N63 Liss to Abbey Realignment Scheme

Environmental Impact Assessment Report
Volume 1: Non-Technical Summary

Galway County Council

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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

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Environmental Impact Assessment Report

Volume 1: Non-Technical Summary

Table of Contents

Figures

1 Introduction

The Environmental Impact Assessment Report has been prepared by AECOM Ireland Limited on behalf of Galway County Council (hereafter referred to as the 'Applicant') who are seeking planning permission for the design and construction of the proposed N63 Liss to Abbey Realignment Scheme (hereafter referred to as the 'Proposed Road Development').

The Proposed Road Development is situated to the northeast of Galway City, located along the existing N63 corridor. The N63 is a national secondary route, and this section of the N63 is located directly to the east of Abbeyknockmoy village. The Proposed Road Development is a 2.3 km road realignment which extends from the eastern edge of Abbeyknockmoy, across the Abbert River, to the townland of Derreen and on towards the junction of the N63 with the L6234. Figure 1-1 highlights the approximate location of the Proposed Road Development.

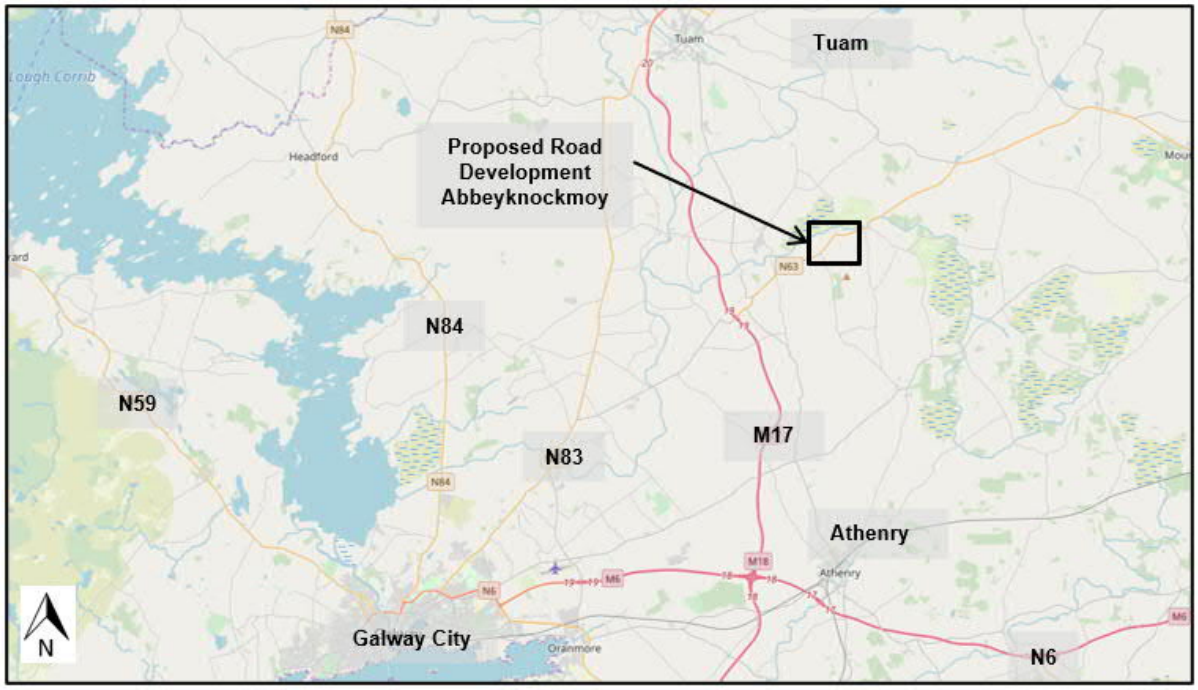

Figure 1-1 Regional Location of Proposed Road Development

The Environmental Impact Assessment Screening Report for the Proposed Road Development concluded that the Proposed Road Development did not trigger the mandatory criteria for a road development under Section 50 of the Roads Act 1993 (as amended) and Article 8 of the Roads Regulations, 1994 (as amended).

However, it was identified that under Section 50(1)(d) of the Roads Act 1993 (as amended), there would be potential for significant effects on water quality and biodiversity as the Proposed Road Development will traverse the Abbert River, (part of the Lough Corrib, Special Area of Conservation). A sub-threshold assessment was carried out as part of a report to inform the Environmental Impact Assessment Screening Determination and concluded that the Proposed Road Development has the potential to result in significant effects on sensitive biodiversity, landscape, and cultural heritage receptors and therefore should be subject to preparation of an Environmental Impact Assessment Report to accompany the planning application. Galway County Council in turn determined an Environmental Impact Assessment was required under Section 50 of the Roads Act 1993 (as amended).

Under Section 50 of the Roads Act 1993 (as amended), Galway County Council submitted the Environmental Impact Assessment Screening Report to An Board Pleanála for their consideration and in order to seek a direction on Galway County Council's determination prior to making this planning application. An Board Pleanála made the determination that an EIAR was required for the Proposed Road Development (An Bord Pleanála -309050-20).

This Environmental Impact Assessment Report has been prepared in full accordance and compliance with the provisions of Directive 2014/52/EU (Environmental Impact Assessment Directive), as well as the Roads Act 1993 (as amended) and the Roads Regulations 1994 (as amended). The preparation of the Environmental Impact Assessment Report was undertaken in accordance with the requirements as set out in the Environmental Impact Assessment Directive and relevant guidelines and documentation.

2 Need for the Proposed Road Development

The Need for the Proposed Road Development chapter outlines the requirement for the Proposed Road Development based on the planning policy, the deficiencies in the existing road network, project objectives, and identified future needs of the study area.

Overall, the need for the Proposed Road Development revolves around the requirement to provide a safe, robust and resilient National Secondary road network, allowing the more efficient movement of people and goods at a regional and local level, and the provision of improved facilities to encourage and promote active travel modal share at a local community level.

The Proposed Road Development is a multi-modal transport scheme, with a provision for both cyclists and pedestrians which will improve journeys across the Abbert River, with improved horizontal and vertical alignments. These improved cross-sections, realignment and upgraded junctions will improve safety, particularly for pedestrians and cyclists.

The specific needs for the Proposed Road Development include the following key issues:

- Resolving Existing Safety & Alignment Issues on the National Road Network;
- Providing Improved Regional Connectivity;
- Providing Improved Local Connectivity at a Community Level;
- Enabling Modal Shift to Active Travel Modes at a Community Level;
- Existing Road Conditions;
- Existing Traffic Issues; and
- Existing Road Safety Issues.

The overall ambition of the Proposed Road Development is to achieve a number of specific objectives under a number of multi criteria categories. The overarching headings for each of the objectives have been structured around the headings required by the Transport Infrastructure Ireland (TII) Project Appraisal Guidelines:

- Economy;
- Safety;
- Environment;
- Accessibility and Social inclusion;
- Integration; and
- Physical Activity.

Each of the objectives are linked to the European, national, regional and local policies.

This chapter also includes a policy section which sets out the overarching planning framework, by examining planning strategy, policy and guidance at European, national, regional and local levels. The review of strategic, statutory and non-statutory plans demonstrates support and consistency with policy framework in regard to the Proposed Road Development.

The principles of the Proposed Road Development will particularly assist with;

- Supporting the objectives of the TEN-T in broad terms by improving the connection to Junction 19 on the M17 TEN-T network;
- Enhancing regional and local accessibility, by providing improved accessibility and social inclusion to community facilities and to heritage resources;
- Maintain the strategic capacity and safety of the national roads network including planning for future capacity enhancements;
- Sustaining the economic growth through the provision of improved transport connectivity in this rural location;
- Enhancing environmental benefits, through a reduction in traffic queuing and journey time reliability;

- Improved safety through improved road alignment, pedestrian and cycle user segregation, and ultimately reducing collisions in line with the Road Safety Strategy;
- Ensuring adequate transport infrastructure is in place to meet demands from continued population growth; and
- Protecting and safeguarding investment made in strategic transportation infrastructure.

The Proposed Road Development is compliant with planning policies at a European, national, regional and local level.

3 Consideration of Alternatives

The Consideration of Alternatives chapter considers reasonable alternatives 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.

The alternatives considered are grouped as follows:

- 'Do-Nothing' Alternative;
- 'Do-Minimum' Alternative;
- Alternative Modes;
- Strategic Alternatives - Route Alignment Options; and
- Design Development Alternatives (alternative locations and alternative layouts).

It is noted that a full Options Selection process was undertaken for this Proposed Road Development as part of the earlier phases of the project and this document is included as an Appendix to this Environmental Impact Assessment Report (Volume 04; Appendix A3-1). This was a phased assessment, in accordance with the Transport Infrastructure Ireland Project Management Guidelines, which included the environmental assessment of options.

'Do-Nothing', 'Do-Minimum' and 'Do-Nothing/Do-Minimum' Alternatives

Do-Nothing Alternative

The 'Do-Nothing' consideration examined the potential of the existing road structure to meet future traffic and safety demands without any upgrades. This scenario would not include any additional crossing of the Abbert River or improvement of the existing road network other than routine maintenance.

Assessment of the 'Do-Nothing' alternative concluded that it would not meet the project's objectives in terms of safety and reducing traffic congestion. From an environmental perspective there would be limited opportunity to improve safety for motorised and non-motorised users, there would be potential for increases in noise levels resulting from traffic congestion with little scope for mitigation measures, and the existing drainage infrastructure does not have any environmental protection measures in terms of surface water attenuation and hydrocarbon interceptors which would be included in any new works.

Do-Minimum Alternative

The 'Do-Minimum' alternative investigated the potential to upgrade, rather than replace, the existing infrastructure to meet the predicted traffic and non-motorised user demands for the next 30 years. The 'Do-Minimum' alternative would not include any significant interventions other than local minor improvements within the road boundary without consideration of any additional land take.

Issues identified related to the Do-Minimum alternative included a lack of additional crossings of the Abbert River, the narrow cross-section of the carriageway and poor alignment of the existing N63. From an environmental perspective there would be limited opportunity to improve safety, there would be potential for increases in noise levels resulting from traffic congestion with little scope for mitigation measures, and the existing drainage infrastructure does not have any environmental protection measures in terms of surface water attenuation and hydrocarbon interceptors which would be included in any new works.

Do-Nothing/Do-Minimum Alternative

Due to the minor works involved in the 'Do-Minimum' alternative, the two were combined into the 'Do-Nothing/Do-Minimum alternative. However the 'Do-Nothing/Do-Minimum' alternative failed to address two issues which are predominantly causing the current safety concerns.

- The 'Do-Nothing/Do-Minimum' would not improve river crossing options as there would be no new crossing points, due to the minimal works considered under this option.
- Journey times would be increased and there would be no additional capacity for traffic travelling through the area. The regional traffic and local traffic are not segregated, which results in little prospect of minimising conflict and improving road safety.

In addition, there would be potential for increases in noise levels resulting from traffic congestion with little scope for mitigation measures, and the existing drainage infrastructure does not have any environmental protection measures in terms of surface water attenuation and hydrocarbon interceptors.

Ultimately it was determined that the 'Do-Nothing/Do-Minimum' alternative would not meet the objectives of the scheme.

Alternative Modes

At present there are no dedicated cycle facilities within the area. There is currently a minor network of footpaths and pedestrian facilities in the vicinity of the community facilities only and within parts of Abbeyknockmoy village, however there are no connecting facilities. The Proposed Road Development will facilitate active travel modes however dedicated pedestrian/cycle facilities alone would not address the project objectives.

There are no railways within the study area. As there are no railways within the study area it was not possible to consider rail as an alternative mode of transport. Several regional bus routes pass through the study area, however, improvements to the bus network or bus facilities would not meet the objectives for the Proposed Road Development.

While alternative modes were considered not to meet the scheme objectives in isolation, it is noted that key Active Travel facilities have been incorporated into the scheme as they support elements of the scheme objectives.

Strategic Alternatives

Six primary Route Options A-F were identified as part of a Stage 1 Route Option Assessment process. These Route Options were identified taking into account engineering, economic and environmental considerations and having regard to the issues and constraints identified in the Constraints Study.

All bridge options for the offline routes included a clear spanned crossing of the Abbert River and Special Area of Conservation boundary and a connection to the L3110. The introduction of pedestrian/cyclist facilities was reviewed as part of the route options strategy.

During Stage 2 'Project Appraisal of Route Options' the three highest ranking route options (A, B and C) were progressed along with the 'Do-Nothing/Do-Minimum' alternative. There were no major changes between the Stage 1 route options and those brought forward to Stage 2. Where possible, route options were amended locally and in consultation with environmental specialists to minimise impacts, while respecting the study area constraints. All the route options included one new crossing of the Abbert River and an at-grade junction with the L3110.

All three route options required the acquisition of greenfield lands and would likely result in the loss of treelines and hedgerows between agricultural fields. The provision for a bridge over Abbert River, which forms part of Lough Corrib Special Area of Conservation, could cause potential impacts during the construction and operational phases. During construction this would include at the construction site and downstream related to instream works or works in close proximity to the Special Area of Conservation.

Following assessment using the six Common Appraisal Framework criteria (Economy, Safety, Environment, Integration, Accessibility & Social Inclusion, and Physical Activity) the Emerging Preferred Route (Route Option B) was then taken forward to the preliminary design stage.

Design Development and Alternatives

Amendments made throughout the preliminary design process included development of accommodation works via consultation with directly impacted landowners, refinement of local junctions, access arrangements in order to improve accessibility and performance and horizontal alignment alterations were undertaken to minimise impact on property owners. Various alignment options were investigated with the aim to minimise impacts on residential properties and revisions were made to the alignment where practicable.

Following the identification of a preferred route option, a review was carried out to identify and detail preferred junction options, along with the proposed layout of the pedestrian and cycle facilities routes. Five junction areas were identified along the Proposed Road Development and a number of junction options were considered for each area. Following an assessment of junction options a preferred junction option for each area was chosen. During this process it was deemed that a connection along the existing downgraded N63 between the residential area and the community facilities would be more beneficial than including the pedestrian and cycle facilities along the new section of road, as this would facilitate connection between the residential area and the community facilities of Abbeyknockmoy.

A Structural Options Report was also developed to investigate the various bridge options. There were three bridge options, and they all assumed a Type 2 Single Carriageway as the minimum desirable cross-section at the bridge crossing location. The minimum bridge cross-section will be 14 m wide.

The potential environmental impacts of the bridge construction were considered as part of project planning. The magnitude of the environmental effects was related to a number of factors such as the location, quantity and choice of materials, span and structural form. Of the three options, Option 2 Steel Girder was the most favourable when compared to the alternatives and was carried forward to the Preliminary Bridge Design.

Description of the Proposed Road Development

Beginning at Abbeyknockmoy village, the Proposed Road Development will deviate offline to the north of the existing N63 and be connected to the existing road network through a three-armed roundabout. From there, it will continue in a north-easterly direction through agricultural land before crossing the Abbert River at a skewed angle of approximately thirty-five degrees. The proposed alignment will then sweep east and continue through more agricultural land, running parallel to the existing N63. The alignment then crosses the L6159 and continues east through an area of existing woodland until it ties in with the existing N63 at its junction with the L6234. The existing L6159 will be realigned to create a north/south staggered junction with the proposed alignment, and the L6234 will be realigned to tie in with the proposed alignment.

The introduction of dedicated pedestrian and cyclist facilities along the existing downgraded section of the N63 will be included as part of this Proposed Road Development to connect the residential area of the village to the community facilities.

4 Description of the Proposed Road Development

This chapter provides a description of the Proposed Road Development, the design of which advanced from the Emerging Preferred Route identified during the route options selection process. Surveys, assessments and information that form the basis of this Environmental Impact Assessment Report are based on the design of the project as described in this chapter.

The refinement of the Proposed Road Development took cognisance of a number of constraints, such as the Abbert River, Lough Corrib Special Area of Conservation, and Knockmoy Abbey (National Monument No.166). Avoidance mitigation measures have been included in the design to reduce the direct and indirect impact on sensitive environmental receptors. These avoidance mitigation measures include;

- A clear span steel girder bridge to minimise visual impact on Knockmoy Abbey and flood culverts to minimise impact on the Abbert River (which forms part of Lough Corrib Special Ares of Conservation);
- A closed drainage network to minimise the impact on the Special Area of Conservation and surrounding watercourses;
- The Preferred Route was chosen to minimise impact on the National Primary School;
- Regrading earthworks and introducing planting to minimise the impact for vehicle restraints and anti-dazzle screening.
- Updating the horizontal geometry to reduce impact on landowners; and
- Minimising impacts in the vicinity of Knockmoy Abbey.

Summary of the Proposed Road Development

The Proposed Road Development is located in the townlands of Culliagh North, Culliagh South, Liss, Abbey, Chapelfield, Clashard, Moyne and Newtown in Co. Galway and runs in a south-west to north-east direction across the Abbert River. Starting on the eastern edge of Abbeyknockmoy and running north-east to the proposed tie-in with the existing N63 at the L6234 junction.

The Proposed Road Development will comprise a rural all-purpose Type 2 Single Carriageway road, including a new crossing over the Abbert River. Provision of both pedestrian and cycle facilities have been included predominantly along the route of the existing N63 to connect the residential area of Abbeyknockmoy village to the community facilities.

Beginning at Abbeyknockmoy village, the Proposed Road Development will deviate offline to the north of the existing N63 and be connected to the existing road network through a three-armed roundabout. From there, it will continue in a north-easterly direction through agricultural land before crossing the Abbert River at a skewed angle of approximately thirty-five degrees. The proposed alignment will then sweep east and continue through more agricultural land, running parallel to the existing N63. The alignment then crosses the L6159 and continues east through an area of existing woodland until it ties in with the existing N63 at its junction with the L6234. The existing L6159 will be realigned to create a north/south staggered junction with the proposed alignment, and the L6234 will be realigned to tie in with the proposed alignment.

The Proposed Road Development will comprise the following major elements:

- Approximately 2.3 km of new Type 2 Single Carriageway road (predominantly offline);
- One new roundabout at the western end of the Proposed Road Development to provide connection with the existing N63;
- Two new priority junctions to provide connection to the existing L6159 and L6234, including some minor local road realignments;
- One new clear span steel girder bridge crossing of the Abbert River;
- A number of new piped culverts and two new box culverts over existing field ditches;
- Three new flood alleviation culverts;
- New pedestrian and cycle facilities, predominantly located along the existing N63;
- Associated earthworks including excavation of unacceptable material, excavation and processing of rock and other material, and recovery of unacceptable material for re-use in the works;

- Accommodation works, including the provision of access roads and accesses;
- Drainage works, including the construction of attenuation ponds in accordance with sustainable drainage design principles and guidance;
- Treatment of surface water run-off prior to outfall discharge, spill containment measures and attenuation treatment facilities;
- Utilities and services diversion works including medium voltage (10 kV/20 kV) overhead lines and EIR overheard and underground lines;
- Safety barriers, public lighting, fencing;
- Viewing area for Knockmoy Abbey with parking;
- Landscaping planting works, signage, lighting and other works ancillary to the construction and operation of the Proposed Road Development;
- Construction of farm access tracks with accommodation works ancillary to the Proposed Road Development; and
- Environmental measures and other ancillary works.

The location and extent of the Proposed Road Development are shown in Figure A4-1 to Figure A4-6 contained in Volume 03 of this EIAR.

Mainline Alignment and Side Roads

The mainline alignment will compose two unique individual sections, running from the south-west to north-east for a total length of 2.30 km:

- Section A: Ch. 0+070 to 0+250 – From the western tie-in along the existing N63 in the village of Abbeyknockmoy to the proposed roundabout. This section of the mainline alignment was developed to achieve a design speed of 60 km/h, consistent with the posted speed limit of 50 km/h within the village of Abbeyknockmoy.
- Section B: Ch. 1+000 to 3+120 – From the proposed roundabout to the eastern tie-in along the existing N63 east of the junction with the L6234. This section of the mainline alignment was developed to achieve a design speed of 100 km/h, consistent with the posted speed limit of 100 km/h for Type 2 Single Carriageway National Roads.

It is proposed that the side roads will be reconfigured to tie-in with existing or realigned roads, where 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.

For the local roads, the design speeds are suitable to the existing low-speed character of these roads and will assist to minimise any impact on the environment at those locations. Where side roads have existing speed restrictions, proposed speed restrictions, or are in more built-up areas, the appropriate design speed has been established in accordance with Sections 1.1 and 10.2 of DN-GEO-03031(TII, 2017) and DMURS (2019).

Drainage – General Principles

The proposed drainage design incorporates:

- Systems for the collection and conveyance of overland water and surface water run-off;
- Measures to treat and attenuate the surface water run-off from the new paved surfaces of the Proposed Road Development; and
- Treatment of existing watercourses crossed or affected by the Proposed Road Development.

The preliminary design of road drainage for the Proposed Road Development is in accordance with the principles outlined below and the following TII Publications:

- DN-DNG-03022 - Drainage Systems for National Roads (including Amendment No. 1 dated June 2015) (TII, 2015);
- DN-DNG-03064 – Drainage of Runoff from Natural Catchments (including Amendment No. 1 dated June 2015) (TII, 2015);
- DN-DNG-03065 - Road Drainage and the Water Environment (including Amendment No. 1 dated June 2015) (TII, 2015); and
- DN-DNG-03066 - Design of Earthworks Drainage, Network Drainage, Attenuation & Pollution Control.(TII, 2015).

5 Traffic Analysis

The Traffic Analysis chapter assesses the impacts of the Proposed Road Development on traffic. It defines the traffic assessment study area; the methodology used for developing the baseline and impact assessment; provides a description of the baseline environment in relation to traffic, active travel model and safety. It presents the findings of the impact assessment at construction phase and operational phase, and the proposed mitigation and monitoring measures.

Traffic modelling tools were used to analyse the N63 Liss to Abbey Realignment Scheme (the Proposed Road Development) 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 Chapter 04 (Description of the Proposed Road Development) and the assessments presented in Chapter 10 (Air Quality), Chapter 11 (Noise and Vibration) and Chapter 16 (Climate). The overall commentary on the predicted changes in traffic conditions provides a setting for a number of the other assessments undertaken in this Environmental Impact Assessment Report.

During the construction phase, the resulting percentage increase in Annual Average Daily Traffic flows as a result of the construction traffic generated by the Proposed Road Development were established. The daily percentage impacts on the existing N63 will be +2.4% and +3.3% to the west and east of the Proposed Road Development respectively. It is noted that these impacts are based on the worst-case assessment where the entirety of construction traffic will travel from/to the Proposed Road Development from east or from west, while a more realistic scenario would be a combination of the two.

With implementation of the mitigation measures identified, there will be no major effects during the construction phase of the Proposed Road Development.

During the operational phase, the results for the both the Opening Year (2023) and Design Year (2038) show that implementation of the Proposed Road Development will cause a substantial decrease in Annual Average Daily Traffic flows on the following section:

- Existing N63 between the proposed roundabout and the L7138;
- Existing N63 between the L7138 and L3110 (at the Newtown National School and Abbeyknockmoy Community Centre); and
- Existing N63 between L3110 and L6159 (across the existing Liss Bridge).

Figure 5-1 illustrates the relative differences in traffic volumes between the Do-Minimum and Do-Something scenarios for the assumed Opening Year (2023) and Design Year (2038); where the positive figures indicate increased traffic volumes as a consequence of the Proposed Road Development implementation and negative figures indicate reduced traffic volumes as a consequence of the Proposed Road Development implementation.

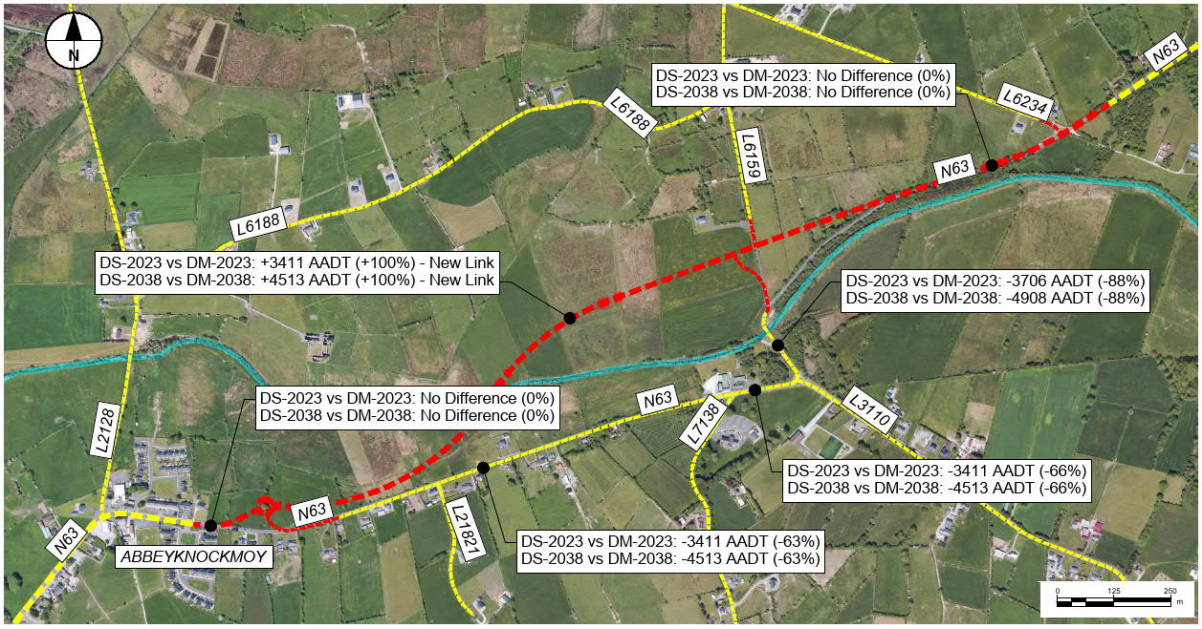

Figure 5-1 AADT Difference between Proposed Road Development (Do-Something) and Do-Minimum

The Proposed Road Development will see localised changes to the local and national road network and traffic flows. The modelling work undertaken to assess the traffic impacts of the Proposed Road Development indicates that there will be an overall positive traffic benefit associated with the Proposed Road Development. Further, the Proposed Road Development will provide benefits to pedestrian and cycling facilities on the adjoining local road network. Therefore, there are no residual negative traffic effects anticipated.

Overall, the Proposed Road Development (Do-Something) will provide benefits for the entire network compared to the Do-Minimum option. The network statistics illustrate that the Proposed Road Development will provide a reduction in total distance travelled (-4.4%), a reduction in travel time (-20.4%) and an increase in average speed (+20.1%) throughout the entire modelled road network.

The Proposed Road Development will be of a higher safety standard than the existing road network and will therefore contribute to a network-wide reduction in collisions. This is reflected in the forecasted reduction of 15 collisions over the 30-year design life appraisal period. This equates to a reduction of 27 casualties (1 Fatal, 2 Serious, and 24 Slight).

The Proposed Road Development will provide a dedicated walking and cycling facility on the south side of the existing road, connecting the village with community facilities. New pedestrian and cycle crossings will be provided at the school and at the junction of the N63 and local road L3110. The new facility and the removal of regional traffic from the existing road will enable a significant increase in the use of active modes.

No likely significant negative traffic impacts are anticipated as a result of the Proposed Road Development. The traffic analysis shows that the Proposed Road Development results in significant benefits in terms of network performance and journey time savings. The network statistics show that the Proposed Road Development will lead to a 20% reduction in the journey times on N63 routes along the section included within the study area.

The Proposed Road Development will result in reduced traffic levels and congestion in proximity of the Abbeyknockmoy Community Centre and Newtown National School. The Proposed Road Development will alleviate traffic along the existing N63 and will provide a better quality of life for the local community and provide a safer environment for all users. By reducing the number of vehicular traffic on the existing N63 between the Abbeyknockmoy village and the Community Centre, and through the provision of pedestrian and cycle facilities, more sustainable travel will be supported and encouraged, facilitating a commute using active modes and the public transport system.

Without the Proposed Road Development, traffic delays would continue along the existing N63 National Secondary route, particularly at the Liss Bridge, and negative environmental impacts related to high traffic volumes in proximity to the Newtown National School and Abbeyknockmoy Community Centre would continue. The traffic volumes would have negative impacts for the local communities along the route in terms of safety, security, amenity, noise, air quality, and particularly so in the case of vulnerable road users where there are no existing facilities. Road safety on the N63 route particularly in proximity of the existing Liss Bridge will diminish due to growing traffic flows. Likewise, the road safety rating on the N63 will worsen due to the increase in traffic volumes and Heavy Goods Vehicle traffic.

6 Population and Human Health

The Population and Human Health chapter presents the likely significant effects on land use and accessibility, employment and human health and well-being as a result of the Proposed Road Development.

During the construction phase of the Proposed Road Development, there is the potential for negative effects to be experienced. Potential impacts include impacts on amenity at local residential properties and land acquisition. The effect of the Proposed Road Development on air quality, noise, and neighbourhood amenity as a determinant of human health is assessed to be **negative** during construction, due to the potential negative, moderate, and significant noise effects on sensitive receptors in the study area. It is envisioned that the majority of effects experienced will be restricted to a local scale and will be temporary and/or short term in nature.

The temporary acquisition of the land will likely result in a **temporary**, **negative,** and **low** effect on the existing residential land and its users (**medium** sensitivity); therefore, the significance of effect will likely be **not significant**.

The permanent acquisition of the land will likely result in a **permanent**, **negative**, and **negligible** effect on the existing land use and its users; therefore, the significance of the effects will likely be **slight** as a result of the land take.

During the operational phase, the Proposed Road Development is expected to reduce network travel time, traffic volumes, and associated congestion at Liss bridge, thereby improving accessibility to local services and businesses.

The separation of regional and local traffic coupled with the introduction of pedestrian/cycling facilities will improve accessibility to employment sites in Abbeyknockmoy and potentially create a more attractive, safer router for vulnerable road users. The separation of regional and local traffic and the improvement of the quality of the existing N63 will also improve accessibility to employment sites in the wider region.

The dedicated pedestrian/cycle routes will allow for direct active travel access from Abbeyknockmoy village to the community facilities. The new routes will introduce safe access to the school, creche, GAA club and church in the study area. In turn this will allow safe access for children but will also offer safe access for vulnerable road users and give people a new connection to the community facilities.

During operation it is considered the Proposed Road Development will have a **positive** effect on with relation to access to healthcare services and other social infrastructure, accessibility to work and training and active travel options, and air quality, noise and neighbourhood amenity.

7 Biodiversity

An assessment was carried out of the likely significant effects of the Proposed Road Development on the biodiversity interests of the receiving environment.

Survey Programme

A number of 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, 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 habitats of the Lough Corrib Special Area of Conservation.

Baseline Conditions

Designated Sites

The Proposed Road Development will cross the Abbert River. This river forms a part of the Lough Corrib Special Area of Conservation. There is therefore a potential for direct impacts on this designated site. Habitats associated with this designated site occur within the Proposed Road Development site.

Habitats

Habitats of high ecological value were recorded within and in the surrounding vicinity of the Proposed Road Development. These included species-rich wet grassland (GS4) that correspond with the Annex I habitat '*Molinia* meadows on calcareous, peaty or clay-laden soils. Calcareous springs (FP1) that correspond to the Annex I habitat Petrifying Springs with Tufa Formations were also recorded. The Abbert River is an eroding river (FW1) which offers excellent habitat for Annex II animal species. Non-native invasive alien plant species were also recorded in three locations.

Fauna

Bats

A total of four species of bat were detected during field surveys; Common pipistrelle, soprano pipistrelle, Leisler's bat and Daubenton's bat. Bat activity was principally concentrated along the river and riparian habitats and the treelines and hedgerows at the eastern end of the Proposed Road Development. The Abbert river is important for Daubenton's bats and also other species that use the riparian corridor for commuting and foraging.

Badger

No active setts were recorded within the vicinity of the Proposed Road Development or the wider area during field surveys. Much of the habitats present are considered unsuitable to support the development of setts. However, evidence of a badger territory to the north-east of the Proposed Road Development was found. More suitable habitat for badger setts and foraging/feeding occurs to the north, south and east of the Proposed Road Development.

Otter

Evidence of otter activity was found at several locations along the Abbert River. The remains of an otter were also found. It may be assumed that all of the river within the vicinity of the Proposed Road Development is within an otter territory. This species is a Qualifying Interest of Lough Corrib Special Area of Conservation.

Other Protected Mammals

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

Birds

Kingfisher, an Annex I species was recorded within the riparian area of the Abbert River and is likely breeding here. Little Egret, another Annex I species was also recorded. Three birds of prey were recorded – Buzzard, Kestrel and Sparrowhawk. No suitable breeding habitat for Barn Owl was found within the survey area. Using BoCCI classification (Colhoun and Cummins, 2013), two Red-Listed breeding bird species – Meadow Pipit and Grey Wagtail were recorded, and sixteen Amber-Listed breeding species were recorded in total. The majority of the bird species recorded were Green-listed breeding species. Winter bird surveys carried out between 2019 and 2021 recorded Lapwing, a Red-List species, among other commoner species such as Snipe, Teal and Mallard.

Amphibians

While the only confirmed breeding site of the Common Frog was found at some remove from the Proposed Road Development, based on the suitable nature of the habitats present onsite, this species is considered to be present within the the Zone of Influence of the Proposed Road Development. No evidence of newts was found.

Fish

Atlantic Salmon, Sea Lamprey and Brook Lamprey are all Annex II species that are qualifying interests of the Lough Corrib Special Area of Conservation of which the Abbert River is a part. A fisheries survey in 2019 recorded Salmon and Brown Trout within the survey area of the Proposed Road Development. Brook Lamprey have previously been recorded in the wider catchment and it is therefore considered to be present within the Zone of Influence of the Proposed Road Development.

Common Lizard

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

Invertebrates

Some suitable habitat (wet grassland) for Marsh Fritillary (the only Annex II invertebrate) butterfly occurs within the wider area. Devil's Bit Scabious, the food-plant of this butterfly, was found within the footprint of the Proposed Road Development. However, a survey for this species did not find any of its larval webs.

Other

While there is suitable habitat for White-Clawed Crayfish within the Abbert River, a targeted survey did not find any evidence of this species. Other species were considered but were not considered to be present within the Zone of Influence of Proposed Road Development. These include Freshwater Pearl Mussel and notable butterflies such as Small Blue.

Potential Impacts

In the absence of mitigation, the Proposed Road Development could have a range of potential impacts on the Qualifying Interests of a European site within the Zone of Influence 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.

Mitigation

The Proposed Road Development adopts a number of embedded control measures that avoid the potential for any adverse impacts on the Qualifying Interest of the Lough Corrib Special Area of Conservation, 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;
- Translocation of plant material and substrate from the *Molinia* grassland to a compensatory receptor site.
- Production of an Ecological Monitoring Strategy;
- Pre-construction surveys;

- Pollution control;
- Timing/phasing of clearance and earthworks;
- Invasive Species Management Plan;
- Construction Environmental Management Plan;
- Artificial lighting plan; and
- Species-specific mitigation for
  - Bats;
  - Badger;
  - Otter;
  - Amphibian;
  - Breeding birds; and
  - Protected mammals (other than those above).

Residual Impacts

The Proposed Road Development will result in the loss of a portion of grassland that corresponds with an Annex I habitat type. Following translocation of turves/plant material and habitat recreation works, mitigation will be achieved by replacement with compensatory habitat which will be suitably managed by the local authority. The significance of the 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 localised populations of nationally protected species including nesting birds, hedgehog, pygmy shrew, stoat, and common frog.

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

8 Land and Soils

The Land and Soils chapter presents an assessment of the impacts of the Proposed Road Development on land, soils, geology and hydrogeology (groundwater). It defines the study area, the methodology used for developing the baseline and impact assessment. It also provides a description of the baseline environment in relation to land and soils and presents the findings of the impact assessment.

The chapter should be read in conjunction with Chapter 16 Material Assets Non-agriculture and Chapter 17 Material Assets Agriculture. Both of these chapters include an assessment of impacts from land take.

The methodology used for describing the potential effects considers the “quality” of the effects (i.e. whether it is adverse or beneficial), the “probability” of the event occurring and the “duration” of the effects (i.e. whether it is short or long term) as per Table 3.3 of the Environmental Protection Agency’s ‘Guidelines on the information to be contained in Environmental Assessment Reports’. Specific assessment criteria and typical examples based on information within the Transport Infrastructure Irelands’ ‘Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes’.

Information relating to regional, local and site conditions was assessed using publicly available datasets and geotechnical site investigation carried out at the Proposed Road Development site. The general ground profile at the site consists of topsoil over alluvium and till deposits, beneath which is limestone bedrock.

The potential impacts to the soils, geology and hydrogeology from the Proposed Development were assessed. Potential impacts assessed included impacts to soil and groundwater quality from accidental spills and leaks, excavation and stockpiling of soils, removal of hardstanding, pumping of groundwater, use of concrete and lime and depletion of non-renewable natural resources. A number of mitigation measures were identified and will be implemented so that there will be no significant adverse effects to the soils, geological and hydrogeological environment during the construction and operation of the Proposed Road Development. The cumulative impacts of the Proposed Road Development on soil, geology and hydrogeology were considered and it was concluded cumulative effects will be **imperceptible**.

It is considered that significance of residual effects of the Proposed Road Development on soil, geology and hydrogeology during both the construction and operational phase will overall be **imperceptible** provided that appropriate mitigation measures are applied.

9 Water

The Water chapter examined how the construction and operation of the Proposed Road Development will interact with the water environment and assessed potential impacts to the water environment from the Proposed Road Development. Existing published water data and other information regarding natural surface waters were reviewed as part of the chapter compilation. A Flood Risk Assessment was prepared for the Proposed Road Development site.

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 reduce the likelihood of 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 mitigation measures will reduce the likelihood of 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 utilise a closed drainage system and will be discharged via ponds to the Abbert River. Surface water will be discharged at greenfield runoff rates. In order to achieve this, flow control restricting devices such as a vortex flow control device will be installed upstream of the outlet to a receiving waterbody.

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 Proposed Road Development site. However, due to the proposed mitigation measures, the cumulative effects from both construction and operation are not considered likely.

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

The embedded mitigation measures outlined in Chapter 04 Description of the Proposed Road Development will reduce the likelihood and magnitude of the potential effects on the water environment occurring during the operational phase. The significance of effects during the operational stage has been assessed as **moderate/slight**, based on the modelled increase in flood levels associated with the proposed river crossing.

10 Air Quality

The Proposed Road Development has been assessed for the impacts it will have on air quality in the local area and regionally. The impacts during the construction period, and during the operation of the Proposed Road Development have been considered.

The air quality assessment has been carried out based on Transport Infrastructure Ireland's 'Guidelines for the Treatment of Air Quality during Planning and Construction of National Roads'. Where necessary new publications since its publication, particularly Highways England 'LA105 Air Quality' (2019), and Environmental Protection UK/Institute of Air Quality Management 'Land-Use Planning & Development Control: Planning For Air Quality' (2017) have also been taken into account.

The assessment considers the pollutants nitrogen dioxide (NO_2), and particulate matter (PM_{10} and $PM_{2.5}$). These are the two main air pollutants of concern which come from the exhaust gas of vehicles, among other sources.

Because of the health effects of NO_2 and PM, there are legal limits in place on these pollutants. These limits apply at places like homes, hospitals, and schools.

As described in the TII Guidance document, the following seven elements were considered for the air quality assessment.

- Baseline air quality conditions (qualitative);
- Construction dust assessment (qualitative);
- Construction traffic (HGVs) assessment (qualitative);
- Calculation of the Index of Overall Change of Exposure for the Proposed Road Development (quantitative);
- Determination of the pollutant concentration (NO_2, PM_{10} and $PM_{2.5}$) at worst case sensitive receptors (quantitative);
- Consideration of impacts on sensitive ecosystems (quantitative); and
- Calculation of regional emissions (NO_2, PM_{10} and CO_2) associated with the Proposed Road Development.

The study area lies within the air quality Zone D. NO_2 and PM concentrations in this zone are generally low, and in 2019, the legal limits on concentrations of NO_2, PM_{10}, and $PM_{2.5}$ were not breached anywhere in this Zone. Background concentrations representative of the study area are very low, well below the applicable legal limits.

During the construction phase by using standard industry good practice mitigation measures as outlined in the Construction Environmental Management Plan, the dust effect will be **not significant**. Similarly, the number of Heavy Goods Vehicles used is expected to be small enough that the effect of the construction traffic will also be **not significant**.

The Index of Overall Change of Exposure calculations concludes that there will be an overall reduction in exposure to NO_X and PM_{10} as a result of the operation of the Proposed Road Development. This is because the majority of sensitive receptors in the study area (e.g. residential properties) are located along the existing N63, and approximately 60% of vehicles will use the Proposed Road Development instead, which is further away from these receptors. The same theme is shown in the local air quality assessment, where pollutant concentrations decrease at locations close to the existing N63. However, at some locations closer to the Proposed Road Development, pollutant concentrations will increase, though, the absolute levels are still very low, well within the legal limits. Therefore, the effects will be **negligible** and **not significant**.

There is one designated ecological site that is within the study area, Lough Corrib Special Area of Conservation. The impacts on this site vary as at some locations within the site, traffic increases (e.g. the Proposed Road Development) and at other locations it decreases (e.g. the existing N63). At all locations, the concentration of NO_X is well below the legal limits for designated sites. The effects at this ecological site will be **negligible** and **not significant**.

Regionally, there is predicted to be an increase in emissions of PM_{10} in the assumed opening year and design year due to the Proposed Road Development. This is due to an increase in the total vehicle-kilometres travelled as a result of the Proposed Road Development. Conversely there is predicted to be a decrease in emissions of NO_X and CO_2 in the assumed opening year and design year due to the Proposed Road Development due to the effect of relieving congestion.

In conclusion overall, the Proposed Road Development will **not be significant** and considered **neutral** with respect to air quality.

11 Climate

This chapter presents the findings of an assessment of the likely significant effects on the climate as a result of the Proposed Road Development, and also considers the resilience of the Proposed Road Development to the physical impacts of climate change.

Lifecycle Greenhouse Gas Impact Assessment

The lifecycle Greenhouse Gas impact assessment assesses the impact of the greenhouse gas emissions arising as a result of the Proposed Road Development on the global climate. This includes direct greenhouse gas emissions arising from activities within the Proposed Road Development site boundary and indirect emissions from activities outside the site boundary (for example, the transportation of materials to site and embodied carbon within construction materials).

The global climate has been identified as the receptor for the purposes of the greenhouse gas emissions assessment. However, to enable the significance of the estimated greenhouse gas emissions arising from the Proposed Road Development to be evaluated, Ireland's carbon reduction targets have been used as a proxy of the level of effect on the global climate. Greenhouse gas emissions have also been contextualised against the first three carbon budgets, as developed by the Climate Change Advisory Council.

As the Greenhouse Gas emissions associated with the Proposed Road Development are not considered to have a material impact on Ireland's ability to meet its carbon reduction targets, the effect from greenhouse gas emissions during the construction and operation of the Proposed Road Development have been found to be minor (low significance). As the impact, and therefore the associated effect, is not considered to be major and of high significance, the mitigation measures detailed in Environmental Impact Assessment Report Volume I – Chapter 11 Climate are considered to be adequate.

Climate Change Resilience Review

The climate change resilience review considers the resilience of the Proposed Road Development to projected climate change impacts. The receptor for the climate change resilience review is the Proposed Road Development including workers, users and associated infrastructure.

Future climate change impacts considered include:

- Increased year-round average temperatures;
- Increased winter rainfall;
- Decreased summer rainfall; and
- Increased severity of extreme weather events (e.g. storms).

The climate change resilience measures detailed in Environmental Impact Assessment Report Volume 02 – Chapter 11 Climate are considered to adequately mitigate the effects of the projected climate change impacts. Therefore, no residual effects have been identified in relation to climate change resilience.

12 Noise and Vibration

AWN Consulting Ltd were commissioned to investigate the potential noise impacts associated with the Proposed Road Development. The potential impacts and the outcome of the assessment are summarised below.

A baseline noise survey was undertaken to measure existing traffic noise levels at the closest properties within the study area. A total of eight locations were surveyed: two unattended and six attended. The results of the baseline survey confirm that properties along the existing road network experience traffic noise levels above 60 dB L_{den}. At properties located along the alignment of the Proposed Road Development, ambient noise levels are below 60 dB L_{den} and are influenced by traffic along surrounding roads, local traffic movements and environmental sources (bird song, foliage rustle etc.).

To determine the potential noise impact of the Proposed Road Development, a 3D noise model of the existing adjacent road network and the Proposed Road Development was developed for the future traffic years of 2023 and 2039. Road traffic noise levels were predicted at 37 locations within the study area using the projected traffic flows for the two assessment years. It was determined that mitigation will be required to reduce traffic noise levels at properties at the eastern end of the Proposed Road Development and at properties immediately towards the middle of the development.

Indicative calculations have been made to estimate the range of likely noise levels during the construction phase of the project. The application of noise limits, controlled hours of operation, along with implementation of appropriate noise control measures, have indicated that the construction noise impact will be **short-term moderate to major** impact. Therefore, it is considered that the likely residual effects on the noise environment will be **negative**, **moderate to significant**, **local**, and **short-term**.

During the operational phase noise mitigation in the form of a low-noise road surface has been proposed and modelled to reduce traffic noise levels to below the Transport Infrastructure Ireland design goal of 60 dB L_{den}. With the proposed measured in place, calculated noise levels will be reduced for both assessment years to within the design goal at the relevant assessment locations. The assessment has determined that once operational, the noise impact associated with the Proposed Road Development will result in varying degrees of impact, from negligible to major in the long term. A number of locations will experience a positive noise impact as the Proposed Road Development is at a greater distance than the existing road.

Taking into account the residual reduction in predicted noise levels at 32 of the 37 locations assessed and the magnitude of change (negligible to minor in the long-term) in noise levels predicted at the 5 locations which are predicted to experience an increase in noise levels, it is considered that the likely effects on the noise environment will be **negative**, of **slight significance**, **local**, and **long-term**.

13 Landscape and Visual

The objective of the Landscape and Visual Impact Assessment process is to identify and evaluate the potentially significant effects on the landscape character and associated views arising from the Proposed Road Development. The assessment will identify the residual effects likely to arise from the finalised design considering mitigation measures and the change over time.

The Landscape and Visual chapter describes the effects of the Proposed Road Development along the entirety of the route and has identified seven key viewpoints to provide photographic records, three of which have been developed as photomontages. Including views from the listed Galway County Development (2015-2021) Focal Point 26 at Knockmoy Abbey.

The majority but not all of the identified likely adverse landscape and visual effects will be able to be mitigated. The design of the Proposed Road Development has incorporated a new viewing area for the abbey for the benefit of users and in particular for the benefit of the local community. While the existing N63 road has been retained for access, and a new roundabout is introduced to the periphery of Abbeyknockmoy.

The Proposed Road Development takes a more northerly route than the existing road and crosses the Abbert River on an embankment and bridge. The raised road embankments create the greatest landscape effects and are the most difficult feature to mitigate. Mitigation proposals have avoided planting woodland along the entire road corridor as the resultant tree belt will further effect the landscape character. Instead clusters of trees are proposed to break up the linear form of the road and integrate the roadside boundaries with the existing hedgerows and riverbanks.

Proposed planting will mitigate the majority but not all of the likely adverse visual effects as follows.

Viewpoint 1 – View from Knockmoy Abbey

Proposed mitigation includes hedgerow planting of the embankments and clusters of trees becoming denser at the roundabout. The mitigation will not entirely screen the Proposed Road Development or camouflage the embankments; it will substantially reduce the visual effect to **slight** and **adverse**.

Viewpoint 2 – View from the periphery of Abbeyknockmoy Village

The Proposed Road Development includes the design of a viewing area of the Abbey from the western end of the new road adjacent to Abbeyknockmoy village. In order to gain the most benefit of this view, considerable screen planting has been proposed along the roadside boundary of the roundabout, along with clusters of tree planting at the convergence of the new road with the old road. Thus, allowing views to the abbey to be framed by tree planting and limiting the visibility of the new road. It is considered on establishment of the planting; the visual effect will be reduced from Moderate and Adverse to **slight** and **adverse**.

Viewpoint 3 – View from the existing N63 looking northwest toward proposed bridge crossing

On establishment of the proposed planting, tree clusters will break up the continuity of the road and hedges will screen the road surface and vehicular movement. The majority of viewers will experience residual **slight to moderate and adverse** visual effects. The visual effect from the nearest residence while partially screened, will remain as **significant** and **adverse**.

Viewpoint 4 – View from Abbeyknockmoy Community Centre

On maturity of the proposed planting, it is predicted the Proposed Road Development as viewed from the Community Centre and School will become largely integrated with the tree-lined riverbanks in the foreground of the view, resulting in only a **slight** and **adverse** residual effect.

Viewpoint 5 – View from Existing Abbert River Bridge

On maturity of the planting, the Proposed Road Development and associated embankments will be partially visible, but the roadside planting will be integrated with field boundaries giving the road a permanent and acceptable setting in the landscape resulting in only **slight** and **adverse** visual effect.

Viewpoint 6 – View from Local Road (L6159)

Over time, the planting will largely screen views from the retained sections of the L6159, resulting in only slight and adverse effects for vehicle users. However, the views of the new road from the residence due north will not be entirely screened; planting will break up the linear form of the road and screen the vehicles on the road, the road embankments and bridge crossing will be visible resulting in a residual **significant** and **adverse** visual effect.

Viewpoint 7 – View from the eastern extents of the Proposed Road Development

On maturity of the proposed planting, the southern roadside boundary will effectively replace the removed vegetation and result in a **slight but neutral** effect.

14 Cultural Heritage

The Cultural Heritage Chapter provides a statement of the potential impacts and residual effects upon the identified archaeological and architectural heritage resource resulting from the Proposed Road Development.

Eight archaeological and architectural heritage assets on which the Proposed Road Development has the potential to impact were identified. 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 an adverse residual effect upon the following assets:

- Previously unrecorded archaeological assets within the Proposed Road Development site;
- National Monument - Knockmoy Abbey (National Monument Number 166);
- The Planned Landscape Newtown (National Inventory of Architectural Heritage Reference 5365);
- Previously unrecorded archaeological assets within the former islands (CH1) noted from historic cartographic evidence;
- The buildings (CH2) noted from historic cartographic evidence; and
- The former mill pond (CH3) associated with the planned landscape Newtown (National Inventory of Architectural Heritage Reference 5365).

The National Monument, Knockmoy Abbey (National Monument No. 166), is an asset of national importance. This was identified as experiencing a significant effect from the Proposed Road Development during construction and operation. This effect will not change so the overall residual significance will not change from significant. The residual significance of effect will be **significant**, **long-term** and **adverse**.

Newtown Planned landscape (National Inventory of Architectural Heritage Reference 5365) is an asset of regional importance. This was identified as experiencing a moderate effect from the Proposed Road Development during construction. This effect will not change so the overall residual significance will not change from moderate. The residual effect will be **moderate**, **long-term** and **adverse**.

CH1 Former islands identified through historic cartographic evidence may contain previously unrecorded archaeological assets. These will experience a very high effect from the Proposed Road Development. Mitigation has been proposed in the form of archaeological testing and excavation, if appropriate, to determine the presence/absence of such features and to preserve them by record. The residual effect is therefore assessed to be **moderate**, **negative** and **long-term**.

CH2 Buildings identified through historic cartographic evidence will experience a very high effect from the Proposed Road Development. Mitigation has been proposed in the form of archaeological testing and excavation, if appropriate, to determine the presence/absence of such features and to preserve them by record. The residual effect is therefore assessed to be **moderate**, **negative** and **long-term**.

CH3 Former mill pond associated with the Newtown Planned landscape (National Inventory of Architectural Heritage Reference Ref. 5365) will experience a very high effect from the Proposed Road Development. Mitigation has been proposed in the form of archaeological testing and excavation, if appropriate, to determine the presence/absence of such features and to preserve them by record. The residual effect is therefore assessed to be **moderate**, **negative** and **long-term**.

Potential currently unrecorded archaeological deposits which are likely to be present within the Proposed Road Development site will experience a very high effect from the Proposed Road Development. Mitigation has been proposed in the form of archaeological testing and excavation, if appropriate, to determine the presence/absence of such features and to preserve them by record. The residual effect is therefore assessed to be **moderate**, **adverse** and **long-term**.

The Protected Structures Liss Bridge (Record of Protected Structure Number 3925), Rose Villa (Record of Protected Structure Number 3923), St. Bernard's Church (Record of Protected Structure Number 83) are assets of regional importance. These were identified as experiencing a low effect from the Proposed Road Development, resulting in a slight effect. This effect has been assessed as positive and therefore mitigation is not applicable. The residual effect is therefore assessed to be **slight**, **long-term** and **beneficial.**

The Protected Structures *Leacht Cuimhne* (Record of Protected Structure Number 3921) and *Leacht Cuimhne* (Record of Protected Structure Number 3918) are assets of regional importance. These were identified as experiencing a low effect from the Proposed Road Development, resulting in a slight effect. This effect has been assessed as neutral and therefore mitigation is not applicable. The residual effect is therefore assessed to be **slight**, **long-term** and **neutral**.

15 Major Accidents and Disasters

The Major Accidents and Disaster chapter presents an assessment of the potential major accidents and disasters associated with the Proposed Road Development (both the potential of the project to cause major accidents and disasters, and the vulnerability of the project to potential major accidents and disasters).

This prescribed environmental factor is outlined within the revised Environmental Impact Assessment 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*".

The assessment of the major accidents and disasters considers all factors defined in the Environmental Impact Assessment 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 assessment aims to identify if major accidents and/or disasters relevant to the Proposed Road Development could result in likely significant environmental effects and if so, what these will be and what mitigation measures are/should be in place to prevent or mitigate the effects of such events on the environment.

The major accidents and disasters assessment was carried out in two stages:

- Stage 1: Hazard Identification and Baseline Establishment; and
- Stage 2: Hazard Classification: Likelihood and Consequence.

An analysis of embedded mitigation measures (i.e. those that have been incorporated into the design of the Proposed Road Development) and any proposed additional environmental mitigation measures identified throughout the Environmental Impact Assessment Report were considered when estimating the likelihood and consequence of the identified hazards occurring. This was to identify if these measures will be enough to manage the major accident and disasters risks too as low as reasonably practicable. Where this is not the case, additional mitigation measures would be required to reduce major accident and disasters risks to reach an acceptable level.

The assessment identified the potential major accidents and disasters pertinent to the Proposed Road Development including major accidents occurring during the construction phase, such as an adverse impact on a previously undiscovered heritage site. Following construction, potential major accidents and disasters include flooding, major fires caused by a road traffic accident and bridge failure due to collision impacts.

However, a detailed assessment of these potential major accidents and disasters has concluded that the mitigation measures proposed throughout the Environmental Impact Assessment Report, in addition to the design features of the Proposed Road Development and compliance with legislation and industry best practice guidance will be sufficient to reduce risks to a level considered to be as low as reasonably practicable; therefore, no further detailed assessment was deemed necessary.

16 Material Assets

The Materials Assets chapter presents an assessment of the potential impacts of the Proposed Road Development on material assets. For each material asset assessed, this chapter defines the study area; the methodology used for developing the baseline and impact assessment; provides a description of the baseline environment; and presents the findings of the impact assessment.

The chapter provides an assessment of impacts on:

- Utilities including:
  - Electricity Network;
  - Telecommunications (including phone and broadband);
  - Gas Distribution Networks;
  - Water supply networks; and
  - Drainage Network (including stormwater and sewerage effluent).
- Infrastructure: Land Use and Property (non-agricultural); and
- Waste.

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 examined. Consultation with several relevant bodies, including Irish Water, Gas Networks Ireland and the Electricity Supply Board were undertaken during the preliminary design phase in order to identify the location of existing services in the area.

During the construction phase, a limited amount of waste materials will be generated. The significance of effect from the generation and management of solid waste streams arising from the Proposed Road Development is therefore considered to be **imperceptible** as no significant reduction or alteration in the capacity of waste infrastructure at a national scale is anticipated. There will be no operational phase waste impacts from the Proposed Road Development.

During the construction phase of the Proposed Road Development, some realignment, or replacement of utilities will be required in conjunction with or to accommodate the proposed works. It has been identified that the residual effects from diversion works during the construction phase on the existing utilities networks will likely reduce to imperceptible with the implementation of mitigation measures. The effects from additional demands on existing utilities network will remain **imperceptible** during the construction phase as no mitigation is possible to reduce the effect from the additional demands on the existing network supply. The effects on the existing electricity network will remain **imperceptible** during the operational phase as no mitigation is possible to reduce the effect from the additional demands on the existing electricity network.

The Proposed Road Development will require the permanent (2.94 hectare) and temporary acquisition of land (0.074 hectare of residential land) to facilitate the construction of the road. The effects from the temporary acquisition of residential land will remain **temporary**, **negative**, **low** and **slight** as no mitigation is possible to reduce the effects due to the potential access restrictions. The effects from the temporary acquisition of public road will remain **temporary**, **neutral**, **negligible** and **imperceptible** as the viability of the land use will not be compromised. Therefore, no mitigation measures will be required.

With regards to the permanent acquisition of public road, as the lands are not associated with the property and no access restrictions are anticipated, effects on the existing land use will likely remain **permanent, neutral, negligible** and **imperceptible** as the viability of future land use will not be compromised. Therefore, no mitigation measures will be required.

With the implementation of embedded mitigation measures, residual effects from the partial acquisition of residential lands impact will remain **permanent**, **negative**, **low** and **slight** as no additional mitigation is possible to reduce the effect from the permanent land take.

17 Material Assets – Agriculture

The Material Assets - Agriculture chapter assesses effects on Agriculture within the study area. The agricultural study area is defined as the combined area of the 32 land parcels directly affected by the footprint of the Proposed Road Development and its extents from the townlands of Newtown and Moyne in the east of the study area to Culliagh North and Culliagh South in the west.

To assess the impacts on agriculture, observations were made during a windshield survey in March 2021 and various sources of information were referred to such as Central Statistics data for local electoral divisions, information from Teagasc in relation to soil data and grass crop yields, aerial photography and land registry mapping from the Property Registration Authority of Ireland open database.

The majority of land parcels along the Proposed Road Development are medium sensitivity beef and or sheep and grass cropping farms. Within the study area, one of the 32 plots (Ref No 127) is being farmed by a dairy farmer. Central Statistics Office data shows that the average size of farms in the local area is approximately 21.1 hectares which is smaller than the national average of 32.7 hectares.

The effects on agricultural land parcels are assessed by considering the type of land parcel affected, assessing the extent of land taken from each land parcel and how a land parcel may be affected if severed by the Proposed Road Development, assessing the potential disturbance impacts due to construction and operation of the Proposed Road Development and assessing effects on access to the land parcel and other potential adverse effects. Based on these assessments, a residual effect is arrived at for each affected land parcel. These residual effects are summarised in Appendix A17-1; Volume 04 for each land parcel.

Mitigation measures are presented which will minimise the effects from the Proposed Road Development. For example:

- Suitable stock-proof boundary fencing will be erected;
- A key contact person will be appointed to liaise with landowners;
- Access to affected land parcels will be maintained as will water and power supplies;
- Measures will be employed to minimise dust emissions and prevent contamination of water supplies;
- The Proposed Road Development will be designed to mitigate potential effects on land drainage and access to retained lands will be provided for; and
- Where existing water and electricity supplies to fields or farm yards are severed, the supply would be made available.

The Proposed Road Development will acquire approximately 12.3 hectares of land from the 29 affected land parcels and result in severance of 11 land parcels. Following mitigation, 57% of land parcels (18no.) are predicted to have **not significant** and **slight adverse** effects, 34% of land parcels (11no.) are predicted to have **moderate adverse** effects and 9% of land parcels (3no.) are predicted to have **significant adverse** effects. The regional effects on agriculture within County Galway will **not be significant**, even when cumulative effects of other road projects and other developments requiring agricultural land is considered.

18 Interaction of the Forgoing

The interactions of the forgoing chapter highlights the potential interaction of impacts described within the main technical chapters of the Environmental Impact Assessment Report. As a requirement of the EIA Directive and considering best practice guidelines and advice notes, the inter-relationships between factors must be identified and assessed throughout the Environmental Impact Assessment Report. In accordance with this and to align with the environmental aspects assessed in this Environmental Impact Assessment Report, a summary of the interactions (or inter-relationship) of impacts identified from the Proposed Road Development between the following environmental aspects are outlined in this chapter:

- Traffic Analysis;
- Population and Human Health;
- Biodiversity;
- Land and Soil;
- Water;
- Air Quality;
- Climate;
- Noise and Vibration;
- Landscape and Visual;
- Cultural Heritage;
- Major Accidents and Disasters;
- Material Assets – Non-Agriculture; and
- Material Assets - Agriculture.

All potential impacts and associated effects arising from the interactions were identified early in the design process and in preparation of the Environmental Impact Assessment Report and were therefore addressed in the design of the Proposed Road Development, in addition to the individual impact assessment studies. As a result, many of these potential impacts were either avoided through design measures or have been reduced as low as practicably possible through specific mitigation measures where possible, as outlined within respective chapters of this Environmental Impact Assessment Report. No additional mitigation is proposed.

19 Schedule of Mitigation Measures

The Environmental Impact Assessment Report concludes with a mitigation and monitoring chapter. This is a compendium of the mitigation and monitoring commitments developed through the course of the Environmental Impact Assessment process. The mitigation and monitoring commitments are also integrated into the outline Construction and Environmental Management Plan produced for the Proposed Road Development. The outline Construction and Environmental Management Plan will be updated by the appointed Contractor and implementation during the construction works.