

# **CLONASLEE FLOOD RELIEF SCHEME**

Volume I - Non-Technical Summary



Document status					
Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
S5	Issue for Planning	RPS	КМ	BC	27.02.2025

Approval for issue	
BC	February 2025

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# ACRONYMS

Term	Meaning		
AADT	Annual Average Daily Traffic		
ACA	Architectural Conservation Area		
AEP	Annual Exceedance Probability		
BPM	Best Practice Mitigation		
CEMP	Construction Environment Management Plan		
CFRAM	Catchment Flood Risk Assessment and Management		
CSO	Central Statistics Office		
CTMP	Construction Traffic Management Plan		
DMP	Dust Management Plan		
ECoW	Ecological Clerk of Works		
ED	Electoral Divisions		
EIA	Environment Impact Assessment		
EIAR	Environmental Impact Assessment Report		
EU	European Union		
FRS	Flood Relief Scheme		
GHA	Geological Heritage Area		
GHG	Greenhouse Gas		
HGV	Heavy Goods Vehicles		
IAPS	Invasive Alien Plan		
IEF	Important Ecological Features		
IGH	Irish Geological Heritage		
LCC	Laois County Council		
LV	Low Voltage		
MCA	Multi-Criteria Analysis		
MV	Medium Voltage		
NBDC	National Biodiversity Data Centre		
NHA	Natural Heritage Area		
NSL	Noise Sensitive Location		
NTS	Non-Technical Summary		
OHL	Overhead Line		
OPW	Office of Public Works		
PSA	Population Study Area		
PWS	Public Water Supply		
SAC	Special Areas of Conservation		
SAP	Small Area Population		
SPA	Special Protection Area		
SoP	Standard of Protection		
ТІІ	Transport Infrastructure Ireland		
ТТА	Traffic and Transportation Assessment		
UÉ	Uisce Éireann		
WFD	Water Framework Directive		
Zol	Zone of Influence		

# 1 INTRODUCTION

This document is a Non-Technical Summary (NTS) of the Environmental Impact Assessment Report (EIAR) and its purpose is to describe the proposed Clonaslee Flood Relief Scheme (FRS) (hereinafter referred to as the 'Proposed Scheme'). The NTS provides a summary in non-technical language of the likely significant effects identified, the mitigation and monitoring measures proposed, as well as any residual effects arising from the Proposed Scheme that have been identified during the Construction and Operational/Maintenance Phases to inform the planning consent process.

RPS has been appointed by Laois County Council (LCC), in partnership with the Office of Public Works (OPW), to identify, design and submit (for planning consent) an FRS that is technically, socially, environmentally, and economically acceptable. Detailed design and procurement of construction of the Proposed Scheme will follow should planning consent be granted.

### 1.1 Background and Need for the Proposed Development

Clonaslee Village has a history of fluvial flooding due to its location and proximity to the Clodiagh River, which traverses through the town. The main source of flooding in Clonaslee is the high-water levels in the Clodiagh River which originate from the Slieve Bloom Mountains. Clonaslee is located at the base of the Slieve Bloom Mountains where the topography changes from steep slopes to a flat terrain. High water levels in the Clodiagh River are quick to occur and quick to dissipate. A flood event of note occurred in November 2017, when Chapel Street and the adjacent properties were subject to flooding. This coincided with a breach in the existing wall along the river. Anecdotal evidence indicates water seeps through this wall and bubbles up through the road along Chapel Street in times of high-water levels.

Current flood modelling undertaken by RPS predicts that flooding has the potential to affect 72 residential properties and 2 commercial properties if the Proposed Scheme was not implemented.

Based on Clonaslee's current flooding susceptibility in conjunction with the expected increase in future flooding, there is a strong need to develop an FRS to protect the residents of Clonaslee from serious flooding events and to preserve Clonaslee as an attractive village to reside and visit.

#### **1.2** Purpose of the Environmental Impact Assessment

The requirement for an Environmental Impact Assessment (EIA) for a project was initially set out in European Union (EU) Directive (85/337/EEC) as amended by Directive 97/11/EC, 2003/35/EC and 2009/31/EC on the assessment of the effects of certain public and private projects on the environment. The amendments were codified by Directive 2011/92/EU of the European Parliament and the Council on the assessment of the effects of certain public and private projects on the environment (and as amended in turn by Directive 2014/52/EU). The Directives as amended being herein referred to as the 'EIA Directive'.

The EIA Directive requires that certain developments must be assessed for likely significant effects before planning permission can be granted. An EIAR is required to be produced by the developer of a project under Articles 5(1) and 5(2), and with reference to Annex 1 and 2, of the EIA Directive and must contain the information specified in Annex IV. The EIAR requirements of the EIA Directive are transposed into Irish Law in the Planning and Development Regulations 2001 (as amended and substituted).

#### 1.3 EIA Guidance

The EIAR has been informed by the following relevant European and national EIA guidelines:

- Advice Note seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects, published by the Planning Inspectorate, an executive agency of the Ministry of Housing, Communities and Local Government of the United Kingdom (2019).
- Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (EC, 2017).
- Guidelines for Planning Authorities and An Bord Pleanála; on carrying out Environmental Impact Assessment, (DHPLG, 2018)

- Good Practice Guidance on Cumulative Effects Assessment in Strategic Environmental Assessment (EPA, 2020).
- Guidelines on information to be contained in the Environmental Impact Assessment Report (EPA, 2022).

Other relevant legislation and guidance has also been applied and is detailed in the relevant technical assessment chapters of this EIAR.

Potential effects from the Proposed Scheme are described in the EIAR using Guidelines on information to be contained in the Environmental Impact Assessment Report (EPA, 2022). Effects can result from direct, indirect, secondary, and cumulative effects on environmental conditions. Effects can be positive, neutral or negative. The significance of an effect is based on objective evidence and subjective concerns and may be described as **imperceptible**, **slight**, **moderate**, **significant**, **very significant** or **profound** impact. Significance depends on, among other considerations, the nature of the environmental effect, the timing and duration of an effect and the probability of the occurrence of an effect. The effects may be short-term, medium-term or long-term.

### 1.4 EIA Structure

The EIAR is divided into four volumes as listed below. **Table 1-1** details the chapters included within the EIAR and associated competent experts for each discipline.

- Volume I: NTS;
- Volume II: EIAR Main Body;
- Volume III: Technical Appendices; and
- Volume IV: Natura Impact Statement (NIS).

#### Table 1-1: EIAR Structure and Competent Expert

Chapter Number	Chapter	Competent Expert
1	Introduction	Paul Chadwick
2	Planning & Policy	Michael Higgins
3	Consultation	Paul Chadwick
4	Assessment of Alternatives	Paul Chadwick
5	Project Description	Barry Cahalin
6	Traffic and Transportation	Rowan O'Callaghan
7	Population	Michael Higgins
8	Human Health	Ryngan Pyper
9	Biodiversity	Robert Rowlands
10	Land, Soil, Geology and Hydrogeology	Noreta Daly
11	Water	Paul Chadwick
12	Air Quality	Paul Chadwick
13	Climate	Paul Chadwick
14	Noise & Vibration	John Mahon
15	Material Assets: Waste/ Utilities	Paul Chadwick
16	Archaeology and Cultural Heritage	Joanne Hughes
17	Landscape & Visual	Eimear O'Connor
18	Interactions & Cumulative Effects	Paul Chadwick
19	Risks of Major Accidents or Disasters	Paul Chadwick
20	Schedule of Environmental Commitments	Paul Chadwick

# 2 PLANNING AND POLICY

### 2.1 International Policy

The principal International polices that underpin the implementation of the Proposed Scheme are contained within the following plans and programme of the United Nations Sustainable Development Goals.

#### 2.2 European Policy Context

The principal European polices that underpin the implementation of the Proposed Scheme are contained within the following plans and programmes:

- EU Directive on the Assessment and Management of Flood Risks (2007/60/EC)
- EU Water Framework Directive 2000/60/EC
- EU Strategy on Adaption to Climate Change 2021

#### 2.3 National Policy Context

The principal national plans and polices that underpin the implementation of the Proposed Scheme are contained within the following plans and programmes:

- National Planning Framework 2040
- Draft National Planning Framework July 2024
- National Development Plan 2021-2030
- Climate Action Plan 2024
- Ireland's 4th National Biodiversity Action Plan 2023–2030
- Biodiversity Action Strategy 2022-2026
- Climate Change Sectoral Adaptation Plan for Flood Risk Management 2019-2024
- National Flood Policy 2004
- The Planning System and Flood Risk Management 2009
- National Catchment-based Flood Risk Assessment and Management Programme
- Water Action Plan 2024
- National Adaptation Framework 2024

## 2.4 Regional Policy Context

The principal regional policy that underpins the implementation of the Proposed Scheme is contained within the following strategy:

- Regional Spatial and Economic Strategy (RSES) 2019-2031 for the Eastern and Midland Region
- Flood Risk Management Plan Shannon Upper & Lower River Basin (UOM25-26) 2018.

#### 2.5 Local Policy Context

The principal local polices that underpin the implementation of the Proposed Scheme are contained within the following plans and programmes:

- Laois County Development Plan 2021-2027
  - County Laois Strategic Flood Risk Assessment
- Laois Heritage and Biodiversity Strategy 2021-2026

- Laois County Council's Climate Change Adaptation Strategy 2019-2024
- Laois County Council Climate Action Plan 2024-2029
- Flood Risk Management Plan Shannon Upper & Lower River Basin (UOM25-26) 2018

European, national, regional and local planning policies identify the increased flood risk arising in part from climate change. There is support at all levels for the appropriate provision of flood relief measures to address flooding risk.

# 3 CONSULTATION

Consultation is an essential part of the decision-making process for the EIA. This includes statutory consultation and the early involvement of the public and other stakeholders to ensure that the views of the interested parties are taken into consideration throughout the preparation of the EIAR. Stakeholder consultation has been a key feature to inform the design of the Proposed Scheme.

The main consultations carried out over the course of the project were undertaken at key stages in the design process:

#### Public Consultation

Three public consultation days were completed between February 2021 and December 2023. These consultations aligned with key stages in the scheme development:

These PIDs aligned with three key stages of the project development:

- 1. Information gathering at the project outset;
- 2. Discussion of the emerging options; and
- 3. Presentation of the preferred option.

Public Consultation Day 1 followed an online format running from February 8th to March 26th, 2021 due to Covid 19 restrictions at the time. To aid the consultation process a stand-alone website was set up at (https://consult.laois.ie.). The public were able to make submissions online, complete and submit online questionnaires, view the event's brochure and maps showcased at the events and obtain general information about the purposes of the Proposed Scheme throughout the consultation process.

Public Consultation Day 2 and 3 were held on the 22nd of November 2022 and the 12<sup>th</sup> of December 2023 in the Clonaslee Heritage Centre. Feedback from the public was considered at all stages during the design and resulted in the inclusion of measures to prevent blockages at the Clonalsee Bridge to give one key example.

#### **Stakeholder Consultation and Meetings**

Four stakeholder consultations were undertaken between February 2021 and December 2023, see below. A number of key stakeholders were identified and contacted via formal email.

- February 2021: Public Information Day 1 invites and materials were issued to the Stakeholder list;
- November 2022: Request input on the existing environmental constraints identified and inform stakeholders of the Second Public Information Day.
- December-2023: Provide scoping report for review and allow stakeholders to provide comment and insights into the design stage. This aligned with the third Public Information Day;
- May 2024: Reissue of scoping report requesting feedback from stakeholders who had not yet responded.

Throughout the course of the project design phase, meetings were held with the following stakeholders through a mix of online and onsite engagements to provide input and feedback on the design, construction programme, and proposed mitigation and monitoring measures:

- IFI
- National Parks and Wildlife Service,
- National Monuments Service,
- Coillte CGA,
- Uisce Éireann,
- Offaly County Council.

#### **Utilities Consultations**

Consultation with various telecommunications operators with assets within the area was undertaken in February and March of 2024. Correspondences with relevant operators are detailed **Chapter 15 Material Assets: Waste and Utilities**.

#### Landowner Liaison

A search of the Property Registration Authority of Ireland website was undertaken to determine the degree of private landownership encroachment on a temporary basis e.g. construction phase or permanent basis i.e. through the implementation of flood defence infrastructure.

The landowners have been invited to public information days. They have also been contacted and met with during site visits, to discuss the scheme proposals and co-ordinate land access for surveys etc.

# 4 CONSIDERATION OF ALTERNATIVES

From project inception, all reasonable alternatives were considered. Non-viable alternatives were rejected at an early phase. The Proposed Scheme is a culmination of an iterative design process that emphasised constraints and consultation at pivotal points of the process.

#### 4.1.1 Do Nothing

The "Do Nothing" scenario involves maintaining the status quo without taking any proactive steps to address the existing and future flood risks associated with the Clodiagh River. Currently, Clonaslee Village does not have any specifically designed flood defence structure to protect from flooding. The existing stone wall along Chapel Street delineates the riverbank from the vehicular road and does provide an informal degree of protection during flood events but it is not structurally designed to provide reliable protection. As such, the "Do Nothing" scenario does not meet the required level of flood protection and would permanently maintain the risk of flooding and associated damage to properties and infrastructure. This risk may increase in the future when considering known climate change effects and projected increases in pluvial and fluvial flooding. Therefore, the "Do Nothing" scenario is not a viable alternative.

#### 4.1.2 Do Minimum

The "Do Minimum" scenario consists of the implementation remediation measures in the Village such as debris and sediment removal from under the Clodiagh Bridge and from the river bed, repointing of the existing Chapel St. wall and establish flood barriers at individual properties. The "Do Minimum" scenario would not provide the required standard of flood protection to the village. Therefore, the "Do Minimum" scenario is not a viable alternative

#### 4.1.3 Iterative Design Process

An Option Development Process was undertaken to identify engineering options for the Proposed Scheme that meet the required Standard or Protection (SoP). The process undertaken aimed at identifying options that are economically viable and environmentally acceptable while also being satisfactory to the community and other stakeholders

An alternative option considered was to relocate residents/properties out of the floodplain. This option was not taken forward due to the quantity of properties at flood risk and the social and economic impact moving a considerable number of properties out of Chapel Street would have on the Village. Therefore, this option was not investigated further.

The option of creating upstream storage via Natural Water Retention Measures was considered on the Clodiagh River. Using the hydraulic model developed for the Proposed Scheme, a number of upstream storage locations were trialled by modelling dams across the river valley; however, the steep nature of the catchment rendered these locations unsuitable for water storage. In order to deliver a benefit to the village of Clonaslee, the modelled dams would have to be unfeasibly high. Therefore, this design option was not investigated further.

The effect of dredging the Clodiagh River was analysed. Dredging did not deliver the required flood risk reduction and was not deemed technically feasible. Furthermore, this option has a greater environmental impact and a high future maintenance requirement. Therefore, this design option was not investigated further.

The benefit of removing existing weirs upstream of the village, including the historic weir at Brittas Wood was assessed. To do this they were removed from the hydraulic model and the riverbed was smoothed out at these locations. The removal of the weirs provided no benefit to the modelled flood risk area. This design option was not investigated further.

Another option considered was to provide a preferential flow path for flood water to pass the flood risk area, thereby diverting water away from properties at risk. It is sometimes referred to as "Room for the River" approach. There is a viable candidate land in Clonaslee, where earth excavation could allow increased water flows to cut the corner of the river bend downstream of the Clonaslee bridge. This design was taken forward to optioneering as a technically viable proposal, but ultimately was rules out due to environmental impacts of riverbank excavation.

#### 4.1.4 Preferred Option

Hard defences such as flood walls or embankments form a barrier between the river and the floodplain, effectively reducing the size of the river's floodplain where receptors are at risk. Replacement or bolstering of the existing Chapel Street wall was an immediately evident flood defence option, and proved to be the most advantageous option following comparison with all others.

Anecdotal evidence received at public information days identified the need to manage debris upstream of the Clonaslee bridge in Brittas Wood. A permanent in-stream debris trap upstream of the Clonaslee Bridge is included in the proposed scheme.

The final scheme also includes the reinforcement of an existing embankment to the north of the village, and a low flood wall to prevent an increase in flood risk to the Integrated Constructed Wetlands Wastewater Treatment facility.

# 5 **PROJECT DESCRIPTION**

The Proposed Scheme includes flood relief measures in Clonaslee along different sections of the River Clodiagh but no other waterbodies. A summary of the Proposed Scheme is provided in **Table 5-1**. For ease of explanation and future project co-ordination, the scheme has been divided into three discrete works areas.

 Table 5-1 Summary of Proposed Scheme

Location	Defence Elements
Area 1: Brittas Wood	<ul><li>Embankment</li><li>Debris trap with access slipway</li><li>Culvert remediation</li></ul>
Area 2: Chapel Street	Flood wall
Area 3: Tullamore Rd and Integrated Constructed Wetland (ICW)	<ul><li>Flood wall</li><li>Embankment</li></ul>

### 5.1 Area 1 – Brittas Wood

Area 1 is located within Brittas Wood where a publicly accessible amenity trail owned and operated by Coillte runs alongside the river. The proposed works in Area 1 are designed to fulfil three crucial flood defence functions:

- 1. Catch fallen trees and other large debris that cause a blockage risk to the Clodiagh Bridge in Clonaslee village;
- 2. Ensure that increased water levels due to debris trap blockages will not create a flood risk; and
- 3. Facilitate ongoing maintenance and cleaning of an existing small stream crossing culvert (600 mm diameter) that crosses the forest trail.

As obstructions to flow will be introduced to the channel to create the debris trap, measures will be taken to ensure this does not lead to excessive scour or erosion on the adjacent banks. Soft engineering methods such as willow spiling will be used for bank erosion protection.

#### 5.1.1 Debris Trap

To capture debris, a coarse debris trap is required in the form of 'tree poles'. This is the only proposed instream work on the Scheme and requires careful water flow management to allow construction of the substantial foundation and the poles themselves. The key features of the debris trap are the following:

- A concrete base extending the full width of the Clodiagh River;
- Concrete poles cast into the base the concrete poles measure approx. 3 m height from the riverbed and will be 300 mm in diameter; and
- Willow spiling erosion protection on the adjacent riverbanks.

A slipway is required to allow for maintenance access to the debris trap. A locked gate and fence will be installed across the slipway which will be opened only to facilitate machine access to the debris trap during maintenance works.

#### 5.1.2 Embankment

It is proposed to construct a flood relief embankment on a portion of the amenity trail. The proposed embankment will prevent increased water levels due to debris trap blockages from creating a flood risk. The key features of the embankment are the following:

• It is a trapezoidal structure composed of non-porous clay material;

- To minimise disturbance to the woodland vegetation, its footprint is within the curtilage of the existing amenity pathway;
- It will be 135 m in length with a maximum height above existing ground level of 0.8 m, and a maximum width of 6 m;
- The crest of the embankment will be paved to allow traffic (from Coillte, Uisce Éireann and private Landowner) to drive on top of the embankment and amenity users to walk/cycle along the embankment.

#### 5.1.3 Culvert Remediation

A small stream arising from the Brittas Lake enters the River Clodiagh via a culvert (600mm in diameter and 6.5m in length) under the amenity trail. To facilitate maintenance into the future and to prevent vegetation encroaching on the culvert inlet, a headwall will be installed on the upstream side.

#### 5.2 Area 2 – Chapel Street

#### 5.2.1 Flood Defence Wall

The most prominent element of the Proposed Scheme is the works to the existing wall along Chapel Street in Clonaslee Village. This wall also extends into private property as it curves around the river bend. This wall acts as an informal flood defence, but its vulnerability is evident through records of past flood events in this location.

The Proposed Scheme builds onto the existing wall with a reinforced concrete 'secondary' wall. This will have the effect of widening the wall by approximately 0.5 m. This width includes an allowance for stone cladding to maintain the appearance of the wall. Remediation will be required on the existing wall, consisting of repointing the stonework. The main element of the wall work will be completed on the roadside of the existing wall.

#### 5.3 Area 3 – Tullamore Road and ICW

#### 5.3.1 Embankment

The proposed embankment runs parallel to the Clodiagh River and Tullamore Road, west of existing embankment. It is positioned to avoid the existing mature treeline along the riverbank. The key features of the embankment are:

- The embankment will be offset from an existing embankment and treeline on the left bank of the Clodiagh River and will provide a secondary line of defence;
- It will be 130 m in length with a maximum width of 7.5 m;
- Its core will consist of non-porous clay material and extend 1m below ground level to prevent a flow path underneath the embankment;
- The embankment will be topsoil and grass seeded and fenced off on its western side to prevent livestock erosion.

#### 5.3.2 Flood Wall

The wall will be constructed within the Uisce Éireann ICW grounds. Key features of the wall are as follows:

- A reinforced concrete wall, 70 m in length and approximately 0.6 m in height;
- The proposed wall extends below ground by 0.6 m to prevent a flow path underneath the wall;
- The proposed wall is L-shaped, is reinforced with concrete and has a 1 m wide footing;
- The proposed wall has a shuttered concrete finish.

#### 5.3.3 Supporting Temporary Infrastructure and Site Enabling Works

A temporary construction compound will be located north of Brittas Wood trail head entrance to facilitate Area 1 and in the field immediately north of Area 2. The temporary compounds will provide welfare units, parking, set down of deliveries and storage of imported embankment material. The existing entrances to the compound fields will be widened to facilitate safe access and egress of delivery vehicles. The fields and entrances will be reinstated to their original form post construction.

#### 5.3.3.1 Vegetation Removal and Replanting

Tree felling will be required within and around the construction footprint in Area 1, 2 and 3. The felling activities required as part of the Proposed Scheme will be the subject of a Limited Felling Licence (LFL) application to the Forest Service in accordance with the Forestry Act 2014 and the Forestry Regulations 2017 (SI 191/2017).

It is proposed to replant by hand all trees that will be removed for these works on a like for like basis. The manner and location of this replanting will be undertaken in agreement with Coillte, Laois County Council and third party landowners.

#### 5.3.3.2 Utilities Diversion and Protection

The protection of Uisce Éireann (UÉ) infrastructure in Area 1 which is associated with the Clonalsee Water Treatment plant (Area 3) is an important objective for the design, both during and the Construction and Operational Phase of the Proposed Scheme. The location and depth of pipelines will be confirmed by slit trenching prior to detailed design. A 'Build over Agreement' with UÉ will be in place to ensure all parties are satisfied that the assets are protected in-situ and allowances and contingencies are in place for potential future upgrades.

In preparation for construction in Area 2, the area of wall construction along the roadside will have to be cleared of all utilities before commencing excavations for the wall foundations. Interactions with utilities will be considered on an individual basis and each conflict location will be discussed with the relevant utility provider. Utility diversions will be designed and agreed with the ESB and will ensure only a minor and temporary interruption to service for the residents. Shut-off events will be reported to relevant affected residents in advance of diversion works and restored as soon as possible.

#### 5.4 Construction Programme and Phasing

The construction activities are planned to take place during a 24-month construction campaign. The specific schedule for activities within each area of the Proposed Scheme will be finalised on appointment of a Contractor. Preference will be given to working during the summertime to avoid water high river and groundwater levels. There will be restrictions on the instream works as a result of fish spawning season.

#### 5.5 **Construction Lighting**

During construction, lighting will be required during hours of darkness. Low-energy LED options will be utilised where feasible. Emergency back-up lighting will be provided.

Security lighting will be required at night-time in designated areas such as the temporary construction compounds. Directional lighting will be used to ensure minimal disturbance to bats by avoiding light spill onto boundary features (hedgerows, scrub, and trees) and by avoiding uplighting.

#### 5.6 **Construction Hours**

It is proposed that standard construction working hours will apply as follows: Monday to Friday: 07:00 to 19:00; Saturdays: 07:00 to 13:00; and no work on Sundays and Bank Holidays. Deviation from these times will only be allowed where prior written approval has been received from the local authority.

#### 5.7 Traffic Management

Indicative daily movements for one construction team operating on site are as follows:

- Six vehicles (cars/vans) will arrive on site in the morning (07:00 08:00) and depart in the evening (18:00 19:00), Mon to Friday; add times for Saturday.
- An average of 16 HV will arrive and depart the site throughout the typical working day (07:00 19:00) with a maximum of 32 HV movements per day.

A detailed Construction Traffic Management Plan will be followed for the duration of the Construction.

#### 5.7.1 Site Access Points

Access to the construction site in Area 1 will be via the existing amenity trail head entrance. This trail head entrance also includes a public amenity carparking space. Short term diversions of the existing amenity trail will be in place during the Construction Phase.

Access to the wall section on private property in Area 2 will be via an adjacent field which will also be used as a supporting temporary construction compound.

Access to construction sites in Area 3 will be via an existing entrance to the field. Enabling works in the form of entrance widening will require tree removal and vegetation removal.

Access to all construction compound A and B will be via existing gate entrances. Enabling works in the form of entrance widening and vegetation removal will be required. All entrances will be reinstated to preconstruction form in agreement with landowners.

#### 5.8 Waste Management

The Contractor will be responsible for a Waste Management Plan (WMP), which will outline the best practice procedures during the Construction Phases of the Proposed Scheme. The WMP will detail the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage of construction of the Proposed Scheme. Disposal of waste will be seen as a last resort.

#### 5.9 Operation and Maintenance Phase

It is expected that the operation and maintenance activities required will be undertaken by existing Laois County Council maintenance personnel. An Operation and Maintenance Plan will be prepared for the Proposed Scheme. **Table 5-2** provides a description of the expected maintenance activities required for the Proposed Scheme.

Element Activity		Frequency	
Flood walls	Inspections	Annually	
	Repairs	As req	
	Vegetation control Annually		
Debris Trap	Inspections	Monthly	
	Repairs	As req	
	Removal of debris	As req	
Culverts	Inspections	Annually	
	Repairs	As required	
	Removal of trash and vegetation	Quarterly	
Embankments	Inspections and maintenance	Annually	
Vegetation control		Annually	

#### Table 5-2: Operational and Maintenance Activities

#### NON-TECHNICAL SUMMARY

Element	Activity	Frequency
	Vermin control	Bi-annually
	Back drainage improvements	Bi-annually

# 6 TRAFFIC AND TRANSPORT

#### 6.1 Introduction

This chapter of the EIAR presents the Traffic and Transportation Assessment (TTA) of the potential impacts of the Proposed Scheme. Specifically, this chapter considers the potential impact of the Proposed Scheme on traffic and transport during the Construction and Operational/Maintenance phases.

## 6.2 Baseline Environment

The road network in Clonaslee comprises local and regional roads. Traffic volumes are described in terms of Annual Average Daily Traffic (AADT), which is the traffic volume in both directions on a section of road, averaged over a year (total annual flow divided by 365). It is a standard industry recognised parameter for assessing traffic volumes. The AADT values were adjusted for seasonal variation for the area are shown in **Table 6-1**.

Road	Weekly Average Daily Traffic (WADT)	Monthly Index Factor (from TII PAG Unit 16.1 Annex C) – Midland Region	AADT
Chapel Street / L2006	1,592	1.01	1,607
R422 to Birr	2,682	1.01	2,708
R422 to Mountmellick	3,386	1.01	3,419
L6002 Brittas Wood Road	171	1.01	173

#### Table 6-1: AADT Volumes

## 6.3 Significant Effects

With a Proposed Scheme of this nature, traffic impacts will only occur during the Construction Phase, which is anticipated to be 24 months in duration. The Proposed Scheme will be unmanned during operation, with infrequent traffic movements to and from the site primarily for maintenance and environmental monitoring.

The results of the assessment show that the surrounding road network performs within capacity during the construction period of the Proposed Scheme.

Site enabling works are forecast to commence in 2026. Peak traffic volumes are anticipated to occur during in 2027, with peak delivery and removal of material and numbers of site staff present decreasing thereafter.

Throughout the Construction Phase, traffic will be generated by the following activities:

- HVs importing construction materials;
- HVs exporting waste/spoil materials;
- HVs delivering plant and fuel; and
- Workforce traffic.

It is anticipated that HVs will travel to and from the site from the east, via the R442 and L2006 Tullamore Road. Construction staff trips are more widely dispersed as they will not have a single point of origin. HV traffic will seek to avoid peak hours, both for efficient operation of the site and to reduce the impact on the surrounding network.

Aside from added volumes of traffic, there will be a traffic impact during construction arising from a lane closure on Chapel St to facilitate construction of the flood defence wall.

In summary, the Proposed Scheme is likely to incur a **moderate** or **significant**, short term negative impact on Chapel Street with a **slight** or **moderate** temporary negative impact on other localised sections of the road network during construction. The Proposed Scheme is likely to incur permanent **imperceptible** effects on traffic users and the transport network during the Operational Phase .

#### 6.4 Mitigation Measures

A number of mitigation measures are included to minimise the impact of the Proposed Scheme on the local road network. These include a range of construction mitigation measures to be implemented by the Contractor such as preparation of a Construction Environmental Management Plan (CEMP) and a Construction Traffic Management Plan (CTMP), appointment of a traffic management coordinator, staff mobility management and a clear signage system.

### 6.5 Residual Effects

Following the implementation of mitigation measures, the residual effects on the local road network will range from short term **imperceptible** to short term **moderate**, **i.e. only for the Construction Phase**. Chapel Street will have the most significant residual effect of **slight** or **moderate** during the Construction Phase only. Residual effects are assessed as **imperceptible** or **slight** on the local transport network during the Operational Phase.

# 7 **POPULATION**

## 7.1 Introduction

This chapter identifies, describes and presents an assessment of the likely significant effects of the Proposed Scheme on the population during the Construction and Operational/Maintenance Phases. The population study area (PSA) was created based on the Small Area Population (SAPs) from the Central Statistics Office (CSO) 2022 Census. This PSA includes all SAPs within 3 km from the EIAR Study Area.

The following aspects were considered in the assessment of the potential effects of the Proposed Scheme on Population, including:

- Population level;
- Economic effects;
- Private landholdings;
- Residential amenity;
- Community facilities;
- Recreational and tourism facilities; and
- Transport, connectivity and accessibility.

#### 7.2 Baseline Environment

The PSA is made up by six Small Areas. In 2022, the PSA had a population of 1,859 persons spanning an area of 114.7 km<sup>2</sup>. Residential development is generally dispersed throughout the PSA, with small clusters of residential and commercial properties concentrated within the core of the Clonaslee Village and along the two main routes, main street (R422) and Tullamore Road. There is a total of 618 no. buildings within the PSA. 511 no. of these properties are 'residential', 31 no. are 'commercial', 76 no. properties are listed as 'commercial and residential'.

The Slieve Bloom Mountains offers different looped walking and hiking trails and eco walks ranging from 4 km to 75 km. Some of the trailheads are located in Clonaslee Village and other townlands, such as Glenbarrow and Monicknew. Other amenities include the Giant's Grave and Brittas Forest and Lake.

## 7.3 Significant Effects

Overall, the effects of the Proposed Scheme on population are projected to be positive, but **not significant** and short-term during the Construction Phase. Construction workers within the area may enjoy an increase in available job opportunities and construction materials may also be sourced locally for the Proposed Scheme.

The effects of the Proposed Scheme overall will have a positive, but **not significant**, short-term effect on economic activity during the Construction Phase. The Construction Phase of the Proposed Scheme will increase economic activity in the area primarily because of the presence of construction workers in the area. In addition, it is considered that the Construction Phase will bring indirect employment to the local businesses and services in Clonaslee. The construction works would involve temporary restrictions on traffic movements, and temporary road closures may impact businesses due to the loss of parking and disruptions to the regular flow of traffic, which is envisaged to have adverse, **slight** to **moderate**, and short-term effects during the Construction Phase.

The Proposed Scheme will have an adverse, **slight** and short-term effect on residential amenities during the Construction Phase. This adverse effect to residential amenity is predicted to arise from impacts to traffic and transport, noise and vibrations, air quality and landscape and visual during the Construction Phase.

The Proposed Scheme will have a **neutral**, **not significant** and **short-term** effect in community facilities during the Construction Phase. Community facilities are expected to operate normally during the Construction Phase. It is anticipated that effects on community facilities during Construction Phase will arise from changes to traffic and transport, noise and vibrations, air quality.

#### NON-TECHNICAL SUMMARY

The Proposed Scheme will have an **adverse**, **slight** and **short-term** effect on transport, connectivity and accessibility during the Construction Phase. This effect will arise from public access to the Brittas Loop walk being restricted during works and temporary lane closure of Chapel Street to facilitate the proposed construction.

The Proposed Scheme will provide flood protection to 72 no. existing, residential units and 2 no. commercial and business premises within Clonaslee and the surrounding areas.

The Proposed Scheme will have a **positive**, **moderate** and , and **long-term** effect on population and residential amenities. It will have **positive**, **moderate**, **permanent** effects on recreational and tourism facilities.

The Proposed Scheme will have **positive**, **slight** and **long-term** effects on economic activity, **positive**, **not significant** and **long-term** effect on community amenities and **positive**, **imperceptible** and **long-term effect** on transport and connectivity during the Operational Phase of the Proposed Scheme. It is envisaged there to be **adverse**, **slight**, and **long-term** effects because of the procurement of wayleaves / rights of way and permanent land acquisition.

#### 7.4 Residual Effects

Following the implementation of mitigation measures, the residual impact during the Construction Phase is predicted to have **negative**, **not significant** and **short-term** effects on population during the Construction Phase, and these will be **positive**, **moderate** and **long-term** during the Operational Phase.

## 8 HUMAN HEALTH

#### 8.1 Introduction

The chapter follows best practice to assess human health as part of EIA. The methods follow the health in EIA guidance set out by the Institute of Environmental Management and Assessment and the Institute of Public Health. The assessment provides reasoned conclusions for the identification and assessment of any likely significant effects of the Proposed Scheme on population health. Physical health, mental health and health inequalities are considered across a broad range of determinants of health.

The health assessment looks at the potential effects for both the general population and for vulnerable groups. Vulnerability relates to experiencing effects differently due to age, income level, health status, degree of social disadvantage or the ability to access services or resources. The health assessment considers localised population effects and also considers wider population effects at the regional and national levels.

The health assessment is informed by the findings of other Environmental Impact Assessment Report (EIAR) chapters, including traffic and transport; population; climate; noise and vibration; air quality; water; and waste and utilities. The health assessment has also been informed by a review of relevant public health evidence sources, including scientific literature, baseline data, health policy, local health priorities and health protection standards.

### 8.2 Baseline Environment

An overall baseline health profile was gathered for relevant electoral divisions (EDs) in Clonaslee, using Laois County and Ireland as comparators. Data was gathered from publicly available public health evidence sources. This data shows that overall, the general health of Clonaslee ED which makes up the study area is good, although some indicators suggest mental health pressures. These indicators do not suggest increased health sensitivity to change in the area as a whole, however the assessment does take into account that vulnerable groups are present.

## 8.3 Significant Effects

A number of potential impacts on human health associated with the construction, and operational and maintenance, of the Proposed Scheme, were identified. These included access to open space, leisure and play; transport modes, access and connections; employment and income; noise and vibration; and housing. With the measures adopted as part of the Proposed Scheme in place, there would be **temporary to short term minor beneficial and minor adverse** population health effects (not significant in EIA terms) during the Construction Phase. In relation to the operational and maintenance phase, all effects result in **moderate beneficial** significance (significant).

Construction of the Proposed Scheme has the potential to result in temporary and short-term disruption of public open spaces, affecting recreational activities for local people. This effect is assessed as being of **minor** significance (not significant). During construction, the Proposed Scheme has the potential to result in temporary and short-to-medium-term disruptions in relation to health-related travel times and accessibility, active travel and road safety. The effect is assessed as being of **minor adverse** significance (not significant). The construction of the Proposed Scheme is likely to have **minor beneficial** effect (not significant) on economic activity as a result of the presence of construction workers in the area. Construction noise impacts of the Proposed Scheme are considered to result in a **minor adverse** (not significant) effect on population health.

During the operational and maintenance phase, the Proposed Scheme is expected to have a **moderate beneficial** (significant) effect on housing, as the flood protection provided to residential amenities will be long-lasting and will affect all residents in the area. Avoiding flooding of homes is beneficial to health both in terms of actual flood injury risk, but also secondary respiratory mould effects and mental health concern about flood risk. Operational impacts on open space, leisure / play and transport modes, access and connections, are considered to result in a **minor beneficial** (not significant) effect on population health. This is due to improved flood relief measures making travels routes and recreational use of public open spaces safer and more accessible. During operation, employment and income health effects are assessed to be **minor beneficial** (not significant). Improvements to flood risk and safety associated with the Proposed

#### NON-TECHNICAL SUMMARY

Scheme will affect all residents including those participating in economic and revenue-generating activities. The flood relief safety and protection provided by the Proposed Scheme would enable many aspects of everyday life that either protect or promote good health, as well as mitigate against the increasing frequency and severity of floods due to climate change.

There is potential for temporary to short term cumulative impacts on population health through disruptions to recreational activities, access to services and amenities, and increased construction dust and noise. However, these effects are mitigated through appropriate construction management plans and would be temporary in duration.

#### 8.4 Residual Effects

The residual effects of the Proposed Scheme during construction are not significant.

The residual effects of the Proposed Scheme during the operation and maintenance phase are considered to be minor beneficial in terms of housing, access to open space, leisure / play, transport modes, employment and income.

The Proposed Scheme will protect homes and businesses from flooding which is beneficial to health both in terms of actual flood injury risk but also for mental health due to stress and anxiety brought about by the fear and anticipation of future flood events and post-traumatic stress disorder and anxiety from past flood events (Weilnhammer et al., 2021; Fernandez et al., 2015).

# 9 **BIODIVERSITY**

### 9.1 Introduction

This chapter of the EIAR identifies, describes, and presents an assessment of the likely significant effects of the Proposed Scheme on terrestrial and aquatic ecology. Potential effects are assessed for the Construction and Operational/Maintenance Phases of the Proposed Scheme.

The chapter sets out the potential effects on ecological features within the Zone of Influence (ZoI) of the Proposed Scheme. The ZoI is the area over which ecological features may be subject to significant effects as a result of the Proposed Scheme. This area varies depending on the feature and its sensitivity to environmental change. For habitats, mammals (other than otter and badger), flora, bats and birds, the ZoI included the redline boundary and land immediately adjacent to same. The ZoI for badger comprised a 50 m buffer from the redline boundary. The ZoI for otter comprised an area up to 150 m upstream and downstream of the redline boundary of the Proposed Scheme and adjacent riparian habitats. The ZoI for designated sites (e.g., Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Natural Heritage Areas (NHAs)) was determined by identifying connectivity pathways.

### 9.2 Baseline Environment

The Proposed Scheme is located within Clonaslee Village, which is situated in the Lower Shannon catchment. Two rivers pass through the village; the Clodiagh River to the west and Gorragh River to the east. The Slieve Bloom Mountains SPA, which is designated for hen harrier (*Circus cyaneus*) intersects the Proposed Scheme. Charleville Wood SAC, which is designated for alluvial woodland and Desmoulin's whorl snail (*Vertigo moulinsiana*) occurs downstream of the Proposed Scheme.

Several European Sites occur within the Zol of the Proposed Scheme. These Sites include the River Barrow and River Nore SAC, Charleville Wood SAC, River Shannon Callows SAC, Slieve Bloom Mountains SPA, Middle Shannon Callows SPA and River Nore SPA. Furthermore, given the presence of crayfish plague (*Aphanomyces astaci*) in the River Clodiagh, the potential for significant effects on European Sites for which white-clawed crayfish (*Austropotamobius pallipes*) is listed as a qualifying interest was also considered as part of the assessment.

The Slieve Bloom Mountains Ramsar Site is located approximately 4 km southwest of the Proposed Scheme. There are eight NHAs, including proposed NHAs, within the ZoI of the Proposed Scheme, as well as the Slieve Bloom Mountains Nature Reserve.

The desktop study indicated there to be one scheduled invasive alien plant species (IAPS) within the desk study area, namely Indian balsam (*Impatiens glandulifera*). During the field surveys Japanese knotweed (*Reynoutria japonica*), and hybrid knotweed (*R. x bohemica*) were recorded within and adjacent to the footprint of the Proposed Scheme area. No habitats were identified within the Proposed Scheme area corresponded to EU Annex I habitats and no protected flora or species listed on the Flora (Protection) Order were noted during field surveys.

Several bat species were identified as potentially occurring within the Proposed Scheme area as part of the desk study. The field survey confirmed the presence of six bat species, namely common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), Leisler's bat (*Nyctalus leisleri*), Daubenton's bat (*Myotis daubentonii*), whiskered bat (*Myotis mystacinus*) and brown long-eared bat (*Plecotus auritus*) and two species groups (*Myotis* and *Pipistrellus*). Trees with the potential to support individual or multiple bats were identified, but no bat roosts were identified within the Proposed Scheme area.

Protected mammals are likely to occur throughout the Zol of the Proposed Scheme such as otter, badger, pine marten, pygmy shrew and hedgehog. Surveys to confirm the presence of otter along the River Clodiagh found evidence of otter activity, but no resting or breeding sites were found. Surveys to confirm the presence of badger within 50 m of the Proposed Scheme did not find any badger signs. The semi-natural habitats surrounding the Proposed Scheme (e.g., the River Clodiagh, treelines, hedgerows, and broadleaved woodland habitat, riparian habitats) provide feeding and nesting habitat for breeding birds. Three birds associated with river habitat were identified during field surveys, namely grey wagtail (*Motacilla cinerea*), dipper (*Cinclus cinclus*) and kingfisher (*Alcedo atthis*).

The desk study identified 20 red-listed bird species and 27 amber-listed birds species within 5 km of the Proposed Scheme in the last 20 years. Seven of the species identified through desk study are listed under Annex I of the EU Bird's Directive (2009/147/EC).

Whereas the desk study identified common frog (*Rana temporaria*) and smooth newt (*Lissotriton vulgaris*) within 5 km of the Proposed Scheme, no incidental records of these species were made during surveys. Similarly, several records of rare or protected terrestrial invertebrates were found as part of the desk study, but a review of the National Biodiversity Data Centre (NBDC) maps indicated that none of these invertebrate records intersected within the Proposed Scheme area. Furthermore, no incidental records of these species were made during surveys.

The River Clodiagh is not a designated salmonid water and is not designated as an SAC or SPA for aquatic species. However, the river has a Q-value of 4-5, which is indicative of a high-status waterbody. High status rivers are relatively rare nationally and are of high biodiversity value. White-clawed crayfish, as well as crayfish plague, were found within the River Clodiagh during surveys in 2021. Repeat white-clawed crayfish surveys in 2023 did not find crayfish within the river. Overall, the River Clodiagh supports optimal habitat for salmonids, lamprey, eel. Crayfish habitat with boulder/cobbles, instream woody debris, leaf litter and over hanging banks creating refugia.

Characterisation of the receiving environment identified a number of important ecological features (IEF) for further assessment, these include designated sites (European and National), watercourses, habitats (woodland), bats, otter, kingfisher, hen harrier, breeding birds, fish and crayfish.

### 9.3 Significant Effects

The key sources of potential significant effects on biodiversity were identified as potential water pollution, pathogen spread (namely crayfish plague), habitat loss/degradation and fragmentation, disturbance, deterioration of foraging resources for certain species and the spread of IAPS.

Construction activities within the River Clodiagh and adjacent lands have the greatest potential to adversely affect water quality of the River Clodiagh, both locally and downstream. This is primarily linked to construction activities that can cause contamination (e.g., through the generation of silt or the use of hydrocarbons and concrete) with consequent effects on aquatic ecology. Run-off and management activities during the Operational Phase may also be a source of pollution to the River Clodiagh.

Habitat loss is expected within the footprint of the Proposed Scheme to facilitate works, but this will be quite limited and is not anticipated to result in significant effects. Key potential significant effects on habitats include accidental damage and indirect loss or deterioration due to pollution via waterborne contaminants and IAPS spread. Species within the receiving environment (e.g., birds, fish, whorl snail) are at risk of significant effects as a result of indirect damage to their supporting habitat (e.g., hedgerows, the River Clodiagh) and foraging resources (e.g., aquatic insects), or direct effects on them (e.g., toxic effects arising as a result of accidental spills, mortality during instream works or vegetation clearance). Furthermore, there is potential for works associated with the Construction Phase to result in the spread of aquatic pathogens (namely crayfish plague) into other watercourses, which could significantly affect white-clawed crayfish populations should they occur therein. The proposed instream works and vegetation clearance introduce the greatest risk to biodiversity.

During the Operational Phase, there is potential for significant effects on the River Clodiagh as a result of scouring of the riverbed at the proposed debris trap, siltation/river substrate alteration due to run-off from the proposed slipway and gravel path, and ongoing maintenance of the debris trap and Brittas Stream culvert within Brittas Wood. There is potential for works associated with the Operational Phase to result in the spread of aquatic pathogens (namely crayfish plague) into other watercourses, which could significantly affect white-clawed crayfish. Furthermore, the reinstatement of street lighting, if not undertaken sensitively, could result in significant effects on nocturnal fauna such as bats and otter through disturbance from light pollution.

#### 9.4 Mitigation Measures

Mitigation measures for the protection of important ecological features have been specifically identified for the Proposed Scheme. The mitigation measures include:

• The appointment of an Ecological Clerk of Works (ECoW) for the duration of the Construction Phase;

- The preparation of a CEMP;
- Pre-construction ecology surveys;
- An environmental emergency response/contingency plan;
- The preparation of an Invasive Alien Species Management Plan (IASMP);
- Specific measures to protect:
  - Retained habitats;
  - Fish, bats, birds and otter;
- Restrictions on the timing of works;
- Water quality protection and management measures;
- Requirements for lighting, debris trap and slipway design;
- Biosecurity requirements during construction and operation;
- Development and implementation of a SoP, in consultation with a suitably qualified ecologist and IFI, to account for monitoring and debris clearance operations at the Brittas Stream culvert and the River Clodiagh debris trap during the Operational Phase ;
- Construction and Operational Phase monitoring.

Enhancement measures have also been set out in a Biodiversity Management and Enhancement Plan prepared for the Proposed Scheme. This plan outlines measures regarding replacement planting of vegetation, installation of bat and bird boxes and habitat management. In addition, IFI will be consulted at detailed design stage in relation to potential enhancement measures that could be integrated into the Proposed Scheme.

A wide range of mitigation measures have also been included within other chapters (**Chapter 10: Land**, **Soils, Geology and Hydrology** and **Chapter 11: Water**) as part of the Proposed Scheme to prevent contamination of surface waters during the Construction Phase. Additionally, noise and vibration measures have been provided in **Chapter 14: Noise and Vibration**.

#### 9.5 Residual Effects

With the implementation of the mitigation measures during the Construction and Operational Phase, residual effects are predicted to be **not significant**.

# 10 LAND, SOIL, GEOLOGY AND HYDROGEOLOGY

#### 10.1 Introduction

This chapter of the EIAR considers and assesses the likely significant effects on land, soil, geology and hydrogeology associated with both the Construction phase and the Operational/Maintenance Phase of the Proposed Scheme.

## **10.2 Baseline Environment**

The existing environment of the Proposed Scheme area in terms of land, soils, geology and hydrogeology was analysed using data collected from a desk study, site walkovers and previous ground investigation programmes. This study was used to inform the development of a conceptual site model in order to develop an understanding of the geological and hydrogeological environment of the Proposed Scheme. Although the wider geomorphology and topography of the works areas is considered, the primary Study Area for the purpose of this assessment comprises a 2 km buffer zone around each of the various work elements of the Proposed Scheme.

The Study Area is underlain by thick flaggy Devonian sandstones and siltstones of the Clonaslee Member of the Cadamstown Formation (CWcl). The vast majority of the bedrock geology in the Study Area is classified by the Geological Service Ireland (GSI) as a Regionally Important Aquifer -Fissured bedrock (Rf). Subsoils with 'Moderate' groundwater vulnerability underlie a high proportion of the Proposed Scheme.

Under the Water Framework Directive (WFD), the Groundwater Bodies (GWBs) within the Proposed Scheme that need to be protected are:

- Clonaslee West GWB
- Geashill GWB

The Public Supply Source Protection Area of the Clonaslee Public Water Supply (PWS) is mapped within the southern portion of the Study Area including Area 1-Brittas Woods. There is one geological heritage area (GHA) identified within the Study Area: Glebe Quarry is a designated County Geological Site under the Irish Geological Heritage (IGH) Programme. Features of high geological/hydrogeological importance identified include an Annex I Wet Heath habitat [4010] located within the Slieve Bloom SAC at Srahcullen, approximately 2 km south of Area 1-Brittas Woods and upstream of the Clodiagh River.

There is no evidence of contaminated land along the Proposed Scheme and the potential to encounter contaminated land is low to minimal.

## **10.3 Significant Effects**

Potential impacts during the construction phase are identified as short-term soil erosion and compaction, soil pollution (via spillage of construction materials, dewatering, infiltration of surface water runoff), embankment settlement, loss of soil reserves, increase of aquifer vulnerability, groundwater contamination and impacts to river bed geomorphology and groundwater resources (Clonaslee PWS). These impacts are assessed by taking into account the methods, extent, and volume of earthworks proposed, excavations of soft soil and material extraction.

No potential impacts are identified during the operation phase. Maintenance activities during the operational stage will involve periodic inspection of flood walls, monitoring of the newly constructed embankments to check for signs of instability or soil slippage and inspection of the debris trap and remediated culvert. The access slipway will be regraded and surfaced during construction to provide an access to the debris trap for operational maintenance and debris removal.

#### **10.4 Mitigation Measures**

A series of measures are proposed to mitigate the potential impacts associated with the construction phase. These measures include the minimising the scale of excavations at any one time and backfilling as soon as possible, reuse of excavated material (topsoil) where possible, erosion and sediment control techniques, compliance with measures set out in CIRIA's Control of water pollution from construction sites, use of

geotextiles for construction of embankments, instream works to be undertaken in the dry or in low flow conditions and exclusion zones around PWS abstraction boreholes.

#### **10.5 Residual Effects**

Residual effects associated with the Proposed Scheme are predicted to be reduced to **imperceptible** with the implementation of the mitigation measures and are **not significant**.

## 11 WATER

### 11.1 Introduction

This chapter of the EIAR identifies, describes, and presents an assessment of the likely significant effects of the Proposed Scheme on the natural water environment during both the Construction and Operational/Maintenance phases. This includes impacts on physicochemical and hydromorphological characteristics of surface waters, drainage and flood risk. Mitigation and monitoring measures to limit potential significant impacts are set out where appropriate.

#### **11.2 Baseline Environment**

The Proposed Scheme is located in Clonaslee, Co. Laois, which is in the upper reaches of the Lower Shannon Catchment (Hydrometric Area 25, WFD ID 25A). The catchment (hydrometric area) covers an area of 1,248 km<sup>2</sup> and is characterised by relatively flat topography with much of the low-lying areas in the catchment covered in thick deposits of peat.

The Study Area is subject to fluvial flooding. Approximately 72 residential and 2 commercial properties have been identified at flood risk and there are extensive records of historic flooding. The main cause of flooding is the prolonged heavy rainfall in the steep upper Clodiagh River catchment area coupled with inadequate capacity of the river channels. Blockages in the river by woody debris accumulated at the existing bridge and at Clonaslee has also caused flooding in the past.

The latest WFD status of the waterbodies within the Study Area are assessed as 'Good' and 'not at risk'.

In the scheme area, there exist multiple locations where groundwater is being extracted. These include the abstraction point for supply of potable water to the town of Tullamore.

### 11.3 Significant Effects

The key parameters examined as those having the potential to result in the greatest impact on the receiving water environment were surface water quality, drinking water resources, flood risk, and hydromorphology.

Materials used or generated on construction sites or in construction activities can contaminate surface waters (CIRIA, 2001). One of the main contaminants is suspended solids, which can arise from uncontrolled runoff from earthworks, haulage routes and stockpiles. Dewatering activities, in-stream works and enabling works may also generate sediment-laden runoff. Cementitious particles, sources of which include the pouring of concrete, runoff from freshly poured concrete and washout of concrete delivery trucks and equipment. Chemical status of surface waters can also be affected by hydrocarbons which can arise from runoff or leakage from machinery, accidental spillages during refuelling or storage of petroleum-based products. The resulting impact during the Construction Phase will be short term **Significant/Moderate** effects on surface water and drinking water quality.

There is a possibility that a flood will occur to the River Clodiagh during the Construction Phase of the works, however, the effect of the Proposed Scheme on flood risk during the Construction Phase is deemed as short term and **Imperceptible**.

During the operation and maintenance phase, it is anticipated for the Proposed Scheme to have **positive imperceptible** effect on the surface water and **imperceptible** effect drinking water quality and **major beneficial effect of a profound positive significance on flood risk**.

With careful design and the adoption of an appropriate Operation & Maintenance Plan, overall, the predicted long term hydromorphological effects are expected to be **slight to moderate**.

An assessment was carried out on the Clodiagh River as it is potentially affected by the Proposed Scheme. The assessment concludes that the Proposed Scheme will not cause a deterioration of status in any water body, nor will it compromise the attainment of good status where necessary. The Proposed Scheme is therefore compliant with WFD Article 4(1) objectives. The Proposed Scheme also advances the overall purpose of the WFD by contributing to mitigating the effects of floods, as per Article 1(e).

#### 11.4 Mitigation Measures

To combat these effects, a range of mitigation measures are proposed limit suspended solids, cementitious particles, hydrocarbons and construction debris from entering watercourses. Moreover, flood preparedness measures will be incorporated during the Construction Phase.

## 11.5 Residual Effects

Following the implementation of mitigation measures, the residual effects on water quality, flood risk, drinking water and hydromorphology are assessed as imperceptible and not significant.

# 12 AIR QUALITY

### 12.1 Introduction

This chapter of the EIAR identifies, describes, and assesses the potential likely significant effects of the Proposed Scheme on Air Quality. The assessment will examine the potential impacts during the Construction and Operational/Maintenance Phases of the Proposed Scheme.

## **12.2 Baseline Environment**

Within the study area, concentrations of the key pollutants are well below the relevant limit values. In terms of the existing air quality environment, air quality monitoring data available from similar environments indicate that levels of nitrogen dioxide (NO<sub>2</sub>), particulate matter less than 10 microns ( $PM_{10}$ ) and particulate matter less than 2.5 microns ( $PM_{2.5}$ ) are generally well below the National and EU ambient air quality standards.

A dust sensitivity assessment was conducted to establish a better understanding of the air quality baseline. It was identified that the ecology sensitivity was given a 'Medium' rating for Area 1, as the Slieve Bloom SPA is located less than 50 m from a high sensitivity source. Nuisance sensitivity was also given a 'Medium' rating for Area 3 as there is a high sensitivity receptor (dwellings) less than 50 m from source dust emissions, with 10-100 dwellings present. Nuisance sensitivity for Area 2 was rated 'High' as there is a high sensitivity receptor (dwellings and school) <20m with 10-100 receptors present.

## 12.3 Significant Effects

The impacts associated with Construction Phase dust emissions are considered to pose a medium risk, and therefore represent a short-term, moderate, negative impact without mitigation.

It was identified that emissions from traffic is anticipated to increase during the Construction Phase, however, this will be a short term, temporary effect. Levels will remain below the legal limits for the protection of human health, but above WHO air quality guidelines. It will be anticipated that the traffic associated with the Construction Phase is anticipated to cause a **neutral** or **negligible** effect for air quality. Moreover, it was assessed that Construction Traffic effects will have a **negligible** effect on the Slieve Bloom SPA habitats and Nitrogen deposition will cause 'Not Significant' effects on these habitats.

Due to the nature of the Proposed Scheme, it is anticipated to cause neutral effects during the Operational Phase.

#### 12.4 Mitigation Measures

Before commencing relevant works, a Dust Management Plan (DMP) shall be prepared by the appointed main contractor and submitted for approval to the relevant planning authority. The plan must include all appropriate dust and emissions mitigation measures, applicable to the circumstances of the relevant site, based on the mitigation in this EIAR and local authority requirements and industry best practices.

## 12.5 Residual Effects

Following the implementation of mitigation measures, it is anticipated there to be **negligible** effects air quality during the Construction Phase and **neutral** effects during the Operational Phase.

# 13 CLIMATE

### 13.1 Introduction

This chapter of the EIAR considers and assesses the likely significant effects on Climate associated with both the Construction and Operational/Maintenance Phases of the Proposed Scheme.

#### **13.2 Baseline Environment**

In Ireland, and in line with global patterns, annual average temperatures are now approximately 0.9°C higher than they were in the 1900s and the last 30 years show almost a 7% increase in annual precipitation. Global sea level increased by approximately 0.20 m between 1901 and 2018, and recent studies have highlighted greater than expected sea level rise in Cork and Dublin. Climate change under early, middle, and late action climate model scenarios show very different futures for Ireland. All model projections show higher temperatures and an increase in annual precipitation, extreme events will become more common and more extreme. At Casement Aerodrome, the 30-year record for temperature shows that the average daily temperature across a calendar year was 9.9°C with an average maximum of 13.4°C and an average minimum of 6.3°C. Across the calendar year the average number of days with air frost<sup>1</sup> was 34.8. The 30-year average rainfall for Casement is 783.5 mm. Based on data collated from the 'Think Hazard!' tool<sup>2</sup>, it was identified that climate related risks to the Proposed Scheme is at a 'High' risk for fluvial flooding and a 'Medium' risk for wildfires.

### 13.3 Significant Effects

As part of the EIA, a greenhouse gas (GHG) assessment and climate change risk assessment was conducted. Calculation of the GHG emissions during the Construction Phase was based on the Transport Infrastructure Ireland (TII) online Carbon Calculator tool. GHG emissions associated with the Proposed Scheme are predicted to generate a total of 426 tonnes CO<sub>2e</sub>. The main source of GHG emissions is predicted to be materials, material transport and maintenance material. The Climate Change Risk Assessment followed TII guidance. This assessment undertook a sensitivity and an exposure analysis used to inform the vulnerability of the works to climate change. It was identified that the potential impact during the Construction Phase is predicted to be **minor adverse** and short-term. No significant impacts to climate are predicted during the Construction Phase. These GHG emission impacts are lessened during the Operational Phase.

#### 13.4 Mitigation Measures

A host of mitigation measure will be deployed during the Construction and Operational Phase. The majority of the measures will be enforced during the Construction Phase which will use construction material with lower embodied carbon associated with the construction material, source local material to reduce material transport emissions, utilisation of hydrogen generators or electrified plants for electricity generation, seeking to reduce GHG emissions through sourcing local material, regular maintenance of vehicles, encouragement of public transport.

#### 13.5 Residual Effects

Following the implementation of mitigation measures, it is envisaged that the Proposed Scheme will have **temporary minor adverse** effects on from GHG emissions and vulnerability to climate change during the Construction Phase. It is predicted for the Proposed Scheme will have **negligible** effects on climate from GHG emissions and a long-term, **beneficial** impact on the vulnerability to climate change.

<sup>&</sup>lt;sup>1</sup> Defined by the UK Met Office as: 'An air frost is usually defined as the air temperature being below freezing point of water at a height of at least one metre above the ground.' Available at: https://www.metoffice.gov.uk/weather/learn-about/weather/types-of-weather/frostand-ice/frost

<sup>&</sup>lt;sup>2</sup> Global Facility for Disaster Reduction and Recovery 'Think Hazard!' tool. Available at: https://thinkhazard.org/en/

# 14 NOISE AND VIBRATIONS

### 14.1 Introduction

A noise and vibration assessment of the Proposed Scheme has been conducted which includes an assessment of the baseline environment, potential noise and vibration emissions arising as a result of the Proposed Scheme and recommended mitigation and monitoring measures to limit such emissions.

The Construction Phase of the Proposed Scheme has been assessed in accordance with British Standard BS5228 which provides guidance for the assessment of noise and vibration from construction activities.

The Operational/Maintenance Phase of the Proposed Scheme will be limited to occasional maintenance and as such will not result in significant noise emissions. Operational noise emissions are therefore scoped out of the assessment at an early stage and not considered further

### 14.2 Baseline Environment

A desktop study and baseline noise surveys have been conducted in the vicinity of the three works areas to characterise the existing baseline noise environment. All locations have relatively low daytime baseline noise levels, ranging from 52 – 60 dB LAeq,30min. Sources of baseline noise include road traffic noise, flow of water in the rivers, birdsong and local activity. Results of the baseline noise surveys have been used to determine the BS5228 noise thresholds for the onset of potential significant effects, with all locations assessed as being in the most sensitive category.

### 14.3 Significant Effects

The project description, information provided by the design team, and BS5228 source noise levels for the various types of construction plant and equipment have been used to predict noise from works at the nearest sensitive receptors. The predicted levels have been assessed against the previously determined noise thresholds and other factors such as duration, frequency and likelihood have been considered in determining the potential for significant effects. A similar method has been used to assess vibration effects.

Predicted noise levels from activities at Area 1 – Brittas Wood and Area 3 – Tullamore Road during the Construction Phase are below the BS5228 thresholds for onset of significant effects. Construction works at Area 2 – Chapel Street are in close proximity to noise sensitive locations (NSL) and when works are within 25 m of the NSLs, predicted noise levels are above the BS5228 thresholds for onset of significant effects. A range of mitigation measures are proposed to mitigate the noise impact as far as possible. For NSLs within 25 m of the activities, the significance of effect will be significant or greater; however, given the linear nature of works, the impact will be temporary in nature. A positive attitude to the Proposed Scheme is expected from all nearest NSLs given the benefits conferred by prevention of floods, and therefore a higher tolerance for temporary elevated noise levels is expected (as allowed for in BS5228).

#### 14.4 Mitigation Measures

Noise predictions assume that Best Practice Mitigation (BPM) will be implemented at all works locations. Implementation of BPM is required to ensure that construction noise levels are properly controlled. In addition to BPM, a range of measures will be implemented during construction works to mitigate the noise impacts where possible. The noisiest plant items expected to be in use are the rock breaker, consaw and timber saws. However, the use of the rock breaker is anticipated to be required only in exceptional circumstances, if at all. Temporary noise barriers completely blocking line of sight to the nearest NSLs will be used where NSLs are within 25 m of these activities. Likewise, temporary noise barriers will be installed at two compounds along the boundaries adjacent to NSLs. Where water management is required, generators will be enclosed, and plant will be located as far away as possible from NSLs. Engagement and communication with residents regarding noisy works or works likely to cause significant vibration is recommended.

## 14.5 Residual Effects

Given that the specific mitigation and BPM measures listed in the assessment will be implemented in full, the predicted significance of effects due to construction noise from the Proposed Scheme at the nearest NSLs range from **Temporary**, **Not Significant** to **Significant**. Following implementation of BPM and specific mitigation measures, **Slight** to **Significant** residual effects will remain. In some instances, implementation of BPM and specific **effects reduced to slight**. This is due to the very wide variations in noise levels throughout the day captured by the various categories and the inherent variability of construction noise. As such, it should be noted that this assessment considers the locations of the greatest potential impact within this variation. However, implementation of mitigation measure will reduce the noise levels experienced at NSLs.

# 15 MATERIAL ASSETS: WASTE AND UTILITIES

Material Assets are defined in the 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2022) 'as '*built services and infrastructure*'. Material Assets may be either of human or natural origin. The study area for Material Assets has been defined with reference to the area in which there is potential for direct and indirect impacts on economic material assets of human origin because of the Proposed Scheme.

### **15.1 Baseline Environment**

The site crosses electricity supplies, water mains / foul sewers, surface water drainage, Local Authority Street Lighting as well as telecommunication. The identified power infrastructure consists of overhead lines (OHLs) but not underground cables. This consisted of Medium Voltage (MV) and Low Voltage (LV) overhead lines across the Scheme area.

A desktop review of existing utilities and associated infrastructure was undertaken as part of the design development process. A utility data request was made to suppliers and a Ground Penetrating Radar (GPR) survey was conducted in April 2024 to confirm the existence of services and provide a more accurate location. The utilities identified within, or adjacent to, the footprint of the Proposed Scheme include:

- Electricity Supply: ESB Networks
- Local Authority Street Lighting: Laois County Council
- Water Mains and Foul Sewers: Uisce Éireann
- Telecommunications: Eir
- Surface Water Drainage: Laois County Council

There are 11 no. licenced waste facilities within 30km of the Proposed Scheme that may be considered for the disposal of material and waste streams arising from the Construction and Operational/Maintenance Phases of the Proposed Scheme. These facilities include integrated waste management, soil recovery, waste transfer, and landfill facilities.

## **15.2 Significant Effects and Mitigation Measures**

Construction of the Proposed Scheme is likely to have **Slight** or **Moderate** effect on case of water supply, and **Slight** and **Imperceptible** or **Slight** effect on all other services without the implementation of mitigation measures.

Waste will arise from construction activities. All waste generated on site will be segregated at source and removed by a licensed waste collector(s) or reused where appropriate. The significance of effects related to waste resulting from vegetation removal, road demolition, excavation and individual waste are **imperceptible**.

The Operational Phase of the Proposed Scheme will cause **imperceptible** effects to waste due to the nature of a flood relief scheme.

#### 15.3 Mitigation Measures

All potentially affected utility providers will be contacted prior to the commencement of any works. All existing services will be confirmed prior to construction using service records and slit trenching to ensure that their position is accurately identified before excavation works commence across all sections of the Proposed Scheme. Early consultation shall be undertaken with service providers to enable providers to reroute their service during non-peak periods to maintain connections to customers. Any damage to services during the construction phase shall be repaired / replaced by the Contractor. Supply to existing services will be maintained as far as possible during construction.

There are a series of best practice requirements and mitigation measures that must be implemented for the Construction and Operational Phase to minimise the effect on material assets. A Waste Management Plan (WMP) will be developed and implemented by the Contractor.

## 15.4 Residual Effects

Effects on utilities during construction after the introduction of mitigation measures are expected to be shortterm in nature and **imperceptible** to all utilities. The Proposed Scheme will also protect existing key utilities during Operational Phase, thus reducing the disruptions to these facilities in the future. The residual effect of the Operational Phase is predicted to have a **slight** positive, long-term effect.

The residual effects of the Proposed Scheme in terms of waste management during the Construction Phase, following the implementation of mitigation measures, are considered to be **short-term and imperceptible** in nature. The waste generated during operation and maintenance phases of the Proposed Scheme will not be significant as it will mainly be associated with occasional maintenance works. The residual effect on resource and waste management is expected to be **imperceptible**.

# 16 CULTURAL HERITAGE

### 16.1 Introduction

This chapter of the EIAR considers potential cultural heritage effects associated with the Construction and Operational/Maintenance Phases of the Proposed Scheme. This included potential effects on heritage assets, ground disturbance and degradation of the setting and amenity of heritage assets due to construction activities. The potential cultural heritage effects associated with the operation of the Proposed Scheme (i.e. predominantly maintenance works/activities) have also been assessed.

The assessment has been carried out according to best practice and guidelines relating to cultural heritage assessment, and in the context of similar infrastructural projects.

### **16.2 Baseline Environment**

The Clonaslee village is set in the foothills of the Slieve Bloom Mountains in Clonaslee and there is a high volume of identified cultural heritage receptors (94 No.). There is a total of ten cultural heritage receptors with an importance rating of 'High'. The village of Clonaslee is designated as an Architectural Conservation Areas (ACA). This identifies that protection through the positive management on a wider scale of Clonaslee Village must be sought to adequately protect the overall heritage in accordance with the relevant legislation, policies and objectives of the Laois County Development Plan and current guidelines.

### **16.3 Significant Effects**

There are no identified significant effects on the Cultural Heritage resource as a result of construction activities for the Proposed Scheme.

A number of **moderate** effects were predicted during the Construction Phase following the impact assessment. These receptors include: Clonaslee Village ACA (indirect effects), Historic demesne associated with Brittas House (direct effects), two undesignated stiles (direct effects), an undesignated stone bench (direct) and an undesignated stone wall (direct effects). Six no. cultural heritage receptors experiencing a **moderate** effect during the Construction Phase are located within the redline boundary. The remaining receptors are predicted to experience **not significant** to **slight** effects.

There are no identified significant effects on the Cultural Heritage resource during the Operational Phase for the Proposed Scheme.

#### **16.4 Mitigation Measures**

Construction Phase mitigation measures in relation to the identified effects within the study area largely comprise the preservation by record for direct impacts.

In addition to this, it is proposed to carry out pre-construction archaeological testing to ground-truth anomalies identified through advance works geophysical survey within the redline boundary. An appropriate mitigation strategy for archaeological resolution of identified archaeology (terrestrial or underwater) will be agreed in consultation with the National Monuments Service (NMS) thereafter. Furthermore, archaeological monitoring of all ground works within the Proposed Scheme area will be undertaken during construction. The archaeological testing and monitoring will be undertaken by a suitably qualified archaeologist under licence from the NMS.

Any identified built heritage features sited along access routes or immediately adjacent to works areas/along streetscapes shall be protected by preventative measures such as installation of barriers and appropriate wall heights.

## 16.5 Residual Effects

Following the implementation mitigation measures, it is predicted that five cultural heritage receptors will experience a **Slight**, Negative effect during the Construction Phase. No residual effects are predicted as a result of the Proposed Scheme during the Operational Phase.

# 17 LANDSCAPE AND VISUAL

### 17.1 Introduction

The assessment considered the effects of the Proposed Scheme on the surrounding landscape and visual amenity comprising the village of Clonaslee, the core of which is a designated Architectural Conservation Area, along with Brittas Wood which features walking trails and is a popular and well used amenity.

## 17.2 Baseline Environment

The baseline landscape comprises the urban built up landscape of Clonaslee, the core of which is a designated ACA and Brittas Wood, a known recreational facility featuring woodland trails.

The baseline visual amenity was considered at seven representative viewpoint locations, five of which are within the village urban area and two of which are within Brittas Wood. There are no designated views and prospects within the study area or which would be affected by the proposed change brought about by the implementation of the Proposed Scheme.

## 17.3 Significant Effects

Significant effects on landscape character and visual amenity are considered to not arise. This is due to the limited scale of the proposed change and the mitigation measures which sought to minimise vegetation losses. Additionally, the proposed structures have been designed in a manner that integrates same into the receiving landscape. This included input and advice from a conservation architect in regard to the proposed flood relief wall in the ACA.

Significant adverse visual impacts are anticipated to arise at one viewpoint in Brittas Wood however, this effect would arise at a moment in time along a wider woodland walk, along which viewers would experience none or not significant effects.

In Brittas Wood views of the proposed debris trap and slipway would be attained along a short section of the walking trail along which, the recreational walker would also experience the proposed refurbished footpath and verges (allowed to naturally regenerate). The significant visual effects would be very localised at this location representing a very short section of the Brittas Wood Trail overall. Individuals elsewhere along the Brittas Wood Trail would experience none or limited and not significant visual effects

## 17.4 Mitigation Measures

Mitigation measures during the construction phase include the protection of and retention of tree lines and hedgerows where possible in the vicinity of the works. Works within the vicinity of trees will be monitored by an arborist to ensure retention and protection of trees insofar as possible. Temporary construction compounds will be designed to minimise visual effects, in particular, on surrounding residents of dwellings overlooking these locations;

Mitigation measures during operation comprise the sensitive and appropriate use of materials for the proposed flood relief wall on Chapel Street, as advised by a conservation architect, and the path resurfacing in Brittas Wood. Topsoil, previously stripped to facilitate construction, will be reinstated and allowed to regenerate naturally, thus developing a natural sward. Proposed planting will be introduced to replace those removed to facilitate construction and to mitigate landscape and visual effects where feasible. The gardens of private properties will be restored with replacement planting and landscape detailing in agreement with each affected landowner. Areas of land, formerly in use as site compounds during construction, will be restored.

## 17.5 Residual Effects

The residual effects on landscape and landscape character and the Clonaslee ACA during construction are assessed as **minor** adverse and not significant effect. The residual visual effect during construction is assessed as minor adverse and not significant. The residual effects on landscape and visual receptors at all viewpoints are assessed as not significant for year 1 and year 15 with the exception to viewpoint 6 which is

#### NON-TECHNICAL SUMMARY

assessed as significant at year 1 only in terms of the magnitude of change to a small section of the Clodiagh River in Brittas Wood due to the presence of the debris trap, slipway and gate. This visual change is only experienced momentarily within this section of the Wood. By year 15 of operation the residual effect of this viewpoint is assessed as not significant due to the maturation of replacement planting. It should be noted that this infrastructure within this area of Brittas Wood will ensure the continuous recreational use of Brittas Wood by removing the potential flood risk from the existing walking trails.

# **18 INTERACTIONS AND CUMULATIVE EFFECTS**

The various chapters of the EIAR identify the potential significant environmental impacts and residual effects that may occur in terms of Population, Human Health, Biodiversity, Land, Soils, Geology and Hydrogeology, Air Quality, Climate, Noise and Vibration, Cultural Heritage, Landscape and Visual, Material Assets as a result of the Proposed Scheme as described in **Chapter 5: Project Description**.

Mitigation measures and best practice measures for the Construction and Operational/Maintenance Phases are detailed in the accompanying CEMP. However, for any development with the potential for significant environmental effects there is also the potential for interaction between these potential significant effects. The result of interactive effects may exacerbate the magnitude of the effects or ameliorate them or have a neutral effect. In addition to the assessment of impacts on individual environmental topics, the potential interactions between these factors have also been considered as part of the topic-specific assessments. A matrix is presented in **Chapter 18: Interactions and Cumulative Effects** to identify interactions between the various aspects of the environment already discussed in the EIAR. The matrix highlights the occurrence of potential positive or negative impacts during the construction, operational/maintenance phases of the Proposed Scheme. Where any potential interactive impacts have been identified, appropriate mitigation is included in the relevant sections within **Chapters 6—17**.

## 18.1 Summary of Cumulative Effects

Cumulative effects result from the addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects. Additionally cumulative effects can be caused due to incremental changes by other past, present or reasonably foreseeable projects together with the Proposed Scheme.

The Zol considered for the Cumulative impact assessment (CIA) takes into consideration the previously defined study areas in each of the respective specialist chapters of this EIAR (**Chapters 6 – 17**) which is informed by the appropriate guidance documents together with the professional judgement associated with the potential for cumulative environmental effects to occur based on the location, nature, and characteristics of the cumulative effects of projects in conjunction with the Proposed Scheme.

The main aspect of the CIA relates to the assessment of existing and/ or approved projects with the Proposed Scheme. A staged approach was applied in order to undertake the CIA as follows:

- **Stage 1:** The ZoI was defined, and a desk study was undertaken to source publicly-available information on projects within the CIA ZoI using planning databases. Once the long list of projects was collated, a number of assumptions were developed based on RPS guidance and best practice and applied in order to create a short-list of projects which may have the potential to give rise to cumulative effects in conjunction with the Proposed Scheme.
- Stage 2: The list of projects was then brought forward to the respective EIA specialist to carry out a screening exercise to identify the potential for cumulative effects between the planning applications and the Proposed Scheme. This screening exercise was carried out in accordance with a set of defined screening criteria (grounds for screening-in or out) in order to identify which projects should be considered in the assessment of cumulative effects.
- Stage 3: This stage comprised the detailed assessment which considered the potential cumulative
  impacts of the projects screened-in during Stage 2 in conjunction with the Proposed Scheme. The CIA
  for each topic used the same language as that used for the impact assessments as set out in the
  methodology sections for each topic chapter.

Overall, the assessment did not identify potential for any significant cumulative effects with other projects.

# **19 RISKS OF MAJOR ACCIDENTS AND/OR DISASTERS**

### **19.1** Introduction

This section of the EIAR describes the vulnerability of the Proposed Scheme to risks of major accidents and/or disasters or to cause major accidents and/or disasters. Major accidents or disasters are hazards which have the potential to affect the Proposed Scheme and consequently have potential impacts on the environment. These include accidents during Construction and Operation caused by operational failure and/or natural hazards.

The assessment of the risk of major accidents and/or disaster considers all factors defined in the EIA Directive, i.e., population and human health, biodiversity, ornithology, land, soil, water, air quality, climate and material assets, cultural heritage and the landscape. A desk-study was completed to establish the baseline environment for which the proposed risk assessment has been carried out. Local and regional context has been established prior to undertaking the risk assessment to develop an understanding of the vulnerability and resilience of the area to emergency situations.

The Proposed Scheme has been designed and will be constructed in accordance with the best practice measures set out in this EIAR and, as such, mitigation against the risk of major accidents and/or disasters is embedded through the design.

## 19.2 Hazards/Risks and Mitigation

From examining all potential risk events associated with the Proposed Scheme, scenarios that were considered to be of the highest risk in terms of the Proposed Scheme's vulnerability and its potential to cause such an event include but are not limited to events leading to structural collapse, extreme weather causing damage to flood infrastructure, and an extreme flooding events if flood defence failure coincided with the Construction Phase. The assessment considered mitigation by design (where appropriate), and it was determined these are sufficient to mitigate the associated risk level(s) to be low.

#### **19.3 Residual Effects**

The risk of a major accident and/or disaster during the construction of the Proposed Scheme is considered 'low' in accordance with 'A National Risk Assessment for Ireland 2023' (Department of Defence 2023).

With the implementation of best practise measures and all recommended mitigation and monitoring measures for the construction and operation phases listed in this EIAR, the likelihood of a Major Accident or Natural Disaster occurring from, or to, the Proposed Scheme, is **very unlikely with a low risk of occurrence** and is assessed as not significant in EIA terms.

## 20 SUMMARY OF ENVIRONMENTAL COMMITMENTS

The Schedule of Environmental Commitments presents a summary of the mitigation measures identified as a result of undertaking the environmental impact assessments, as well as the mitigation measures detailed in the NIS which has been carried out to inform the Appropriate Assessment (AA) process.

From the inception of the design and environmental assessment processes of the Proposed Scheme, the design team has strived to avoid, prevent and reduce adverse effects, which are incorporated into the design drawings and specifications for the Proposed Scheme that have been assessed as part of the EIAR and NIS.

Avoidance of impacts is most applicable at the earliest stages of a Proposed Scheme, whereas prevention has taken place during the design and environmental assessment process between the design team and EIA team. Mitigation is a last resort and can include a remedy or offsetting of adverse effects. For example, this can apply when a Proposed Scheme cannot avoid significant effects due to their need to be located within a particular site.

Where significant effects have been identified during the EIA and AA processes, measures will be implemented to mitigate these effects as much as reasonably possible, with any residual effects identified in the relevant chapters of this EIAR. The objective of this chapter is to provide a central location where a summary of measures from the preceding chapters are presented together for both ease of reference and inclusion in the contract documents at a later stage of the Proposed Scheme.

All of the mitigation commitments in EIAR are incorporated in full into the CEMP.

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