

AtkinsRéalis



**Environmental Impact
Assessment Report
(EIAR) Volume 1 - Non
Technical Summary
(NTS)**

Uisce Éireann

June 2026

5161805DG0447

MORTARSTOWN WASTEWATER TREATMENT PLANT UPGRADE

Notice

This document and its contents have been prepared and are intended solely as information for Uisce Éireann and use in relation to Mortarstown Wastewater Treatment Plant Upgrade

AtkinsRéalis Ireland Limited assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This document has 64 pages including the cover.

Document history

Document title: Environmental Impact Assessment Report (EIAR) Volume 1 EIAR - Non Technical Summary (NTS)

Document reference: 5161805DG0447

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
0	Draft	SK	AMC	DL	DL	02/06/2026
1	Final	SK	AMC	DL	DL	16/06/2026

Client signoff

Client	Uisce Éireann
Project	MORTARSTOWN WASTEWATER TREATMENT PLANT UPGRADE
Job number	5161805
Client signature/date	



Contents

1.	Introduction.....	9
1.1	Pre-Application Consultation.....	12
2.	Proposed Development	13
2.1	Nature and Extent of the Proposed Development	13
2.2	General Overview	13
2.2.1	Microtunnel Gravity Sewer	13
2.2.2	Inlet Pump Station.....	13
2.2.3	Mortarstown WwTP.....	14
2.2.4	Outfall.....	17
2.2.5	Onsite Storage (including Chemical and Fuel Storage).....	17
2.3	Demolition and Decommissioning Phases	17
2.4	Future Decommissioning of Mortarstown WwTP.....	18
2.5	Project Details	18
2.5.1	Timelines	18
2.5.2	Sequencing of Works.....	18
2.6	Construction Aspects	20
2.6.1	Environmental Management.....	20
2.6.2	Waste Management.....	20
2.6.3	Traffic Management	20
2.7	Operational Aspects.....	21
2.7.1	Discharge Licence	21
2.7.2	Waste Management.....	21
2.7.3	Surface Water Management.....	21
2.7.4	Odour Control.....	21
2.7.5	Potable Water (Mains) & Clean Wash Water (Borehole)	21
3.	Alternatives	23
3.1	Introduction	23
3.2	Consideration of Reasonable Alternatives.....	23
3.2.1	Alternative Treatment Technology scenarios	23
3.2.2	Works on Kilkenny Road Pumping Station	24
3.2.3	Pipeline from Kilkenny Road Pump Station to WwTP	24
3.2.4	Micro-Tunnel Alignment	25
3.2.5	WwTP Outfall	25
3.2.6	Headwall Construction	26
3.3	Proposed Optimal Design Solution	26
4.	Population And Human Health	27
4.1	Existing Environment	27



4.2	Impact Assessment.....	27
4.2.1	Do Nothing Scenario.....	27
4.2.2	Construction and Demolition Phase	27
4.2.3	Operational Phase	28
4.2.4	Decommissioning Phase	28
4.3	Mitigation and Monitoring.....	29
4.4	Residual Impact Assessment.....	29
5.	Biodiversity	30
6.	Landscape And Visual	32
6.1	Receiving Environment - Landscape	32
6.1.1	Central Lowlands Character Area (Co. Carlow)	32
6.1.2	Urban Fringe Character Area (Co. Laois).....	32
6.1.3	Lowland Agricultural Areas (Co. Laois)	32
6.2	Receiving Environment - Visual	33
6.3	Likely Significant Landscape Effects of The Proposed Development	33
6.3.1	Central Lowlands Character Area (Co. Carlow)	33
6.3.2	Urban Fringe Character Area (Co. Laois).....	34
6.3.3	Lowland Character Area (Co. Laois)	34
6.4	Likely Significant Visual Effects of The Proposed Development	34
6.5	Mitigation Measures.....	35
6.6	Residual Effects	35
7.	Air Quality And Odour	36
8.	Climate.....	37
8.1	Existing Environment	37
8.2	Impact Assessment.....	37
8.2.1	Do Nothing Scenario.....	37
8.2.2	Greenhouse Gas Assessment.....	37
8.2.3	Climate Change Risk Assessment.....	38
8.3	Mitigation.....	38
8.3.1	Construction Phases.....	38
8.3.2	Operational Phase	38
8.4	Residual Impact Assessment.....	38
8.5	Monitoring	39
9.	Noise And Vibration	40
9.1	Construction Phase.....	40
9.2	Operational Phase	40
10.	Traffic.....	41
10.1	Receiving Environment.....	41



10.1.1	Site Access	41
10.1.2	Baseline Traffic Volume	41
10.2	Potential Effects: Construction Stage	41
10.3	Potential Effects: Operational Phase	42
10.4	Potential Effects: Decommissioning Phase	42
10.5	Do Nothing Scenario	42
10.6	Mitigation Measures	42
10.6.1	Construction Phase: Outline Traffic Management	42
10.6.2	Operational Phase	43
10.7	Residual Effects	43
10.8	Monitoring Requirements	43
10.9	Conclusion	43
11.	Land, Soil And Geology	44
12.	Water	45
13.	Cultural Heritage	47
13.1	Introduction	47
13.2	Methodology	47
13.3	Receiving Environment	47
13.3.1	Site Inspection	47
13.3.2	Underwater Archaeological Survey	48
13.4	Potential Effects on Cultural Heritage during Construction Phase	48
13.5	Potential Effects on Cultural Heritage during Operational Phase	49
13.6	Mitigation Measures	49
13.6.1	Construction Phase	49
13.6.2	Operational Phase	50
13.7	Residual Effects	50
13.8	Monitoring Requirements	50
14.	Material Assets	51
14.1	Introduction	51
14.2	Built Services	51
14.3	Waste Management	52
15.	Major Accidents And Disasters	54
15.1	Baseline Environment	54
15.1.1	COMAH	54
15.1.2	Seismic Activity	54
15.1.3	Aerodromes	54
15.1.4	Landslides	54



15.1.5	Flood Risk	54
15.2	Potential Effects Of The Proposed Development	55
15.2.1	Construction Phase	55
15.2.2	Operational Phase	55
15.3	Mitigation And Residual Effects (Post-Mitigation).....	56
16.	Cumulative Effects	57
16.1	Introduction	57
16.2	Methodology.....	57
16.3	Cumulative Effects Assessment	57
17.	Interactions	60
17.1	Introduction	60
17.2	Summary of Interactions	60
18.	Schedule Of Commitments	63

Tables

Table 6-1 - Significance of Visual Effects	35
Table 10-1 - Summary of Mitigation Measures	42
Table 17-1 - Summary Interactions Matrix of Interactions between Environmental Factors.....	61

Figures

Figure 1-1 - Proposed Development Location (including redline boundary)	10
---	----



Acronyms

ACA	Architectural Conservation Area
ACP	An Coimisiún Pleanála
ADCO	Archaeological Driving Company
ASP	Activated Sludge Process
Bgl	Below ground level
CCRA	Climate Change Risk Assessment
CEMP	Construction Environmental Management Plan
COMAH	Control of Major Accident Hazards
CSRR	Carlow Southern Relief Road
CSO	Central Statistics Office
CTMP	Construction Traffic Management Plan
DHLGH	Department of Housing, Local Government and Heritage
DS	Dry Solids
ED	Electoral Division
EIAR	Environmental Impact Assessment Report
ELVs	Emissions Limit Values
EPA	Environmental Protection Agency
ESB	Electricity Supply Board
EU	European Union
FOG	Fats, Oils and Greases
GHG	Greenhouse Gas
ha	Hectares
HDD	Horizontal Direct Drilling
HGV	Heavy Goods Vehicles
HV	High Voltage
ICOMOS	International Council on Monuments and Sites
JTC	Junction Traffic Count
kV	KiloVolts
kW	KiloWatts
l/s	Litres per second
m ³ /h	Metres cubed per hour
m	metres
MEICA	Mechanical, Electrical, Instrumentation, Control and Automation



MV	Medium Voltage
mAOD	Metres Above Ordnance Datum
NDP	National Development Plan
NIAH	National Inventory of Architectural Heritage
NIS	Natura Impact Statement
NMS	National Monuments Service
No.	number
NPF	National Planning Framework
NTS	Non-technical Summary
OCUs	Odour Control Units
PCU	Passenger Car Unit
PE	Population Equivalent
PS	Pumping Station
PST	Primary Sludge Tanks
PTF	Picket Fence Thickeners
PV	Photovoltaic
RAS	Return Activated Sludge
RWMP	Resource Waste Management Plan
SAC	Special Area of Conservation
SCADA	Supervisory Control and Data Acquisition
SME	Subject Matter Expert
SPA	Special Protection Area
TII	Transport Infrastructure Ireland
UE	Uisce Eireann
UWWD	Urban Wastewater Treatment Directive
WAC	Waste Acceptance Criteria
WAS	Waste Activated Sludge
WFD	Water Framework Directive
WMP	Waste Management Plan
WwDL	Wastewater Discharge License
WwTP	Wastewater Treatment Plant



1. Introduction

Uisce Éireann (UE) intends to apply for permission to upgrade the Mortarstown Wastewater Treatment Plant (WwTP), located 2.2km south of Carlow Town on the eastern bank of the River Barrow in the townland of Mortarstown Upper. The WwTP serves Carlow Town and its environs. The Proposed Development boundary is presented in Figure 1-1. Refer also to Chapter 1 – Introduction, Volume 2 of the EIAR.

The existing WwTP, with 1no. outfall, currently operates under Wastewater Discharge Licence (EPA Ref: D0028-01, which was granted by the Environmental Protection Agency (EPA) in 2009, with technical amendments granted in October 2011, December 2016 and December 2021.

The existing WwTP site covers approximately 3.79 hectares (ha), and following completion of the upgrade works, the WwTP site will increase in area to approximately 5.53 ha. The total Proposed Development area (red-line boundary) is approximately 10.766 ha.

The current WwTP has a treatment capacity of 36,000 Population Equivalent (PE). In order to sustainably support future residential, commercial and industrial development, and to ensure continued compliance with environmental legislation, an upgrade and expansion of the WwTP to a capacity of 58,500 PE is required.

The proposed works comprise the following components:

- Microtunnel Gravity Sewer connecting the decommissioned Pumping Station (PS) to new Pumping Station
- New inlet Pumping station
- Decommissioning of Existing Kilkenny Road Pumping Station
- New Outfall chamber, Outfall Pipe including a microtunnel for the section crossing under the R448
- Provision of various new structures at the existing Mortarstown WwTP
- Refurbishment of a number of structures at the WwTP
- Demolition of a number of structures at the WwTP
- Decommissioning of the Kilkenny Road Pumping Station, existing rising main and existing settlement tanks



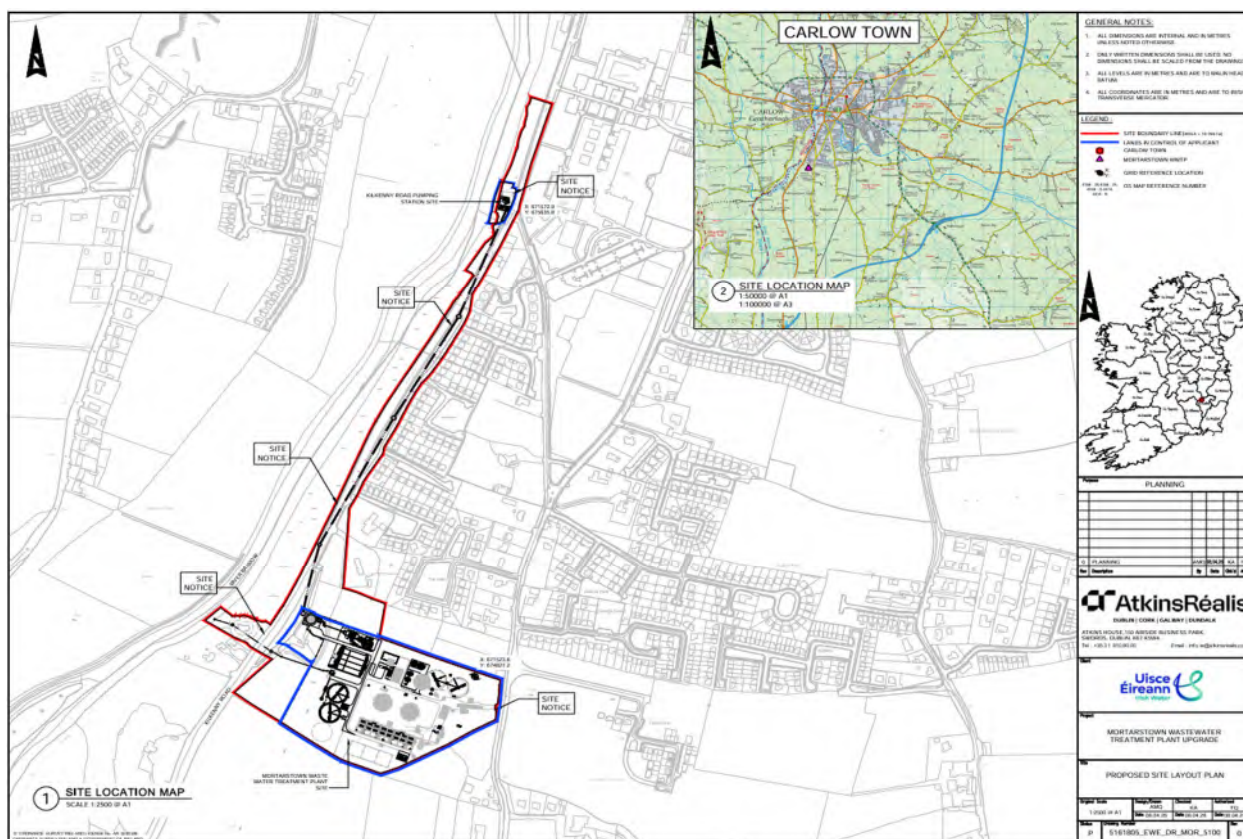


Figure 1-1 - Proposed Development Location (including redline boundary)

The proposed development is driven by a number of European policies and legislation, aimed at protecting water quality and supporting sustainable growth, including The Water Framework Directive (WFD) (2000/60/EC) which establishes a comprehensive framework for the protection and improvement of surface waters and groundwater across the European Union, and The Urban Wastewater Treatment Directive (91/27/EEC), revised and recast in November 2024 as Directive (EU) 2024/3019. At the national and regional levels, the national planning framework (NPF) (April, 2025) and the National Development Plan (NDP) 2021-2030 emphasise the importance of investment in wastewater infrastructure in order to bring and maintain wastewater services to acceptable international standards. The Water Services Policy Statement 2024–2030 provides the national policy framework for the delivery of safe, reliable and sustainable water and wastewater services, setting out objectives for availability and reliability, safety and quality, and long-term sustainability. At a local level, the Carlow County development plan 2022-2028 promotes sustainable growth of Carlow town and identifies wastewater infrastructure upgrades as essential to support development. Refer to Chapter 1 of Volume 2, EIAR for details.

This non-technical summary (NTS), Volume 1 of the Environmental Impact Assessment Report (EIAR) presents a standalone overview of the Proposed Development and an assessment of all associated potential environmental impacts. Refer also to the main Environmental Impact Assessment Report (EIAR) (Volume 2) submitted as part of this planning application.

The EIAR is presented in three volumes as follows:

- Volume 1 – Non-Technical Summary (NTS). This is a non-technical explanation of the assessments and supporting documentation presented in Volume 2 (Main EIAR) and Volume 3 (Appendices) of the EIAR.

- Volume 2 – EIAR; and,
- Volume 3 – EIAR Appendices (Appendix 1 - Appendix 14)

The EIAR (Volume 2) contains:

- Chapter 1 Introduction
- Chapter 2 Proposed Development
- Chapter 3 Alternatives
- Chapter 4 Population and Human Health
- Chapter 5 Biodiversity
- Chapter 6 Landscape and Visual
- Chapter 7 Air Quality and Odour
- Chapter 8 Climate
- Chapter 9 Noise and Vibration
- Chapter 10 Traffic
- Chapter 11 Land, Soil and Geology
- Chapter 12 Water
- Chapter 13 Cultural Heritage
- Chapter 14 Material Assets
- Chapter 15 Major Accidents and Disasters

The EIAR has been prepared by competent subject matter experts (SMEs). Cumulative and in-combination effects for environmental factors have been addressed within Chapter 16, Volume 2 – EIAR. Interactions between impacts on various environmental factors have also been addressed within the Chapter 17, Volume 2 – EIAR. All mitigation and monitoring commitments detailed within the EIAR have been included in a separate compendium 'Schedule of Commitments' presented within the EIAR (refer to Chapter 18, Volume 2 – EIAR).

An Appropriate Assessment (AA) Screening prepared by AtkinsRéalis (2025) for the Proposed Development determined that a Natura Impact Statement (NIS) was required. Accordingly, an NIS was undertaken as part of this application to consider the potential impacts of the Proposed Development on the conservation interests of Natura 2000 Sites and to outline mitigation measures as required. Based on the findings of the NIS Report (AtkinsRéalis, 2026), submitted as part of this planning application, the following conclusions have been made:

'Given the full and proper implementation of the mitigation detailed in this NIS, it can be concluded beyond reasonable scientific doubt that the proposed development will not, either individually or in combination with other plans or projects, give rise to any impacts which would constitute adverse effects on the River Barrow and River Nore SAC or any other Natura 2000 site, in view of their conservation objectives. Therefore, it is recommended that the competent authority may determine that the proposed development, either individually or in combination with other plans or projects, will not adversely affect the integrity of any Natura 2000 site, provided that the mitigation prescribed in this NIS is fully and properly implemented.'

Following consultation, An Coimisiún Pleanála (ACP) have concluded that the Proposed Development meets the criteria for Strategic Infrastructure Development (SID). ACP have determined that the Proposed



Development exceeds the relevant threshold set out in the Seventh Schedule of the Planning and Development Act 2000 (as amended)¹.

It is noted that a preliminary construction phase of c. 20 months is envisaged, as well as a 3-month commissioning phase, as detailed further in Chapter 2. Notwithstanding, a 10-year permission is requested, having regard to:

- The strategic nature and extent and complexity of the Proposed Development.
- To provide adequate time for the planning consent process and other consent processes including a review of Discharge Licence, No D0028-01
- To allow adequate time for the provision of funding and the procurement process.

It is considered reasonable and appropriate to seek a period of the permission in excess of the standard five year period in this context.

The full planning application pack, including this EIAR will be available for public viewing from the ACP Office, Carlow County Council Office, or the SID Application Website www.mortarstownwwtp.ie

1.1 Pre-Application Consultation

Consultation was undertaken with statutory organisations at various stages of the pre-planning process and subsequently informed the preparation of this EIAR document. A Pre-application meeting with An Coimisiún Pleanála was held on the 21st May 2025. The minutes of the meeting are included Appendix 1-3, Volume 3 of the EIAR. As part of the consultation process, a meeting with Carlow County Council was held on the 29th July 2025.

UÉ held a non-statutory public consultation on the Proposed Development over the period from Monday 22nd September to Sunday 19th October 2025. One non-statutory public information event was held on Thursday 9th October 2025, at the Seven Oaks Hotel & Leisure Club in Carlow town, to present the emerging proposals and gather feedback.

As part of the EIAR assessment process, consultation was undertaken with statutory organisations at various stages of the pre-planning process. A summary of all relevant feedback in relation to the Proposed Development is presented in Chapter 1, Volume 2 of the EIAR. A copy of all pre-application consultation correspondence received from statutory organisations as part of the EIAR process is presented in Appendix 1-2, Volume 3 of the EIAR.

All comments and feedback received from environmental consultees are addressed in full within the EIAR and the accompanying NIS.

¹ Accordingly the Proposed Development satisfies the requirements of Section 37A(1) of the Act. Furthermore, ACP concluded that the Proposed Development is of strategic importance and meets the requirements of Sections 37A(2)(a) and 37A(2)(b) of the Act.



2. Proposed Development

2.1 Nature and Extent of the Proposed Development

The development will consist of the upgrade to the existing Mortarstown WwTP, construction of a new inlet pump station at the treatment plant site, construction of a new microtunnel gravity sewer along Kilkenny Road between the existing Kilkenny Road Pumping Station and the new inlet pump station, landscaping, boundary treatments, and all ancillary site works. This includes the associated internal roads, lighting, security fencing and landscaping.

The current WwTP access from Green Road will be retained. A new internal vehicle access point will be provided to facilitate entry to the rear of the UÉ-owned property situated to the west of the WwTP boundary. The current Kilkenny Road Pumping Station access will also be retained. The proposed WwTP upgrade works will be developed to the west of the existing plant footprint, taking in areas of agricultural land and part of the adjoining UÉ property.

The proposal also includes the demolition of the inlet works, the stormwater holding tank, the sludge cake transfer facility, and 2 no. small chambers as well as decommissioning of the Kilkenny Road WwPS, final clarifiers (2 no.) and 2 no. rising mains. The existing WwTP site is ca. 3.79 hectares (ha) and after completion of the upgrade works the Site will expand to ca. 5.53ha. The total Proposed Development site area (Red line boundary) is ca. 10.766 ha in size. See Figure 1-1. Refer also to Chapter 2 – Proposed Development, Volume 2 of the EIAR.

2.2 General Overview

A summary of the works required is provided in the following sections.

2.2.1 Microtunnel Gravity Sewer

A 785m long microtunnel gravity sewer (1650mm internal diameter) will be constructed from the south side of Kilkenny Road Pumping Station to the wet well of the new inlet pump station adjacent to the new inlet works of the existing WwTP which is proposed to be upgraded. The microtunnel will be routed under the R448 Kilkenny Road before it traverses under a treelined verge and local access road (to UÉ owned property) to connect to the WwTP.

2.2.2 Inlet Pump Station

2.2.2.1 New Inlet Pump Station (PS)

The construction of the new inlet pump station at the Mortarstown WwTP site, located west of the WwTP and north of a vacant cottage, will involve:

- The provision of 1 no. terminal pump station.
- The provision of 4 no. raw sewerage pumps inclusive of Mechanical, Electrical, Instrumentation, Control, and Automation (MEICA) works.



- The provision of 1 no. odour control unit.
- The provision of 1 no. flow meter chamber.

The new pump station will be designed for 4 no. pumps configured on a duty/assist/assist/standby basis to cater for future 2037 design requirements.

2.2.2.2 Existing Kilkenny Road Pumping Station (PS)

The existing Kilkenny Road pumping station will be decommissioned. The existing building structure will remain. The existing above ground steel gantry structure, access stairs and pumps will be removed from site and repurposed. Incoming flows will be diverted via the existing below-ground holding tank to a newly constructed manhole positioned south of the existing PS, conveying flows to the new gravity microtunnel. Existing overflows at the Kilkenny Road PS will be retained in accordance with the current Wastewater Discharge Licence (EPA WwDL Ref: D0028-01) and utilised in extreme events where the new gravity microtunnel may be at maximum capacity.

2.2.3 Mortarstown WwTP

The upgrade of the Mortarstown Wastewater treatment plant will require the following scope of works:

- Provision of a new foul pumping station for local agglomeration adjacent to existing inlet works (supplemented by the WwTP standby generator).
- Provision of new fuel storage tank (5000l) and standby diesel generator to service the WwTP (roofed).
- Provision of new inlet works to include fine screening, mechanically raked by-pass screen, screening compaction and conveyance to skips, grit removal, grit classification and conveyance to skips. The new inlet works will be provided with an odour treatment unit.
- Provision of 2 no. new stormwater storage tanks and 2 no. new stormwater return pumps.
- Existing final settlement tanks and associated Return Activated Sludge (RAS)/ Waste Activated Sludge (WAS) to be retained, cleaned and decommissioned.
- Provision of 4 no. new primary settlement tanks and scraper systems.
- Provision of 4 no. new primary sludge pumps.
- Provision of a new scum pump.
- Provision of 4 no. new air blowers and modifications to existing air delivery pipework
- Provision of a new air blower building (13.6m x 8.6m, roofed) and repurposing of existing blower building for storage purposes.
- Provision of new fine bubble diffused air system in existing aeration tanks.
- Provision of 2 no. new final settlement tanks with half-bridge scrapers.
- Provision of a new RAS/WAS pumping station and station fitted with 2 no. RAS pumps and 2 no. WAS pumps.
- Structural refurbishment of the existing picket fence tanks.
- Mechanical and electrical refurbishment of existing picket fence thickener and conversion of second existing tank to a sludge blending tank.
- Provision of 2 no. additional picket fence thickener tanks.
- Provision of 1 no. belt press, polymer prep unit and polymer dosing pumps in the existing sludge dewatering building.
- Provision of a new pumped sludge transfer system between the sludge blending tank and picket fence thickeners.
- Provision of upgrades to the existing sludge import facility.
- Provision of minimum 6 no. new odour control units



- Provision of upgrade to existing chemical storage tank and dosing facility
- Provision of 1 no. new outfall chamber and outfall pipe.
- Modifications to existing administration building.
- Provision of MEICA and SCADA upgrades.
- New storage shed and associated gantry (24.9m x 12.7m, roofed).
- Demolition of existing inlet works structure.
- Existing utility service relocations.
- General civil site works.
- Future storm tank (not part of this planning consent).
- Future aeration tank (not part of this planning consent).
- Future final settlement tank (not part of this planning consent).
- Provision for PV solar panels²,
- Diversion of existing ESB 38kv HV overhead lines and 10kV/20kV MV line on site (carried out by ESB).

2.2.3.1 Preliminary Treatment – Inlet Works

As part of the upgrade, the existing inlet treatment works will be decommissioned, demolished, and replaced with a newly constructed inlet works. Wastewater from the new Inlet Pump Station and the new local foul pump station will discharge into a flow splitting chamber. A standby generator will be installed to ensure continuous operation. Excess flows will overflow to new stormwater tanks. Screenings and grit will be washed and conveyed to enclosed skips for off-site disposal. Offensive odours will be managed using covered units and an air extraction system connected to a dedicated odour treatment facility.

2.2.3.2 Preliminary Treatment – Stormwater Storage

As part of the stormwater management upgrade, excess stormwater flows will overflow downstream of screening and grit removal units and be directed to a new stormwater storage tank system. If a storm event exceeds this capacity, the screened and de-gritted wastewater will overflow to the WwTP outlet chamber and discharge via a licensed discharge location to the River Barrow. The existing final settlement tanks will be repurposed as stormwater storage tanks and supplemented by 2 no. newly constructed tanks providing additional storage. If all tanks reach capacity, overflow will be recorded via a flow monitor. Once the storm subsides, stored water will be returned to the inlet works using a duty/standby pump.

2.2.3.3 Primary Settlement

As part of the new works, 4 no. rectangular horizontal-flow primary settlement tanks will be installed. These tanks will feature chain and flight scrapers for sludge collection, when all tanks are in service, and will achieve 30% organics and 60% solids removal efficiency. The tanks will be covered, with access for maintenance and inspection, and equipped with sludge scrapers, scum skimmers, and a dedicated odour control system to manage emissions.

2.2.3.4 Secondary Treatment – Biological

The existing biological process, which biologically removes nitrogen and phosphorus through anaerobic, anoxic, and aerobic stages, will be retained. New flowmeters and modulating penstocks will be installed to control flow

² UÉ's recent sustainability and renewable energy policies target generation of minimum 10% of plant's energy demand from renewable energy sources. The implementation of solar PV (Photovoltaic) panels is proposed on the grassed site to the west of the WwTP works.



to each anaerobic reactor. The system will utilize high-strength influent from a local microbrewery as a carbon source, eliminating the need for external dosing. Upgrade works include replacing the existing chemical storage tank, installing new dosing pumps and lines, and replacing fine bubble air diffusers. 4 no. new 70 kW variable speed air blowers will be provided, housed in a new blower building. The anaerobic reactors will be equipped with mixers to prevent solids settlement, and the anoxic reactors will receive variable internal recirculation flows.

2.2.3.5 Secondary Treatment – Chemical

Phosphorus in wastewater exists as ortho-phosphate, polyphosphate, and organic phosphate. During aerobic treatment, polyphosphate and organic phosphate are converted to ortho-phosphate. While most phosphorus will be removed biologically through the retained biological process, chemical dosing will be applied at the aeration tank for simultaneous precipitation of residual phosphorus. The new chemical dosing system will be implemented in accordance with UÉ Standards (Ref: IW-TEC-700-05). Upgrade works will include replacement of the existing chemical storage tank and installation of new dosing pumps and lines to support effective phosphorus removal.

2.2.3.6 Secondary Treatment – Final Settlement and Activated Sludge Pumping

Flows from the biological process will pass through the existing outlet chamber to a new flow splitting chamber upstream of secondary settlement. Secondary treatment will include 2 no. newly constructed 32m diameter radial flow settlement tanks, equipped with full bridge scrapers and central sludge hoppers. Treated effluent will flow to a new Parshall flume fitted with an ultrasonic flow sensor and an autosampler for monitoring, before discharging, via a licensed discharge location to the River Barrow. A new pH/temperature sensor will be installed. Final settlement will be supported by two new upward-flow tanks. To mitigate the risk of rising sludge due to gas production from denitrification, a denitrification stage has been included in the process design prior to settlement.

2.2.3.7 Sludge Facility – Sludge Storage and Dewatering

The existing sludge import facility will be upgraded to accept sludge from local treatment plants. Imported sludge will be screened and stored in a new underground tank, then pumped to the sludge blending tank, where all sludge streams will be combined to ensure a balanced and homogenous mixture. Blended sludge will be gravity thickened using the existing thickener and 2 no. new thickeners.

Thickened sludge will be pumped directly to both the existing and the new belt press for dewatering. Works will include the provision of 3 No. covered and forced-ventilated skips. Separate conveyors will be supplied for discharging into each of the 3 no. sludge skips. Centrate and supernatant from thickening and dewatering will be returned to the biological process via the new pumping station, with a bypass to the import tank for maintenance.

2.2.3.8 Sludge Import

The existing site access and weighbridge will be retained, while the existing sludge import facility adjacent to the sludge dewatering building will be upgraded. This upgraded facility will include a packaged sludge reception plant with tanker coupling, grit drop-out box, and enclosed screening with washing and dewatering, mounted above an underground storage tank. Screened sludge will be pumped to the sludge blending tank, which will be fitted with a mixer to homogenise imported and site-generated sludge. Homogenised sludge from the sludge blending tank shall be pumped to the picket fence thickeners. Sludge will be dosed enroute with a polyelectrolyte principally to improve the quality of the supernatant and to aid in the entrapment of fats, oils and greases, and scum.



2.2.3.9 Administration Building

The existing administration building will be modified to include a larger control room. The existing store will be repurposed to include a new office and laboratory.

2.2.3.10 Final Effluent Monitoring

At the notch weir of the final settlement tanks, treated effluent overflows and passes by gravity through a flowmeter chamber and onto a sampling chamber from where a flow proportional sampler will collect samples.

2.2.4 Outfall

The existing (licenced) outfall pipe will be replaced with a new diameter gravity outfall pipe, to the south side of the existing outfall (ca. 10m from the existing licenced discharge point). The pipe will cross under the R448 by microtunnelling and enter the previously cleared woodland that is adjacent to the existing residential dwellings to the west of the Kilkenny Road. A temporary cofferdam / shoring will be required to construct the head wall on the riverbank. The temporary cofferdam installation will be carried out from a barge operating on the River Barrow. By this means, it is intended to avoid potential adverse effects of piling from the river bank due to the limited working area at the river bank. The barge will be a temporary structure required during the construction phase for cofferdam installation. The outfall pipe will enter the river ca. 1.5m below the low water level. It should be noted that the existing outfall pipe will be retained; however will not be used as part of the proposed development.

2.2.5 Onsite Storage (including Chemical and Fuel Storage)

Chemical materials and fuels will be stored at site during the operational stage and will be within suitably bunded storage tanks. A new storage shed will be constructed to the north of the sludge dewatering which will be used as the primary storage location of machinery and parts for the WwTP. The disused blower building will be repurposed as additional storage facility for general materials.

2.3 Demolition and Decommissioning Phases

Existing plant/items to be demolished as part of the Proposed Development are listed as follows

- Storm tank (area 616m²);
- Inlet works (area 166m²);
- Various small chambers within the site (2 no. chambers, area 3m² and 14m²); and,
- Existing sludge cake transfer facility (area 100m²).

Existing plant/items to be decommissioned as part of the Proposed Development are listed as follows:

- Kilkenny Road pumping station;
- Existing rising main; and,
- Existing settlement tanks (2no.).

An Asbestos Refurbishment Survey Report (OHSS, 2018), presented in Appendix 2.1, Volume 3 of this EIAR, was prepared which identified asbestos containing materials (ACM) within the existing WwTP. This report recommends that the ACMs are removed in advance of any refurbishment or demolition works within the existing WwTP, and ACMs should only be removed by a competent contractor in compliance with all relevant



waste management and Health and Safety legislation. An Asbestos Survey of the Kilkenny pump station (scheduled to be decommissioned) will be undertaken prior to commencement of the proposed decommissioning works.

2.4 Future Decommissioning of Mortarstown WwTP

Mortarstown WwTP is owned and operated by UÉ, who will be responsible for the future intentions of this facility if the plant were decommissioned. The design lifespan of the upgraded plant is 25 years but it is anticipated that it will be maintained, with periodic upgrading undertaken over a longer lifetime to meet future demand and upgrades in technology. In the event of facility shutdown UÉ will decommission, render safe or remove for disposal/recovery, all materials, waste, ground, plant and equipment that could result in environmental pollution. Decommissioning would follow a staged, compliant process focused on safety, environmental protection, and traceable documentation in accordance with prevailing best practice at the time of closure, and all relevant EPA requirements, under the relevant EPA waste licence.

2.5 Project Details

2.5.1 Timelines

The construction activities for the development are anticipated to run for 18-20 months between Q4 2027 and Q2 2029, with commencement of operation expected to be Q3 2029.

At this preliminary juncture, the proposed construction works will comprise 4 no. key stages, summarised as follows:

- **Phase 1** - Construction of a new microtunnel gravity sewer between the existing Kilkenny Road pumping station and the new inlet pump station and construction of the outfall pipe and the headwall;
- **Phase 2** – Construction of inlet works, primary settlement tank, picket fence thickeners, blower building, storage shed, and other ancillary units;
- **Phase 3** – Decommissioning of the existing Kilkenny Road PS;
- **Phase 4** – Construction of the stormwater holding tanks.

2.5.2 Sequencing of Works

Details of the proposed sequence of construction works are provided in the following section. It should be noted that this construction sequence is preliminary and may be subject to revision at a later stage of the development.

2.5.2.1 Microtunnel Gravity Sewer Construction

A trenchless construction methodology, pipe jacking, will be used to install the underground pipeline, by pushing specially designed pipes through the ground using high-capacity hydraulic jacks from a launch shaft. A working area within the red line project boundary, will be provided during construction for the installation of the launch chamber, at the existing WwTP site.



2.5.2.2 Waste Water Treatment Plant (WwTP)

The construction of the WwTP will involve 11 no. key stages including:

- Construction of the new screening and grit control inlet works offline.
- Construction of the new Storm Tank 2 (tank at the east).
- Construction of the new Primary Settlement Tanks, Final Settlement Tanks and associated pipework, chambers and pumping stations.
- Installation of sludge thickening tanks, sludge dewatering units, upgrade sludge import facility and installation of all associated chambers offline. Install and connect upstream and downstream pipework to these units offline.
- Installation of the temporary cofferdam on the River Barrow utilising a barge for driving the sheet piles.
- Construction of the proposed outfall pipework, chambers and new outfall chamber and headwall.
- Installation of the new dewatering press, new sludge cake pumps and upstream and downstream pipework offline.
- Completion of necessary modifications to thickened sludge feed pumps arrangement and connect thickened sludge pipework upstream and cake pipe work downstream of the new dewatering unit to the existing pipework.
- Commissioning of the new sludge dewatering facilities.
- Installation of the new air blower building, 4 no. new air blowers, associated equipment and pipework offline.
- Connection and commission of the air blower pipework to the existing aeration tanks and decommission the existing air blowers and associated building. Commission the new sludge dewatering facilities.

2.5.2.3 Kilkenny Road Pumping Station Connection

2.5.2.3.1 Temporary Overpumping to Allow Modifications to Existing Wet Well

An existing manhole upstream of the Kilkenny Road pumping station is fed from 3 no. existing pipelines. One pipe will be intercepted and diverted to reception Shaft B. The remaining larger pipes shall be overpumped to reception Shaft B. This will allow flows to be isolated and the connection to Shaft A be made.

2.5.2.3.2 Kilkenny Road Pumping Station Connection to Tunnel

A connection will be made from the southern side of the existing wet well to the new Shaft A. Flows will then be reinstated to the existing wet well and allowed to overflow to the reception Shafts A and B and the new tunnel until testing and commissioning of the tunnel, the new pumping station and the new inlet works are complete.

2.5.2.3.3 Wet Well Modifications

Once testing and commissioning are complete, flows will be isolated upstream of the existing wet well and overpumped again to allow modifications to the existing wet well. Once works are complete, upstream flows will connect via the modified wet well to the new gravity tunnel.

2.5.2.4 Connection of New Infrastructure into Treatment Process³

It is proposed to complete the following 3 no. connections outlined below, to allow for transfer of the flows from the existing process to the new process:

³ These works will need to be completed during periods of dry weather.



- **WwTP Connection No.1** - It is proposed to isolate the flows coming from the existing inlet works to the chamber, immediately upstream of the aeration tank.
- **WwTP Connection No.2** - It is proposed to isolate the flows coming from the existing aeration tank.
- **WwTP Connection No.3** - Flows coming from the new upstream combined effluent chamber will be isolated. The next step will complete the connection of the proposed pipework into this chamber.

2.5.2.5 Stormwater Storage

Following the diversion of the flows to the new process stream, the existing storm tank will be demolished and the new stormwater Tanks with associated pipework and chambers constructed.

2.5.2.6 Commissioning

When the proposed infrastructure is constructed and connected into the process stream, a 3-month commissioning phase will commence. All existing infrastructure proposed for decommissioning will be retained for this period to act as a standby system, in the event of any commissioning issues.

2.6 Construction Aspects

2.6.1 Environmental Management

The construction of the Proposed Development will comply with the Outline CEMP submitted as Appendix 2.2, Volume 3 of this EIAR (which takes account of the Schedule of Environmental Commitments presented within this EIAR). This document will be further developed and added to within the project specific Detailed CEMP which will be prepared by the Contractor in advance of the construction and demolition works, and will be fully implemented onsite for the duration of the construction and demolition phase of the project.

2.6.2 Waste Management

The construction of the Proposed Development will be in accordance with the Construction and Demolition Resource and Waste Management Plan (RWMP) (AtkinsRéalis, 2026) submitted as Appendix 2.3, Volume 3 of this EIAR which was prepared in accordance with the relevant following guidance 'Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition projects' (EPA, 2022).

2.6.3 Traffic Management

All construction activities will be managed and informed by a Construction Traffic Management Plan (CTMP) which will be implemented by the Contractor. The details of the CTMP will be agreed with the Carlow Co. Council Roads Department in advance of construction activities commencing on site. Refer to Chapter 10 Traffic, Volume 2 of this EIAR and the Outline Construction Environmental Management Plan (CEMP) submitted as Appendix 2-2, Volume 3 of this EIAR.



2.7 Operational Aspects

2.7.1 Discharge Licence

The Urban Wastewater Treatment Directive (UWWTD) Regulations 2001 (amended in 2004 and 2010) sets standards to be met in the collection and treatment of wastewater as well as the monitoring requirements for wastewater discharges from urban areas. The discharge licence for Mortarstown WwTP was most recently granted under this legislative instrument in August 2009 (EPA WwDL Ref: D0028-01), with technical amendments in October 2011, December 2016 and December 2021.

The proposed discharge pipe is ca. 10m from the existing licenced discharge pipe (EPA WwDL Ref: D0028-01). A new discharge licence application / licence amendment will be sought for the proposed upgrade to the WwTP to reflect the proposed uplift in contributing PE. The WwDL establishes Emissions Limit Values (ELVs) for certain chemical characteristics, which the plants final effluent discharge is required to comply with. An update to the existing ELV's will be required within the new discharge licence application / licence amendment for the WwTP. As part of the proposed design, assimilative capacity calculations have been undertaken. The River Barrow has sufficient assimilative capacity to accept the increased discharge from the upgraded WwTP. A full Waste Assimilative Capacity (WAC) analysis has been completed and is discussed in Chapter 12 – Water, Volume 2 of this EIAR.

2.7.2 Waste Management

The operation of the Proposed Development will be in accordance with the Operational Waste Management Plan (WMP) (AtkinsRéalis, 2026) submitted as part of this planning application.

2.7.3 Surface Water Management

The Mortarstown WwTP has an existing surface water drainage system which drains the existing roadways. The extension of the site to the west including the proposed WwTP will require a new surface water drainage system, which will connect to the proposed storm water overflow pipeline (which includes an oil/petrol interceptor) prior to discharge via the existing outfall pipe to the River Barrow.

2.7.4 Odour Control

There will be active odour management during the operation of the WwTP by means of the odour control units (OCUs) to be installed to key process units including: New Pumping Station; New Inlet Works; New Primary Settlement Tank; Anoxic / Anaerobic Tank; Sludge Blending Tank and Picket Fence Thickeners (New and Existing); Sludge Dewatering Building; Local Foul Pump Station; and Centrate Pumps.

2.7.5 Potable Water (Mains) & Clean Wash Water (Borehole)

Potable water supply for human consumption and use in canteen and other welfare facilities is provided from Carlow Town's existing water network mains. The existing potable water supply to the WwTP will be retained to continue the supply of potable water supply to the administration building, emergency shower and eye wash and hydrants at the WwTP site.



The washwater supply to the process units is provided via an existing borehole located in the WwTP site, east of the administration building. The borehole system will be upgraded and washwater network will be expanded to cover the new process units and the inlet pump station during the operational phase.



3. Alternatives

3.1 Introduction

The assessment of Reasonable Alternatives is presented within Chapter 3, Volume 2 of the EIAR. A range of reasonable alternatives were considered during the design and assessment of the Proposed Development. This process examined the different options for meeting the Proposed Development's needs and objectives, and to determine whether these objectives can be achieved in a way that avoids, minimizes, or mitigates potential significant environmental effects. Refer also to Chapter 3 – Alternatives, Volume 2 of the EIAR.

3.2 Consideration of Reasonable Alternatives

This section outlines the changes in design over the design period of the project from feasibility, preliminary design and through to specimen design.

The 'Do Nothing' scenario was not considered further because, if the project did not proceed, the Mortarstown WwTP would not be upgraded and the absence of additional storage capacity for stormwater would mean that excessive stormwater flows would continue to be discharged into the River Barrow. The WwTP would be in breach of their EPA Discharge Licence and would not provide sufficient wastewater treatment for the population for Carlow Town and its surroundings.

The Proposed Development will be procured as a Design and Build project, with the chosen Contractor responsible for the final detailed design. A number of key design iterations which were considered during the design process, and how the overall design evolved taking account of site-specific design, engineering and environmental constraints, are described below. In order to identify a preferred specimen design, the design team considered the following:

- Process options to ensure compliance with the EPA wastewater discharge licence and the Habitats Directive;
- Area available for the development;
- Possible re-use of existing plant; and,
- Construction and operational costs.

3.2.1 Alternative Treatment Technology scenarios

At Project Feasibility Stage, four technical scenarios were assessed, based on a preliminary calculation of the projected 10-year agglomeration load of 57,000 PE:

- **Scenario A** included the addition of primary settlement tanks (PST) and activated sludge process (ASP) while utilising the existing bioreactors, ferric sulphate dosing equipment and Picket Fence Thickeners (PTF) in addition to other infrastructure.
- **Scenario B.1** included the incorporation of 2 no. additional Bioreactors without PSTs while utilising the existing bioreactors, ferric sulphate dosing equipment and PFTs in addition to other infrastructure.
- **Scenario B.2** included incorporating addition of 4no. aerobic zones without PSTs while utilising the existing bioreactors, ferric sulphate dosing equipment and PFTs in addition to other infrastructure.



- **Scenario C** considered the introduction of additional infrastructure required to receive and treat imported leachate and sludge.

The chosen option, Scenario A was identified as the preferred solution, as this option reduced load on the downstream biological treatment processes while meeting compliance requirements. Although all scenarios have similar impacts on environment and constructability, Scenario A offered lower energy requirements with a higher estimated CAPEX and lower whole life cost.

3.2.2 Works on Kilkenny Road Pumping Station

During the initial Feasibility Stage, it was identified that an upgrade of the existing Kilkenny Road Pump Station (PS) to deliver and manage Scenario A flows for future design horizons was required. Three pump station layout options, located to the south of the existing PS, were initially considered:

Option 1. Circular Pump Station – Wet Well

Option 2. Circular Pump Station – Dry Well; and,

Option 3. Rectangular Pump Station – Dry Well

3.2.2.1 Chosen Option

The circular pump station with dry well (i.e. Option 2) was deemed the preferred option following a comparative analysis and consultation with UÉ. This option provides isolation of pumps in a clean, ventilated mechanical chamber, superior equipment protection, easier access, and more reliable long-term operation compared with submergence in a sewage-filled wet well.

Following a site selection assessment, the most favourable site option for the new pumping station was available land in the northwest corner of the existing Mortarstown WwTP site.

3.2.3 Pipeline from Kilkenny Road Pump Station to WwTP

3.2.3.1 Rising Main Option

The upgrade of the Kilkenny Road PS requires additional pipe capacity to convey flows from the PS to the WwTP and during the initial assessment of a new PS two options of the raising mains were assessed:

1. Supplement the existing 600mm diameter Rising Main by construction of a new 1,200mm diameter rising main.
2. Installation of 2 No. new 900mm diameter rising main along the Kilkenny Road (R448) to the WwTP.

Rising Main Option 2 was selected as it offers cost effectiveness, operational efficiency, eliminates the need for further remedial works on the existing rising mains and provides long-term security to the Carlow wastewater infrastructure

3.2.3.2 Gravity Option

The selected option includes a gravity main from a proposed shaft located south of the existing Kilkenny Road PS to a new PS located at Mortarstown WwTP. Originally a 1200mm diameter tunnel was proposed.



The feasibility study considered four methods of trenchless technologies for the installation of pipelines including Horizontal Directional Drilling (HDD), Auger boring, Pipe Jacking; and Microtunnelling.

3.2.3.3 Chosen Option

Microtunnelling was identified as the optimal choice based the minimal impact on the alluvial woodland and traffic on Kilkenny Road, its compatibility with tunnelling beneath the water table, as well as economic benefits at depths exceeding 6m.

The preferred option will minimise any potential effects, during installation and operation, on the nearby River Barrow.

3.2.4 Micro-Tunnel Alignment

Following public consultation in October 2025, where the proposed microtunnel alignment was published to the members of the public, along with the preparation of an additional study, the proposed tunnel shaft on Kilkenny Road was moved southwest.

Following design revisions arising from the public consultation process, the updated design was subsequently reviewed by Carlow County Council. It was requested that the relocated shaft be repositioned to avoid overlap with the Southern Relief Road layout. In order to avoid encroaching on the private property boundary and the Southern Relief Road layout, an additional shaft was added (manhole F) and the intermediate shaft (manhole E) was moved further north.

3.2.5 WwTP Outfall

The existing outfall pipeline does not have sufficient capacity to convey treated effluent from the upgraded WwTP. It is proposed to replace the existing 600mm diameter outfall pipe with a 900mm diameter gravity outfall pipe approximately 205m in length.

Six outfall route options were identified and considered, as follows:

- Route No. 1 - Using the Existing Outfall Pipe
- Route No. 2 – New Outfall Pipe adjacent to Existing Pipeline Route (Open cut)
- Route No. 3 – New Outfall Pipe adjacent to Existing Pipeline Route (Microtunnel)
- Route No. 4 – Route Diverted North of the Property, Oakfield
- Route No. 5 – Route Avoiding Alluvial Woodland (Diverted South of the Property, Oakfield)
- Route No. 6 – Route Avoiding Alluvial Woodland (Further South).

3.2.5.1 Preferred Route

Route No. 3 was found to be most favourable route. This route is favoured from an ecological point of view, as it is located within lands that have been previously disturbed (during construction of new residential properties) and therefore has the least potential to impact the Alluvial Woodland identified within the area.



3.2.6 Headwall Construction

The use of a barge was selected as the most appropriate method of installation of the cofferdam at the outfall location in order to avoid adverse effects of the temporary working platform on the water quality of River Barrow and the surrounding ecosystem.

3.3 Proposed Optimal Design Solution

The proposed optimal design solution from an environmental, constructability and cost perspective is as follows;

- Treatment Plant Technical Scenario – a combination of technical scenarios are being progressed, with Technical Scenario B.2 being the original preferred option, however following further design refinement, elements from Scenario C and works to the PS were also included in the final design;
- New Pump Station - a circular dry well design has been selected, in lands available in the northwest corner of the Mortarstown WwTP site;
- Mains from Kilkenny Road Pump Station to WwTP – a 1650mm gravity main has been selected at design stage, which will be installed via. micro-tunnelling methodologies. The alignment of this gravity main is located so as to avoid encroaching on a property boundary; and,
- WwTP Outfall - a 900mm gravity pipeline which follows the alignment of the existing WwTP outfall pipe has been selected at design stage.



4. Population And Human Health

An assessment of the potential impacts from the Proposed Development on Population and Human Health was undertaken. Relevant guidance was used and the assessment considered the wider population, the local population and sensitive receptors surrounding the Proposed Development.

The Population and Human Health Impact Assessment is contained within Chapter 4 Population and Human Health, Volume 2 of the EIAR.

4.1 Existing Environment

The existing Population and Human Health baseline can be determined with reference to the Central Statistics Office (CSO) Census Results 2022, along with relevant guidance from the EPA and EU EIA guidelines. The Proposed Development is located within Carlow Rural ED, which had a population of 16,203 during the Census 2022. There are residential, community, commercial properties surrounding the Proposed Development, as well as agricultural lands. The Census 2022 results indicated that health of Carlow Rural ED is within the typical range with ca. 82% of the population declaring general health to be either 'Very Good' or 'Good'.

4.2 Impact Assessment

4.2.1 Do Nothing Scenario

A '*Do Nothing*' scenario would adversely impact the local area, increasing the risk of pollution events via overflows and reduce the feasibility of future developments in the area. In addition to this, there would be an increased volume of untreated discharge – placing the local water network at risk of pollution events and not reaching Water Framework Targets by 2027.

Community and tourist resources and amenities revolve around the use of the River Barrow. These resources and amenities could become compromised should the quality of the River Barrow be affected by capacity overloads associated with Mortarstown WwTP. The River Barrow is also designated as a Special Area of Conservation which makes the flora and fauna in the Study Area sensitive to changes in water quality in the River Barrow.

Adopting a 'Do Nothing' scenario could negatively affect human health and settlement patterns in the area due to reduced air quality and persistent odor issues arising from excessive loading on the current infrastructure.

4.2.2 Construction and Demolition Phase

Consideration of construction impacts of the Proposed Development has shown that there would likely be **significant adverse impacts** (pre-mitigation) associated with disruption or changes to access to residential estates, community amenity (such as the Irish Wheelchair Association) and commercial properties along the Kilkenny Road during construction of the Proposed Development. These effects would be temporary during the construction phase.



Whilst **not anticipated to be significant**, adverse impacts are also anticipated for residents in the wider study area, walkers, horse riders, cyclists and users of services in the wider area during construction due to increased traffic levels, disruption to access and increased journey lengths. 2no. active travel routes located along the River Barrow have potential to be impacted by traffic related disturbances during the construction phase. Residents, businesses and local communities in proximity to the proposed abnormal loads routes may also be affected by disruption to roads including delays and temporary closures.

Non-significant adverse effects are also anticipated in terms of safety for residents as a result of construction activities and introduction of construction traffic and for construction workers who are exposed to potential human health risks.

Non-significant beneficial effects are anticipated for businesses and local communities in terms of employment and income due to increased opportunity for employment and stimulation of the local economy and job market.

Taking account of mitigation measures, as detailed further in Chapter 4, Volume 2 of the EIAR, all effects identified during construction will be **temporary, not significant and limited to the construction phase**.

Effects during demolition are similar to those during construction but are of shorter duration. Non-significant adverse effects may arise in relation to:

- dust and air quality (including asbestos management)
- noise and vibration
- temporary disruption to traffic and access
- potential minor impacts to surface water (e.g. sediment runoff)

Taking account of mitigation measures, as detailed in Chapter 4, Volume 2 of the EIAR, all effects identified during demolition will be **temporary**, are considered **not significant** and will be **limited to the demolition phase**.

4.2.3 Operational Phase

During operation, **no likely significant adverse effects** on population and human health are anticipated. The effects associated with operation are predicted to be **negligible or imperceptible** and therefore **not significant**. The operation of the upgraded wastewater treatment plant will:

- operate within a regulated framework
- maintain traffic, noise and air quality within acceptable standards
- include enhanced odour control measures

The Proposed Development will provide **improved wastewater treatment capacity**, reducing the risk of pollution events and contributing to improved water quality in the River Barrow. Improved odour control measures will result in an **overall improvement in odour conditions** in the surrounding area, representing a positive effect on local amenity. **Non-significant beneficial effects** may also occur due to improved infrastructure and potential employment opportunities.

4.2.4 Decommissioning Phase

No likely significant effects are anticipated during the decommissioning phase. Potential non-significant adverse effects may arise in relation to:



- worker health and safety
- temporary increases in traffic
- noise and dust during dismantling activities

An asbestos survey will be carried out prior to decommissioning, and appropriate mitigation measures will be implemented to ensure that effects remain **not significant**. There may be some **minor beneficial impacts** for local communities associated with the opportunity for employment during decommissioning.

4.3 Mitigation and Monitoring

Mitigation and monitoring measures set out in the EIAR will be implemented to minimise effects on population and human health. During construction, a Detailed **Construction Environmental Management Plan (CEMP)** will be implemented, setting out best practices for controlling noise, dust, vibration and traffic.

Key mitigation measures include:

- dust suppression techniques (e.g. water spraying and wheel washing)
- traffic management measures to maintain access
- maintaining safe access for residents, businesses and emergency services
- noise and vibration control measures
- pollution prevention measures to protect water quality

A **Health and Safety Plan** will also be implemented to protect workers and the public.

Environmental monitoring will be carried out during construction and operation to ensure compliance with environmental standards.

4.4 Residual Impact Assessment

All construction phase activities are **temporary** in nature. **No likely significant adverse residual effects** on population and human health are expected during the construction, decommissioning phases, and the operational phase of the Proposed Development.

The Proposed Development will also provide benefits to the local community, including improved wastewater infrastructure, reduced risk of pollution events, improved environmental water quality and potential economic benefit.



5. Biodiversity

Chapter 5 Biodiversity describes the biodiversity within the footprint of the proposed development, evaluates the importance of ecological features on a geographical scale, assesses the likely effects on key ecological receptors, and identifies measures to avoid, minimise or compensate for potential negative effects. It also outlines ecological enhancement measures to achieve a No Net Loss/Net Gain of Biodiversity in accordance with UÉ's Biodiversity Action Plan (UÉ, 2021). The Biodiversity assessment was completed on the basis of thorough desk studies and a suite of field surveys (including Fossitt habitat surveys, priority Annex I woodland surveys, aquatic habitat and fisheries surveys, non-volant mammal surveys, and bat surveys), as well as consultation with the National Parks & Wildlife Service. This chapter was prepared in accordance with recognised guidance, including CIEEM (2018, updated 2024), EPA (2022), and relevant survey guidelines. Refer also to Chapter 5 – Biodiversity, Volume 2 of the EIAR.

A separate Natura Impact Statement (NIS) has been prepared for the proposed development (AtkinsRéalis, 2026; Report Ref. 5161805DG0457). The NIS assesses the implications of the proposed development, individually and in combination with other plans and projects, for the integrity of Natura 2000 sites, most notably the River Barrow and River Nore Special Area of Conservation, to inform the competent authority's Appropriate Assessment under Article 6(3) of the Habitats Directive (92/43/EEC).

The proposed development has the potential to give rise to a range of ecological effects during both the construction and operational phases. Key effects include habitat loss and fragmentation associated with permanent and temporary land take, which may reduce habitat extent, connectivity and quality, and indirectly affect fauna through the loss of foraging, breeding and sheltering habitat. Construction-related disturbance arising from noise, vibration, visual activity and human presence is anticipated to be localised, temporary and generally limited to within approximately 100m of works. Operational disturbance will be significantly lower, confined to routine activities within the plant, and is expected to be negligible above baseline levels. Artificial lighting associated with both phases has the potential to disrupt natural behavioural patterns, particularly for sensitive nocturnal species such as bats and otters, depending on its intensity, duration and proximity to sensitive habitats.

Other potential effects include those associated with solar panels, which may affect birds and insects due to reflective surfaces; however, existing evidence of significant ecological effects is limited, and the low ecological value of the proposed grassland location reduces the likelihood of notable effects. Underwater noise and vibration from piling during outfall construction may temporarily disturb fish and otters, with effects most pronounced in close proximity to the works, although these effects will be short-term and restricted to periods of active piling. Water quality effects represent a more significant risk during construction, particularly from sediment, hydrocarbons, concrete and other pollutants, with effects generally expected to be temporary and moderate, but potentially significant in the event of accidental releases. During operation, however, the upgraded wastewater treatment plant is expected to improve water quality in the River Barrow through increased treatment capacity and reduced overflow events, with compliance measures ensuring adherence to environmental quality standards.

The mitigation strategy follows the mitigation hierarchy and addresses all identified ecological risks associated with both construction and operation. Key measures prioritise protection of water quality through adherence to detailed controls in Chapter 12 – Water, Volume 2 of the EIAR, including management of sediment, hydrocarbons, wastewater and specialist works (e.g. outfalls and micro-tunnelling). Construction effects are further reduced through strict timing constraints (e.g. daylight-only in-stream works), minimisation and control of artificial lighting, and implementation of wildlife-sensitive lighting design principles such as dark buffers and low-intensity luminaires. Habitat loss and fragmentation are minimised via adherence to Tree Protection Plans,



constrained vegetation clearance, and retention of key ecological features, including mature trees supporting bat roosts. Species-specific mitigation includes pre-construction surveys, seasonal restrictions, exclusion measures, and ecological supervision to protect birds, bats, otter and aquatic fauna. Biosecurity protocols are comprehensive, addressing invasive species and disease risks through cleaning, containment and controlled disposal procedures. Additional measures include fish rescue during cofferdam works, noise control, and maintaining habitat connectivity. Operational mitigation is largely embedded in design, with wastewater treatment improvements expected to safeguard overall water quality.

The enhancement strategy seeks to deliver biodiversity gains in line with national, county and UÉ policies, including green infrastructure objectives and the All-Ireland Pollinator Plan. Central to this is a landscape-led approach incorporating native planting, habitat creation and improved ecological connectivity. Proposed measures include extensive native hedgerow planting, species-rich grassland management (short- and long-flowering meadows), and the creation of wildlife ponds to support aquatic and terrestrial biodiversity. Pollinator-focused interventions are embedded throughout, including reduced mowing regimes, elimination of pesticide use where possible, and provision of nesting habitats such as bare ground areas and bee bricks. Tree and orchard planting using native, nectar-rich species will enhance foraging and roosting resources, particularly for bats, alongside targeted features such as bat boxes, veteranisation of trees, and potential enhancement of existing structures for roosting. Birds will be supported through installation of nest boxes and swift bricks. The strategy also promotes long-term ecological management, including invasive species control, adaptive monitoring, and alignment with evolving biodiversity plans. Collectively, these measures aim to achieve a Net Gain in Biodiversity, as demonstrated through the UÉ BNG Register completed for the proposed development.

The mitigation and enhancement measures secured through both the EIAR Biodiversity chapter and the NIS will ensure that the proposed development, alone or in combination with other plans and project, **will not give rise to any significant negative effects** on Biodiversity or any adverse effects on the integrity of the River Barrow and River Nore SAC or any other Natura 2000 site.



6. Landscape And Visual

This section summarises the effects of the proposed development on landscape and visual receptors, and the significance of the effects identified. The Study Area for the assessment was devised as an area sufficient to enable the potential significant effects of the project on landscape character and views/ visual amenity to be analysed. The Study Area includes areas of land within a 0.5km radius of the site. Refer also to Chapter 6 – Landscape and Visual, Volume 2 of the EIAR.

6.1 Receiving Environment - Landscape

The Carlow County Landscape Character Assessment and Schedule of Protected Views (Appendix VII of the Carlow County Development Plan 2022-2028), a county and local level character assessment provides detail on the type of landscape that occurs within the part of the study area within County Carlow. The part of the study area east of the River Barrow includes land within the Central Lowlands Character Area.

The Laois County Landscape Character Assessment (Appendix 6 of the Laois County Development Plan 2021-2027), a county and local level character assessment provides detail on the type of landscape that occurs within the part of the study area within County Laois. The part of the study area west of the River Barrow includes land within, Urban Fringe and Lowland Agricultural Areas.

6.1.1 Central Lowlands Character Area (Co. Carlow)

Condition: The field survey noted that the rural landscape in the area is generally in good condition, with intact characteristics such as grassland, hedgerows, woodland, and views along the river Barrow contributing to character. Typical suburban areas and generally in good condition.

Value: This landscape is judged to be of local importance and low value due to the influence of suburban development.

6.1.2 Urban Fringe Character Area (Co. Laois)

Condition: The rural landscape in the area is generally in good condition, with intact characteristics such as grassland, hedgerows, woodland, and views along the river Barrow contributing to character. The suburban areas are typical suburban areas and generally in good condition.

Value: This landscape is judged to be of local importance and low value due to the influence of suburban development.

6.1.3 Lowland Agricultural Areas (Co. Laois)

Condition: The rural landscape in the area is generally in good condition, with intact characteristics such as grassland, hedgerows, woodland, and views to distant upland areas and along the river Barrow contributing to character.

Value: This landscape is judged to be of local importance and medium value and includes some sense of place and distinctive features.



6.2 Receiving Environment - Visual

The Zone of Theoretical Visibility (ZTV) or areas of land from which the development may be potentially visible was estimated using a manual approach using map interpretation, and visual envelope mapping on site to establish the outer limit of land that may be visually connected with the proposal.

The areas identified are generally within 500m from the WwTP site and 150m from the Kilkenny Road Pumping Station and include;

- the area of the R448 Kilkenny Road corridor immediately west of the WwTP site and up to the Kilkenny Road Pumping station;
- the area of Green Road immediately east of the WwTP site;
- the residential areas at The Glen, College Green, Cluain Bui, Maple Court;
- Tyndall College/Carlow Institute of Further Education; and,
- The area of the R448 Kilkenny Road corridor immediately adjacent to the Kilkenny Road Pumping Station site.

The visual receptors identified includes people using; tracks/ waymarked walks, roads, settlement areas, commercial property and education buildings.

Seventeen viewpoint locations were selected based on professional judgement to represent the experience of visual receptors. The viewpoints chosen, do not cover every view but have been selected to represent the different users from a range of directions and distances from the site. The viewpoint locations are illustrated on the Viewpoint Locations drawing, in Appendix 6.1, Volume 3 of this EIAR. The viewpoint images are illustrated in Appendix 6.2, Volume 3 of the EIAR.

6.3 Likely Significant Landscape Effects of The Proposed Development

6.3.1 Central Lowlands Character Area (Co. Carlow)

The part of the Central Lowlands Character Area within the study area is judged to have low value. This landscape is judged to have low susceptibility to change as a result of the proposed development. The combination of low susceptibility and low value mean that the sensitivity of overall local landscape character is judged to be low.

Overall magnitude of change (Construction): Minor adverse and of temporary to short term duration.

Significance (Construction): The combination of the overall minor adverse magnitude and low sensitivity, suggest that the overall significance of the effect on Central Lowlands landscape character in the study area during construction would be **slight adverse**.

Overall magnitude of change (Operation): Minor Adverse and long term duration.

Significance (Operation): The combination of the overall minor adverse magnitude and low sensitivity, suggest that the overall significance of the effect on Central Lowlands landscape character in the study area during operation would be **slight adverse**.



6.3.2 Urban Fringe Character Area (Co. Laois)

The part of the Central Lowlands Character Area within the study area is judged to have low value. The Proposed Development is not located within this character area so there will be no direct physical effects; intervisibility from this area to the proposed development will also be limited by intervening vegetation/ built development. This landscape is judged to have low susceptibility to change as a result of the proposed development. The combination of low susceptibility and low value mean that the sensitivity of overall local landscape character is judged to be low.

Overall magnitude of change (Construction): Negligible adverse and of temporary to short term duration.

Significance (Construction): The combination of the overall negligible adverse magnitude and low sensitivity, suggest that the overall significance of the effect on Urban Fringe landscape character in the study area during construction would be **neutral**.

Overall magnitude of change (Operation): No change

Significance (Operation): The combination of the overall no change magnitude and low sensitivity, suggest that the overall significance of the effect on Urban Fringe landscape character in the study area during operation would be **neutral**.

6.3.3 Lowland Character Area (Co. Laois)

The part of the Lowlands Character Area within the study area is judged to have medium value. The Proposed Development is not located within this character area so there will be no direct physical effects; intervisibility from this area to the proposed development will also be limited by intervening vegetation/ built development. This landscape is judged to have low susceptibility to change as a result of the proposed development. The combination of low susceptibility and medium value mean that the sensitivity of overall local landscape character is judged to be low.

Overall magnitude of change (Construction): Negligible adverse and of temporary to short term duration.

Significance (Construction): The combination of the overall negligible adverse magnitude and low sensitivity, suggest that the overall significance of the effect on Lowland landscape character in the study area during construction would be **neutral**.

Overall magnitude of change (Operation): No change.

Significance (Operation): The combination of the overall no change magnitude and low sensitivity, suggest that the overall significance of the effect on Lowland landscape character in the study area during operation would be **neutral**.

6.4 Likely Significant Visual Effects of The Proposed Development

The significance of the visual effect of the proposed development on representative viewpoints (as shown in Appendices 6.1 and 6.2, Volume 3 of this EIAR) is summarised below.



Table 6-1 - Significance of Visual Effects

Viewpoint	Significance of Visual Effect Construction	Significance of Visual Effect Operation
1	Neutral	Neutral
2	Neutral	Neutral
3	Neutral	Neutral
4	Neutral	Neutral
5	Neutral	Neutral
6	Neutral	Neutral
7	Slight Adverse	Neutral
8	Slight Adverse	Neutral
9	Moderate Adverse	Slight Adverse
10	Neutral	Neutral
11	Moderate Adverse	Slight Adverse
12	Moderate Adverse	Moderate Adverse
13	Neutral	Neutral
14	Moderate Adverse	Neutral
15	Moderate Adverse	Neutral
16	Moderate Adverse	Moderate Adverse
17	Slight Adverse	Neutral

6.5 Mitigation Measures

A number of mitigation measures will be implemented during the design and construction phase, to minimise or eliminate significant effects.

6.6 Residual Effects

Following the implementation of additional mitigation measures there would be **no significant adverse** residual landscape and visual effects, during the Construction and Operational Phases.

7. Air Quality And Odour

The Air Quality and Odour assessment has been carried out in line with all relevant guidelines, as detailed further in Chapter 7 – Air Quality and Odour, Volume 2 of this EIAR.

The Proposed Development has been designed to ensure that there are no significant adverse effects on air quality and Odour. This is demonstrated through the Air and Odour assessment and Odour modelling study, which establishes that no International or Irish air quality standards or guidelines are forecast to be exceeded.

The assessment concludes that operation of the Proposed Development will have **Minor effects** on air quality and the health of local people.

Application of an Environmental Management System will incorporate best practice measures in order to minimise dust and Odour air pollutants at the subject site.

During the construction and operational phase, emissions to air from the construction, landscaping and operation of the process will be mitigated in accordance with specific measures set out within Chapter 7 – Air Quality and Odour, Volume 2 of this EIAR and Chapter 18 – Schedule of Commitments, Volume 2 of the EIAR.

UÉ will be required to regularly monitor emissions in accordance with EPA licence requirements to ensure compliance with the prescribed Odour limit values.



8. Climate

8.1 Existing Environment

The existing climate baseline can be determined by reference to data from the EPA on Ireland's total greenhouse gas (GHG) emissions and compliance with European Union's Effort Sharing Decision "EU 2020 Strategy" (Decision 406/2009/EC). The EPA estimate that Ireland had total GHG emissions of 53.82 Mt CO₂e in 2024. The data indicate that from 2021-2024 Ireland has used 79% (186 Mt CO₂e) of the 295 Mt CO₂e Carbon Budget for the five-year period 2021-2025. This leaves 21% of the budget available for 2025, requiring a substantial 17.5% annual emissions reduction for 2025 to stay within budget. Refer also to Chapter 8 – Climate, Volume 2 of the EIAR.

8.2 Impact Assessment

8.2.1 Do Nothing Scenario

In the Do-Nothing scenario, the site will remain as per the baseline and will change in accordance with trends within the wider area. The Do-Nothing scenario is considered neutral in terms of the climate assessment.

As set out in Chapter 12 - Water, Volume 2 of the EIAR, increase in precipitation rates, and intense rainfall events, will increase the occurrence of stormwater overflows and the existing Mortarstown WwTP operations will not have the capacity to cope with the increasing flow volumes. The increase in summer droughts will result in a reduction in low river flows. This will have a negative effect on water quality in the River Barrow.

8.2.2 Greenhouse Gas Assessment

Calculation of the GHG emissions associated with the construction and operation of the proposed development was calculated using the online Transport Infrastructure Ireland Carbon Assessment Tool and information provided by the design team. GHG emissions associated with the proposed development are predicted to be a small fraction of Ireland's national 2024 GHG emissions, the ETS and non-ETS 2030 targets and the Electricity, Industry, Transport and Waste sector 2030 emissions ceilings.

The TII and ISEP guidance states that the following two factors should be considered when determining significance:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

Therefore, prior to mitigation, any impact to climate as a result of GHG emissions arising from the construction and operation of the Proposed Development is considered significant.



8.2.3 Climate Change Risk Assessment

A Climate Change Risk Assessment (CCRA) was conducted to consider the vulnerability of the proposed development to climate change, as per the TII 2022 PE-ENV-01104 guidance. This involves an analysis of the sensitivity and exposure of the development to future climate hazards which together provide a measure of vulnerability. The hazards assessed included flooding (pluvial, fluvial); extreme heat; extreme cold; drought and extreme wind.

The proposed development is predicted to have at most low vulnerabilities to the various climate hazards and therefore the effect of climate change on the proposed development is considered direct, long-term, negative and not significant, which is considered overall not significant in EIA terms with regard to the construction and operational phase.

Overall, no significant impacts to climate are predicted during the construction, decommissioning or operational phases of the proposed development.

8.3 Mitigation

8.3.1 Construction Phases

A number of best practice mitigation measures are proposed for the construction phase of the proposed development to ensure that impacts to climate are minimised. These mitigation measures include a construction program, sourcing materials locally where feasible, determining material reuse and waste recycling opportunities and identifying and implementing lower carbon material choices and quantities during detailed design.

8.3.2 Operational Phase

The majority of the operational GHG emissions associated with the proposed development are from vehicle use to carry out routine maintenance, deliver chemicals and collect sludge cake. Emissions from these visits will be reduced by using local businesses to carry out required works and ensuring visits are multi-functional where possible to negate the need for additional trips. Electricity consumption also contributes to operational emissions. The installation of solar panels will reduce GHG emissions associated with electricity consumption from the grid which is often generated using fossil fuels. Solar panels will provide 15% of the energy demand of Mortarstown WwTP.

8.4 Residual Impact Assessment

The impact to climate as a result of a proposed development must be assessed as a whole for all phases. The proposed development will result in some impacts to climate through the release of GHGs. TII reference the ISEP GHG Guidance which states that the crux of assessing significance is “*not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*”. The proposed development has proposed some best practice mitigation measures and is committing to reducing climate impacts where feasible. As per the TII and ISEP assessment criteria the residual effect of the proposed development in relation to GHG emissions is considered **direct, long-term, negative and slight**, which is overall **not significant** in EIA terms.



Design mitigation has been considered when assessing the vulnerability of the development to future climate change. In relation to climate change vulnerability, it has been assessed that there are no significant risks to the proposed development as a result of climate change. The residual effect of climate change on the proposed development is considered **direct, long-term, negative and not significant**, which is overall **not significant** in EIA terms.

8.5 Monitoring

There is no monitoring required for the construction or operational phases.



9. Noise And Vibration

The baseline noise environment has been established through environmental noise surveys conducted in the environs of the Proposed Development in order to quantify the existing noise environment. The surveys were conducted in accordance with ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise. Refer also to Chapter 9 – Noise and Vibration, Volume 2 of the EIAR.

9.1 Construction Phase

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Local authorities or An Coimisiún Pleanála normally control construction activities by imposing limits on the hours of operation and/or applying noise limits for construction noise at noise-sensitive locations.

Reference has been made to BS 5228 2009+A1 2014 Code of practice for noise and vibration control on construction and open sites to set appropriate limits on construction noise and vibration for the development site. Construction noise levels predicted at nearest sensitive properties are predicted to be below the threshold for significant impact during the general construction phase. At noise-sensitive locations around the WWTP site, likely construction noise effects are negative, not significant and short-term.

During the decommissioning of the pumping station, there is potential for temporary significant noise effects at the nearest noise-sensitive receptors. The application of binding noise limits, hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise and vibration effects are minimised.

9.2 Operational Phase

The primary sources of outward noise in the operational context are long-term and will comprise noise from the pumps, inlet works, blowers and other items in the main WWTP site. Detailed computer-based noise modelling of the site shows that the noise levels of the Proposed Development are within the noise criteria.

In the context of the surrounding road network the proposed development will not generate significant additional traffic noise.

The overall effect is therefore **negative, not significant and long-term**.

10. Traffic

This section summarises the existing receiving environment in relation to current road traffic characteristics and establishes the associated baseline scenario whilst undertaking an assessment of the proposed development to identify its likely effects on the traffic environment.

The assessment methodology for the traffic and transport impact is consistent with the Transport Infrastructure Ireland's (TII) Traffic and Transport Assessment Guidelines (PE-PDV-02045, last published in May 2014. Refer also to Chapter 10 – Traffic, Volume 2 of the EIAR.

10.1 Receiving Environment

10.1.1 Site Access

The existing treatment plant has two access points, both of which are intended to be retained:

- The first access is located via Green Road, approximately 900 m south of the Green Road / Kilkenny Road junction.
- The second existing residential access is located to the west of the site and forms part of the current site access arrangement.
- The existing access to PS (Pump Station) along Kilkenny Road is also intended to be retained

The majority of trips generated by the Proposed Development will occur during the construction phase. These construction-related trips are expected to route primarily via the M9 motorway, with vehicles travelling through the R448 / Green Road junction to access the Proposed Development via the existing entrance on Green Road.

The construction trips related to the PS will also use M9 motorway and Kilkenny Road to access the existing access along Kilkenny Road.

10.1.2 Baseline Traffic Volume

Baseline traffic data was obtained from a Junction Traffic Count (JTC) survey conducted on 22 May 2025 and, traffic volumes from the TII Traffic Monitoring Units on the M9 were used to obtain representative traffic data for the M9 motorway.

Overall, traffic volumes on the surrounding road network are relatively low, with peak flows occurring between 8:00–9:00 a.m. and 5:00–6:00 p.m.

10.2 Potential Effects: Construction Stage

The additional construction traffic is not expected to result in any significant operational impact on the surrounding road network. In line with the EPA Guidelines (2022), this level of impact is classified as “*not significant*”, meaning “*an effect that causes noticeable changes in the character of the environment but without significant consequences*”.



10.3 Potential Effects: Operational Phase

Due to the nature of the project, operational trips are significantly lower than those generated during the construction phase and most will occur outside network peak hours (7:00–9:00 a.m. and 4:00–6:00 p.m.). As a result, the effects of these operational-phase trips are considered imperceptible.

10.4 Potential Effects: Decommissioning Phase

Overall, the effect of traffic associated with the decommissioning phase is considered “Imperceptible”.

10.5 Do Nothing Scenario

In the event that the proposed development does not proceed, there would be no additional traffic-related activity associated with the wastewater treatment plant. As this scenario represents a continuation of the existing baseline conditions, no immediate or direct change to traffic patterns or operational performance on the surrounding road network is anticipated. Accordingly, the resulting traffic effect is considered to be “Imperceptible”.

10.6 Mitigation Measures

10.6.1 Construction Phase: Outline Traffic Management

The Construction Traffic Management Plan (CTMP) shall be treated as a live document updated as needed throughout construction, and will include monitoring to ensure effectiveness, and shall be developed in accordance with Traffic Signs Manual Chapter 8: Temporary Traffic Management by the appointed contractor in liaison with the relevant authorities—including Transport Infrastructure Ireland, Carlow County Council, and Emergency Services.

An initial outline of the future CTMP is summarised in the table below, including relevant key issues addressed and mitigation measures.

Table 10-1 - Summary of Mitigation Measures

Category	Mitigation Measure
Car Parking	Parking will not be permitted along the side of any road. Proposed parking arrangements will utilise the existing WwTP site.
Access & Egress	The existing access will be maintained. No changes are proposed for either the construction or operational phases.
Traffic Management	Signage: All signage will comply with the Traffic Signs Manual – Chapter 8 and be agreed with Carlow County Council. Construction Route: Materials will be delivered directly to each site. HGV traffic will use National and Regional Roads. Deliveries via Kilkenny Road / Green Road junction. Material Delivery Timing: Deliveries restricted to 09:00–16:00 to minimise community impact.



Category	Mitigation Measure
	Speed Limits: Compliance with posted/legal speed limits will be emphasised to all staff, suppliers, and contractors. Micro Tunnel Gravity Sewer: Road closures along Kilkenny Road limited to 100m stretches. One side of the road will remain open via 'Stop/Go' system with a minimum 3m carriageway. No road closure for outfall pipe crossing under the Kilkenny Road.
Road Cleaning	Regular cleaning of the road network near the Proposed Development will be required.
Enforcement	Inspections and spot checks will ensure compliance with the CTMP by all project staff and suppliers.
Emergency Procedures	Emergency services will be contacted immediately via 112. Full incident details will be provided.

10.6.2 Operational Phase

No operational traffic issues are predicted, and no specific mitigation measures are considered necessary for the Operational Phase.

10.7 Residual Effects

The traffic-related residual effects during the construction phase, following the implementation of mitigation measures, are anticipated to be **imperceptible**.

The residual traffic-related effects during the operational phase are similarly expected to be **imperceptible**.

10.8 Monitoring Requirements

No monitoring requirements are necessary for the Proposed Development.

10.9 Conclusion

Analysis indicates that cumulative construction traffic volumes will remain significantly below the capacity of key road links, including Kilkenny Road and Green Road, suggesting that the traffic-related effect during construction can be considered not significant.

During the operational phase, a maximum of 16 trips per day is anticipated, primarily related to routine maintenance, inspections, and occasional service visits. This level of activity is expected to have an imperceptible effect on the surrounding road network.

The proposed development is also not expected to have any significant effect on the future Carlow Southern Relief Road, and the cumulative traffic effect remains imperceptible.

An Outline Traffic Management Plan (OTMP) has been provided to guide the preparation of the final Construction Traffic Management Plan (CTMP), which will be developed by the appointed contractor prior to the commencement of construction.



11. Land, Soil And Geology

Current land use of the Proposed Development is infrastructure, mainly comprising wastewater treatment with the surrounding lands comprising, agricultural, commercial, domestic and educational uses. An additional ca. 1.4 hectares of agricultural land will be incorporated into the development to facilitate the expanded WwTP and pumping station. There will be no likely significant effect on land take. Refer also to Chapter 11 – Land, Soil and Geology, Volume 2 of the EIAR.

The maximum anticipated depth of excavation will be 15m bgl. It is anticipated that ca. 74,000m³ of soil will be required to be excavated for the development. Due to the existing use of the site as a WwTP there is a moderate risk of contaminated soils being encountered during the excavation works. Environmental sampling onsite did not encounter any soil that is not suitable for commercial land use. Soil from 2no. locations indicates that some soil may not meet the Inert Waste Acceptance Criteria (WAC). Soils from these areas will be further tested to determine their acceptability at non hazardous waste facilities. Soil samples taken from the route of the micro-tunnel in close proximity to the petrol station site indicates that some soil in this area may not meet the Inert Waste Acceptance Criteria (WAC). Soil from this area will be further tested to determine its acceptability at non hazardous waste facilities.

A number of operational mitigation measures will be put in place to ensure that any likely effects on soil, geology, water and air quality will be minimised.

There will be **no likely significant effect** on soils and geology during the construction, demolition and operational phases.



12. Water

This chapter assesses the likely significant effects that the Proposed Development may have on hydrology and hydrogeology and sets out the mitigation measures proposed to avoid, reduce or offset any potential significant effects that are identified. Refer also to Chapter 12 – Water, Volume 2 of the EIAR.

The Proposed Development site is located in the River Barrow surface water catchment. The River Barrow lies immediately to the west of the site and forms part of River Barrow and River Nore SAC. There are no drinking water abstractions from the River Barrow in the vicinity of the Proposed Development site, whilst the River Barrow is listed as a Nutrient Sensitive Area.

In terms of hydrogeology, the Proposed Development site is mapped to be underlain by a Regionally Important Karst Aquifer. The bedrock aquifer in the area of the Proposed Development site is also mapped to be overlain by a Regionally Important Gravel Aquifer. There are no public or group water schemes mapped in the immediate vicinity of the Proposed Development site.

Due to the nature of the Proposed Development construction works, which generally comprises near surface earthworks and construction activities (of temporary duration), the risk to groundwater is expected to be low and the River Barrow is considered to be the primary sensitive receptor.

The primary risk to groundwater during construction would be from cementitious materials, hydrocarbon/chemical spillage and leakages. These are common potential impacts which occur at all construction sites (such as road works and industrial sites). All potential contamination sources are to be carefully managed during the construction and operational phases of the Proposed Development and mitigation measures are proposed to deal with these potential minor impacts. There is likely to be requirements to manage groundwater during the construction phase in terms of excavation dewatering. However any dewatering will only be localised and temporary and the effects will not be significant.

The proposed upgraded WwTP plant will discharge treated effluent to the River Barrow. The upgraded plant has been designed to meet both the discharge quality standards set out in Urban Wastewater Treatment Regulations (UWWTR), and to a standard which will allow the River Barrow to meet at least “Good” status as required by the WFD and the Surface Water Regulations. By adhering to the calculated emission limit values, it can be ensured that the quality of the effluent being discharged is compatible with the long-term WFD objectives of the receiving waterbody. Given the high level of treatment to be provided by the proposed upgraded WwTP, there will be no significant negative effects associated with the proposed discharge.

A detailed Site Specific Flood Risk Assessment Report has been completed for the Proposed Development (IE Consulting, 2026). The proposed outfall pipe and associated headwall are located within the mapped fluvial flood zones along the River Barrow. All other infrastructure is located in Flood Zone C and is considered to be at low risk of flooding. The elements of the Proposed Development mapped within the flood zones are considered to be “Water Compatible”. Modelling has revealed that the construction of these elements will not result in any negative effects to the existing hydrological regime or any increase in the downstream/upstream flood risk. The potential flood risk is considered to be low and the Proposed Development is considered to be appropriate from a flood risk perspective. Furthermore, a Hydrodynamic Technical Report (IE Consulting, 2025) concluded that the construction of the outfall pipe and headwall would not have a significant effect on the existing baseline water levels and flows in the river.

A Water Framework Directive (WFD) Compliance Assessment has been completed for all waterbodies (surface water and groundwater bodies) with the potential to be impacted by the Proposed Development, as presented



in Appendix 12.6, Volume 3 of this EIAR. With the implementation of the mitigation measures prescribed in this EIAR there will be no change in the WFD status of the underlying groundwater body or downstream surface waterbodies as a result of the Proposed Development. The Proposed Development has been found to be fully compliant with the WFD and will not prevent any waterbody from achieving its WFD objectives.

An assessment of potential cumulative effects associated with the Proposed Development and other developments on the hydrological and hydrogeological environment has been completed. With the implementation of the mitigation measures prescribed in this EIAR, the cumulative assessment found that there will be no significant effects on the hydrological and hydrogeological environments.

No significant effects on the water environment will occur during the construction, or operation of the Proposed Development.



13. Cultural Heritage

13.1 Introduction

The Cultural Heritage chapter assesses the effects of the proposed development on the known and potential cultural heritage resource which includes archaeological sites and architectural heritage structures as well as intangible cultural heritage assets such as folklore and historical associations. Refer also to Chapter 13 – Cultural Heritage, Volume 2 of the EIAR.

13.2 Methodology

The assessment was based on a programme of desktop research combined with site inspections of the proposed development. The study area for the assessment encompassed the area within the boundary of the proposed development and lands extending for 500m in all directions which were reviewed in order to compile a comprehensive cultural heritage context for the proposed development and its environs. An Underwater Archaeological Impact Assessment of a proposed outfall area at the bank of the River Barrow was also carried out by the Archaeological Diving Company (ADCO) under a licence issued by the National Monuments Service (NMS), Department of Housing, Local Government and Heritage (DHLGH), as presented in Appendix 13.2, Volume 3 of this EIAR.

The methodology used for the assessment of effects is based on Environmental Protection Agency (EPA, 2022) Guidelines for Information to be Contained in EIAR. The guidelines relevant to the assessment included Architectural Heritage Protection: Guidelines for Planning Authorities (Department of Arts, Heritage and Gaeltacht 2011) and the Framework and Principles for the Protection of Archaeological Heritage (Department of Arts, Heritage, Gaeltacht and the Islands 1999). The assessment was also informed by the International Council on Monuments and Sites (ICOMOS) Guidance on Heritage Impact Assessments for Cultural World Heritage Properties (2011).

13.3 Receiving Environment

13.3.1 Site Inspection

The proposed development was inspected in October 2020, August 2021, July 2022 and May 2025. The ground levels on the footprint of the existing infrastructure within the WwTP appear to have been reduced down into natural subsoil levels and this developed area is deemed to be of negligible archaeological potential. A proposed western extension to the plant will extend into a vacant pasture field and no visible surface traces of any potential unrecorded archaeological sites were noted within this area.

The proposed development site contains a small cottage building located on the east side of a diverted section of the Kilkenny Road (R448). A small building is depicted at this location on the historic OS maps indicating that the cottage predates the publication of the 1st edition 6-inch OS map in 1842. This building is not listed as a Protected Structure or included in the NIAH and was in use as an occupied residence during site inspections carried out between 2020 and 2022. It has since been purchased by the developer and was vacant at the time of inspection in May 2025. While not a designated architectural heritage structure, the cottage does comprise a feature of local vernacular interest which has been compromised by modern interventions. The proposed outfall pipe will extend westwards from the proposed plant extension across the Kilkenny Road (R448) and then will



extend through a strip of woodland to the bank of the River Barrow. The ground levels within the woodland were obscured by thick undergrowth and fallen trees but no structural remains of any date were identified in this area.

The section of the Kilkenny Road (R448) within the boundary of the proposed development that extends to an existing pumping station to the north is flanked by roadside properties containing modern residential and commercial properties. No recorded archaeological sites, designated architectural heritage structures or features of potential cultural heritage interest were noted during an inspection of this area.

13.3.2 Underwater Archaeological Survey

The Archaeological Diving Company (ADCO) carried out an Underwater Archaeological Impact Assessment (UAIA) of the location of a proposed new outfall structure on the east bank of the River Barrow positioned close to an existing WwTP outfall. The on-site survey work was carried out on 9th August 2022, under dive and detection licences issued by the DHLGH (Licences 22D0069, and 22R0225).

No archaeologically significant features, structures, or deposits were encountered for the river assessment area. Likewise, metal-detection across a series of riverbed areas did not yield any items of interest.

13.4 Potential Effects on Cultural Heritage during Construction Phase

There are no recorded archaeological sites located within the study area and, therefore, no effects on the known archaeological resource are predicted during the construction phase. The areas within the existing WwTP and pumping station properties have been previously subject to ground disturbance works during the construction of the existing infrastructure and the potential for adverse effects on unrecorded, sub-surface archaeological sites and features within these disturbed areas is deemed to be negligible. The proposed demolition of modern infrastructure within the boundary of the proposed development will have a neutral effect on the cultural heritage resource.

The potential exists for adverse direct effects on any unrecorded, sub-surface archaeological remains in the following work areas:

- Ground excavation works within green field areas to the west of the existing wastewater treatment plant;
- Ground excavation works required to facilitate the construction of the proposed outfall within woodland, riverbank and in-channel areas; and
- Any ground excavation works required to facilitate the construction of a microtunnel gravity sewer along Kilkenny Road.

As the existence, nature and extent of any unrecorded sub-surface or underwater archaeological remains within these areas are unknown, the significance of potential construction phase effects cannot be accurately quantified but ground excavation works will have the potential to result in permanent, direct, moderate-significant adverse effects on any such potential remains and this will require mitigation.

There are no designated architectural heritage structures located within or directly adjacent to the proposed development and it is not located within an ACA. A proposed outfall pipe extending to the west of the WwTP will extend through a wooded area that formerly formed part of the landholding of Erindale House which is a Protected Structure (CW066). There are no associated curtilage structures located within the environs of the proposed outfall route which extends through an area that is now separated from the existing Erindale property by a modern residential house. While the proposed outfall pipe will result in no predicted effects on Erindale



House, it will result in a **temporary, direct, slight effect** on an area formerly within its grounds during the construction phase. The construction phase will result in no predicted effects on Protected Structure CW396, a 19th century thatched house located c.100m to the southeast of the existing WWTP, or on Protected Structure CW395, a roadside stable building located c.300m to the south of the proposed outfall pipe.

A single-storey cottage is located within an area of the proposed development site to the west of the Kilkenny Road (R448). While not a designated architectural heritage structure, the cottage does comprise a structure of local (low) vernacular significance which has been compromised by modern interventions. The cottage will be retained in situ as part of the proposed development and, therefore, **no direct adverse effects** on this structure will occur during the construction phase.

No likely significant effects on the cultural heritage resource will arise as a result of the construction phase.

13.5 Potential Effects on Cultural Heritage during Operational Phase

There are no recorded archaeological sites located within the 500m study area, and the operational phase of the proposed development will have no predicted effects on the known archaeological resource. There are no Protected Structures or NIAH-listed structures located within, or adjacent to, the proposed development. The proposed outfall pipe will extend through an area of woodland that formerly formed part of the landholding of Erindale House and will comprise a buried underground feature during the operational phase. It is, therefore, concluded that the operational phase of the proposed development will have no predicted effects on the designated architectural heritage resource. A single-story cottage within the boundary of the proposed development will be retained in situ during the operational phase and the proposed development will result in a **medium magnitude, indirect effect** on this structure which will result in a **long-term, adverse effect of slight significance**.

No likely significant effects on the cultural heritage resource will arise as a result of the operational phase.

13.6 Mitigation Measures

13.6.1 Construction Phase

A programme of archaeological monitoring of ground excavation works during the construction phase will be undertaken by a suitably qualified archaeologist licensed by the NMS within the following areas:

- Topsoil stripping works in greenfield areas within and to the west of the existing wastewater treatment plant
- Ground excavation works required to facilitate the construction of the proposed outfall within woodland, riverbank and in-channel areas to the west of Kilkenny Road
- Any ground excavation work required to facilitate the construction of a microtunnel gravity sewer along Kilkenny Road.

In the event that any archaeological remains are identified during the course of archaeological supervision of works they will be recorded and securely cordoned off while the NMS are consulted to determine further appropriate mitigation measures, which may entail preservation in situ by avoidance or preservation in record by archaeological excavation. The ground levels within the footprint of the proposed upgrade works to the existing infrastructure within the wastewater treatment plant and pumping station have been previously disturbed and archaeological monitoring of demolition works within these areas is not considered to be required.



13.6.2 Operational Phase

Following the successful implementation of the construction phase mitigation measures, no required operational phase mitigation measures for the cultural heritage resource are predicted.

13.7 Residual Effects

The proposed mitigation measures will provide for either the preservation in situ of any potential unknown, sub-surface archaeological features within the proposed development site or the proper and adequate recording of such potential features by full archaeological excavation. Preservation in situ will allow for a negligible magnitude of effect resulting in a potential **not significant / imperceptible significance of residual effect** on the potential unrecorded archaeological resource. Preservation by record will allow for a high magnitude of effect, albeit ameliorated by the creation of a full and detailed archaeological record, the results of which shall be publicly disseminated.

This will result in a potential **slight / moderate range of significance of effect** in the context of residual effect on the potential unrecorded archaeological resource.

No likely significant residual effects on the cultural heritage resource will arise.

13.8 Monitoring Requirements

There are a number of obligatory processes required as part of archaeological licence applications to the NMS, including the submission of method statements and reports, and these will allow for monitoring of the successful implementation of the archaeological mitigation measures.



14. Material Assets

14.1 Introduction

According to relevant EPA guidance (EPA, 2022) Built Services, Roads and Traffic, and Waste Management are the topics to be considered under material assets.

Roads and traffic have been assessed separately as part of this EIAR. Refer to Chapter 10 – Traffic, Volume 2 of the EIAR. Therefore, this chapter identifies describes and assesses the likely significant effects on material assets serving the proposed development specifically in relation to existing and proposed built services and waste management.

This chapter was prepared in accordance with the European, national, regional and local policies, guidelines and legislation. The EPA 'Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)' (2022) was used for this assessment. Refer also to Chapter 14 – Material Assets, Volume 2 of the EIAR.

14.2 Built Services

The study area for assessment of built services is the redline boundary of proposed development depicted in Figure 1-1.

With regard to the receiving environment, consultation with relevant bodies has been undertaken to determine existing utilities present in the vicinity of the Proposed Development and a complete set of all utility data has been integrated into the Proposed Development layout and presented in Appendix 14.1, Volume 3 of this EIAR.

To identify, describe and assess the likely significant effects from the proposed development, the characteristics of the proposed built services / utilities are considered.

The following potential impacts could occur during the Construction phase;

- Damage to existing foul water network along Kilkenny Road on the eastern site boundary,
- Damage to existing overhead and underground power supply which runs through the site, and
- Potential power outages to existing services in the surrounding area during the diversion and rerouting of the supply networks within the site.

However, given the nature and scale of proposed development and the fact that a Detailed CEMP will be prepared and implemented by the contractor during construction and demolition, these potential effects are unlikely and should they occur, would be temporary and moderate adverse in nature. Similarly, there will be no likely significant effects regarding built services during the operational phase. Overall, **no significant effects** on built services are likely.

The Material Assets Assessment assumes that under the 'Do-Nothing' scenario the proposed scheme would not be developed. There will likely be significant effects regarding built services under the 'Do-Nothing' scenario as the current flow of and concentration of the waters arising from the production processes on site is variable and could limit the potential treatment capacity of the sewer system due to this variability.



Due to the nature and scale of the proposed development, no cumulative effects are anticipated during the construction and demolition, operational or decommissioning phases of the proposed development associated with built services. There will be no likely significant effects regarding built services due to cumulative effects.

Mitigation measures will be implemented during the construction and demolition phase, and no mitigation measures are required during the operational phase.

14.3 Waste Management

This section of the EIAR has been prepared in accordance with the EPA 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2022), and 'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects' (EPA, 2021).

With regard to the receiving environment and based on all available evidence, including soil analytical data and findings from the geotechnical investigation and considering the proposed mitigation measures, soils beneath the Proposed Development are not considered likely to have a significant effect on human health, building and services, or environmental receptors. Overall, **no significant effects** on built services are likely.

The management of waste generated during the construction and demolition phases will be in accordance with the Outline Resource and Waste Management Plan (RWMP) (AtkinsRealis, 2026) submitted as part of this application. The scope of works for the proposed development includes the construction of an Effluent Balancing and Resource Recovery System with associated infrastructure and access road.

The following waste streams will be generated during the construction and demolition phases: concrete, mechanical, electrical containment, wood, glass, aluminium, iron and steel, insulation material, construction material containing asbestos and soils. This waste will be properly segregated and appropriately disposed of/removed from the Proposed Development in accordance with the relevant waste management legislation.

During the operational phase, all waste materials will be removed from the proposed development and transported to an appropriately permitted or licensed waste disposal or recovery facility. All waste handling, transport, and disposal activities will be carried out in full compliance with relevant waste management legislation, including (but not limited to) the Waste Management Acts 1996–2011.

Mitigation measures will be implemented during the construction and operational phases with regards to the transport and disposal or recovery of all waste streams which will be generated during these phases.

Based on the scale and nature of the proposed development and taking account of the preparation and implementation of a Resource and Waste Management Plan (RWMP) for the construction phase, no cumulative effects are predicted in relation to waste generation. Any effects arising from waste management activities during the construction and operational phases will be **imperceptible** and **not significant**. Hence there are no likely significant effects identified in respect of waste management and/or waste generation.

It has been determined that there will be no likely significant effects as a result of cumulative effects.

The do-nothing scenario will have a neutral and imperceptible effect on the Proposed Development with regards to Material Assets. There will likely be significant effects regarding waste under the 'Do-Nothing' scenario as the current overloading of Mortarstown WwTP will not be alleviated and headroom to treat predicted catchment growth will not be provided.



The Contractor will be responsible for maintaining waste records and documentation for the full duration of the construction phase. The Contractor will track and monitor all waste volumes transported offsite. All waste records will be maintained onsite throughout the project and will be made available for viewing by the Client, Employer's Representative and statutory consultees (UÉ, CCC, EPA) as required.



15. Major Accidents And Disasters

15.1 Baseline Environment

15.1.1 COMAH

The Seveso III Directive (2012/18/EU) requires Member States to apply land-use or other relevant policies to ensure that appropriate distances are maintained between residential areas, areas of substantial public use and the environment, including areas of particular natural interest and sensitivity and hazardous establishments.

The COMAH Regulations do not apply to the Proposed Development as the Proposed Development will not store significant quantities of hazardous materials which are in excess of the defined COMAH thresholds set out in Schedule 1 of the COMAH Regulations.

There are no Seveso sites within 5km of the Proposed Development site and the site is not located within the consultation zones of any Seveso establishment; therefore, there are no constraints to the Proposed Development from nearby Seveso establishments. Refer also to Chapter 15 – Major Accidents and Disasters, Volume 2 of the EIAR.

15.1.2 Seismic Activity

Ireland has low seismicity, no earthquakes have been recorded nearby, and any seismic impact on the Proposed Development would be insignificant. Seismic risk near the Proposed Development is negligible.

15.1.3 Aerodromes

There are no Aerodromes or Airfields within 5 km of the Proposed Development; therefore, there are no constraints on the Proposed Development from nearby Aerodromes or Airfields.

15.1.4 Landslides

No landslide susceptibility issues have been noted in the vicinity of the site. The closest landslide event reported is located ca. 10km north west of the site at Maidenhead/Arless, County Laois. The Proposed Development and the surrounding area have a low susceptibility of landslides. Therefore, the likelihood of a landslide impacting the Proposed development is negligible; therefore, not significant.

15.1.5 Flood Risk

The primary risk of flooding at the Proposed Development Site is associated with fluvial flooding due to the sites close proximity to the River Barrow. While the majority of the Proposed Development Site is located in Fluvial Flood Zone C with a low risk of flooding, some sections in the east, adjacent to the River Barrow, are located in Fluvial Flood Zone A.



The site-specific Flood Risk Assessment, as presented in Appendix 12.1, Volume 3 of this EIAR found that the potential flood risk to and from the proposed outfall pipe and headwall is considered to be low, and is considered to be appropriate from a flood risk perspective.

15.2 Potential Effects Of The Proposed Development

15.2.1 Construction Phase

General construction activities will include ground preparation, excavation, construction of structures. These activities will require the use of vehicles and tools. The hazards associated with activities include the potential for vehicle impact, particularly during reversing and vehicle overturning. The controls around this work will be managed by appropriate risk assessments to control the risks to people, the environment and also to the existing operational areas.

A site-specific Detailed Construction Environmental Management Plan (CEMP) and a Health and Safety Plan will be produced by the Construction Contractor, covering the construction and commissioning of the Proposed Development. The CEMP will be prepared to ensure compliance with relevant health and safety legislation including the Safety, Health, and Welfare at Work Act (2005).

The following risks of major accidents or disasters associated with the Proposed Development have been identified for further assessment:

- Extreme heat or cold weather resulting in structural damage and/or pollution to soils, groundwater or surface waters
- Storm events (including lightning) resulting in structural damage and/or pollution to groundwater and surface waters
- Flooding
- Flash fire, Explosion or Jet fire following compressed gas cylinder release (e.g. acetylene for welding)
- Release of Concrete paste to surrounding environment
- Release of silt laden waters, muds, drilling spoils, hydrocarbons from the drilling equipment, stripped soil, and drilled cuttings

There are no likely effects on the project to off-site receptors during the construction phase in relation to major accidents and disasters.

15.2.2 Operational Phase

The following potential risks of major accidents or disasters in connection with the Proposed Development have been assessed:

- Extreme heat or cold weather resulting in structural damage and/or pollution to soils, groundwater, or surface waters;
- Storm events resulting in structural damage and/or pollution to groundwater and surface waters;
- Flooding;
- Release of hazardous material and/or effluent leak following plant failure and/or pollution to soils, groundwater, or surface waters.



There are no likely effects on the project or to off-site receptors during the operational phase in relation to major accidents and disasters.

15.3 Mitigation And Residual Effects (Post-Mitigation)

The Proposed development has been designed in line with good industry practice, and mitigation against the risk of major accidents and/or disasters is embedded through the design, in accordance with planning and legislative requirements. There is a layered suite of mitigation measures embedded across design, construction, operation and decommissioning to prevent, detect and respond to major accidents and disasters. This includes regulatory compliance with Industrial Emissions licensing and adherence to national and international codes and standards.

As **no likely significant effects** were identified for the construction, operational and decommissioning phases, no additional mitigation measures are proposed.

There are no expected effects from projects within 5km of the Proposed development, from a major accidents and disasters perspective, as such, there are no significant cumulative effects with the Proposed Development from a major accidents and disasters perspective.

The residual effects are the final predicted or intended effects which occur after the proposed mitigation measures have been implemented. As no likely significant effects were identified, there is **no potential for residual effects**.



16. Cumulative Effects

16.1 Introduction

The EIA Directive states that an EIAR should contain cumulative effects. Therefore, this Chapter examines whether the addition of the effects from the Proposed Development itself or in combination with the effects of other permitted projects will have more significant effects when combined.

The cumulative effects assessment considers developments which have potential for cumulative effects with the Proposed Development during both the construction and operational phases, and which have planning permission and/or which are in the planning system, but where a planning decision is not expected to have been made by the time the Proposed Development is operational. Refer also to Chapter 16 – Cumulative Effects, Volume 2 of the EIAR.

16.2 Methodology

An initial review of planning applications in the general vicinity (a 2km radius) of the Proposed Development, approved by Carlow County Council, Laois County Council or An Coimisiún Pleanála (ACP) within the last 5 years was conducted. These developments were reviewed individually and those deemed to have already been constructed, were of a small scale in nature or were considered to be of a reasonable distance from the Proposed Development were not considered further in this assessment.

A short list of 27.no. developments, as presented in Chapter 16 – Cumulative Effects, Volume 2 of this EIAR, were reviewed in further detail in May 2026 in terms of project location, nature of development by each individual specialist with regard to cumulative effects as part of the technical assessments undertaken for this EIAR and it was found that there were minimal or no cumulative significant effects are likely to occur in relation to the proposed development.

16.3 Cumulative Effects Assessment

The cumulative Impacts assessment found that the Proposed Development will not have any significant negative effects on Population and Human Health. Mitigation measures and monitoring requirements outlined in regard to the other environmental topics will ensure that no significant cumulative effects arise in relation to Population and Human Health.

Population and Human Health - Following a review of Planning Applications in the local area, the Population and Human health assessment has not identified potential cumulative effects above and beyond what has been identified in respective technical chapters Climate change mitigation and adaptation (Chapter 8), Air Quality and Odour (Chapter 7), Water Quality (Chapter 12), Land Quality (Chapter 11), Noise and Vibration (Chapter 9), and Major Accidents and Disasters (Chapter 15).

All work will be carried out in accordance with appropriate safety guidance and legislative requirements. Such considerations apply for the project in isolation and in combination with any other projects.

Biodiversity – Granted developments have conditions attached to their planning permission relating to sustainable development, such as siting of septic tanks, foul surface water and effluent drainage facilities, and



clean surface water run-off drainage facilities. Therefore, it is not anticipated that the developments that have been granted permission will have any significant effects in combination with the Proposed development .

There are no cumulative effects between the Proposed development and any relevant planning applications. The aim of the proposed development is to increase the P.E. capacity of the WWTP so that there is sufficient capacity to cater for the growing population of the agglomeration for the next 25 years. As such this project is required to ensure residential and commercial projects in the agglomeration can proceed without causing cumulative effects through there associated waste.

Landscape and Visual - From a visual amenity perspective if mitigation planting is not provided along the proposed road adjacent to the WwTP, locally adverse visual effects could arise for road users and nearby receptors at Kilkenny Road and Green Road. The cumulative visual effect for these receptors is therefore assessed as **moderate adverse**.

From a landscape perspective, the introduction of the CSRR would not materially alter the existing suburban landscape character surrounding the WwTP. The combined presence of both developments would result in a **slight adverse** cumulative landscape effect, which is not significant.

Air Quality and Odour - With regards to Odour, all receptors in the vicinity of the proposed facility will perceive an odour concentration less than or equal to 2.30 OUE/m³ for the 98th percentile of hourly averages for the worst case met year Oak Park 2020. There will be a net overall improvement in odour air quality in the vicinity of the facility as a result of the development and the impact associated with the proposed development is considered **Negligible**.

Climate - Any future projects within the vicinity of the wastewater treatment works, but not related to the wastewater treatment works, such as the Carlow Southern Relief Road (CSRR) (planning application due 2028) sit outside the scope of this cumulative assessment. GHG emissions associated with this project should be subject to its own GHG assessment and will also be subject to alignment with Ireland's trajectory of net zero by 2050 and the relevant sectoral carbon budgets.

As per the above, the cumulative effect of the proposed development in relation to GHG emissions is considered **direct, long-term, negative** and **slight**, which is overall **not significant** in EIA terms.

Noise and Vibration Given that the predicted noise levels due to the Proposed Development are 27 to 31 dB L_{Aeq,T}, and that the baseline noise levels are 53 dB L_{Aeq,T} by day, 42 dB L_{Aeq,T} during the evening and 39 dB L_{Aeq,T} by night, it is considered that there is no significant potential for adverse cumulative noise effects due to the proposed development, in combination with the Carlow Southern Relief Road.

Traffic - Traffic related effects are considered minimal. No developments other than the CSRR were identified as having any potential to interact cumulatively with the proposed development however, the cumulative traffic effect of the development can be considered "imperceptible", meaning an effect capable of measurement but without significant consequences on the surrounding road network.

Land, Soil and Geology - No significant cumulative effects on land, soils and geology environment are anticipated during the construction or operational phases as long as proposed mitigation measures are put in place.

Water - Given the nature of the Proposed Development consisting of a direct discharge of effluent to the River Barrow and the Proposed Development Sites proximity to the River Barrow, the primary potential for cumulative effects will be from interactions with other activities within the River Barrow catchment which can affect surface



water quality and surface water quantity. There will be no likely significant effects on the receiving water environment due to cumulative effects.

Cultural Heritage - Given the absence of any recorded archaeological sites within the 500m study area surrounding the proposed development, the proposed development will not contribute to any likely significant cumulative effects on the cultural heritage resource.

Material Assets - Due to the nature and scale of the proposed development, no cumulative effects are anticipated during the construction and demolition, operational or decommissioning phases of the proposed development associated with built services. There will be no likely significant effects regarding built services due to cumulative effects.



17. Interactions

17.1 Introduction

This chapter describes how effects on different environmental factors may interact with each other during both the construction and the operational phases of the proposed development. Different contributors worked together to understand how impacts in one area could affect others ensuring that all combined, cumulative and interactive effects that could arise during construction and operational lifetime were properly identified and assessed. Refer also to Chapter 17 – Interactions, Volume 2 of the EIAR.

17.2 Summary of Interactions

The interactions between each of the technical topics have been considered to determine the potential direct and indirect environmental effects, via. various pathways. The assessment follows national guidance ('Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (2022)) to ensure that overlaps between topics are properly considered without repeating information.

A summary table showing key interaction and interdependencies between environmental attributes is presented in Table 17-1. Each environmental topic is discussed in Chapter 17 – Interactions, Volume 2 of the EIAR.



Table 17-1 - Summary Interactions Matrix of Interactions between Environmental Factors

	Chapter 4 – Population & Human Health		Chapter 5 - Biodiversity		Chapter 6 – Landscape & Visual		Chapter 7 – Air Quality & Odour		Chapter 8 - Climate		Chapter 9 – Noise & Vibration		Chapter 10 - Traffic		Chapter 11 – Land, Soils & Geology		Chapter 12 - Water		Chapter 13 – Cultural Heritage		Chapter 14 – Material Assets		Chapter 15 – Major Accidents and Disasters	
	Con. ⁴	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.
Chapter 4 – Population & Human Health			x	x	x	x	√	√	√	√	√	√	√	√	√	√	√	√	x	x	x	x	x	x
Chapter 5 - Biodiversity	x	x			√	√	√	√	x	x	√	√	x	x	x	x	√	√	x	x	√	√	x	x
Chapter 6 – Landscape & Visual	x	x	√	√			x	x	x	x	x	x	x	x	√	x	√	√	√	x	x	x	x	x
Chapter 7 – Air Quality & Odour	√	√	x	x	x	x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Chapter 8 - Climate	x	x	x	x	x	x	√	√			x	x	√	√	√	√	√	√	x	x	√	x	x	x
Chapter 9 – Noise & Vibration	x	x	x	x	x	x	x	x	x	x			√	x	x	x	x	x	x	x	x	x	x	x

⁴ Note: *Con.* Refers to Construction Phase. *Op.* refers to Operational Phase

Legend: x denotes no interaction / interdependency; √ denotes interaction / interdependency identified, further consideration warranted; Grey cells denote topic under assessment.



	Chapter 4 – Population & Human Health		Chapter 5 - Biodiversity		Chapter 6 – Landscape & Visual		Chapter 7 – Air Quality & Odour		Chapter 8 - Climate		Chapter 9 – Noise & Vibration		Chapter 10 - Traffic		Chapter 11 – Land, Soils & Geology		Chapter 12 - Water		Chapter 13 – Cultural Heritage		Chapter 14 – Material Assets		Chapter 15 – Major Accidents and Disasters	
Chapter 10 – Traffic	√	√	x	x	x	x	√	x	√	x	√	√			x	x	x	x	x	x	x	x	x	x
Chapter 11 – Land, Soils & Geology	x	x	x	x	x	x	√	√	x	x	x	x	x	x			√	√	x	x	x	x	x	x
Chapter 12 - Water	√	x	√	√	x	x	x	x	x	x	x	x	x	x	√	x			x	x	x	x	x	x
Chapter 13 – Cultural Heritage	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			x	x	x	x
Chapter 14 – Material Assets	x	x	√	x	x	x	√	x	√	x	x	x	x	x	√	x	√	x	x	x			x	x
Chapter 15 – Major Accidents and Disasters	x	x	x	x	x	x	x	x	x	x	x	x	x	x	√	x	√	x	x	x	x	x		



18. Schedule Of Commitments

A schedule of environmental commitments has been prepared, for ease of reference and clarity, and to facilitate enforcement of all environmental mitigation and monitoring measures specified within Chapter 4 to Chapter 15, Volume 2 of the EIAR.

All mitigation and monitoring commitments detailed within the EIAR have been included in a separate compendium and are presented in Chapter 18 – Schedule of Commitments, Volume 2 of the EIAR. These commitments have been incorporated into the Outline Construction Environmental Management Plan (CEMP) submitted as part of this planning application. Refer to Appendix 2.2, Volume 3 of the EIAR.

The Outline CEMP is a live document which will be added to in the Detailed CEMP, prepared by the Contractor, which will include any future additional requirements (e.g. planning conditions).



AtkinsRéalis



AtkinsRéalis Ireland Limited
150-155 Airside Business Park
Swords
Co. Dublin
K67 K5W4

© AtkinsRéalis Ireland Limited except where stated
otherwise