combination with other plans or projects, on any European sites based on the best scientific evidence and taking into account the conservation objectives of the European sites.. The project will not have the potential to interact with or adversely effect the conservation status of any Natural Heritage Areas in the wider area surrounding the project site. The Grand Canal pNHA is located approximately 0.95km to the west of the project site. The project will not have the potential to interact with or adversely affect the conservation status of this pNHA or any other pNHAs occurring in the wider area surrounding the

		project site. No geological heritage sites are located in close proximity to the project site.

Pursuant to section 50(1)(c) of the Roads Act 1993 (as amended), Kildare County Council are required to turn their attention to whether the Naas Inner Relief Road is likely to have significant effects on the environment, such that an EIAR is required.

Section 50(1)(e) of the Roads Act, 1993 (as amended) states "Where a decision is being made pursuant to this subsection on whether a proposed road development would or would not be likely to have significant effects on the environment, An Bord Pleanála or the road authority concerned (as the case may be) shall have regard to the criteria specified for the purposes of article 27 of the European Communities (Environmental Impact Assessment) Regulations, 1989."

The purpose of this EIA Screening Report is to assist Kildare County Council in determining whether the Naas Inner Relief Road is likely to have significant effects on the environment.

According to European Commission Guidance (2017[1])

"Screening has to implement the Directive's overall aim, i.e. to determine if a Project listed in Annex II is likely to have significant effects on the environment and, therefore, be made subject to a requirement for Development Consent and an assessment, with regards to its effects on the environment. At the same time, Screening should ensure that an EIA is carried out only for those Projects for which it is thought that a significant impact on the environment is possible, thereby ensuring a more efficient use of both public and private resources. Hence, Screening has to strike the right balance between the above two objectives."

[1] Environmental Impact Assessment of Projects Guidance on Screening (Directive 2011/92/EU as amended by 2014/52/EU). European Commission 2017. Page 23.

Recent guidelines from the Department of Housing, Planning and Local Government (2018) [2] in relation to screening state:

"3.1. Screening is the initial stage in the EIA process and determines whether or not specified public or private developments are likely to have significant effects on the environment and, as such, require EIA to be carried out prior to a decision on a development consent application being made. A screening determination is a matter of professional judgement, based on objective information relating to the proposed project and its receiving environment. Environmental effects can, in principle, be either positive or negative.

3.2. Screening must consider the whole development. This includes likely significant effects arising from any demolition works which must be carried out in order to facilitate the proposed development. In the case of transboundary developments, screening must consider the likely significant effects arising from the whole project both sides of the boundary. A screening determination that EIA is not required must not undermine the objective of the Directive that no project likely to have significant effects on the environment, within the meaning of the Directive, should be exempt from assessment."

Annex III of the EIA Directive (as amended)/Schedule 7 to the Planning and Development Regulations 2001, as amended, lists the criteria for determining whether a project should be subject to EIA.

Annex IIA of the EIA Directive (as amended)/Schedule 7A to the Planning and Development Regulations, 2001, as amended, set out the information to be provided for the purposes of EIA Screening. The information set out in Schedule 7A is grouped together under 3 main headings:

Annex IIA requirements	Relevant section of this screening report

[2] **Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment**

A description of the proposed development, including in particular – a description of the physical characteristics of the whole proposed development and, where relevant, of demolition works, and a description of the location of the proposed development, with particular regard to the environmental sensitivity of geographical areas likely to be affected	Section 3 of this Report describes the characteristics of the project and provides an assessment against the criteria contained in Schedule 7A under this category heading
A description of the aspects of the environment likely to be significantly affected by the proposed development	Section 4 of this Report describes the aspects of the environment that may be affected by the proposed development
A description of any likely significant effects, to the extent of the information available on such effects, of the proposed development on the environment resulting from— (a) the expected residues and emissions and the production of waste, where relevant, and (b) the use of natural resources, in particular soil, land, water and biodiversity	Section 5 of this Report describes the characteristics of the project and provides an assessment against the criteria contained in Schedule 7A under this category heading.

During the assessment of the aspects of the environment likely to be significantly affected by the proposed development and the description of any likely significant effects on the environment current Transport Infrastructure Ireland (TII) assessment guidelines have been relied upon to inform these assessments. While it is acknowledged that the proposed Naas Inner Relief Road does not represent a national road scheme the various environmental assessment guidelines published by TII represent best practice guidance for the assessment of road schemes in Ireland. As such these guidelines have been relied upon during the preparation of this Screening Report.

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3.0 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

3.1 DESCRIPTION OF THE PROJECT

The proposed Naas Inner Relief Road connects the R445 to the R410. The approximate length of the proposed route is 1.60km. The proposed alignment passes through the housing estates of 'Racecourse Gate', 'The Gallops' and 'Kings Court'. Priority junctions are proposed as accesses to each of these housing developments. The proposed route has its centreline approximately 50m from the western boundary of the racecourse lands and intersects with Tipper Road 500m to the east of the existing junction with the R410 Blessington Road. It is proposed to provide a fully signalised skewed crossroads at this location with some widening of Tipper Road on approach.

The proposed route connects Tipper Road to the R410 Blessington Road on a new alignment of the 'Time House' Industrial Estate Road, slightly further east of the existing alignment. A new priority junction is proposed for the access to the east-west industrial estate road serving the two northern sites in the estate. The proposed route then connects to the R410 at a proposed upgraded signalised junction at the existing entrance to the IDA 'Time House' Industrial Estate, with upgrades to the R410 for 100m and 125m to the northwest and southeast respectively.

The proposed development comprises of a 6.5m carriageway, 2m footpath, 2m cycle track and 2m verge as described in Section 3 of this report. Other associated proposed works and improvements include:

- Improvement to existing signalised junctions
- New signalised junctions
- At-grade priority junctions
- Pavement
- Traffic signs & road markings
- Earthworks
- Drainage

- Public utilities
- Temporary Traffic Management

3.1.1 Technical Standards

The design has been prepared in accordance with the Design Manual for Urban Roads and Streets (DMURS) published by DTTAS & DoECLG in 2013 and the National Cycle Manual published by the National Transport Authority in 2011.

The technical standards contained in the NRA Design Manual for Roads & Bridges (NRA DMRB), which is an adaptation of the UK Design Manual for Roads & Bridges (UK DMRB) for Irish conditions has also taken into consideration when designing the road geometry. The NRA DMRB has been the prescribed technical standard for all national road schemes in Ireland since December 2000.

3.1.2 Design Speed

In accordance with Chapter 4.1.1 of the Design Manual for Urban Roads and Streets and due to the proposed route located in close proximity to Naas Town Centre, a 50km/hr speed limit is proposed to be imposed for the proposed road scheme, with design speed limit of 60km/hr.

3.1.3 Proposed Road Type and Mainline Cross-Section

Based on the 50km/hr speed limit, an 18.5m wide road footprint is proposed to facilitate the proposed road scheme which consist of the following design widths and their respective design parameters are outlined as follows:

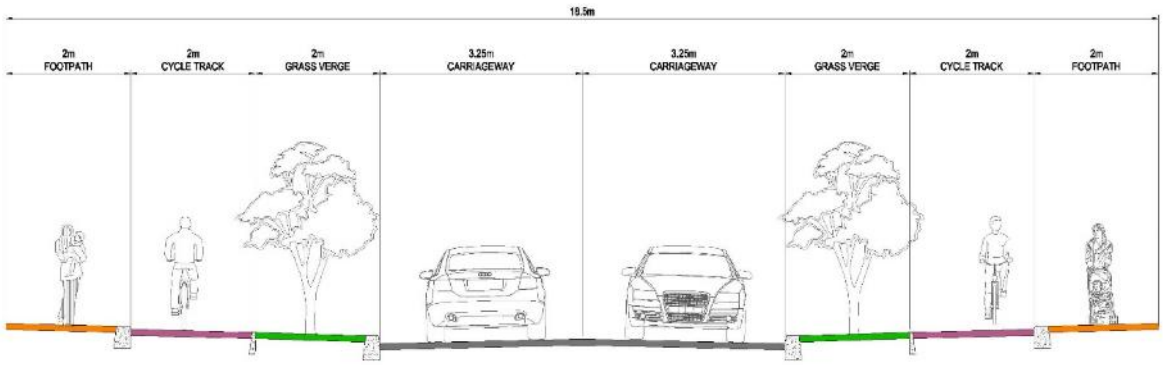

Figure 2.1: Proposed Road Cross Section

6.5m Carriageway

- 3.25m per lane
- In accordance with DMURS - Figure 4.55 - 'standard carriageway width for arterial and link streets, range for low to moderate design speeds' for the proposed 50km/hr speed limit
- Gradient = 1:40

2 m Footpath

- In accordance with DMURS - Figure 4.34
- 2m footpath width proposed according to function from lower/moderate activity to higher activity as development density increases.
- 2m Footpath - desirable space for two people to pass comfortably.
- Gradient = 1:40

2m Cycle Track

- In accordance with the NATIONAL CYCLE MANUAL, Chapter 1.7.2 'SEGREGATION' and Chapter 1.7.4 'GUIDANCE GRAPH' for 60km/h (85th Percentile) design speed (also see DMURS Figure 4.52).
- Gradient = 1:40

- In accordance with NATIONAL CYCLE MANUAL, Chapter 1.5.2 'WIDTH CALCULATOR', where:

  A 'Inside Edge - Kerb' = 0.25m

  B 'Single File + Overtaking, Partially using next lane' = 1.25m

  C 'Outside Edge - Raised kerb, dropped kerb or physical barrier' = 0.5m

  A + **B** + **C** = 2.0m

2m Verge

- In accordance with DMURS - Chapter 4.3.1 - 'on arterial and link streets with no on-street parking, a 1.5m to 2.0m wide grass verge is proposed to provide a buffer zone and to facilitate the planting of large street trees and items of street furniture'
- Continuation of existing tree line located on both sides of the existing The Gallops road.
- Future proof for potential access requirements to surrounding lands
- To provide protection of potential future service corridor

3.1.4 Surface Water & Drainage Design

An intrinsic element of the Naas Inner Relief Road (NIRR) scheme are the design elements that have been incorporated into the overall scheme for the management of surface water drainage from the road during the operation phase. The surface water drainage system for the road has been designed to provide managed and treated drainage of the proposed scheme that will meet a satisfactory performance throughout its design life. The principal functions of a road drainage system are:

- To prevent flooding of the carriageway by direct rainfall or by water flowing onto the road from adjoining footways, cycle tracks and/or properties;
- To avoid weakening of the sub-grade or pavement layers due to the presence of groundwater;
- To avoid erosion of side slopes on embankments and cut slopes;
- To facilitate the passage of watercourses through a scheme by constructing culverts or carrying out localised diversions.

- To provide safe driving conditions for all vehicles.

The proposed road drainage system will ensure that surface water drains quickly from the carriageway (including footway and cycle track Infrastructure) and is collected and conveyed to the nearest outfall in order to avoid localised flooding or ponding on the roads surface. The proposed drainage system will also ensure that groundwater is not permitted to infiltrate the sub-grade and pavement layers to the extent where it could cause a build-up of excess pore water pressure capable of undermining or weakening the proposed roads foundation. The water table must be maintained at an adequate level below the pavement at all times of the year. The proposed drainage system will also ensure that flooding of the proposed road by water from adjoining properties/lands is prevented by intercepting it with suitable drains and conveying it to a suitable outfall.

The Greater Dublin Strategic Drainage Study (GDSDS) mandates that Sustainable urban Drainage Systems (SuDS) proposals are implemented in order that the completed development run-off characteristics mimic the existing green-field as closely as possible. Appropriately designed, constructed and maintained SuDS are more sustainable than conventional drainage methods by: :

- reducing runoff rates, and reducing the risk of downstream flooding
- reducing the additional runoff volumes and runoff frequencies that tend to be increased as a result of urbanisation, and which can exacerbate flood risk and damage receiving water quality
- encouraging natural groundwater recharge (where appropriate) to minimise the impacts on aquifers and river base flows in the receiving catchment
- reducing pollutant concentrations in storm water, and protecting the quality of the receiving water body
- acting as a buffer for accidental spills by preventing direct discharge of high concentrations of contaminants to the receiving water body
- reducing the volume of surface water runoff discharging to combined sewer systems, and reducing discharges of polluted water to watercourses via Combined Sewer Overflow (CSO) spills
- contributing to the enhanced amenity and aesthetic value of developed areas

- providing habitats for wildlife in urban areas and opportunities for biodiversity enhancement.

The NIRR scheme will incorporate as many Sustainable Drainage Systems as feasibly possible to ensure that the above objectives are satisfactorily introduced and ultimately implemented within the lifetime of the proposed road scheme. At detailed design stage, the NIRR scheme will allow for the optimal SUDs design, within the existing constraints of the project footprint, to ensure the above objectives are achieved.

There are several types of drainage systems which are incorporated into the NIRR Road Scheme as follows:;

- **Sealed Drainage**: This drainage system collects, conveys and discharges carriageway/hardstanding surface runoff to a suitable outfall via sealed (impervious) conduits. A typical example of this type of drainage system is the kerb and gully drain.

- **Positive Drainage**: As sealed drainage is impervious, it does not drain to groundwater; therefore its use in cut areas should be combined with or accompanied by a filter drain. Where this system of drainage is used, it is imperative that it is designed so that road runoff is prevented from dissipating through the filter drains. As filter drains can also drain road runoff, the use of positive drainage should be restricted to areas that are sensitive to high concentrations of flow arising from road runoff such as Karst areas.

- **Combined Kerb and Drainage System**: Extremely versatile storm water drainage system that provides a unique, flexible and cost-effective solution for carriageways, junctions and roundabouts and traffic calming areas with a D400 loading class incorporated.

- **Sealed Manhole Chambers**: Sealed storm water chambers in accordance with TII Standard Construction Details - Series 500.

- **Flow Restricting Devices**: Hydro-brake flow restricting devices shall be introduced to convey allowable discharge rates in accordance with Qbar. Allowable discharge rates in accordance with Qbar (GDSDS - Typically 2l/s/Ha) will be generated for all catchment surfaces/areas.

- **Bypass Separators:** Petrol/Oil Bypass Interceptors shall be introduced down stream of hydro brake chambers prior to discharging/connecting into existing storm network/open channel watercourses located in close proximity.

- **StormTech Stormwater Management System**: All storm water runoff generated from the NIRR Road scheme footprint will ultimately discharge into several StormTech detention systems prior to discharging downstream, in a controlled manner, back into the nearest available existing watercourse/existing storm drainage system. StormTech chamber system provide the full AASHTO safety factors for live loads and permanent earth loads.

The design of the closed/sealed drainage system for the proposed NIRR Road scheme shall be used through the aid of XP Microdrainage software in accordance with the Modified Rational Method. XP Microdrainage is supported by both FSR and FEH rainfall data in the UK and Ireland. Pipe capacities are calculated by using the Colebrook-White equations. XP Microdrainage employs a full hydrograph method to design, size and test storage/attenuation systems in accordance with BRE 365, Sewers for Adoption, CIRIA guidance and the Building Regulations. The analysis of each storm network, including attenuation/storage, is analysed using automatic storm generation of both FSR and FEH rainfall from 15 minutes (summer/winter) to 7 days duration and return periods of up to 1000 years in the UK and Ireland.

All the above is designed in parallel and in accordance with the Greater Dublin Strategic Drainage Study (GDSDS), the 2010 Building Regulation - Technical Guidance Document H, the SuDS Manual, the TII Design of 'earthworks drainage, network drainage, attenuation and pollution control' DN-DNG-03066 and all other relevant drainage standards and guidance documents available at the time of design.

3.2 SIZE & DESIGN

The proposed development consists of the provision of a new road carriageway and associated works. A description of project is presented in Section 3.1. The extent of the scheme is presented in Figure 3.1.

3.3 CUMULATION WITH EXISTING AND/OR APPROVED PROJECTS

An assessment of the project's potential to combine with other existing and/or approved projects to result in likely significant effects on the environment is provided in Section 5.12 of the report.

3.4 NATURE OF ANY DEMOLITION WORKS

No demolition works are proposed as part of the project.

3.5 USE OF NATURAL RESOURCES

Aside from the materials required for the construction phase, the project will not require the use of any other natural resources. The construction phase will require the removal of soil to facilitate the construction of the proposed carriageway. Where possible this material will be reused on-site during the detailed design and construction of the carriageway. Where such soil material is required to be transported off-site to an authorised disposal facility, the transport of all material will be undertaken in line with mitigation measures outlined in Section 5.6.2 and 5.7.2 of this Screening Report. This measures aim to ensure that the project does result in nuisance as a result of emissions to air and noise. The implementation of these measures will ensure traffic movements associated with the transport of soil material from the site do not result in likely significant effects on the environment.

No groundwater or surface water from surrounding resources will be required during the construction or operation phase of the project.

3.6 PRODUCTION OF WASTE

Solid inert waste in the form of soil and stone along with other waste such as plastic wrapping and wood pallets will be produced during construction. Materials will be only ordered as required. Any wastes from the construction process will either be reused within the scheme, or recycled/disposed of at an authorised waste facility.

3.7 POLLUTION & NUISANCE

Pollution and nuisance that could arise as a result of the project relate to residues and emissions generated during the construction and operation phase. Examples of potential residues include the contamination of soils and waters with polluting materials. Potential emissions include:

- the discharge of polluted surface water runoff to receiving surface waters and groundwaters;

- the generation of noise and vibration during the construction and operation phase;

- the generation of aerial emissions such as dust during the construction phase;

- the generation of aerial emissions such as exhaust emissions during the operation phase.

Section 5 of this Screening provides an assessment of the significance of potential pollution and nuisance sources associated with the project.

3.8 RISK OF MAJOR ACCIDENTS AND/OR DISASTERS

The potential for the construction phase of the project to result in major accidents and/or disasters is low. This is based on the relatively small-scale nature of the project and the recognised risks associated with construction projects involving machinery, excavations, working from height and enclosed areas and working with bulk materials etc. Provided standard health and safety procedures are adopted, implemented and complied with the risk of major accidents and/ or disasters during the construction phase will be low. The implementation of all standard health and safety procedures will be requirement of the contractor during the construction phase.

It is an objective of the Naas Inner Relief Road project to reduce the frequency and severity of collisions in Naas, with a focus on improving safety for vulnerable road users.

The design of the proposed road scheme includes for the provision of a closed/sealed surface water drainage system during both the construction phase and operation phase. This system will provide the opportunity to monitor and treat all surface water draining from the road corridor and will provide measures to ensure that only effectively treated surface water is discharged from the road scheme.

As outlined in Section 3.1.4 the proposed road scheme has been designed to prevent flooding along the proposed route corridor.

During the operation phase of the proposed Naas Inner Relief Road the risk of accidental spillage and subsequent discharge of potentially polluting material to the Morell or Castlesize will be low. This is based on:

- the low speed limit of 50kph that will apply;
- the low risk of heavy good vehicles (HGVs) accidents given the low speed limit and design layout of the road in accordance with DMURS. It is noted that the risk of accidental spillage and a pollution incident on any road is proportionate to the risk of a HGV road traffic collision (TII, 2015).
- The design and provision of the proposed road, which aims to support the Road Safety Authority (RSA) Road Safety Strategy 2013 – 2020 by alleviating the congestion currently experienced on Naas Town Centre is anticipated to result in a reduction in collisions in the surrounding road network.

3.9 RISK TO HUMAN HEALTH

An assessment of the risk to human health is provided in Section 5.2 of this screening report.

4.0 LOCATION OF THE PROPOSED DEVELOPMENT

4.1 POPULATON & HUMAN HEALTH

The recorded population of Naas Town and its surrounding rural area has experienced growth between the 2006 Census and the 2011 Census and again to the 2016 Census. The Central Statistics Office (CSO) has divided Naas Town into two individual districts when classifying the population, these are 'Naas Urban' and 'Naas Rural'. Table 4.1 below shows the available 2006, 2011 and 2016 census information.

Table 4.1: 2006, 2011 and 2016 Population Census Information

District	2006 Census (Persons)	2011 Census (Persons)	2016 Census (Persons)	% Change in Population 2006 – 2011	% Change in Population 2011 – 2016
Naas Urban	20,044	20,573	21,393	2.6%	4.0%
Naas Rural	74,142	83,931	N/A	13.2%	N/A
Total	94,186	104,504	N/A	10.95%	N/A

The population growth for Naas (Urban) between the 2006 and 2016 Censuses was 6.73%.

The total population growth for Naas (Rural and Urban) was 10.95% between the years 2006 and 2011. The population growth experienced by Naas town and the surrounding rural area is considered to be slightly lower than the population growth for County Kildare as a whole, which was 12.7% for the same recorded period.

4.1.1 Community Facilities & Amenities

Naas Racecourse and its associated open space and amenity lands form a large portion of the study area. Further details on this facility are provided in Section 4.8 below.

There are other open space and amenity areas in the vicinity of the study area such as the river park at the junction of Ballycane Road and Blessington Road and the Craddockstown Golf Course to the south east of the study area.

In terms of potential sensitive receptors for human beings to environmental effects, such as noise, air quality and dust the following summarised the approach.

Sensitive Receptors

Based on the "Draft Advice Notes for Preparing Environmental Impact Statements issued by the EPA" (EPA, 2017), the following types of sensitive receptors should be noted in particular during impact assessment:

- homes;
- hospitals;
- hotels and holiday accommodation; and
- schools and rehabilitation workshops.

The principal sensitive receptors within the environs of the study area include residential properties to the west of the project area.

4.1.2 Noise & Human Health

WHO Guideline

In 2018 the WHO issued updated guidelines Environmental Noise Guidelines for the European Region. They issued specific guidelines for road noise. They can be summarised as follows

For average noise exposure, they recommend reducing noise levels produced by road traffic below 53 decibels (dB) Lden, as road traffic noise above this level is associated with adverse health effects.

For night noise exposure, they recommended reducing noise levels produced by road traffic during night time below 45 dB Lnight, as night-time road traffic noise above this level is associated with adverse effects on sleep.

They specifically recommend "To reduce health effects," the GDG (Guideline Development Group) strongly recommends that policymakers implement suitable measures to reduce noise exposure from road traffic in the population exposed to levels above the guideline values for average and night noise exposure. For specific interventions, the GDG recommends reducing noise both at the source and on the route between the source and the affected population by changes in infrastructure.

One might ask how one can reconcile these guidelines with road traffic anywhere? The fact is that these guidelines are for populations. The WHO absolutely realise that every individual residence will not be below 45dB Lnight. However the question in relation to the assessment of the impact on health will be determines by the overall impact on the population.

Vibration

Vibration has the potential to have health effects when perceptible. These could include for example sleep disturbance. Another issue which is sometimes described is infrasound. The latter is sound but at a frequency so low that it is not audible to the human ear. If at high levels it may be perceived as vibration. These effects, in relation to vibration and infrasound, however only occur when the levels are high and perceptible to human beings for example an underground train.

4.1.3 Air Quality & Human Health

An examination of recent EPA and Local Authority data in Ireland [3] [4] has indicated that SO_2 and smoke are unlikely to be exceeded at the majority of locations within Ireland and thus these pollutants do not require detailed monitoring or assessment to be carried out. However, the analysis did indicate potential issues in regards to nitrogen dioxide (NO_2), PM_{10} and $PM_{2.5}$ at busy junctions in urban centres. Benzene, although previously reported at quite high levels in urban centres, has recently been measured at several city centre locations to be well below the EU limit value. Historically, CO levels in urban areas were a cause for concern. However, CO concentrations have decreased significantly over the past number of years and are now measured to be well below the limits even in urban centres. The key pollutants reviewed in the assessments are NO_2, PM_{10}, $PM_{2.5}$, benzene and CO, with particular focus on NO_2 and PM_{10}.

As part of the implementation of the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002), four air quality zones have been defined in Ireland for air quality management and assessment purposes. Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone

Appropriate Standards

[3] EPA (2019) EPA Website: http://www.epa.ie/whatwedo/monitoring/air/

[4] EPA (2018) Air Quality Monitoring Report 2017 (& previous annual reports 2012-2016)

In order to reduce the risk to health from poor air quality, national and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values or "Air Quality Standards" are health or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit value which is set. Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland include the Air Quality Standards Regulations 2011, which incorporate EU Directive 2008/50/EC, which has set limit values for NO_2, PM_{10}, $PM_{2.5}$, benzene and CO (see Table 4.2).

The concern from a health perspective is focussed on particles of dust which are less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$) and the EU ambient air quality standards outlined in Table 4.2 have set ambient air quality limit values for PM_{10} and $PM_{2.5}$.

With regards to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland. Furthermore, no specific criteria have been stipulated for nuisance dust in respect of this development.

With regard to dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) sets a maximum permissible emission level for dust deposition of 350 mg/(m^2*day) averaged over a one year period at any receptors outside the site boundary. Recommendations from the Department of the Environment, Health & Local Government[(2)] apply the Bergerhoff limit of 350 mg/(m^2*day) to the site boundary of quarries. This limit value can also be implemented with regard to dust impacts from construction of the proposed development.

Table 4.2: Limit values of CAFE Directive 2008/50/EC

Pollutant	Limit Value Objective	Averaging Period	Limit Value ug/m3	Limit Value ppb	Basis of Application of the Limit Value	Limit Value Attainment Date

NO_2	**Protection of human health**	**1 hour**	**200**	**105**	**Not to be exceeded more than 18 times in a calendar year**	**1 Jan 2010**
NO_2	**Protection of human health**	**calendar year**	**40**	**21**	**Annual mean**	**1 Jan 2010**
PM10	**Protection of human health**	**24 hours**	**50**		**Not to be exceeded more than 35 times in a calendar year**	**1 Jan 2005**
PM10	**Protection of human health**	**calendar year**	**40**		**Annual mean**	**1 Jan 2005**
PM2.5 -	**Protection of human health**	**calendar year**	**25**		**Annual mean**	**1 Jan 2015**
Carbon Monoxide	**Protection of human health**	**8 hours**	**10,000**	**8620**	**Not to be exceeded**	**1 Jan 2005**
Benzene	**Protection of human health**	**calendar year**	**5**	**1.5**	**Annual mean**	**1 Jan 2010**

Potential Health Impacts from Air

In 2010, the Health Effect Institute (HEI) Panel in the US, in a study partially funded by the US EPA on the Effects of Traffic-Related Air Pollution, concluded that exposure to air

pollutants specifically from roads is likely to be associated with all-cause mortality[5], cardiovascular disease incidence and mortality, and reduced lung function, albeit with weaker evidence (due to fewer and smaller studies) than the wider air pollution health evidence base.

The WHO published a review in 2005 of the health effects of transport-related air pollution which concluded that health effects include increased cardiopulmonary mortality risk and respiratory morbidity risk.

Since 2013, the International Agency for Research on Cancer (IARC) defines diesel engine exhaust as carcinogenic to humans. Petrol engine exhaust is classified by IARC as possibly carcinogenic, as there is inadequate evidence to form a firmer conclusion.

A relatively recent article by Chen et Al published in the Lancet in early 2017 showed a small (7%) increase in the incidence of dementia in those living less than 50 meters from major roads but no increase in the incidence of Multiple Sclerosis or Parkinson's disease. The authors postulated that increased levels of $PM_{2.5}$ and NO_2 may be associated factors. However, there were important limitations on the study as the study was based in Ontaria, Canada where major roads would include very busy highways and trunk roads. Perhaps the most significant criticism of the study was that the authors could not control adequately for socio-economic effects. Socio-economic effects are related to the incidence of dementia. If the individuals living within 50 metres of major roads in Ontario were of lower socio-economic status than those living further away this might explain the relatively small effect. Overall while further studies are recommended one can draw relatively little from this one study.

While there are some difficulties making comparisons between the impact of road building in say China, far more relevant information can be gleaned with similar projects within Ireland while being conscious of international published data. This is due to the fact that the baseline environment in densely populated counties such as China, which currently includes polluted air quality in its baseline, is not comparable to that of Ireland.

[5] **This is mortality from all causes e.g. cancer, heart, lung etc.**

The 2014 publication from the OECD The Cost of Air Pollution, The Health Impacts of Road Transports points out that while the health impacts of air pollution in western countries is decreasing, that it is increasing in countries like China and India. It is more important for us in Ireland to consider the data from this country and similar countries.

While it is now 13 years old, an important document in Ireland was the Health Impacts of Transport, a Review published in March, 2005 by the Institute of Public Health in Ireland. This remains the most recent publication from this body on this subject.

The document reviews the elements of health impacts of transport. It originated as part of the transport HIA in Ballyfermot organised by the Eastern Regional Health Authority and proceeds from the Institute's strategic objective to strengthen the capacity of those working for public health.

In the Executive Summary they stated:

"*the effect of air quality on human health has been extensively researched and expert opinion is available in this area. Currently, evidence is strongest for air pollution as a cause for short-term health problems in certain groups such as the elderly and those with underlying health problems such as heart or lung disease. Longer term health impacts are suspected to result from certain components of air pollution. However, it has been difficult to ascribe a cause and effect with certainly. Traffic is a leading source of air pollution and any issues which would reduce traffic volume can have potential benefits to health by improving air quality. Vehicle speeds is also a factor warranting consideration. Low average speeds such as those on congested routes are less efficient in the use of fuel and result in greater pollution emissions.*"

It can be concluded that the principal of moving traffic to a road with higher average speeds has actually a potential benefit on health.

It is important in these areas to consider the baseline environment. The EPA Air Quality Index shows that the air quality in Naas is very good.

4.2 BIODIVERSITY

The proposed Naas Inner Relief Road is not subject to any statutory nature conservation designation. A total of 7no. European Sites have been identified in the surrounding 15km of the proposed road. These European Sites and their distance from the proposed road are listed in Table 4.3 below.

Table 4.3: European Sites within 15km of the Proposed Road

European Sites	Distance
Mouds Bog SAC	9.1km to the west
Pollardstown Fen SAC	12.7km to the west
Ballynafagh Lake SAC	10.5km to the northwest
Ballynafagh Bog SAC	10.6km to the northwest
Red Bog SAC	7.7km to the southeast
Wicklow Mountain SAC	12.6km to the southeast
Poulaphouca Reservoir SPA	9.3km to the southeast

In addition to the above European Sites a further four European Sites are located downstream from the proposed road. These comprise the European Sites located at Dublin Bay and are as follows:

North Dublin Bay SAC

North Bull Island SAC

South Dublin Bay River Tolka Estuary SPA

South Dublin Bay SAC.

The distance between the proposed road and these European Sites is over 50km downstream along the River Liffey catchment.

The proposed Naas Inner Relief Road is located immediately to the east of Naas town centre. The land-cover within and adjacent to the footprint of the proposed road corridor is dominated by improved grassland (GA1 & GA2) and arable land (BC1). Areas of built land in the form of residential housing occur to the west, southwest and north of the alignment. Naas Racecourse, which is dominated by amenity grassland habitat (GA2) occurs to the east of the alignment. Scattered trees occur within the parkland amenity grassland along the southern section of the proposed road corridor between the Tipper Road and the R410 Blessington Road. The grassland, arable land and built land habitats occurring along the proposed route are representative of habitats of local importance (lower conservation value, Rating E as per TII guidelines (NRA, 2009[6]).

The proposed route corridor passes through an area that supports high levels of human activity. During ecological surveys along the proposed route corridor no rare or protected mammal species were identified as occurring along the proposed route corridor. Previous records are held by the National Biodiversity Data Centre (NBDC) for the presence of hedgehog, badgers, Irish hare and otter in the wider area surrounding the project site. Records are also held for the presence of Daubenton's Bat along the proposed route corridor. Other bat species recorded in the wider area surrounding the project site include Common pipistrelle, Soprano pipistrelle and Leisler's bat, all of which are common and widely distributed throughout Ireland. No potential bat roosts occur along the proposed route corridor. Commonly occurring song birds are associated with parkland trees and hedgerow vegetation occurring to the west of the project site.

[6] NRA (2009). Guidelines for Assessment of Ecological Impacts of National Road Schemes.

The proposed route corridor occupies a low lying and flat landscape with little change in altitude throughout. The elevations within the study area range from 90m to 100m OD Malin. The route alignment is located within the River Liffey catchment and hydrometric area No. 9.. The sub-catchments occurring in the area surrounding the project footprint include the River Morell (sub-basin site code: Morell_020) and a sub-catchment of the River Liffey (sub-basin site code: Liffey_120) which includes the Castlesize River.

The nearest point of the Morell River to the project site is located approximately 800m to the east. From a review of the EPA *Envision* Database, the most up to date status of the Morell River at the nearest monitoring stations to the project is *'Poor' to 'Good'*. There are two monitoring points along the Morell River. The upstream monitoring point at South Br West of Tipper House has a Q-value of 3-4 (moderate to good). The downstream monitoring point at a bridge near Fishery Lane has a recent Q-value of 4 (good). The Morell River is a tributary of the River Liffey and the confluence of these watercourses is located approximately 10km downstream of the proposed Naas Inner Relief Road surface water discharge point.

A review of Catchments.ie database indicates that the water quality of the River Morell recorded between 2010 and 2015 was poor along its stretch downstream of the proposed discharge point and the M7 overbridge at Johnstown. Downstream of Johnstown the water quality of the river improves to moderate, while the lower stretch of the river between the railway over bridge and its confluence with the River Liffey has been classified as good water quality. The Water Framework Directive water quality status for the Morell River between the project's proposed discharge point and Irish Rail crossing to the north has been assessed as being At Risk. The remaining section of the river between the Irish Rail crossing and the confluence of the River Liffey has been assessed as being Not At Risk.

The Morell River is known to support otters, with evidence of this species being recorded downstream of the project site (RPS, 2017[7]). This watercourse is also an important salmonid

[7] RPS (2017). Morell River Flood Management Scheme. Environmental Impact Assessment Report.

fishery and supports significant populations of Atlantic Salmon, Sea Trout, Brown Trout, Lamprey and White-Clawed Crayfish. The IFI stated that the Morell is "hugely important in that it provides a valuable salmonid spawning and nursery habitat contribution to the Liffey main channel" (RPS, 2017).

The only watercourse occurring along the project's route alignment is the Castlesize River to the south of the alignment. This river is culverted at the southern end of the proposed road corridor. No baseline water quality information is available for this watercourse. This river drains to the River Liffey, the nearest point of which is located approximately 4.7km downstream. This watercourse is known to support brown trout and stickleback. Due to the culverted sections of this watercourse in the vicinity of the project site it is of sub-optimal habitat for supporting otters. Prior to draining the River Liffey the Castlesize River first drains into the southern end of an artificial pond, approximately 1.6km downstream of the project site. The Castlesize then discharges from this pond at its northern end and drains to the River Liffey. The overall Water Framework Directive water quality status for the Liffey Catchment downstream of the project site is assessed as being at Moderate status. The Liffey Catchment drains to the Liffey Estuary and Dublin Bay. The overall Water Framework Directive water quality status of the transitional waters at Dublin Bay is assessed as being at Good status.

4.3 LAND, SOILS & GEOLOGY

The topography of the study area is generally flat. Elevation slightly changes from approx. 103m OD on the Blessington Road in the southeast of the study area, up to a ridge around Tipper Road West of approx. 107m OD and down to approx. 86m OD on the mainline of the M7 at Junction 9. There are some troughs which relate to the hydrological environmental and tributary channels flow. Land use of this region is predominantly agricultural land, apart from the town of Naas which is depicting on the GSI soil mapping as urban made ground. Overall, this whole area is underlain by glacial deposits and glacial tills, with alluvium mapping the river beds. The subsoil thickness varies from north to south. However, based on a review of the GSI aquifer vulnerability maps for the area, it is assessed that the subsoil is generally not greater than 10 metres in thickness, with exposed rock in places.

4.3.1 Bedrock Geology

The bedrock geology of the area consists predominately of interbedded limestones with shale and mudstone.

The northeastern end of the Quinagh Formation extends into the southwestern portion of the study area. The Quinagh Formation is made up of shale, sandstone & thin limestone from the Carboniferous Era.

The Ballysteen Formation underlies the majority of the study area and comprises of dark-grey bioclastic limestone and subsidiary shale from the same era.

The Carrighill Formation underlies the southern and southeasterly portion of the study area. The Carrighill Formation is made up of deep marine turbidite sequence; mudstone, greywacke & conglomerate.

4.3.2 Geological Heritage Sites and Protected Habitats

There are no recorded geological heritage sites in the close proximity to the study area. The nearest geological heritage sites are located in Blessington, approximately 6 km to the south-east. These are the Slate Quarries (site code: KE0004) which are a series of quarries on a hillside and the Blessington Delta (site code: WW012) which attributes to a large accumulation of sands and gravels which has been quarried extensively.

4.3.3 Historic Landfills and Illegal Dumping

A review of EPA data on waste licence and unlicensed sites has confirmed that there are no known historic landfills or illegal landfills in the area of the study area.

4.3.4 Quarrying

There are no quarries in the close vicinity of the study area. The nearest quarries are the Cemex Walshetown quarry just to the east of Punchestown Racecourse, approx. 3.5km southeast of the Study Area and in Blessington, approximately 5 km south-east of the Study Area. The quarry is Dillonstown quarry (site code: WW003) which supplies washed pebbles for drainage, washed sands for construction and concrete.

4.4 WATER

4.4.1 Hydrogeology

This section provides information on the hydrogeological environment as compiled by AWN Consulting Ltd. In the Naas region, the aquifer is classified as 'Ll' a mainly "locally important aquifer" which is 'moderately productive only in local zones (pink)' to 'Pu' a mainly 'poor aquifer' which is 'generally unproductive (light Beige)'. There are areas underlying the proposed scheme where the aquifer is classified as a 'poor aquifer - Pl' which describes the bedrock which is 'unproductive expect for local zones (green)'. Almost a kilometre to the northwest of the study area lies a 'regionally important aquifer' (yellow)..

The southwestern portion of the study area is located in the 'Pl' poor aquifer from the IDA Ireland Industrial Estate. The rest of the southern portion of the study area is within the 'Pu' poor aquifer which is generally unproductive. As the study area extends towards the north the underlying bedrock aquifer becomes 'locally important aquifer where the bedrock is moderately productive in only local zones'.

4.4.2 Aquifer Vulnerability

The bedrock geology predominately consists of; interbedded limestone, shale and mudstone. This is overlain by made ground, glacial deposits/tills and alluvium. A review of the subsoil thickness indicates depth to bedrock is generally not greater than 10 metres below land surface with exposed rock/near surface rock in places. The vulnerability of the aquifer ranges from "moderate to extreme" across the constraints study area (see Table 4.4. below for aquifer vulnerability ratings).

The proposed road is in an area of *'High'* aquifer vulnerability.

Table 4.4: Aquifer Vulnerability Rating

Vulnerability Rating	Hydrogeological Conditions				
	Subsoil Permeability (Type) and Thickness			Unsaturated Zone	Karst Features
	High permeability (sand/gravel)	Moderate permeability (e.g. Sandy subsoil)	Low permeability (e.g. Clayey subsoil, clay, peat)	(Sand/gravel aquifers only)	(<30 m radius)
Extreme (E)	0 - 3.0m	0 - 3.0m	0 - 3.0m	0 - 3.0m	-
High (H)	>3.0m	3.0 - 10.0m	3.0 - 5.0m	>3.0m	N/A
Moderate (M)	N/A	>10.0m	5.0 - 10.0m	N/A	N/A
Low (L)	N/A	N/A	>10.0m	N/A	N/A

Notes: (1) N/A = not applicable.
(2) Precise permeability values cannot be given at present.
(3) Release point of contaminants is assumed to be 1-2 m below ground surface.

4.4.3 Water Framework Directive Groundwater Status

The Water Framework Directive (WFD) classification scheme for water quality includes two status classes: good and poor. The assignment of the status class depends on the above factors e.g. ecological and chemical status of the groundwater body.

The groundwater body in the Naas area has been assigned 'Good' status (EPA, 2015). The underlying groundwater body is the Dublin groundwater body (GWB). The relevant European codes are IE_EA_G_003 & IE_EA_G_008.

4.4.4 Water Supplies

There are no regional groundwater supplies or Source Protection Areas (SPA) identified within this area. The nearest SPA sites are approximately 5km southeast in Blessington and Robertstown which is located 6km north-west of the constraints study area.

The GSI Well Card Index is a record of wells drilled in Ireland. It is noted that this record is not comprehensive, as licensing of wells is not currently a requirement in Ireland. A review of the current index indicates that no springs and/or wells have been drilled on/near at the project site. The area is serviced by public mains therefore it is unlikely that many wells are currently used for potable supply.

4.4.5 Hydrology

The proposed road is located within the Eastern River Basin District (ERBD) in Hydrometric Area No. 09 of the Irish River Network. It is within the River Liffey and Dublin Bay catchment.

The River Liffey catchment encompasses an area of approximately 1,369km^2. The river extends from the mountains of Kippure and Tonduff in County Wicklow to the sea at Dublin Bay. The main channel covers a distance of approximately 120km and numerous tributaries

enter along its course. The proposed road lies within the sub-basin site code: Liffey_120, which is drained by the Castlesize River at the southern end of the proposed road.

The following river occur within the vicinity of the proposed road:

- Castlesize/Craddockstown Demesne/Tipper West stream;
- Morell River;
- Westown River;
- Toberton River;
- Hartwell (Rathmore) River.

These rivers flow in a north to north-easterly direction towards Naas and the M7 (motorway).

4.4.6 Water quality

In accordance with the Water Framework Directive (WFD), each river catchment within the ERBD was assessed and a water management plan detailing the programme of measures was put in place for each. For the River Liffey WMU (Water Management Unit) the main pressure preventing achievement of *'Good Status'* is diffuse agricultural pollution. There is no river/stream water quality data available for the Castlesize River.

4.4.7 Flooding

4.4.7.1 Fluvial Flooding

Castlesize/Craddockstown Demesne/Tipper West

The Castlesize River runs along the Blessington Road as it enters Naas. The Craddockstown Demesne and Tipper West are tributaries to the Castlesize River. This river floods during the storm events. It is modelled that the river floods during a 1 in 10 year flood event, the 1 in 100 year flood event and the most extreme flood event, the 1 in 1000 year event.

The Craddockstown Demesne and Tipper West tributaries join the Castlesize River to the north of the R410 Blessington Road before it crosses under the road to flow on the south side of Blessington Road next to the Alderwood Park housing estate.

Morrell River

There is no evidence of extensive flooding of the Morell River within the vicinity of the proposed route during a 1 in 10 year flood event. Some lands along the northern reaches of the Morrell, to the northwest of the proposed route experience moderate levels of flooding for the 1 in 100 year flood event. The river is modelled for a 1 in 1000 flood event and shows extensive flooding in the surrounding areas which would include lands to the northeast of the proposed route in the vicinity of the Morell River.

Westown River, Toberton River & Hartwell (Rathmore) River

The Morell, Westown, Toberton and Rathmore rivers all lie to the northeast of the proposed route. The Weston River extensively floods into adjacent lands during the 1 in 10 year, 1 in 100 year and 1 in 1000 year flood events. The Toberton River floods on to adjacent lands during the 1 in 1000 year flood event, with very little flooding modelled for the 1 in 10 year and 1 in 100 year flood events. The Hartwell (Rathmore) River floods on to adjacent lands during the 1 in 1000 year flood event, with very little flooding modelled for the 1 in 10 year and 1 in 100 year flood events.

4.4.7.2 Pluvial Flooding

Pluvial flooding is usually caused by intense rainfall that may only last a few hours. The resulting water follows natural valley lines, creating flow paths along roads and through and around developments and ponding in low spots, which often coincide with fluvial floodplains in low lying areas. Any areas at risk from fluvial flooding will almost certainly be at risk from pluvial flooding.

The CFRAM PFRA maps indicate that proposed route would not be impacted by pluvial flooding.

4.4.7.3 Groundwater Flooding

Groundwater flooding can be due to high water tables and increased recharge following long periods of wet weather. Groundwater flooding typically occurs in areas underlain by limestone and where underlying geology is highly permeable with high capacity to receive and store rainfall. The area within and adjacent to the proposed route is not affected by groundwater flooding, according to the OPW Flood map.

4.5 AIR & CLIMATE

4.5.1 Air

The major source of air pollution within in the vicinity of the proposed road is road traffic, predominantly that from the N7, R445 and R410. Air quality is variable and subject to significant spatial variation, with concentrations generally falling significantly with distance from major road sources (UK DEFRA, 2007). The highest levels of existing air pollution are experienced along the R445 and R410 with the remainder of the study area generally experiencing rural background concentrations of pollutants.

A review of IPPC licences issued by the EPA for the region show that there are 5 IPPC licenced facilities (P0782-01, P0239-01, P0812-01, P0805-01 and P0819-01) with emissions to the atmosphere within the wider area surrounding the proposed road. All of these facilities must comply with emissions limit values as stipulated in their IPPC licences (EPA, 2017).

Wind speed and direction are key factors influencing air quality and the prevailing wind direction is from southerly to westerly in direction over the period 2012 – 2016 The mean wind speed is approximately 5.5m/s over the period 1981 – 2010.

The proposed road is located within Air Quality Zone C, which comprises Naas Town and its environs. Although no EPA or Local Authority monitoring has been carried out within the study area to date, data from Zone C and Zone D locations in Ireland can be used to provide an indication of the prevailing air quality conditions. TII *Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes* (2011) state that the local air quality assessment should focus on NO_2 and PM_{10}, as these are the pollutants of greatest concern with respect to road traffic conditions.

The NO_2 annual average for the Zone C monitoring stations have an average annual mean NO_2 concentration of 7.6 $\mu g/m^3$ over the period 2013-2017. These concentrations are significantly lower than the NO_2 limit value and would be broadly representative of the prevailing NO_2 concentrations at distances of 200m or greater from the national roads within the study area. A conservative estimate of the current background NO_2 concentration in the study area is 8 $\mu g/m^3$. Baseline monitoring by NO_2 diffusion tubes conducted between December 2017 and February 2018 at 8 locations showed an average NO_2 of 15 $\mu g/m^3$. The highest concentrations were monitored on the Blessington Road near the junction with the Tipper Road.

Long-term PM_{10} monitoring is carried out at the Zone C monitoring stations of Galway, Portlaoise and Ennis have an average annual mean PM_{10} concentration of 15.5 $\mu g/m^3$ over the period 2013 - 2017. This concentration would be broadly representative of the prevailing PM_{10} concentration at distances of 200m or greater from the national roads within the study area. A conservative estimate of the current background PM_{10} concentration in the study area is 16 $\mu g/m^3$.

4.5.2 Climate

Ireland has signed up to several Climate agreements including the "*2030 Climate and Energy Policy Framework*" which aims to reduce GHG emissions by 40% compared with 1990 levels by 2030. 2013 and 2014 saw a decreasing trend in Ireland's GHG emissions, this can be attributed to a decrease in economic activity. The agriculture and transport sectors make up the majority of non-ETS emissions making up 72.4% of emissions in 2014. Energy production using fossil fuels is continually decreasing in recent years with renewable energy production increasing. Renewable energy production increased by 6.6% on 2012 levels in 2013 and by 12.6% based on 2013 levels in 2014. This increasing trend continued into 2015 with a 4% increase in renewable energy production based on 2014 levels. However in 2016 renewables accounted for 25.5% of electricity generated in 2016 (down from 27.3% in 2015).

Between 2014 and 2016, national total emissions have increased by 7.4% or 4.23 Mt CO_2eq. In the same period, emissions in the ETS sector have increased by 11.2% or 1.78 Mt CO_2eq and in the non-ETS sector by 5.9% or 2.45 Mt CO2eq

This change in trend is a result of increasing economic growth and employment. While Ireland has been in compliance with its EU 2020 target up to 2015 however 2016 figures indicate that Ireland exceeded its 2016 annual limit set under the EU's Effort Sharing Decision (ESD), 406/2009/EC3 by 0.3 Mt CO_2eq. The EPA predicts that over the period 2013-2020 Ireland is projected to cumulatively exceed its compliance obligations by approximately 17 Mt CO_2eq under the Existing Measures scenario and 16.3. Mt CO_2eq equivalent under the with Additional Measures scenario.

4.6 LANDSCAPE

In 2004, a Landscape Character Assessment (LCA) of the county was undertaken and is contained in Volume II of the Kildare County Development Plan 2011-2017. The LCA focused on the discernment of the character of the landscape based on its land cover and landform, but also on its values, such as historical, cultural, religious and other understandings of the landscape. Landscape Character Areas are areas that generally share the same characteristics. The LCA concentrates on the distinctiveness of different landscapes and on the sensitivity of that landscape to development. The current Kildare County Development Plan 2017 – 2023 also relies on the 2004 LCA and reproduces the Landscape Character Areas identified during the LCA on Map 14.1 of the County Development Plan.

The proposed road lies within the Northern Lowlands Landscape Character Area (LCA) which is described as follows:

This extensive lowland area to the north-east of the County...is characterised by generally flat terrain and open lands with regular (medium sized) field patterns. Hedgerows are generally well maintained and low, with scattered trees along the field boundaries that partially screen the lowest lying areas. Nevertheless, the generally low-lying vegetation of the area allows long-distance and extensive visibility. Distant views include the skylines of the Eastern Uplands. Soils in the area are dominated by complexes (generally mineral soils) with pockets of Grey Brown Podzolics and Gleys. The area is suitable to moderately suitable for tillage, pasture and meadow and suitable for forestry.

Critical Landscape Factors of relevance within the Northern Lowlands are: Smooth Terrain, Undulating Topography, Low Vegetation and Shelter Vegetation.

The Northern Lowlands LCA is categorized as having **Low Sensitivity** to development, i.e. 'has the capacity to generally accommodate a wide range of uses without significant adverse effects on the appearance or character of the area'.

Urban expansion, within which category a new road would fall, is cited as having a high compatibility with the Northern Lowlands landscape area. However, where urbanisation is within 300m of Agricultural Lands and Natural vegetation and Forestry it is likely to be compatible only in certain circumstances; and within 300m of Green Urban Areas it is likely to be incompatible (see Kildare County Development Plan 2017-2023, Ch 15, Tables 14.3 and 14.4).

4.6.1 Scenic Routes & Protected Views

The Landscape Character Assessment identifies a range of scenic routes and protected views throughout the County. There are no scenic routes and protected views within the vicinity of the project. However, the Blessington Road has signage that indicates it is on the South Kildare Tourist Route. The closest scenic routes, identified in the Kildare County Development Plan 2017 - 2023 as route no. 12 and 22, with protected views looking west and northwest from the Eastern Uplands LCA, is near Kilteel, Rathmore and Red Bog, over 5km east of the project site and will not be affected by project.

4.6.2 Views & Prospects

The current Naas Town Development Plan (2011-2017) identifies a range of views and prospects within the Naas Town Council Boundary. None fall within the vicinity of the project site and many are enclosed views of the Canal. None of the protected views will be affected by the project as the views are enclosed by intervening buildings and vegetation.

4.7 CULTURAL HERITAGE

4.7.1 Archaeology

Archer Heritage Planning Ltd. have undertaken an assessment of the archaeological constraints occurring along the proposed route and identified the presence of two areas of archaeological potential (AC15 a curving bank & AC16 a curving hedgerow). The

archaeological assessment has concluded that the archaeological potential of both of these sites are considered to be low. The proposed route also traverses 1 townland boundary (AC14). A relatively small amount of green field area is traversed by these routes as much of it is comprised of an existing road sub-base on the edge of The Gallops housing estate and what appears to be previously disturbed land between Tipper Road and the Blessington Road. The archaeological assessment has concluded that the archaeological potential of the proposed route is Low to Moderate.

No archaeological sites or monuments, as listed on the Record of Monuments and Places (RMP) are located within the footprint of the proposed route, while three occur within a 500m buffer of the proposed route. These RMPs are listed in Table 4.5.

Table 4.5: Archaeological Sites (RMPs) within 500m of the proposed route

SMR No	Class	Townland	Distance
KD019-021	Burial ground	Maudlings	170m
KD019-063	Burial	Naas East	175m
KD019-031	Ritual site-well	Naas East	220m

4.7.2 Architectural Heritage

The proposed road contains no Protected Structures. However, a pair of ornate gates with railings, located on the Tipper Road and used as a pedestrian access to The Paddocks estate, are recorded in the National Inventory of Architectural Heritage (NIAH 11901910). These are located just to the south of the racecourse main entrance and grandstand.

4.8 MATERIAL ASSETS

A baseline rating of all material assets occurring within and in the vicinity of the project has been completed by Clifton Scannell Emerson Associates in association with John Bligh & Associates. The baseline environment or rating for a material asset is evaluated based on the material asset type, significance and sensitivity to construction and operation effects.

4.8.1 Land Use

The existing land use along the route is a combination of urban residential, commercial and agricultural land. The excerpt from Naas Town Development Plan 2011-2017 (Drawing 200/11/538 'Land Use Zoning Objectives') shows that the majority of the zoned land within the proposed scheme is zoned for Open Space and Amenity (Zoning Objective F) and for Enterprise & Employment (Zoning Objective Q) at the southwest of the proposed scheme. There is an indicative alignment for a 'New Roads Objective'.

The criteria for property baseline ratings are presented in Table 4.6.

Table 4.6: Baseline Rating Criteria

Information	Source
High	Residential property. Commercial property. Community property used for public and private recreation amenity. Development land / site with planning permission.

Information	**Source**
Medium	Development land / site without planning permission. Residential property (vacant / derelict). Commercial property (vacant / derelict).
Low	Property consisting of public roadbed only.

IDA Business Park (proposed Chainage 0 – 370)

The baseline rating for the IDA Business Park, where the proposed road traverses an existing road and a derelict site, is determined to be low – medium.

Naas Racecourse (proposed Chainage 390 – 1000)

Naas Racecourse is a medium sized (Grade I) racecourse being one of 26 racecourses in Ireland and, together with Punchestown and the Curragh courses, is the location of Thoroughbred racing in County Kildare. Although Naas is the smallest of the three, there are 18 race meetings annually and in 2017 the attendance at the racecourse was 37,690 (Horse Racing Ireland, 2018). The significance of the property is of regional importance to the equine industry in Co. Kildare and is a key economic driver to Naas town given its location and its proximity to the town centre. The sensitivity of the property to development effects is high where land acquisition may interfere with the operation of the racecourse and particularly so during the holding of race meetings given the potential of high value equine stock to negatively react to such effects.

Under the Naas Town Development Plan 20011 – 2017 the racecourse itself is zoned 'Open Space and Amenity' with associated lands on the property zoned 'Agricultural'. There is an indicative alignment through the property for 'New Roads Objective'.

The baseline rating for Naas Racecourse, a commercially operated property of regional importance to the equine industry and a key economic driver for Naas town, is determined to be high.

The Gallops/Kingscourt/Naas Racecourse Entrance Road (proposed Chainage 1000 – 1550

The baseline rating for this existing road is low.

4.8.2 Existing Utilities

There is an extensive network of utilities in the within and adjacent to the proposed development, which provide services to the existing farms, residential and industrial development.

ESBN Services (Overhead & Underground)

The ESB network assets identified in study area include MV/LV (10kV) overhead lines and underground cables. There are no known or identifiable ESB sub-stations located within the extents of the proposed development.

There are existing overhead ESB powerlines across the lands of Naas Racecourse and traversing in a southerly direction.

On the southern sections of proposed development near the R410 Blessington Road, there is existing overhead MV/LV lines located within a small western landscaped area adjacent to the existing IDA Ireland 'Time House' industrial estate road entrance.

The baseline rating for ESBN Services is low.

Telecommunications

EIR has existing underground fibre cables in-situ along The Gallops estate road and the existing IDA Ireland 'Time House' Industrial Estate Road.

The baseline rating for telecommunications is low.

Gas Network Ireland (GNI) Services

There is an existing 125 PE-80 4 Bar gas main currently in-situ on The Gallops estate road, which may impact the northern sections of proposed development. There is also an existing 125 PE-80 4 Bar Gas main currently in-situ along the existing IDA Ireland Time House Industrial Estate Road.

The baseline rating for GNI Services is low.

Irish Water

Located along the existing Gallops Estate Road is a 12-inch asbestos 1950s watermain. The watermain travels in a southerly direction from the Gallops, through the existing Naas Racecourse lands and on through the existing IDA Ireland Time House Industrial Estate Road, before continuing through the R410 Blessington Road.

There is a 3-inch uPVC 1980s watermain along the L6037 Tipper Road.

Along the entire length of the R410 Blessington Road is an existing 5-inch cast iron watermain, which tie-ins to the R410 Blessington Road.

The baseline rating for Irish Water watermains is low.

Foul sewer

There are foul sewers along The Gallops Estate Road that are serving the Gallops and Kings Court Housing developments; and along the IDA Ireland 'Time House' industrial estate road.

The baseline rating for foul sewers is low.

Storm sewer

There are storm sewer network along The Gallops Estate Road that are serving the Gallops and Kings Court Housing developments, which ultimately discharges to the Morell River through the lands of Naas Racecourse.

The storm sewer network along the IDA Ireland 'Time House' Industrial Estate Road are serving the existing AIB premise and IDA industrial park, which ultimately discharges to the Castlesize River via an existing approximately 2.2m (W) x 0.75m (H) culvert.

The baseline rating for storm sewers is low.

4.9 TRAFFIC

Clifton Scannell Emerson Associates and Steer Consultants have undertaken a Traffic and Transport assessment for the proposed Naas Inner Relief Road development.

The baseline traffic conditions have been established by extensive on-site surveys including:

- 25 Junction traffic counts at locations on the surrounding road network;
- Automatic traffic counts at 21 sites throughout Naas – one week time periods per site; and
- ANPR Automatic Number Plate Recognition surveys at 21 No locations throughout Naas.

This data has been used to establish traffic levels including HGV levels, origin destination patterns and travel times. Note that further information on these surveys is provided in the Appendix.

The data collected was then used to update and calibrate a traffic model for Naas Town which is based on a cordoned section of the NTA Eastern Regional Model.

Figure 4.1(a) below shows the existing am peak hour flows from the base year 2018 traffic model in the area surrounding the proposed scheme.

The base year Traffic model was used to inform a future year 2035 (see Figure 4.1b) cordon model of the Naas area to provide a future horizon year baseline.

Figure 4.1(a): Existing 2018 AM peak hour Saturn Traffic Model Demand Flows without Scheme in place

Figure 4.1(b): Existing 2035 AM peak hour Saturn Traffic Model Demand Flows without Scheme in place

5.0 CHARACTERISTICS OF LIKELY SIGNIFICANT EFFECTS

5.1 INTRODUCTION

The likely significant effects of the Naas Inner Relief Road on the environment were considered and assessed by reference to the following factors

- Population and human health;
- Biodiversity
- Land, Soils & Geology
- Water
- Air & Climate
- Noise
- Landscape & Visual
- Cultural Heritage
- Material Assets
- Traffic

An assessment of the potential for the project to result in likely significant effects to each of these environmental factors is provided in the following sub sections..

5.2 POPULATON & HUMAN HEALTH

5.2.1 Impacts

The impact of the proposed route will be to reduce traffic along its current routes in streets of Naas Town Centre. This well have the effect of reducing emissions including noise and emissions to air along these streets.

Some short-term local effects from noise and air emissions of the construction phase are expected however all construction activities will have to comply with TII standards and therefore no adverse health effects would be expected.

Traffic travelling along the new route during the operational phase will generate emissions but mitigation will ensure that all emissions are below relevant TII standards. This will have the effect, that fewer people will be exposed and to lower levels of emissions than is currently the case.

5.2.2 Mitigation

The proposed road includes extensive mitigation in terms of noise and air quality. It will involve a low noise road surface as well as noise barriers. The latter are proven not just to reduce noise emissions but also air quality issues such as dust emissions. This applies to the larger visible dust particles which can be disturbed by passing traffic but also to the smaller, non visible particles such as PM10 and PM2.5 which may be emitted from vehicles. Current roads involve no such mitigation therefore, given that the road is simply moving traffic from one place to another, the overall impact is going to be positive in terms of noise and air quality. That is not to say that no individual may be adversely affected. Those residences which are close to the line of the proposed road may suffer slight adverse effects in terms of noise and air quality. The point is that these effects will be slight because of the mitigation measures. As noted in 5.6 below, for example only a slight negative impact on air quality is predicted in those residences even in worst-case scenarios.

As seen in 5.7 below extensive mitigation is proposed in both the construction and operational phases. While some annoyance is possible over a limited period of time during the

construction period this will be mitigated as outlined in Section 5.7 including restriction of working hours.

During the operational phase traffic noise levels associated with the proposed road combined with traffic along the adjacent surrounding roads are within the adopted noise design criterion of 60dB L_{den}. There are three properties that are predicted to be within 1dB of this design criterion which is imperceptible in terms of human perception to noise. As these design criterion are selected to protect residences, even those containing vulnerable individuals, we can be confident that there will be no adverse health effects.

Also as outlined in Section 5.7 a far greater number will see reductions in noise levels for example as the traffic is moved away from the town centre streets, but also because it is moving quicker and the new road includes mitigation measures that do not currently apply at all. The overall effect of the proposed road during the operational phase on the population is positive.

5.2.3 Residual Impacts

As the road involves extensive mitigation, does not involve any additional traffic that would not be there anyway, and in general is moving the road away from more populated areas, the effect on human health proposed road is predicted to be positive.

5.3 BIODIVERSITY

5.3.1 Impacts

The habitats occurring within and immediately adjacent to the proposed road are of low ecological value and low conservation status. No habitats upon which protected species rely will be lost to the footprint of the proposed development. No habitat fragmentation, in the severance of linear habitat corridors such as hedgerows, treelines and watercourses will occur as a result of the proposed development. No rare, threatened or protected species were identified along or in the vicinity of the proposed route corridor and the project will not result in likely significant effects to such species.

In summary no significant effects to local biodiversity occurring along and adjacent to the proposed route are predicted to occur.

An Appropriate Assessment Screening Report has been prepared for the proposed development. The Appropriate Assessment Screening Report has concluded that the project is not likely, alone or in-combination with other plans or projects, to have a significant effect on any European Sites in view of their Conservation Objectives and on the basis of best scientific evidence and there is no reasonable scientific doubt as to that conclusion.

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There are no pathways connecting the proposed road to any NHAs, pNHAs or Nature Reserves and such conservation areas will not be affected by the project.

5.3.2 Mitigation

While no likely significant affects to biodiversity will occur as a result of the project the following measures will be implemented in order to manage the construction phase of the project and enhance the biodiversity value of the landscape along and adjacent to the proposed route during the operation phase.

- Habitat disturbance during construction work will be confined strictly to within the direct land-take of the proposed scheme.
- Construction machinery will be restricted to site roads and the footprint of the proposed scheme.
- Replacement and enhancement tree and hedgerow planting will be undertaken along the proposed route corridor. The landscaping design will plant native tree species, including fruiting trees along the route corridor. A new woodland habitat feature in the form of a linear woodland/hedgerow will be provided along the route corridor. The enhancement tree planting will augment the extent of woodland habitat associated with the western and northern field boundaries and will provide additional resting/breeding/foraging habitat for fauna.

5.3.3 Residual Impacts

As outlined in the baseline and impact assessment sections above no high-value habitat receptors have been identified within the project site and the loss of these habitats will represent at most a negligible residual impact.

The project will present a negligible risk to fauna due to the dominance of artificial and well managed greenfield habitats that are subject to existing high levels of human activity.

The landscape design will be prepared to enhance landscaping along the proposed route corridor for fauna. The implementation of these measures will ensure that likely significant effects to biodiversity, habitats and fauna do not arise as a result of the project.

5.4 LAND, SOILS & GEOLOGY

5.4.1 Impacts

The importance of attributes of land, soil and geology occurring within and adjacent to the project site have been assessed in line with the Transport Infrastructure Ireland (TII) guidance document

The assessment of attribute is considered to be medium importance (based on the TII above). This is based on the fact that the route is all fully or partly underlain by moderately drained and/or moderate fertility soils. There are no geological heritage areas, NHAs, or area of economic reserve.

Overall the impacts of imperceptible significant for land, soils and geology during the construction and operation phase are predicted for the project.

5.4.2 Mitigation

Given that the impacts will be imperceptible to land, soils and geology no mitigation measures are proposed for the project.

5.4.3 Residual Impacts

Impacts to land, soil and geology will be imperceptible and no likely significant impacts will occur.

5.5 WATER

5.5.1 Impacts

During construction, the primary contaminants of concern are hydrocarbons and suspended solids. There is very limited potential for accidental contamination during construction as any required bulk storage of fuels will be within the construction compound. As such the only potential leakage along the route corridor is a single construction vehicle leak i.e. maximum 200 litres. Should any hydrocarbon contaminated run-off enter open surface water it will become quickly diluted downstream. Based on the flow and shallow gradient noted in the drainage catchment natural degradation will easily occur within < 1 kilometre of the discharge point to the receiving watercourses. Should run-off with elevated suspended solids reach the Morell or Castlesize rivers, it will readily attenuate to background within 1 kilometre. As such the potential for a change in water quality as a result of an accidental emission during the construction of the route will be negligible and imperceptible within the Castlesize and Morell Rivers and will not result in significant impacts to the status of these watercourses.

The proposed construction compound will be located a minimum of 250m from the nearest point of the Castlesize River and the Morell River and is not directly connected to or in the immediate vicinity of any drainage ditch. There is no direct source pathway linkage. The location of the compound away from receiving watercourses will ensure there is no risk of contaminated surface water being released from the construction compound to the Liffey catchment during the construction phase.

During the operation phase of the proposed Naas Inner Relief Road the risk of accidental spillage and subsequent discharge of potentially polluting material to the Morell or Castlesize Rivers will be negligible and imperceptible. This is based on:

- the low speed limit of 50kph that will apply;

- The low risk of heavy good vehicles (HGVs) accidents given the low speed limit and design layout of the road in accordance with DMURS. It is noted that the risk of accidental spillage and a pollution incident on any road is proportionate to the risk of a HGV road traffic collision (TII, 2015[8]).

- The design and provision of the proposed road, which aims to support the Road Safety Authority (RSA) Road Safety Strategy 2013 – 2020 by alleviating the congestion currently experienced on Naas Town Centre is anticipated to result in a reduction in collisions in the surrounding road network.

- Even in the absence of considering any design measures that will manage, control and treat runoff during the construction phase and operation phase, an accidental release of potentially contaminating material (due to a collision or release from a tanker etc.), there will be no likely water quality impact within 1 kilometre of the site. Any impact to the receiving Morell River or Castlesize River would be localised and temporary and will not result in any likely significant effects to the water quality of these watercourses.

- Routine stormwater runoff from the proposed Naas Inner Relief Road will not have the potential to represent a risk of pollution to the receiving Castlesize River, the Morell River and the River Liffey downstream..

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[8] TII (2015). Road Drainage and the Water Environment. Publication No. DN-DNG-03065

5.5.2 Mitigation

Notwithstanding the imperceptible significance of potential impacts to attributes of water and hydrology a number of measures will be implemented during the construction phase and operation phase of the project so that surface waters and related emissions can be managed and controlled. These measures are outlined in the following subsections.

The project will be constructed and operated in compliance with design standards described in Section 3.1.4 above. These surface water management features are an intrinsic part of the design of all road corridors and represent a best practice approach to the construction and operation of road schemes. The design features incorporated into the proposed Naas Inner Relief Road involve the application of techniques proven to manage surface waters generated along roads.

In addition to the design features outlined in Section 3.1.4 that will be implemented for the operation phase the following design features will be fully incorporated into the construction approach of the NIRR route:

Interceptor swales will be constructed along the perimeter of the roadway. These swales will be constructed as the first item of works during the construction phase. This will allow for the control of surface water runoff from the footprint of the road during the construction phase. The swales will be vegetated to improve the performance of silt removal.

During the construction phase the swales will be fitted with check-dams to further aid the removal of silts from surface waters. All surface waters draining to the perimeter swales will be conveyed to attenuation ponds. During both the construction phase and the operation phase surface water will settle in the attenuation ponds/tanks prior to discharge. For the construction phase settled water will be discharged from the attenuation pond and pass through a hydrocarbon and silt interceptor prior to release into the receiving surface water environment. During the construction phase the potential for silt mobilisation in surface water runoff is at its greatest and as such, silt-busters will be made available to treat surface water being discharged from attenuation ponds prior to discharge to interceptors and release to the receiving surface water network.

The final, treated surface water generated along the road footprint during the construction phase and operation phase will be discharged to the proposed discharge points along the Castlesize River and Morell River.

Weekly monitoring of water quality discharges from the attenuation ponds and interceptors will be undertaken throughout the duration of the construction phase.

It is noted that the project will not require the crossing of any surface watercourse during the construction of the proposed road. The Castlesize Stream towards the southern of the proposed road is culverted in an existing pipe under the Tipper Road. No construction works are proposed to this culvert as part of the project.

During the operation phase the proposed surface water design of the project as detailed in Section 3.1.4 above will collect all road drainage within the road drainage network. Pre-treatment of road drainage, in the form of attenuation, silt interception and hydrocarbon interception will be provided upstream of all road drainage outfalls. The SUDs measures that will form part of the drainage network will also provide a range of measures to control and manage surface water.

5.5.3 Residual Impacts

The implementation of SUDs through the incorporation of engineered attenuation ponds and controlled discharges at all outfalls will control storm runoff rates to Greenfield runoff rates so as not to exacerbate flooding and flood risk in the receiving watercourses. With these measures in place the project will have an imperceptible residual impact on flooding in receiving watercourses.

The project, in the absence of surface water management design measures has been assessed as having the potential to result in imperceptible and negligible impacts to water quality of receiving watercourses. With the provision of the surface water management design measures for the project the residual impact to water quality in receiving watercourses will be imperceptible and negligible.

The road drainage network design will include features to control the flow of runoff in the event of an accidental spillage. These features will include hydrobrakes and/or penstocks or

similar features that can restrict the flow of water to receiving watercourses. The inclusion of these features will prevent the discharge of polluted waters to receiving watercourses during an accidental spillage.

5.6 AIR & CLIMATE

5.6.1 Impacts

5.6.1.1 Air Quality

The greatest potential impact on air quality during the construction phase of the proposed road scheme is from construction dust emissions and the potential for nuisance dust and PM_{10}/$PM_{2.5}$ emissions. The proposed road scheme can be considered moderate in scale and therefore in accordance with TII Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes there is the potential for significant dust soiling 50m from the source. While construction dust tends to be deposited within 200m of a construction site, the majority of the deposition occurs within the first 50m. There are a number of sensitive receptors, predominantly residential properties and recreational areas in close proximity to the site. In order to minimise dust emissions during construction, a series of mitigation measures have been prepared in the form of a dust minimisation plan. Provided a dust minimisation plan in line with Dust Guidance is are adhered to, the air quality impacts during the construction phase will not be significant.

Table 5.1: Assessment Criteria for the Impact of Dust from Construction, with Standard Mitigation in Place

Source		Potential Distance for Significant Effects (Distance From Source)		
Scale	**Description**	**Soiling**	**PM_{10}**	**Vegetation Effects**
Major	Large construction sites, with high use of haul roads	100m	25m	25m
Moderate	Moderate sized construction sites, with moderate use of haul roads	50m	15m	15m
Minor	Minor construction sites, with limited use of haul roads	25m	10m	10m

There is the potential for a number of greenhouse gas emissions to atmosphere during the construction of the development. Construction vehicles, generators etc., may give rise to CO_2 and N_2O emissions. However, the impact on the climate is considered to be imperceptible in the short and long term.

There is the potential for a slight negative operational phase impact to air quality at sensitive receptors located adjacent to the proposed alignment. The impact will occur due to vehicle emissions on the new road. The impact is limited due to the background concentration being well below the Objective/Limit Value for the Scheme (<30 $\mu g/m^3$ of NO_2 or PM_{10}) as provided in the overall significance tables in the TII Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes.

There is the potential that there will be a slight beneficial impact on sensitive receptors close to the current road links where traffic volumes reduce and congestion decreases as a result of the proposed road scheme.

It is further noted that the slight negative impact to air quality at sensitive receptors is adjudged to be a worst-case impact.

With regard to potential air quality impacts to sensitive ecosystems it is noted that no sensitive habitats occur within 200m distance of the project. The TII guidelines state that as the potential impact of a development is limited to a local level, detailed consideration need only be given to roads where there is a significant change to traffic flows (>5%) and the designated site lies within 200m of the road centre line. Given the above the project will not have the potential to result in significant effects to sensitive ecosystems occurring in the wider area surrounding the project.

5.6.1.2 Climate

Climate impacts are calculated on a regional scale, the scheme will not increase overall traffic volumes in the region but will redistribute the current traffic. The road scheme will change the travelled kilometers for each vehicle and reduced congestion on current road links. Reduced congestion will have a positive benefit during the operational phase due to reduced GHG's produced by diesel or petrol engines of vehicles associated with less congested

journeys. As the proposed development will not increase overall traffic volumes it is predicted that the impact on climate will be insignificant with respect to Ireland's EU 2020 Targets.In addition, the proposed development will improve the overall connectivity and permeability within the town by providing new carriageway, pedestrian, cycle track and buses links between the R445 Dublin Road and R410 Blessington Road. This will provide an opportunity for modal shifts away from private vehicles, particularly for shorter journeys within the environs of Naas town.

5.6.2 Mitigation

A dust minimisation plan will be finalised and implemented for the construction phase of the project, as construction activities are likely to generate some dust omissions. In order to minimise dust omissions during construction the following measure will form part of that plan and will be implemented during the construction phase::

- 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.
- Furthermore, any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions.
- Bowsers or suitable watering equipment will be available during periods of dry weather throughout the construction period.
- Access gates to the site shall be located at least 10m from sensitive receptors where possible
- Vehicles using site roads will have their speed restricted, both on un-surfaced site roads and on hard surfaced roads, as site management dictates.
- During periods of very high winds (gales), activities likely to generate significant dust emissions shall be postponed until the gale has subsided.
- 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 such as rock blasting or demolition are necessary during dry or windy periods.
- Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions and cleaned as necessary.

- The Principal Contractor or equivalent will be obliged to monitor the contractors' performance to ensure that the proposed mitigation measures are implemented and that dust impacts and nuisance are minimised;
- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions;
- 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 should also include head/regional office contact details;
- Community engagement will be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses;
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out;
- It is the responsibility of the contractor at all times to demonstrate full compliance with the dust control conditions herein;
- At all times, the procedures put in place will be strictly monitored and assessed.

At all times these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust will be curtailed and satisfactory procedures, such as the covering of all dust-emanating materials, will be implemented to rectify the problem before the resumption of construction operations.

With the implementation of these dust minimisation measures in addition to a construction management plan including dust mitigation fugitive emissions of dust from the site will be insignificant and will not pose a nuisance at nearby sensitive receptors.

Mitigation measures in relation to traffic-derived pollutants during the operation phase have focused generally on improvements in both engine technology and fuel quality. EU legislation, based on the EU sponsored Auto-Oil programmes, has imposed stringent emission standards for key pollutants (REGULATION (EC) No 715/2007) for passenger cars which were to be complied with in 2009 (Euro V) and 2014 (Euro VI). With regard to heavy duty vehicles, EU Directive 2005/78/EC defines the emission standard, Euro IV, as well as the next stage (Euro V) which entered into force in October 2009. In addition, it defines a non-

binding standard called Enhanced Environmentally-friendly Vehicle (EEV). In relation to fuel quality, SI No. 407 of 1999 and SI No. 72 of 2000 have introduced significant reductions in both sulphur and benzene content of fuels.

In relation to design and operational aspects of road developments, emissions of pollutants from road traffic can be controlled most effectively by either diverting traffic away from heavily congested areas or ensuring free flowing traffic through good traffic management plans and the use of automatic traffic control systems (UK DEFRA, 2014). Removing traffic from the current road network within Naas town, will result in reductions in emissions in these areas..

5.6.3 Residual Impacts

With appropriate mitigation measures in place, residual impacts of the proposed Naas Inner Relief Road on air quality and climate for the long and short term will result in, at worst, slight negative impacts to sensitive receptors and therefore there will be no likely significant effects.

5.7 NOISE

5.7.1 Impacts

AWN Consulting have completed a preliminary noise impact assessment of the proposed route. This assessment has examined the potential noise impact associated with the construction phase and operation phase of the project. The results of this impact assessment are summarised below.

5.7.1.1 Construction Phase

The results of the construction phase noise impact assessment have indicated that at distances of beyond 50m from the works, the construction day time noise limit of 70dB L_{Aeq} 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 number of properties along the length 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 5.7.2

will be employed to ensure the construction noise limits are not exceeded along the length of the scheme.

5.7.1.2 Operation Phase

Noise emissions during the operational phase of the project have been modeled by AWN Consulting Ltd. using *Predictor* in accordance with CRTN and with the application of the relevant conversion factors as detailed in the TII Guidance.

Free-field traffic noise levels have been predicted at a 60 properties in the vicinity of the scheme in question. For single story properties, calculations have been made at ground floor height whilst for two story properties, calculations have been made at first floor height.

Given the new link road traverses greenfield lands, traffic noise levels associated with the Do-Nothing scenario will be approximately comparable to those measured during the baseline noise survey. This has confirmed that traffic noise levels are below the operational design criterion of 60dB L_{den} and hence noise levels associated with the Do Something scenario have been used to determine the requirement for noise mitigation for properties which exceed the adopted traffic design criterion of 60dB $L_{den.}$

The results of the assessment indicate that noise levels will be increased at all modelled locations once the road becomes operational. A total of 27 properties are determined to meet TII conditions that indicate a need for noise mitigation. These are located at properties within The Gallops, Kingscourt, Chestnut Hill and Elm Wood.

The mitigation measures proposed to reduce operational noise levels to within the TII design criteria are set out in Section 5.7.2.

5.7.2 Mitigation

5.7.2.1 Construction phase

The contract documents will clearly specify the construction noise criteria included in this chapter 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- 1:2009+A1:2014 Code of Practice for Noise

and Vibration Control on Construction and Open Sites - 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
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use
- Any plant, such as generators or pumps that is required to operate before 07:00hrs or after 19:00hrs will be surrounded by an acoustic enclosure or portable screen

During the course of the construction programme, the contractor will be required to manage the works to comply with the limits detailed in Table 1 using methods outlined in BS 5228-1:2009+A1 2014. Part 1 – Noise BS 5228 -1: 2009+A1 2014 Part 2 which include guidance on several aspects of construction site practices, which include, but are not limited to the measures discussed below.

Selection of Quiet Plant

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. 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. 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. 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.

General Comments on Noise Control at Source

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. In practice, a balance may need to be struck between the use of all available techniques and the resulting costs of doing so. It is therefore proposed to adopt the concept of "Best Available Techniques" as defined in EC Directive 96/61. In this context "best" means "the most effective in achieving a high general level of protection of the environment as a whole".

The expression "available techniques" means "those techniques developed on a scale which allows implementation...., under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced within the State, as long as they are reasonable

Thus, the concept of Best Available Techniques requires a degree of balance between the attainment of environmental benefits and the likely cost implications. In the identification of Best Available Techniques, regard will be had to a wide range of factors, however, emphasis will be given to "practical suitability" and the need "to reduce an emission and its impact on the environment as a whole".

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:

- 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 10dB. Mobile plant will be switched off when not in use and not left idling;

- For percussive tools such as pneumatic concrete breakers or tools a number of noise control measures include fitting muffler or sound reducing equipment to the breaker 'tool' and ensuring any leaks in the air lines are sealed. Erection of localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries are other suitable forms of noise reduction;

- For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum;

- 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;

- Where compressors, generators and pumps are located in areas in close proximity to noise sensitive properties/ areas and have potential to exceed noise criterion, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation;

- 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;

- Demountable enclosures can also be used to screen operatives using hand tools and may be moved around site as necessary, and;

- 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.

Screening

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. 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.

BS 5228 -1:2009+A1 2014 states that on level sites the screen should be placed as close as possible to either the source or the receiver. The construction of the barrier will be such that there are no gaps or openings at joints in the screen material. In most practical situations the effectiveness of the screen is limited by the sound transmission over the top of the barrier

rather than the transmission through the barrier itself. In practice screens constructed of materials with a mass per unit of surface area greater than 10 kg/m^2 will give adequate sound insulation performance. As an example, the use of a standard 2.4m high construction site hoarding will provide a sufficient level of noise screening once it is installed at a suitable position between the source and receiver.

Working Hours

Normal working times will be 07:00 to 19:00hrs Monday to Friday and 08:00 to 13:00hrs Saturday. Works other than the pumping out of excavations, security and emergency works will not be undertaken outside these working hours without the written permission of the Contracting Authority. This permission, if granted, can be withdrawn at any time should the working regulations be breached.

Works other than the pumping out of excavations, security and emergency works will not be undertaken at night and on Sundays without the written permission of the Contracting Authority. Night is defined as 19:00 to 07:00hrs.

When overtime and shift work is permitted, the hauling of spoil and delivery of materials outside normal working hours is prohibited and the noise limits outlined in Table 1 will apply.

5.7.2.2 Operation phase

The proposed mitigation measures consist of the use of barriers along either the road edge or at property boundaries. The mitigation measures detailed here are based on the current scheme design.

Barriers can take the form of proprietary acoustic screens, solid block walls, earth berms or other solid structures. The barriers chosen should be solid, with no gaps at the base or between vertical joints and should have a minimum surface mass of 10kg/m^2. All barriers

shall achieve the performance specified in I.S. EN 1793 – 1:1998, I.S. EN 1793-2:1998, I.S. EN 1973-3:1998, I.S. 1794-1:2003 and I.S. EN 1794-2:2003.

Table 5.1 summarises the location and extent of screening requirements for noise mitigation.

Table 5.2: Extent of Noise Mitigation Required During Operational Phase

Receiver No	Barrier Details	Side of Road	Barrier Height (m)
R1 -R3	Existing Panel Fence ro be replaced with 2m high noise barrier	East	2m above road level
R9	Proposed new 1.5m noise barrier	West	1.5m above road level
R11 -R18	Existing brick wall with galvanized railing extended to 1.5m high including noise barrier	East	1.5m above road level
R19 - R20	Existing brick wall with galvanized railing extended to 3.5m high including noise barrier	East	3.5m above road level
R21 – R30	Proposed new 1.5m noise barrier (Existing plastered block wall with railing to be removed)	East	1.5m above road level
R32 – R33	Proposed new 3.5m high noise barrier (Existing pebble dashed block wall with capping to be removed)	East	3.5m above road level
R52	Existing concrete wall with capping to be extended to 3m high including noise barrier	East	3m above road level
R53 - R55	Existing fence (post & rail) to be replaced by 2m high noise barrier	East	2m above road level
R57 – R58	Existing fence (post & rail) to be replaced by 2m high noise barrier	East	2m above road level
R59	Existing plastered block wall with railing to be extended to 2m high including noise barrier	East	2m above road level

R60	Existing panel fence to be replace with 2m high noise barrier	East	2m above road level

5.7.3 Residual Impacts

5.7.3.1 Construction phase

During the construction phase of the project there will be short-term moderate to major impacts on nearby residential properties due to noise emissions from site traffic and other activities. The application of noise limits, restricted hours of operation, along with implementation of appropriate noise control measures are designed in order to control noise emissions to within the noise limits for this phase and there will be no likely significant effects on the environment..

5.7.3.2 Operation phase

The residual impacts of the proposed scheme have been assessed taking into account the recommended noise mitigation measures set out above.

The assessment has determined that with the inclusion of the recommended noise mitigation measures, traffic noise levels associated with the proposed road combined with traffic along the adjacent surrounding roads are within the adopted noise design criterion of 60dB L_{den}. There are three properties that are predicted to be within 1dB of this design criterion which is imperceptible in terms of human perception to noise.

The 2004 TII noise guidance document notes the following with respect to achievement of the noise design criterion:

"The Authority accepts that it may not always be sustainable to provide adequate mitigation in order to achieve the design goal. Therefore, a structured approach should be taken in order to ameliorate as far as practicable."

The 2014 noise guidance document notes that:

"in some cases the attainment of the design goal may not be possible by sustainable means".

This guidance document also notes that caution should be exercised specifying substantial screening where small benefits (<3dB) are only achieved, given a change of 3dB(A) is the smallest change that would give a reliable difference in public response. Specifically, the TII 2014 document goes on to note that:

"It may be unsustainable to increase barrier dimensions significantly where the result would be a reduction of 1dB or less, as such a reduction would be close to imperceptible in a laboratory situation, and would not result in a difference in public response in the real world environment."

In this instance, the extent of screening deemed feasible to achieve the adopted design criterion at the relevant properties has been assessed, taking into account a level of proportionality with respect to changes in noise level. It is concluded that with the provision of appropriate screening traffic noise during the operation phase of the project will not result in likely significant effects on the environment.

5.8 LANDSCAPE & VISUAL

5.8.1 Impacts

The proposed Naas Inner Relief Road links up existing roads through existing residential/commercial areas with minimal impact on the racecourse grounds open space amenity. The proposed route avoids one of the groups of mature trees within open space off Tipper Road and a dwelling close to the Woodlands Park entrance.

The main elements of the project that have the potential to result in landscape and visual impacts during the construction phase are:

- Landscape disturbance during construction works;
- Construction activity, site compounds and construction traffic;
- Vegetation removal.

The main elements of the project that have the potential to result in landscape and visual impacts during the construction phase are:

- The presence of noise barriers:
- Lighting: and
- Traffic:

5.8.1.1 Scenic Routes & Protected Views

The closest scenic route, with protected views looking west and northwest from the Eastern Uplands LCA, is near Kilteel, Rathmore and Red Bog, over 5km east of the project site. This scenic route and the associated protected views will not be affected by project.

5.8.1.2 Views & Prospects

As noted in Section 4.6.2 above no views and prospects as identified within the Naas Town Development Plan (2011-2017) fall within the vicinity of the project site and many are enclosed views of the Canal. None of the protected views will be affected by the project as the views are enclosed by intervening buildings and vegetation

5.8.2 Mitigation

The design of landscape and visual mitigation for the project will comply with the TII's A Guide to Landscape Treatments for National Road Schemes in Ireland. The general approach to landscape planting will focus on using bare-root transplants, whips and feathered trees as these are more adaptable to establishment on disturbed ground conditions. A preference will be given for planting mixes and tree species of native origin that are in keeping with the local area.

The following mitigation measures for the potential landscape and visual impacts will be implemented as part of the construction phase and operation phase of the project.

5.8.2.1 Construction phase

- Monitoring of the construction phase will be undertaken to ensure that areas outside the construction footprint are protected.
- All plant and machinery required for the construction phase will be generally restricted to operating within the construction footprint.

- Construction compounds and storage areas will be selected in areas that minimise impacts on existing residential and other property and surrounding woodland habitats.
- Boundary hoarding will be provided where construction works and compounds are located in close proximity to residential properties.
- The construction compounds will be fully-decommissioned and reinstated to pre-construction condition at the end of the construction phase.

5.8.2.2 Operation phase

Along the route, perimeter hedgerow planting will be established using native species. General hedgerow plants shall be 90 to 120cm in height at planting, standard trees will be included at intervals to mimic mature hedgerows in the locality that have mature trees. A grass verge will provide a buffer and facilitate the planting of street trees.

In order to minimise the visual impact of noise barriers planting of hedgerows and/or shrubs/climbers using primarily species of native origin will be established along the full off-road elevation of noise barriers..

A detailed lighting design will be completed for the project and this will be include all necessary measures that will minimise light-spill, glare and light pollution from both public lighting along the proposed route and headlights from traffic. The lighting design will be prepared to comply with the requirements of BS EN 13201-2:2003 and BS5489-1: 2003, Code of Practice for Design of Road Lighting. Lighting of Roads and Public Amenity Areas and shall comply with the requirements of the TII/NRA DMRB DN-LHT-03038.

5.8.3 Residual Impacts

As the proposed road will have a permanent presence within the landscape there will be a residual impact on the landscape character of the immediate surrounding area. Nevertheless it the gradual establishment of the proposed mitigation measures will integrate the project within its landscape setting over the long-term. The provision of landscape planting will diminish the prominence of visual intrusions such as noise barriers along the proposed route.

With the implementation of all mitigation measures as described in Section 5.8.2 above it is concluded that the project will not result in likely significant effects on landscape and visual receptors.

5.9 CULTURAL HERITAGE

5.9.1 Impacts

No sites of important historical, cultural or archaeological heritage occur within or immediately adjacent to the proposed road. Two areas of archaeological potential occur along the proposed road corridor, both of which are considered to be of low archaeological potential. Potential impacts posed by the project to unknown and unrecorded, buried archaeological sites/features will occur during construction stage and include all ground disturbance works undertaken at that stage (including topsoil removal, quarrying activities, groundworks including the provision of access roads and service trenches), movement of machines and storage of material in sensitive areas.

5.9.2 Mitigation

Mitigation measures shall be undertaken as directed by the Minister for Culture, Heritage and the Gaeltacht in compliance with national policy guidelines and statutory provisions for the protection of archaeology and cultural heritage.

The following measures will be implemented in advance of the construction phase of the project:

- All green field areas will be subject to geophysical survey followed by test trenching.
- Any townland boundaries that may be affected by the proposed route will be subject to full photographic and written survey.
- Any of the areas of architectural features that may be affected by the proposed route will be fully recorded by photographic and written record.

In order to ensure that construction works do not result in significant effects to archaeology a suitably qualified archaeologist will be appointed as part of the detailed design team in order to advice on specific potential impacts as and when they may arise. This will result in continuous impact assessment of the detailed works, allowing mitigation measures to be agreed in advance, in full consultation with the statutory bodies. This approach will provide the opportunity to resolve archaeological and cultural heritage issues during the pre-construction and construction phase of the project.

As part of the project all relevant measures outlined in the Department of Arts, Heritage and the Gaeltacht's Architectural Heritage Protection Guidelines for Planning Authorities will be implemented.

5.9.3 Residual Impacts

With the implementation of the mitigation measures outlined above any potential direct impacts to unknown and unrecorded features of archaeology occurring along the proposed route will be mitigated such that no significant residual archaeological and cultural heritage impacts will occur. With excavation and planned recording, preservation by record will be provided along the proposed route at the pre-construction and construction stage of the development.

5.10 MATERIAL ASSETS

5.10.1 Impacts

The impacts on property arising from the construction and operation of the Naas Inner Relief Road development include:

- Landtake;
- Land severance;
- Impact on buildings / parking facilities;
- Potential impact on roads and traffic;
- Potential impact on utilities'
- Potential impact on waste management.

5.10.1.1 Landtake

The effect of landtake can be significant and the acquired area together with its location and duration will determine the magnitude of impact. The landtake for the proposed Naas Inner Relief Road is estimated to be approximately 5.5ha. The area and location of landtake are interlinked as an area of landtake near the centre of operations on a property will be of a greater magnitude than a similar area at the external boundary of the same property. The

duration of landtake can vary from permanent (greater than sixty years), short term (one year to seven years) to temporary (less than one year). The degree of the magnitude of impact decreases with shorter durations.

The proposed Naas Inner Relief Road alignment is entirely offline through Naas Racecourse and will impact on amenity lands available to the racecourse for parking, deliveries and future development.

The proposed Naas Inner Road alignment is on existing road bed and through a derelict site through the IDA Business Park.

The proposed Naas Inner Relief Road alignment is entirely offline through Naas Racecourse and will impact on amenity lands available to the racecourse for parking, deliveries and future development.

The proposed Naas Inner Relief Road alignment is on existing road bed on The Gallops/Kingscourt/Naas Racecourse Entrance Road.

5.10.1.2 Land Severance

The severance of land is determined by the landtake location and can often result in more significant impacts on property than landtake. Similar to the effect of landtake, the area of severed lands, their location relative to remaining lands and duration will influence the magnitude of impact. The severance of a significant area or an area of intensive operational activity will have a higher magnitude of impact. The permanent severance of lands will have a greater magnitude of impact than temporary severance.

The proposed Naas Inner Relief Road alignment does not result in land severance in the IDA Business Park or at The Gallops/Kingscourt/Naas Racecourse Entrance Road.

The proposed Naas Inner Relief Road alignment will result in central severance of the amenity lands along the north-western side of the property. The severed lands will be separated by the proposed road from the racecourse and its facilities. Mitigation measures will be necessary to provide adequate access to this area. Such measures are outlined in Section 5.10.2.2 below. It is likely that there will be further limitations on the severed and residual

areas due to the proposed alignment that will require their reconfiguration for future parking use.

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5.10.1.3 Impact on Buildings / Parking Facilities

The impact of a proposed road development on property buildings or parking facilities is generally indicative of a high magnitude of impact. The degree of magnitude will depend on the property type and the type and nature of buildings that are affected.

While the proposed Naas Inner Relief Road does impact on a site within the IDA Business Park, this site is currently vacant and derelict, and the remaining site is of a size and shape that can be reconfigured for future use.

The proposed Naas Inner Relief Road will impact on amenity lands used for car / bus parking for racegoers, horse transport parking for trainers and as amenity lands. The loss of this area will significantly reduce the capacity of the Racecourse for parking of cars, buses and horse transporters such as horse boxes and lorries.

There will be an impact on the operation of the racecourse from the combined effects of landtake and severance on lands used for parking by the trainers and particular for activities including the loading and unloading of horses before, during and after race meeting events. The reduction in this area and the severance of remaining areas will have a significant effect on the suitability of the residual areas to be used for this activity, e.g. the severed area will not be suitable for parking for trainers and owners given it will be separated from the racecourse and stabling facilities by the proposed road. In the absence of an access accommodation structure for equine use only this area will be limited to car and bus parking by racegoers only.

5.10.1.4 Other Impacts Such as Impacts to Land Drainage and Services

The construction activities on a proposed road development may result in the disturbance of existing land drainage and the potential interruption of supply for utilities such as water, power, phone, broadband, etc. The magnitude of impact will be influenced by the type of

disturbance and the duration involved. These impacts are generally of a temporary to short term duration being limited to the extent of construction works.

While further information is required regarding the existence and location of all utilities it is likely that any such interruptions will be managed to limit any adverse effects.

5.10.1.5 Potential Impact on Roads and Traffic

The proposed development involves new and upgrading of existing carriageway, footpath, cycle track, drainage and utilities. Construction related vehicles used during the construction stage is expected to have slight and short term impact to the traffic in the affected areas.

The existing access to the AIB premise and Naas Racecourse will be relocated to a safer and more suitable location.

In general, the proposed development will improve the overall connectivity and permeability within the town by providing new carriageway, pedestrian, cycle track and buses links between the R445 Dublin Road and R410 Blessington Road. The proposed development also involves upgrading of existing junctions and carriageway to the current standard in order to improve the road safety for the road users.

The Traffic Impact Assessment attached with this report assesses the anticipated levels of traffic generated by the proposed development, the existing and future road infrastructure and concludes that the proposed development will not result in a material deterioration in road conditions.

5.10.1.6 Potential Impact on Utilities

ESBN Services (Overhead & Underground)

There's no anticipation of underground and overhead ESB diversion during the works. However, during the construction stage, underground electrical cables could be damaged during the excavation works within the scope of works. There are also a number of overhead electric cables crosses the vicinity of the proposed road scheme.

Electric supply will also be required to feed the temporary lighting and temporary traffic signal during the construction stage.

Power will be required to provide public lighting, signals etc. during the operational stage. This is similar to the existing situation. The power demands during the operational phase on the existing electricity network are considered to be imperceptible.

Telecommunication

There's no anticipation of underground telecommunication diversion during the works. However, during the construction stage, underground electrical cables could be damaged during the excavation works within the scope of works and would result in the loss of signal to the existing holdings.

New traffic signal ducting incorporating power supply and traffic communications ducting will also be required for the new signalized crossing at the proposed junction at Tipper Road.

The increased demand on the existing telecommunication during the operational stage is considered to be imperceptible.

Gas Network Ireland (GNI) Services

No new gas main or additional gas supply is required during the construction phase of the proposed scheme. However, existing underground gas pipeline could be damaged during the excavation works within the scope of works. This is expected to result in a slight, negative and short term impact.

No additional gas supply is required to the site. There's no predicted impacted on the existing gas network.

Irish Water

There's no anticipation of watermain diversion during the works. However, excavation works during construction phase may result in damaging the watermain pipe which may result in water disruption and/or no portable water supply to the affecting properties.

There is also an existing asbestos watermain crossing in the vicinity of the proposed road scheme.

A separate water supply connection will be required to serve the construction activities during the construction phase. However, the water demands during the construction phase are expected to result in a slight, negative and short term impact.

No additional water supply is required to the proposed development. There's no predicted impact on the existing water supply network during the operational phase.

Foul Sewer

The proposed scheme will involve relocation/diversion of few existing foul sewer pipes and chambers in the detailed design to facilitate the proposed cycle track alignment.

No additional sewerage discharge is required to the proposed development. There's no predicted impacted on the existing foul sewer network and the treatment plant.

Storm Sewer

The proposed road scheme will involve removal of the existing road gullies, relocation/diversion of the existing storm sewer pipes and chamber during the construction phase to facilitate the enabling works.

Temporary drainage will be required for the surface water run-off generates during the construction phase. Ingress of groundwater and overland flows into the excavated areas may have the potential impact to the existing watercourse. This is expected to result in a slight, negative and short term impact.

Surface water runoff generated from the hardstanding of the proposed development will be collected by sealed drainage system, e.g. gullies, storm sewer pipes and discharge to the proposed attenuation system and discharge into the existing watercourse via by-pass oil interceptor. The design of the permanent drainage system shall be in accordance with the local authority requirements and Sustainable Urban Drainage System (SuDS) and Greater Dublin Strategic Drainage Strategy (GDSDS) guidelines.

It is expected that the impact to the stormwater sewer will have a slight, positive impact to the existing watercourse as majority of the surface water runoff generated from the proposed development will be detained and stored, and no excessive flow shall be discharged to the existing watercourse during the 100-year storm event.

5.10.1.7 Potential Impact on Waste Management

There will be excavated waste materials which will have to be exported during the construction stage, such as bituminous, gravels and etc. some existing services, such as pipe, ducts, chambers will have be excavated and disposed offsite during the enabling works.

Fuel/ oil which will be used by the construction vehicle is hazardous and has the potential to cause pollution to the environment.

There's no predicted impact on waste during the operational stage.

5.10.1.8 Magnitude of Impact

The criteria used to determine the magnitude of impact for property on the proposed Naas Inner Relief Road development are shown in Table 5.2 Magnitude of Impact Criteria. The criteria for each of the impact ratings have been developed in consideration of the relevant EPA guidelines on the assessment of impact

Table 5.3: Magnitude of Impact Criteria

Impact	Criteria
High	An impact on the property where the use of the property cannot continue.

Impact	Criteria
Medium	An impact on the property where the use of the property can continue. An impact of permanent duration resulting in a change to the character of the property.
Low	An impact on the property where the use of the property can continue. An impact of permanent or temporary duration with a minimal or temporary effect on the character of the property.
Very low	An impact on the property that does not affect the use of the property (i.e. acquisition of public road only)

The magnitude of impact on the IDA Business Park is determined to be Low to Very Low.

The magnitude of impact on Naas Racecourse is determined to be Medium to High subject to the provision of suitable mitigation of access and other effects and the re-configuration of existing parking to limit the operational impacts on the property.

The magnitude of impact on The Gallops/Kingscourt/Naas Racecourse Entrance Road is determined to be Very Low.

The potential impact on roads and traffic is determined to be Very Low.

The potential impact on utilities is determined to be Very Low.

The potential impact on waste management is determined to be Low.

5.10.1.9 Significance of Impact

The significance of impact on property is determined by the baseline rating combined with the magnitude of impact of the proposed road development. There are three categories of baseline rating ranging from 'low' to 'high'. There are four categories of magnitude of impact ranging from 'very low' to 'high'. The likely significance rating is determined by reference to the matrix in Table 5.3 using the baseline rating and magnitude of impact. The likely significance of impact is prior to the implementation of any mitigation measures.

Table 5.4: Significance of Impact

Baseline rating	**Magnitude of impact**			
	High	**Medium**	**Low**	**Very low**
High	Profound	Significant	Slight	Imperceptible
Medium	Significant	Moderate	Slight	Imperceptible
Low	Imperceptible	Imperceptible	Imperceptible	Imperceptible

The significance of impact on IDA Business Park is determined to be Imperceptible.

The significance of the effects of the Naas Inner Relief road on Naas Racecourse is considered to be Significant to Profound, subject to mitigation. The significance of the effects is primarily due to the area of landtake involved, the central alignment taken through the property together with the operational impact associated with the existing equine based activities taking place at the racecourse.

The significance of impact on The Gallops/Kingcourt/Naas Racecourse Entrance Road is determined to be Imperceptible.

The significance of impact on Roads and Traffic is determined to be imperceptible and positive impact on local transport infrastructure.

The significance of impact on Utilities is determined to be imperceptible.

The significance of impact of Waste Management is determined to be imperceptible.

5.10.2 Mitigation

5.10.2.1 Land Use

The compulsory acquisition of land is subject to the statutory code governing the assessment of compensation for such acquisition. Compensation will be considered on an individual property owner basis and is dependent on a variety of factors such as, landtake severance, injurious affection, disturbance and potential damage to future viability of the property.

Construction and Environmental Management plan (CEMP) shall be put in place by the appointed contractor during the construction phase to monitor the noise levels and dust emissions in order to minimise the noise and vibration impact and air pollution to the adjacent properties.

Compensation payments for lands to be acquired as a result of the scheme will be agreed, where possible between the relevant landowners and Kildare County Council and will otherwise be referred to abritration. Where part of a property/field is to be acquired a replacement boundary treatment will be provide.

Existing boundary treatments will be upgrade and development of new noise boundary treatments along the road edge will be constructed in order to reduce the nose impact to affected residents.

5.10.2.2 Naas Racecourse

Specific mitigation of the landtake and land severance impacts will involve the following:

- Reconfiguration of the residual amenity lands to provide a parking area for trainers, owners and others transporting horses of a similar size to that currently occupied by trainers, etc. This parking area is to be located between the proposed road and the racing facilities (See Mitigation Map – Drawing 1013). Appropriate boundary treatment will ensure this area is securely screened from the proposed road.

- Reconfiguration of the residual amenity lands to provide parking areas for racegoers mainly located on the lands severed by the proposed road. Additional parking capacity may be located on lands between the proposed road and the racing facilities (See Mitigation Map – Drawing 1013). Appropriate access will be provided to ensure safe access across the proposed road for racegoers.

- Other construction effects and operation associated effects on services are anticipated to be adequately dealt with by appropriate mitigation.

5.10.2.3 Roads and Traffic

Temporary traffic management plan (TTMP) shall be in placed by the appointed contractor to ensure access to all properties to be maintained during the construction stage and safety of the road users.

Where access is affected, the access will be reinstated or an alternative access will be provided, in agreement with the property's owner.

5.10.2.4 Utilities

ESBN

The appointed contractor shall ensure that all electricity services are maintained throughout the construction phase. Appropriate measures and protection will be put in place to the existing electric cables during the construction phase in accordance with the requirements and guidelines of the ESB Network.

In order to reduce the risk of striking the existing underground electric cables and causing damages during construction phase, GPR survey and silt trenches will be carried out prior to work commencing to locate the exact location and depth of the existing electrical cables. The

silt trenches and GPR information shall be available to the appointed contractor and the location of the underground electrical cable will be marked prior to the excavation in the area.

Any impact arises from the overhead electrical cables will be mitigated in accordance with the code of practice documents issued by ESB Network.

Where new services are required, the Contractor will apply to the relevant utility company for a connection permit where appropriate, and will adhere to their requirements.

Telecommunications

The appointed contractor shall ensure that all existing telecommunication services are maintained throughout the construction phase. Appropriate measures and protection to be put in place to the existing telecommunication cables during the construction phase in accordance with the requirements and guidelines of the telecommunication providers.

In order to reduce the risk of striking the existing underground telecommunication cables and causing damages during construction phase, GPR survey and silt trenches will be carried out prior to work commencing to locate the exact location and depth of the existing underground telecommunication cables. The silt trenches and GPR information shall be available to the appointed contractor and the location of the existing underground telecommunication cable will be marked prior to the excavation in the area.

Where new services are required, the Contractor will apply to the relevant utility company for a connection permit where appropriate, and will adhere to their requirements.

Gas Networks Ireland (GNI) Services

The appointed contractor shall ensure that all existing gas pipelines are maintained throughout the construction phase. Appropriate measures and protection will be put in place to the existing gas pipelines during the construction phase in accordance with the requirements and guidelines of Board Gáis.

In order to reduce the risk of striking the existing underground gas pipeline and causing damages during construction phase, GPR survey and silt trenches will be carried out prior to

work commencing to locate the exact location and depth of the existing underground gas pipeline. The silt trenches and GPR information shall be available to the appointed contractor and the location of the underground gas pipeline will be marked prior to the excavation in the area.

Irish Water

The appointed contractor shall ensure that all existing watermains are maintained throughout the construction phase. Appropriate measures and protection will be put in place to the existing watermains during the construction phase in accordance with the requirements and guidelines of the Irish Water, specifically in the vicinity of the asbestos watermain.

In order to reduce the risk of hitting the existing watermain and causing damages during construction phase, GPR survey and silt trenches will be carried out prior to work commencing to locate the exact location and depth of the existing watermian. The silt trenches and GPR information shall be available to the appointed contractor and the location of the existing watermain will be marked prior to the excavation in the area.

Foul Sewer

The appointed contractor shall ensure that all existing foul sewers are maintained throughout the construction phase.

In order to reduce the risk of striking the existing foul sewer pipes and causing damages during construction phase, GPR survey and silt trenches will be carried out prior to work commencing to locate the exact location and depth of the existing foul sewer pipes. The silt trenches and GPR information shall be available to the appointed contractor and the location of the foul sewer pipes will be marked prior to the excavation in the area.

Storm Sewer

As discussed above, the additional surface water runoff generates for the proposed development will be controlled and restricted to the greenfield runoff rate by implemented SuDS in the detailed design.

Construction and Environmental Management Plan (CEMP) shall be in placed by the appointed contractor during the construction phase to prevent pollution to the adjacent land and watercourse by the sediment and contaminated surface water generates from the construction activities, such as oil spillage.

Waste Management

The appointed contractor shall have the Waste Management Plan (WMP) in placed prior to construction. All waste generated from the site shall be recycled whenever possible.

The contractor shall handle, store, transport and dispose of waste in a proper manner to ensure no adverse impact to the environment.

If hazardous material is encountered on site, such as asbestos pipes, a specialist contractor shall be employer to carry out the assessment and, if required, removal of the hazardous materials.

5.10.3 Residual Impacts

Following the provision of the specific mitigation measures for Naas Racecourse in Section 5.10.2.2 above the residual impact of the proposed Naas Inner Relief Road development will be 'Moderate'. The impact will be such that the continued use of Naas Racecourse will be possible.

The likely residual impact on all other material assets will be imperceptible.

5.11 TRAFFIC

5.11.1 Impacts

The proposed scheme was tested for both the 2018 base year and 2035 horizon year using the traffic model.

The proposed scheme was tested for both the 2018 base year and 2035 horizon year using the traffic model.

Figures 5.1(a) and 5.1(b) below shows a comparison of the base year traffic flows without and with the scheme in place. Figures 5.2(a) and 5.2(b) below shows a comparison of the 2035 future year traffic flows without and with the scheme in place.

Figure 5.1(a): Existing 2018 AM peak hour Saturn Traffic Model Demand Flows without Scheme in place

Figure 5.1(b): 2018 AM peak hour Saturn Traffic Model Demand Flows with Scheme in place

Figure 5.2(a): Existing 2035 AM peak hour Saturn Traffic Model Demand Flows without Scheme in place

Figure 5.2(b): 2035 AM peak hour Saturn Traffic Model Demand Flows with Scheme in place

The scheme has the following impacts:

- Significant reduction in queuing on the overall road network in Naas. The over capacity queuing in Naas will be reduced by more than 80 vehicle hours in Naas in 2035 morning peak hour due to the scheme.
- Improvement to road safety by delivering a road to the current standards, including the Design Manual for Urban Road and Streets (DMURS) and the National Cycle Manual (NCM), and by removing traffic volume from existing roads which experience significant congestion, and were constructed prior to current best practices in design.
- A reduction in travel time on the overall road network in Naas
- An increase in average travel speed on the overall road network in Naas
- Significant reduction in traffic flows on the Dublin Road south of the Gallops. The traffic levels in the morning peak hour will be reduced by over 40%
- Minor increase in traffic flows on the Dublin Road north of the Gallops junction
- Significant reduction in traffic flows on the Blessington Road between Dublin Road and the IDA junction. The traffic levels in the morning peak hour will be reduced by over 40%
- Significant decrease in traffic levels on Tipper road between the Blessington Road junction and the Racecourse.

Therefore, the overall traffic impact of the scheme will be positive.

5.11.2 Mitigation

The proposed junctions at the Dublin Road, Tipper Road and Blessington Road have been designed as signalised junctions with capacity to cater for the predicted horizon year traffic flows. These junctions also have signalled toucan crossings incorporated to provide for a safe and efficient pedestrian and cyclist movements across the junctions, minimizing any severance impact.

High quality pedestrian and cyclist facilities are provided along the route to provide for alternative sustainable modes of transport.

5.11.3 Residual Impacts

The proposed scheme will reduce overall congestion and journey times within Naas. Average travel speeds will increase. The scheme will increase road safety for all road users including pedestrian, cyclists and other vulnerable road users.

Therefore the provision of the scheme will have an overall positive traffic and transport impact.

5.12 INTERACTIVE & CUMULATIVE EFFECTS

5.12.1 Interactive Effects

Interactive effects may arise from the interaction between various impacts within a project. Interactive effects occur when a receptor is impacted by multiple effects. Potential interactive effects on the environment include:

- Traffic will have the potential to interact with the following environmental factor:
    - hydrology and water quality as a result of runoff and accidental spillage
    - landscape and visual impacts to properties in the vicinity of the proposed route;
    - population and human health as a result of noise and air emissions;
    - material assets during the construction phase when access to properties may be affected.
- Impacts to soils and geology and the potential to interact with the following environmental parameters:
    - Biodiversity due to the excavation of vegetation and the removal of trees and hedgerows. The vegetation clearance will mobilise sediment with potential for discharge to receiving watercourses. It is noted that the potential impact to receiving watercourses associated with the mobilization of suspended solids is predicted to result in an imperceptible and negligible effect.
    - Landscape and visual during the construction phase through excavations and the storage of spoil.
    - Archaeology during ground excavations; and

- Hydrology during excavations and the potential for the loss of sediment to receiving watercourses.

- Impacts to hydrology will have the potential to interact with the following environmental parameters:
  - Biodiversity through the discharge of road drainage to the Morell and Castlesize River and associated aquatic habitats and fauna.
  - Soils and geology by mobilizing sediment during periods of high precipitation
  - Material assets by temporary disturbance to the existing surface water drainage system in the vicinity of the project.
  - Population and human health by presenting a risk of flooding or a risk to water quality. It is noted that the hydrological assessment has concluded that, in the absence of control and management measures, the project will not present a significant risk of flooding or risk to water quality.
- Impacts to air quality will have the potential to interact with the following environmental parameters:
  - Population and human by presenting a risk of a decline in air quality at properties adjacent to the proposed route. This impact has been assessed and it is predicted that, under a worst case scenario impacts to air quality of sensitive receptors will be slight negative.
  - Material assets a risk of a decline in air quality at properties adjacent to the proposed route and the generation of dust during the construction phase.
- Impacts to noise will have the potential to interact with the following environmental parameters:
  - Population and human health by presenting a risk to sensitive properties adjacent to the project route.
  - Landscape and visual through the provision of noise barriers which will alter the landscape and visual setting for adjacent properties.
  - Material assets by disturbing livestock in adjacent areas such as the racecourse and agricultural lands to the east.
  - Archaeology by generating vibration which could result in impacts to any unknown archaeological features that may occur along the route alignment.

The significance of any potential negative interactive effects are predicted to be slight and predominantly of a temporary nature. Mitigation measures as outlined in Section 5.1 to 5.11 will provide effective management of the project and will eliminate the potential for interactive effects to result in likely significant effects on the environment.

5.12.2 Cumulative Effects with Existing and/or Approved Prjects

A search of the Kildare County Council on-line planning portal was completed on the 10th December 2018 to identify any existing or approved projects (i.e. within the last five years) in the vicinity of the proposed project or along the Castlesize River and Morell River upstream and downstream of the project site. Table 5.5 lists the projects that have been identified during this search and provides an assessment of the potential for the proposed project to combine with these other projects to result in cumulative significant effects to the environment.

The assessment outlined in Table 5.5 has found that the proposed Naas Inner Relief Road project will not have the potential to combine with any other existing and/or approved projects to result in likely significant impacts on the environment.

Table 5.5: Assessment of the Project's Potential to Combine with Other Projects

Project Planning Ref. & Brief Description	**Assessment**
Morell Catchment	
18/908: New 2-storey rear extension to existing 2-storey terraced house	This project represents a small-scale project which comprises the construction of a dwelling within an existing residential area. It is not located adjacent to the proposed project. This project is located over 100m from the nearest point of the Morell River and will not result in any discharges to the river. Due to the small scale of this project and its remote location from the project site it will not have the potential to combine with the proposed project to result in

	likely significant effects on the environment.
17/683: New Residential Dwelling	This is project is not located adjacent to the proposed project. It is located approximately 50m from the River Morell. This project will include the provision of a proprietary wastewater treatment system. The proposed wastewater treatment system has been reviewed by Kildare County Council's environment section, who have concluded that this project, with the installation of the proposed wastewater treatment system will not have the potential to result in impacts to the environment including the water quality of the River Morell. Based the absence of any potential impacts to the water quality of the Morell, the small scale of this project and its remote location from the Naas Inner Relief Road the proposed Naas Inner Relief Road will not have the potential to combine with this project to result in likely significant effects on the environment.
17/694: Construction of Fuel Store & Garage	This is project is not located adjacent to the proposed project. This application relates to the provision of a shed to provide cover for the applicants car and also to provide sheltered storage for solid fuel, in the form of turf briquettes. The application site bounds the River Morell. The provision of the shed will represent minor works that will not have the potential to result in adverse effects to the environment. Based on this assessment it is concluded that the proposed Naas Inner Relief Road will not have the potential to combine with this project to result in likely significant effects on the environment.
16/1230: New garage for existing residential dwelling	This project site is located adjacent to the River Morell over 5km downstream from the project site. This project is small in scale and involves the provision of a garage for domestic use. Its construction and use will not have the potential to result in perturbations to the water quality or status of the River Morell. There will be no potential for the project to combine with this project to result in likely significant effects to the water quality or

	ecological status of the River Morell or the surrounding environment.
15/504: Construction of new conservatory attached to existing residential dwelling	This project comprises the construction of a conservatory to the front on an existing residential dwelling. The works associated with this project will be minor in scale and will not result in perturbations to the water quality of the River Morell. This project will not combine with the proposed project to result in likely significant effects on the environment.
14/536: Change of use of 5 office buildings and ancillary works	This project, which is located adjacent to the River Morell, will involve alterations to the internal layout of an existing building. It will not involve any activities that will present a risk of perturbations to the water quality of the River Morell. This project will not combine with the proposed project to result in likely significant effects on the environment.
Castlesize Catchment	
18/480: Extension and alteration	This project proposes to undertake an extension to the north and west of an existing convent. The project site is located at a remote distance from the proposed project and will be small in scale. Due to the scale of the project, its remote location from the proposed Naas Inner Relief Road and its location buffered from the Castlesize River it will not combine with the proposed project to result in likely significant effects on the environment.
18/1226: Construction of an extension to an existing dwelling.	This project is located approximately 30m to the south of the Castlesize River and will involve an extension to the rear of this structure. The works associated with this project will be small in scale and will be buffered from the river by existing buildings, road surfaces and greenfield land. This project will not result in perturbations to the water quality and it will not combine with the

	proposed Naas Inner Relief Road to result in likely significant effects on the environment.
18/1047: Construction of a domestic garage.	This project is small in scale and is located over 130m to the south of the Castlesize River. It is buffered from the river by existing buildings, roads and greenfield lands. This project will not result in perturbations to the water quality and it will not combine with the proposed Naas Inner Relief Road to result in likely significant effects on the environment.
17/1351: modifications to existing car park to provide additional car parking space and bicycle parking	This project is located along the R410 adjacent to a culverted section of the Castlesize River. The project will comprise the alteration of existing greenfield landscape in the form of a landscaped lawn to a car parking area. Due to the scale of the project and its location which is buffered from a culverted section of the Castlesize River it will not combine with the proposed project to result in likely significant effects on the environment.
16/217: Proposed demolition of an existing small stand and part demolition of the existing self-service restaurant at Naas Racecourse	This project is located 400m to the north of the Castlesize River and is buffered from the river by existing roads, buildings and greenfield lands. This project this project is small in scale and will not result in perturbations to the water quality. It will not combine with the proposed Naas Inner Relief Road to result in likely significant effects on the environment.
15/1060: Construction of a residential dwelling development comprising 395 houses and a neighbourhood centre	This project is located adjacent to the R410 road and the Castlesize River. An EIAR has been prepared by Kildare County Council for this project and concluded that the nature and extent of the anticipated effects of this project on the environment will be suitably mitigated, reduced and/or avoided, where required by conditions in the grant of planning permission. The application of these conditions for this project will ensure that it does not have the potential to combine with the proposed Naas Inner Relief Road

	to result in likely significant effects on the environment.
15/1011: Demolition of an existing bungalow and construction of a residential dwelling	This project site is located approximately 50m to the south of a pond/wetland area into which the Castlesize River flows. The project is buffered from this pond/wetland area by existing gardens, a road and boundary walls that form a barrier to the movement of water. Works associated with this project will be small in scale. Given the above, this project will not combine with the proposed Naas Inner Relief Road to result in any likely significant effects on the environment.
14/461: erection of a stand-alone single storey pre-fabricated Training Room (floor area = 40.2sqm) to the rear of existing Training Centre together with all associated site works.	This project site is located over a 100m to the northeast of a culverted section of the Castlesize River. The works associated with this project are small in scale and will not have the potential to result in perturbations to water quality in the Castlesize River. This project will not combine with the proposed Naas Inner Relief Road to result to any likely significant effects on the environment.
14/500025: construction of an external single storey UPS Room building circa 20.6 sqm and associated site works to be located on the site of Time House.	This project is located adjacent to the R410 road and a culverted section of the Castlesize River. The project is small in scale and will not have the potential to result in likely significant effects on the environment. This project will not combine with the proposed Naas Inner Relief Road to result to any likely significant effects on the environment.

6.0 CONCLUSION

The proposed Naas Inner Relief Road does not trigger the threshold for mandatory EIA/EIAR as set out in the Roads Act 1993 (as Amended) and/or in the Road Regulations of 1994 and has been assessed as a sub-threshold EIA development. This EIA Screening Assessment has determined that the characteristics of the proposed development are considered not significant due to the scale and nature of the proposed road development and its footprint, which is confined to an area of less than 3 ha, the characteristics and sensitivities of the receiving environment and design and mitigation measures that will be implemented as part of the construction phase and operation phase of the proposed development.

The European Guidance on EIA Screening provides a checklist to assist with the decision of whether an EIA is required based on the characteristics of a project and its environment. This screening checklist is presented in Table 6.1 below and have been informed by the various assessments that have been set out in Section 5 above.

Table 6.1: Screening Checklist

Questions to be Considered	Yes / No? Briefly describe	Is this likely to result in a significant effect? Yes/No/? – Why?
1. Will construction, operation or decommissioning of the Project involve actions which will cause physical changes in the locality (topography, land use, changes in waterbodies, etc.)?	Yes	No. The construction of the proposed Naas Inner Relief Road will involve a change in land cover within sections of its footprint. This will involve a small area of physical land cover change. Measure are proposed to treat the road with landscaping elements that will over the long-term integrate the road into the surrounding area.
2. Will construction or operation of the Project use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or in short supply?	Yes	No. The proposed development will require natural resources in the form of standard construction materials. The quantities to be used as part of the proposed development will be relatively small given the scale of the proposed development.

3. Will the Project involve use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?	Yes	No. Standard construction materials for a proposed road will be used during construction, however it is unlikely that this would include any quantity of materials that could be harmful to human health or the environment. Best practice construction will be implemented during the construction phase and all such materials will be stored in secure locations and will be handled in accordance with accepted construction procedures.
4. Will the Project produce solid wastes during construction or operation or decommissioning?	Yes	No. Waste in the form of construction material wrappings and pallets etc. will be generated during the project. In addition waste generated by site operative at the site canteen etc. will be generated. All solid waste will be managed in accordance with relevant waste legislation and all waste would be removed by the site by a licensed contractor and disposed of at a licensed facilities. Mitigation measures outlined in Section 5.6.2 and 5.7.2 will be implemented to ensure that any traffic associated with the collection and movement of waste materials will not result in nuisance and likely significant effects on the environment. Efforts will be made to reuse as part of the project's construction phase wherever possible soil material generated during excavations at the project site. Where materials cannot be reused they will be transferred off site by a licensed contractor and disposed of at a licensed facilities. The movement of an soil material from the project site will be subject to the control measures outlined in Section 5.6.2 and 5.7.2 above.
5. Will the Project release pollutants or any hazardous, toxic or noxious substances to air?	Yes	No. It is expected that dust and emissions from construction vehicles, plant and equipment may be released temporarily during construction. Mitigation measures as outlined in Section 5 above will be implemented to minimise emissions and prevent discharge. All emissions will be kept within standard air quality limits outlined in the relevant legislation. During the operation phase there will be potential for accidental spillages to occur as a result of collisions. The risk of a collision and accidental spillage is predicted to be low given the design and proposed speeds for the route. In addition control measures will be place to manage and where

		necessary prevent the discharge of polluting material associated with an accidental spillage to the receiving surface water environment.
6. Will the Project cause noise and vibration or release of light, heat energy or electromagnetic radiation?	Yes	No. It is expected that noise and vibration will occur during construction and operation of the proposed route. Mitigation measures have been outlined in Section 5 above to minimise the potential impact of noise and vibration and to meet the design goals for the project. A detailed lighting design will be completed for the project and this will be include all necessary measures that will minimise light-spill, glare and light pollution from both public lighting along the proposed route and headlights from traffic. The lighting design will be prepared to comply with the requirements of BS EN 13201-2:2003 and BS5489-1: 2003, Code of Practice for Design of Road Lighting. Lighting of Roads and Public Amenity Areas and shall comply with the requirements of the TII/NRA DMRB DN-LHT-03038. This lighting design will be prepared to minimise the potential for light spill to neighbouring properties. Landscaping will be provided to minimise the potential impact of headlight visibility to properties adjacent to the proposed route.
7. Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into surface waters, groundwater, coastal wasters or the sea?	Yes	No. All potential polluting substances would be stored and managed appropriately by the contractor to reduce the risk of accidental spillages and/or discharges. There will be no discharge to surface water, groundwater, coastal waters or the sea and appropriate measures to ensure effective incident control will be provided for the construction phase and operation phase of the project.
8. Will there be any risk of accidents during construction or operation of the Project which could affect human health or the environment?	Yes	No. Construction activities would be undertaken with due regard to occupational health and safety. The site manager would be responsible for the management of health and safety on site during construction. An aim of the project is to result the potential for collisions and accidents along the road network within and surrounding Naas town. While the risk of accidents along the proposed route during the operation phase cannot be eliminated, the design of

		the road and the associated speed limits will minimise the potential for accidents to occur along it.
9. Will the Project result in social changes, for example, in demography, traditional lifestyles, employment?	No	No. the project is not predicted to have the potential to result in social changes in demography, traditional lifestyles or employment.
10. Are there any other factors which should be considered such as consequential development which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality?	Yes	Section 3 of this Report identified other existing and approved projects within the wider surrounding area and concluded that the proposed route will not have the potential to combine with these to result in significant cumulative effects to the environment.
11. Are there any areas on or around the location which are protected under international or national or local legislation for their ecological, landscape, cultural or other value, which could be affected by the project?	No	The nearest area that is afforded protection under international or local legislation is the Grand Canal pNHA located over 900m to the west of the project.
12. Are there any other areas on or around the location which are important or sensitive for reasons of their ecology e.g. wetlands, watercourses or other waterbodies, the coastal zone, mountains, forests or woodlands, which could be affected by the project?	No	The habitats occurring within and in the vicinity of the project are dominated by artificial man-made structures or intensively managed agricultural or amenity grassland. They are not representative of sensitive ecological receptors. The Castlesize River flows east to west towards the south of the project site. This is a highly modified watercourses. The Morell River is the nearest feature of semi-natural habitat and this is located over 800m to the east of the project site.
13. Are there any areas on or around the location which are used by protected, important or sensitive species of fauna or flora e.g. for breeding, nesting, foraging, resting, overwintering, migration, which could be affected by the project?	No	As outlined in Section 5.3 above the project site and surrounding area does not support habitats that are relied upon by important or sensitive species of fauna or flora.
14. Are there any inland, coastal, marine or underground waters on	Yes	No. The Castlesize River flows east to west under the proposed route. The river is culverted at the

or around the location which could be affected by the project?		proposed intersection point with the project and it will remain culverted during the construction and operation phase of the project. The Morell River will receive surface water drainage from the project site. construction and operation phase design measures will be put in place to control and manage runoff to these watercourses. Impacts to these watercourses will be imperceptible and negligible.
15. Are there any areas or features of high landscape or scenic value on or around the location which could be affected by the project?	No	No. As outlined in Section 4.6 above the location of the proposed route is not considered to be within a sensitive landscape.
16. Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the project?	Yes	No. While the proposed route will intersect with existing roads and will incorporate sections of existing roads that are used to access recreational facilities such as the Naas racecourse mitigation measures outlined in Section 5.10.2 and 5.11.2, which include a traffic management plan will be put in place to manage traffic during the construction and operation phase to minimise any disruption to existing routes.
17. Are there any transport routes on or around the location which are susceptible to congestion or which cause environmental problems, which could be affected by the project?	Yes	No. A traffic management plan will be implemented for the duration of construction works in order to minimise any disruption to traffic and transportation on the road network around the site. During the operation phase it is anticipated that the proposed route will have a positive impact on traffic and congestion within the town of Naas.
18. Is the project in a location where it is likely to be highly visible to many people?	Yes	No. During the construction phase mitigation measures will be put in place to minimise the visual disturbance caused by the construction works. A landscape plan will be implemented for the operation phase and it is predicted that over the long term this landscaping will integrate the proposed route into the surrounding area.
19. Are there any areas or features of historic or cultural importance on or around the location which could be affected by the project?	No	As outlined in Section 4.7 there are no known features of archaeological importance occurring along the proposed route corridor. There are two area of archaeological potential and measures have been outlined in Section 5.9 to minimise and

		disturbance to archaeological features should they be found to occur along the proposed route.
20. Is the project located in a previously undeveloped area where there will be loss of greenfield land?	Yes	No. Small sections of the proposed corridor are located within an area of greenfield land. The extent of greenfield land to be lost to the footprint of the project will be minor and will not represent a significant negative environment effect.
21. Are there existing land uses on or around the location e.g. homes, gardens, other private property, industry, commerce, recreation, public open space, community facilities, agriculture, forestry, tourism, mining or quarrying which could be affected by the project?	Yes	No. As outlined in the various sub-sections provided in Section 5 of this Report the potential exists for disturbance and nuisance to properties occurring adjacent to the project site. Mitigation measures have been outlined in Section 5 of this Report and it is predicted that, with the implementation of these mitigation measures, potential for disturbance and nuisance to these properties will be minimised.
22. Are there any plans for future land uses on or around the location which could be affected by the project?	No	No.
23. Are there any areas on or around the location which are densely populated or built-up, which could be affected by the project?	Yes	No. The proposed route is located adjacent to a densely populated area. As outlined in the various sub-sections provided in Section 5 of this Report the potential exists for disturbance and nuisance to population residing in the vicinity of the project site. Mitigation measures have been outlined in Section 5 of this Report and it is predicted that, with the implementation of these mitigation measures, potential for disturbance and nuisance to the local population will be minimised.
24. Are there any areas on or around the location which are occupied by sensitive land uses e.g. hospitals, schools, places of worship, community facilities, which could be affected by the project?	Yes	No. There will be a minor loss and severance of amenity lands along the proposed route. As outlined in Section 5.10 mitigation measures will be implemented to minimise this effect.
25. Are there any areas on or around the location which contain important, high quality or scarce resources e.g. groundwater, surface waters, forestry, agriculture, fisheries, tourism, minerals, which could be affected by the project?	No	No. See section 4.4 for further detail on water resources.

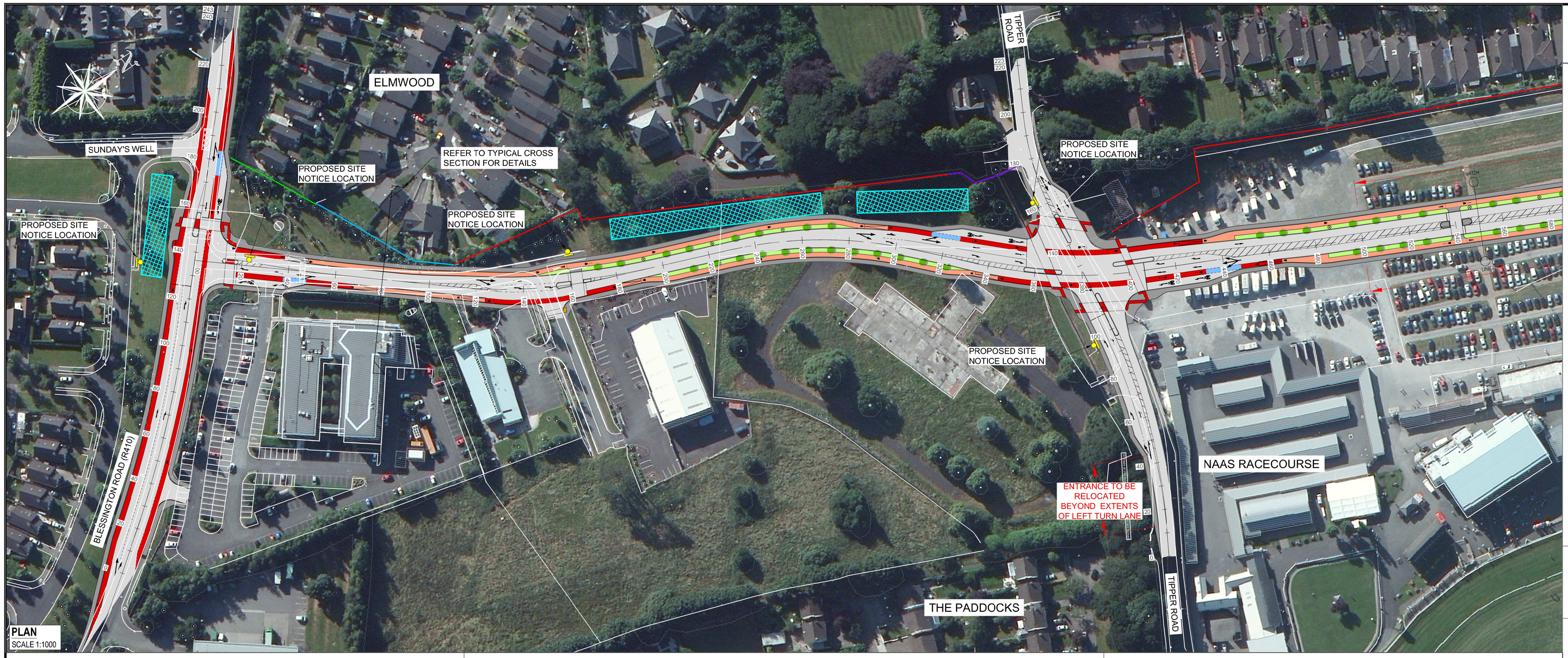
26. Are there any areas on or around the location which are already subject to pollution or environmental damage e.g. where existing legal environmental standards are exceeded, which could be affected by the project?	No	No. See Section 4 for an overview of all environmental resources
27. Is the project location susceptible to earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions e.g. temperature inversions, fogs, severe winds, which could cause the project to present environmental problems?	Yes	No. While modeling has shown that there is potential for flooding in a 1 in 10 year event along the Castlesize River and a 1 in 100 year event along the Morell River the proposed route has been designed to ensure that it does not exacerbate the risk of flooding along these watercourses.

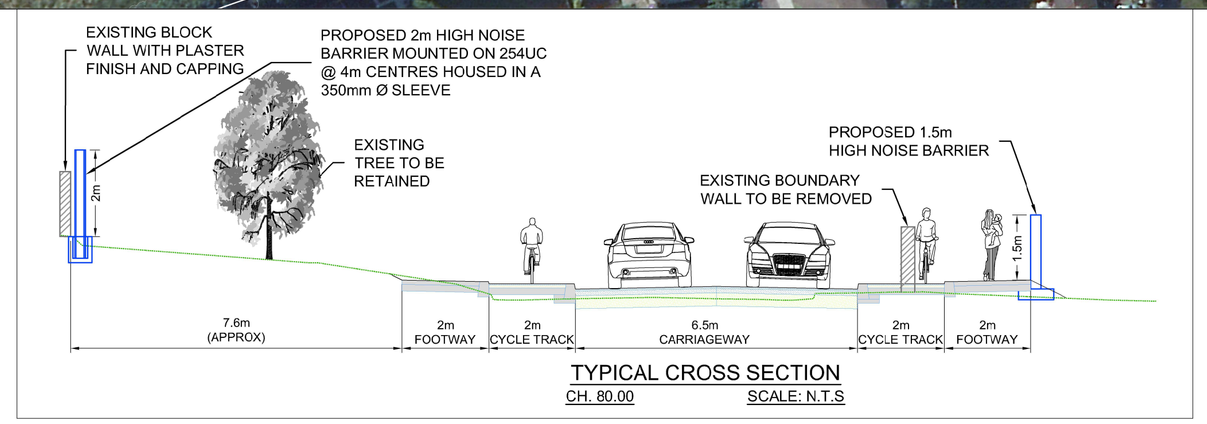
Given the scale and nature of the project and taking account of all available information, the overall probability of impacts on the receiving environment arising from the proposed development (during the construction or operational phases) is considered to be low, as summarised in Table 6.1 above.

No significant environmental impacts will occur once mitigation measures outlined in Section 5 of this Report are implemented. These mitigation measures are representative of standard industry environmental management that are implemented to minimise the impact of projects to the environment.

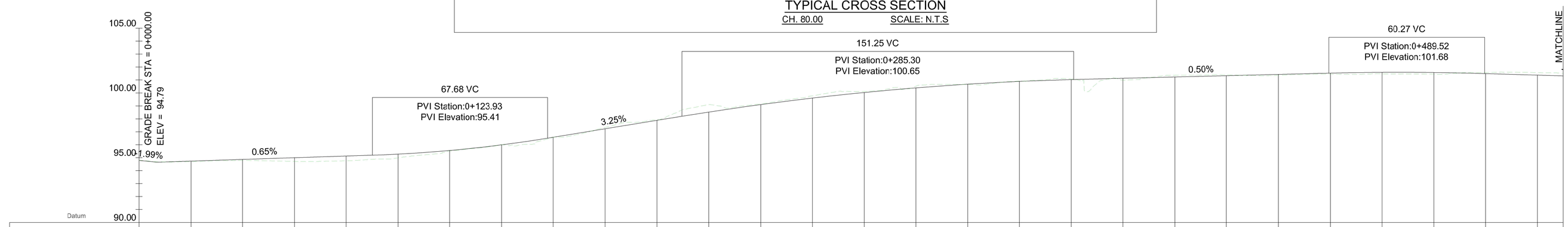
The information provided in this EIA Screening Report can be used by the competent authority, Kildare County Council, to conclude and determine that an EIA is not required for the proposed Naas Inner Relief Road as there will be no significant effects.

APPENDIX 1: NAAS INNER RELIEF ROAD SCHEME DRAWINGS





TYPICAL CROSS SECTION
CH. 80.00 SCALE: N.T.S



Chainage	0.000	20.000	40.000	60.000	80.000	100.000	120.000	140.000	160.000	180.000	200.000	220.000	240.000	260.000	280.000	300.000	320.000	340.000	360.000	380.000	400.000	420.000	440.000	460.000	480.000	500.000	520.000	540.000
Proposed Levels	94.791	94.738	94.867	94.997	95.126	95.274	95.557	96.993	96.583	97.233	97.883	98.323	99.099	99.602	100.033	100.391	100.676	100.889	101.028	101.128	101.239	101.328	101.428	101.528	101.590	101.578	101.494	101.375
Existing Levels	94.791	94.698	94.791	94.716	94.758	94.961	95.517	96.009	96.586	97.341	97.930	99.098	99.156	99.772	100.112	100.520	100.656	100.907	101.082	100.992	101.364	101.391	101.362	101.450	101.473	101.444	101.574	101.568
Level Difference	0.000	0.040	0.076	0.281	0.368	0.283	0.040	-0.016	0.076	-0.108	-0.048	-0.975	-0.057	-0.169	-0.079	-0.129	0.020	-0.018	-0.054	0.137	-0.135	-0.062	0.067	0.078	0.117	0.135	-0.080	-0.192
Vertical Geometry	G =1.992% L =6.907	G =0.647% L =83.174	R =2601.701 K =26.000 L =67.675	G =3.250% L =51.941	R =5503.420 K =55.000 L =151.250	G =0.500% L =98.433	R =5500.053 K =55.000 L =60.271	G
Horizontal Geometry	L =6.907	L =104.265	R: 200.000 L: 65.204	L =51.873	R: 180.000 L: 78.389	L =33.905	R: 180.000 L: 64.043

PREFERRED ROUTE PROFILE
SCALE: 1:1000 HORIZONTAL
1:200 VERTICAL

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

A1

LEGEND:

- PROPOSED 2m HIGH NOISE BARRIER CONSTRUCTED INFRONT OF EXISTING PLASTERED BLOCK WALL
- EXISTING FENCE (POST & RAIL) TO BE REPLACED BY 2m HIGH NOISE BARRIER
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- EXISTING PANEL FENCE TO BE REPLACED WITH 2m HIGH NOISE BARRIER
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- EXISTING BRICK WALL WITH GALVANIZED RAILING EXTENDED TC 1.5m HIGH INCLUDING NOISE BARRIER
- EXISTING PLASTERED BLOCK WALL WITH RAILING TO BE REMOVED
- PROPOSED 1.5m HIGH NOISE BARRIER
- PROPOSED 3.5m HIGH NOISE BARRIER
- PROPOSED 2m HIGH POST AND PANEL NOISE BARRIER
- PROPOSED 2m HIGH BLOCK WALL
- PROPOSED CARRIAGEWAY
- PROPOSED CYCLE TRACK
- PROPOSED CYCLE LANE
- PROPOSED CYCLE LANE / LEFT TURN CONFLICT ZONE
- PROPOSED FOOTPATH
- PROPOSED SHARED SURFACE
- PROPOSED GRASS VERGE, TREES & PUBLIC LIGHTING
- POTENTIAL SITE COMPOUND LOCATION A
- POTENTIAL SITE COMPOUND LOCATION B
- PROPOSED ATTENUATION TANK LOCATION

Rebuilding Ireland

Kildare County Council
Comhairle Contae Chill Dara

Revision	Description	Drw'n	Chk'd	Date
P02	PLANNING	DC	CAB	22.02.2019
P01	FOR INFORMATION	DC	GE	08.01.2019

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Client: KILDARE COUNTY COUNCIL

Project: NAAS INNER RELIEF ROAD

Dwg. Title: PROPOSED NAAS INNER RELIEF ROAD PLAN & LONGSECTION - SHEET 1 OF 3

Drawn By: DC Date: 08.01.2019

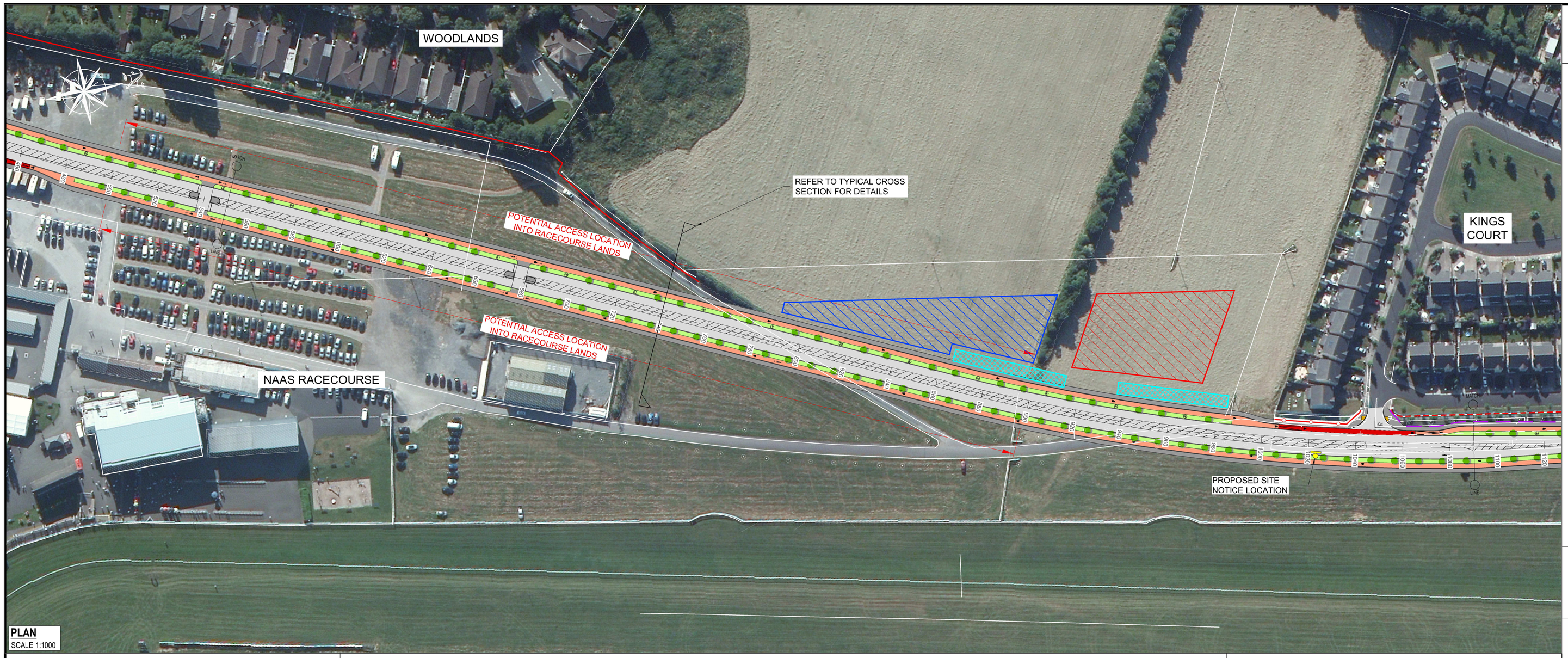
Checked by: GE Scale: AS INDICATED @ A1

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
17_169	CSE	HML	XX	DR	C	2201

S2 SUITABLE FOR INFORMATION
Status Code Suitability Description

P02 PLANNING
Revision Project Status

17_169
CSEA Job No.



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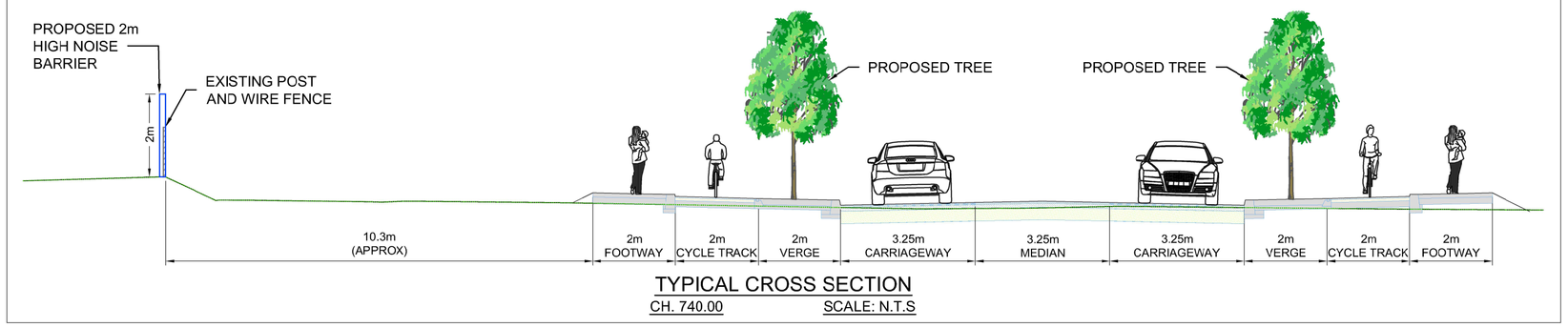

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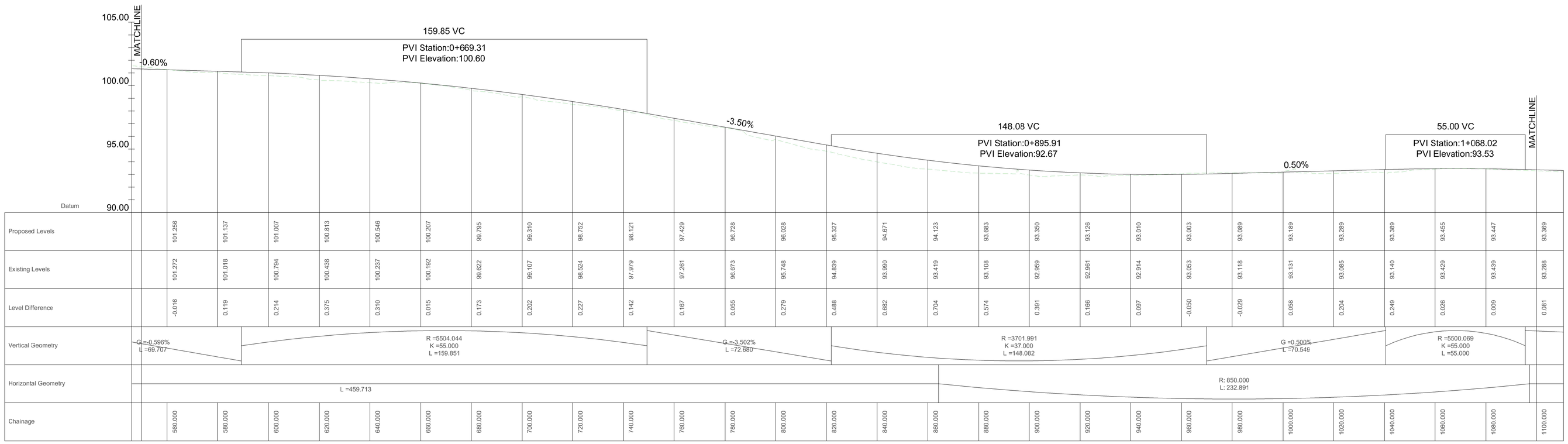
CH. 740.00 SCALE: N.T.S



PREFERRED ROUTE PROFILE
SCALE: 1:1000 HORIZONTAL
1:200 VERTICAL

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

A1

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Client: KILDARE COUNTY COUNCIL

Project: NAAS INNER RELIEF ROAD

Dwg. Title: PROPOSED NAAS INNER RELIEF ROAD PLAN & LONGSECTION - SHEET 2 OF 3

Drawn By: DC | Date: 08.01.2019

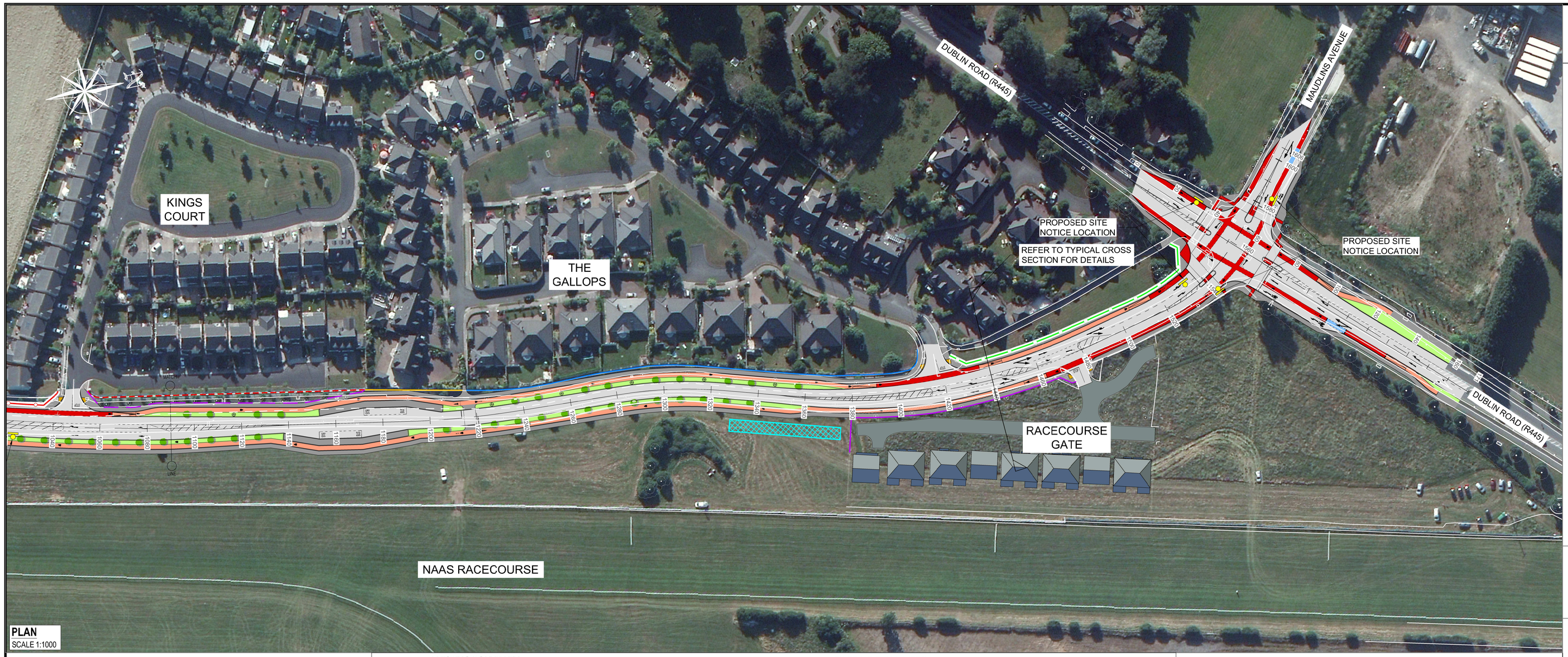
Checked by: GE | Scale: AS INDICATED @ A1

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
17_169	CSE	HML	XX	DR	C	2202

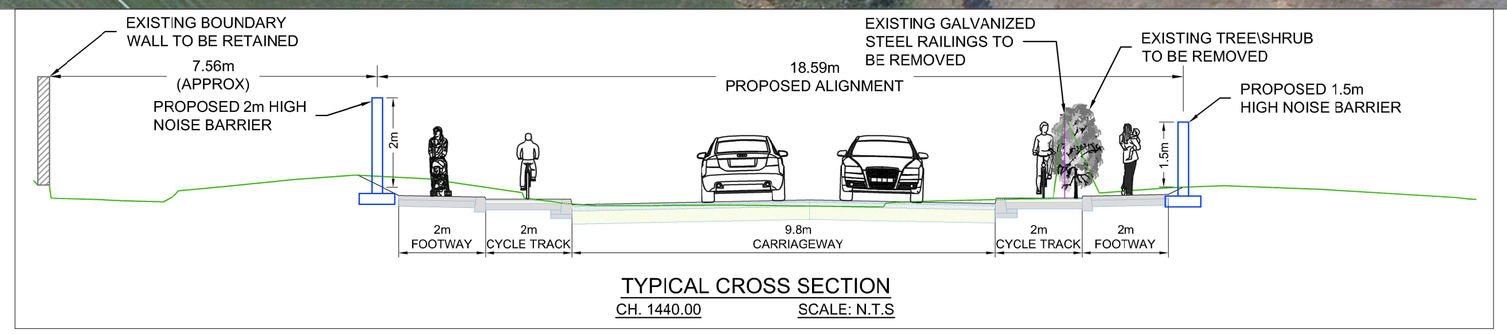
Status Code: S2 SUITABLE FOR INFORMATION (Suitability Description)

Revision: P02 PLANNING (Project Status)

CSEA Job No.: 17_169



PLAN
SCALE 1:1000



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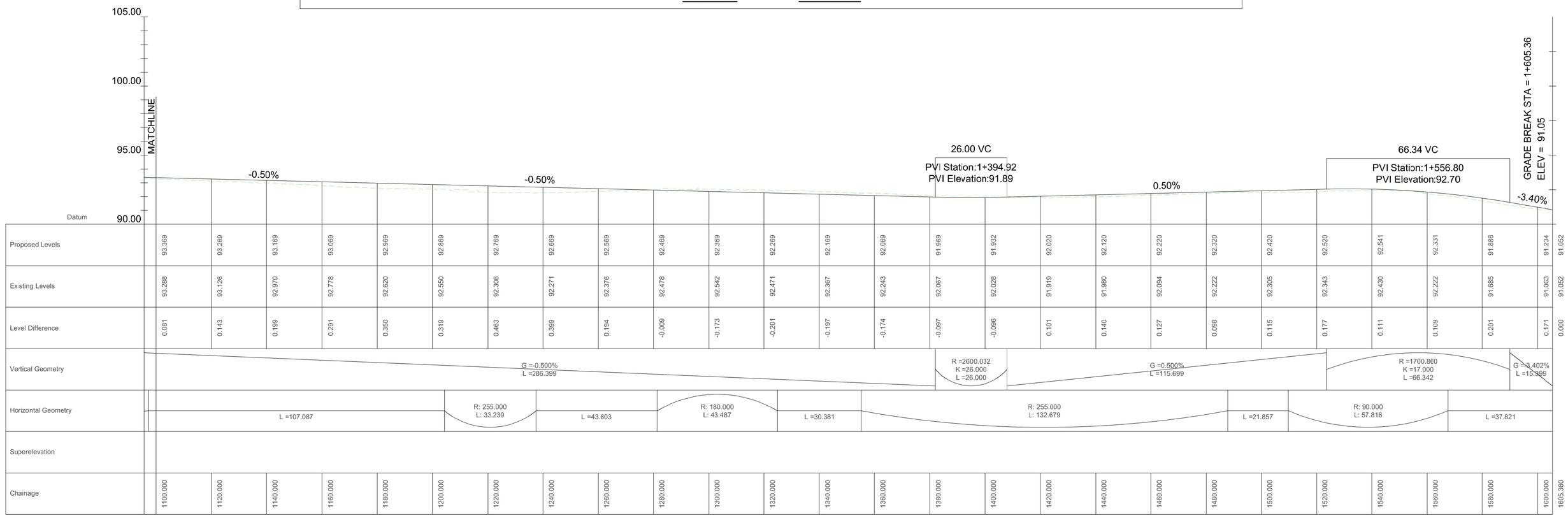

PREFERRED ROUTE PROFILE
SCALE: 1:1000 HORIZONTAL
1:200 VERTICAL

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

A1

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Client: KILDARE COUNTY COUNCIL

Project: NAAS INNER RELIEF ROAD

Dwg. Title: PROPOSED NAAS INNER RELIEF ROAD PLAN & LONGSECTION - SHEET 3 OF 3

Drawn By: DC Date: 08.01.2019

Checked by: GE Scale: AS INDICATED @ A1

Project Code	Originator	Zone/ Phase	Level	Type	Role	Dwg. No.
17_169	CSE	HML	XX	DR	C	2203

S2 SUITABLE FOR INFORMATION
Status Code Suitability Description

P02 PLANNING
Revision Project Status

17_169
CSEA Job No.