

# Local Distributor Road 4 Abbeyland Navan

Environmental Impact Assessment Report  
Volume 1: Non-Technical Summary

Meath County Council

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comhairle chontae na mí  
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## List of Volumes comprising this Environmental Impact Assessment Report

**Volume 1    Non-Technical Summary**

**Volume 2    Main Text**

**Volume 3    Figures**

**Volume 4    Appendices**

# Environmental Impact Assessment Report

## Volume 1: Non-Technical Summary

### Table of Contents

1.	Introduction .....	1
2.	Need for the Proposed Road Development and Planning Policy .....	3
3.	Examination of Alternatives .....	4
4.	Description of the Proposed Road Development .....	6
5.	Traffic Analysis .....	10
6.	Population and Human Health .....	12
7.	Biodiversity .....	13
8.	Land and Soil .....	15
9.	Water .....	16
10.	Landscape and Visual Impact Assessment .....	17
11.	Noise and Vibration .....	17
12.	Air Quality .....	18
13.	Cultural Heritage .....	20
14.	Material Assets .....	20
15.	Major Accidents and Disasters .....	22
16.	Climate .....	23
17.	Interactions of the Foregoing .....	25

# 1. Introduction

## 1.1 Overview

The Environmental Impact Assessment Report (EIAR) for the proposed Local Distributor Road 4 (LDR4) (hereafter referred to as the 'Proposed Road Development') is "A *statement of the effects, if any, which proposed development, if carried out, would have on the environment*" (EPA, Draft 2017) and has been prepared in respect of the construction and operation of the Proposed Road Development. The EIAR, as presented, has been prepared by AECOM with the assistance of Meath County Council (MCC) (hereafter referred to as the 'Applicant').

This EIAR should be read in conjunction with all the particulars of the planning application, which will be submitted by MCC to An Bord Pleanála (ABP).

The Proposed Road Development comprises a local distributor road, incorporating pedestrian and cycleway provision of approximately 1.15 km in length.

The Proposed Road Development comprises the following major elements:

- Approximately 1.15 km of new urban Arterial Street (Design Manual for Urban Roads and Streets - 3.25 m lanes - single carriageway), incorporating pedestrian and cycle facilities (2.0m wide raised one-way cycle track on both sides, 2.5 m wide footpaths on both side, 1.0 m road verges);
- Two new signalised junctions at the scheme termination points, L3409 Ratholdron Road and R147/N51 Kells Road, both incorporating right turn lane and pedestrian/cycle crossings;
- One new single span river bridge over the River Blackwater (overall length 45.0 m);
- One new piped culvert over an existing field ditch;
- New pedestrian and cycle facilities, including 2 accesses to the Blackwater Park;
- Associated earthworks including excavation & unacceptable material, excavation and processing of rock and other material, provision of material deposition areas and deposition and recovery of unacceptable material for reuse in the works;
- Accommodation works, including the provision of access roads and accesses;
- Drainage works, including the construction of an attenuation pond and storage tanks;
- Demolition of an existing commercial building in the southern section of the Proposed Road Development;
- Landscaping works, including the construction of earth bunds between the Proposed Road Development and the Town Park;
- Utilities and services diversion works, including the diversion of a high voltage electricity line crossing the Proposed Road Development, including the provision of associated support poles;
- New safety barrier, public lighting, fencing; and
- Environmental measures and other ancillary works, including but not limited to the provision of 1 mammal underpass and mammal fencing.

The project location and extent of the Proposed Road Development is shown in Figure NTS 1.

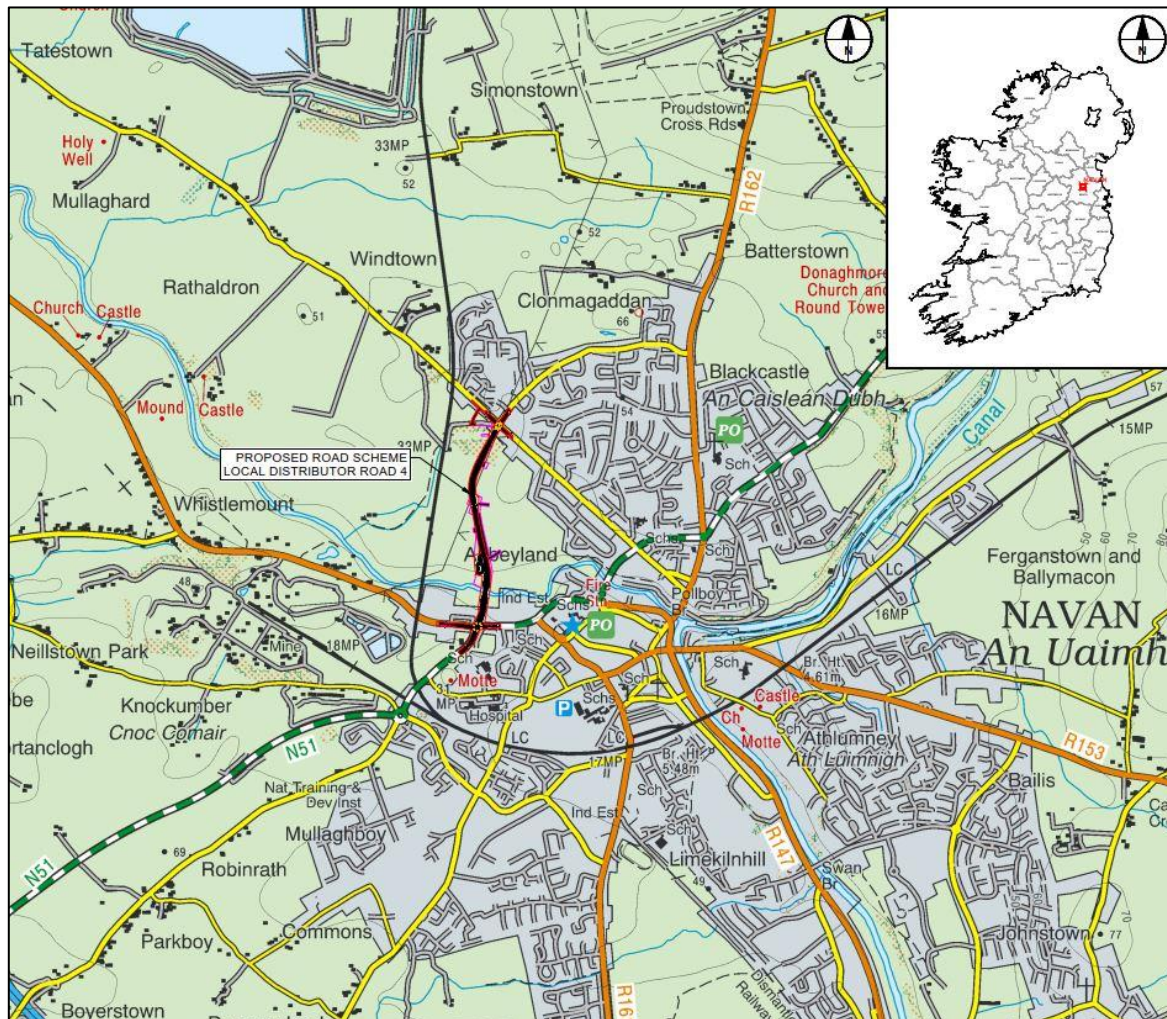


Figure NTS 1 Site Location

This area is on land which is zoned as A2 (New Residential), F1 (Open Space), H1 (High Amenity) and R1 (Rail Corridor), within the NDP 2009-2015 (Incorporating Variation 1, Variation 2 and Variation 3). The land use zoning objectives in the area are described as follows:

- A2 New Residential: To provide for new residential communities with ancillary community facilities, neighbourhood facilities and employment uses as considered appropriate for the status of Navan as a Large Growth Town;
- F1 Open Space: To provide for and improve open spaces for active and passive recreational amenities;
- H1 High Amenity: To protect and improve areas of high amenity; and
- R1 Rail Corridor: To provide for a strategic rail corridor and associated physical infrastructure.

The Proposed Road Development runs in a north-south direction across the River Blackwater between L3409 Rathaldron Road and N51/R147 Kells Road. The location is characterized by presence of open greenfield area with some wooded areas in the section north of the River Blackwater, which runs to the west of the recently developed Blackwater Park. The southern section of Proposed Road Development site contains the River Blackwater where a new river bridge crossing is also proposed, and continuing to the south the scheme meets the N51/R147 Kells Road, which is lined by both residential and commercial properties. The River Blackwater is in a Special Area of Conservation (SAC) and Special Protection Area (SPA).

The Proposed Road Development falls under the criteria outlined in S. 50(1)(b) of the Roads Act, 1993-2007 (as amended): "Where An Bord Pleanála (ABP) considers that a proposed road development would be likely to have significant effects on the environment it shall direct the road authority to prepare an EIS".

The Applicant received direction from ABP (Reference Number PL32.HD0020) to prepare an EIAR for the Proposed Road Development for a number of reasons and considerations including:

- *The nature of the proposed development;*
- *The environmental sensitivity of the proposed route, which traverses a candidate Special Area of Conservation, that is the River Blackwater, whose banks are governed by the H1 zoning objective in the Navan Town Development Plan 'to protect the setting, character and environmental quality of areas of high natural beauty; and*
- *the guidance set out in the "Environmental Impact Assessment (EIA) Guidance for Consent Authorities regarding Sub-Threshold Development" published by the Department of the Environment, Heritage and Local Government in August, 2003.*

The following EIA regulations and EPA guidelines were considered by AECOM in preparing this EIAR:

- The requirements of EC Directives and Irish Regulations regarding EIA such as European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018); the Planning and Development Act (2000-2019), and the EIA Directive 2014/52/EU.
- European Commissions (EC's) 2017: *Environmental Impact Assessment of Projects – Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU).*
- EC's 2017: *'Environmental Impact Assessment of Projects, Guidance on the preparation of Environmental Impact Assessment Reports'.*
- EC's 2015: *'Interpretation of definitions of project categories of annex I and II of the EIA Directive'.*
- EC's 2013: *'Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment'.*
- EPA's 2017 Draft: *'Guidelines on the information to be contained in Environmental Impact Assessment Reports'.*

The EIAR has been developed to a stage that permits a fully informed EIA of the Proposed Road Development (and indeed Appropriate Assessment (AA)) to be carried out by the competent authority.

## 2. Need for the Proposed Road Development and Planning Policy

### 2.1 Relevant Policy Documents

The Need for the Proposed Road Development and Planning and Development Context Chapter in Volume 2 outlines the need for the Proposed Road Development based on the planning policy, the deficiencies in the existing road network and identified future needs of Navan town.

The need for the Proposed Road Development has been identified in and is consistent with the following national, regional and local planning policy documents:

#### *National Policy Context:*

- Project Ireland 2040: National Planning Framework; and,
- National Development Plan 2018-2027.

#### *Regional Policy Context:*

- Regional Spatial and Economic Strategy for the Eastern and Midland Region 2019-2031; and,
- Greater Dublin Area Transport Strategy 2016-2035.

#### *Local Policy Context:*

- Draft Meath County Development Plan 2020-2026;
- Meath County Development Plan 2013-2019; and,

- Navan Development Plan 2009-2015.

## 2.2 Existing Traffic Issues

As outlined in the Route Selection Report (Appendix A2-1; Volume 4), the heaviest traffic flows around Navan are evident on the N51, R147, and R161 transiting the town centre.

## 2.3 Existing Road Safety Issues

The Road Safety Authority (RSA) maintains a database of Personal Injury Accidents (PIA) collisions statistics. The database currently covers the 12-year period between 2005 and 2016 included. Collisions in this database are classified into 3 groups based on the severity (fatal, serious and minor).

The Proposed Road Development is in line with national, regional and local policy guidelines. In addition to this, it is outlined as a specific objective within the current Navan Development Plan (NDP) (2009-2015) and Navan Transport Plan (NTP) (2014-2019).

As the Proposed Road Development is a multi-modal transport scheme, it will provide both cycling and pedestrian connections.

The Proposed Road Development also forms a key north/south transport link across the River Blackwater, thus, providing a link to the national road network and to Navan town centre via the N51. This link provides the transport connections required for the development of zoned residential lands within the development plan, particularly to the north west of Navan town, allowing for the continued development of Navan town in the long term.

In addition, Navan town currently experiences significant traffic congestion issued on a number of junctions within the town centre, and the associated river crossing points. This Proposed Road Development will assist in the alleviation of these issues at the local level, while improving safety for both motorised and non-motorised users.

# 3. Examination of Alternatives

A requirement of the EIAR process is the consideration and presentation of reasonable alternatives studied which are relevant to the key project decisions in the context of environmental impact. EIA guidance and legislation requires that consideration of these alternatives should include, where relevant; design, location, routes, alignments/layouts, processes, technology, size, and scale.

## 3.1 Do-Nothing Alternative

The 'Do-Nothing' alternative investigated the existing road infrastructure and its ability to meet future demands for traffic and safety without upgrade works on the roads (other than routine maintenance). The 'Do-Nothing' alternative of the Proposed Road Development does not provide improvement to the existing road network, and therefore no crossing of the River Blackwater is proposed.

As a result, all local or regional traffic would be restricted to using the N51 Bridge in the southbound direction or the N51 and Flower Hill bridges in the northbound direction.

## 3.2 Do-Minimum Alternative

The 'Do-Minimum' alternative of the Proposed Road Development investigated the potential to undertake minor improvement works to provide relief from traffic congestion in Navan town centre. This option would also provide safer alternatives for non-motorised users (NMUs) and would meet future traffic demands.

## 3.3 Selection of an Emerging Preferred Route

### 3.3.1 Constraints Study

The principal constraints identified in the study area during the development of the Proposed Road Development are presented in the Route Selection Report.

The constraints include:

- Natural Constraints:
  - Nature Reserves and National Parks;
  - Topography and Landscape;
  - Water Quality and Fisheries;
  - Geology and Hydrogeology; and
  - Ecology.
- Artificial Constraints:
  - Existing Road Network;
  - Pedestrians and Cyclists;
  - Public Transport;
  - Land Use;
  - Archaeology and Cultural Heritage;
  - Utilities;
  - Local Amenities, Community Activities and Facilities;
  - Noise and Vibration;
  - Air Quality; and
  - Population, Economy Business and Tourism.

### 3.3.2 Stage 1 Assessment

The purpose of the Stage 1 assessment is to reduce the number of feasible route options to progress through a more detailed and refined assessment of the options as part of the Stage 2 Preliminary Options Assessment process.

As part of the Stage 1 Route Selection Assessment process three route corridor options were developed within the study area to allow an accurate comparison of the alternative options, looking at different tie-in locations with particular regards to the south end of the scheme.

Despite the 'Low Preference' for some of the route options, it was concluded that all options should be taken to the more detailed Stage 2 assessment, given the reduced number of options that were developed for the Stage 1 assessment.

### 3.3.3 Public Consultation No.1- Route Options

Following the consideration of the Stage 1 assessment and prior to commencing the Stage 2 assessment, a Public Consultation (PC1) was held to present to the public the three routes that arose from the Stage 1 Assessment.

A general preference for Corridor Option B1 was indicated during the consultation and in the subsequent submissions. There were 3 submissions that indicated a negative preference to B1.



### 3.3.4 Stage 2 Assessment

The Stage 2 Project Appraisal of Route Options (herein referred to as Stage 2) was based on three Route Options which progressed from the Stage 1 assessment and 'Do-Minimum' and 'Do-Nothing' options. Given the reduced number of options that were developed for the Stage 1 assessment, all three Route Corridor options progressed to the Stage 2 assessment.

From the Stage 2 assessment, it was recommended that Route Corridor Option B1 be taken forward as the Emerging Preferred Route Corridor for the LDR4.

#### 3.3.4.1 Conclusions

The route selection process concluded that the preferred route corridor was Route Corridor Option B1. It was recommended that this option be adopted as the preferred route corridor and it was therefore taken forward to the design stage of the project.

### 3.3.5 Design Development and Alternatives

A number of alignment designs were considered. The assessment of the alignment option for the southern section under the headings of Environment, Economy, Safety, Accessibility & Social Inclusion and Integration (TII's Project Appraisal Guidelines, 2016) concluded that Eastern Option (B1E) was the preferred alignment option.

### 3.3.6 Bridge Design Options

Following the identification of the preferred route corridor and the preferred alignment option at the river crossing point, a technical note was developed to investigate the various bridge options which may be considered and to establish the most appropriate river crossing option based on a Multi Criteria Analysis (MCA) for a number of key constraints.

Six options were investigated.

In summary, the following key assessment and considerations are noted:

- Biodiversity: the 'mitigated' Options 2A, 2B, 2C and 3 are considered similar as it is concluded that they will not adversely affect any European sites, following implementation of measures including seasonal works, and installation of a cut-off trench (and temporary flood defence wall to protect the working area);
- Aesthetics: single span in Options 2B, 2C, 3 and 4 will provide considerably improved bridge aesthetic with further improvements associated with steel structures (more slender structure);
- Constructability: difficulties associated with works within flood plain, proximity to the river bank edge and complexity of the lifting required are main driver to the constructability assessment;
- Operational Maintenance: all precast concrete options will provide significant advantages over steel structure due to the very limited maintenance required; and,
- Construction Cost: steel structures are substantially more expensive than the precast concrete equivalent.

The results of the MCA under the heading of Environment, Engineering, and Economy for the six bridge options selected showed that Option 2B was more favourable when compared to the alternative options.

In light of the options assessment undertaken, Option 2B was adopted as the preferred bridge option and therefore taken forward to the design stage.

## 4. Description of the Proposed Road Development

### 4.1 General

The Applicant is proposing to develop a circa 1.15 km local distributor road referenced in the NDP 2009-2015 and in Appendix IV of the Navan Transport Plan on 8.63 ha of predominantly greenfield site in the north-west of Navan, Co. Meath. The Proposed Road Development comprises an urban Arterial Street, incorporating both

pedestrian and cycle facilities provisions, connecting the N51/R147 Kells Road to the L3409 Ratholdron Road through Abbeyland. The scheme is located in the townlands of Abbeyland, Abbeyland South, Moathill, Townparks, Windtown in Navan, Co. Meath.

The Proposed Road Development runs in a north-south direction across the River Blackwater between the L3409 Ratholdron Road and the N51/R147 Kells Road. The location is characterized by presence of open greenfield area with some wooded areas in the section north of the River Blackwater, which runs to the west of the recently developed Blackwater Park. The southern section of the study area contains the River Blackwater and continuing to the south the scheme meets the N51/R147 Kells Road, which is lined by both residential and commercial properties. The River Blackwater is in a SAC and SPA.

A new bridge crossing over the River Blackwater in the south is also proposed, which will improve access to lands to the north of the town between the L3409 Ratholdron Road and the R162 Proudstown Road, and also the Clonmagaddan Strategic Development Zone (SDZ).

This EIAR should be read in conjunction with all the particulars of the associated planning applications and is intended to assess the potential environmental impacts of the Proposed Road Development.

The Proposed Road Development comprises the following major elements:

- Approximately 1.15 km of new urban Arterial Street (Design Manual for Urban Roads and Streets (DMURS) - 3.25 m lanes - single carriageway), incorporating pedestrian and cycle facilities (2.0m wide raised one-way cycle track on both sides, 2.5 m wide footpaths on both side, 1.0 m road verges);
- Two new signalised junctions at the scheme termination points, L3409 Ratholdron Road and R147/N51 Kells Road, both incorporating right turn lane and pedestrian/cycle crossings;
- One new single span river bridge over the River Blackwater (overall length 45.0 m);
- One new piped culvert over an existing field ditch;
- New pedestrian and cycle facilities, including 2 accesses to the Blackwater Park;
- Associated earthworks including excavation of unacceptable material, excavation and processing of rock and other material, provision of material deposition areas and deposition and recovery of unacceptable material for reuse in the works;
- Accommodation works, including the provision of access roads and accesses;
- Drainage works, including the construction of an attenuation pond and storage tanks;
- Demolition of an existing commercial building in the southern section of the Proposed Road Development;
- Landscaping works, including the construction of earth bunds between the Proposed Road Development and the Town Park;
- Utilities and services diversion works, including the diversion of a high voltage electricity line crossing the Proposed Road Development, including the provision of associated support poles;
- New safety barrier, public lighting, fencing; and
- Environmental measures and other ancillary works, including but not limited to the provision of 1 mammal underpass and mammal fencing.

## 4.2 Design

### 4.2.1 Roads and Junctions Design

The alignment is composed of one single section (Chainage from 0+000 to 1+150), running north to south for a total length of 1.15km, between the existing L3409 Ratholdron Road/L34094-1 Clonmagaddan Road Junction (Junction 1) and the existing N51/R147 Roundabout (Junction 2). The alignment was developed to achieve a design speed of 60km/h, consistent with the posted speed limit of 50km/h for urban environment.

All non-mainline roads affected by the Proposed Road Development are termed 'Side Roads'. As the Proposed Road Development is largely at grade, only very local diversions of existing side roads are necessary. Where side roads have been realigned, they have been designed to tie-in to the existing carriageway as quickly as possible to minimise the impact of the Proposed Road Development on the surrounding environment.

The mainline single carriageway of the Proposed Road Development has been designed as an urban Arterial Street with 3.25 m wide lanes, in accordance to DMURS. In general, the proposed widths of realigned roads intersected as part of the Proposed Road Development have been designed to closely follow that of the existing road.

Two alterations of existing junctions have been incorporated into the design of the Proposed Road Development. Two four-arm signalised junctions are proposed in place of the existing T-junction between L3409 Ratholdron Road and L34094-1 Clonmagadden Road, and in place of the existing roundabout between N51 and R147 Kells Road.

## 4.2.2 Pedestrian and Cycle Provisions

At the present there are limited dedicated cycle facilities within Navan; however, the National Transport Authority (NTA) have published proposals for a number of facilities covering the Greater Dublin Area which also covers Navan. This strategy includes the provision of Primary/Secondary facilities, Greenways (M5 Boyne Valley and M6 Navan to Kingscourt Railway line in particular) and urban feeder routes within Navan town.

During the design of the Proposed Road Development, cognisance was taken of the proposals from the NTA to ensure that it would complement these proposals and seek to implement those that were in close proximity to the scheme. Along the length of the LDR4 mainline, a 2.0 m wide raised one-way cycle track and 2.5 m wide footpaths have been incorporated on both sides. Two new dedicated pedestrian links between the LDR4 and the walking route within the Blackwater Park have also been incorporated into the design.

## 4.2.3 River Blackwater Bridge

The River Blackwater bridge has a single span of 45.0 m, with the bridge abutments located outside the river channel to minimise instream works for the construction of the bridge over the River Blackwater SAC.

## 4.2.4 Road Drainage

The proposed design incorporates:

- The collection and conveyance system proposed for the scheme; and
- Measures to treat and attenuate the surface water run-off from the new carriageway.

As the Proposed Road Development will cross the River Blackwater SAC and SPA, and due to the use of kerbs on the road section, it is proposed that a sealed drainage system be used. Road runoff will be collected through gullies located at regular intervals or kerb drains where necessary. Sealed pipes will convey the flows to the downstream attenuation systems.

Flows from the Proposed Road Development will be attenuated prior to discharge to the receiving watercourse so that the post development peak flow rate is not greater than the original greenfield runoff rate. This will be achieved using pond and tank attenuation systems with a flow restricting device such as a vortex flow control device upstream of the outlet to a receiving waterbody.

It is proposed to use a pond upstream of the discharge point to the River Blackwater for the greenfield section of the scheme. The remaining sections at the northern and southern tie-in points will be attenuated using tank systems.

The spillage assessment carried out on the Proposed Road Development demonstrates a very low magnitude of risk for individual or grouped catchment outfalls and shows the overall spillage risk for the entire scheme to be 1 in 8128 years. Shut-down facilities at outfalls will be provided as a precautionary measure due to the presence of the SAC and SPA.

Streams and interceptor ditches crossed by the scheme will be culverted. A flood analysis been undertaken for the Proposed Road Development. This review concluded that based on the available information, flooding of the site and surrounding area, and subsequent risk to receptors due to the Proposed Road Development presents negligible flood risk.

### 4.2.5 Utilities/Services

The Proposed Road Development intercepts various utility services along the mainline and side roads. Locations where conflicts with significant trunk and distribution services occur along the route have been identified, and preliminary designs and budget costs for the necessary service diversions have been developed following discussions with the utility providers. Effects on local domestic connections will be addressed at the detailed design stage.

The utilities and services identified include:

- Electricity;
- Gas;
- Water services;
- Foul & storm water services; and
- Telecommunications.

### 4.2.6 Land Acquisition

The provision of the Proposed Road Development requires the acquisition of land for the construction and operation of the development.

The land acquisition has been sub-divided into temporary acquisition and permanent acquisition. Temporary acquisition has been sought where the lands are required temporarily to facilitate the construction/demolition of discreet elements of the works. Permanent land acquisition has been sought where the lands are required permanently to enable the operation of the Proposed Road Development through its lifetime.

### 4.2.7 Construction Works

It is likely that the construction of the Proposed Road Development will be progressed as a single construction contract with the construction phase potentially lasting between 15 - 18 months.

An Outline Construction Environmental Management Plan (CEMP) has been developed for the Proposed Road Development. The Outline CEMP (Appendix A4-1; Volume 4) sets out the procedures, standards, work practices and management responsibilities to address potential environmental effects that may arise from the construction of the Proposed Road Development. Prior to any demolition, excavation or construction, this Outline CEMP will be further refined and expanded by the appointed Contractor into a full Contractor CEMP as more certainty and more information becomes available in terms of the proposed layout, construction methods, programme and potential environmental impacts to be mitigated against. The CEMP details the contractor's overall management and administration of the works and incorporates and further develops the Construction Erosion and Sediment Control Plan (CESCP), Construction and Demolition (C&D) Waste Management Plan (WMP) and the draft Incident Response Plan (IRP). The CEMP will also include any commitments included within the statutory approvals and mitigation measures outlined within the EIAR.

Due to the at-grade nature of the Proposed Road Development junctions, the existing road network will not require extensive traffic management during the construction phase, except for the aforementioned at-grade junctions located at the north and south ends of the Proposed Road Development (Ch. 0+000 and Ch. 1+150).

All temporary diversions, lane closures, one-way systems, signage and temporary safety measures will be carried out in accordance with Chapter 8 of the Traffic Signs Manual (2019).

The actual traffic management plans and diversions to be implemented at the interface between the works and traffic will however be the contractor's responsibility. The contractor will be also responsible for acquiring the necessary licensing and permissions for the use of these roads with regard to temporary closures and traffic management.

## 5. Traffic Analysis

The Traffic Analysis chapter in Volume 2 assesses the potential traffic impacts of the Proposed Road Development. It outlines the development of the traffic models used to analyse the LDR4 scheme and the future year traffic growth factors used to generate projected Annual Average Daily Traffic (AADT) on all key roads in the study area. Existing and projected traffic figures are presented for both the 'Do-Minimum' and 'Do-Something' scenarios. These figures provide a basis for the engineering design presented in Volume 2 - Chapter 4 (Description of the Proposed Road Development) as well as the air quality, noise and vibration and climate assessments presented in Chapters 10, 11 and 16 of Volume 2. An overall commentary on the predicted changes in traffic conditions is provided as a setting for all the other assessments undertaken in this EIAR.

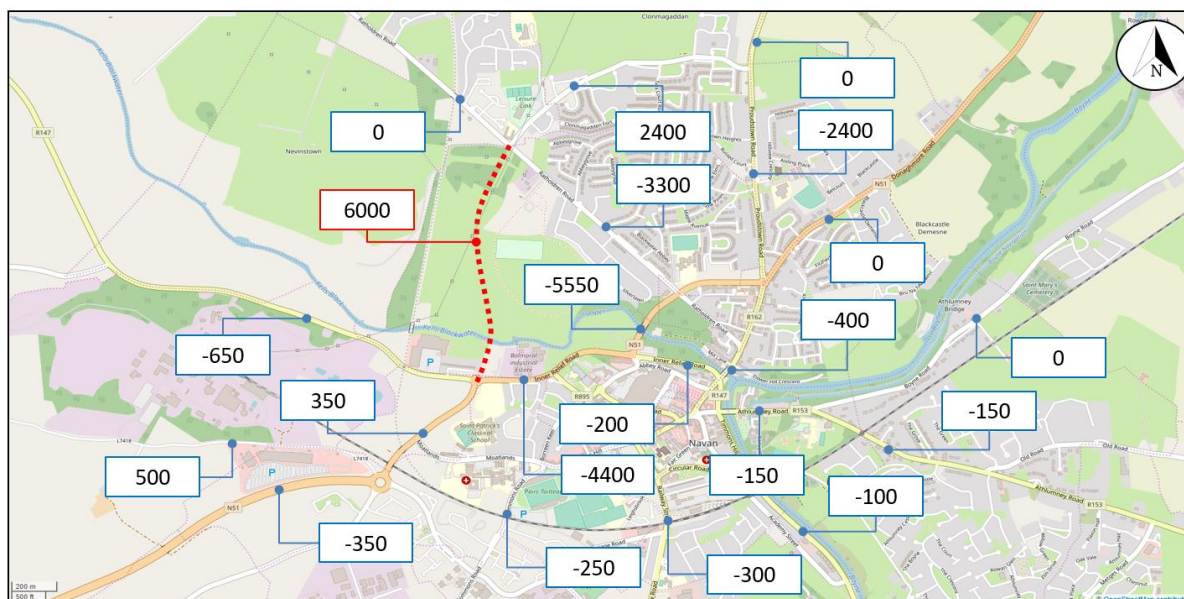
### 5.1 Traffic Impacts

#### 5.1.1 Opening Year (2022)

The forecast AADT flows on the road network within the study area were extracted from The Navan Traffic Model for the following scenarios:

- 2022 Do-Minimum; and
- 2022 Do-Something

Figure NTS 2 below illustrates the relative differences in traffic volumes between the 'Do-Minimum' and 'Do-Something' scenarios for the Opening Year (2022); where the positive figures indicate increased traffic volumes and negative figures indicate reduced traffic volumes as a consequence of the Proposed Road Development implementation.



**Figure NTS 2 Opening Year (2022) AADT Differences between 'Do-Minimum' and 'Do-Something'**

Results for the Opening Year (2022) show that the implementation of the Proposed Road Development will cause a significant decrease in AADTs on the following sections:

- N51 Kells Road;
- N51 section crossing the River Blackwater;
- Ratholdron Road north of Ratholdron Road/N51 junction; and
- R162 north of R162/N51 junction.

It is also observed that there will be significant increases on Clonmagadden Road as a result of the scheme implementation. The Proposed Road Development joins directly to this road, therefore the majority of traffic looking to bypass the Navan Town Centre will use this route.

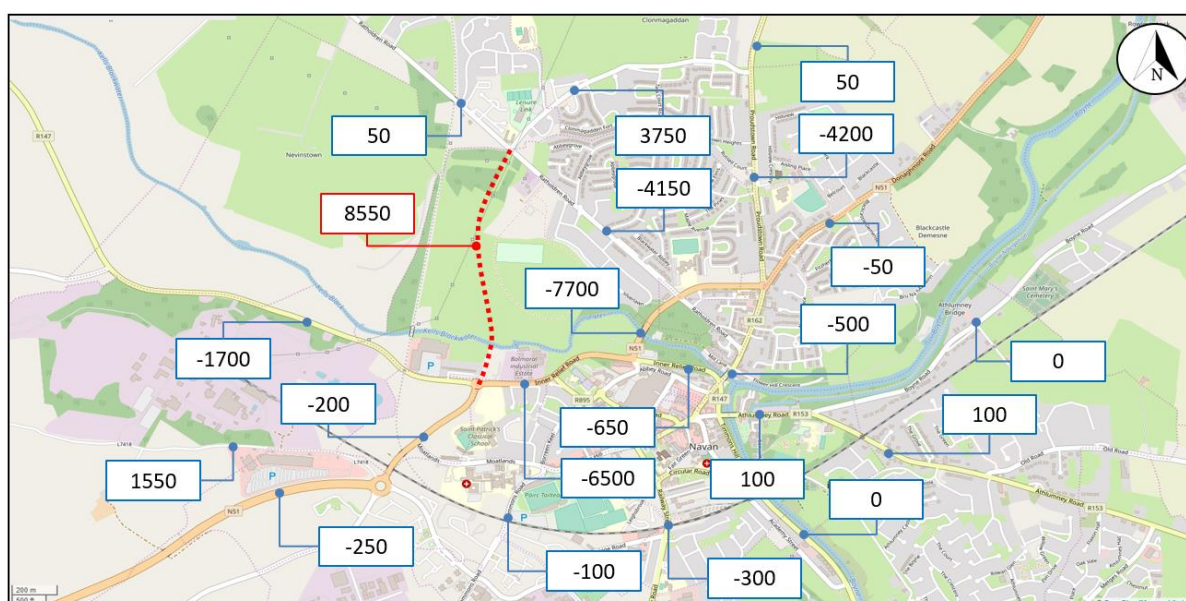
In summary, the Proposed Road Development substantially decreases the volume of traffic on the existing N51 corridor through the town centre, as traffic is transferred onto the Proposed Road Development, then onto Clonmagadden Road, bypassing Navan Town Centre.

### 5.1.2 Design Year (2037)

The forecast AADT flows on the road network within the study area were extracted from the Navan Traffic Model for the following scenarios:

- 2037 Do-Minimum; and
- 2037 Do-Something

Figure NTS 3 below illustrates the relative differences in traffic volumes between the 'Do-Minimum' and 'Do-Something' scenarios for the Design Year (2037); where the positive figures indicate increased traffic volumes and negative figures indicate reduced traffic volumes as a consequence of the Proposed Road Development implementation.



**Figure NTS 3 Design Year (2037) AADT Differences between 'Do-Minimum' and 'Do-Something'**

Results for the Design Year (2037) show that implementation of the Proposed Road Development will cause a significant decrease in AADTs on the following sections:

- N51 Kells Road;
- N51 section crossing the River Blackwater;
- Ratholdron Road north of Ratholdron Road/N51 junction; and
- R162 north of R162/N51 junction.
- It is also observed that there will be significant increases on Clonmagadden Road which resulting from the scheme implementation. The Proposed Road Development joins directly to this road, therefore the majority of traffic looking to bypass the Navan Town Centre will use this route.
- It is worth noting these results are in line with the results for the Opening Year (2022), although the magnitude is amplified by the overall additional traffic which will load the road network.

In summary, the Proposed Road Development substantially decreases the volume of traffic on the existing N51 corridor through the town centre, as traffic is transferred onto the Proposed Road Development, then onto Clonmagadden Road, bypassing Navan Town Centre.

## 5.2 Safety Impact

The Proposed Road Development will be of a higher safety standard than existing routes and will therefore contribute to a network wide reduction in collisions.

The Proposed Road Development will reduce traffic volumes, and associated congestion, in the proximity of the town centre. This reduction in traffic volumes will create a more attractive, safer town centre for vulnerable road users and will improve accessibility to local services and businesses.

An assessment was conducted which indicates that the Proposed Road Development will also provide a reduction in network travel time throughout the entire Navan modelled road network.

## 6. Population and Human Health

The Population and Human Health chapter in Volume 2, in conjunction with the Health Impact Assessment (HIA) - Appendix A6-1 contained in Volume 4, describes the potential effects of the construction and operation of Proposed Road Development on Population and Human Health. Issues considered in this section include economic activity, social consideration, land-use; and health. Potential impacts from other areas including air quality, noise, vibration, traffic, soil, hydrogeology and landscape are discussed in separate EIAR chapters.

The Proposed Road Development is located predominantly in a greenfield area currently designated by Corine Land Cover 2018 as agricultural areas of pasture and areas of artificial surfaces of urban fabric. Directly to the west of the Proposed Road Development are lands zoned for new residential developments, Blackwater Park is located to the east of the Proposed Road Development in an area zoned for open space. Lands to the north of the Proposed Road Development are zoned as Existing Residential, Community Infrastructure and areas of Open Space, while areas zones as High Amenity, Existing Residential, Open Space and Retail, Warehouse Park are located to the south of the Proposed Road Development.

According to the most recent Census County Meath has experienced population growth since 2011, and is considered a youthful population. The presence of a young population highlights the importance of considering the future demand for local facilities and the infrastructure required for these facilities. Many of the population resident in Navan and Local Environs commute to locations outside of the area for employment, with the main mode of transport being privately owned cars.

During the construction phase of the Proposed Road Development, potential impacts include traffic management impacts, impacts on journey characteristics, impacts on amenity at local residential properties and severance. It is envisioned any effects experienced will be restricted to a local scale and will be temporary and short term in nature. Overall it is expected the construction phase of the Proposed Road Development will have a neutral to a short term negative effect.

During construction, excavations and earthworks, temporary stockpiling of potentially dusty materials, cutting and grinding of materials and cement, use of unsurfaced haul roads and construction traffic haul roads are expected to result in some temporary residual air quality, noise and neighbourhood amenity impacts, which have the potential to affect physical and mental health. The closest receptors to any construction-related activity would be Blackwater Park and residential/commercial properties located on streets adjacent to the periphery of the works area to the north and south. Given the likely methods of work, scale and materials involved in the construction phase, it is considered that with good site practice, impacts from construction works would be managed to an acceptable level.

During the operational phase of the Proposed Road Development the Traffic Analysis (Volume 2; Chapter 05) identified the implementation of the Proposed Road Development will cause a significant decrease in AADT on the N51 Kells Road, the N51 section crossing the River Blackwater, the Ratholdron Road north of Ratholdron Road / N51 junction, and the R162 north of R162 / N51 junction and an increase on the Clonmagadden Road as it joins directly to the Proposed Road Development. The Proposed Road Development is also expected to reduce network travel time, traffic volumes, and associated congestion, in the proximity of the town centre, potentially creating a more attractive, safer town centre for vulnerable road users and improved accessibility to local services and businesses. Overall it is considered the Proposed Road Development has the potential to have a positive effect on journey characteristics.

The Proposed Road Development will be of potential amenity benefit due to the provision of a pedestrian footpath and a cycle track on both sides of the carriageway. The pedestrian footpaths and cycle facilities have the potential to encourage greater pedestrian and cycle activity, this in turn could have knock on effects of the health profile of the local community. The pedestrian footpaths and cycle tracks will also provide additional access to Blackwater Community Park. This has the potential to have a long term, positive effect on users of the Proposed Road Development.

The addition of footpaths and cycle tracks along the proposed mainline will provide an additional crossing over the Blackwater River and will potentially increase connectivity between Navan town, St Patricks Classical School, residential areas such as Blackwater Park residential area, Dean Cogan Place and a number of areas north of the River Blackwater, as well as community facilities north of the River Blackwater such as Blackwater Community Park. The additional crossing over the River Blackwater and provision of cyclist and pedestrian facilities provided by the Proposed Road Development has potential to have a long term, positive effect on users of the Proposed Road Development. The provision of links to surrounding residential areas and existing leisure routes, in turn has the potential to promote active and healthy lifestyles. There will be no direct increase in employment resulting from the operation of the Proposed Road Development.

Taking into account the construction and operational potential impacts and the specified mitigation measures, there is the potential for some negative effects to be experienced during the construction phase of the Proposed Road Development; however, these will be localised and short term in nature. Overall it is considered the Proposed Road Development will have a net positive effect.

## 7. Biodiversity

### 7.1 Survey Programme

Having regard for the potential impacts from the Proposed Road Development, and the nature of the Proposed Road Development site, multidisciplinary ecology surveys were completed to inform the Biodiversity Chapter.

The surveys were carried out to map habitats and plant species (including invasive species) and also to identify bat, bird (emphasis on Kingfisher) and other protected fauna species (such as badger and otter). The surveys also verified the results of desktop surveys, regarding the distribution of Qualifying Interest (QI) habitats of the River Boyne and River Blackwater SAC and SPA.

### 7.2 Baseline Conditions

#### 7.2.1 Designated Sites

There are two European sites identified within the footprint of the Proposed Road Development and therefore considered to have a direct impact pathway. These include the River Boyne and River Blackwater SAC and the River Boyne and River Blackwater SPA. Habitats and species associated with the River Boyne and Blackwater SAC (QI) and River Boyne and Blackwater SPA (Special Conservation Interest) were recorded within the Proposed Road Development site.

#### 7.2.2 Habitats

Habitats of high ecological value such as Blackwater River, marsh (including *Hydrophyllus* tall herb communities), alluvial woodland, grassland (including dry meadows and grassy verges (GS2), wet grassland (GS4), improved agricultural grassland (GA1), etc.), woodlands (including alluvial (outside the Proposed Road Development site)) and hedgerows were recorded within and in the surrounding vicinity of the Proposed Road Development. Japanese knotweed (scheduled invasive species) was recorded in the wider area.

#### 7.2.3 Fauna

##### 7.2.3.1 Bats

No buildings were recorded to support roosting bats. Two trees were considered suitable to support roosting bats (low suitability). The site is considered of high suitability to support foraging and commuting bats.



### 7.2.3.2 Badger

Badger setts (deemed inactive) were recorded in the wider area. The habitats present are considered suitable to support foraging and commuting badger.

### 7.2.3.3 Otter

No evidence of otter was recorded along the Blackwater River; however, otter are considered to be present within the River Blackwater at the proposed bridge crossing and likely to utilize this stretch of the River Blackwater for commuting and foraging. The species is a QI of the River Boyne and River Blackwater SAC.

### 7.2.3.4 Other Protected Mammals

Irish stoat, pygmy shrew, hedgehog and red squirrel are also considered to be present within the Proposed Road Development based on the presence of suitable habitats present onsite.

### 7.2.3.5 Birds

There was no evidence of Kingfisher breeding within the Zone of Influence (Zol) of the Proposed Road Development. The species were observed foraging and commuting along the stretch of the River Blackwater within the Zol. Passerine birds such as meadow pipit (high conservation concern) and robin (medium conservation concern) were recorded within the Zol. Raptors such as a territorial breeding pair of Sparrowhawk were recorded during field surveys.

Sparrowhawk is considered to be present in woodland to the south of the Proposed Road Development.

### 7.2.3.6 Amphibians

Based on the suitable nature of the habitats present onsite, Common frog is considered to be present within the the Zol of the Proposed Road Development.

### 7.2.3.7 Fish

Atlantic salmon, brown trout, and river lamprey are recorded throughout the River Boyne catchment and there is suitable spawning habitat for all three species within the Zol of the Proposed Road Development. The species are considered to utilize the stretch of the River Blackwater within the Zol for commuting during spawning migration.

### 7.2.3.8 Common Lizard

Based on the habitats present this species is considered to be present within the Proposed Road Development.

### 7.2.3.9 Invertebrates

Habitats within the Proposed Road Development are considered suitable to support invertebrate species of conservation concern such as whorl snails (marsh and common), large red-tailed bumblebee, prickly snail, smooth grass-snail and whirlpool ramshorn snail.

### 7.2.3.10 Other

Other species were considered as part of this EIAR chapter but not considered to be present within the Zol of Proposed Road Development. These include protected/notable butterflies, Irish hare, wintering bird (including those associated with SPAs in the wider area) and smooth newt.

## 7.3 Potential Impacts

In the absence of mitigation, the Proposed Road Development could have a range of potential impacts on the QI/SCI of European sites within the Zol and other protected habitats and species during the construction and operation phase. Significant potential impacts include habitat loss, habitat deterioration, disturbance (i.e. visual, vibration and noise, temporary barriers to connectivity, artificial lighting etc.), the potential for the release of pollutants and contaminants to receiving watercourses and bird strike and mortalities.

## 7.4 Mitigation

The Proposed Road Development adopts a number of embedded control measures that avoid the potential for any adverse impacts on the QI of the River Boyne and River Blackwater SAC, SCI of the River Boyne and River Blackwater SPA, nationally designated and/or protected habitats and species and Annex I habitats.

Key additional mitigation measures during construction and operation include:

- Monitoring during construction and operation by suitably experience ecologists;
- Production of an Ecological Monitoring Strategy;
- Pre-construction surveys;
- Pollution control;
- Timing/phasing of earthworks (proposed cut-off wall);
- Invasive species management plan;
- Construction Environmental Management Plan;
- Artificial lighting plan; and
- Species specific mitigation for
  - Bats
  - Badger
  - Otter
  - Amphibian
  - Breeding birds
  - Protected mammals (other than those above).

## 7.5 Residual Impacts

Following habitat enhancement, there will be a positive residual impact to Annex 1 hydrophilous tall herb fringe habitat.

During the construction phase, there will be potential localized mortality of populations of several (unprotected) invertebrate species identified on Irish Red Lists, which have been presumed present in the absence of evidence to the contrary. The significance of this residual impact is assessed as a negative effect at the local-county geographic scale.

All other residual effects will be limited to significance at Local level.

Significant residual effects during operation to other species and habitats are predicted to be limited to Local level in all cases, namely in relation to:

- Disturbance during operation to localized populations of nationally protected species including nesting birds, hedgehog, pygmy shrew, stoat, and common frog;
- Disturbance, severance and/or displacement impacts to foraging badgers and bats from operation of Proposed Road Development including lighting.

Following implementation of mitigation measures, residual effects to designated sites will be non-significant during the construction phase. There will be no significant residual effects on designated sites during operation.

## 8. Land and Soil

The Land and Soil chapter in Volume 2 examined how the construction and operation of the Proposed Road Development will interact with the Land and Soils (geology and hydrogeology).

Information relating to regional, local and site conditions was assessed using publicly available datasets and ground investigation data. Available data indicates that the soil in the vicinity of the Proposed Road Development site is variable, with river (alluvial) deposits in the vicinity of the River Blackwater and made ground underlying much of the southern portion of the Proposed Road Development site. Glacial deposits are widespread throughout the Proposed Road Development site and limestone bedrock was encountered at shallow depth to the north of the river. Shallow bedrock was not encountered to the south of the river.

During construction, potential impacts would include excavation and infilling, use of natural resources, accidental spills and leaks, and use of concrete and lime. A number of mitigation measures will be implemented to ensure that there will be no significant adverse effects to the Land & Soil (geology and hydrogeology) environment during the construction of the Proposed Road Development.

During operation there will be no direct discharges to the groundwater and soil environment. The potential impacts associated with the operational phase of the Proposed Road Development are accidental spills and leaks, water balance changes and land use changes. Embedded control measures and mitigation measures outlined in Section 8.6.2 of the chapter, will significantly reduce the likelihood and magnitude of the potential effects on land and soils occurring during the operational phase.

The cumulative impact of the Proposed Road Development on Land & Soil (geology and hydrogeology) were considered in relation to a number of proposed and consented developments or those under construction identified adjacent to the site. As a result of the predominantly redevelopment nature of the proposed and consented projects, there were no cumulative effects on the soil and groundwater at the Proposed Road Development site identified.

Taking into account the construction impacts it is considered that the residual effect of the identified developments on Land & Soil (geology and hydrogeology) will be slight provided that appropriate mitigation measures as specified are applied.

The embedded control measures outlined in Volume 2 - Chapter 4 (Description of the Proposed Road Development) will significantly reduce the likelihood and magnitude of the potential impacts on land and soils occurring during the operational phase.

## 9. Water

The Water chapter in Volume 2 examined how the construction and operation of the Proposed Road Development will interact with the water environment, in particular with natural water bodies, storm water, wastewaters and water supplies in the area. Existing published water data and other information regarding natural surface waters, foul sewerage services, storm water drainage and water supply were reviewed as part of the chapter compilation.

The Proposed Road Development site is situated partially within the 1% Annual Exceedance Probability (AEP) and 0.1% AEP floodplains associated with the River Blackwater and identified drainage channels.

The potential impacts to the water environment from the Proposed Road Development were assessed. During construction, potential impacts include sedimentation, accidental spills and leaks, use of concrete and lime, bridge construction, culverting and drainage works. A number of mitigation measures will be implemented to ensure that there will be no significant adverse effects to the water environment during the construction of the Proposed Road Development.

During operation potential impacts include accidental spills and leaks, discharges to surface water, flooding resulting from the Proposed Road Development and impacts of flooding on the Proposed Road Development.

A number of embedded control measures will ensure there will be no significant adverse effects to the surface water environment during the operation of the Proposed Road Development. Surface water collected on the Proposed Road Development site will be discharged via a settlement pond/tanks to the River Blackwater. Surface water will be discharged at greenfield runoff rates. In order to achieve this, flow control devices will be installed on the outlets from the settlement pond/tanks.

In terms of cumulative impacts, the impact of the Proposed Road Development has been considered in relation to a number of proposed and consented developments adjacent to the site. The cumulative impacts associated with construction are largely related to the spillage and leakage of oils and fuels and disturbance of land. Cumulative impacts from the operation of the developments were considered in relation to surface water drainage from combined developments. However, due to the proposed mitigation measures, the cumulative impacts from both construction and operation are considered to be slight.

Taking into account the construction impacts it is considered that the residual effect from the Proposed Road Development will be slight provided that appropriate mitigation measures as specified are applied.

The embedded control measures outlined in Volume 2 - Chapter 4 (Description of the Proposed Road Development) will significantly reduce the likelihood and magnitude of the potential effects on the water environment occurring during the operational phase.

## 10. Landscape and Visual Impact Assessment

The Landscape and Visual chapter in Volume 2 describes the landscape and visual effects arising from the construction and operation of the Proposed Road Development, Abbeyland, Navan from locations accessible by the general public in accordance with the relevant EPA Guidelines, general national and European best practice guidelines in relation to the preparation of Landscape and Visual Impact Assessments (LVIA).

The objective of the assessment process is to identify and evaluate the potentially significant effects arising from the Proposed Road Development. The assessment will identify the residual effects likely to arise from the finalised design taking into account mitigation measures and the change over time.

The Meath Landscape Character Assessment (LCA) divides the County into four Landscape Character Types which are further sub-divided into twenty Landscape Character Areas. The Proposed Road Development is located in River Corridors and Estuaries Landscape Character Type and Blackwater Valley Landscape Character Area. The wider study area extends to Lowland Landscapes Landscape Character Type and the following Landscape Character Areas - North Navan Lowlands to the north-east, West Navan Lowlands to the south and Boyne Valley to the east. Each of the Landscape Character Areas had been assigned a specific rating under the following categories within the Meath LCA: Landscape Value, Landscape Sensitivity, Landscape Importance and Landscape Capacity.

Sections of the study area are characterised by the high-quality landscapes of the Blackwater and Boyne River Valleys. The Blackwater Valley Landscape Character Area, which contains the majority of the Proposed Road Development, is designated as an area of 'High Sensitivity' in the County Meath LCA. The remaining parts of the Proposed Road Development are located within an area of Moderate Sensitivity.

The majority of the Proposed Road Development is located within an area identified as 'Very High Value'; the remainder is located within an area of 'Moderate Value'.

The landscape and visual impact assessment on site identified a range of viewpoints located within the study area at varying distances from the Proposed Road Development to show the effect of the development in key close, middle and distant views

The majority but not all of the identified likely adverse landscape and visual effects will be able to be mitigated. The new road will intensify the edge of town character of this part of Navan. The Proposed Road Development will provide a new access route from north to south and improve access and permeability outside of the town centre and to planned and zoned development lands to the north. Whether or not the road eventually becomes an integrated part of the town's urban fabric will depend on future strategic masterplanning of new developments alongside the road and approaches to road speeds. New pedestrian infrastructure through the study area will be a positive landscape effect as it will formalise existing often semi-official pedestrian crossings and provide a safe access between communities.

Proposed planting will mitigate the majority but not all of the likely adverse visual effects. Vehicles and elevated parts of the road alignment including the new bridge will remain visible from a number of viewing locations particularly from residential properties to the immediate south of the River Blackwater and from open areas within Blackwater Park. Following mitigation planting and the replanting of riverside vegetation, close distance visibility of the new bridge will be limited to a relatively short stretch along the River Blackwater and limited areas within Blackwater Park.

## 11. Noise and Vibration

The Noise and Vibration chapter in Volume 2 provides an assessment of the potential noise and vibration impacts of the Proposed Road Development as described in Chapter 4 (Description of the Proposed Road Development)

on sensitive receptors, in accordance with the requirements of the relevant EIA legislation and guidance on preparation and content of EIAR.

This noise and vibration assessment has been prepared in accordance with the EPA 'Guidelines on the Information to be contained in Environmental Impact Statements' 2002, 'Advice Notes on Current Practice (in preparation of Environmental Impact Statements)', the "Guidelines on the information to be contained in Environmental Impact Assessment Reports" (EPA DRAFT August 2017), the EPA's 'Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)' and National Road Authorities (NRA's) 'Guidelines for the Treatment of Noise and Vibration in National Road Schemes' 2004.

The Proposed Road Development site predominantly occurs within an open Greenfield area with some areas of woodland and hedgerows. Residential areas are located to the north of the Proposed Road Development site while Blackwater Park is located to the east of the Proposed Road Development. The River Blackwater is located within the southern section of the Proposed Road Development site. Continuing to the south the scheme meets the N51/R147 Kells Road, which is lined by both residential and commercial properties. The principal noise sources at residential areas close to the Proposed Road Development are currently from existing road traffic.

Monitoring comprised of an unattended survey at one location and attended surveys at 6 locations.

The construction of the Proposed Road Development is predicted to adversely impact residential properties and other noise sensitive receptors. However, the application of measures such as restricted working hours, the use of quiet plant, positioning construction works at a distance from noise sensitive receptors will reduce the noise and vibration impacts due to the construction of the scheme.

The operation of the Proposed Road Development is predicted to reduce road traffic noise levels at a majority of receptors close to the following sections of roads due to the diversion of traffic onto the new link road:

- Proudstown Road between Clonmagadden Road and N51;
- N51 between Proudstown Road and Kells Road;
- Abbeylands/Windtown Road between N51 and Windtown Crescent, and
- Kells Road between N51 and Proposed Road Development.

The operation of the Proposed Road Development is predicted to increase road traffic noise levels at receptors in the vicinity of Clonmagadden, R147 and N51 junction. The predicted increase at majority of these receptors is identified to be not significant.

Two residential properties were predicted to exceed the NRA's design criteria, if no mitigation measures were proposed. However, the use of low noise road surfacing materials and the installation of a noise barrier, as mitigation measures, will result in these residential receptors complying with the aforementioned criteria.

## 12. Air Quality

The Air Quality EIAR Chapter in Volume 2 provides a statement of the potential impacts and residual effects upon air quality resulting from the construction and operation of the Proposed Road Development.

Compounds released to the air by motor vehicles, both Light Duty Vehicles (LDV) including cars and small vans and Heavy-Duty Vehicles (HDV) including buses and articulated lorries, result in a variety of environmental effects. Emitted pollutants can travel for various distances through the air and can be greater at certain times of the day depending on traffic volume, wind direction and wind speed. Over time, repeated exposure to vehicle fumes can cause soiling of buildings and materials, as well as having a detrimental effect on human health.

A new road project, such as a local distributor road, would typically alter traffic flows in the locality in terms of vehicle numbers and speed, and will have a corresponding impact on air quality. Road projects are usually perceived as having only negative effects; however, in the majority of cases, the overall effect can be beneficial.

The principal objective of this air quality and climate assessment is to indicate whether there are likely to be significant air quality and climate impacts associated with the Proposed Road Development ('Do-Something') in comparison with the 'Do-Minimum' scenario, and existing 'Base Year' (2017) conditions.

The methodology that has been adopted for the assessment of air quality impacts has been prepared in accordance with the NRA 'Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes' (Revision 1, May 2011).

In general, the potential impacts of any operational or construction related emissions would be intrinsically related to the level of exposure. Typically, receptors which are located in closest proximity to the source of the emission would be subject to the highest level of exposure. Whether or not the environmental and health effects are likely to be significant, they are likely to be confined to within the first 50–100 m from the Proposed Road Development. However, some impacts, (such as climatic) would have a wider sphere of influence.

The assessment has concluded that there would be no instance under any of the scenarios considered where a receptor is predicted to be exposed to annual mean concentrations higher than the National Air Quality Standard value for Nitrogen Dioxide (NO<sub>2</sub>) and Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>).

The changes in concentrations of these pollutants would generally be of an imperceptible or small magnitude, in terms of exposure. The greatest beneficial change in concentration is predicted to occur at the receptors located in the southern portion of the study area, where the redistributive traffic effects of the scheme would be most keenly felt, however overall this would result in a largely negligible effect on local air quality. The greatest adverse change in concentration is predicted to occur at the receptors located in close proximity to the Proposed Road Development within the northern portion of the study area (where existing traffic volumes are lowest), however overall this would result in a largely negligible effect on local air quality. Overall there would be a reduction in receptor exposure to these pollutants as a result of implementing the Proposed Road Development.

The results of the regional impact assessment indicate that the climatic effect on air quality would be largely beneficial but not significant. In relation to the actions and goals set out in the Department of Transport's 'Smarter Travel – A Sustainable Transport Future' to improve air quality, the Proposed Road Development would help minimise the negative impacts of transport on the local and global environment through reducing greenhouse gas emissions. This also represents an absolute worst-case scenario, in that it does not consider additional measures that would be implemented to decrease in emissions over the longer term, such as the accelerated deployment of 500,000 electric vehicles and the impact of greater biofuel uptake. Furthermore, based on the 2018-2040 GHG Emissions Projections, with existing measures, an imperceptible reduction in CO<sub>2</sub> would be delivered with the Proposed Road Development and the scheme would not hinder the achievement of targets under the EU Clean Air Policy.

In terms of designated ecological sites, the assessment indicates Oxides of Nitrogen (NO<sub>x</sub>) levels would increase in close proximity to the Proposed Road Development. However, as estimated levels would fall 'Well Below' the EU critical load levels, the significance of effect in all cases would be negligible. Whilst decreases in NO<sub>x</sub> levels would be experienced within the designated ecological site away from the Proposed Road Development (i.e. in the vicinity of the N51), the significance of effect would also be negligible. The Proposed Road Development would have a beneficial effect of facilitating dispersal of contaminants over a wider area within the SAC by splitting the main traffic flows through Navan and channelling that flow via two crossing points, as opposed to one. This would allow for greater dispersal and exposure to much smaller annual mean concentrations, particularly closer to source (where concentrations are typically highest).

The likely effects on amenity and local air quality resulting from construction works has also been considered at nearby residential receptors due to potential changes in dust deposition rates and airborne concentrations of particulate matter. The closest receptors to any construction-related activity would be at the tie-ins with the existing road network (north and south). Other than Blackwater Park amenity area and the River Blackwater, there no other receptors of note in proximity to the offline works area, which constitutes the majority of the construction footprint. Given the likely methods of work, scale and materials involved in the construction, it is considered that with good site practice, these works would have a slight adverse effect on amenity and a negligible effect on short-term PM<sub>10</sub> concentrations at all receptors. Overall, adverse effects on amenity and local air quality due to fugitive emissions of dust and Particulate Matter during construction are not considered to be significant and would only be local in terms of effect.

The effects of emissions from construction-related traffic movements are also not likely to be greater than those estimated for the assumed Opening Year (2022), thus are not likely to be significant in terms of localised increases in airborne pollutants.

## 13. Cultural Heritage

The Cultural Heritage EIAR Chapter in Volume 2 provides a statement of the potential impacts and residual effects upon the identified archaeological and architectural heritage resource resulting from the Proposed Road Development during both the construction and operational phases.

The EIAR Chapter identifies seven archaeological and architectural heritage assets on which the Proposed Road Development has the potential to impact. Mitigation has been proposed in the form of archaeological testing, excavation and recording, screening of boundaries and controls to ensure accidental impact during construction to reduce significant effects. Following mitigation there remains a residual effect upon the following assets:

- previously unrecorded archaeological assets within the scheme including Zone of Archaeological Potential associated with the Blackwater River;
- evidence of communications and agricultural activity in the form of banks, ditches and roads; and
- Protected Structures- Millbrook Weir (NT025-105), Spicers Blackwater Mills (NT025-106), concrete weir and sluice (NT025-107) and motte (ME025-23001).

Potential unrecorded archaeological assets likely to be present within the footprint of the scheme, which includes part of a Zone of Archaeological Potential associated with the Blackwater River, would experience a very high impact from the Proposed Road Development, resulting in a significant effect. Mitigation has been proposed in the form of archaeological testing and monitoring/excavation, if appropriate, to determine the presence/absence of such features and to mitigate impacts arising from the Proposed Road Development. The residual effect following the successful implementation of a National Monument Service approved mitigation strategy is assessed to be moderate, long-term and negative.

Similarly, evidence for communications and agricultural related activity in the form of banks, ditches and roads, dating to the Post-Medieval and modern periods is present within the footprint of the Proposed Road Development. These would experience a high effect from the Proposed Road Development. Mitigation has been proposed in the form of archaeological topographic survey to mitigate impacts arising from the Proposed Road Development. The residual effect following the successful implementation of a National Monument Service approved mitigation strategy is assessed to be moderate, long-term and negative.

The Protected Structures Shelton Spicers Blackwater Mills (NT025-106), concrete weir and sluice (NT025-107) are assets of regional importance, while the motte (ME025-23001) is nationally important. These were identified as experiencing a low effect from the Proposed Road Development, resulting in a slight effect. Proposed landscape planting will not reduce effect and therefore mitigation is not applicable. The residual is therefore assessed to be slight, long-term and negative.

Millbrook Weir (NT025-105) has also been identified as experiencing a low effect from the Proposed Road Development during operation. This impact will not change so the overall residual significance will not change from slight. The residual significance of effect would be slight, long-term and negative.

## 14. Material Assets

The Material Assets chapter evaluates potential effects the Proposed Road Development may have on Material Assets. Material Assets are defined by the EPA as “*built services*” and “*infrastructure*” (EPA, 2017).

This chapter evaluates the following economic assets of the site and environs:

- Electricity Network;
- Telecommunications (including phone and broadband);
- Gas Distribution Networks;
- Water supply networks;
- Sewerage networks; and
- Land Use and Property.

The assessment of potential impacts associated with the generation of unusable or unwanted waste materials that may arise during the construction phase is also addressed in this chapter.

A desktop assessment was undertaken to identify the location of the existing material assets in the area. In addition to this, scheme mapping, and engineering proposals were looked at.

Consultation with several relevant bodies, including Irish Water (IW) Gas Networks Ireland (GNI) and the Electricity Supply Board (ESB) were undertaken during the preliminary design phase in order to identify the location of existing services in the area. Preliminary utilities searches were undertaken in consultation with the other utility providers in October 2017. Surveys will be carried out prior to construction to confirm the exact location of the existing utilities.

Consultations with ESB have confirmed the locations of a number of overhead electricity lines and underground cables in the Proposed Road Development site. A comparison of the route of the Proposed Road Development with the gas network, existing water services and sewerage network records has revealed a number of conflicts with the Proposed Road Development.

There are robust telecommunication lines in existence for telephone and broadband services in the area, and fibre provisions for the Proposed Road Development.

Works during the construction phase, including service diversions and realignment will be carried out in accordance with relevant guidance documents, including GNI's publication 'Safety advice for working in the vicinity of natural gas pipelines'; the ESB' Code of Practice for Avoiding Danger from Overhead Electricity Lines', 2008 and the HSA's 'Code of Practice for Avoiding Danger from Underground Services', 2010.

Prior to excavation and diversion works during the construction phase, the appointed contractor will be supplied with accurate service drawings additional site investigations will be carried out if necessary, to ensure services are not damaged during construction works. When service suspensions are required during the construction phase, reasonable prior notice will be given to the residencies in the area.

As outlined in Volume 2 - Chapter 4 (Description of the Proposed Road Development), prior to any demolition, excavation or construction, a CEMP and C&D WMP will be produced by the successful contractor. The C&D WMP and CEMP will be implemented by the contractor for the entirety of the construction and demolition activities, which will ensure that specific control measures contained within these plans are implemented during the construction phase. Therefore, it is anticipated that the Proposed Road Development will likely result in a negligible effect on an existing environment of medium sensitivity/significance; therefore, the significance of the effect is considered not significant.

With the implementation of mitigation measures outlined in Volume 2 – Chapter 14 (Material Assets), the residual effect on existing utilities network will likely be reduced to imperceptible during the construction phase as consultation with service providers will ensure the disruption to services or outages will be carefully planned so the duration is minimised.

The effects on the existing electricity network will remain slight during the operational phase as a result of the additional power demands on the existing supply.

No additional residual impacts on the utility's networks are anticipated during the operational phase. Following implementation of the best practice measures outlined in Volume 2 - Chapter 14 (Material Assets), the residual effect significance from the generation and management of solid waste streams arising from the Proposed Road Development during the construction is considered to remain imperceptible.

The residual effect resulting from the commercial building being acquired and demolished will remain as significant as no mitigation is possible to reduce the impact. The residual impact post compensation cannot be assessed as the compensation to be agreed as part of the land acquisition are outside the scope of the EIA process.

The residual effect from the acquisition of partial agricultural land take, will be reduced to slight as a result of the proposed mitigation measures; for example, by providing new access road and entrances. The residual effects from the acquisition of partial non-agricultural land, including land categorised as 'Part of Recreational Land'; 'Part of Amenity Land'; 'Part of River' and 'Part of Commercial Property' will remain slight as no additional mitigation is possible to reduce the impact from the loss of land.



There will be no residual impacts on lands classified as Private Access/Public Road, as well as small number of commercial properties.

There will be no residual impacts on land acquired temporarily during the construction phase.

The construction and operation of the Proposed Road Development will result in cumulative impacts with the existing demands on these utilities and services by other facilities in the locality during the construction and operational phase. However, anticipated demands on these services are not excessive, as discussed above and will likely result in not significant effects during the operation and construction phase. The relevant service providers (ESB, GNI and IW) have been consulted in relation to provision of these services for the Proposed Road Development and have not signalled any difficulty with the proposed resources required.

No additional significant cumulative impacts have been identified.

## 15. Major Accidents and Disasters

This chapter relates to major accidents and disasters (MADs) and the assessment of likely significant adverse effects on the environment arising from the vulnerability of the Proposed Road Development to MADs. This topic is a new topic within the EIA process as outlined within the revised EIA Directive 2014/52/EU, which entered into force in May 2017. The directive states a requirement to assess “*the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or natural disasters which are relevant to the project concerned*”.

A disaster in the context of this assessment, is a naturally occurring phenomenon such as an extreme weather event (e.g. storm, flood, extreme temperatures) or ground-related hazard events (e.g. subsidence, landslide, earthquake) with the potential to cause an event or situation that leads to immediate or delayed serious damage to human health, welfare and/or the environment and requires the use of resources beyond those of the developer or its contractors to manage. A major accident, in the context of this assessment, means an uncontrolled event caused by a man-made activity or asset that may result in immediate or delayed serious damage to human health, welfare and/or the environment and requires the use of resources beyond those of the proposed developer or its contractors to manage.

Important considerations are the potential of the Proposed Road Development to cause MADs during the construction and operational phases, and the vulnerability of the Proposed Road Development to potential man-made and natural disasters. The assessment of MADs considers all disciplines outlined within the revised EIA Directive 2014/52/EU (population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and landscape).

The purpose of this chapter is to outline the requirement for an assessment of MADs and to outline a potential approach to the assessment to occur as part of the EIA process. The current EIA assessment approach (prior to the revised EIA Directive 2014/52/EU) already considered some accidents and disasters such as the potential for pollution to ground and surface waters, the potential pathways to sensitive biodiversity receptors (through Appropriate Assessment) and the potential for flood events (through flood risk assessments). The assessment of MADs is a new requirement; however, national guidelines are not yet available. In the absence of such guidance, Highways England's (equivalent body to TII) guidance (2017) has been consulted, which sets how projects must implement the new requirements of the 2014/52/EU Directive.

A risk analysis-based methodology was used in the assessment scope, covering identification, likelihood and consequence of MAD risks, derived from the EPA guidance. The assessment of the MAD risks will consider all factors defined in the EIA Directive 2014/52/EU, i.e. population and human health, biodiversity, land and soil, water, air and climate, material assets, cultural heritage and the landscape. The approach is based on the EPA's ‘*Guidance on Assessing and Costing Environmental Liabilities*’ (2014) and the ‘*Guide to Risk Assessment in Major Emergency Management*’ (Department of the Environment, Heritage & Local Government, 2010).

The following stages were undertaken as part of the risk assessment:

**Stage 1:** Risk identification/baseline establishment – confirm the existing baseline; establish an understanding of the interface of the Proposed Road Development with existing operations; identify possible risks and review potential receptors to identify any groups not considered necessary to include in the assessment.

**Stage 2:** Risk classification: likelihood and consequence—If MAD risks requiring further consideration in the EIAR are identified in Stage 1, the likelihood of a risk occurring and the consequence of the risk if the event occurs will be assessed.

**Stage 3:** Risk evaluation/risk management options –The likelihood and consequence ratings are then multiplied to form a risk score for each risk and subsequently ranked based on the risk score. The purpose of the risk evaluation is to assist in making decisions, using the outcomes of the risk analysis identifying and prioritising the risks for mitigation/treatment.

The consideration of embedded control measures and compliance with legislation and best practices has demonstrated that there will be no risks associated with MADs in the context of the Proposed Road Development.

There are a number of mechanisms which currently manage accidents outside of the EIA process, including a site-specific Health and Safety Plan which will be adopted during the construction phase of the Proposed Road Development. These mechanisms are currently effective at reducing these risks to an acceptable level whereby the risk is unlikely and unexpected as a result.

MAD risks screened in at Stage 1, which were identified as requiring potential further consideration within the EIAR, are all already being adequately considered as part of the Proposed Road Development design or within relevant EIAR chapters. No MAD risks have been identified that require additional consideration within the EIAR; therefore, it was determined that the risk classification and evaluation process was not required.

No significant residual risks associated with MADs in the context of the Proposed Road Development have been identified given the existing embedded mitigation measures and identified good practice measures outlined in Volume 2 - Chapter 15 (Major Accidents and Disasters).

## 16. Climate

The Climate chapter in Volume 2 presents the findings of an assessment of the likely significant effects on the climate as a result of the Proposed Road Development, and considers the resilience of the Proposed Road Development to the physical impacts of climate change.

### 16.1 Lifecycle GHG impact assessment

The Green House Gas (GHG) assessment study area considers all GHG emissions arising over the lifecycle of the Proposed Road Development. This includes direct GHG emissions arising from activities within the Site boundary and indirect emissions from activities outside the Site boundary (for example, the transportation of materials to the Proposed Development site and embedded carbon within construction materials).

The baseline for the GHG emissions assessment is a 'business-as-usual' scenario whereby the Proposed Road Development does not go ahead.

The global climate has been identified as the receptor for the purposes of the GHG emissions assessment. However, to enable the significance of the estimated GHG emissions arising from the Proposed Road Development to be evaluated, the national GHG inventory for Ireland has been used as a proxy of the level of effect on the global climate. GHG emissions have also been contextualised against the Transport Emissions Inventory projections for 2022, 2040 and 2050.

### 16.2 Climate change resilience review

The receptor for the climate change resilience (CCR) review is the Proposed Road Development including workers, users and associated infrastructure.

## 16.3 Construction Phase

### 16.3.1 Lifecycle GHG impact assessment

The construction phase has been quantitatively assessed in terms of expected GHG emissions arising from onsite construction activities, loss of carbon sink through land use change, embodied carbon in the construction materials, transportation of workers, construction materials and waste, and waste disposal.

The greatest contributor to the overall GHG emissions arising as a result of the construction phase of the Proposed Road Development is embodied carbon in the construction materials, accounting for 69% of overall construction emissions.

In relation to Ireland's national GHG inventory, the effects from GHG emissions during the construction phase of the Proposed Road Development have been found to be minor (low significance).

### 16.3.2 Climate change resilience review

During the construction process, receptors may be vulnerable to a range of climate risks. These could include:

- Inaccessible construction site due to severe weather event (flooding, snow and ice, storms) restricting working hours and delaying construction;
- Health and safety risks to the workforce during severe weather events;
- Unsuitable conditions (due to very hot weather or very wet weather, for example) for certain construction activities; and
- Damage to construction materials, plant and equipment, including damage to temporary buildings/facilities within the site boundary, such as offices, compounds, material storage areas and worksites, for example from stormy weather.

## 16.4 Complete and Operational Development

### 16.4.1 Lifecycle GHG impact assessment

The operational phase has been quantitatively assessed in terms of expected GHG emissions arising from operational energy use, additional vehicle journeys and maintenance activities.

Each of these three emissions sources contributed roughly one third to the overall GHG emissions arising as a result of the operational phase of the Proposed Road Development.

In relation to Ireland's national GHG inventory, the effect from GHG emissions during the operation of the Proposed Road Development have been found to be minor (low significance).

### 16.4.2 Climate change resilience review

During the operational phase, the Proposed Road Development may be vulnerable to a range of climate risks. These could include:

- Increased frequency and severity of extreme weather events (such as heavy and/or prolonged precipitation, storm events and heatwaves) leading to:
  - Damage to utilities due to stormy periods and intense rainfall;
  - Damage to drainage systems due to flooding from intense rainfall; and
  - Flooding from drainage systems during intense or prolonged rainfall.
- Increased winter precipitation leading to surface water flooding and standing waters.
- Increased summer and winter temperatures leading to increased heat stress on infrastructure and assets.

See Volume 2 – Chapter 16 (Climate Change) for a list of adaptation measures built into the design of the Proposed Road Development to increase its resilience to climate change during operation.

## 16.5 Residual Impacts

### 16.5.1 Lifecycle GHG impact assessment

There will be GHG emissions resulting from both the construction phase and the operational phase of the Proposed Road Development. However, as none of the effects are major and of high significance it is not appropriate to define any mitigation measures further to the ones detailed in Volume 2 - Chapter 16 (Climate Change).

### 16.5.2 Climate change resilience review

No residual impacts have been identified in relation to climate change resilience. It is therefore not appropriate to define any mitigation measures further to the ones detailed in Volume 2 – Chapter 16 (Climate Change).

## 17. Interactions of the Foregoing

The Interactions chapter in Volume 2 evaluates the potential interaction of impacts described within this EIAR, which the Proposed Road Development may have on the receiving environment and sensitive receptors.

As a requirement of the 2014 Directive, and of best practice guidelines and advice notes, the inter-relationships between individual factors must be identified and assessed.

Pursuant to section 50(3)(b) of the Roads Act 1993 (as amended) the EIAR (or EIS as then was under the Roads Act) is to contain:

*“50(3)(b) a description of the aspects of the environment likely to be significantly affected by the proposed road development, including in particular—*

- *human beings, fauna and flora,*
- *soil, water, air, climatic factors and the landscape,*
- *material assets, including the architectural and archaeological heritage, and the cultural heritage,*
- *the inter-relationship between the above factors”*

Article 3 of the 2014 Directive requires that the interactions between the following be assessed:

- Population and Human Health;
- Land and Soil;
- Water;
- Biodiversity;
- Air Quality;
- Cultural Heritage;
- Landscape and Visual; and
- Material Assets.

In addition, the interactions between these elements above and that of noise and vibration, as well as major accidents and disasters have also been considered in this chapter.

The EIAR has addressed each of the elements likely to have potential for environmental impact, during the construction and operational phase of the Proposed Road Development.

All of the environmental factors are inter-related to some extent. Table 17-1 provides a matrix summarising the major interactions between the various environmental factors.

A ‘√’ in the table denotes a weak/some/strong interaction. If there is no interaction, a ‘X’ can be found in the box. All interactions have been considered and assessed in the EIAR.

**Table 17-1 Interactions**

Interaction	Population & Human Health		Biodiversity		Land & Soils		Water		Air Quality		Noise & Vibration		Landscape & Visual		Material Assets		Traffic		Cultural Heritage		Major Accidents and Disasters		Climate	
	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.
<b>Population &amp; Human Health</b>																								
<b>Biodiversity</b>	x	x																						
<b>Land &amp; Soils</b>	✓	x	✓	x																				
<b>Water</b>	✓	✓	✓	✓	✓	✓																		
<b>Air Quality</b>	✓	✓	✓	✓	✓	x	x	x																
<b>Noise &amp; Vibration</b>	✓	✓	✓	✓	x	✓	x	x	x	x														
<b>Landscape &amp; Visual</b>	✓	✓	✓	✓	✓	x	x	x	x	x	x	✓												
<b>Material Assets</b>	✓	✓	x	x	x	x	x	x	x	x	✓	✓	x	x										
<b>Traffic</b>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	x								
<b>Cultural Heritage</b>	x	x	x	x	✓	x	x	x	x	x	✓	✓	x	x	x	x	x	✓						
<b>Major Accidents and Disasters</b>	✓	✓	x	x	x	x	x	✓	✓	✓	x	x	x	x	✓	x	✓	✓	x	x				
<b>Climate</b>	✓	x	x	✓	✓	x	x	✓	✓	✓	x	x	x	x	✓	✓	✓	✓	x	x	✓	✓		

Con.	Construction Phase	✓	Weak / Some / Strong Interaction
Op.	Operational Phase	x	No Interaction

