Appendix 6.1
EIA Scoping Report

N2 SLANE BYPASS & PUBLIC REALM ENHANCEMENT SCHEME

EIA Scoping Report

MDT0806-RPS-00-N2-RP-Z-0081
N2 Slane Bypass
EIA Scoping Report
S4.P01
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Glossary / Acronyms

Term	Explanation
AA	Appropriate Assessment
AADT	Annual Average Daily Traffic
ABP	An Bord Pleanála
ACA	Architectural Conservation Area
CIA	Cumulative Impact Assessment
DCCAE[1]	Department of Communications, Climate Action and Environment
DECC	Department of Environment, Climate and Communications
DHLGH	Department of Housing, Local Government and Heritage
DHPLG[1]	Department of Housing, Planning and Local Government
DMRB	Design Manual for Roads and Bridges
EC	European Commission
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EU	European Union
ESB	Electricity Supply Board
GHG	Greenhouse Gases
GI	Ground Investigation
GPS	Global Positioning System
INSPIRE	Infrastructure for Spatial Information in Europe
MCA	Multicriteria analysis
NDP	National Development Plan 2018–2027
NPF	National Planning Framework
NTA	National Transport Authority
NIS	Natura Impact Statement
NPWS	National Parks and Wildlife Service
NSR	Noise Sensitive Receptor
NTS	Non-technical Summary
OB	Overbridge
OPW	Office Public Works
OSI	Ordnance Survey Ireland
RMP	Record of Monuments and Places
RSES	Regional Spatial and Economic Strategy
SAC	Special Area of Conservation
SMR	Sites and Monuments Record
SPA	Special Protection Area
TII	Transport Infrastructure Ireland
UB	Underbridge

[1] Following the formation of a new Government on 27 June 2020, these Department names have changed and responsibilities have migrated: Department of Communications, Climate Action and Environment; and Department of Housing, Local Government and Heritage.

Term	Explanation
WHS	World Heritage Site
ZTV	Zone of Theoretical Visibility

Units

Unit	Description
Bq/m^3	Becquerel per cubic metre
CO_{2eq}	Carbon dioxide equivalent
dB	Decibel (unit used to measure the intensity of sound)
d	Depth
ft	Feet
km	Kilometres
<	Less than
m	Metre
m/s	Metres per second (wind speed)
Mt	Megatonne (million tonne)
mg/l	Milligrams per litre
>	More than
%	Percentage

1 INTRODUCTION

Meath County Council (MCC), under the auspices of Transport Infrastructure Ireland (TII), are developing a bypass of Slane Village to address a sub-standard section of the existing N2 National Primary Route. The scheme also encompasses traffic management measures within Slane, together with works on the N51 between the proposed bypass and the centre of the village. The collective elements together make up the N2 Slane Bypass and Public Realm Enhancement Scheme – the "*Proposed Scheme*".

EIA Screening has been undertaken and it has been concluded that the *Proposed Scheme* will require Environmental Impact Assessment (EIA) and the preparation of an Environmental Impact Assessment Report (EIAR) to support decision making.

The next stage in the EIA process is to set out the scope of the EIAR along with the proposed approaches that will be used to enable an assessment of the likely significant effects of the *Proposed Scheme*. This report forms the EIA Scoping Report and will be used to inform the content of the EIAR for the *Proposed Scheme*. This Scoping Report has been prepared by RPS, who have been appointed by the MCC to prepare the EIAR for the *Proposed Scheme*.

Responses received during EIA Scoping will be used to inform the assessments to be undertaken for the EIAR.

1.1 Background to the Proposed N2 Slane Bypass

Planning for the N2 Slane Bypass project dates back over a decade. In late 2009, MCC submitted an Environmental Impact Statement (EIS) and Compulsory Purchase Order (CPO) for the N2 Slane Bypass to An Bord Pleanála (ABP) and an oral hearing was held in early 2011. ABP subsequently refused permission for the bypass in March 2012 citing among its reasons for refusal:

- Given the location of the route within the viewshed of Brú na Bóinne UNESCO World Heritage Site, that any major road proposal would only be acceptable where it has been demonstrated that no appropriate alternative is available, and
- The alternatives to a bypass to address the traffic concerns at Slane Village had not be been adequately explored and having regard to the current configuration of the national road network in the region that a bypass would undermine public investment in the existing strategic road network.

At the beginning of 2017, MCC and TII re-started the project. To ensure the full extent of the concerns raised by ABP in the earlier decision would be robustly considered, it was decided that it should be taken through all planning phases of TII's Project Management Guidelines (PMG, 2010) and TII's Project Appraisal Guidelines (PAG, 2016) again to ensure a robust re-evaluation of the alternatives and significant effects arising from the *Proposed Scheme*.

1.2 Need for the Proposed N2 Slane Bypass

The need for the N2 Slane Bypass has been identified in national, regional and local policy as set out in a number of land use and transport policies, including:

- Project Ireland 2040: Our Plan – The National Planning Framework;
- Project Ireland 2040: National Development Plan 2018 – 2027;
- Eastern and Midlands Regional Spatial and Economic Strategy 2019 – 2031;
- Meath County Development Plan 2013 – 2019; and
- Draft Meath County Development Plan 2021 – 2027.

These documents set out a strong policy basis for the provision of an N2 Slane bypass.

1.2.1 Existing Road Network

The N2 is a strategic national route which runs through the centre of the small historic village at Slane. There has been a long history of traffic collisions including fatalities at Slane. Collisions arise from the substandard alignment particularly on the steep approach to Slane Bridge, the steep approaches to and tight geometry at 'The Square' in Slane Village, and the high percentage of heavy goods vehicles (HGVs) which pass through the village (see **Figure 1.1**) on the National Primary Route of the N2.

At the southern end of Slane village, the existing N2 crosses the River Boyne on a multi-arched masonry bridge. This bridge is too narrow to cater for two-way traffic and a traffic signal shuttle system operates. Southbound HGVs are segregated from other traffic for safety reasons. Facilities for vulnerable road users are non-existent in the vicinity of Slane Bridge.

Figure 1.1: View Looking North at Existing N2 Bridge (Left) and View Looking Southbound Across the Existing N2 Bridge (Right)

The layout of the signalised junction in Slane is also constrained and turning lanes are short and narrow. Large vehicles turning cross over opposing traffic lanes. Due to the historic setting of 'The Square' in Slane Village, there is no scope for improvement to the signalised junction, as it would need to be made wider therefore impacting on pedestrian provision in addition to impacting on the historic context. The problems at the junction will continue to pose a risk of accidents for road users, local residents and visitors (all pedestrians).

There are no overtaking opportunities on the N2 for over four kilometres from south of McGruder's Cross to north of the Grassland Agro access. Speed limits have been reduced to 60 km/h, 50km/h and 30km/h approaching and through the village, however many vehicles do not comply with these speed limits.

The level of service on the N2 in Slane is poor. Average delays of 2 to 3 minutes occur in both directions, which can increase to between 6 and 7 minutes depending on traffic congestion. **Table 1-1** outlines the current indicative traffic volumes in each direction on the N2 and N51.

Table 1-1: Indicative existing traffic volumes in Slane

Road Section	Annual Average Daily Traffic (AADT)	HGV Content
N2 South	6,800	15%
N2 North	8,600	14%
N51 West	8,600	10%
N51 East	5,700	7%

1.2.2 Road Safety Issues

Analysis of collision data suggests the collision rates on the N2 in Slane are higher than average. From analysis of the collision data, a number of trends are identified, namely:

- The average collision rate is 80% higher than the comparative rate for County Meath.[2]
- The average collision rate is also higher for Slane than that for similar reference populations for both urban and rural two-lane roads.[3]
- The primary collision types are head-on and single vehicle type collisions.
- Clusters of collisions tend occur at McGruder's Crossroads (3 no.) and N2/N51 junction (3 no.).

1.3 Public Realm Enhancement

In 2020 MCC prepared a draft strategy for public realm enhancements for Slane Village. This considered improvements that could be made to the public realm in the village with the introduction of the N2 Slane Bypass. Key issues to be addressed were identified as including:

- Congestion throughout the town centre;
- Speed of vehicles on non-peak hours;
- Vehicle dominated public realm, not pedestrian friendly;
- Narrow footways and lack of pedestrian crossings;
- The negative perception of safety, visual intrusion, air quality and noise due to the quantity of vehicles, especially HGV's;
- The comfort of all users including pedestrians and cyclists;
- Little emphasis put on key buildings / architectural heritage;
- Lack of vegetation and tree planting in the town centre;
- Absence of pedestrian connection to the surroundings of the town e.g. riverside, key archaeological sites, woodlands; and
- Air pollution.

The impact of the bypass road in removing traffic from the town area was identified as an important opportunity to revitalise and increase the general quality and attractiveness of the town centre, and as such MCC made the decision to incorporate the enhancements into the Slane Bypass project to ensure continuity in design and achievement of a balance between pedestrian and road space. This aspect was added to the N2 Slane Bypass Project in 2020 as the public realm elements represents an opportunity to reallocate street space for more equitable streets

1.4 Summary of Work Carried Out

1.4.1 Phase 1 Feasibility Stage

In accordance with the TII Project Management Guidelines, a Feasibility Report was prepared in Q2 2017 to verify the need for the Slane Bypass. It was concluded that there was a need for the scheme and that a bypass of Slane Village was feasible. Based on this it was recommended that the N2 Slane Bypass be progressed to Phase 2 - Constraints Analysis and Options Appraisal. This appraisal also considered reasonable alternatives including other bypass options, traffic management alternatives and other modes.

[2] RSA Collision Database, Annual Average Accident Rate 2008 – 2014. Note the Road Safety Assessment and collision data is being updated as part of Phase 3 work for the scheme.

[3] TII HD15 collision rate by reference population for rural two lane roads.

1.4.2 Phase 2 – Constraints Analysis and Options Appraisal

A constraints analysis was undertaken to inform the development of a number of route options within the defined study area. Information was collated on environmental topics including population, landscape, biodiversity, water land use, soils, and cultural heritage among others. A Constraints Study Report was prepared to record this information and to inform development of route options.

A series of fifteen preliminary bypass options were generated for initial assessment, along with traffic management options. The preliminary assessment of options was carried out under the headings of Environment, Engineering and Economy and resulted in eight bypass options going forward for further appraisal. Five bypass options to the east and three bypass route options to the west of Slane Village were identified.

The Stage 2 project appraisal comprised a detailed assessment of options under the standard Common Appraisal Framework criteria: Environment; Economy; Safety; Integration; Accessibility and Social Inclusion; and Physical Activity with all options assessed against a Do Minimum option (i.e. the existing N2 with some minor upgrades). The outcome of the Option Selection Appraisal was identification of an emerging preferred option which included an eastern bypass route, traffic management measures within Slane Village and upgrade works to the N51 between the proposed bypass and the centre of the village. The full Option Selection Report can be accessed at: www.n2slanebypass.ie.

1.4.3 Consultation Carried Out to Date

At project commencement, a dedicated website was set up for the N2 Bypass. This presents the history of the scheme, information on current activities and provides a repository of the documents available for public consultation. Opportunities to provide feedback are also available through the website.

Throughout the initial phases of the road planning process, the design team has also sought the direct engagement of the public. Three public display events have been conducted, as follows:

- Constraints Study Public Display and Consultation: 27th July 2017 at the Conyngham Arms Hotel in Slane.
- Options Study Public Display and Consultation: 29th November 2017 at the Conyngham Arms Hotel in Slane.
- Emerging Preferred Option Public Display and Consultation: 14th November 2019 at the Conyngham Arms Hotel in Slane.

Each of the public consultation events was well attended by local residents, landowners and other interested parties. Information was provided on the development of the project and feedback sought to further inform the ongoing development of the scheme. Further detail on the issues raised through these consultations is included in the Option Selection Report which can be accessed at: www.n2slanebypass.ie.

2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

This chapter provides an outline of the main elements of the *Proposed Scheme*. The design of the *Proposed Scheme* is currently being developed to the point where all of the potential environmental impacts can be identified and assessed for the EIAR. Wherever possible, design measures to offset negative environmental effects and enhance environmental benefits from the project are being integrated into the design. Further mitigation measures will be identified in the EIAR.

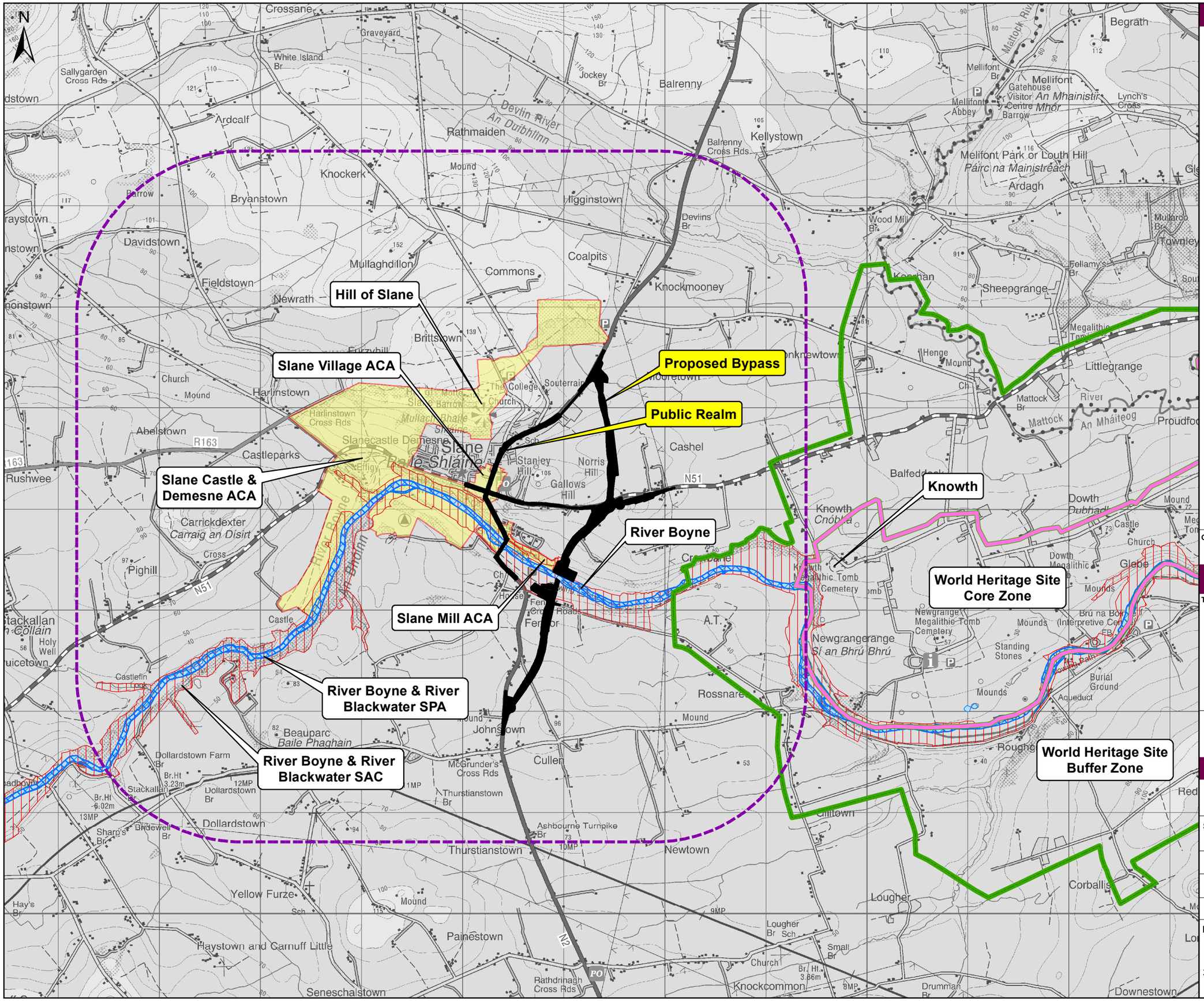
2.1 Site Location and Context

Slane is located in the east of County Meath in the heart of the Boyne Valley. It is 11km from Navan and 12km from Drogheda. The core of the village extends along cross-roads radiating from the square at the centre junction known locally as '*The Square'*. The crossroads sees the convergence of two national roads, the Dublin to Derry N2 and the Drogheda to Navan N51.

Slane and the surrounding environs are characterised by significant environmental assets with the Hill of Slane to the north, Slane Castle to the west and the River Boyne and Slane Mill to the south. Slane village is elevated above the River Boyne which affords it views of the village's historic core when approaching from the south from Slane Bridge. The more significant environmental assets associated with Slane Village and environs that have shaped the design of the proposed bypass and public realm enhancements are noted in **Table 2-1** and shown on **Figure 2.1**.

Table 2-1: Significant Environmental Assets for the Scheme

Environmental Asset	How it has Shaped the Design
Brú na Bóinne UNESCO World Heritage Site	• Location of the River Crossing to reduce visibility in the landscape. • Design of the bridge crossing to reduce visibility in the landscape – low level rather than statement bridge.
River Boyne and Blackwater SAC and SPA	• Location of the River Boyne Crossing to avoid Annex I Habitat. • Design of the bridge crossing to avoid piers in the river and reduce disturbance of riverine environment.
Hill of Slane	• Location of the River Crossing to reduce visibility in the landscape. • Design of the bridge crossing to reduce visibility in the landscape – low level rather than statement bridge.
Slane Village Architectural Conservation Area **Slane Mill Architectural Conservation Area** **Slane Castle and Demesne Architectural Conservation Area**	• Location of the proposed bypass away from the ACA's • Bridge design to reduce visibility in the receiving landscape. • Sympathetic public realm design to reflect and connect heritage.



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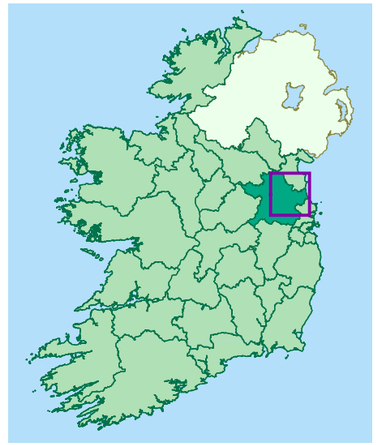

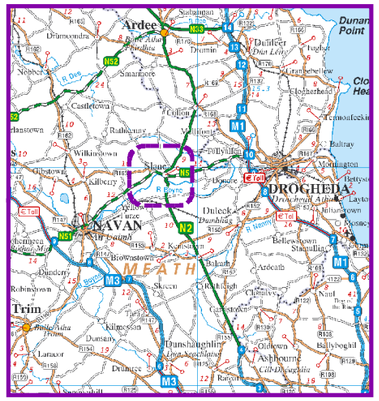

Client

Meath County Council

N2 Slane Bypass and Public Realm Enhancement Scheme

Title

Figure 2.1:

Site Context of the N2 Slane Bypass and Public Realm Enhancement Scheme

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2.2 Project Overview

An overview of the scheme is shown on **Figure 2.2** and described in the following sections. Construction related matters are discussed in **Section 2.4**.

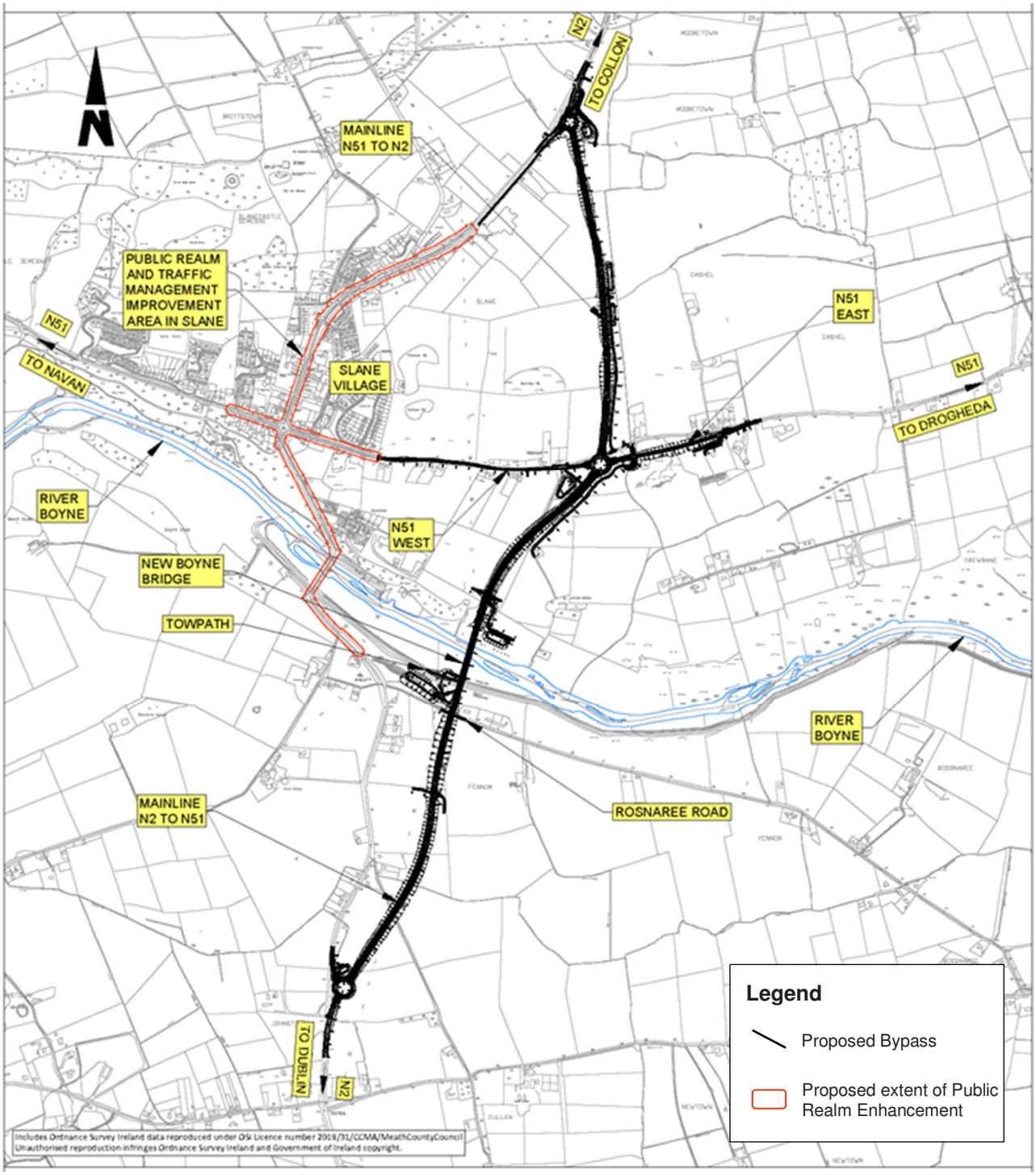


Figure 2.2: Overview of N2 Slane Bypass and Public Realm Enhancement Scheme

2.2.1 Mainline

The proposed N2 Slane Bypass will consist of 3.5 kilometres of dual carriageway, located to the east of Slane village. The proposed route diverts from the existing N2, in a north-easterly direction, from a location approximately 400m north of McGruder's crossroads in the townland of Johnstown. It continues in a north-north easterly direction, through Fennor and Crewbane townlands in a 6-7m deep cutting. The route passes under the existing Rosnaree Road, crossing the River Boyne approximately 630m east of the existing Slane Bridge. After crossing the river, the route runs in a north-easterly direction in a typically 6m deep cutting until it reaches the N51. It crosses the N51, approximately 1,100m east of the N2/N51 junction in the centre of Slane Village. The route then proceeds northwards, passing east of Ledwidge Cottage, through the townlands of Cashel and Mooretown, before turning north-west to tie in with the existing N2, approximately 415m north of the entrance to the Grassland Agro plant. The section from the N51 to the northern tie-in to the N2 is a combination of cut and fill. At grade roundabouts are proposed at each tie in with the existing N2 and at the interface with the N51.

The carriageway for the proposed bypass will be:

- Type 2 Dual Carriageway with 2 x 7.00m carriageway.
- 1.5m central reserve with steel barrier.
- 5.5m carriageway width on west side including 2m wide shared two-way cycle/pedestrian facility 2.5m wide grassed verge on road side of shared facility and 1m grass verge on earthworks side.
- 3m grassed verge on east side.

2.2.2 River Boyne Bridge Crossing

The proposed N2 Slane Bypass will also consist of a new crossing of the River Boyne on the eastern side of Slane Village approximately 630m to the east of the existing Slane Bridge (see **Figure 2.3** below).

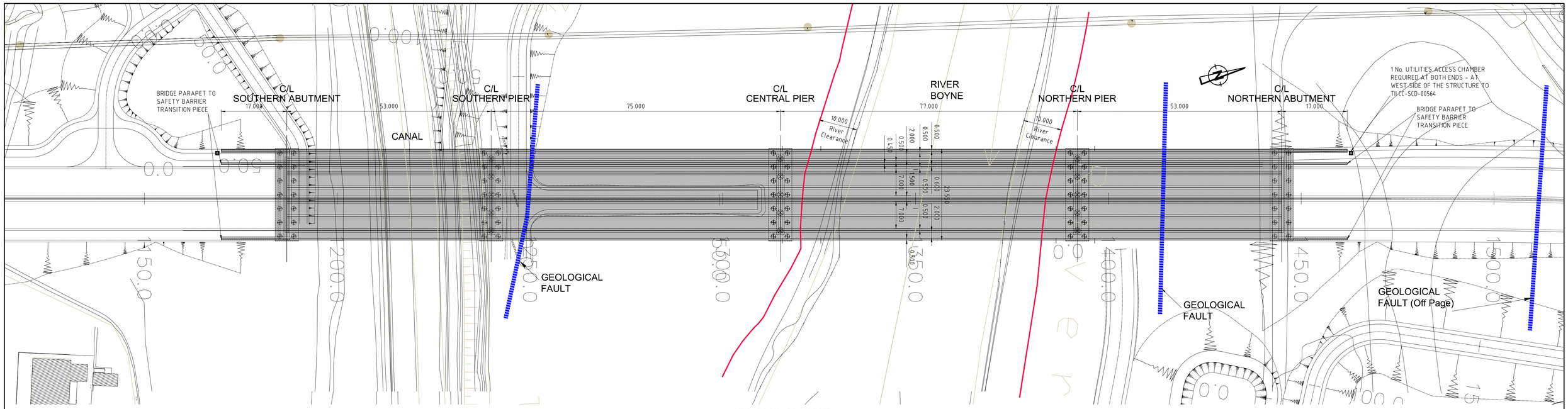
Figure 2.3: Location of the Proposed New Crossing of the River Boyne

The proposed new structure comprises a four-span steel plate girder bridge made composite with a reinforced concrete deck slab. The span arrangements are 55m, 75m, 75m and 55m giving a total bridge length of 260m. The depth of the steel plate girders varies from 4m at the intermediate supports to 2.15m at mid span. The bridge height would be approximately 13m over the southern bank of the river. The substructure consists of cast in-situ reinforced concrete piers and abutments supported by bored pile foundations.

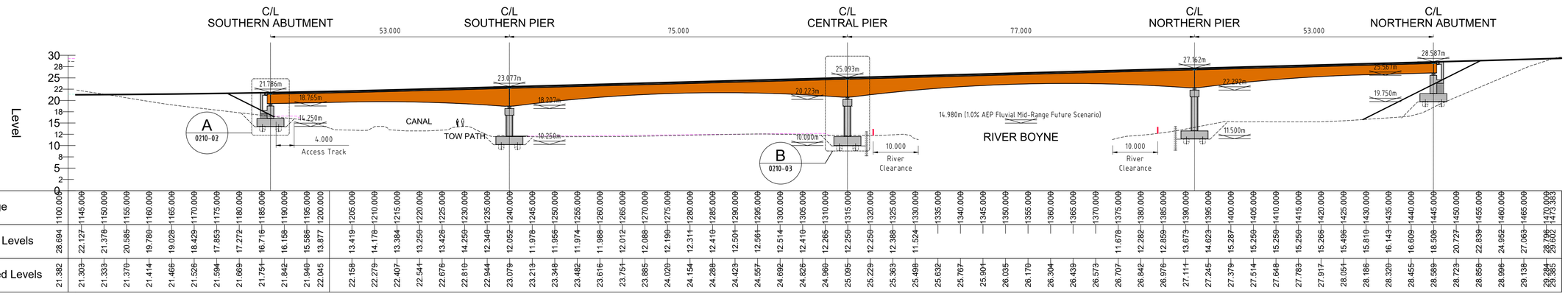
On the southern side of the river, the proposed bridge will span over the Boyne Canal and towpath which forms part of the Boyne Navigation. The Inland Waterways Association of Ireland (IWAI) – Boyne Navigation Branch have as a primary objective to restore the canal from Drogheda to Navan. A minimum vertical clearance for canal navigation is generally required to be a minimum of 3.6m, a minimum vertical clearance of 5.1m to the canal towpath is also required for maintenance of the canal.

Lighting is not proposed at this structure. Access tracks for maintenance will be required

The proposed bridge design is shown below in **Figure 2.4**.



PLAN LAYOUT
(Scale 1 : 500)



Chainage	1100.000	1145.000	1150.000	1155.000	1160.000	1165.000	1170.000	1175.000	1180.000	1185.000	1190.000	1195.000	1200.000	1205.000	1210.000	1215.000	1220.000	1225.000	1230.000	1235.000	1240.000	1245.000	1250.000	1255.000	1260.000	1265.000	1270.000	1275.000	1280.000	1285.000	1290.000	1295.000	1300.000	1305.000	1310.000	1315.000	1320.000	1325.000	1330.000	1335.000	1340.000	1345.000	1350.000	1355.000	1360.000	1365.000	1370.000	1375.000	1380.000	1385.000	1390.000	1395.000	1400.000	1405.000	1410.000	1415.000	1420.000	1425.000	1430.000	1435.000	1440.000	1445.000	1450.000	1455.000	1460.000	1465.000	1470.000	1473.383
Existing Levels	28.694	22.127	21.378	20.585	19.780	19.028	18.429	17.853	17.272	16.716	16.158	15.586	13.877	13.419	14.178	13.384	13.250	13.426	14.250	12.340	12.052	11.978	11.956	11.974	11.988	12.012	12.088	12.190	12.311	12.410	12.501	12.561	12.514	12.410	12.265	12.250	12.250	12.388	11.524	11.632	11.767	11.901	12.035	12.170	12.304	12.439	12.573	11.678	12.282	12.859	13.673	14.623	15.287	15.259	15.259	15.259	15.266	15.496	15.810	16.143	16.609	18.508	20.727	22.839	24.952	27.063	28.796	29.602
Proposed Levels	21.382	21.303	21.333	21.370	21.414	21.466	21.526	21.594	21.669	21.754	21.842	21.940	22.045	22.158	22.279	22.407	22.541	22.676	22.810	22.944	23.079	23.213	23.348	23.482	23.616	23.754	23.885	24.020	24.154	24.288	24.423	24.557	24.692	24.826	24.960	25.095	25.229	25.363	25.498	25.632	25.767	25.901	26.035	26.170	26.304	26.439	26.573	26.707	26.842	26.976	27.111	27.245	27.379	27.514	27.648	27.783	27.917	28.051	28.186	28.320	28.455	28.589	28.723	28.858	28.996	29.138	29.284	29.385

CENTERLINE LONG SECTION
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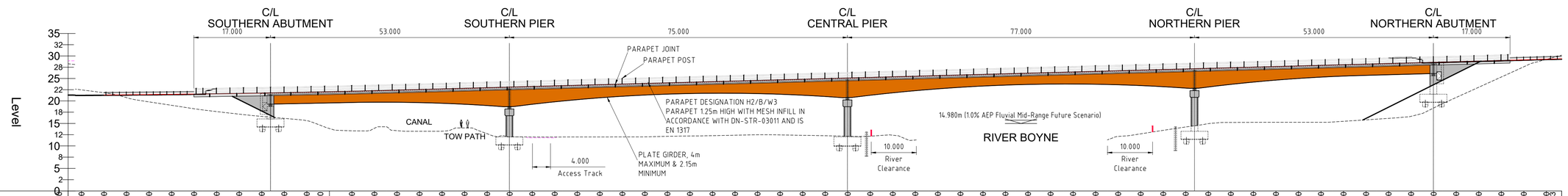

Chainage	1100.000	1145.000	1150.000	1155.000	1160.000	1165.000	1170.000	1175.000	1180.000	1185.000	1190.000	1195.000	1200.000	1205.000	1210.000	1215.000	1220.000	1225.000	1230.000	1235.000	1240.000	1245.000	1250.000	1255.000	1260.000	1265.000	1270.000	1275.000	1280.000	1285.000	1290.000	1295.000	1300.000	1305.000	1310.000	1315.000	1320.000	1325.000	1330.000	1335.000	1340.000	1345.000	1350.000	1355.000	1360.000	1365.000	1370.000	1375.000	1380.000	1385.000	1390.000	1395.000	1400.000	1405.000	1410.000	1415.000	1420.000	1425.000	1430.000	1435.000	1440.000	1445.000	1450.000	1455.000	1460.000	1465.000	1470.000	1473.383
Existing Levels	28.250	22.455	21.816	20.734	19.788	19.029	18.257	17.639	17.062	16.557	16.125	15.606	13.863	13.362	13.936	13.392	13.259	13.265	14.000	12.718	12.000	11.987	11.982	11.987	11.992	11.997	12.012	12.129	12.211	12.278	12.384	12.479	12.448	12.356	12.264	12.152	12.159	12.379	11.309	11.467	11.625	11.784	11.942	12.100	12.259	12.417	12.575	12.102	12.688	13.467	14.213	14.956	15.217	15.237	15.259	15.259	15.259	15.475	15.794	16.129	16.587	18.444	20.779	23.049	25.320	27.598	29.252	30.172
Proposed Levels			21.333	21.370	21.414	21.466	21.526	21.594	21.669	21.754	21.842	21.940	22.045	22.158	22.279	22.407	22.541	22.676	22.810	22.944	23.079	23.213	23.348	23.482	23.616	23.754	23.885	24.020	24.154	24.288	24.423	24.557	24.692	24.826	24.960	25.095	25.229	25.363	25.498	25.632	25.767	25.901	26.035	26.170	26.304	26.439	26.573	26.707	26.842	26.976	27.111	27.245	27.379	27.514	27.648	27.783	27.917	28.051	28.186	28.320	28.455	28.589	28.723	28.858	28.996	29.138	29.284	29.385

WESTERN ELEVATION
(Scale 1 : 500)

Client

Bonneagar Iompair Éireann Transport Infrastructure Ireland

An Roinn Iompair Turasóireachta agus Spóirt
Department of Transport, Tourism and Sport

comhairle chontae na mí
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Rev	Date	Drn	Chk	Amendment / Issue	App
S3 P02	Aug.'21	DC	JMI	Issue For Approval	MN
S3 P01	May'21	DC	JMI	Issue For Approval	MN

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Created on: May'21
Sheets: 1 of 3

Project: **N2 SLANE BYPASS & PUBLIC REALM ENHANCEMENT**

Title: BOYNE CROSSING - ST01
GENERAL ARRANGMENT
(Sheet 1 of 3)

File Identifier: MDT0806-RPS-ST01-N2-DR-D-BR0000

Drawing Number: MDT0806-RPS-ST01-N2-DR-D-BR0210-01
Status: S3
Rev: P02

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2.2.3 Realignment of the N51

The scheme includes for a 1.4 km realignment of the N51 between Slane village and the proposed bypass. This realignment comprises 820m realignment between the bypass roundabout and the edge of Slane bypass and some 580m realignment of the N51 on the east side of the bypass roundabout. The design of the section of road from the bypass to the village reflects the change of standard (higher speed) rural road to rural fringe to gateway treatment and transition zone as traffic calming measures on the approach to the urban development in Slane village. The proposed improvements to the N51 between Slane village and the proposed bypass include the following:

N51 West of the N2 Bypass

- Realigning N51 route west of the N2 Bypass over approximately 820m adopting a design speed of 60kph to improve the standard of the horizontal alignment where possible. A carriageway cross-section comprising 2 x 3.5m carriageway. A grass verge of 2.0m width is proposed on the northern side of the route.
- Provision of a consistent single carriageway cross-section along the route with a total pavement width of 6.5m.
- Provision of a pedestrian footway and road lighting from the Slane Village to the N2 bypass. On southern side of the route, it is proposed to provide a 2.0m wide footpath.
- Provision of a no overtaking zone.
- Provision of public lighting
- Landscaping with vertical emphasis on side of road, where feasible, together with mass planting with ground cover shrubs and a hedgerow planted along the boundary fence at the top of the embankment.

N51 East of the N2 Bypass

- Realigning N51 route east of the N2 Bypass over approximately 600m adopting a design speed of 80kph. The realigned section of the N51 would consist of a Type 2 single carriageway comprising cross-section of 7.0m with 0.5m wide hard strips and 3m verges either side.

2.2.4 Slane Village Public Realm Improvements

Within Slane Village, the *Proposed Scheme* will include traffic management measures and public realm improvements including reallocation of road space, improved paving, landscaping, street furniture, utility and services installation and diversions, disability facilities, lighting, advertising, signage, drainage etc. Additionally, further transport related issues, including promotion of active travel measures, accessibility, enhancement of public transport and capacity of the east-west route through the village to safely cater for the anticipated traffic demand are included.

The implementation of a bypass around Slane will significantly improve public realm and pedestrian conditions by reducing dominance of traffic in the village. The aims of the public realm improvements in the village are to reflect this outcome and deliver a significant change of character and improved public realm for the village centre, in particular on the north-south route. Improvements can still be made on the east-west route which will improve the setting and provide for improved management of the residual and predominantly east-west traffic, by reducing traffic speeds and facilitating ease of movement on the east and west route through the village.

As such, the proposed public realm measures within Slane Village include the following:

- Removal of traffic signals and left turn slips.
- Provision of necessary signage and road markings so that the junction at the square becomes a priority junction with the east-west N51 forming the major arms and the northern and southern approaches from the N2 giving way.
- Realignment of kerblines to narrow carriageway widths and remove turning slip roads at the junction resulting in increased footpath provision to DMURS standards and landscape provided such as street trees and planted areas etc for traffic calming/ improved streetscape/Sustainable Urban Drainage Systems (SuDS) etc.

- Provision of verge areas for suitable on-street planting, which will be considered as part of the public realm design process.
- Provision of raised pedestrian/cyclist crossing ramps on each arm of the junction with signalised crossings on the N51 arms and zebra crossings on the N2 arms.
- Improved paving, landscaping, street furniture, utility and services installation and diversions, disability facilities, lighting, advertising, signage, drainage etc. The use of appropriate streetscape materials, including reuse of materials, and the historical context of the village will also be considered as part of the public realm design process.

2.3 Ancillary Infrastructure

2.3.1 Interfaces

The *Proposed Scheme* interfaces with existing roads as follows:

- Tie-in to N2 South: Roundabout junction
- L16002 Rosnaree Road: Local road overpass
- N51 Slane to Drogheda: Roundabout Junction
- Tie-in to N2 North: Roundabout Junction

Other than Local Road L16002, Rosnaree Road, the side road realignments consist of new tie-ins to proposed roundabout junctions.

2.3.2 Overbridges

Three overbridge structures are proposed to facilitate and maintain access to the local road network and serve farming operations impacted by the scheme. These include:

- 2 No. farm accommodation overbridges.
- 1 No. bridge for the local road L16002, Rosnaree Road.

All overbridges will be 3-span prestressed concrete beam bridges.

2.3.3 Drainage

The natural catchment drainage of the study area is towards the River Boyne and therefore the majority of run-off from the scheme will ultimately outfall to the river [be it directly or indirectly]. The River Boyne is designated a Special Area of Conservation (SAC), as part of the River Boyne and Blackwater SAC, through the EU Habitats Directive 92/43/EEC. It is also designated a Special Protection Area (SPA) through the EU Birds Directive 2009/147/EC. Both the SAC and SPA are European Sites which form part of the Natura 2000 network of sites. The design of the drainage system is a critical element of the scheme in the context of avoiding adverse effects on the integrity of a European site. The proposed surface water drainage design will have regard to the requirements of Meath County Council, Environmental Protection Agency (EPA), Inland Fisheries Ireland (IFI) and National Parks and Wildlife Service (NPWS).

The scheme drainage system will incorporate a carriageway drainage collection system, together with a system of bridges and culverts to accommodate watercourses that intersect the scheme. The drainage design of the project implements the concepts of SuDS, which requires the drainage to be carefully integrated into the scheme, while taking account of the original greenfield drainage patterns. It includes provisions to control volume on the rate of run off from the road as well as provisions to remove pollutants from the run off.

It is envisaged that the surface water runoff from the proposed carriageway, verges, footpath and cut slopes will typically be collected by a network of grassed surface water channels. The drainage design has been developed in accordance with TII standards.

Retention/attenuation ponds are proposed to be provided to the road scheme. The ponds will be designed as reconstituted wetland in accordance with TII standards. The ponds will be sized to provide sufficient volume

to store runoff to attenuate the rate of the outflow to a value to not exceed the pre-development rate of greenfield runoff. The attenuation ponds have been designed for the 1 in 100 year design period plus allowance for climate change. The ponds will be designed to retain a permanent pool of water.

In order to prevent petrochemicals or other substances discharging into adjacent watercourses arising from accidental spillages from motor vehicles on the proposed road development, it is proposed to install Class 1 oil/petrol bypass interceptors upstream of the locations where the drainage collection system discharges into the retention/attenuation ponds. Also included at these discharge point are vortex grit separators, provided to increase the capacity of the drainage system to minimise suspended solids in the run-off from the scheme.

Due to the level of the existing water table, sub-surface drainage systems consisting of combined filter drains will be required; separate systems are proposed for surface run-off and for ground water sub-surface drainage. They will be provided to control ground water levels to reduce the moisture content of the road pavement and the underlying material in order to maximise pavement strength and longevity.

There are two culverts required on the Mooretown Stream (a tributary of the River Mattock) while other culverts will be required for existing drainage ditches etc. Where culverts are not proposed for other watercourses, such as minor land drains, these shall be intercepted by the interceptor ditches and conveyed to the nearest downstream outfall and/or culvert.

2.3.4 Cycling and Pedestrian Facilities

Appropriate cycling facilities are to be provided alongside the scheme's mainline to facilitate long-distance cycling along the N2. Meath County Council are advancing a greenway project along the River Boyne from Navan to Drogheda and it is expected that this greenway may incorporate the existing tow path alongside the canal to the south of the River Boyne. It is proposed that a pedestrian/cyclist link is provided from the bypass cycling facility to the canal tow path. This will require a bridge crossing of the existing canal.

In general terms, pedestrians should be discouraged from using new offline high-speed roads where the existing route remains available and provides a safer alternative. This would be the case for the proposed N2 Slane Bypass which has been designed for a speed of 100 kph. In this regard, it is not proposed to provide pedestrian facilities along the proposed bypass route for the purpose of pedestrian access to particular facilities or destinations.

The scheme includes for the provision of enhanced footway access along the existing N51 between the village and the bypass. Taking this into consideration, the provision of footway facilities on the proposed bypass between the proposed junction with the N51 and the southside of the proposed River Boyne crossing, linking to the existing tow path along the canal/river presents the opportunity for an attractive pedestrian route, and would form an ideal walking loop accessing the area of high scenic value around the river. Additionally, it would be feasible to facilitate a walking loop on the north side of Slane, using the bypass and N51 to return to the village. This route will require extension of the existing footway on the N2 at the entrance to the Grassland facility to the northern tie-in roundabout.

2.3.5 Utilities

The principal statutory undertakers and service providers affected by the N2 Slane Bypass scheme which will require existing services to be diverted or protected are as follows:

- ESB and ESBi
- Irish Water
- Eircom

The services conflicts and the associated diversions will be considered as far as possible at this stage, but it is likely that further modifications will occur at detailed design stage following design development and further consultation with Utility and Service Providers.

During construction, it may be necessary to maintain supply to certain services, and this may entail the construction of temporary diversions to facilitate completion of the permanent diversion whilst maintaining supply. The sequence of roadworks will also have to take account of the need to liaise with service providers and, subject to their availability to carry out diversions, staging of the works may be necessary.

2.3.6 Public Lighting

Road lighting will be provided at the following locations:

- At the N2 South Roundabout at the southern extent of the scheme.
- At the N2 Slane Bypass / N51 Roundabout.
- At the N2 North Roundabout at the northern extent of the scheme.

Lighting is proposed to utilise columns no higher than 14m and to use light emitting diode (LED) luminaires.

2.4 Construction Management

The overall construction period for the *Proposed Scheme* is anticipated to be in the region of 36 to 42 months (including 24 to 30 months for the proposed new River Boyne crossing). The construction site is effectively split by the River Boyne and will remain as such for the majority of the construction period. The main elements of construction will be:

1. Earthworks – Permanent and Temporary
2. Drainage - Permanent and Temporary
3. Bridge Construction, including temporary working platforms
4. Flood risk mitigation

2.4.1 Earthworks / Resource Requirement

Excavation and fill operations to enable the construction of the mainline will require a significant quantity of excavated material to be removed from the site to suitable locations. As a result, there is anticipated to be a need for haulage of material on the existing road network. The scheme has been designed to be sympathetic to the receiving environment and landscape character given the proximity and significance of the World Heritage Site (WHS) and the monument at Knowth in particular, as well as important views from Slane and local environment. A low-profile bridge and route over the Boyne River and valley, a significant valley with large floodplain and steep grades on both northern and southern sides of the river, has been designed which has resulted in the works generally required to be constructed in cut. As such, there is expected to be significant excess material which will need to be managed.

Key earthworks activities are:

- Cut in soil and rock for - N2 South Link; locations on the Mainline; N51 East; and various access tracks .
- Embankment for - the South Roundabout and the N2 North Link; the southern approach to the Boyne River Crossing; the cycle track link to towpath and the towpath realignment; the northern approach to the Boyne River Crossing; locations on the Mainline; North Roundabout; and N2 South Link.
- Temporary working platforms for the Boyne River Crossing.
- Excavation and replacement - at various overbridges; for a localised area of soft subsoil for the N51 roundabout; and locations on the mainline.
- Cuts and embankments for attenuation ponds.
- Opportunities for landscape bunding are to be identified as part of the EIA process.

2.4.2 Drainage

All on site drainage, erosion and sediment control measures for the construction works will be in place and functioning prior to the commencement of earthworks/site clearance. This will broadly include the six proposed retention ponds and associated vortex grit separator and Class 1 oil/petrol bypass interceptors. It is intended that temporary site drainage during the construction will be provided to drain to the permanent pollution and flood management system prior to discharge to the river.

The scheme requires significant cutting into the existing landform on either side of the Boyne River and given the ecological sensitivities of the river, a comprehensive drainage and pollution control plan will be

developed to inform the EIAR. The natural catchment drainage of the area is towards the river and all drainage provisions included in the scheme also outfall to the river [by both direct means and indirectly via the Mattock].

2.4.3 River Boyne Bridge Construction

Construction of the new bridge crossing will require significant enabling works and temporary construction infrastructure. Construction activity will be required within the River Boyne and Blackwater SAC/SPA, but not within the water body itself.

Enabling works will include temporary access for vehicles to the valley floor, provision of a temporary working platforms on which to carry out construction activities, temporary supports, provision of all necessary measures to prevent sediment runoff during the bridge construction including bunding and sediments ponds. The temporary working platforms will be in place for 2 to 2.5 years and will be designed for a flood with 1-in-100 year return period, including 20% increase for climate change (the mid-range future scenario).

The multi-girder bridge deck will be constructed by crane operating in river valley. This will require access for a 1200t crane which will need to be moved to three locations in the valley floor. A smaller crane will also be needed to support construction of the bridge.

No temporary works with respect to the piers and abutments will be required in the SPA however they will take place in the SAC. They will however not be permitted within 10m of the River Boyne. A mammal fence will be constructed at a 10m offset from the river and no works will take place within this area. To maintain the exclusion zone some temporary shoring for the construction of the central pier foundations will be required.

2.4.4 Flood Risk

The proposed bridge location, particularly the bridge piers is within a floodplain for the River Boyne. The proposed route corridor also intersects with several other watercourses including land drains. A Flood Risk Assessment is ongoing to inform the design and design measures will be incorporated to eliminate / reduce any related flood risk in the first instance and mitigate where necessary.

2.4.5 Other Construction Aspects

In addition to the key aspects above, other construction related matters of note include:

Further Site Investigation / Ground investigation: To inform detailed design of the scheme, further site investigation / ground investigation (GI) will be undertaken, particularly in the vicinity of the bridge crossing. This will include excavation of trial pits, cable percussive and rotary core boreholes. At present, GI has been completed for the Phase 3 Design stage.

Vegetation Protection / Removal: Prior to commencing construction, the site will be fenced off. Trees and other vegetation for protection will be clearly marked and protected from construction activities. Local soils and seedbank identified for re-use by the ecology / landscape specialists will be removed and stored in a suitable location. Remaining vegetation will be removed. The removal of vegetation will be undertaken outside the bird breeding season and will follow all mitigation measures proposed in the EIAR in relation to protected habitats and species. Any invasive plant species identified within the lands made available will also be dealt with prior to commencement of the main construction works.

Site Compound and Offices: As the site is effectively split by the River Boyne, it is anticipated there will be a need for a temporary main construction compound to the north of the River and a temporary satellite site compound to the south side of the river. A further temporary satellite site compound is likely to be required to facilitate the construction of the River Boyne bridge.

The construction compounds are likely to include stores, offices, welfare facilities, materials storage areas, material processing areas, plant storage and parking for site and staff vehicles. The sites are anticipated to remain in place for the duration of the works. The contractor will be required to manage parking and deliveries at the compound and other areas in such a manner as to ensure that there is no obstruction to traffic or sightlines during construction.

Other smaller satellite construction compounds may be required at specific locations from time to time during the construction phase. These temporary facilities will be located within the lands made available for the

construction at suitable places. These smaller office offices are likely to be served by temporary mobile sanitation units.

No construction compounds will be permitted within the River Boyne and Blackwater SAC/SPA.

Stockpile Areas: It is envisaged that topsoil and/or acceptable material[4] will be stockpiled during the course of the *Proposed Scheme* development. To minimise impacts, topsoil stripping over large areas in advance of main excavation works will not be permitted and topsoil stripping will be restricted to the minimum required for efficient earthworks operations. Stockpiles will not be located close to any watercourse or waterbody. Runoff from stockpiles will be collected via a shallow toe drain, which will discharge to a settlement pond which will be designed to have a retention time of at least 5 hours. Sediment build-up will be removed at regular intervals by manual means only and will be disposed of at appropriately licensed facilities only. Each construction area will be top-soiled and seeded using suitable seed mix appropriate to previous/proposed land use as soon as practicable thus limiting both the amount and the length of time for which materials have to be stockpiled. Stockpiles of non-granular materials shall be limited in height to not more than 2m.

Traffic Management: The construction site is effectively split by the River Boyne and will remain as such for the majority of the construction period. As a result, it will be necessary to provide construction access from both sides of the river. The proposed works at each access location will cause disruption to the travelling public in an environment. The existing road network within Slane village will also be impacted by construction traffic accessing to and from the site. All construction traffic leaving the site will be subject to stringent wheel washing prior to entry onto the public road network. Wheel washing design will include for water collection and sediment control. Prior to the commencement of works the Contractor will be required to prepare and submit a detailed site specific traffic management plan.

In terms of temporary traffic management during construction, the following is envisaged;

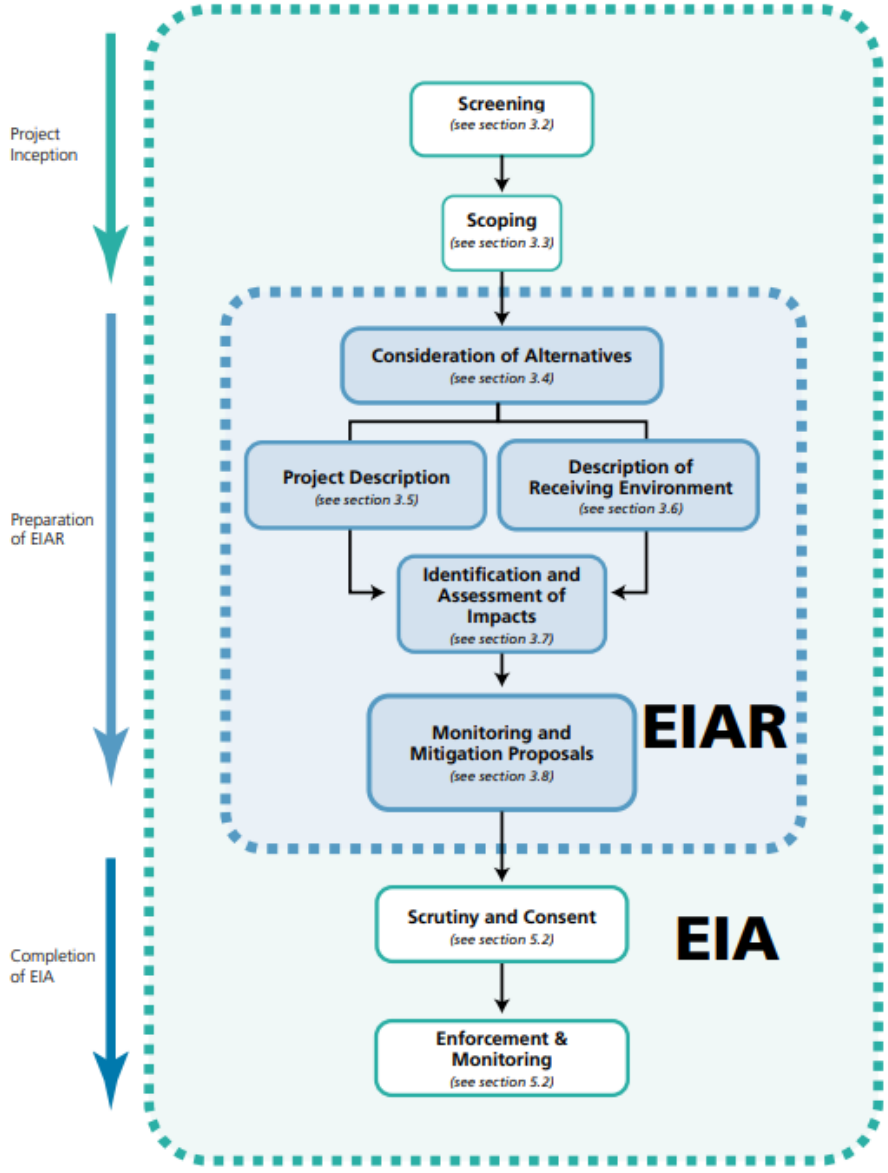
- Temporary closure and diversion of the L16002, Rosnaree Road to facilitate overbridge construction. This road is expected to be closed for a minimum of 12 months approximately to carry out earthworks below the road as well as construction the overbridge afterwards;
- The N2 and N51 will remain open to two-way traffic throughout the construction period except for short term occasional managed road closures for critical works, e.g. utility crossings. Traffic control shuttle systems will be necessary to complete tie-ins and enable the online realignment of the N51 West to be carried out.

[4] 'Acceptable material' means material which is suitable for re-use as an earthworks construction material in accordance with TII standards.

3 ENVIORNMENTAL IMPACT ASSESSMENT PROCESS

The EIA process encompasses a number of key decision points and outputs used by the relevant competent authority to complete the EIA process. It commences with consideration of whether an EIA is needed – EIA Screening. Where EIA is required the process moves to EIA Scoping and this is followed by preparation of an Environmental Impact Assessment Report (EIAR). This output is used by the relevant Competent Authority, along with any other supplementary information they deem appropriate, to complete the EIA process and either allow or refuse the proposed application. The overall process and the sequence of the various stages are outlined in **Figure 3.1** (reproduced from the 2017 EPA draft Guidelines on the Information to be Contained in an EIAR).

The content of this report relates to EIA Scoping for the *Proposed N2 Slane Bypass and Public Realm Enhancement Scheme*.



Source: Draft Guidelines on the Information to be Contained in an EIAR (EPA, 2017)

Figure 3.1: The Position of Scoping an EIAR within the EIA Process

3.1 EIA Screening

The requirements for EIA under 2011/52/EC as amended by Directive 2014/52/EC have been transposed into Irish law with reference to road development by the Roads Act 1993, as amended. The Roads Act established those instances where EIA is mandatory and where sub-threshold EIA may be required. Screening of the N2 Slane Bypass and Public Realm Enhancement Scheme concluded that mandatory EIA is required for the following principal reasons:

- The *Proposed Scheme* will include a bridge over the River Boyne c. 260m in length. The threshold for mandatory EIA under the Roads Act 1993, as amended, is any bridge over 100m in length and as such this criterion is met for the *Proposed Scheme*.

Notwithstanding this mandatory requirement for EIA, a number of other relevant factors have also influenced the requirement for EIA of the *Proposed Scheme.* These include:

- The *Proposed Scheme* intersects both a Special Area of Conservation (SAC) and a Special Protection Area (SPA).
- The *Proposed Scheme* will pass in proximity to the UNESCO site of Brú na Bóinne and will interact with a wider cultural heritage landscape which includes national and internationally recognised sites and features of importance.

An EIAR will therefore be prepared for the scheme and this will be submitted as part of an application to An Board Pleanála for permission to build and operate the *Proposed Scheme*.

3.2 EIA Scoping

EIA scoping seeks to establish the *content and extent of the matters which should be covered in the environmental information to be submitted in the EIAR.*[5] This includes definition of temporal and spatial scope and also potential for significant effects throughout the lifecycle of the project.

The process involves an assessment of a project's possible issues before deciding which should be brought forward for further consideration in the EIAR. An initial scoping of potential impacts may identify those issues thought to be potentially significant in EIA terms, those where significance is unclear, and those thought to be not significant. The issues in the potentially significant category are brought forward, together with those in the uncertain category. Those considered to be not significant are not considered further in the EIAR.

The preparation of this Scoping Report has had regard to the following:

- Guidelines for Planning Authorities and An Bord Pleanála on Carrying Out Environmental Impact Assessment (DHPLG, 2018);
- Environmental Impact Assessment of Projects. Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU), (European Commission, 2017b);
- Environmental Impact Assessment of Projects. Guidance on EIA Scoping (Directive 2011/92/EU as amended by 2014/52/EU), (European Commission, 2017a);
- Guidelines on the Information to be Contained in Environmental Impact Statements (EPA, 2002);
- Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2017);
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003);
- Draft Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2015).

In addition, topic-specific guidance has been reviewed for specialist topic areas. This is outlined in the specialist tables presented in **Chapter 4**.

[5] EC Guidance on EIA Scoping (2017).

Having regard to the most recent guidance scoping must be focused on issues and impacts which are:

- Environmentally based;
- Likely to occur; and
- Significant and adverse.

Although scoping commences early in the process and informs the content and level of detail in the EIAR, it is noted that scoping is a dynamic process and only provides a starting point from which to launch an environmental assessment of the *Proposed Scheme*. It is regarded as an ongoing phase throughout the evolution of the EIAR, responsive to issues that may arise as a result of field survey, changes to design and stakeholder feedback.

3.3 Preparation of Environmental Impact Assessment Report

The Environmental Impact Assessment Report (EIAR) is the principal document that the EIA process is based on[6]. Its purpose is to present a systematic analysis and assessment of the potential effects of a proposed scheme on the receiving environment with reference to a range of environmental factors and relevant information required at Article 3(1) and 5(1) of the 2014 EIA Directive.

3.3.1 Competent Experts

Article 5(3)(a) of the 2014 EIA amended Directive requires that "*the developer shall ensure that the environmental impact assessment report is prepared by competent experts*" to ensure the completeness and quality of the EIAR. In this regard, the EIAR will be prepared by a team of competent, technical experts who have the knowledge and understanding of best science to assess the potential impacts associated with the Proposed Development and where required develop mitigation measures (including monitoring where required).

3.3.2 EIAR Structure

The EIAR will be presented in a number of Volumes as follows:

- **Volume 1** – Non-technical Summary
- **Volume 2** – Main EIAR
- **Volume 3** – Technical Appendices
- **Volume 4** – Information in Support of AA Screening and Natura Impact Statement
- **Volume 5** – Heritage Impact Assessment (HIA)

3.3.3 EIAR Content

An indicative structure of the EIAR for the Proposed Development is set out in **Table 3-1**.

Table 3-1: Indicative Structure of the EIAR

Volume	Chapter / Report
Volume 1	Non-Technical Summary (NTS)
Volume 2 – Main Report	Preface
	Acronyms
	Introduction
	Background and Need for the Project
	Consideration of Alternatives

[6] EPA Draft Guidelines 2017.

Volume	Chapter / Report
	Description of the Project
	Environmental Impact Assessment Approach
	Consultation
Volume 2 – Specialist Chapters	Traffic and Transport
	Population
	Noise and Vibration
	Air Quality
	Human Health
	Landscape and Visual
	Heritage including Archaeology and Cultural Heritage and UNESCO World Heritage
	Heritage including Architectural Heritage
	Biodiversity [including Terrestrial and Aquatic Ecology]
	Water [including Hydrology and Flood Risk]
	Soils, Geology and Hydrogeology
	Land [including Agriculture]
	Climate
	Material Assets
	Waste
	Risks of Major Accidents and/or Disasters
	Cumulative Effects
	Interactions of the Foregoing
	Summary of Mitigation and Monitoring
Volume 3 (Technical Appendices)	Specialist raw data to support chapters
	Cumulative Impact Assessment Screening
	Outline Construction Environmental Management Plan
Volume 4 (AA Documentation)	Information in Support of AA Screening
	Natura Impact Statement (NIS)
Volume 5	Heritage Impact Report (HIA)

3.3.4 Specialist Chapter Layout

For each of the specialist chapters in Volume 2, the following will be addressed as a minimum:

- Scope of the Assessment;
- Methodology;
- Baseline Environment (desktop and field surveys);
- Impacts (incl. site enabling, construction, operation and maintenance). The
- Mitigation Measures (avoidance, reduction or remedy);
- Residual impacts;
- Monitoring; and
- References.

3.3.5 Assessment of Effects

The *Proposed Scheme* has the potential to create a range of impacts and effects with regard to the physical, biological and human environment. For the purposes of the EIAR, 'impact' will be used to define a change that is caused by an action. For example, the piling of the bridge abutments (action) will result in increased levels of airborne noise (impact). Impacts can be defined as direct, indirect, secondary, cumulative and interactive. They can also be either positive or negative, although the relationship between them is not always straightforward. In addition, for certain impacts, the reversibility of an impact is relevant to its overall effect. An irreversible (permanent) impact may occur when recovery is not possible, or not possible within a reasonable timescale. In contrast, a reversible (temporary) impact is one where natural recovery is possible over a short time period, or where mitigation measures can be effective at reversing the impact.

The term 'effect' will be used in the EIAR to express the consequence of an impact. Using the piling example, the piling of bridge abutments (action) results in increased levels of airborne noise (impact), with the potential to disturb local residents and protected fauna (effect).

In general, in in carrying out the impact assessment of the proposed scheme, specialists will have regard to the approaches identified in:

- Guidelines for Planning Authorities and an Bord Pleanála on carrying out Environmental Impact Assessment (DHPLG, August 2018);
- Environmental Impact Assessment of Projects. Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU), (European Commission, 2017b);
- Guidelines on the Information to be Contained in Environmental Impact Statements (EPA, 2002);
- Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2017);
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003
- Draft Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2015).
- Environmental Impact Assessment of National Road Schemes – A Practical Guide (NRA, 2008).

There may be some variations to the general EIA methodology where required by specific topic guidance, and where this is the case this will be explained within each relevant topic chapter.

3.4 Other Related Environmental Assessment Processes

3.4.1 Habitats Directive

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora ('the Habitats Directive') provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. The Natura 2000 network includes sites designated under the Habitats Directive (Art. 3 and 4) referred to as Special Areas of Conservation (SACs) and the Birds Directive (Art. 4), referred to as Special Protection Areas (SPAs).

Special Areas of Conservation (SAC) are composed of sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II, to enable the natural habitat types and the species' habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range. Special Protection Areas are composed of the 'most suitable territories', to protect bird species listed in Annex I of the Directive as well as migratory species.

In Ireland, these Natura 2000 sites are designated as European Sites and include Special Protection Areas (SPAs), established under the EU Birds Directive (79/409/EEC, as codified by 2009/147/EC) for birds; and SACs, established under the Habitats Directive 92/43/EEC for habitats and species.

The Habitats Directive has been transposed into Irish law by Part XAB of the Planning and Development Act 2000 as amended and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011) as amended ('the Habitats Regulations').

An Appropriate Assessment (AA) is a separate but inter-related process to EIA, required under the Habitats Directive for any plan or project likely to have a significant effect on a European Site. Preliminary AA Screening has been undertaken for the project by MCC and the potential for likely significant effects on a European site has been identified. A Natura Impact statement is therefore being prepared to accompany the application to ABP. The AA will be undertaken by ABP, informed by this Natura Impact Statement (NI

The Department of Environment, Heritage and Local Government (DEHLG) has published Appropriate Assessment Guidelines for Planning Authorities (DEHLG, 2010). In addition to this advice, the European Commission has published a number of documents which provide a significant body of guidance on the requirements of AA, including 'Assessment of Plans and Projects Significantly Affecting Natura 2000 sites – Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EC, 2001) and 'Managing Natura 2000 sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC' (EC, 2019), which set out the principles of how to approach decision making during the process. Other pertinent guidance documents will be identified and employed to inform the development of the NIS.

The NIS will form a standalone report which focuses on the requirements of the EU Habitats Directive. In addition, as part of integrated biodiversity impact assessment methodologies, the output from the NIS will also be considered in the Biodiversity chapter of the EIAR.

3.4.2 Water Framework Directive

The Water Framework Directive (WFD) (2000/60/EC) came into force in December 2000 and establishes a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater. Ireland is required to comply with four main obligations under the environmental objectives of the WFD, namely to:

- Prevent deterioration of the status of all bodies of surface water and groundwater;
- Protect, enhance and restore all bodies of surface water and groundwater with the aim of achieving good status by the end of 2027;
- Protect and enhance all artificial and heavily modified bodies of water, with the aim of achieving good ecological potential and good surface water chemical status; and
- Achieve compliance with the requirements for designated protected areas.

Guidelines for planning authorities on the relationship between physical planning and river basin management planning are currently in preparation by the DHLGH. These guidelines are likely to be published within the timeframe of the Proposed Scheme. In anticipation of the guidelines a specific WFD Assessment will be included in the EIAR documentation for the Proposed Scheme.

3.5 Work Completed to Date

A considerable amount of work has already been completed in relation to the *Proposed Scheme* which has informed the proposed scopes which are presented in this Chapter. This work includes:

- Previous Environmental Impact Statement (EIS) - As outlined in Section 1.1 an EIS was prepared to support an application to ABP for an earlier version of the N2 Slane Bypass in 2009. This and the reasoned decision by ABP have been reviewed by all specialists as part of scoping for the new Proposed Scheme.
- Constraints and Route Selection Reporting - The environmental specialists have all contributed to the constraints and route selection reporting for the current N2 Slane Bypass scheme in accordance with TII Guidance on development of national road schemes, specifically:
  - N2 Slane Bypass Constraints Report (October 2017); and
  - N2 Slane Bypass Option Selection Report (May 2020).
- Surveying – Many of the environmental specialists have undertaken field surveys to inform the constraints and route selection stages**.** Additional specialist inputs such as visualisations have also been undertaken to inform the constraints and route selection stages of the proposed scheme. These are outlined in **Table 3-2**.

Table 3-2: Work Completed to Date

Specialist Area	Work Completed to Date
Traffic and Transport	• Transport Assessment for N2 Bypass and Slane Traffic Management Options (January 2020) • N2 Slane Bypass Supplemental Study Report (RPS, October 2019) • N2 Slane Bypass Traffic Impact Assessment of Options (RPS, February 2019) • N2 Slane Bypass Traffic Modelling Report for the Preliminary Business Case at Options Stage (RPS, February 2019) • N2 Slane Bypass Alternatives Report for the Preliminary Business Case at Options Stage (RPS, January 2019) • N2 Slane Bypass Traffic Forecasts for the Preliminary Business Case at Options Stage (RPS, January 2019) • Slane Traffic Management Review, MCC (Halcrow Barry, July 2015) • NRA Transport Policy and Evaluation. Technical Note Assessment of Toll Diversion Rates During Toll-Free November, NRA (AECOM, March 2014) • Technical Note No 2 –Slane Traffic Management – Impact of Reduced Speed Limits, MCC (AECOM, June 2013) • Slane Traffic Management Study- Stage 2: Draft Project Appraisal of HGV Restriction in Slane, MCC (AECOM, May 2013) • Slane Traffic Management Study - Stage 1: Report, MCC (AECOM, October 2012) • Slane Road Tolling Study, NRA (AECOM, August 2012)
Air Quality	• Air quality monitoring along the proposed route and in Slane (Jan. – Mar. 2021)
Landscape and Visual	• Visual Impact Assessment/ Viewshed Analysis from key protected views based on: – Summer Photography (September 2019) – Winter Photography (February 2019) • Generation of wireframes and representative 3D model views for key protected views produced from an aerial survey (captured June 2018) and corresponding digital surface model (DSM) with embedded alignments for each option from route selection stage. • Review of Draft County Development Plan: – Map 8.6 and Map 8.6.1 (Views and Prospects Map & References) – Appendix A10 – Protected Views and Prospects (written text) • Review and updated to viewpoint locations proposed as part of the visual assessment, based on: – Draft CDP review (protected views); – Input from MCC • Review and update to proposed visual assessment graphics / materials being considered to represent views from locations identified: – Viewpoint photography from updated viewpoints – Winter Photography (March 2021)
Cultural Heritage incl. Archaeological, Cultural, Architectural and World heritage	– Field Walkover Surveys (Dec. 2017, Jan. 2018) – World Heritage Site Visits (Jan. 2018, Jan. 2019) – Draft Statement of Outstanding Universal Value for the Brú na Bóinne World Heritage Site (Feb. 2018) – Route Selection Heritage Impact Assessment undertaken for the UNESCO World Heritage Site of Brú na Bóinne (Carter, 2019) – Supplementary aerial photographic analysis (drone survey) (June 2018) – Geophysical Survey Report (Target, 2018) – LiDAR Survey Report (Davis, 2018) – Archaeological Monitoring of Geotechnical Investigations Report (Jan. – Feb. 2018) (O'Brien, 2018) • Viewshed analysis, 3D modelling and wireframe images (RPS, 2018 & 2019) • Geophysical Survey Report (Earthsound, Jan. 2021) • Ground investigation works monitoring including metal detecting and recording of stray finds (process underway)

Specialist Area	Work Completed to Date
	• A number of face-to-face meetings have taken place with various key stakeholders during constraints and the route selection stage. This has included three meetings with the then-named Dept. Culture, Heritage & the Gaeltacht, as well as three meetings with ICOMOS Ireland between 2018 and 2019. Written correspondence has also been received from other stakeholders as part of consultation for these stages.
Biodiversity	• Risk-based Assessment using the Qualifying Interests (QIs) and Special Conservation Interests (SCIs) (both terrestrial and aquatic) for the European sites directly impacted by the options brought forward to route selection stage, and the site-specific targets relating to each of the six QIs and SCIs within the zone of influence (RPS, January 2019). • Terrestrial Ecology Surveys Completed to Date: – Walkover survey of accessible viewpoints for 15 routes identified for consideration at preliminary options stage (reported in Options Selection Report, May 2020) – Multidisciplinary walkover of the seven bypass options brought forward for consideration at route option selection stage (reported in Options Selection Report, May 2020) – Walkover habitat assessment survey of the River Boyne corridor for Annex I habitats (Alluvial forest) and to confirm otter activity (reported in Options Selection Report, May 2020) – Walkover survey of River Boyne to identify potential kingfisher nesting habitat and vantage point survey along existing Boyne Bridge (reported in Options Selection Report, May 2020) – Terrestrial invasive and alien species (IAPS) survey along River Boyne corridor (reported in Options Selection Report, May 2020) – Vantage point kingfisher surveys along main Boyne channel north of existing N2 road bridge (reported in Options Selection Report, May 2020) – Boat survey of main Boyne River Channel from Beauparc downstream beyond Crewbane: primarily Otter, Kingfisher, remnant IAPS, extent of accumulated alluvial sediments on river islands, and observations for Whooper swans (reported in Options Selection Report, May 2020) – Wintering Bird surveys (transects and vantage point surveys) (Winter 2018/19, Winter 2019/20 as reported in Options Selection Report, May 2020 & Winter 2020/21 – will be reported in EIAR) – Mammal survey (badger and otter), assessment of wetland habitat for amphibian suitability & Visual assessment of Potential roost Features within/adjacent preferred corridor (as reported in Options Selection Report, May 2020) • Aquatic Ecology Surveys Completed to Date: – Habitat assessment (salmon, lamprey and crayfish) (Jan. 2018, June 2019 as reported in Options Selection Report, May 2020 & Aug. 2020) – Q-value sampling (aquatic macroinvertebrate, where accessible) (Jan. 2018, June 2019 & Aug. 2020) – will be reported in EIAR – Physico-chemical parameters measurements on site – Aquatic IAPS survey (June 2019 as reported in Options Selection Report, May 2020 & Aug. 2020 – will be reported in EIAR) • Formal consultation and face-to-face meetings with NPWS and communications with the former conservation ranger, as well as face to face meeting with IFI have been undertaken during route option selection stage.
Water	• N2 Slane Bypass Stage 1 and Stage 2 Flood Risk Assessment (RPS, Apr. 2021) • Strategic Flood Risk Assessment and Management Plan for Meath County Development Plan, 2020-2026 (JBA, Dec. 2019)
Soils, Geology and Hydrogeology	• Ground Investigation Report [Phase 2 – Option Selection] (Feb. 2019) • Ground Investigation Report [Phase 3 – Design & EIA] (Apr. 2021) • Geotechnical Design Report [Phase 3 – Design & EIA] (Apr. 2021) • Geophysical Survey Report (for geotechnical/ground conditions) (Minerex, Feb. 2021)

4 ENVIRONMENTAL SCOPE

This chapter provides an overview of the technical scope, key issues and relevant standards / guidance for each environmental topic to be covered in the EIAR. In considering the environmental scope, consideration has been given to site enabling works including site / ground investigation; construction (including any demolition); operation; and maintenance phases.

4.1 Traffic and Transport Scope

This chapter of the EIAR will be based on the traffic modelling carried out to inform the *Proposed Scheme* design. It will:

- Present the existing conditions – observed base year traffic flows on the N2 and N51 corridors and in Slane Village
- Describe the traffic growth assumptions used in the traffic modelling work, and the network changes assumed to occur in the Do-Minimum case.
- Present data on forecast traffic flow and traffic speeds/delay that are likely to occur in the Do-Minimum case if the scheme is not built.
- Present data on forecast traffic flow and traffic speeds/delay that are likely to occur in the Do-Something case if the scheme is built.
- Present data on the pedestrian and cycling strategy elements.
- Present the principal impacts of the scheme in terms of:
  - Total net impact on traffic journey times;
  - Location and scale of changes in traffic flow and traffic congestion;
  - Changes in journey times for a sample of journeys;
  - Impacts in relation pedestrian and cycling activity;
  - Note the origin-destination flows that suffer a worsening of travel times as a result of the scheme. Identify mitigation measures as a result of impacts

Traffic and Transportation	
Key Issues that will be considered in EIAR Chapter	• Impact on N2 and N51 (in general terms), and also M1 corridor • Impact within Slane Village, including discussion of active travel • Consideration of traffic reassignment across the wider network • Extent to which the scheme attracts traffic into the N2 corridor • Reductions in traffic on N2 and N51 through Slane Villages • (Where applicable) increased journey times for some local journeys • Effects on HGVs • Effects on pedestrian and cyclist traffic as a result of the road and the active travel strategies • Size of vehicles, loads and routes used by traffic • Forecast information will be based on the medium growth scenario
Baseline Survey Work Proposed	• No further baseline information updates anticipated. The existing data collated (see **Table 3-2**) is being used and where necessary will factor in a 2019 baseline year (pre-COVID) • Local HGV travel demand survey • Traffic Modelling – being prepared for design of scheme.
Technical Consultations	• Meath County Council • Transport Infrastructure Ireland • Haulage Association and local businesses
Key Guidance Documents	• Traffic & Transport Assessment Guidelines (TII/NRA, 2014) • Project Appraisal Guidelines (NRA, 2010)

4.2 Population Scope

This chapter of the EIAR will:

- Consider the population profile, economic activity, social considerations, non-agricultural land-use, and non-agricultural properties.
- Establish the current socio-economic and community characteristics through a review and update of the demographics of the study area, e.g. population, profile, household size, etc., as well as community facilities, recreational opportunities, etc.
- Assess the potential and predicted impacts on local communities as a result of the proposed scheme.

It will also have regard and make reference to other related chapters of the EIAR such as the traffic and transport, air quality, noise and vibration, and water, as relevant.

An understanding of both the quantum and pattern of demography and employment in the area is of crucial importance to understanding the receiving human environment. The primary official record and analysis of demographic trends is the Central Statistics Office (CSO) Census of Population. The census records demographic information at state, county, and local levels. In this regard, the key geographical units distinguished by the 2016 Census is the Small Area (SA) and Electoral Division (ED). The most recent census was taken in 2016, however statistics and projections for various indicators are updated regularly outside of the national census.

A detailed analysis of the demographic trends within the study area and local and wider environs will be undertaken, identified by SA and/or ED as appropriate, with reference to the most recent census statistics and the work undertaken to date. These results will then be compared with similar data recorded in the census publications of 2011 and 2016 (where relevant). This gives a ten-year profile of population and population change. Areas of analysis will include:

- Population numbers and change;
- Employment levels;
- Principal occupations; and
- Unemployment rates.

This chapter will consider severance, loss of rights of way or amenities, transference of traffic from Slane village centre or other areas and changes likely to ultimately alter the character and use of the surroundings. The location of commercial/ business premises within the study area will be confirmed. The commercial/ business premises are mainly centred around Slane Village with others located along local roads/ rural ribbon development. The majority of the land use in the wider area outside the village relates to agricultural use, which will also be assessed under the chapter for Land including Agriculture within the EIAR.

Information on the demographic and employment characteristics of the resident population will be sourced from the Census of Population, the Labour Force Survey (CSO) and the Live Register. Identification of sensitive communities and land uses in the vicinity of the site will be undertaken by a mix of site visits, review of aerial photography and development plan mapping.

The issue of demolition, severance and loss of land for non-agricultural properties will be assessed within this EIAR chapter, as well as in the Land including Agriculture chapter which will focus on agricultural enterprises.

This population impact assessment will be carried out by way of a combination of desk-based studies and site visits and investigations, and cross-reference to other relevant chapters.

Areas of analysis will include:

- Population numbers and change;
- Employment levels;
- Principal occupations; and
- Unemployment rates.

This chapter will consider severance, loss of rights of way or amenities, transference of traffic from Slane village centre or other areas and changes likely to ultimately alter the character and use of the surroundings.

The location of commercial/ business premises within the study area will be confirmed. The commercial/ business premises are mainly centred around Slane Village with others located along local roads/ rural ribbon development. The majority of the land use in the wider area outside the village relates to agricultural use, which will also be assessed under the chapter for Land including Agriculture within the EIAR.

Information on the demographic and employment characteristics of the resident population will be sourced from the Census of Population, the Labour Force Survey (CSO) and the Live Register. Identification of sensitive communities and land uses in the vicinity of the site will be undertaken by a mix of site visits, review of aerial photography and development plan mapping.

The issue of demolition, severance and loss of land for non-agricultural properties will be assessed within this EIAR chapter, as well as in the Land including Agriculture chapter which will focus on agricultural enterprises.

This population impact assessment will be carried out by way of a combination of desk-based studies and site visits and investigations, and cross-reference to other relevant chapters.

Population	
Key issues that will be considered in EIAR Chapter	• The main settlement in the study area, Slane village, is located in the centre of the study area. There is also linear residential development along the existing road network within the study area. One-off housing, as elsewhere in Ireland, is a feature of the study area. • Within Slane and the immediate surrounds there is a range of community facilities including one primary school (St Patrick's National School), a health centre, a Garda station, two churches (St Patrick's Catholic Church and St Patrick's Church of Ireland, Slane), two parish halls, a small cemetery, three crèches (Early Buds Crèche 2 Castle Hill, Slane, Tus Maith Pre-school Slane, and The Little Kingdom Daycare Newtown, Beauparc Daycare Centre, and various playing pitches. Meath Community Rural and Social Development Partnership Limited and Slane Community Forum are also based in Slane. • The Boyne Canal towpath runs along the southern banks of the Boyne through the study area, with areas of woodland. The Boyne Valley Drive links Navan to Drogheda, and other towns, and passes through Slane. There is also a proposal to extend the Boyne Greenway to link through Slane; these will be considered with respect to amenities within the area. There are recreational activities associated with the River Boyne such as fishing and boating. There are amenity areas such as the Mill House near Slane Bridge, Rock Farm Camping Site on the grounds of Slane Castle, Slane Farm Cottages & Hostel located to the west of the village, trails through Littlewood Forest, the Hill of Slane, Francis Ledwidge Cottage & Museum located on the N51, and other amenity features in the village which will also be considered as part of this section of the EIAR. • There is an industrial estate on the northern side of the Boyne and to the east of Slane Bridge. Grassland Agro is a Lower Tier Seveso site located on the existing N2 on the northern end of the village, the consultation radius of which overlaps. P. Sheils Quarry is also located in this area, and Carrickdexter Quarry operated by Roadstone is located on the N51 to the west of the village, both of which are located beyond the extents of the *Proposed Scheme*. • The effects on Slane Village and environs from the public realm elements of the scheme.
Baseline Survey Work Proposed	• Desktop analysis of the local area and its facilities including but not limited to population level, population age structure, households and economic activity. • Windshield survey/ walkover as needed to re-confirm land uses and amenities around the Project elements and provide an overview of the area and its environs.
Technical Consultation	• Meath County Council • Health & Safety Authority (HSA) • Health Service Executive (HSE)

Population	
	• Fáilte Ireland
Key Topic Specific Guidance	• There is no specific national guidance for this topic. • LA 112 - Population and human health (DMRB, 2020)

4.3 Noise and Vibration Scope

The impacts from noise and vibration will depend on the proximity of sensitive receivers to the proposed scheme. The main potential source of noise and vibration impacts from the scheme will be during construction works and road traffic noise during the operational phase.

The main source of noise is currently the road traffic on the existing N2 and N51 national roads which dominate the noise climate. The County Meath Noise Action Plan 2019, prepared under the European Communities (Environmental Noise) Regulations 2018 (S.I. No. 549/2018) identifies that sections of the N2 and the N51 which are part of the proposed scheme, fall within the thresholds as set out in the Environmental Noise Directive (2002/29/EC) as transposed by the Environmental Noise regulations (S.I. No. 549/2018) and TII has developed strategic noise modelling for this area. A desk study will be carried out to identify and confirm noise sensitive locations to be taken into consideration in this assessment.

A baseline survey of noise levels in the receiving environment will be carried out in accordance with TII guidelines. The survey methodology will be in accordance with ISO 1996-1:2016 - Description and Measurement of Environmental Noise. Measurements will be made using the shortened measurement procedure as described in the Calculation of Road Traffic Noise (CRTN) 1988 and at three 24-hour stations. All measurements will be taken using Type 1 Precision Digital Sound Level Meters and associated hardware. The meters will be calibrated before and after each round of surveying to ensure that no unacceptable deviation from the standard calibration occurred during the measurement period and that results presented are reliable and accurate. The calibration certificates of the relevant equipment to be utilised during the survey will be provided with the EIAR as standard best practice.

The impacts of noise for the construction activities and operation phases will be separately assessed for their impact on the nearest noise sensitive location and then combined to give a cumulative indicator of the likely noise impacts on the nearest noise sensitive locations.

The EIAR chapter will take account of noise emissions related to construction activities and operational phase traffic associated with the scheme. Noise propagation calculations will also be performed to determine the quantitative impact of project noise sources, particularly those related to the River Boyne bridge crossing. The chapter will provide the results of the baseline noise survey and noise and vibration impact assessments.

The high traffic growth scenario will be assessed to ensure a robust assessment in respect of noise impacts.

Noise and Vibration	
Key issues that will be considered in EIAR Chapter	• The majority of noise sensitive receptors within the study area are residential dwellings concentrated around Slane village and those that are close or adjacent to the existing N2 and N51 national roads. There is also existing ribbon development adjacent to the N2 and N51, along local roads, as well as one-off housing. • The Meath Noise Action Plan 2019 identifies St. Patrick's National School as a noise sensitive receptor in Slane, located on the existing N2. • Due to the presence of residential and commercial/ business properties along the scheme it is likely that some properties will experience a change in noise level generated by the proposed works during the construction and operational stages. • The main potential source of noise and vibration impacts from the scheme will be from potential traffic-related emissions. The potential for impacts from construction associated machinery required during the construction stage will also be assessed.

Noise and Vibration	
	• Inter-relationship with biodiversity, particularly potential noise effects on protected species associated with the River Boyne and River Blackwater SAC and SPA (see section on biodiversity also). • Inter-relationship with cultural heritage, particularly potential noise effects on the Brú na Bóinne site (see section on cultural heritage also).
Baseline Survey Work Proposed	• Development of a noise model which will be supported by the noise survey results and traffic inputs from the Transport Team • Undertake a baseline survey of noise levels: – In the receiving environment according to TII guidelines – At noise sensitive locations in proximity to the proposed scheme
Technical Consultation	• Meath County Council
Key Guidance Documents	• Guidelines for the Treatment of Noise and Vibration in National Road Schemes (NRA, 2004) • Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes (NRA, 2014) • ISO 1996-1:2016 - Description and Measurement of Environmental Noise • British Standard BS5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise. • British Standard BS5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration. • EPA Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4, January 2016) • Calculation of Road Traffic Noise, CRTN (UK Department of Transport, 1988)

4.4 Air Quality Scope

The proposed methodology for assessing impacts to air will be based on the TII/NRA Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes, May 2011. This will include a desktop assessment of the EPA National Air Quality Monitoring Database, traffic modelling outputs provided by the Transport Team, and a local baseline assessment has been completed using a series of diffusion tubes in Q1/Q2 2021 around the road network of the *Proposed Scheme*. The parameters measured were nitrogen oxides (NO_X) and volatile organic compounds (VOCs). RPS will also document the existing air quality sources of the area, i.e. traffic, space heating, etc. In addition, RPS will review the key environmental receptors including areas of residential housing, schools, places of worship and amenity areas, i.e. locations where members of the public are likely to be regularly present in the area.

The main potential for impacts on air quality and climate from the scheme during the operational phase is from road traffic-derived pollution. Impacts as a result of the traffic alterations associated with the scheme will be assessed using the techniques outlined in the TII/NRA Guidelines and the UK Highways Agency Design Manual for Roads and Bridges (UK DMRB 2007), Volume 11, Section 3, Air Quality Assessment.

During the construction stage it anticipated that air quality impacts will be of temporary duration and will be primarily from dust during the construction works and construction traffic. The potential impacts are likely to be limited to within 100m of any compound, 50m of the proposed works and within 20m of the proposed haul routes. Hazardous chemical or biological agents are not likely to be present which could become airborne during the proposed works.

Locations with a high sensitivity to fugitive emissions of PM_{10} and NO_x include receptors such as hospitals/healthcare centres, hi-tech industries, painting, furnishing and food processing facilities. Locations classed as being moderately sensitive to such pollutants include schools, residential areas and food retailers. Designated habitats are also potentially sensitive receptors; the River Boyne as well as the River Boyne and River Blackwater SAC and SPA will be considered as part of the assessment. The potential for impacts on the above receptors will be assessed further at the EIAR Stage and will consider construction and operational sources.

The benefits of the *Proposed Scheme* will also be considered, particularly the redistribution of traffic from the village centre and the integration of active travel modes into the overall scheme.

The Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC) deals with each Member State in terms of Zones and Agglomerations. For Ireland, four zones (A, B, C and D) are defined in the Air Quality Standards Regulations 2011. The study area is located within EPA Zone D which covers rural Ireland. Air quality in this zone is consistently classed as "good" as measured by the EPA monitoring network.

In order to identify potential impacts with respect to air quality, the high growth traffic growth scenario will be assessed to ensure a worst-case assessment.

Air Quality	
Key issues that will be considered in EIAR Chapter	• Traffic-related emissions and dust during the construction of the scheme • Road traffic-derived pollution during the operational phase of the scheme. The influence of the pandemic will be corrected for using analysed EPA data for 2019 vs 2020. • Inter-relationship with biodiversity, particularly protected species associated with the River Boyne and River Blackwater SAC and SPA (see section on biodiversity also).
Baseline Survey Work Proposed	• See **Table 3-2** for monitoring completed.
Technical Consultation	• Meath County Council
Key Guidance Documents	• Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes (TII/NRA, May 2011) • Local Air Quality Management Technical Guidance LAQM.TG (09) • Design Manual for Roads and Bridges (DMRB), LA 105

4.5 Human Health Scope

This chapter of the EIAR will be undertaken with reference to key inputs from the air quality, climate, noise and vibration, water, traffic and transport, and population experts undertaking the relevant impact assessments for the EIAR.

This chapter will aim to identify and assess the potential health and wellbeing effects (both adverse and beneficial) of the *Proposed Scheme* on the surrounding area, and to deliver evidence-based recommendations that maximise health gains and reduce or remove potentially negative impacts or inequalities. In addition, health chapter aims to address concerns raised by the local population regarding health.

The delivery of the human health chapter will be based on a broad socio-economic model of health that encompasses conventional health impacts such as communicable disease, accidents and risk along with wider determinants of health which are considered vital to achieving good health and wellbeing.

A key aspect of the human health chapter will be to integrate with and build upon other relevant technical outputs as outlined above. Such an approach will enable consistency between the human health chapter and the EIAR and will prevent repetition of effort and ensure a solid basis to the assessment.

Human Health	
Key issues that will be considered in EIAR Chapter	• Changes to local air quality (road traffic emissions and potential dust nuisance) • Changes in noise exposure • Changes in local transport nature and flow rates • Increased direct, indirect and induced employment opportunities • Radiation will be considered in the context of potential impacts on human health. It is noted that Slane village and the surrounding area falls within an EPA 10km x 10km grid square classed as a High Radon Area i.e. an area

Human Health	
	where it is predicted that between 10-20% of homes will exceed the Reference Level of 200 becquerel per cubic metre (Bq/m^3). Potential for road construction to facilitate diffusion of radon from underlying bedrock/ fault lines will be considered.
Baseline Survey Work Proposed	• Windshield and walkover surveys to confirm key sensitive receptors and pathways • The chapter will also include reference to surveys undertaken as part of other technical disciplines such as Air Quality, Noise and Vibration, Traffic and Transport, Climate, Population, and Hazard and Risk.
Technical Consultation	• Health Service Executive (HSE) • Health & Safety Authority (HSA)
Key Guidance Documents	• LA 112 - Population and human health (DMRB, 2020) • Health in Environmental Impact Assessment: a primer for a proportionate approach (IEMA, May 2017) • Investigation into the Assessment of Health Impacts within National Environmental Regulation Processes. Report commissioned by the Environmental Protection Agency (April 2015) • Planning Practise Guidance, Health and Wellbeing (Department for Communities and Local Government, March 2014)

4.6 Landscape and Visual Scope

The landscape and visual impact assessment will be undertaken through a combination of site surveys, analysis of up-to-date mapping and aerial photography, in conjunction with detailed plans and sections of the proposed scheme. The landscape will be appraised with reference to the Landscape Character Assessment, carried out as part of the Meath County Development Plan (Appendix 7 of the Meath County Development Plan 2013 – 2019 and draft Meath County Development Plan 2021-2027).

This Landscape Character Assessment was appraised as part of the Route Selection assessments by RPS and found to generally reflect an appropriate level of categorisation within the wider study area. This process identified a further two additional character areas: Slane Urban Area and Slane Castle Demesne. These additional character areas, together with those identified from the Meath County Development Plan have enabled the categorisation of landscape quality at a more local level.

The landscape and visual assessment as part of the EIAR will then take the *Proposed Scheme* and apply it to this baseline with potential landscape impacts recorded.

The visual envelope for the *Proposed Scheme* will be identified on a Zone of Theoretical Visibility (ZTV) map which identifies the areas of land from which there is a theoretical view of any part of the proposal. Through analysis of the ZTV mapping, the visual impact of the *Proposed Scheme* can be determined allowing the location of affected properties, recreation areas and sensitive receptors etc. to be recorded.

Where significant landscape and visual impacts are predicted to occur as a result of the *Proposed Scheme* being implemented, suitable mitigation measures will be proposed.

The key landscape features in the vicinity of the *Proposed Scheme* are identified in **Figure 4.1**.

Landscape and Visual	
Key issues that will be considered in EIAR Chapter	**Landscape:** At a local level, the landscape, in which the heritage village of Slane is located, is characterised by a steep river valley with areas of rolling lowland adjacent to the River Boyne. Land cover is largely comprised of pastoral and arable agricultural land use, with a diverse variety of field sizes and patterns. Tree cover forms a strong element of the landscape, particularly to the north of Slane and generally consists of lines of hedgerow trees dividing large fields with scattered groups and copses of mixed species woodland The landscape associated with the study area and the wider environs is comprised of the World Heritage Site at Brú na Bóinne, Hill of Slane and associated rolling hills and a steep

river valley associated with the River Boyne. The visual amenity of this area is extremely valuable both socially and economically and it is potentially the most significant and highly valued landscape in County Meath as it contains the Brú na Bóinne World Heritage Site (WHS) which is located approximately 2km east of Slane.

The Hill of Slane is prominent by virtue of a ruined abbey which also acts as a prominent viewpoint and local landmark to the north of Slane Village. Views of the river are afforded from around Slane where the river can be seen cutting through a large flat-bottomed valley. Due to Slane's street pattern of four roads extending from the crossroads and its position at an elevated height above the River Boyne, significant views are afforded towards the village from the valley below and from the village street outwards, forming important vistas. The most noteworthy views towards Slane from the Boyne valley are from the southern bank of the river and from the existing N2, which forms an important approach to the town.

Landscape Character Areas:
The *Proposed Scheme* traverses the following Landscape Character Areas as set out in the Meath CDP: Boyne Valley (Exceptional value, High sensitivity and International importance); Rathkenny Hills (Very High value, High sensitivity and Regional importance); Central Lowlands (High value, Moderate sensitivity and Regional importance).
It avoids traversing the North Navan Lowlands LCA (Moderate value, Moderate sensitivity, Regional importance) which is located to the west of Slane village.

The following local LCAs were identified during route selection; the *Proposed Scheme* also avoids traversing these areas: Slane Castle Demesne (High value, High sensitivity and Regional importance); and Slane Urban Area (High value, Low sensitivity and Local importance).

Protected Views and Prospects:
Protected views and prospects, identified from the Meath CDP during the route selection process include:
No. 29 car park at Hill of Slane
No. 30 Hill of Slane
No. 32 At cross off county road to north of N51
No. 34 N2 between Slane and Balrath at McGruder's Cross Roads
No. 35 County Road between Beaupark and Painestown
No. 58 County road between N51 and Knowth
No. 59 Knowth Tumulus
No. 74 Boyne valley from Rosnaree House
No. 87a to d Newgrange Passage Tomb
No. 89a Dowth Passage Tomb
No. 89b Views towards Brú na Bóinne from N51
No. 89c Views towards Brú na Bóinne from N51
No 90 West of crossroads at Monknewtown
No. 93a Local Road L16002, 1.2km east of Fennor Cross Roads
No. 93b Local Road L16002, 0.7km west of Rossnaree
No. 93c Local road L16002, 1.65km east of Fennor Cross Roads

Visually Significant Trees from Meath County Development Plan:
The Boyne Valley has a diverse range of attractive and important habitats associated with the River Boyne, including a well-wooded river corridor that runs to the immediate south of Slane. The Meath County Development Plan's Land Use Zoning Objectives Map identifies 'Trees to be Preserved', which are primarily located along the southern and northern banks of the River Boyne, though also occur along the northern development boundary associated with Slane. There are no Tree Preservation Orders within the study area or the immediate environs, however broad areas of visually significant vegetation have been identified; these are predominantly scattered throughout Slane Castle Demesne, as well as planted forestry at Littlewoods Forest and another block of woods located to the east of the *Proposed Scheme*.

Landscape and Visual	
	Visual Impact Assessment: During the route selection stage, the following visual impact assessments were conducted which will be examined in greater detail during the EIAR: **Key Protected Views:** Assessment of the potential visual impacts from Protected Views derived from ZTV mapping and an assessment of the predicted visibility of options derived from wireframe and 3D model imagery assessed during the Route Selection Stage, against representative views available from selected Protected Views at the Hill of Slane (View No. 30), Knowth (View No. 59) and Newgrange (View No. 87). There is potential for minor to moderate impacts on southern portions of Protected View No. 29 and No. 30 from Hill of Slane, associated with proposed bridge crossing; potential for minor to moderate impacts on Protected View No. 32 and No. 34; and potential for minor impacts on Protected View No. 59, though bridge crossing not predicted to be visible in western portions of the view. **Residential Properties:** There are predicted to be visual impacts for approximately 41 dwellings within 300m of the proposed road corridor, as identified during the route selection process. **Lighting:** The environmental impact of light will be considered in the context of potential impacts on heritage, landscape and visual amenity.
Baseline Survey Work Proposed	• See **Table 3-2** for surveys and other work already completed. • Winter photography from Jebb's Mill car park • Summer photography from selected viewpoint locations • Wireline views from viewpoint locations to be based on final, agreed alignment layout and associated ZTV mapping • High quality photomontages (depicting proposed alignment with and without soft landscape mitigation) will be generated from agreed viewpoint locations (which are to include a number of relevant protected views and from other key locations within the study area). Viewpoint locations will be chosen for relevance in regard to both the landscape/visual and heritage assessments • 3D model image outputs from selected viewpoints (as required) • Cumulative LVIA research / background information gathering
Technical Consultation	• Meath County Council • Heritage Council • Failte Ireland • An Taisce • Dept. of Housing, Local Government and Heritage
Key Guidance Documents	• Landscape Character Assessment (LCA) and Landscape and Visual Impact Assessment (LVIA) of Specified Infrastructure Projects – Overarching Technical Document. (TII Publication PE-ENV-01101, December 2020) • Landscape Character Assessment (LCA) and Landscape and Visual Impact Assessment (LVIA) of Proposed National Roads - Standard (TII Publication PE-ENV-01102, December 2020) • Technical Guidance Note 06/19 Visual Representation of Development Proposals (The Landscape Institute, 2019). • Guidelines for Landscape and Visual Impact Assessment, Third Edition (The Landscape Institute and Institute of Environmental Management & Assessment, 2013) (GLVIA3); • Guidelines on the Implementation of Landscape Treatments on National Road Schemes In Ireland (TII, 2012); • A Guide to Landscape Treatments for National Road Schemes in Ireland (NRA, 2006) • Design Manual for Roads and Bridges, Volume 11 (UK DMRB, 1994). • Design Manual for Urban Roads and Streets (DMURS, Department of Transport)

4.7 Heritage including Archaeology, Architecture, Cultural Heritage and UNESCO World Heritage Scope

In accordance with the TII heritage Guidelines, the following data sources have been consulted to date and will be reviewed on an ongoing basis throughout the EIAR stage:

- UNESCO World Heritage Sites (WHS) and Tentative World Heritage Sites and those monuments on the tentative list;
- National Monuments in State care and, as listed by the National Monuments Service (NMS) of the Department of Culture, Heritage and the Gaeltacht (DCHG)/Department of Housing, Local Government and Heritage (DHLGH);
- Sites with Preservation Orders;
- Sites listed in the Register of Historic Monuments;
- Record of Monuments and Places (RMP) and the Sites and Monuments Record (SMR) from the Archaeological Survey of Ireland (DCHG);
- The topographical files of the National Museum of Ireland and Newgrange Environs Surface Collection Survey, Dr Conor Brady (1998-2000);
- Archaeological Inventory of County Meath;
- Excavations Bulletins; archaeological assessment reports within the study area;
- The Hill of Slane Archaeological Project;
- Meath County Development Plan 2013-2019, the Slane Town Written Statement 2006, Draft Meath County Development Plan 2021-2027, and relevant published information;
- Meath Industrial Heritage Survey (MIHS) (paper survey only);
- National Inventory of Architectural Heritage (NIAH);
- Building and Historic Gardens & Demesnes Survey;
- Meath Field Names Project (MFNP);
- Townland names and toponomy (loganim.ie);
- National Folklore Collection (Duchas.ie);
- Museums, Collections and Archives database (Heritage Council of Ireland);
- Boat and Maritime Collections (2013; Heritage Council of Ireland);
- N2 Slane Bypass Cultural Heritage Constraints Study Report (Deery, 2017);
- N2 Slane Bypass Cultural Heritage Route Selection Study Report (Crowley, 2019)
- Cartographic sources and aerial imagery;
- The supplementary aerial photographic analysis undertaken of the route selection study area using aerial imagery captured during the drought conditions in late June 2018;
- The geophysical survey carried out as part of the routing study (Target, 2018) and LIDAR survey review (Davis, 2018); and
- Aerial investigation and mapping of the Newgrange landscape, Brú na Bóinne, Co. Meath. The Archaeology of the Brú na Bóinne World Heritage Site (Department of Culture Heritage and the Gaeltacht Interim Report Condit and Keegan, 2018).

In order to carry out the cultural heritage section of the EIAR, a review of existing documentation and supplementary research and field surveys will take place where necessary in order to evaluate the archaeological, architectural and cultural heritage constraints in terms of avoidance and mitigation measures. This approach will involve a review of the fieldwork and various surveys completed to date (see **Table 3-2**), as well as the proposed surveys and review of the latest aerial photography to take place during the EIA.

Consultation will take place throughout the process with the Project Archaeologist, Engineering and Design Team, other EIAR specialists such as the World Heritage Expert and the Landscape and Visual specialists, other sub-consultants, Meath County Council and statutory authorities. All findings will be communicated in a timely and accurate manner. The key heritage features in the vicinity of the *Proposed Scheme* are shown on **Figure 4.2**.

Cultural Heritage	
Key issues that will be considered in EIAR Chapter	• The Slane area is particularly rich in archaeological, architectural and cultural heritage. • The World Heritage Site of Brú na Bóinne is located to the east of the study area. • Potential for the *Proposed Scheme* to impact adversely on the OUV of the World Heritage Site is greatest in two areas of the road alignment. These are at the crossing of the Boyne where the southern end of the bridge may be visible from Knowth and the route north of the N51 junction where the road would be visible in views towards the World Heritage Site from the Hill of Slane. Minimising of any adverse impact at these two locations is a key issue for the EIAR. • Potential impacts to heritage or setting for national and recorded monuments, areas of archaeological potential, buildings/features on the architectural heritage record of protected structures, demesne houses/ garden landscapes, or architectural conservation areas and unrecorded cultural/ industrial heritage features. • There are no national monuments recorded within or within 250m of the mainline of the proposed road Three national monuments are located on natural heights within the wider landscape: Hill of Slane; Knowth Passage Tomb Cemetery, Enclosure and Mound; and Carrickdexter Cross. • The *Proposed Scheme* would be visible from the Hill of Slane, particularly to the east of Slane, north of the N51. • The *Proposed Scheme* would potentially have a moderate direct impact on part of a probable field system associated with an early medieval enclosure (SMR ME019-085, AH10). This is the only direct impact on RMP/SMR sites identified along the entire length of the route. • Potential indirect impacts on two recorded sites, namely an enclosure identified through geophysical survey (SMR ME019-088, AH9) and a linear earthwork (SMR ME019-092, AH13). The relative proximity of the sites means that there is the potential that features associated with them may survive subsurface within the area. • No stray finds have been recorded to date from the townlands within which the proposed road passes. • Potential impact from lighting associated with the scheme and traffic using the scheme. • There are a number of protected structures in the wider study area listed on the Record of Protected Structures (RPS) in the Meath CDP 2013-2019. Around half of lie within Slane Village (an Architectural Conservation area, ACA), 14 are associated with Slane Mills and 6 are within Slane Demesne. The remaining sites are scattered in the surrounding rural environment. • There are three adjoining Architectural Conservation Areas (ACAs) located to the west of the *Proposed Scheme*: Slane Castle Demesne ACA, Slane Village Centre ACA, and Slane Mill ACA, the latter of which is the closest to the *Proposed Scheme*. • There are two demesnes located to the west of the *Proposed Scheme* - both are sited on the banks of the River Boyne, associated with Slane Castle (RPS MH019-104), the demesne of which comprises the ACA, and Beauparc House (RPS MH019-102). • The *Proposed Scheme* would pass close to two pairs of labourers' cottages, a single labourer's cottage and a derelict gate lodge. In most of these cases the impact would be minor and indirect.

Cultural Heritage	
	• There would be a positive impact for the architectural heritage of the Slane Village ACA and on Slane Bridge, which is a protected structure, via the removal of significant volumes of traffic onto a bypass. • Francis Ledwidge cottage and museum are located on the N51, just to the west and outside of the footprint of the N51 link road to the bypass.
Baseline Survey Work Proposed	• See **Table 3-2** for surveys and other work already completed. • Field surveys of the *Proposed Scheme* footprint and up to 250m either side of the proposed road elements. • Ground investigation works monitoring including metal detecting and recording of stray finds. • High quality photomontages (depicting proposed alignment with and without soft landscape mitigation) will be generated from agreed viewpoint locations (which are to include a number of relevant protected views and from other key locations within the study area). Viewpoint locations will be chosen for relevance in regard to both the landscape/visual and heritage assessments • 3D model image outputs from selected viewpoints (as required)
Technical Consultation	• Ongoing consultation will continue, with follow-up contact via e-mail, telephone and/ or face to face meetings as considered necessary during the EIA stage: – Meath County Council Heritage Officer – Dept. Housing, Local Government and Heritage – Development Applications Unit – National Monuments Service – Architectural Policy and Built Heritage Section – Underwater Archaeology Unit (if required) – ICOMOS Ireland – An Taisce - The National Trust for Ireland – The Heritage Council – Office of Public Works – Brú na Bóinne Visitor Centre – National Museum of Ireland Ledwidge Museum – Fáilte Ireland – Arts Council of Ireland – Royal Irish Academy: Committee for Historical Studies – Irish Georgian Society – The Discovery Programme – University College Dublin (School of Archaeology) – Trinity College Dublin (Department of Classics, School of Histories & Humanities) – Dundalk Institute of Technology (Department of Humanities) – University College Galway (Discipline of Archaeology) – University College Cork (Department of Archaeology) – Archaeologists that have worked in the WHS
Key Guidance Documents	• Guidelines for the Assessment of Archaeological Heritage Impact of National Road Schemes (NRA, 2005) • Guidelines for the Assessment of Architectural Heritage and National Road Schemes (NRA, 2005) • Historic Environment Good Practice Advice in Planning, Note 3: The Setting of Heritage Assets (Historic England, July 2015) • Historic Landscape Characterisation in Ireland: Best Practice Guidance (The Heritage Council, 2013) • Architectural Heritage Protection Guidelines for Planning Authorities (Department of Arts Heritage and the Gaeltacht, 2011) • Frameworks and Principles for the Protection of the Archaeological Heritage ((formerly) Department of Arts, Heritage, Gaeltacht and Islands, 1999) • Cultural Heritage Guidelines for Electricity Transmission Projects (Courtney Deery for EirGrid, 2015)

Cultural Heritage	
	• Proposals for Ireland's Landscapes (The Heritage Council, 2010) • Guidance on Heritage Impact Assessments for Cultural World Heritage Properties (ICOMOS, 2011) • Updated Guidance on Heritage Impact Assessments for Cultural World Heritage Properties (ICOMOS, *in preparation*)

4.8 Biodiversity (including Terrestrial and Aquatic Ecology) Scope

This EIAR chapter will consider the potential impacts within the zone of influence of the *Proposed Scheme* on terrestrial and aquatic biodiversity, flora and fauna during the site enabling, construction, operational and maintenance phases. The zone of influence will differ with the various ecological features and this will be confirmed within the EIAR chapter.

The ecological assessment will be undertaken in accordance with the criteria for site evaluation outlined in the Guidelines for Assessment of Ecological Impacts on National Roads Schemes (NRA, 2009), as well as more recent guidance published by CIEEM (2018). Potential impacts will be identified in respect of the above listed items and detailed below under key issues, and mitigation measures will be specified as required. Residual and cumulative impacts will also be addressed as part of the assessment process.

The scope of the terrestrial and aquatic assessment for the EIAR will build upon the desktop studies and fieldwork undertaken to date, and will involve:

- Desktop study: A thorough search and review of available information pertaining to the development will be carried out in addition to email/phone consultations with relevant authorities, in particular the National Parks and Wildlife Service and Inland Fisheries Ireland. The ecological features of the study area will be examined, and the sensitivity of each feature reviewed. Relevant environmental protection legislation including EU directives and national regulations will be consulted as appropriate e.g. Water Framework Directive and Habitats Directive. The desk study will also review the survey locations and will include review of any pertinent engineering reports associated with the development.
- Baseline aquatic and terrestrial surveys: within the terrestrial areas of the proposed road corridor and affected watercourses to assess and confirm the ecological status of the affected areas. This will include surveys of habitats, protected species habitat potential, and presence/absence of species. Protected species, invasive species and any other features of note related to terrestrial and aquatic ecology, and bankside/instream will be noted.
- Assessment of potential direct, indirect and cumulative impacts of the *Proposed Scheme* on terrestrial and aquatic species and habitats.
- Recommend mitigation and monitoring measures in the design, construction, operation and maintenance of the new N2 road route.

The designated ecological sites within the study area are identified in **Figure 4.3**.

Biodiversity	
Key issues that will be considered in EIAR Chapter	**Terrestrial Ecology:** • **Nature Conservation Areas:** Designated conservation areas are areas containing habitats or species of national or international conservation importance and include Special Areas of Conservation (SAC), Special Protection Areas (SPA) and proposed Natural Heritage Areas (pNHA). The proposed N2 Slane Bypass traverses the River Boyne and River Blackwater SAC and SPA, and traverses discrete areas of the Boyne Woods pNHA . Fragments of Residual Priority Annex I habitat, alluvial woodland (a QI of the SAC), has been recorded in the study area along the Boyne corridor, but not within the footprint of the proposed scheme. The EIAR (in addition to the Appropriate Assessment) will consider the potential for both direct and indirect impacts on these designations. • **Rare and Protected Species:** Through a search of the rare and protected species records held by the National Biodiversity Data Centre and the various field surveys and walkovers, the following species protected under the EU

Biodiversity

Habitats Directive recorded along the route include: European Otter (*Lutra lutra*), Pine Marten (*Martes martes*) and Red Deer (*Cervus elaphus*). Species protected under the Wildlife Act 1976, as amended, include: Eurasian Badger (*Meles meles*), Irish Hare (*Lepus timidus hibernicus*), Eurasian Red Squirrel (*Sciurus vulgaris*), West European Hedgehog (*Erinaceus europaeus*) and Eurasian Pygmy Shrew (*Sorex minutus*) and amphibians A number of mature trees were visually assessed as being moderate or high potential for Potential Roost Features (PRFs) in respect of bats during walkover surveys including within deciduous woodland along the Boyne Valley. Surveys conducted by Bat Conservation Ireland from 2002-2005 located seven bat species foraging and commuting along the tow path of the River Boyne: Soprano Pipistrelle (*Pipistrellus pygmaeus*), Common Pipistrelle (*Pipistrellus pipistrellus*), Daubenton's Bat (*Myotis daubentonii*), Whiskered bat (*Myotis mystacinus*), Natterer's Bat (*Myotis nattereri*), Leisler's Bat (*Nyctalus leisleri*) and Brown Long-eared Bat (*Plecotus auritus*). Impacts to rare and protected species including the impacts of new lighting will be addressed as part of the EIAR.

- **Other Areas of Biodiversity Value:** The *Proposed Scheme* primarily runs through improved agricultural lands that are of generally poor botanical diversity. However, the surveys to date have identified a number of ecological receptors (ER) with potential for habitat loss as a result of the *Proposed Scheme*. These include habitats such as improved/ dry humid acid grassland, improved/ agricultural grassland, treelines/ hedgerows, riparian woodland, managed wetland vegetation, and arable land. Further surveys will be conducted as part of the EIAR to address the effects of potential impacts.
- **Birds:** Kingfisher is a species of note given that it is the special conservation interest (SCI) for the River Boyne and River Blackwater SPA. Furthermore, all species are protected under the Wildlife Acts 1976 (as amended). A number of bird species are also categorised as Red or Amber listed Birds of Conservation Concern, a number of which have been recorded in the area. A number of kingfisher surveys as well as the first season of wintering bird surveys have been undertaken to date. Whooper swan has been observed flying overhead of the proposed scheme, though its preferred and observed feeding grounds to date are noted to be wetland fields outside of preferred routing, typically to the east of the study area. Breeding bird surveys are currently ongoing to determine the potential for impacts.
- **Invasive Species:** The Wildlife Acts, 1976 and 2000 contain a number of provisions relating to non-native or invasive alien plant species (IAPS). Ireland has also ratified a number of international conventions that oblige the Government to address the issues of non-native invasive species including the Convention on Biological Diversity, the Bern Convention and the International Plant Protection Convention. In addition, there are obligations under the EU Habitats Directive to address any threats to the conservation status of the various habitats and species listed for protection under the Directive. Terrestrial IAPS including Third schedule species have been recorded upstream and downstream of the proposed scheme, including Himalayan balsam (*Impatiens glandulifera*), however none has been recorded at the proposed Boyne bridge crossing.

Aquatic Ecology:

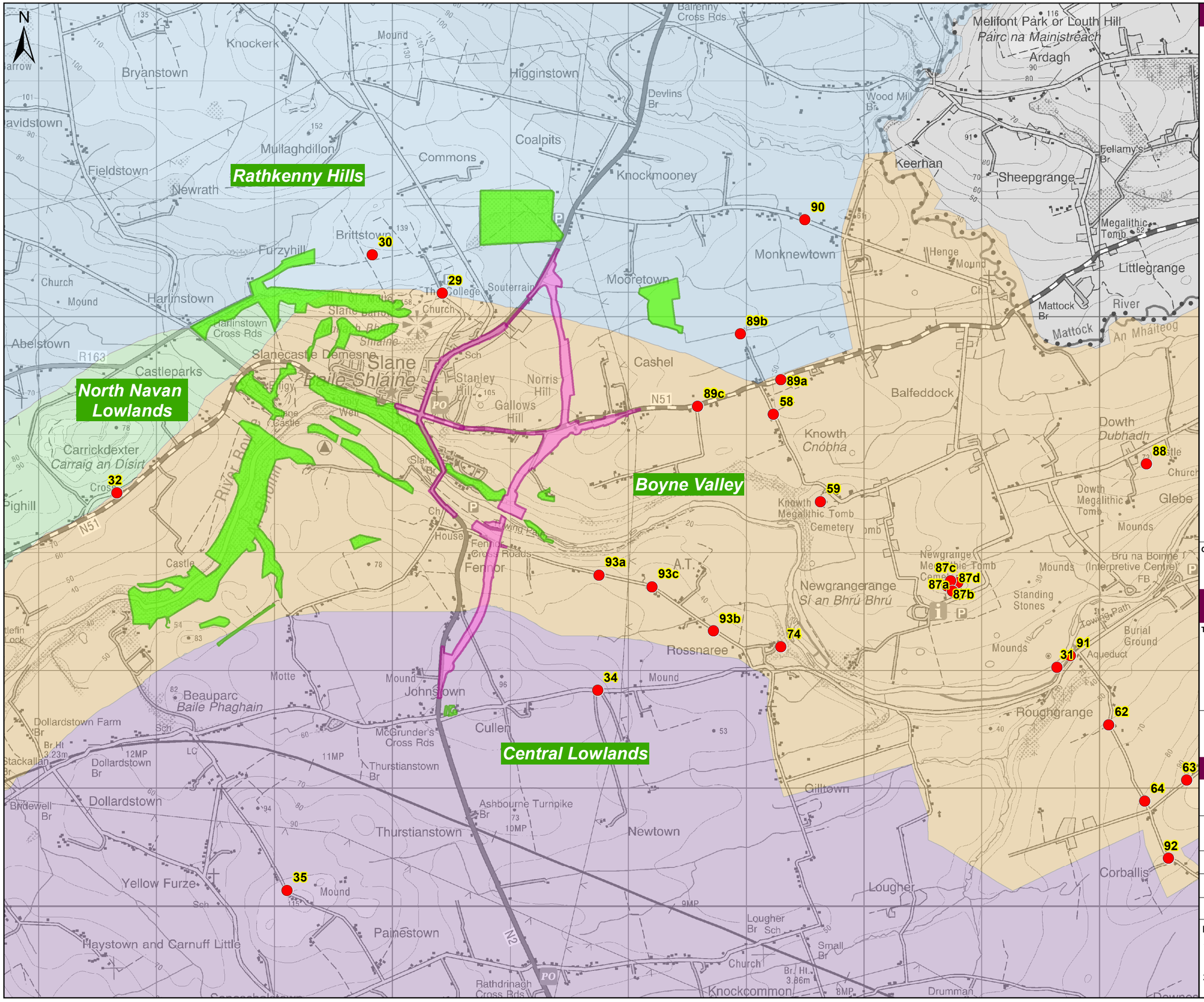
The watercourses potentially be impacted by the *Proposed Scheme* are:

- River Boyne:
  - The proposed route crosses the River Boyne which has Good WFD Ecological Status for 2013-2018 (Boyne_170, EU Code: IE_EA_07B042150) and designated as SAC for alluvial forest and alkaline fen habitat, river lamprey, salmon and otter. The main channel is also a designated salmonid water. Salmonids, lamprey, and otter are known to occur within this section of the Boyne River. Crayfish are present in its

Biodiversity	
	tributaries with historic records within the main channel 18km upstream. A Q4 (good ecological condition) was assigned at Slane Bridge in the 2020 survey. – A section of the Boyne canal is present to the east of the *Proposed Scheme* and the aquatic invasive duckweed which has a risk of medium impact, *Lemna minuta* has been observed growing in the canal. • River Mattock: – The *Proposed Scheme* also runs adjacent to the River Mattock, which has Unassigned WFD Ecological Status for 2013-2018 (Mattock_030, EU Code: IE_EA_07M010300). A Q3 (poor ecological condition) was assigned to the river during the 2020 aquatic survey. Salmon habitat was rated as None -Poor. Lamprey habitat as Poor. No crayfish were present during the 2020 aquatic survey. • Small tributary of the Mattock – The *Proposed Scheme* will run adjacent to a small tributary of the River Mattock. This has been heavily modified into a series of drainage ditches and the 2020 aquatic survey noted recent dredging. No fisheries potential was identified in the 2020 survey. There was little water within the channel and dry in sections. Unsuitable for macroinvertebrate sampling. **Appropriate Assessment:** A report to inform screening for Appropriate Assessment has been prepared and this concluded the potential for Likely Significant Effects on a European site, alone or in combination with other plans and projects as a result of the proposed project in the absence of mitigation. On this basis, a Natura Impact Statement will be prepared to establish whether or not there is potential for adverse effects on the integrity of a European site, in order to inform the AA to be undertaken by ABP.
Baseline Survey Work Proposed	A number of terrestrial and aquatic baseline surveys have been completed to date during the preliminary options and route options selection stages. Further, surveys will be undertaken to inform the EIA as follows: • See **Table 3-2** for surveys and other work already completed. **Terrestrial:** • Habitat, hedgerow and terrestrial IAPS survey. Habitat classification to Fossit (2000) • Bat survey; with reference to Bat Conservation Trust (BCT) Guidelines (Collins, 2016) • Ongoing breeding bird surveys (BTO Common Bird Census Methodology; Bibby, 2000 & Gilbert,1998) • Kingfisher survey (methodology based on Cummins (2010) • Lands required for construction-related elements (such as temporary works areas) will be walked. Other lands adjacent to the preferred route identified during the field survey may also require surveying. • Protected species, invasive species and any other features not related to terrestrial ecology will be noted. **Aquatic:** • Q-value sampling (macroinvertebrate, where accessible) and physico-chemical parameter measurements on site. • Upstream and downstream fisheries habitat assessment, protected species habitat potential, and presence/absence of protected species (salmon, lamprey and crayfish), general habitat and hydro-morphological descriptions • General aquatic plant survey including aquatic IAPS • Protected species, invasive species and any other features not related to aquatic ecology, and bankside terrestrial invasive species will be noted.

Biodiversity	
	• Water quality sampling, to inform the baseline for both the Biodiversity and Water chapters, as well as the Appropriate Assessment (see **Section 4.9 Water** for details).
Technical Consultation	**National Parks and Wildlife Service (NPWS**) of Department of Housing, Local Government and Heritage (DHLGH). Note: Pre-planning consultations with NPWS/then-named Dept. of Culture, Heritage and the Gaeltacht related to the project were initiated through the Development Applications Unit (DAU). The following points to be discussed: • Nature conservation sites within close proximity to the proposed scheme. • Requirement for Appropriate Assessment. • Scope of ecological surveys and proposed survey approach. • Information on any protected flora and fauna records. • Potential impact pathways / cumulative impact pathways. • Avoidance of potential impacts. • Information/advice on any further constraints and mitigation that should be considered in the ecological impact assessment. **Inland Fisheries Ireland** The following points to be discussed**:** • Status of waterbodies crossed by the proposed scheme. • Location of significant spawning areas for salmonid species. • Location of significant spawning areas for lamprey species. • Location of significant areas for angling along the proposed scheme. • Information/advice on any further constraints and mitigation that should be considered in the ecological impact assessment. • Potential impact pathways / cumulative impact pathways • Information on invasive species. **Heritage Officers/ Biodiversity Officers of Meath County Council** The following points to be discussed**:** • Information on local areas of biodiversity value. • Scheme/programmes for enhancement/restoration. • Green linkages/networks relevant to the area. • Information/advice on any further constraints and mitigation that should be considered in the ecological impact assessment. **BirdWatch Ireland** The following points to be discussed**:** • Information on species areas of importance within adjacent SPAs. • Bird usage of the area. • Survey data. • Potential impact pathways / cumulative impact pathways • Information/advice on any further constraints and mitigation that should be considered in the ecological impact assessment. **Bat Conservation Ireland** The following points to be discussed**:** • Bat species distribution records in the area. • Suitability of the area for bats. • Potential impact pathways / cumulative impact pathways **National Biodiversity Data Centre** The following points to be discussed**:** • Any relevant survey data for the area.

Biodiversity	
Key Guidance Documents	• Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn*) The Bat Conservation Trust, London. • Cummins, S.; Fisher, J.; McKeever, R.G.; McNaghten, L. & Crowe, O. (2010) Assessment of the distribution and abundance of Kingfisher Alcedo atthis and other riparian birds on six SAC river systems in Ireland. Unpublished Birdwatch Ireland report to the National Parks and Wildlife Service, Newtownmountkennedy, Co. Wicklow. • Fossit, J.A. (2000) A Guide to Habitats in Ireland. • GE-ENV-01105 - The Management of Invasive Alien Plant Species on National Roads – Technical Guidance (TII, December 2020) • Gilbert, G.; Stanbury, A. and Lewis, L. (2021) Birds of Conservation Concern in Ireland 4: 2020-2026 *Irish Birds,* 43, pp 1-22 • Guidelines for Planning Authorities and an Bord Pleanála on carrying out Environmental Impact Assessment (DHPLG, August 2018); • Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, January 2016, modified in 2018) • Guidelines on the information to be contained in Environmental Impact Assessment Reports, (draft) (EPA, August 2017) • Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI 2016) • Guidelines for Assessment of Ecological Impacts of National Roads Schemes (NRA/TII, 2009 • Environmental Impact Assessment of National Road Schemes – A Practical Guide (NRA, 2008) • Guidelines for the Treatment of Bats during the Construction of National Road Schemes (NRA) • Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes (NRA) • Guidelines for the Treatment of Badgers prior to the Construction of a National Road Scheme (NRA) • Guidelines for the Protection and Preservation of Trees Hedgerows and Scrub • Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA) • Management of Noxious Weeds and Non-Native Invasive Plant Species on National Road Schemes (NRA)



Client

Meath County Council

N2 Slane Bypass and Public Realm Enhancement Scheme

Title

Figure 4.1:

Key Landscape Features

West Pier
Business Campus,
Dun Laoghaire,
Co Dublin, Ireland.

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Issue Details

File Identifier:
MDT0806-RPS-00-N2-DR-Z-AG-0301

Status:	Rev:	Model File Identifier:
S4	P01	MDT0806-RPS-01-N2-DR-C-SK0151 MDT0806-RPS-01-N2-M2-C-XR0005

Drawn: NO'N	**Date:** 28/09/2021
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Approved: MN	**Projection:** ITM

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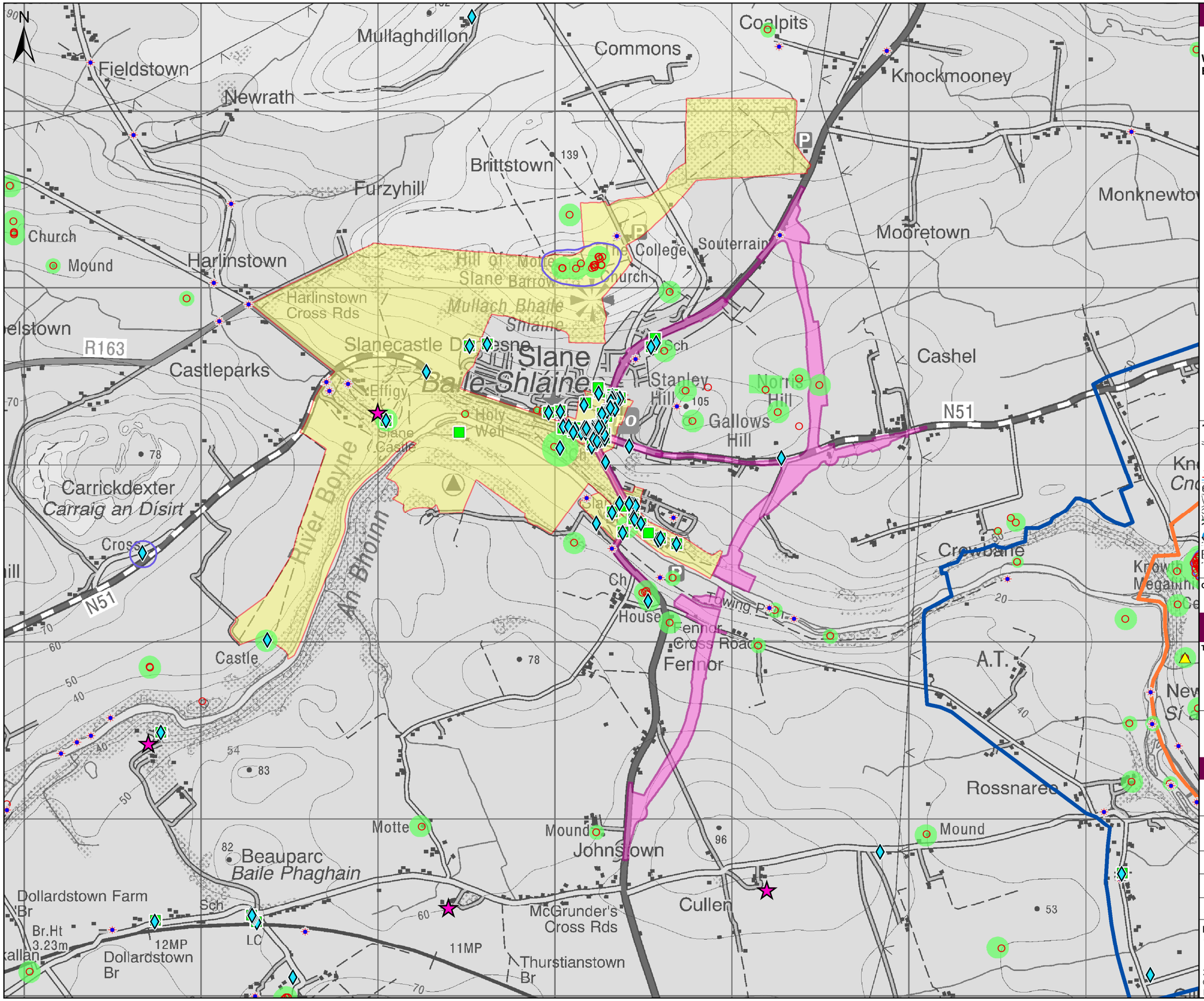

Client

Meath County Council

N2 Slane Bypass and Public Realm Enhancement Scheme

Title

Figure 4.2:

Key heritage features

West Pier
Business Campus,
Dun Laoghaire,
Co Dublin, Ireland.

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Issue Details

File Identifier:
MDT0806-RPS-00-N2-DR-Z-AG-0302

Status:	Rev:	Model File Identifier:
S4	P01	MDT0806-RPS-01-N2-DR-C-SK0151 MDT0806-RPS-01-N2-M2-C-XR0005

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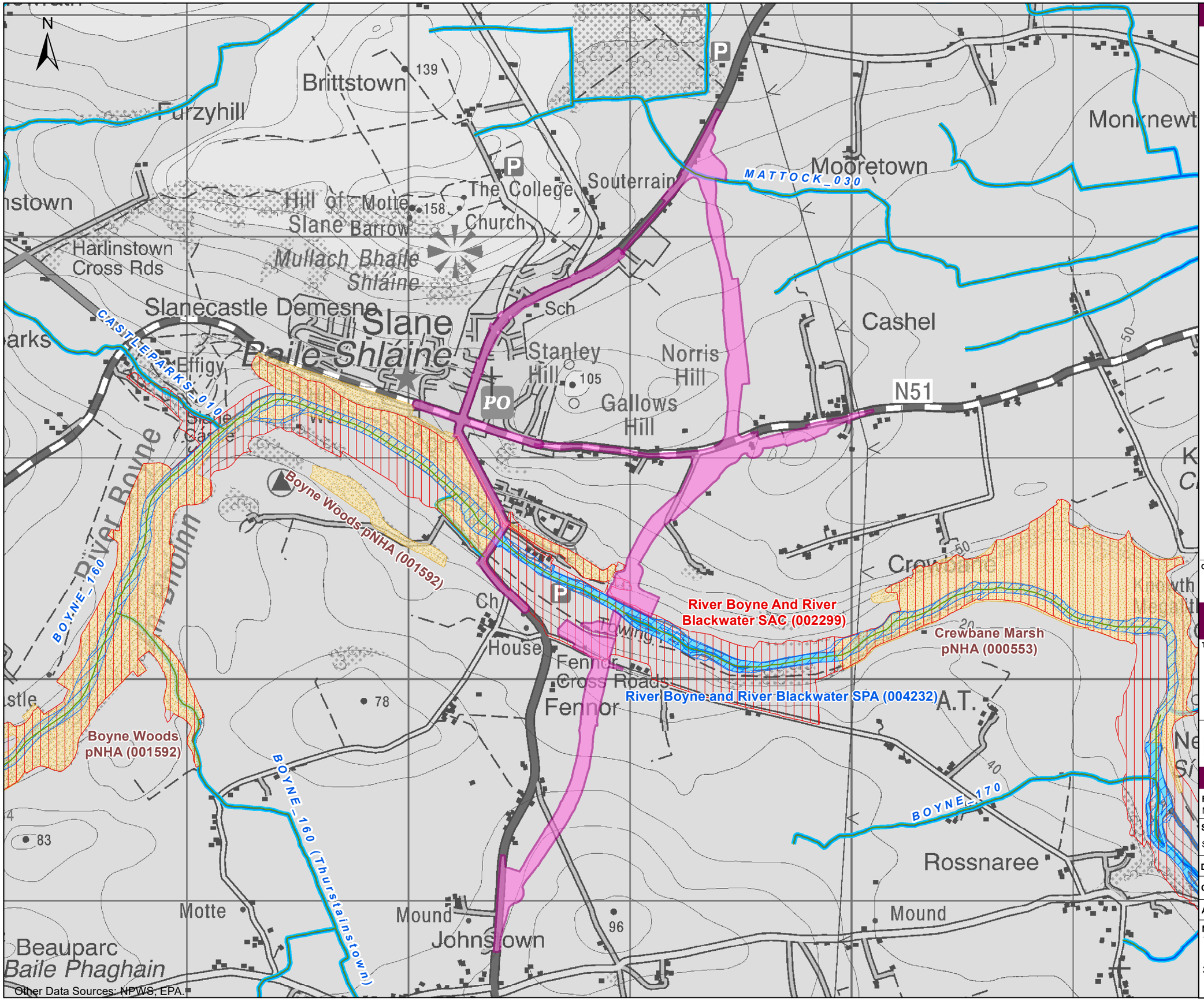

Legend

- Scheme Extents
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Proposed Natural Heritage Area (pNHA)
- WFD River Water Body

0 0.125 0.25 0.5 Kilometers

Client

Meath County Council

N2 Slane Bypass and Public Realm Enhancement Scheme

Title

Figure 4.3

Designated ecological sites

West Pier
Business Campus,
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Issue Details

File Identifier:
MDT0806-RPS-00-N2-DR-Z-AG-0304

Status:	Rev:	Model File Identifier:
S4	P01	MDT0806-RPS-01-N2-DR-C-SK0151 MDT0806-RPS-01-N2-M2-C-XR0005

Drawn: NO'N	**Date:** 24/05/2021
Checked: AG	**Scale:** 1:16,000 (A3)
Approved: MN	**Map Projection:** ITM

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4.9 Water (including Hydrology and Flood Risk) Scope

The Water including Hydrology and Flood Risk chapter of the EIAR will assess the potential impacts arising from the *Proposed Scheme* on surface water quality, hydrology, flooding and drainage. Mitigation measures will be recommended to reduce or eliminate any significant negative impacts identified. An assessment of the residual impact, which will remain assuming that the recommended mitigation measures are fully and successfully implemented, will also be undertaken.

A summary of the impacts will be presented in tabular format for each of the hydrological attributes.

Desktop information has been gathered with respect to existing water bodies, areas with environmental designations and flooding history which is set out below and will be used to inform the detailed assessment of the scheme. The following sources will be referenced in the preparation of this section of the EIAR:

- Ordnance survey maps
- Aerial photography
- EPA GIS maps and hydrometric data
- EPA Water Quality Reports and Water Quality Monitoring Database
- The Office of Public Works (OPW) Hydro-data mapping/ National Flood Hazard Mapping Website
- OPW Eastern Catchment Flood Risk Assessment and Management Study (CFRAMS) and Predicted Flood Maps
- Meath County Council Flood Zone mapping and Flood Risk Assessment and Management Plan for Meath CDP 2020-2026[7] (JBA Consulting, Dec. 2019)

Water (including Hydrology and Flood Risk)	
Key issues that will be considered in EIAR Chapter	• The hydrological constraints relate to watercourses being crossed and adjacent river/ streams. • The study area is located in the Boyne Catchment (Hydrometric Area [HA] 07) and straddles two subcatchments: the Boyne_SC_120 (EPA Code: 07_15) on the northern side of the river and Boyne_SC_110 (EPA Code: 07_1) on the southern side. • The main river traversed by the *Proposed Scheme* is the River Boyne flowing from west to east. The River Mattock runs adjacent to the northern tie-in of the proposed scheme, flowing from the north-west towards the south-east. • A Stage 1 and Stage 2 Flood Risk Assessment for the proposed development has been completed. A review of the Office of Public Works (OPW) Flood Maps/Eastern CFRAMS data and MCC flood zone A and B data indicates fluvial flooding in a number of areas: – Along the southern banks of the Boyne and a small extent associated with the Mattock. Recurring flood events are noted to occur on the existing N2 Slane Bridge. – The Boyne canal does not contribute to the hydraulic capacity of the River Boyne to convey flows and does not have an influence on the flooding from the Boyne. – The River Boyne is noted to be subject to tidal influence, with potential flooding confined within low-lying areas adjacent to the River Boyne. – There are no recorded incidents of pluvial flooding in the vicinity of the proposed route corridor, and there are no records of groundwater flooding in the area. – The proposed bridge will be located across the River Boyne and will have piers within the predicted 1% AEP and 0.1% AEP floodplain. The proposed bridge will have a freeboard above the predicted flood levels in excess of 3 metres and hence will not increase the risk of flooding during the 1% AEP and 0.1% AEP events. An analysis was carried to assess the sensitivity of the predicted flood levels due to climate change. Neither the route corridor nor the bridge was found to

[7] Dates have moved to 2021-2027

Water (including Hydrology and Flood Risk)	
	significantly increase flood risk elsewhere. The flood risk to the proposed route corridor is considered to be low. • Floodplain issues are also being examined, particularly in the context of construction, wash-off, sedimentation, over-edge road drainage etc. • Based on the topography of the study area, higher runoff is expected towards the Boyne from the lands either side of the Boyne valley, as well as from higher ground particularly, from the north-eastern part of the study area. • The main water supply is from the Slane Source Protection Area which is located on the southern side of the Boyne adjacent the main channel. Recharge occurs within this Beauparc area flowing generally north/north-north-west towards the Boyne, due to the more permeable nature of the bedrock.
Baseline Survey Work Proposed	• See **Table 3-2** for surveys and other work already completed. • Windshield and walkover survey • Water quality sampling to be undertaken at a number of points in the River Boyne and River Mattock, both upstream and downstream, fortnightly over a 12 month period, covering a range of physico-chemical parameters, including hydrocarbons and heavy metals
Technical Consultation	• Meath County Council • Office of Public Works
Key Guidance Documents	• Road Drainage and the Water Environment, DN-DNG-03065 (TII, March 2015) • Drainage Systems for National Roads, DN-DNG-03022 (TII, March 2015) • Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2008) • The Planning System and Flood Risk Management Guidelines (DEHLG, 2009) • The SuDs Manual C697 (CIRIA, 2007) • Strategy for Adapting to Climate Change on Ireland's Light Rail and National Road Network (TII, December 2017)

4.10 Soils, Geology and Hydrogeology Scope

In this chapter of the EIAR it is proposed to assess the potential impacts arising from the *Proposed Scheme* on soils, geology and hydrogeology together with recommendations for mitigation measures to reduce or eliminate any significant negative impacts identified. An assessment of the residual impact, which will remain assuming that the recommended mitigation measures are fully and successfully implemented, will also be undertaken.

This assessment will be based on site investigation data provided by the Engineering Team and will primarily include a review of site investigations surveys, geophysical surveys, hydrodynamic surveys, walk over survey and existing baseline data collated to date and on the GSI databases. A summary of the impacts will be presented in tabular format for each of the geological and hydrogeological attributes.

The following sources will be referenced in the preparation of this section of the EIAR:

- Ordnance survey maps
- Aerial photography
- Soils maps (Teagasc, GSI)
- GSI Databases (Wells, Karst, Landslides, Quarries/ pits & Aggregate Resources)
- Groundwater Protection Scheme: aquifer classification and likely vulnerability
- Available geotechnical data including GSI database and additional site investigation data for the scheme, as well as the topographical survey being undertaken to inform the design

- Geological Heritage Areas
- Ecological information from the project ecologist to identify any areas which may be impacted upon by geological or hydrogeological features
- Soft ground information from the Engineering Team following ground investigations
- Information on groundwater fed public water supply schemes served by springs or boreholes
- Information on private wells

Soils, Geology and Hydrogeology	
Key issues that will be considered in EIAR Chapter	• No significant areas of soft ground such as marsh or peat have been identified within the study area. There are alluvial soils along the banks of the Boyne, and some areas of peaty gley type soils. • There is one geological heritage area - the *Proposed Scheme* traverses the Boyne Valley County Geological Site (CGS). This comprises a glacio-fluvial terrace deposited during the last ice age and runs the length of the Boyne river corridor from Navan to the coast. • There is potential for presence of karst features to be intersected, such as in the Boyne Formation ('Calp' limestone). There is one swallow hole identified from the GSI karst database, located 0.5 km to the east of the proposed scheme. A manmade karst feature comprises the boreholes for the Slane public water supply located just to the west of the Slane Bridge. The proposed scheme also traverses groundwater vulnerability rated Moderate and Extreme and several areas rated X (rock near karst or exposed at the surface). These areas would be more vulnerable to pollution from road runoff than the high vulnerability areas. • No active quarries are traversed by the proposed scheme, however historic quarries and sand and gravel pits in the area will be considered as part of this assessment. • There is one source protection zone (SPZ) within the study area; this feeds the Slane Public Water Supply. There is potential for industrial supplies and domestic and farm supplies to be served by private wells. These may need to be identified and confirmed through a well survey carried out at EIAR stage. Much of the study area is well served by water mains, however any local wells supplying farms in the area may be affected. • The key issues for this chapter relate to: – Land use change/ removal of soil and changing groundwater vulnerability class – Local alterations to water tables/ dewatering – Potential impacts to water abstractions for public supplies/ private wells – Potential impacts to geological heritage areas [GHA]/ county geological sites [CGS] (Boyne Valley CGS)
Baseline Survey Work Proposed	• See **Table 3-2** for surveys and other work already completed. • Windshield and walkover survey • Identify areas served by private wells if required
Technical Consultation	• Meath County Council • Geological Survey of Ireland • Environmental Protection Agency
Key Guidance Documents	• Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2008) • Geology in Environmental Impact Statements – A Guide (IGI, 2002)

4.11 Land (including Agriculture) Scope

This section of the EIAR will assess the potential effects on agricultural properties as a result of the proposed scheme in terms of disturbance, nuisance, severance and landtake. The assessment will be based both on a desktop study examining the extent of the proposed CPO fence line in relation to farm properties, and on discussions with landowners.

Landuse within the preferred corridor is primarily agricultural, with a number of large dairy, drystock and tillage enterprises.

Land	
Key issues that will be considered in EIAR Chapter	• Change in agricultural landuse • Impacts to agricultural properties and practices • Landtake from agricultural properties • Severance of agricultural properties (temporary and permanent)
Baseline Survey Work Proposed	• Field walk along scheme extents (July 2021) • Review of aerial photography • Ongoing discussions with relevant landowners
Technical Consultation	• Meath County Council • Department of Agriculture, Food and the Marine • Relevant landowners
Key Guidance Documents	• Census of Agriculture 2010, final results (CSO, 2010) • Guide to Process and Code of Practice for National Road Project Planning and Acquisition of Property for National Roads (NRA, March 2003) [revised 2005] • DMRB Section Volume 11, Section 3, Part 6 'Land Use' (Highways Agency et al., 2001) for the assessment of effects on land use assets • Agricultural Land Classification of England and Wales (MAFF, 1988)

4.12 Climate Scope

In terms of climate impact, the assessment shall be informed through the use of the TII's Carbon Tool for Road and Light Rail Projects which has been developed based on the Publicly Available Specification (PAS) 2080: 2016 Carbon Management in Infrastructure. The tool is designed to develop a lifecycle carbon emissions footprint of the development through construction and operation phases and allow for a determination of options for mitigation.

The assessment will be informed by a desktop assessment of national and regional climate mitigation and adaption policy, the EPA National Emissions Greenhouse Gas Inventories (in particular the transport sector), construction inputs and outputs (materials balance) and traffic modelling outputs provided by the Transport Team.

During construction the key climate impacts relate to the embodied carbon within construction materials, the transport of these materials to the site, staff transport, plant/energy use on site and the management of peat (if any encountered). Each of the above will be calculated through the Carbon Management Tool. A series of carbon mitigation measures will be presented for the design/construction to mitigate the potential for impact.

The main potential for impacts on climate from the scheme during the operational phase is from road traffic-derived pollution. Impacts as a result of the traffic alterations associated with the scheme will be assessed using the techniques outlined in the Carbon Management Tool to identify the change from the baseline scenario. In order to identify potential impacts with respect to climate, the high growth traffic growth scenario will be assessed to ensure a worst-case assessment and the projected uptake of electric/hybrid vehicles and biofuel penetration will be accounted for in the projections.

The changes in carbon emissions as a result of the scheme will be assessed against Objective 10.2 of the Climate Action Plan (2019), which states the following target for the transport sector: *To meet the required level of emissions reduction, by 2030 we will reduce CO_{2eq}. emissions from the sector by 45–50% relative to 2030 pre-NDP projections.*

It is not considered that there would be impacts from the *Proposed Scheme* to heat sources in this area, and this element is therefore scoped out of the EIA.

In terms of climate adaptation, an assessment of flood risk is dealt with under the Water chapter.

Climate	
Key issues that will be considered in EIAR Chapter	• The main potential for impacts on climate from the scheme relates to road traffic-derived emissions during the construction phase and during the operational lifetime of the scheme. • The main potential impacts from climate relate to flood risk. • No significant areas of soft ground such as marsh or peat have been identified within the Project extents. Should significant peaty ground be encountered and need to be excavated, if not kept wet it may result in carbon release.
Baseline Survey Work Proposed	• Desktop-based; no on-site surveys are proposed
Technical Consultation	• Meath County Council • Eastern and Midlands Climate Action Regional Office
Key Guidance Documents	• Carbon Tool for Road and Light Rail Projects (TII, 2020) • Design Manual for Roads and Bridges (DMRB) Screening Air Quality Model • EU Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (2013) • Integrating Climate Change into Strategic Environmental Assessment in Ireland – A Guidance Note (EPA, 2015) • Strategy for Adapting to Climate Change on Ireland's Light Rail and National Road Network (TII, December 2017) • Publicly Available Specification (PAS) 2080: 2016 Carbon Management in Infrastructure

4.13 Material Assets Scope

Material Assets typically covers the issues of built services (e.g. utilities), traffic and transport, land and waste. For the purposes of this EAIR and given the nature of the proposed scheme, the scope of this chapter will focus on utilities and navigation. Matters related to land, waste and road transport (including vehicular, cycling and pedestrian) will all be considered under separate chapter headings – see **Table 3-1** for EIAR layout.

This chapter will examine the potential for impacts of the construction and operation of the project on services such as electricity, gas, telecommunications. Telecoms providers Vodafone, Enet, Virgin Media as well as Gas Networks Ireland confirmed that they have no services within the study area during the route selection stage.

Material Assets	
Key issues that will be considered in EIAR Chapter	• Utilities / built services - Telecoms providers Vodafone, Enet, Virgin Media as well as Gas Networks Ireland confirmed that they have no services within the study area during the route selection stage. • Boyne navigation
Baseline Survey Work Proposed	• Desktop assessment of material assets potentially affected by the proposed scheme, informed by any site investigation and data provided by the Engineering Team
Technical Consultation	• Meath County Council • ESB • Irish Water

Material Assets	
	• NTA • TII • Inland Waterways - Navigation
Guidance Documents	• No topic specific guidance

4.14 Waste Scope

The scope of the assessment will be based on a desktop review of legislation, historic and county council landfill/ waste databases and guidance documents. The scope of this chapter will give consideration to the likelihood for significant impacts arising, having regard to the nature of the receiving environment and the nature and extent of the proposed scheme. Construction and operational impacts of the Project on materials and waste is therefore required. As there is a large export requirement associated with the Project, this has the potential to be a significant environmental issue. The range of options for appropriate reuse and circular economy principles will be fully considered. Once the quantum is fully known, this chapter will inform other relevant chapters such as Air Quality, Noise and Vibration, Climate, and Soils, Geology and Hydrogeology.

Information will be provided by the Engineering and Design Teams on the predicted waste quantities and characterisations, e.g. earthworks and cut/fill balances, hazardous or non-hazardous materials characterisation.

Waste	
Key issues that will be considered in EIAR Chapter	• The majority of the proposed route will be in cutting • Waste generated – cut/fill balances • Other wastes typically associated with road construction e.g. Concrete, brick, asphalt, metals, wood, batteries, fuels etc. • Consideration of materials reuse both within the project and as by-product classification
Baseline Survey Work Proposed	• No specific survey work is proposed for this topic however the assessment will make use of the baseline information, surveys and assessments undertaken as part of the engineering and design works e.g. ground investigations undertaken during the EIA stage
Technical Consultation	• Meath County Council • Eastern & Midlands Regional Waste Management Office
Key Guidance Documents	• Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (2006, DECLG) • The Waste Management Act 1996 (as amended) • Guidance on Soil and Stone By products in the context of Article 27 of the European Communities (Waste Directive) Regulations 2011 (EPA, June 2019) • By-Product — Guidance Note. A guide to by-products and submitting a by-product notification under Article 27 of the European Communities (Waste Directive) Regulations 2011 (S.I. No 126 of 2011) (EPA, May 2020) • Materials and waste in Environmental Impact Assessment (IEMA, April 2020)

4.15 Risks of Major Accidents and/or Disasters Scope

This EIAR chapter will consider the vulnerability of the *Proposed Scheme* to risks of major accidents and/or disasters which are relevant to the project. The vulnerability of the *Proposed Scheme* to major accident hazard and risk relates key areas of traffic management, climate change and flood risk.

Major Accident and Disasters [Hazard and Risk]	
Key issues that will be considered in EIAR Chapter	The issues which will be considered with reference to other relevant and related chapters primarily include: • **Traffic Management**: Major traffic management incidents as a result of road traffic accidents on a national route. Potential for impacts from spillages etc. Also to note there is a Lower Tier Seveso site within the study area (Grassland Agro) which is located on the existing N2 just north of Slane village. This site comes under the remit of the Control of Major Accident Hazards Involving Dangerous Substances (COMAH Directive/ Seveso III Directive) (2012/18/EU); in this case the site manufactures and stores fertiliser. The site has a consultation radius of 700m, which overlaps the existing N2. • **Climate Change:** Transport-related greenhouse gas emissions generated as a result of the scheme; vulnerability of the project to climate change • **Flood Risk**: Vulnerability of the project to flood risk or to give rise to increased flood risk with effects for local residents, road users, biodiversity etc.
Baseline Survey Work Proposed	• No specific surveys are proposed however the assessment will make use of the baseline information, surveys and assessments undertaken as part of the other relevant chapters as previously outlined.
Technical Consultation	• No specific consultations are proposed however the assessment will refer to the responses received from consultations undertaken as part of the other relevant chapters as previously outlined.
Key Guidance Documents	• Strategy for Adapting to Climate Change on Ireland's Light Rail and National Road Network (TII, December 2017). • Flood Risk Management plans for the catchment • Meath County Council Road Safety Plan 2013-2020 and draft plan 2021-2030 • Guide to Risk Assessment in Major Emergency Management (DEHLG 2010)

4.16 Cumulative Effects Scope

Annex IV of the EIA Directive (2014/52/EU) Part 5(e) requires a description of the likely significant effects resulting from "*the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources*."

The EIAR will include a chapter which will assess the cumulative impact of the *Proposed Scheme* with other proposed developments. In order to identify any reasonably foreseeable major developments which have the potential to result in a cumulative impact with the Proposed Scheme, a number of planning resources will be referenced. These will include:

- Local Authority planning lists – Meath CC and surrounding local authorities;
- Local Authority planning websites - Meath CC and surrounding local authorities;
- Local Authority, EPA and similar regulators databases for permits, licenses and certificates relating to emission to air, water, soils etc., as appropriate;
- An Bord Pleanála website;
- National Planning Application Database; and
- The EIA Portal maintained by the Department of Housing, Local Government and Heritage.

4.17 Interactions between the Environmental Factors

The assessment of effects will be on receptors or receptor groups, such as local residents, which may be affected by different environmental elements generated by the *Proposed Scheme* simultaneously or concurrently. This is sometimes referred to as the "inter-relationships" or "interactions" between different environmental effects." The assessment includes consideration of particular locations/ receptors where several effects for example noise, air and landscape may all occur.

Key Issues that will be considered in EIAR Chapter	• Interactions of effects between different environmental effects across all chapter topics previously outlined. Some of the key interactions include, for instance, the following: – Biodiversity (particularly the aquatic ecology aspect) with Water – Water and drainage/flooding aspects – Hazard/Risk with Water (flooding), Traffic and Transport, and Human Health – Heritage with Landscape/Visual – Landscape (treelines/hedgerows) and Biodiversity (particularly terrestrial ecology aspects) – Noise/Vibration, Air Quality and Climate – Noise/Vibration, Air Quality and Population – Noise Vibration, Air Quality and Traffic and Transport with Human Health – Material Assets (sustainable use of natural resources) with Waste (disposal and recovery), and circularity/reuse considerations, as well as Landscape/Visual impact considerations – Noise, light, radiation and dust
Baseline Survey Work Proposed	• No specific surveys are required for this chapter.
Technical Consultation	• Meath County Council • TII
Key Guidance Documents	In addition to general EIA guidance referenced in **Section 3.2**: • Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (EC, 1999).

5 REASONABLE ALTERNATIVES CONSIDERED

The EIA Directive requires an EIAR to contain:

"A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."

To date, route options have been considered through a route optioneering process in accordance with Stage 2 of the TII Project Management Guidelines. This included identification of constraints, consultation on same, development of route options, consultation on same, analysis and assessment of options, identification of an emerging preferred route and consultation on same.

The full detail of this process is contained in a standalone report - Option Selection Report - which can be accessed at: www.n2slanebypass.ie.

In addition to route optioneering, other alternatives will also be recorded in the EIAR as relevant e.g. bridge design.

The consideration of alternatives in the EIAR will record how environmental considerations were taken into account in deciding on the selected option.

6 NEXT STEPS

Using this EIA Scoping Report as the basis, MCC is seeking feedback from the stakeholders outlined in **Appendix A** on the following:

- The key issues to be addressed in the EIAR;
- The proposed content of the EIAR and the potential impacts that have been scoped in/out;
- The proposed assessment methodologies to assess the potential impacts; and
- Any other data that the environmental assessments should consider and address in the EIAR.

Written submissions should be marked *N2 Slane Bypass and Public Realm Enhancement EIA Scoping* and can be made up to the **5th November 2021** to the following email:

Project email address: **n2slanebypass@rpsgroup.com**

RPS will continue to scope the EIAR as further assessment is undertaken on the *Proposed Scheme* and in consultation with the design team. Scoping will be ongoing through the preparation of the EIAR. All feedback received during the scoping process will be considered by MCC and the project team and the EIAR scope updated as required. The EIAR will record all issues raised during Scoping and how they have been addressed in the EIAR.

Appendix A

List of Scoping Consultees

List of Consultees for Scoping

An Bord Pleanála
An Chomhairle Ealaíon (The Arts Council)
An Taisce - The National Trust for Ireland
Bat Conservation Ireland
BirdWatch Ireland
Brú na Bóinne Visitor Centre
Department of Agriculture, Food and the Marine
Department of Environment, Climate and Communications
Department of Housing, Local Government and Heritage - Development Applications Unit – National Parks & Wildlife Service – National Monuments Service – Built Heritage & Architectural Policy Unit – Archaeological Survey of Ireland
Department of Rural and Community Development
Department of Transport
Department of Tourism, Culture, Arts, Gaeltacht, Sports and Media
The Discovery Programme
Dundalk Institute of Technology (Department of Humanities)
Environmental Protection Agency
Eastern and Midlands Climate Action Regional Office
Eastern and Midlands Regional Assembly
Eastern and Midlands Regional Waste Management Office
EirGrid
ESB
Fáilte Ireland
Francis Ledwidge Museum
Gas Networks Ireland
Geological Survey of Ireland
Health and Safety Authority
Health Service Executive
Heritage Council
IBEC
ICOMOS Ireland
Industrial Heritage Association of Ireland
Inland Fisheries Ireland
Inland Waterways Association of Ireland / The Boyne Navigation
Institute of Public Health
Irish Georgian Society
Irish Road Haulage Association
Irish Water
Irish Wildlife Trust
Louth County Council (Heritage Officer and Conservation Officer)

List of Consultees for Scoping
Meath County Council (Heritage Officer and Conservation Officer)
National Biodiversity Data Centre
National Museum of Ireland
National Transport Authority
Office of Public Works
Royal Irish Academy (Committee for Historical Studies)
Teagasc
Telecom's providers
Transport Infrastructure Ireland
Trinity College Dublin (Department of Classics, School of Histories & Humanities)
University College Dublin (School of Archaeology)
University College Galway (Discipline of Archaeology)
University College Cork (Department of Archaeology)
Water and Communities Office (LAWCO)
Waterways Ireland