



An
Bord
Pleanála

Inspector's Report ABP 316168-23

Development	Upgrade of Castletroy wastewater treatment plant.
Location	Dromore, Castletroy, County Limerick
Planning Authority	Limerick City and County Council
Applicant	Uisce Eireann
Type of Application	Application under the provisions of Section 37E of the Planning and Development Act, 2000, as amended,
Observer	Peter Sweetman & Associates and on behalf of Wild Ireland Defence CLG
Date of Site Inspection	30/08/23
Inspector	Pauline Fitzpatrick

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2.0 Introduction

- 2.1. This is an application to the Board under Section 37E of the Planning and Development Act, 2000, as amended, for the upgrade of the Castletroy wastewater treatment plant at Dromore, Castletroy, Co. Limerick.
- 2.2. The applicant entered into pre-application consultations with the Board under ref ABP 310201-21 as to whether the proposed development constituted strategic infrastructure. The Board determined that the proposal falls within the scope of Section 37(A)2 of the Planning and Development Act 2000, as amended, and that an application be made directly to it. The Board's direction was dated 24/01/23.
- 2.3. The application was submitted on the 31/03/23 with a response to the observations received by the Board submitted on the 26/07/23.

3.0 Site Location and Description

- 3.1. The Castletroy Wastewater Treatment Plant, which has a stated area of approx. 3.16 hectares, is located north of and accessed from L1117 Plassey Park Road in the suburb of Castletroy c. 3km to the east of Limerick city centre. The site is in the townland of Drumroe. It is bounded to the north by the River Shannon, to the west by the University of Limerick (UL) Rowing Club, to the south by the Nexus Innovation Centre and UL carparking and to the east by the ruins of the old Plassey Mills and Dromore Student Village. There is a walkway at the northern perimeter of the site along the banks of the river. The river forms the boundary between Limerick City and County Council and Clare County Council.
- 3.2. There is an existing gated roadway providing one way (northwards) access to the site from Plassey Park Road. The roadway is open to university traffic between 0800 and 1000 Monday to Friday. Pedestrians and cyclists are prohibited. Access to the site is also available via the UL campus road network.
- 3.3. The existing treatment plant was constructed and is operational since 1992 with an outfall into the River Shannon. A number of improvements were undertaken consequent to its construction. The existing foul sewer network serves the Castletroy, Monaleen, Ballysimon, Annacotty, Mountshannon, Lisnagry and Castleconnell areas.

3.4. The existing WwTP operates as a Secondary Extended Aeration Activated Sludge Plant and has a design capacity of 45,000 PE. The following provides a summary of the main elements:

- Inlet works incorporating wet well and 3 Duty/Assist/Standby pumps and stormwater dry well with Duty/Standby pumps,
- Emergency gravity overflow to outfall in the River Shannon,
- Hydro rate step screens complete with screenings removal, washing and compaction,
- Jeta grit trap complete with blower, grit conveyor and classifier,
- Inlet flow measurement,
- Salsnes screening unit,
- Twin stream secondary extended aeration with Fine Bubble Diffused Aeration (FBDA),
- Three secondary clarifiers (2 no. at 20m diameter and 1 no. with 25m diameter),
- Final effluent inspection chamber,
- Outfall to River Shannon (combined storm and treated effluent outfall),
- 2 no. picket fence thickeners,
- Sludge dewatering consisting of 1 no. belt press and 1 no. centrifuge,
- Administration/control building and sludge dewatering building.

3.5. The site is enclosed and screened by trees and hedgerows. A mesh fence has been erected along the northern, eastern and western boundaries precluding access to the hedgerows due to presence of giant hogweed.

4.0 Proposed Development

4.1. The proposed upgrades at the existing Castletroy WwTP will cater for future population and industrial development in the area in line with population projections

for Limerick and will provide for 20% headroom allowance in line with Irish Water guidelines for large urban settlements.

- 4.2. The initial upgrade works will cater for the 10 year growth projections to 77,500 PE including a future IDA load of 5,500PE. Provision will be made in the infrastructural development of the plant (tank sizing and pipework) for the 25 year growth projections of 81,100PE. A planning review will be required before any uplift above the 77,500 PE. It also includes a new stormwater storage tank to make the WwTP compliant with the criteria outlined in the Department of the Environment, Heritage and Local Government '*Procedures and Criteria for Storm Water Overflows, 1995*'.
- 4.3. The WwTP will remain operational during the construction phase. All new structures will be constructed offline and connected during temporary shutdowns. The shutdowns will be planned in a manner that will not affect WwTP performance.
- 4.4. The main elements of the proposed development are:-
 - Replacement of the existing storm pumps in the inlet pumping station including the modification of pipework and fittings,
 - Construction of a 4,500m³ capacity stormwater storage tank plus an additional freeboard of 1.05m, to provide capacity for the projected +10-year and +25-year loadings,
 - Stormwater return pumping station to return flows from the stormwater tank for primary and secondary treatment,
 - Upgrade of the existing preliminary treatment screens to cater for higher flows,
 - Construction of a new grit trap to provide redundancy to the preliminary treatment process. Installation of decking over the existing inlet works structure and installation of odour abatement equipment,
 - A new forward feed pumping station which will transfer flows to primary treatment; Wastewater will be pumped to a new elevated splitter chamber to allow flows gravitate through the primary treatment process,
 - Installation of primary treatment filtration units in a proposed treatment building. The structure will also be used for the installation of control panels,

operational equipment and instrumentation. Solar photovoltaic (PV) panels that produce electricity will be installed on the roof,

- Construction of a new primary sludge holding tank which will store sludge removed from primary treatment. Sludge will be pumped from the new primary sludge holding tank to the upgraded dewatering plant within the site,
- Upgrade of the existing secondary treatment tanks with an integrated fixed film activated sludge (IFAS) process,
- Installation of Stamford and McKinney baffles within two of the existing clarifiers to increase flow through each tank,
- A new scum pumping station will collect and transfer scum removed from the clarifiers to the thickened sludge storage tank,
- The existing 7.1 m diameter 'Picket Fence Thickener' (PFT) will be repurposed as a thickened sludge storage tank,
- A new 12 m diameter PFT will be constructed,
- The existing sludge dewatering equipment will be upgraded with new centrifuges. Internal modifications to the existing sludge treatment building first floor will be required for the equipment,
- Sludge storage skips will be located on external concrete plinths. Sludge transfer pipework and valves will be installed to control sludge transfer from the dewatering units to the skips,
- An odour abatement unit will be installed external of the sludge treatment building,
- A bulk storage tank (to supplement the existing) will be installed with integrated bunds to contain Ferric Sulphate (Fe_2SO_4) for phosphorous removal, complete with eye-wash station and dosing pumps,
- A flood event pumping station to allow the plant to remain operational during high river levels. The walls of the existing final effluent inspection chamber will be raised to defend the plant from flood water,
- A tank will be installed adjacent to the existing groundwater well on site to provide storage of washwater. The borehole is used to supply washwater to

various existing treatment processes and will also be used for proposed upgrades. The storage tank will ensure sufficient supply is available to meet peak demands, and

- A surface water attenuation system will be installed to collect, store and dispose of additional surface water arising from the proposed development.

4.5. Uisce Éireann intends to procure the detailed design and construction of the proposed development using a Design and Build type contract.

4.6. A 10 year permission is sought for the upgrade.

5.0 Planning History

I am not aware of any planning applications on the site.

6.0 Policy Context

6.1. EU Policy and Legislation

6.1.1. *EU Water Framework Directive (2000/60/EC)*

The Directive establishes a framework for the protection of all waters including rivers, lakes, estuaries, coastal waters and groundwater. The WFD aims to:

- Protect/enhance all waters (surface, ground and coastal waters);
- Achieve "good status" for all waters by December 2015;
- Manage water bodies based on river basins or catchments; and
- Involve the public in the process

6.1.2. **Urban Wastewater Treatment Directive (91/27/EEC)**

The Directive sets standards to be met in the collection and treatment of wastewater as well as to the monitoring requirements for wastewater discharges from urban areas.

Compliance with the requirements of the Directive is monitored by the EPA.

6.2. National Policy

6.2.1. **National Planning Framework – Project Ireland 2040**

The NPF outlines the policies and objectives for development in Ireland up to 2040 given the expected population growth of 1 million people.

National Policy Objective 63 – to ensure the efficient and sustainable use and development of water resources and water services infrastructure in order to manage and conserve water resources in a manner that supports a healthy society, economic development requirements and a cleaner environment.

National Strategic Outcome 9 – increase compliance with the requirements of the Urban WW Directive from 39% today to 90% by the end of 2021, to 99% by 2027 and to 100% by 2040.

In terms of Limerick the NPF states that it is necessary for Limerick to further strengthen its position as the principal focus within the region and to continue to address the legacy of growth having occurred outside the City area.

For Limerick City and Suburbs the NPF targeted growth objectives seeks an additional population of 50,000 – 55,000 persons to a population of at least 140,000.

The future growth enablers to achieve the above include ensuring that water supply and wastewater needs are met by new national projects to enhance Limerick’s water supply and increase wastewater treatment capacity.

6.2.2. **Water Services Strategic Plan 2015-2040**

The Water Services Strategic Plan (WSSP) sets out strategic objectives for the delivery of water services over the next 25 years up to 2040. It details current and future challenges which affect the provision of water services and identifies the priorities to be tackled in the short and medium term. In identifying priorities it has taken into consideration national and regional strategic plans such as the National Spatial Strategy and River Basin Management Plans. The plan is subject to a 5 year review programme.

6.2.3. **Water Services Policy Statement 2018-2025**

The purpose of the policy statement is to clarify the government's expectations for the delivery and development of water and wastewater services.

Policy objectives include:

- Bringing and maintaining public water and wastewater services to acceptable international benchmarks,
- Adopting forward planning and risk management approaches to minimise the impact of non-compliance with all relevant EU Directives and to safeguard against future compliance risks.

The document refers to the River Basin Management Plan for Ireland which aims, inter alia, to prioritise investment in urban wastewater treatment plants to support the protection of high status waters and to achieve water quality improvements in other water bodies.

6.2.4. **Irish Water Capital Investment Plan 2020-2024**

Castletroy WwTP is included in the list of projects. The listed projects are expected to either commence, progress or be completed during the 2020-2024 period.

6.3. **Regional Policy**

Regional Spatial and Economic Strategy for the Southern Region

Regional Planning Objectives of relevance:

RPO 211 – Irish Water and Wastewater

It is an objective to support the implementation of Irish Water Investment Plans (prepared in five-year cycles) and subsequent investment plans, to align the supply of wastewater treatment facilities with the settlement strategy and objectives of the RSES and Metropolitan Area Strategic Plans for Cork, Limerick-Shannon and Waterford. Support the role of Irish Water Investment Plans in taking into account seasonal pressures on critical service infrastructure, climate change implications, and leakage reduction in the design of all relevant projects.

RPO 212 – Strategic Wastewater Treatment Facilities

- a. It is an objective to support investment and the sustainable development of strategic wastewater treatment facilities by Irish Water in the Region arising from initiatives including Investment Plans, Strategy Drainage Area Plans subject to appropriate environmental assessment and the planning process.
- b. For the management of wastewater, increasing population growth should be planned on a phased basis in collaboration with Irish Water and the local authorities to ensure that the assimilative capacity of the receiving environment is not exceeded and that increased wastewater discharges from population growth does not contribute to degradation of water quality and to avoid adverse impacts on the integrity of the Natura 2000 network.

RPO 214 – Eliminating Untreated Discharges and Long-term Planning

It is an objective to support Irish Water and the relevant local authorities in the region to eliminate untreated discharges from settlements in the short-term, while planning strategically for the long-term in tandem with Project Ireland 2040 and the RSES and in increasing compliance with the requirements of the EU Urban Wastewater Treatment Directive.

Limerick Shannon MASP Policy Objective 1

- a. It is an objective to strengthen the role of the Limerick-Shannon Metropolitan Area as an international location of scale, a complement to Dublin and a primary driver of economic and population growth in the Southern Region.

Limerick Shannon MASP Policy Objective 4

- a. It is an objective to seek the identification of investment packages across State Departments and infrastructure delivery agencies as they apply to the Limerick Shannon MASP and seek further investments into the Limerick Shannon MASP to deliver on the seven Metropolitan Area Goals (volume 3).

Section 4 provides a list of national enablers to support growth in the Limerick Shannon MASP and includes ensuring that water supply and wastewater needs are met by new national projects to enhance Limerick's water supply and increase wastewater capacity.

Limerick Shannon MASP Policy Objective 10

- c. It is an objective to ensure investment and delivery of holistic physical, social and environmental infrastructure packages to meet growth targets that prioritises the delivery of compact growth and sustainable mobility in accordance with NPF and RSES objectives.

6.4. Local Policy

Limerick City and County Development Plan, 2022

Objective IN 06 Water Services

- (a) Support Irish Water in the provision of water and wastewater infrastructure and services in accordance with the Service Level Agreement, until such time as the Agreement is terminated.
- (b) Collaborate with Irish Water in the protection of water supply sources to avoid water quality deterioration and reduce the level of treatment required in the production of drinking water, in accordance with Article 7(2) of the WFD. Protection and restoration of drinking water at the source can have co-benefits for biodiversity and climate change.
- (c) Liaise with Irish Water during the lifetime of the Plan to secure investment in the provision, extension and upgrading of the piped water distribution network and wastewater pipe network across Limerick City and Council, to serve existing population and future population growth and sustain economic growth, in accordance with the requirements of the Core and Settlement Strategies.

Section 8.5.3 notes that Irish Water's wastewater treatment capacity register for County Limerick dated March 2022, states that there is capacity available in 41 no. of the 53 no. wastewater treatment plants. These include Bunlicky and Castletroy WwTPs which serve the Limerick City Metropolitan Municipal District. These WwTPs require some upgrading and it is envisaged by Irish Water that with the

completion of these upgrades there will be sufficient spare capacity to accommodate the projected growth in Limerick City and Suburbs (in Limerick), Mungret and Annacotty as set out in the RSES and the Core Strategy, over the lifetime of the Plan, subject to planning and other approvals.

Objective IN 09 Public Waste Water

- (a) Ensure adequate and appropriate wastewater infrastructure is available to cater for existing and proposed development, in collaboration with Irish Water, to avoid any deterioration in the quality of receiving waters and to ensure that discharge meets the requirements of the Irish Framework Directive.

The site is zoned 'utilities', the objective for which is to provide for the infrastructural needs of transport and other utility providers. This zoning also provides for and preserves land for the provision of services such as electricity and gas networks, telecommunications, the treatment of water and wastewater etc.

7.0 Planning Authority Submission

Chief Executive Report

The report includes sections which I have addressed in the preceding sections of this report and which I indicate in brackets in order to avoid undue repetition.

7.1.1. Site description

(see section 2 above)

7.1.2. Description of the proposed development

(see section 3 above)

7.1.3. Planning history

(see section 4 above)

7.1.4. Environmental Impact Assessment

A summary of the chapters of the EIAR is provided which is not repeated here. The following comments are noted:

Chapter 4 – Construction Strategy

- A detailed remediation plan for the invasive species present on site is required, along with a detailed CEMP.

Chapter 9 – Noise and Vibration

- A specific mitigation measure is recommended in relation to the blowers to reduce the tonal noise.

Chapter 11- Biodiversity

- The issues of invasive species management and biosecurity interacts with a number of environmental topics.

Chapter 18 – Major Accidents and Natural Disasters

- Revisions to the layout, including a revised Flood Risk Assessment, is required to accommodate compensatory storage and storm water attenuation elsewhere within the confines of the site.

Reasoned Conclusion on Significant Effects

The potential main significant direct and indirect effects of the proposed development on the environment are as follows:

- Flood risk and the potential for deterioration of water quality. Revisions to the layout including a revised Flood Risk Assessment is required to accommodate compensatory storage and storm water attenuation elsewhere within the confines of the site.
- The presence of invasive species has been identified on site, with a potential direct impact on biodiversity. A detailed remediation plan is required. Bio-security measures particularly due to the truck movements on and off the site and site management practices should be clear in the CEMP.
- Vulnerability of the project to risks of major accidents and/or disasters is considered low, mitigation against such risk is embedded through the design with the preparation of a final CEMP a suggested condition.
- The overall impact on the landscape is considered to be positive, long term.

7.2. Habitats Directive Assessment

- Precautions to be taken to prevent the further spread of invasive species. The Invasive Species Management Plan should be implemented in full.
- The mitigation measures for surface and ground water should be implemented in full.
- To minimise disturbance the measures mentioned on pages 50-51 should be implemented.
- Should any external fencing be installed during works mammal passes are to be fitted.
- Any new lighting to be installed is to be wildlife friendly in design, be designed to prevent light spill beyond the site boundary, in particular towards the river. This is an important foraging area for bats.
- In terms of invasive species it is recommended that an updated survey and plan are prepared on a 5 yearly basis.

Following an examination, evaluation and analysis of the development, taking into account the relevant mitigation measures, and in light of best scientific knowledge and the conservation objectives of the sites, it can be concluded that the proposed development will not result in a significant effect on the conservation status of any Natura 2000 sites, either alone or in combination with plans or projects.

7.3. Policy Context

(see section 5 above)

7.4. Internal Reports (copies attached as Appendix to report)

Water Services (Waste)

- No objection

Environment Section (Waste Management)

- No objection subject to conditions

Planning, Environment & Place-Making (Flood Risk)

No objection subject to clarification of following:

- The proposed compensatory storage location should be provided entirely within Flood Zones B or C. Should a small volume of storage be proposed within Flood Zone A due to existing site constraints, it should be demonstrated that this portion of storage/volume within Flood Zone A has a negligible impact on flood risk to the development and adjacent lands.
- The surface attenuation storm cell provided in Flood Zone A should be moved to Flood Zone C or alternatively, further information on its effective operation during a flood event should be provided.
- All highly vulnerable infrastructure (electrical equipment etc.) and development is elevated above the proposed FFL/flood defence level as identified (6.97mOD).

Heritage Officer

- No objection subject to implementation of mitigation measures outlined in NIS and invasive species management plan.

Planning, Environment and Place Making (Noise)

- No objection subject to implementation of mitigation measures.

Central Services (Roads)

- Roads, traffic and public lighting conditions recommended.
- Detailed surface water management is required.

Conservation Officer

- No impact on the built heritage of the vicinity.

7.5. Assessment

In addition to reiterating the recommendations of the above reports the following are noted:

- The proposed development will support future planned population growth and industrial development in the area in line with the population projections for Limerick as set out in the NPF and the RSES for the Southern Region.

- In the absence of an upgrade there is potential for negative effects on the receiving environment, in particular the water quality of the Lower River Shannon SAC and the myriad of Natura 2000 habitats that it supports.
- A detailed CEMP is recommended prior to commencement of development.
- The development is not expected to have any significant impact on air quality.
- The site is located within the Castletroy Landscape Character Area. The proposed upgrades will not detract from the landscape. The overall impact on the visual amenities of the area will be positive.
- The site is located within the Castletroy/Dromore ACA. The proposal would not have a negative visual impact on the built heritage amenities.
- Development Contribution of €9,700 applicable.

7.6. Recommendation

It is considered that the proposed upgrade would not be unduly injurious to the visual or residential amenities of the area, will not negatively impact on the nearby Natura 2000 sites, is considered to be compliance with national, regional and local policy and, therefore, is in accordance with the proper planning and sustainable development of the area.

Suggested Conditions are set out should the Board be disposed to a favourable decision.

7.7. Record of Meeting of Limerick City & County Council

Meeting held 22/05/23

The Elected members welcomed the proposed development.

8.0 Prescribed Bodies

8.1. **Transport Infrastructure Ireland** has no specific observations to make.

8.2. **Department of Housing, Local Government and Heritage**

The following conditions are recommended:

- All mitigation measures in relation to archaeology and cultural heritage as set out in the EIAR to be implemented in full.
- Retention of a suitably qualified archaeologist to monitor all site clearance works, topsoil stripping and ground works.
- Construction and Environment Management Plan to include the location of any and all archaeological or cultural heritage constraints, describe all identified likely archaeological impacts and all mitigation measures.
- Planning Authority and Department to be furnished with final archaeological report describing results of archaeological monitoring and investigative work/excavation required.

8.3. **Environmental Protection Agency**

- A Waste Water Discharge Licence (register no: D0019-01) was granted in 2009. Uisce Eireann was informed in November 2021 that the Agency intends initiating a review of the licence. A licence review application has not been received by the Agency to date.
- Where relevant the Board will be requested to provide the documentation relating to the EIA carried out.
- The Board is advised of the requirements of regulation 41 of the Waste Water Discharge Regulations relating to the limitation of the Planning and Development Act, 2000, as amended. The Board's determination of the application should not cause a breach or exacerbate breaches of the combined approach or otherwise cause serious water pollution.
- The development shall not result in a contravention of the Water Framework Directive, Urban Waste Water Treatment Directive, Habitats Directive, Birds Directive and Environmental Liability Directive, as appropriate.

- If the Board determines to grant permission a condition requiring Uisce Eireann to submit an application for a review of the Waste Water Discharge Licence within 6 months of the decision unless otherwise agreed with the Agency is recommended.
- In accordance with Regulation 21(6)(d) of the WWD Regulations the Agency cannot issue a decision on a licence application until a planning decision has been made.

8.4. Health Services Executive (Environmental Health Service)

- The upgrades are welcomed on both environmental and public health grounds.
- There has to be recognition that odour nuisance is predominately a subjective assessment.
- The baseline odour for Castletroy and the surrounding environment should be with no plant and no odour emissions. The predicted odour emissions detailed in table 7.10 are a reduction on those existing. The emissions have potential to be significant for local residents, due to odour nuisance being subjective.
- The setting of an objective standard for odour should not negate the need to ensure that there is no odour nuisance, as perceived by a reasonable subjective assessment.
- There should be a procedure for receiving, investigating and implementing corrective action where odour complaints are made, based on a reasonable subjective assessment of odour exposure.
- There is a requirement for mitigation to protect public and environmental health during the construction phase. Subject to the mitigation measures identified in the CEMP and within the EIAR being implemented there will be adequate protection.
- Construction hours should be limited to 7am to 7pm Monday to Friday and 8am to 2pm Saturday.

8.5. Inland Fisheries Ireland

- Welcomes the WwTP upgrade and acknowledges that it will contribute to improve water quality conditions in the Lower River Shannon SAC.
- An accessible sampling chamber so that the final effluent can be sampled is requested.
- The SWO and EO shall be fitted with telemetry or other satisfactory system to record the volume and duration of overflow events.
- Requirements for the construction phase detailed.

9.0 Observations

9.1. Peter Sweetman & Associates and on behalf of Wild Ireland Defence CLG

The submission can be summarised as follows:

Natura Impact Statement

- EC (2007) Guidance document has been reinterpreted by the CJEU so often than it no longer represents the actual interpretation of the law.
- The decision of the CJEU must be implemented in full.
- The appropriate assessment screening report could not be located.
- The project has not been designed definitively.

Surface/ground water mitigation measures:

- No design or exact details of the proposed silt fence provided.
- Access routes not provided
- Details of excavations
- Use of plant on site
- Stockpiling areas not clearly defined, areas not demarcated and frequency of use not provided.
- Where is the discharge area from silt bags. Reference to alternatives is not mitigation.

- Where is the water table

Earth works:

- Excavation depths
- What is meant by heavy rainfall.
- Details of silt fence to be erected around any stockpiling.

Cement based products control measures:

- Chute cleaning area not delineated.

Refuelling, fuel and hazardous materials storage

- What is meant by minimal refuelling or maintenance of vehicles or plant.
- Where is the off-site refuelling proposed.
- What are the plant refuelling procedures.
- What is meant by fuel volumes stored on site will be minimised.
- What is meant by appropriate bunding of fuel storage areas.
- What is meant by regular inspection of plant.

Operation

- The statement that the operational phase of the development will have a neutral/imperceptible effect on water quality of the aquatic environment of the River Shannon is opinion not mitigation.
- There is no evidence in the NIS to back up the statement that the upgrade works will accommodate future loadings to the plant and will ensure that the resulting effluent will remain within EQ's for the Lower River Shannon.
- It is queried whether provision of improved stormwater storage will be such that untreated spills to the River Shannon will be reduced annually.
- The appropriate assessment must assess all the likely effects and the EPA permitting discharges has no part in AA.
- Monitoring, reference to good construction practices and compliance with the law are not mitigation measures.

- It is not possible to grant permission based on the lacunae and lack of complete, precise and definitive findings.

10.0 Applicant's Response to Submissions

The response by Barry & Partners on behalf of the applicant responds to the submissions received and can be summarised as follows:

10.1. Limerick City and County Council's submission

- Compensatory storage is primarily located within Flood Zone B. This area can be moved further south to avoid any storage being provided within Flood Zone A.
- The loss of flood plain from the development is considered negligible and will not impact on the flood risk to adjacent lands.
- Compensation for the loss of this flood plain will be provided through the reduction of existing ground levels along the western boundary of the site where no development is proposed. The profile of this ground will be regraded and designed so as not to provide any localised depression which will be unable to naturally drain flood water overland back to the Lower River Shannon.
- The odour control unit and sludge skip plinths are not located in their entirety within Flood Zone A.
- All proposed infrastructure within the site, including finished floor levels and tops of tanks will be located above the design flood level as stated in the Flood Risk Assessment. Design of wastewater treatment process and infrastructure will allow the plant to remain operational should the site become inundated with flood water.
- Attenuation of surface water is proposed only for runoff arising from impermeable areas associated with new infrastructure. Surface water from the existing development will be managed through the existing internal drainage system which discharges to the Lower River Shannon.

- It is not in the scope of this project to defend the site from flood water; therefore a large area of the site will remain at risk of flooding as highlighted in the FRA. The proposed solution is to design and construct an attenuation system suitable to store all runoff from new development during a 1 in 100 year storm event. Discharge from the attenuation system will not be achievable during such an event due to associated high levels in the Lower River Shannon, therefore attenuation will be designed to store surface water runoff for the duration of this event until such time as the water level of the river falls. In the event that the storage capacity of the attenuation system is exceeded, surcharging can occur upstream within the site at a location not at risk of flooding. This is a measure to avoid any risk of flooding to existing and proposed buildings.
- The option of relocating the proposed stormwater attenuation system to an area outside Flood Zone A and B is not possible due to space limitations. It is also not feasible with regard to hydraulic constraints in both collecting surface water runoff and discharging to the receiving watercourse.
- The recommended conditions are noted.
- Final details of the compensatory flood and attenuation design will be submitted to the Council as part of compliance prior to commencement of development. The suggested conditions do not, in themselves, have a material impact on the planning application at this point.
- A surface water management layout will be submitted to and agreed with the local authority.
- It is requested that the financial contribution recommended be omitted on the basis that the delivery of the proposal is sufficient in, and of itself, in terms of the provision of necessary infrastructure in the Limerick City and County Council area. If the Board is minded to attach a condition regard should be had to section 7.1.3 of the Draft Water Services Guidelines for Planning Authorities.

10.2. Department of Housing, Local Government and Heritage

- Agree with recommended conditions

10.3. Environmental Protection Agency

- Given the conclusions of the EIAR water study future discharges will not cause any breach or contravene any European Directive.

10.4. Inland Fisheries Ireland

- The existing accessible sampling point will remain in operation. There will also be a flow meter on outflow pipes as per Uisce Eireann technical design standards.

10.5. Health Service Executive

- Odour nuisance can be assessed subjectively in accordance with EPA sniff test methodology. However it can also be modelled and assessed quantitatively as described in the EIAR.
- Having regard to the definition in the EIA Directive the baseline would include the operation of the existing WwTP.
- Section 8.1.1.1, Adopted Odour Impact Assessment Criteria, outlines the relevant guidance in terms of odour impacts from wastewater treatment sources and the criteria as outlined in EIAR Tables 8.2 – 8.4. The threshold recommendation is that odour concentrations at the sensitive receptors shall not exceed 3 ouE/m³ as the 98th percentile of hourly averages,
- There is an existing odour complaints procedure in place.

10.6. Peter Sweetman & Associates

Introduction

- The NIS has been prepared in accordance with relevant and most up to date guidance on appropriate assessment from the European Commission, inter alia, 2021 Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on Articles 6 (3) and (4) of the Habitats Directive 92/43/EEC. It has considered the most up to date case law from the CJEU and national courts. The 2007 guidance is included as a reference document.
- The AA Screening report is included in Appendix 1 of the NIS.

Surface/Groundwater

- Design and construction details of the double silt fence are provided in section 5.2.1.1.1 and is shown on Figure 5-1.
- There is only one access to the construction area via the existing main entrance of the WwTP and within the red line boundary.
- Bare ground refers to bare and exposed soil or earth as defined by Fossitt – A guide to Habitats in Ireland (2000).
- Vehicles will travel at a speed limit of at or below 5km/hr so as to avoid erosion or displacement of bare soil and creation of associated surface run-off.
- The excavation depth required for the storm tank is described in section 3.4 of the NIS. The dimensions are 45 (length) x 20 (breadth) and 4.2m (depth).
- Details of stockpiling are included in section 5.2.1.1.1 of the NIS. A double silt fence will be in place around all boundaries adjacent to drains, and the portion of the site which contains the site compound will be fully bunded to guard against flood risk. Any stockpiles will be surrounded with an additional silt fence. These measures will ensure there will be no adverse effects to the SAC via run-off associated with stockpiling.
- Weather forecasting will be carried out such that no earthworks will be undertaken if the following rain levels are predicted: rainfall > 10mm/hr, rainfall >25mm in a 24 hour period, or rainfall total greater than the monthly average recorded in 7 consecutive days. Weather forecasting is pre-emptive mitigation and will avoid adverse effects as a result of rainfall run-off.
- Under environmental monitoring it is proposed to monitor turbidity levels upstream and downstream of the drain outfall point from the site which is within the adjacent mill race channel east of the site. It is outside of the SAC (see drawing included). These monitoring points will assess the quality of water within the mill race channel in advance of its discharge to the Lower River Shannon SAC, therefore if raised turbidity is recorded in this channel, the team will be alerted and works halted until turbidity in the channel is

lowered, so that adverse effects to the SAC via sedimentation to the SAC will be avoided.

- The water table levels are detailed and considered in section 3.4 (between 4.3 and 6.8m bgl). The proposed groundworks have been assessed within the NIS with mitigation required as set out in Section 5.2.1.1.1.
- Two options for dewatering mitigation have been provided and assessed as part of the NIS. Both are detailed in section 5.2.1.1.1. Both options have been assessed and there is no potential for adverse effects on the SAC. Option 1 to discharge from silt bags within an area of the WwTP surrounded by several levels of silt fencing (as shown in the enclosed drawing) is the preferred option. Option 2 entailing being tankered off site will only be undertaken during planned maintenance or modification to silt bags and/or fencing allowing dewatering mitigation measures to remain in place.

Earthworks

- A chute cleaning area has been defined in section 5.2.1.1.1 within the site compound and is delineated on the enclosed drawing. The site compound will be fully bunded and drains around the site will be separated from the compound by a double silt fence. If a distance from the drain of 30 metres cannot be maintained for the cleaning area, then no chute cleaning will be permitted within the WwTP.
- The range of mitigation measures to avoid adverse effects associated with refuelling is detailed in the NIS in section 5.2.1.1.1.
- Fuel storage tanks will be bunded to 110% capacity.
- Plant will be inspected daily.

Operation

- Operational impacts to the SAC were screened out in the AA Screening Report. This is as a result of scientific analysis of the predicted nutrient loads and stormwater spills as a result of the proposed upgrades. This took into consideration the baseline water quality of the SAC in the vicinity of the existing discharge, the predicted future loads and Waste Assimilative Capacity of the Lower River Shannon.

- Sections 3.2 and 3.3 of the NIS sets out details of the existing and future impacts on water quality. The baseline water quality data and future calculations of effluent and assimilative capacity of the Lower River Shannon have shown that the effluent is currently being discharged to the aquatic environment in line with EPA and WFD objectives and, as a result of the proposed upgrade works, will continue to do so. The assessment of operational impacts on water quality has shown that operation of the WwTP will ensure that the effluent will not prevent water quality within the Lower River Shannon SAC from attaining at least 'Good' status EQs.
- The reduction in annual stormwater spill volumes from the WwTP following the proposed development has been described in section 3.2.3.1.3, The proposed storm tank will reduce the annual rate of stormwater spills to the Lower River Shannon. A Drainage Area Plan (DAP) model using baseline flow survey data has shown that there is currently an Average Annual Spill Rate of approx. 123 spills per annum. This will be reduced to approx. 7 spills per annum.
- The Wastewater Discharge Licence Review and EPA permissions have not been listed as mitigation measures in the NIS. The inclusion of such information is not considered to create any lacuna in the context of the report as a whole.
- Best practice measures and measures to comply with legal requirements are included for the avoidance of doubt and do not present a lacuna.

In response to the comments about the phrase 'where feasible' all potential pathways for adverse effect have been identified and assessed with clear and definitive mitigation put in place to block all identified pathways for effect. The potential for adverse effects have been fully assessed. There are no lacunae which would prevent the competent authority from concluding that there will be no adverse effects on the European site.

11.0 Further Submissions

The applicant's response to the above submissions was circulated for comment.

One response was received.

Transport Infrastructure Ireland has no specific observations to make.

12.0 Natural Heritage Designations

The Lower River Shannon SAC (site code 004077) is immediately to the north of the WwTP.

13.0 Assessment

- 13.1. Having regard to the requirements of the Planning and Development Act, 2000, as amended, the assessment of the proposed development is divided into three parts to include the planning assessment (section 13) environmental impact assessment (section 14) and appropriate assessment (section 15). Invariably there is a significant overlap in the assessments for example between the planning assessment and the EIA. To avoid undue repetition issues I propose to address overlapping issues, in the main, under the respective headings of the environmental impact assessment (EIA) section and appropriate assessment (AA) sections.
- 13.2. My assessment is informed by all of the documentation received with the planning application for the proposed development and all of the subsequent reports, submissions and observations and the applicant's response received, as well as information gathered during my site visit of the Castletroy WwTP.

14.0 Planning Assessment

I consider that the issues arising in this section can be assessed generally under the following headings:

- Existing WwTP Constraints and Proposed Upgrade Works
- Planning Policy Context
- Flood Risk

14.1. Existing WwTP Constraints and Proposed Upgrade Works

14.1.1. The existing WwTP was constructed in the early 1990's and has been subject to various improvement works thereafter. It has a maximum design capacity of 45,000 population equivalent (PE). It treats the wastewater with secondary biological and nutrient removal processes. Final effluent is directed to the final effluent inspection chamber before gravitating to the main river channel via 3 no. outfall pipes. The pipes extend approx. 75 metres into the main river channel and each is fitted with 2 no. diffuser heads. The diffuser heads have 4 no. legs to disperse and enhance mixing with the river flow.

14.1.2. During normal weather conditions the final effluent consists of treated discharge from WwTP process (SW-1). During storm and heavy rainfall conditions it is mixed in the final effluent chamber with screened stormwater from the inlet works (SW-4) and possibly unscreened emergency overflows (EO) discharging directly to the final effluent chamber. Stormwater spills are currently averaging 123 per annum.

14.1.3. The plant is currently operating at the limitations of its design capacity.

14.1.4. The **Emission Limit Values** (ELVs) as specified in the Wastewater Discharge Licence (WWDL) no. D0019-01 issued in 2009 are as follows:

Table 1 – Emission Limit Values

Parameter	ELV
BOD (mg/l)	25
COD (mg/l)	125
Suspended Solids (mg/l)	35

Ammonia (mg/l N)	5
Ortho-Phosphate (mg/l P)	1
Total Phosphorus (mg/l P)	2

- 14.1.5. Water Quality Monitoring Annual Environmental Reports (AERs) prepared in accordance with the requirements of the waste discharge licence note that the plant has been non-compliant with licence conditions in recent years due to breaches in ELVs; ortho-Phosphate in 2018 and 2021 and ammonia in 2019. However, annual mean effluent monitoring results indicate the plant is producing a final effluent considerable less concentrated than the allowable ELVs. From this it can be reasonably assumed that the recorded exceedances were isolated incidences caused by WwTP deficiencies i.e. lack of stormwater storage and/or breakdown of aging plant equipment.
- 14.1.6. With respect to the **Water Framework Directive** (WFD) waterbody status the outfall point for effluent discharge in the Lower River Shannon is on a section classed as 'moderate'. It was also assigned a WFD risk score of 1a in 2008 which indicates the waterbody is at risk of not achieving 'good' status.
- 14.1.7. From the assessment of water quality monitoring results over a 5 year period 2016-2021 (see section 14.4.5 of the EIAR) with regard had to **Environmental Quality Standards** (EQS) the baseline water quality is of good standard for all parameters with concentrations typically within the high stated EQS limits.
- 14.1.8. There were periodic spikes in concentration both upstream and downstream monitoring locations. These are likely due to storm events. Some results showed slightly higher concentrations upstream than downstream indicating that background activities such as agriculture and surface run off also play a role in water quality. The results indicate that the WwTP is not currently having any significant impact on receiving water quality in terms of increase in downstream concentrations or deterioration in waste assimilative capacity in the river.

Table 2 - Water Quality Upstream and Downstream of Discharge Point (2019-2022)

Parameter	Units	Upstream	Downstream	EQS High Status (95%ile)
BOD	Mg/l	1	1	2.2
Ortho-P	Mg/l	0.039	0.037	0.045
Ammonia	Mg/l	0.043	0.053	0.09

Table 3 - Calculated WAC Figures using Measured Concentrations

Baseline Upstream	BOD	Ortho-P	Ammonia
Mean & Median Flow	19%	36%	45%
95%ile & Q95 flow	55%	13%	52%

Baseline Upstream			
Mean & Median Flow	18%	28%	42%
95%ile & Q95 flow	54%	17%	41%

14.1.9. The proposed upgrading works are to allow for an increase in capacity to accommodate for a 10 year growth projection of 77,500 PE. There will be provision made in the plant (tank sizing and pipework) for a 25+ year projection of 81,100 PE which would be subject to further consideration and assessment. The assessment provided includes calculations for the long term 25 year outlook for comparative purposes only.

14.1.10. The WwTP is an aging plant and requires the refurbishment or replacement of several items of equipment, details of which are set out in section 2 of this report. Treatment capacity and effluent standards will be improved with the installation of new plant processes and upgrades to existing infrastructure. Additional grit traps and new primary filters will increase the removal of suspended solids and BOD. Installation of Integrated Fixed-Film Activated Sludge (IFAS) technology and additional air blowers in the existing aeration tanks will enhance secondary biological

treatment, particularly with regard to ammonia removal. There will also be improvements to the chemical dosing system with the installation of a new chemical dosing tank for additional ortho-Phosphate treatment. Alterations to sludge treatment with a new 12 m diameter Picket Fence Thickener (PFT) with a volume of 350m³ is proposed with the existing 7.1 metre diameter PFT to be repurposed as a 'Thickened Sludge Storage Tank'. A full upgrade of the sludge dewatering system is proposed. Two skips for storage of dewatered sludge will be required with a 3rd provided for additional capacity. The development will also include a stormwater storage tank with a capacity of 4500m³ which provides for +20% climate change. A flood event pumping station is required to allow the plant to remain operational during a flood event. The 2 no. existing emergency overflows connecting to the existing overflow 1050mm pipe will be retained for emergency measures. The 900mm overflow from the SWO chamber will be intercepted and diverted to the new storm tank via a 1000mm diameter pipe.

- 14.1.11. The design requirements and sizing of the plant components are set out in detail in sections 3.3 and 3.4 of the EIAR and are considered to be robust providing for sufficient detail.
- 14.1.12. The water quality operational impact assessment was carried out to predict effluent concentrations should the WwTP operate continuously at the maximum allowable ELVs, and also using the scenario of proposed ELVs subject to WWDL review. I refer the Board to section 14.6.3 of the EIAR. Given the scale of the development the applicant expects that there will be a EPA licence requirement to reduce ELVs to account for the additional loading and maintain existing effluent quality. For the purpose of the assessment the following limits have been applied: BOD 20mg/l, Orth-P .75mg/l and ammonia 2mg/l.
- 14.1.13. Having regard to the proposed future hydraulic loading rates and the relative effluent concentrations when the maximum ELV's are applied downstream ammonia will exceed the EQS and orthophosphate is borderline. WAC would be exceeded and would become increasingly deficient.

Table 4: Predicted D/s Concentrations using Existing ELVs

Parameter	BOD (mg/l)	Ortho-P (mg/l)	Ammonia (mg/l)
EQS (High/Mean)	1.3	0.025	0.04
45,000 PE (Design PE)	1.19	0.022	0.051
77,500 PE (+10 yr)	1.25	0.024	0.062
81,100 pe (+25 year)	1.27	0.025	0.065

Table 5: Predicted WAC using Existing ELVs

Loading Scenario	BOD	Ortho-P	Ammonia
45,000 PE (Design PE)	8%	13%	-27%
77,500 PE (+10 yr)	4%	3%	-57%
81,100 pe (+25 year)	2%	1%	-65%

14.1.14. Should the ELVs be reduced it is that considered that whilst demands on the WwTP plant will increase, the improvements in treatment capacity are designed to meet future requirements. There should be no reduction in WwTP performance compared to the current situation with regard to quality of the final effluent. Therefore meeting more stringent ELVs (subject to WWDL review) is achievable.

Table 6: Predicted D/S Concentrations Using Proposed ELVs (median river flow)

Parameter	BOD (20 mg/l)	Ortho-P (.75 mg/l)	Ammonia (2mg/l)
EQS (High Mean)	1.3	0.025	0.04
45,000PE (Design PE)	1.16	0,020	0.033
75,000 PE (+10 Year)	1.21	0.022	0.038
81,100 PE (+25 year)	1.22	0.023	0.039

14.1.15. There will be a slight reduction in waste assimilative capacity as the WwTP discharge rate increases but it is not expected to breach high status environmental constraints.

Table 7: Predicted WAC Using Revised ELVs (median river flow)

Loading Scenario	BOD	Ortho-p	Ammonia
45,000PE (Design PE)	10%	19%	16%
75,000 PE (+10 Year)	7%	20%	14%
81,100 PE (+25 year)	6%	18%	12%

14.1.16. In parallel there will be material improvements in the rate of stormwater overflows due to the proposed stormwater storage and would result in a reduction in spills from on average 123 spills per year to, on average, less than 7 spills per year and 3 spills during bathing season which ensures that recreational water quality standards are met. In this regard the University of Limerick Boat Club Jetty is 115 metres downstream of the discharge point and the area is used for recreational water based activities. On this basis the receiving water has been assessed under **recreational water guidelines**, as set out in the DoEHLG Procedures and Criteria in Relation to Stormwater Overflows and Uisce Eireann’s Technical Standard IW-TEC-800-03 for Stormwater Overflows.

14.1.17. I conclude I accept the assertion that without intervention the existing WwTP will become overloaded in the coming years. This would cause severe deterioration in the quality of the final effluent discharge and there would be subsequent negative effects in receiving water quality in the Lower River Shannon. The continuing absence of stormwater storage would also be in breach of criteria outlined in DoEHLG ‘Procedures and Criteria for Storm Water Overflows, 1995’.

14.1.18. I consider that the applicant has provided sufficient information on which it can be concluded that the proposed development would not cause a breach of the combined approach or otherwise cause serious water pollution or that the development would result in a contravention of the Water Framework Directive.

14.2. Planning Policy Context

- 14.2.1. Limerick city is served principally by two wastewater treatment plants; Castletroy and Bunlicky, the latter which is located approx. 13km downstream from the Castletroy WwTP. It currently serves a PE of 186,233 and is due to undergo a similar upgrading programme.
- 14.2.2. At a national level Limerick is recognised as playing an important regional role working in partnership with Cork and Galway to function as a viable alternative to Dublin with ambitious population growth targets of at least 50% by 2040 for both the city and suburbs with an objective to enhance its significant potential to become a city of scale.
- 14.2.3. Section 9 of the **National Planning Framework** refers to the key national environmental challenges facing the state. Specific reference is made to addressing health risks to drinking water, treating urban wastewater and protecting important and vulnerable habitats. Section 9.4 of the report notes that the EPA considers urban wastewater to be one of the principle pressures of water quality in Ireland and the treatment and disposal of wastewater in an environmentally sound manner is critical for human health. It goes on to note “that urban wastewater treatment plant compliance and remedial actions are therefore a key short-term priority. In the longer-term capacity issues will need to be resolved to meet the growing demand to 2040 and beyond”.
- 14.2.4. At a regional level the **RSES for the Southern Region** advances the national policy objectives for Limerick through the designation of the Limerick-Shannon Metropolitan Area as the primary driver of growth in the region. It is recognised that this growth is predicated on infrastructure capacity including an increase in wastewater capacity.
- 14.2.5. The RSES also includes a number of general policy objectives which support Irish Water’s water and wastewater infrastructure investment programmes and elimination of untreated discharges which the development will advance. Policy objective RPO 211, RPO 212 and RPO 214 refer.
- 14.2.6. In the context of local policy and the **Limerick City and County Development Plan 2022**, the site is appropriately zoned ‘utilities’ and accords with objective IN06 and IN09 which support the role of Irish Water in terms of provision and appropriate

updating of wastewater infrastructure to accommodate projected growth and safeguard the receiving environment.

- 14.2.7. It is apparent, therefore, in terms of strategic planning policy from national level to local level there are a suite of policy objectives in both broad and specific terms which would support the provision of an upgrading of the WwTP. Policy objectives at all levels highlight the need to improve urban wastewater treatment. The proposed upgrading of Castletroy, which will materially increase its capacity, can be considered as an important component in terms of enabling infrastructure to allow for the 50% population growth objective.

14.3. Flood Risk

- 14.3.1. **Appendix 14B** of the EIAR contains an **Flood Risk Assessment (FRA)**. I also note the applicant's response to the Limerick City and Council's submission on this matter.
- 14.3.2. The **National Indicative Fluvial Maps** show a large portion of the site being within Flood Zones A and B with the national flooding website www.floodmaps.ie showing records of historic flooding of the site. The **CFRAMs** map also shows portions of the site within Flood Zones A and B. The map indicates that the 1% AEP fluvial level at the site is +6.37mOD and 0.1% AEP fluvial floor level is +6.93mOD. I refer the board to Figures 8, 9 and 10 of the FRA.
- 14.3.3. The proposed storm water tank will be constructed on an open green area, the majority of which is classified as Flood Zone C with 388 sq.m. within Flood Zone B. The new primary treatment building, splitter chamber, primary sludge holding tank, odour units, picket fence thickener, forward feed pumping station and borehole and storage tank will also be constructed in Flood Zone B. The sludge storage skips and flood event pumping station will be constructed in both Flood Zones A and B. I refer the Board to Table 2 of the FRA. A total of 73 sq.m. is proposed within Flood Zone A and 884 sq.m. is proposed within Flood Zone B.
- 14.3.4. As per the **Flood Risk Management Guidelines** essential infrastructures such as a WwTP is classed as highly vulnerable development for which a justification test is required where infrastructure is to be developed within Flood Zones A and B. Box 5.1 of the guidelines set out the criteria which must be satisfied. I note as follows:
1. Subject Lands Zoned/designated for particular use

The proposal entails an upgrade of the existing WwTP on lands zoned 'Utilities' in the current Limerick City and County Development Plan, 2022, with policies and objectives supporting the economic and population growth of the city and the provision of water and wastewater infrastructure and services.

2. Proposal subject to an appropriate flood risk assessment

A FRA has been undertaken. I note the following:

(a) The area of all proposed structures within each flood depth extent was calculated using GIS software. The results are shown in Table 3 using the minimum, maximum and average flood depths for each range from the CFRAM map. It is calculated that a maximum of 28m³ volume flood storage volume will be removed arising from the proposed infrastructure during a 1% AEP flood event. In accordance with the guidelines compensatory storage is proposed to be provided through the reduction of existing ground levels along the western boundary of the site where no development is proposed. The profile of this ground will be regraded and designed to not provide any localised depression which will be unable to naturally drain flood water overland back to the Lower River Shannon. This compensatory storage is primarily located within Flood Zone B. This storage area can be moved further south to avoid any storage being provided within Flood Zone A.

The option of relocating the proposed stormwater attenuation system to an area outside Flood Zones A and B is not possible due to space limitations.

(b) The 1% fluvial flood levels are +6.36mOD and +6.38mOD. The FRM guidelines require minimum floor level for new development to be set above the 1% AEP fluvial flood levels and should include an allowance for climate change and freeboard. With a freeboard allowance of 0.40m and allowance of 0.20m for the effects of climate change this gives the minimum required finished floor level (FFL) of development of +6.97mOD.

(c) With the implementation of flood risk mitigation measures the risk of flood damage to the proposed infrastructure will be minimised.

(d) The proposal is compatible with wider planning objectives seeking to support the growth of Limerick City as per the National Planning Framework, the

Regional Spatial and Economic Strategy and the City and County
Development Plan.

- 14.3.5. I consider that the proposal meets the criteria of the justification test. The proposal is for the upgrade of an existing WwTP which, by its function, requires a location in proximity to a watercourse. By reason of the prevailing site characteristics a large part of the site will remain at risk of flooding. As far as practicable new infrastructure is to be located in Flood Zone C but due to both physical and hydraulic constraints this is not possible in its entirety. Design of wastewater treatment process and infrastructure will allow the plant to remain operational should the site become inundated with flood water.
- 14.3.6. Overall, I am satisfied that it has been demonstrated that subject to commitments around FFLs and location of compensatory flood storage, the Castletroy WwTP upgrade works would not have any noticeable impact on the existing flood regime.

14.4. Planning Assessment – Conclusion

- 14.4.1. The benefits of the proposed development are considered to be overwhelmingly positive. Its delivery would assist in the realisation of national, regional and local planning policy and would enable sustainable residential and economic growth through the delivery of increased wastewater treatment capacity while protecting the environment through ensuring the quality of effluent discharged to the receiving water environment.

15.0 Environmental Impact Assessment

15.1. Introduction

Statutory Provisions

15.1.1. This section sets out an environmental impact assessment (EIA) of the proposed development.

15.1.2. The **EIA Directive (Directive 2014/52/EU)** is applicable.

Content and Structure of EIAR

15.1.3. The EIAR consists of 4 volumes, grouped as follows:

- Volume 1 – Non Technical Summary
- Volume 2 – Main Report
- Volume 3 - Appendices
- Volume 4 - Drawings

15.1.4. The EIAR provides a description of the project comprising information on the site, design, size and other relevant features. Uisce Éireann intends to procure the detailed design and construction of the proposed development using a Design and Build type contract. It developed a detailed specimen design of the proposed development for assessment within the EIAR. The contractor will be required to develop this design further within specified constraints and will also be required to comply with all of the performance requirements including the statutory consent approvals and any associated conditions, thereby, ensuring that there is no material change in terms of significant effects on the environment.

15.1.5. The EIAR identifies, describes and assesses in an appropriate manner, the direct and indirect significant effects of the project on the following environmental factors: (a) population and human health; (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC; (c) land, soil, water, air and climate; (d) material assets, cultural heritage and the landscape and it considers the interaction between the factors referred to in points (a) to (d). It provides an adequate description of forecasting methods and evidence used to identify and assess the significant effects on the environment. It also

provides a description of measures envisaged to avoid, prevent or reduce and, if possible, offset likely significant adverse effects. The mitigation measures are presented in each chapter and are summarised in Chapter 20 of the EIAR. Where proposed, monitoring arrangements are also outlined. Any difficulties which were encountered in compiling the required information are set out under the respective environmental topics.

- 15.1.6. I am satisfied that the information provided in the EIAR is up to date, adequately identifies and describes the direct and indirect and cumulative effects of the proposed development on the environment. I note the details of the project team members, their qualifications and experience and CVs provided in Appendix 1C. I am satisfied that the EIAR has been prepared by competent experts to ensure its completeness and quality.
- 15.1.7. I am satisfied that the information provided is reasonable and sufficient to allow the Board to reach a reasoned conclusion on the significant effects of the project on the environment, taking into account current knowledge and methods of assessment. I am also satisfied that the information contained in the EIAR complies with the provisions of Articles 3, 5 and Annex (IV) of EU Directive 2014/52/EU and Article 94 of the Planning and Development Regulations 2001, as amended.
- 15.1.8. I have carried out an examination of the information presented by the applicant, including the EIAR and the submissions made during the course of the application. A summary of the submissions made by the planning authority, prescribed bodies and observers are set out in sections 6, 7 and 8 above. The relevant issues arising are addressed below under the relevant headings and, as appropriate, in the reasoned conclusion and recommendation.

Consultations

- 15.1.9. Details of the consultations entered into by the applicant as part of the preparation of the application and EIAR are set out in section 1.7 and Appendix 1D. I consider that the applicant has taken all reasonable steps to engage with the local community. The application is accompanied by copies of the relevant notices and the website on which the documentation could be accessed. I consider that the engagement has been effective in terms of advising the public of the proposed development and that 3rd parties were not disenfranchised.

Vulnerability to Risk of Major Accidents and/or Disaster

- 15.1.10. The requirements of **Article 3(2) of the Directive** include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned. This aspect is addressed in Section 18 of the EIAR. In summary there is limited potential for significant natural disasters to occur at the proposed wind farm site. A risk assessment for both the construction and operational phases is set out in Table 18.4. Of note are flooding and fire. In terms of flooding I refer the Board to my assessment of water in section 13.8 below. In summary there is the risk of flooding during the operational phase as a portion of the site is within Flood Zones A and B. All highly essential infrastructure will be constructed at an elevation higher than the 1% AEP flood level with a suitable freeboard. The proposed storm water tank is to be constructed on the open green area of the site which is largely classified as Flood Zone C. The new Salsnes filters and sludge holding tank will be encroaching on Flood Zones A/B but are expected to cause minimal loss of flood plain storage and which will be compensated for elsewhere on the site. Appropriate drainage measures will ensure that all runoff from the site will be limited to the greenfield runoff rate. The risk of fire affecting the WwTP is limited. All chemicals will be appropriately stored. In accordance with section 19 of the Safety, Health and Welfare at Work Act 2005 the development shall be subject to a fire safety risk assessment.
- 15.1.11. The risk of discharge of untreated wastewater into the Lower River Shannon or groundwater table following an incident or malfunction on site is considered to be unlikely.
- 15.1.12. The Risk Management Plan on site will be updated and implemented to ensure an effective response to disasters or the risk of accidents, The plan will be required to indicate sufficient preparedness and emergency planning measures. The maintenance programme, in compliance with the conditions of the Wastewater Discharge Authorisation required under the Wastewater Discharge (Authorisation) Regulations 2017-2015, will ensure that all critical equipment is operating correctly thereby reducing the risk of major accidents and/or disaster.
- 15.1.13. The site is not a Seveso site and is not in proximity to such a site.

15.1.14. It is considered that having regard to the nature and scale of the development there are unlikely to be any effects deriving from major accidents and or disasters and I am satisfied that this issue has been addressed satisfactorily in the EIAR.

Cumulative Impacts

15.1.15. I address cumulative impacts under each environmental heading below. At this juncture I would note that the projects considered in the EIAR for the purposes of cumulative assessment are outlined in **Section 19** and include Kings Flood Relief Scheme, Castleconnell Flood Relief Scheme, Corbally Baths Project, Bunlicky WwTP project and permissions granted in the vicinity of the site. I consider that the applicant has provided a comprehensive list of projects for consideration in respect of cumulative impacts.

15.2. Reasonable Alternatives

15.2.1. **Article 5 (1) (d) of the 2014 EIA Directive** requires:

“(d) a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;”

15.2.2. **Annex (IV) (Information for the EIAR)** provides more detail on ‘reasonable alternatives’:

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

15.2.3. The matter of alternatives is addressed in **Chapter 2** of the EIAR. The range of alternatives considered span from ‘do nothing’, treatment location alternatives including pumping wastewater to the main Limerick (Bunlicky) WwTP, and alternatives with regard to each phase of the wastewater treatment process including inlet works, stormwater management, secondary treatment, sludge dewatering and sludge cake storage.

15.2.4. I consider that the requirements in terms of reasonable alternatives have been satisfactorily discharged and the requirements of the EIA Directive in this regard have been met.

15.3. Likely Significant Direct and Indirect Effects

15.3.1. This section of the EIA identifies, describes and assesses the potential direct, indirect and cumulative effects of the project under each of the environmental factors referred to in Article 3 (1) of the Directive. I will address the environmental factors in the following chronology in line with that set out in the Directive :

- Population and Human Health
- Biodiversity
- Land and Soil
- Water
- Air and Climate
- Material Assets
- Cultural Heritage
- Landscape
- Interrelationship of the above

15.4. Population and Human Health

Environmental Impact Assessment Report

15.4.1. I consider that this environmental topic appropriately encompasses the subject issues as raised in the EIAR chapter titled 'Population and Human Health' in addition to noise and odour.

15.4.2. **Section 17** addresses **population and human health** under the sub headings population, economic activity, social and settlement patterns and human health. **Section 9** addresses **noise and vibration** and **Section 7** addresses **odour**.

15.4.3. Other matters which would have a direct bearing on population and human health such as water, air and climate will be addressed under the corresponding headings below. Invariably there is an overlap and I recommend that they be read in tandem.

Receiving Environment

Population and Employment

15.4.4. The site within the Electoral Division of Ballysimon and has experienced strong population and employment growth over the last 20 years owing to the presence of the UL campus. The presence of the university temporarily inflates the residential population for the academic term. National Technology Park at Plassey and UL are employment hubs of strategic importance with Castletroy performing an important trade/market and service function for the resident population.

Noise

15.4.5. In terms of methodology regard is had to the Environmental Protection Agency (EPA) Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)(EPA 2016) and British Standard (BS) 4142: 2014+A1 2019 'Method of Rating and Assessing Industrial and Commercial Noise', World Health Organisation Guidelines for Community Noise, Institute of Environmental Management and Assessment (IEMA) Guidelines for Noise Impact Assessment and ISO 1996-1:2016 Acoustics – Description, measurement and assessment of environmental noise – Part 1: Basic quantities and assessment procedures. CadnaA noise prediction software was used. 19 no. locations for which noise predictions have been calculated are detailed in Table 9.7.

15.4.6. The nearest sensitive receptors are properties c. 130 to 200 metres to the north-east of the WwTP site. Baseline monitoring was undertaken at 2 locations as delineated on Figure 9-2. The monitoring was undertaken on 21/09/21. The results are set out in Table 9.9. The L_{A90} (dB) day time ranged between 37.6 and 41.1dB with night time figures of 34.8 and 37.3 dB. The L_{Aeq} day time ranged between 50.5 dB and 59.8 dB with night time between 34.8 dB and 37.6 dB. A faint shrill attributable to the existing pumping station at the inlet and the blower units near to the aeration tanks was audible.

15.4.7. No noise complaints have been reported to the site operators in recent years. The location is not deemed to be an 'area of low background noise' or a 'quiet area' as per the criteria set out in the EPA Guidance Note for Noise.

Odour

15.4.8. The nearest sensitive receptors are as described for noise above. Baseline Odour Surveys were undertaken on 21/09/21 when the prevailing weather conditions were most likely to allow for odours to disperse across the nearest residential properties.

15.4.9. During the on-site odour surveys, it was noted that the odours emitted from the uncovered inlet works and sludge building were a source of particularly and immediately detectable strong odours. Throughout the remainder of the WwTP site faint to moderate odours were detected in proximity to the aeration tanks, the clarifiers and the sludge thickening tanks.

15.4.10. Faint WwTP type odours were detected in proximity to nearby residential properties and was noted to have the potential to give rise to odour nuisance. During the surveys, no odours were detected to be coming from any other source.

15.4.11. There is no general statutory odour standards in Ireland relating to industrial installations. Based on the review of the relevant guidance including 'Guidance on the Assessment of Odour for Planning (Version 1.1 – July 2018) issued by the IAQM and the UK Environment Guidance 'Additional Guidance of H4 Odour Management, how to comply with your Environmental Permit' it is recommended that the odour concentration at the sensitive receptors close to the existing Castletroy WwTP should not exceed 3 ouE/m³ on a 98th percentile of hourly averages.

15.4.12. The American Meteorological Society (AMS)/EPA Regulatory Model (AERMOD) is used for odour dispersion modelling.

15.4.13. As calculated the ranges at the 19 identified sensitive receptors the maximum existing ranges from 0.67 at SR14 to 11.50 at R16 (car park to south). See Table 7.10.

Do Nothing

15.4.14. In a 'do nothing' scenario there is the potential for adverse impacts on water quality in the River Shannon with consequent impacts on human health, wellbeing and commercial impacts.

15.4.15. There would be no change to the noise or odour environments.

Likely Significant Effects

Population and Employment

Construction Phase

15.4.16. Increased road traffic and the potential for disruption could cause disturbance to the residential, working and recreational population of the area.

15.4.17. 40 persons are anticipated to be employed during the construction phase.

15.4.18. There are potential for impacts on human health arising from dust emissions and noise.

Operational Phase

15.4.19. The improvement in wastewater capacity will directly support planned housing and population growth and will also directly support future employment growth.

Noise

Construction Phase

15.4.20. The main noise sources during construction include ground preparation, foundation earthworks, sheet piling and associated HGV truck movements. The EIAR in section 9.5.2 considers each element of the construction phase with Tables 9.12 and 9.13 setting out the typical construction noise emission levels for various activities.

15.4.21. There is no statutory Irish guidance relating to the maximum permissible noise levels that can be generated by the construction phase. Best practice guidelines are taken from BS5228-1:2009 A1:2014 'Code of practice for noise and vibration control on construction and open sites – Noise'. The approach adopted requires each noise sensitive location to be assigned a specific category – A, B or C based on existing ambient noise levels in the absence of construction noise. This then sets a threshold noise value that, if exceeded, indicates a potential significant noise impact is associated with the construction activities. Given the existing noise levels noise sensitive locations (NSLs) have been afforded Category A designation with a threshold of 65 dB L_{AeqT} .

15.4.22. Table 9.14 sets out the predicted noise levels during construction with no exceedance of the above stated daytime construction noise limit of 65 L_{AeqT} .

Operational Phase

15.4.23. The recommended operational noise limits based on EPA Guidance at the receptors in the vicinity of the site are as follows:

Daytime Noise Criterion, dB L _{Ar, T} (07:00 to 19:00)	Evening Noise Criterion, dB L _{Ar, T} (19:00 to 23:00)	Night-time Noise Criterion, dB L _{Aeq, T} (23:00 to 07:00)
55dB	50dB	45dB

15.4.24. The main potential noise sources during the operational phase will be due to water movements within tanks and associated noise from pumps, blowers and buildings. Table 9.17 sets out the predicted noise levels of the upgraded WwTP relative to that of the existing plant. In all instances the levels are reduced with the predicted difference in noise level L_r dB(A) between 1-3 dB(A). The noise levels range between 27.6 and 37.7 L_r dB(A) and are below the above noise limits.

15.4.25. The development does not contain any aspect that has the potential to give rise to vibration.

Odour

Construction Phase

15.4.26. The construction phase will not give rise to any significant odour impacts.

Operational Phase

15.4.27. The results of the odour dispersion modelling assessment based on worst case odour emissions from the site are presented in Table 7.10 and Figures 7-3 and 7-4. The 98th percentile of maximum 1 hour ground level odour concentrations at the nearest sensitive receptors do not exceed 0.5 – 1.5 ouE/m³ range following the upgrade works and therefore do not exceed 3 ouE/m³ and indicate a 68% - 81% reduction in odour concentrations.

Mitigation Measures

Population and Employment

Construction Phase

- 15.4.28. A Construction Environmental Management Plan and Traffic Management Plan are to be prepared with best practice measures to address noise, dust and construction traffic to be implemented.

Operational Phase

- 15.4.29. None recommended.

Noise

Construction Phase

- 15.4.30. Best practice measures for construction sites including the reduction of construction noise at source as outlined in BS5228: Part 1:2009 to be implemented.

- 15.4.31. Heras fencing to be erected around stormwater storage tank construction area.

Operational Phase

- 15.4.32. The existing blowers and additional blowers to be installed are to be fitted within a suitable noise attenuation enclosure.

Odour

Construction and Operational Phases

- 15.4.33. None proposed

Residual Effects

- 15.4.34. Subject to the implementation of the mitigation measures during the construction phase residual impacts would be slight, negative and short term. No residual impacts are anticipated during operational phase.

Cumulative Effects

- 15.4.35. No cumulative effects anticipated.

EIAR Conclusion

- 15.4.36. The conclusions reached in the EIAR is that the proposed development would have a positive impact on the population and human health including noise and odour.

Assessment

- 15.4.37. I consider that the proposed development would allow for the realisation of national, regional and local policy objectives seeking population and employment growth of Limerick City and, whilst the construction phase has the potential to impact on human health due to dust and noise, the incorporation of best practice measures would ensure that such impacts are minimal.
- 15.4.38. The upgraded WwTP will result in an improvement in both noise and odour at sensitive receptors and represents a positive impact. The HSE in its submission on the application considers that the baseline odour for Castletroy and the surrounding environment should omit odours from the existing WwTP. As noted by the applicant in response, a baseline scenario refers to the current state of environmental characteristics. In this case that includes any emissions from the operation of the existing WwTP.
- 15.4.39. As noted above measures are proposed in the upgrade works to improve odour emissions with the dispersion models predicting that the 98th percentile of maximum 1 hour ground level odour concentrations at the nearest sensitive receptors will not exceed 0.5 – 1.5 ouEm³ following the upgrade works. This represents a 68% - 81% reduction in existing odour concentrations. The predicted concentrations fall materially short of the of the 3 ouE/m³ ceiling. A condition requiring that this parameter is not breached is recommended should permission be granted. Such a condition would not be at variance with the requirements of section 37G(4) of the Planning and Development Act, 2000, as amended, which sets out the constraints in terms of conditions for development which involves a waste discharge licence.

Population and Human Health – Conclusion

- 15.4.40. I have considered all of the submissions made in relation to population and human health, including noise and odour. I am satisfied that any potential impacts would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in terms of population and human health.

15.5. Biodiversity

15.5.1. The application is also accompanied by a Natura Impact Statement and I refer the Board to the appropriate assessment in section 14 below.

Environmental Impact Assessment Report

15.5.2. The assessment methodology included a combination of desk top studies using recognised ecological data bases and baseline ecological surveys, field surveys including habitat and invasive species surveys, otter and badger surveys and a bat habitat appraisal. **Appendices 11A, 11B, 11C, 11E and 11F** are relevant.

15.5.3. Natural Heritage Areas and proposed Natural Heritage Areas within 15 km of the site were identified and are set out in Table 11.2. Two are considered to be within the likely zone of impact – Fergus Estuary and Inner Shannon, North Shore pNHA c. 3km from the site and Inner Shannon Estuary, South Shore pNHA 4.5km from the site.

15.5.4. The information provided by the desk top study indicates the Natura 2000 sites within the zone of likely impact. As the potential for significant effects is considered in detail in the NIS, the designated sites are not considered further in this chapter of the EIAR. There is also an overlap with water. To avoid undue repetition I will address matters arising in terms of water, including flood risk assessment, in section 13.7 below.

Receiving Environment

15.5.5. The existing WwTP infrastructure is classified as buildings and artificial surfaces (BL3). Associated hard standing areas are classified as spoil and bare ground (ED2) and recolonising bare ground (ED3). The site boundary is demarcated by a palisade inside of which there are treelines and broadleaved woodland. Species recorded include ash, willow, alder, sycamore, cypress, elder, horse chestnut and hazel. Areas of grassland within the site are classified as amenity grassland (GA2) with scattered trees and parkland (WD5) in places. Invasive species giant hogweed and Himalayan balsam are recorded in the treeline and woodland. A drainage ditch (FW4) surrounds the entire site.

15.5.6. The wider area consists of woodland, public river walkway and a mill race channel to the east. The Lower River Shannon is approx. 20 metres to the north of the site.

Treated effluent from the wastewater treatment plant is discharged to the river via the existing outfall.

15.5.7. From Inland Fisheries Ireland Data 13 fish species were recorded in Limerick Docks with Flounder the most abundant. 22 species were recorded in the Upper Shannon Estuary again with Flounder the most abundant. 29 species were recorded in the Lower Shannon Estuary with sprat the most abundant.

15.5.8. No sign of otter was recorded on the site. It is likely to use the section of the Lower River Shannon adjacent to the site for commuting and foraging. It may potentially use nearby drains and the mill race channel to the east of the site.

15.5.9. There is an active badger sett along the south-eastern boundary of the site. The badger sett is completely outside the footprint of the development. There is evidence of snuffle holes and trails/commuting routes along the southern and eastern boundaries. A full badger survey report is provided in Appendix 11C.

15.5.10. The woodland edges around the perimeter of the site are of moderate suitability for commuting and foraging bats. No evidence of roosting was observed.

15.5.11. Birds observed on site were an assemblage of common garden/passerine species

Do Nothing

15.5.12. In a 'do nothing scenario' the site would continue according to existing operations and the habitats would remain. Areas infested with giant hogweed are subject to spraying with herbicide.

Likely Significant Effects

Construction Phase

15.5.13. The works will result in the loss of approx. 3290 sq.m. of amenity grassland and dry meadow/grassy verge and 25 ornamental trees.

15.5.14. Potential for disturbance of otter as a result of noise.

15.5.15. Potential for disturbance of badger as a result of noise and vibration and loss of commuting/foraging links as a result of construction infrastructure. There is also the potential for tunnel collapse and mortality due to the machinery movement.

15.5.16. Potential for disturbance to roosting bats due to noise and lighting.

- 15.5.17. There is the potential of silt/sediment and hydrocarbons run off to adjacent drains which in turn potentially act as surface water conduits to the Lower River Shannon. Deep excavations are required for the proposed stormwater tank with risk of groundwater contamination which can also result to infiltration to surface water bodies. There is a risk of surface water contamination should a flood event occur during construction. The deterioration in water quality has the potential to affect aquatic species.
- 15.5.18. There is the potential for further spread of invasive species to other sites.

Operational Phase

- 15.5.19. There is potential for significant effect as a result of external lighting on badger and the peripheral woodland areas with suitability for roosting and foraging bats.
- 15.5.20. The higher loadings at the WwTP have the potential to negatively impact water quality of the Lower River Shannon and result in higher nutrient inputs resulting in reduced oxygen availability and oxygen starvation of fish species.

Mitigation Measures

Construction Phase

- 15.5.21. An Environmental Manager is to be assigned with responsibility for ensuring the environmental measures are adhered to with an Ecological Clerk of Works to be appointed for the duration of the project.
- 15.5.22. A Construction and Environmental Management Plan is to be prepared (Outline CEMP provide in Appendix 4A).
- 15.5.23. Mitigation measures to protect surface and groundwater are as detailed in section 13.7 below.
- 15.5.24. If lighting is required it is to be limited, faced downwards and focussed away from surrounding woodland.
- 15.5.25. A pre-construction otter survey will be carried out. Should otter holts be recorded within 150 metres of the works a derogation licence will be obtained.
- 15.5.26. A pre-construction badger survey will be undertaken. No construction works will take place within 30 metres of the badger sett unless in consultation with the NPWS. Any works within the badger breeding season (December to June) will require a 50

metre exclusion zone around the sett. No blasting or pile driving to be carried out within 150 metres of the sett during breeding season. This will apply to works related to the construction of the stormwater storage tank.

- 15.5.27. The proposed works associated with the inlet works, located in proximity to the badger sett, will be carried out in consultation with the NPWS. A solid barrier will be erected along the south of the paved area adjacent to the sett in order to screen off the works from the sett and to prevent any entry of machinery to the south of the paved area. The fence will be constructed in consultation with an ecologist and will not obstruct badger movement along the existing commuting routes.
- 15.5.28. Any works with potential to result in high levels of noise or vibration will be appropriately sequenced in order to avoid potential for cumulative increases in noise or vibration.
- 15.5.29. A site specific Invasive Species Management Plan has been prepared and is attached in Appendix 11B.
- 15.5.30. A landscaping plan has been prepared and is provided in Appendix 12B. It is proposed to create a wet woodland to the north of the site which will provide new habitat and competition against re-encroachment of invasive species.

Operational Phase

- 15.5.31. 4 no. bat boxes to be placed on suitable trees along the eastern and western site boundaries.
- 15.5.32. A swift box is to be placed on the façade of the northern building.
- 15.5.33. A new lighting layout will replace that existing, will be focused onto roads and infrastructure, away from adjacent habitats. An option for external lights to be motion sensed, therefore rendering the site in darkness throughout the night when vacant is also proposed.

Residual Effects

- 15.5.34. None anticipated

Cumulative Impacts

- 15.5.35. No cumulative impacts anticipated.

EIAR – Conclusion

15.5.36. The proposed development would not negatively impact biodiversity at any geographic scale.

Assessment

15.5.37. No habitat of ecological importance has been identified within the site. Indeed there will be a biodiversity net gain once the landscaping measures are implemented through the creation of additional habitat including woodland, treelines, bat boxes and bird boxes. Invasive species are prevalent and will require appropriate treatment for their eradication and to prevent their spread outside of the site. The badger sett identified on site will be protected. The works proposed do not impact directly on it with a suite of measures to mitigate against disturbance.

Biodiversity – Conclusion

15.5.38. I have considered all of the submissions made in relation to biodiversity. I am satisfied that any potential impacts would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in terms of biodiversity.

15.6. Land and Soil

Environmental Impact Assessment Report

15.6.1. **Section 13** addresses land and soil with **Appendix 13A** providing land and soils mapping and **Appendix 13B** comprising a Site Investigation – Factual Report. The assessment comprises both desktop and site inspections.

Receiving Environment

15.6.2. The site is level and is already operating as a WwTP. The site is predominately underlain by estuarine silts and clays. A secondary unit of gravels derived from limestone runs along the southern boundary of the site. From the GSI's bedrock geology the site is underlain by undifferentiated Visean Limestones. Rock was recorded at depths of 10.4 and 11m below ground level.

- 15.6.3. Most of the site is comprised of artificial surfaces. The ground investigations identified deposits of made ground across the site which extended to a depth of 2.6m below existing ground and contained concrete, plastic, timber fragments and steel rebar consistent with construction and demolition waste.
- 15.6.4. Groundwater levels are approx. 4-5 metres below existing ground levels with groundwater directions expected to be towards the Lower River Shannon where it will discharge as baseflow.
- 15.6.5. The bedrock aquifer is classified as Lm – Locally Important Aquifer – Bedrock which is Generally Moderately Productive. Bedrock aquifer vulnerability under the site has been classified by the GSI as low. The GSI Groundwater recharge map across the area indicates low recharge rates to the bedrock aquifer.

Do Nothing

- 15.6.6. In a 'do nothing' scenario there would be no effect on land and soil on the site.

Likely Significant Effects

Construction Phase

- 15.6.7. There is potential for pollution from run off during construction activities. The topsoil and overburden at the proposed stormwater storage tank will be excavated to allow for construction. During the storage and transport of excavated material off site there is potential for silt or mud to enter adjacent water courses. Limited soft soils will require excavation and replacement when encountered at the base of excavations for the stormwater storage tank.
- 15.6.8. Due to the relatively high water table at approx.3-4 metres below ground level, dewatering works are envisaged.

Operational Phase

- 15.6.9. Potential for accidental spillage of polluting substances including fuel oil.
- 15.6.10. Pipes and tanks will convey and store wastewater and storm water which are potentially polluting.

Mitigation Measures

Construction Phase

- 15.6.11. Best practice construction methods to be employed.
- 15.6.12. Excavations in made ground will be monitored by an appropriately qualified person to ensure that any evidence of contamination encountered is identified, segregated and appropriately stored in an area where there is no possibility of run off generation or infiltration to ground or surface water drainage.
- 15.6.13. Preparation of a waste management plan. The contractor will be required to carry out a waste characterisation of the material that will be take-off site for disposal.
- 15.6.14. Any excavation will be monitored during earthworks to ensure the stability of side slopes and to ensure that the soils excavated for disposal are consistent with the descriptions and classifications according to the waste acceptance criteria testing.
- 15.6.15. Ground settlement, horizontal and vibration monitoring will be implemented during the works to ensure that construction activities do not exceed the design limitations of nearby existing WwTP infrastructure.
- 15.6.16. Excavated material will, where possible, be retained and reused on the site as construction fill. All the excavated topsoil may be reused in landscaping. The majority of the overburden material within the stormwater storage tank footprint is unlikely to be suitable for reuse as an engineered fill without additional mechanical working (drying out) or chemical amelioration (lime or cement stabilisation).
- 15.6.17. Earthworks haulage will be along predetermined routes.
- 15.6.18. Use of physical cut-off barriers in the form of earth retention systems such as sheet or secant piling will assist in reducing the groundwater inflows and limiting the amount of groundwater pumping required. Extracted groundwater during dewatering is to be passed to a suitably sized settlement pond or a propriety fines removal system along with any other treatment required by Limerick City and County Council.

Operational Phase

- 15.6.19. Ongoing monitoring of the infrastructure for leaks will be carried out. If leaks are detected the system should include measures for the management of any resulting contamination of the surrounding soils.

Residual Effects

15.6.20. None anticipated.

Cumulative Impacts

15.6.21. None anticipated.

EIAR – Conclusion

15.6.22. The conclusion reached in the EIAR is that the proposed development does not constitute a significant adverse effect on the land and soil

Assessment

15.6.23. The groundworks required for the upgrade largely pertain to the stormwater storage tank which is to have a capacity of 4,500m³. The topsoil is to be reused in landscaping and where feasible overburden will be retained and reused on site as construction fill although the presence of construction and demolition waste is noted and will be appropriately monitored to ensure that if contaminated waste is encountered it would be appropriately handled and disposed of.

15.6.24. With water table levels at between 4.3 and 6.8m below ground level dewatering will be required. The use of physical cut-off barriers in the form of earth retention systems such as sheet or secant piling will assist in reducing the groundwater inflows and as such limit the amount of groundwater pumping required. The means of treating the discharge from the dewatering process as provided in section 13.5.2 of the EIAR (pg. 13-16) is somewhat generic in detail with the mitigation measures provided in the Natura Impact Statement and clarified in the applicant's response to the submissions referencing a more bespoke arrangement with regard to the site constraints. In same it is proposed that any ingress of groundwater will be pumped out to ground via a silt bag which will filter remaining sediment from pumped water. The entire discharge area from silt bags will be enclosed by a perimeter of silt fencing. A 2nd option entailing it being tankered off site will only be undertaken during planned maintenance or where modifications to silt bags and/or fencing is required, allowing dewatering mitigation measures to remain in place.

15.6.25. I consider that sufficient detail is provided to allow for a full and proper assessment to be able to conclude that impacts arising from dewatering can be satisfactorily mitigated.

Land and Soil – Conclusion

15.6.26. I have considered all of the submissions made in relation to land and soil. I am satisfied that any potential impacts would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in terms of land and soil.

15.7. Water

Environmental Impact Assessment Report

15.7.1. **Section 14** addresses water. **Appendix 14A** comprises Baseline Waste Assimilative Capacity Calculations with **Appendix 14B** comprising a Flood Risk Assessment. I refer the Board to Section 13.1 of my assessment above of which there is an overlap and I recommend that the sections be read in tandem.

Receiving Environment

15.7.2. The Lower River Shannon travels from Lough Derg to the Parteen Weir where flows in excess of 10m³/s are diverted to the Ardnacrusha Headrace Canal for use in the ESB Ardnacrusha hydroelectric power station. As a consequence there is a constant 10m³/s flow rate in the downstream section of the main river channel. A small portion of the flow exits the main river channel downstream of the weir, into the Erriva Canal. This merges with the Blackwater River (Clare) and re-joins the main river channel just upstream of the WwTP.

15.7.3. The Mulkear River joins the Lower River Shannon upstream of the WwTP. It merges with the main channel flow at the rivers' confluence. The combined flow passes the WwTP and rejoins the Ardnacrusha (Tailrace) Canal downstream at Limerick Dock, whereby the Lower River Shannon transitions into the Shannon Estuary.

15.7.4. The existing WwTP treats wastewater with secondary biological and nutrient removal processes. During normal weather conditions the final effluent consists of treated discharge from WwTP process. A flow volume up to 3DWF can continue through the process stream as flow to full treatment (FFT). Excess flows occurring during storm and heavy rainfall events are diverted via a stormwater overflow channel (SW-4) and sent directly to the final effluent inspection chamber, bypassing the treatment

process. There are also 2 no. outlets upstream of the inlet pumping station that operate as emergency overflows (EO). They activate when there is a failure of the DWF and/or storm pumps and redirect all incoming flows directly to the final effluent inspection chamber without screening. Outfall to the main river channel is via 3 no. outfall pipes. The pipes extend approx. 75 metres into the main river channel and each is fitted with 2 no. diffuser heads. The diffuser heads have 4 no. legs to disperse and enhance mixing with the river flow. See Figures 14-4 and 14-5. The point of discharge is a SAC.

- 15.7.5. The UL Boat Club jetty is 115 metres downstream of the discharge point. Given the proximity of the jetty the receiving water has been assessed under **recreational water guidelines**, as set out in DoEHLG 'Procedures and Criteria in Relation to Stormwater Overflows' and Uisce Eireann's Technical Standards IW-TEC-80-03 for Stormwater Overflows.
- 15.7.6. The EPA issued a wastewater discharge licence (WWDL) for the agglomeration of Castletroy and its environs on 27/04/09, licence no. D0019-01. The emission limit values (ELVs) are set out in Table 14.3.
- 15.7.7. As per the Annual Environmental Reports (AERs) the plant has been non-compliant with licence conditions in recent years due to breaches in ELVs; ortho-phosphate in 2018 and 2021 and Ammonia in 2019. However annual mean effluent monitoring results indicate plant is producing a final effluent considerably less concentrated than the allowable ELVs. It can be assumed that the exceedances were isolated incidences caused by WwTP deficiencies ie. lack of stormwater drainage and/or breakdown of aging planning equipment.
- 15.7.8. Theoretical calculations estimate hydraulic loading to the WwTP as being 6,043m³/day (see Table 14.6). The Dry Weather Flow (DWF) is established to be 6,058m³/day which coincides with the theoretical hydraulic loading calculation for the same period (see Table 14.7). Average daily flow (ADF) rates to the WwTP include rainfall and any other spills entering the sewer system. ADF was reported in the 2016 AER as 8043m³/day, which is 1.33 DWF. In terms of river flow data and as noted above the Parteen Weir controls discharge at a constant 10m³/s to the main river channel. At a full design capacity 45,000 PE the Q95 dilution rate is 1:107 and Median is 1:179.

- 15.7.9. The water quality status of the receiving water, Lower River Shannon, is classed as 'moderate'. It was also assigned a WFD risk score 1a in 2008, which indicates that the waterbody is at risk of not achieving 'good' status (see Table 14.10). The Shannon Estuary (Limerick Dock) begins approx. 3km downstream of the outfall point where the river changes into a transitional waterbody with 'good' water quality status.
- 15.7.10. From the monitoring results available the baseline water quality is of good standard for all parameters with periodic spikes at both upstream (u/s) and downstream (d/s) monitoring locations (see Tables 14.11 and 14.12). This indicates that background activities such as agriculture and surface run off play a significant role in the receiving water quality.
- 15.7.11. The monitoring results from 2019-2021 indicate the WwTP is not currently having any significant impact on receiving water quality in terms of increases in d/s concentrations or deterioration in Waste Assimilative Capacity (WAC) in the river (see Appendix 14A).
- 15.7.12. Large spills and uncontrolled releases are recorded in the AERs as environmental incidences. Since 2021 the plant has had an average of 10 reportable incidences per annum. As per the Drainage Area Plan prepared for 2021-2028 123 average annual spills and 33 average per bathing season spills are calculated. Having regard to the requirements for recreational waters the maximum number of independent storm events discharged via the stormwater outflow must, on average, not exceed 7 per bath season.
- 15.7.13. A Flood Risk Assessment is provided in **Appendix 14B**. Parts of the site are within Flood Zones A and B.

Do Nothing

- 15.7.14. The demand arising from population growth and industrial development will cause the WwTP to become overloaded and it will not be able to provide appropriate wastewater treatment to the Castletroy agglomeration. The treatment process will become non-compliant with the EPA Wastewater discharge licence and all relative legislation. Lack of appropriate treatment will cause harm to the receiving waters in the Lower River Shannon.

15.7.15. Without the provision of stormwater storage, the WwTP will remain in breach of Uisce Eireann standards.

Likely Significant Effects

Construction Phase

15.7.16. Potential negative impact on surface water quality in terms of run off associated with construction activities including leakage or spillage of construction related materials, runoff from working areas which may contain increased sediment loads, suspended solids and contaminants.

Operational Phase

15.7.17. As development intensifies within the catchment area, there will be an increase in wastewater volumes received at the WwTP and the loading rate of wastewater quality parameters will intensify.

15.7.18. The hydraulic loading rate (ADF) for 77500 PE is calculated at 14.081 m³/day.

15.7.19. Having regard to the proposed future hydraulic loading rates and the relative effluent concentrations should the WwTP operate continuously at the maximum allowable ELVs, downstream ammonia will exceed the EQS and orthophosphate is borderline. WAC would be exceeded and would become increasingly deficient. Should the ELVs be reduced (subject to WWDL review) and which is anticipated to take account of the additional loading and to maintain effluent quality, there should be no reduction in WwTP performance compared to the current situation with regard to quality of the final effluent. Therefore meeting more stringent ELVs will be achievable. There will be a slight reduction in WAC as the WwTP discharge rate increases but it is not expected to breach high status environmental constraints. (see Tables 14.19 to 14.23).

15.7.20. The stormwater storage tank will result in less than 7 spills per bathing season.

Mitigation Measures

Construction Phase

15.7.21. Standard best practice measures are to be implemented as set out in the outline Construction and Environmental Management Plan (CEMP) which is provided in Appendix 4A. The CEMP will set out the monitoring requirements including visual inspections to ensure surface water drainage is not impacting the Lower River

Shannon. The contractor will be required to monitor weather conditions and have formal flood warning and evacuation procedures in place.

- 15.7.22. An Environmental Manager is to be assigned with responsibility for ensuring the environmental measures are adhered to.
- 15.7.23. A double silt fence is to be erected along the drains along the site boundary.
- 15.7.24. Best practice measures are to be implemented to avoid release of bentonite and prevent sediment running into the discharge network and/or to surface waters.
- 15.7.25. Stockpiling of excavated material will be at least 20 metres from any watercourse or drain.
- 15.7.26. Earthworks operations shall be carried out such that the surfaces are designed with adequate slope to promote safe runoff. Earthworks will aim to be carried out in periods of dry weather (April to September).
- 15.7.27. Working areas are to be dewatered at the end of each working day and vehicle washdown will be carried out in an appropriate area where wash water can be captured and treated accordingly.
- 15.7.28. Concrete pouring will not occur during rain.
- 15.7.29. Vehicle maintenance, checks and best practice usage on site including minimal refuelling or maintenance. Any fuel storage area will be appropriately bunded.
- 15.7.30. Strict long range and short range weather forecasting is to be used. Works will be postponed if heavy rain is forecast.
- 15.7.31. The contractor is to devise an appropriate construction phase flood defence around the works area ie. defined area bunded with sandbags. If a flood is forecast potentially polluting materials are to be removed from the site and will not be stored within the floodable areas around the peripheries of the site.
- 15.7.32. Surface water will be collected by the temporary drainage system installed by the contractor and then treated or desilted on-site before discharge into the Lower River Shannon.
- 15.7.33. An Emergency Plan for treatment of spills will be established
- 15.7.34. All oils and fuels are to be stored in bunded tanks. No fuel storage is to be allowed in areas prone to temporary flooding.

15.7.35. The site compound is to be raised and bunded.

Operational Phase

15.7.36. All stormwater overflows to the Lower River Shannon will be screened via mechanical screens in the stormwater storage tank to ensure the maximum particular size in the water column does not exceed 6mm in diameter to ensure compliance with Uisce Eireann standards.

15.7.37. Where feasible new development is to be constructed within Flood Zone C and all highly essential infrastructure to be constructed at an elevation higher than the 1% AEP flood level with a suitable freeboard and an allowance for the effects of climate change. Where it is not possible to locate new infrastructure in Flood Zone C due to physical or hydraulic constraints, compensatory storage will be provided equating to 28m³. A flood event pumping station is to be installed. During higher river levels, levels within the pumping station sump will trigger operation of the pumps. The pumps will lift the final effluent and excess stormwater to the inspection chamber. The mixed flows will then gravitate through the existing outfall which will prevent surcharge of the WwTP and sewer network.

15.7.38. The final effluent will continue to be monitored in accordance with the terms of the Wastewater Discharge Authorisation Licence.

Residual Effects

15.7.39. None anticipated following implementation of mitigation measures.

Cumulative Impacts

15.7.40. Two flood relief schemes (FRS), Kings FRS and Castleconnell FRS are around the site of the proposed upgrade project. There are no significant abstractions or discharge of water into these developments that will have a negative impact on the quality of water.

15.7.41. Corbally Baths is a historic swimming area approx. 8km downstream from Castletroy WwTP. The project to reinstate the baths has been ongoing in recent years. The baths draw water directly from the Lower River Shannon and therefore depend on its water quality which at present is not of appropriate standard. The proposed development will see the installation of stormwater storage that will greatly reduce,

and almost eliminate spills during the bathing season which will have a positive effect on cumulative downstream water quality.

- 15.7.42. Limerick (Bunlicky) WwTP is located to the west of Limerick city, approx. 13km downstream the Castletroy WwTP. It currently serves a population equivalent of 186,233 PE (2020 AER) and is due to undergo a similar works which will upgrade the treatment capacity of wastewater and sludge processes on the site. Due to the distance downstream and mixing of flow with other tributaries, there will be no cumulative effects from the combination of Castletroy effluent with current or future discharges from the Bunlicky WwTP.

EIAR – Conclusion

- 15.7.43. The conclusion reached in the EIAR is that the proposed development would not have a negative impact on water.

Assessment

- 15.7.44. If the current development is not progressed growth projections indicates that, without intervention, the existing WwTP will become overloaded in the coming years. This would cause severe deterioration in the quality of the final effluent discharge and there would be subsequent negative effects in receiving water quality in the Lower River Shannon. The continuing absence of stormwater storage would also be in breach of criteria outlined in DoEHLG 'Procedures and Criteria for Storm Water Overflows, 1995'.
- 15.7.45. I consider that a robust assessment has been provided with future hydraulic loading rates (ADF) at the WwTP and relative effluent concentrations when maximum ELVs are utilised and where ELVs are reduced. Based on the water quality operational impacts assessment, whilst demands on the WwTP plant will increase the improvements in treatment capacity are designed to meet future requirements. There would be no reduction in performance compared to the current situation with regard to quality of the final effluent. Subject to licence review, meeting more stringent ELVs will be achievable. There will be a slight reduction in waste assimilative capacity as the WwTP discharge rate increases but it is not expected to breach high status environmental constraints if more stringent ELVs are put in place. In parallel there will be material improvements in the rate of stormwater overflows due to the proposed stormwater storage and would result in a reduction in spills from

on average 123 spills per year to on average less than 7 spills per year and 3 spills during bathing season which ensures that recreational water quality standards are met.

- 15.7.46. I consider that the applicant has provided sufficient information on which it can be concluded that the proposed development would not cause a breach of the combined approach or otherwise cause serious water pollution or that the development would result in a contravention of the Water Framework Directive.

Water – Conclusion

- 15.7.47. I have considered all of the submissions made in relation to water. I am satisfied that any potential impacts would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in terms of water.

15.8. Air and Climate

Environmental Impact Assessment Report

Section 8 addresses air and climate.

Receiving Environment

- 15.8.1. There are 4 no. EPA air quality stations in Limerick, the nearest being that on Henry Street c.3.6km to the south of the site. As per Table 8.9 the limit values for ozone (O₃), Nitrogen Dioxide (NO₂) and Particular Matter (PM₁₀ and PM_{2.5}) have not been exceeded from May 2021 to April 2022.

A noticeable feature of recent weather has been an increase in the frequency and severity of storms. Sections of the site are within Flood Zones A and B.

Do Nothing

- 15.8.2. In a 'do nothing' scenario the WwTP will continue to operate without any changes to air quality or climate.

Likely Significant Effects

Construction Phase

- 15.8.3. The main emissions likely to be generated during the construction phase are dust and exhaust emissions from vehicles both within and transporting to/from the site. The construction phase will also involve the use of plant which will generate exhaust emissions. Given the scale of plant and machinery involved, the high levels of dispersion and the limited extent and duration of the construction phase significant impacts to air, climate and sensitive receptors are not predicted.

Operational Phase

- 15.8.4. It would not have a significant impact as there is no significant source of air pollutants in the WwTP. Less than 20 vehicle movements per day are generated including less than 10 HGV movements per day for sludge transportation.
- 15.8.5. The proposal will have an imperceptible impact on climate.

Mitigation Measures

Construction Phase

- 15.8.6. During construction standard mitigation measures will be employed to control dust and air emissions. A Construction and Environmental Management Plan (CEMP) and a Dust Management Plan are to be developed. An outline CEMP is provided in Appendix 4A. These will include measures for the maintenance of construction vehicles and plant in good operational order, storage of plant and materials vehicles in dedicated areas, keeping area of excavation and stockpiling of materials to a minimum and dust suppression measures will be used during periods of dry weather.

Operational Phase

- 15.8.7. All highly essential infrastructure will be constructed at an elevation higher than 1% AEP flood level with a suitable freeboard and an allowance for climate change.
- 15.8.8. The applicant is committed to reducing carbon emissions. In the procurement process tenderers will be incentivised to include GHG emission reduction measures throughout the design and construction methodology.

Residual Impacts

- 15.8.9. No residual impacts are anticipated.

Cumulative Impacts

15.8.10. There will be no significant cumulative impacts from the construction phase on either air or climate which are temporary in duration.

15.8.11. EIAR - Conclusion

15.8.12. The upgrading works to the WwTP will not have an adverse impact on air and climate.

Assessment

15.8.13. Whilst dust is a material consideration in terms of air quality during the construction phase, subject to the implementation of best practice measures including dust suppression, it is not anticipated that the impact would be significant during a period that is short term and temporary. As noted previously the sensitivities of the site in terms of flood risk have been accounted for in the design including an allowance made for climate change.

Air and Climate – Conclusion

15.8.14. I have considered all of the submissions made in relation to air and climate. I am satisfied that any potential impacts would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in terms of air and climate.

15.9. Material Assets

Environmental Impact Assessment Report

15.9.1. **Section 6** of the EIAR deals with traffic and transportation and **Section 16** addresses material assets.

15.9.2. Section 6 sets out the assessment and modelling methodology and details of consultation with the University of Limerick (UL) with regards to construction traffic movements.

Receiving Environment

Roads and Traffic

- 15.9.3. The site is accessed by the Limerick City and County Council dedicated access road which connects to Plassey Park Road. The said access road is a one-way road (north bound direction) and is only open for public vehicular use between 0800 and 1000 Monday to Friday. It is otherwise gated. It is approx. 4 metres wide with no footpath and is not wide enough to allow for two way vehicular movements. Pedestrians and cyclists are precluded from using it. The UL's campus road network also provides access to the site.
- 15.9.4. Traffic surveys were conducted at 6 junctions (see Figure 6-5). All are currently operating within capacity. At the Plassey Park Road/Plassey Road (junction 3) the Plassey Road arm is beginning to approach the design threshold in the morning peak hours.

Utilities

- 15.9.5. Underground ESB LV/MV cables run along the south-west boundary of the site crossing beneath the access road into the site with overhead ESB cables running to the west of the Limerick City and County Council access road to the development site.
- 15.9.6. There are telecommunications cables in the vicinity including to the development site.

Do Nothing

In a do nothing scenario the trip generation from the site will remain as is.

Likely Significant Effects

Construction Phase

- 15.9.7. The construction phase is anticipated to last for 2 years. Due to the nature of the works the constituent elements including earthworks, concreting of stormwater storage tanks, removal of cofferdam and backfilling, mechanical installations and electrical installations etc. will be constructed sequentially and will not be undertaken concurrently. The site excavations and construction of the stormwater storage tanks will be main trip generation activities. Whilst vehicular movements would be

distributed throughout a day to allow for a worst case assessment the movements were assumed to occur within 4 hours per day. 20 HGV arrivals and 40 HGV departures in the peak hours are predicted in addition to 40 construction staff.

- 15.9.8. All vehicles will travel via the Limerick City and County Council access road from Plassey Park Road. All monitored junctions (except Junction 3) will operate within capacity. Junction 3 will operate within capacity save for the Plassey Road arm which will exceed capacity during the morning peak hour.

Operational Phase

- 15.9.9. The estimated trips would be small including 10 no. cake sludge trailers per week in addition to staff movements.

Mitigation Measures

Construction Phase

- 15.9.10. A Traffic Management Plan will be prepared with best practice measures to be incorporated including provision of onsite parking, wheel wash, covering of haul vehicles.
- 15.9.11. Provision of banksmen or implementation of 'Stop and Go' traffic control method/temporary traffic signal system on the Limerick City and County Council access road to prevent back up onto Plassey Park Road. It will remain one way between 0800 and 1000 during term time and when accessible by the public. Effort is to be made to schedule busy construction phases outside of college term months. If not possible site access via the access road for HGVs will be restricted to outside peak hours of 0800 to 1000.
- 15.9.12. Health and safety of pedestrians and cyclists to be addressed with use of signage and manning of the hazard spots during busy periods.
- 15.9.13. Due to space confinement along the access road it may be necessary for large plant and equipment to be delivered via the main campus route, to be agreed with UL prior to scheduling of works.

Operational Phase

- 15.9.14. No mitigation measures required.

Residual Impacts

- 15.9.15. Subject to the implementation of the mitigation measures during the construction phase residual impacts would be slight, negative and short term. No residual impacts are anticipated during operational phase.

Cumulative Effects

- 15.9.16. No cumulative effects anticipated.

EIAR Conclusion

- 15.9.17. The conclusion reached in the EIAR is that the proposed development does not constitute a significant adverse effect on the material assets

Assessment

- 15.9.18. Whilst I accept that the increases in traffic during the construction phase may cause inconvenience and annoyance to local residents and regular road users, these impacts will be temporary and relatively short in duration and will be managed in accordance with a Traffic Management Plan to be agreed with the Limerick City and County Council. I note the option for use of the UL campus road network for the transport of large plant and equipment. The applicant states that UL are not opposed to same subject to conditions including that the Limerick City and County Council access road be used by construction staff and that it remain one way during term times between 0800 and 1000. Vehicles using the campus route are to be clean and empty with no disruption during exam periods.

Material Assets – Conclusion

- 15.9.19. I have considered all of the submissions made in relation to material assets. I am satisfied that any potential impacts would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in terms of material assets.

15.10. Cultural Heritage

Environmental Impact Assessment Report

- 15.10.1. **Section 10** of the EIAR addresses Archaeology, Architectural and Cultural Heritage. The assessment was carried out having regard to the Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA 2017). The assessment comprised of a desk top study, aerial photography review and a field survey.

Note: The said EPA guidelines were adopted in May, 2022.

Receiving Environment

- 15.10.2. The site contains the existing WwTP. There are 5 no. enclosures located in the immediate environs of the site, all to the north and northeast of the site and on the north side of the Lower River Shannon. The nearest protected structures are Plassey Mills to the east and Plassey Bridge (also known as Black Bridge) to the north.
- 15.10.3. The site is within the Castletroy/Dromore Conservation Area.

Do Nothing

In a 'do nothing' scenario there would be no site works and no impact on the cultural heritage of the area.

Likely Significant Effects

Construction Phase

- 15.10.4. There is some limited potential that construction works could impact previously unknown features or deposits of an archaeological nature. Due to the necessity for deep excavations, groundworks will result in excavations of estuarine deposits. This has limited potential to expose fish traps, trackways, canoes, boats or objects related to fishing and hunting due to good preservation in waterlogged deposits. This could also include unrecorded archaeological remains that were sealed by made up ground that could have been introduced to the site prior to the construction of the facility in the 1990s. Deeper excavations could expose estuarine deposits that might contain 'in situ' archaeological material or features.

Operational Phase

15.10.5. No impacts.

Mitigation Measures

Construction Phase

15.10.6. As pre-development test excavation of areas to be impacted is not feasible due to the nature of works and location, monitoring of all groundworks by a suitably qualified archaeologist in line with a method statement and under licence will be undertaken. Should significant archaeological material be identified preservation in situ where possible, or preservation by record is recommended, to be undertaken following consultation with the National Monuments Service.

15.10.7. Mature trees and hedging bounding the site are to be retained.

Operational Phase

15.10.8. No mitigation measures necessary.

Residual Effects.

15.10.9. No residual impacts anticipated.

Cumulative Impacts

15.10.10. No cumulative impacts anticipated.

EIAR – Conclusion

15.10.11. The proposal would not have adverse impacts on cultural heritage

Assessment

15.10.12. The site subject of the application is already developed and the upgrading of the WwTP provides limited potential for works to directly impact on previously unknown archaeological features. The mitigation measures proposed are in accordance with best practice and I note that the Department of Housing, Local Government and Heritage in its submission to the Board has no objection subject to conditions.

15.10.13. In the context of the existing site development the proposed upgrading works would not materially alter the character or appearance of the site relative to the nearest protected structure (Plassey Mills) or impact on the Castletroy-Dromore ACA of which it forms part. The mature screening around the site boundaries is to be retained.

Cultural Heritage – Conclusion

15.10.14. I have considered the submissions made in relation to cultural heritage. I am satisfied that any potential impacts would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in terms of cultural heritage.

15.11. Landscape

Environmental Impact Assessment Report

15.11.1. **Section 12** of the EIAR addresses landscape and visual.

15.11.2. The assessment is based on the recommendations in the Guidelines for Landscape and Visual Impact Assessment (GLVIA) as published by the Landscape Institute and the Institute of Environmental Management and Assessment (3rd ed. 2013). Due regard is also had to the landscape character assessment in the Limerick and City County Council Development Plan 2022-2028.

15.11.3. The Landscape and Visual Impact Assessment (LVA) entailed a combination of desk studies and field surveys. Photomontages are provided in **Appendix 12A** with a landscaping plan provided in **Appendix 12B**.

Receiving Environment

15.11.4. The site of the WwTP is on the south bank of the Lower River Shannon in east Limerick City. The site boundaries are delineated by mature treelines and hedgerows. To the south is a surface car park serving UL, with public open space to the west with a walkway and the UL Boathouse. To the north is a public walkway along the river lined, in many parts, with trees on both sides.

15.11.5. The site is situated within the Shannon Integrated Coastal Management landscape character area.

15.11.6. There are no protected views or scenic routes in the vicinity of the site.

Do Nothing

15.11.7. In a 'do nothing' scenario the existing landscape character and views will not be altered.

Likely Significant Effects

Construction Phase

15.11.8. The construction phase will be temporary and is to be completed on a phased basis. There will be periodic use of construction cranes.

Operational Phase

15.11.9. The proposed development will not introduce a new form of development into the area. The existing infrastructure has altered the landscape baseline through its presence, reducing the sensitivity of the landscape to change from development. The proposed elements are similar in scale and layout to the existing wastewater treatment infrastructure.

15.11.10. Views from 23 no. identified visually sensitive residential receptors and from community and open spaces receptors will not be materially altered including along the riverside path running parallel to the northern boundary.

Mitigation Measures

15.11.11. The existing boundary planting is to be supplemented with additional planting including an area of native wet woodland along the northern site boundary.

Residual Effects

None anticipated

15.11.12. **Cumulative Effects**

None anticipated.

EIAR – Conclusion

15.11.13. The proposal would not have an adverse impact on the landscape of the area.

Assessment

15.11.14. The site subject of the application is already developed and the upgrading of the WwTP will not differ in terms of infrastructure to be constructed. The proposal would not any have material impact on the landscape character or on views from sensitive

receptors. It is not visible from the adjoining road network with views from the riverside path along the northern boundary restricted save in the immediate vicinity due to the mature screening which is to be retained and augmented.

Landscape – Conclusion

15.11.15. I have considered the submissions in relation to landscape. I am satisfied that any potential impacts would be avoided, managed and mitigated by the measures which form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative effects in terms of landscape.

15.12. Interactions

15.12.1. Chapter 19 of the EIAR addresses interaction of impacts with a matrix provided in Table 19.1. I would concur that the most dynamic interactions pertain to human beings with other interactions including between biodiversity and water also noted.

15.12.2. I have considered the interrelationships between factors and whether these might, as a whole, effect the environment, even though the effects may be acceptable when considered on an individual basis. In my assessment of each environmental topic, I have considered the likelihood of significant effects arising as a consequence of interrelationship between factors. Most interactions e.g. the impact of noise and, odour on the population and human health are addressed under individual topic headings. Given the generally modest impacts which are predicted to occur having regard to the nature of the proposed development, mitigation measures, or as a consequence of proposed conditions, I do not foresee any likelihood of any of these interrelationships giving rise to significant effects on the environment.

15.12.3. In conclusion, I am satisfied that there are no such effects and, therefore, nothing to prevent the approval for the development on the grounds of interaction between factors.

15.13. Reasoned Conclusion on Significant Effects

15.13.1. I have carried out an examination of the environmental information contained above in which I have had regard to the EIAR and supplementary information provided by the applicant and the reports and submissions from the planning authority, prescribed bodies and observers in the course of the application. Following on from this assessment, it is considered that the main significant direct and indirect effects (positive and negative) of the proposed development on the environment are those arising from the impacts listed below. An Outline Construction Environmental Management Plan (CEMP), contained in Appendix 4A, together with mitigation measures to be employed, as summarised in Chapter 20 of the EIAR, provide a description of the overarching general mitigation measures embedded in the project design and delivery for construction and operational stages. The main likely impacts, both positive and negative are as follows:

Benefits/positive impacts to **population and human health** arising as a result of the overall wastewater treatment plant upgrade due to providing increased treatment infrastructural capacity and improved level of treatment which would be pivotal in supporting planned residential and economic growth in Limerick city and the southern region. The improvements will also provide for measures to reduce noise and odour levels at nearest sensitive receptors.

Negative temporary impact on **population and human health** during the construction phase arising from increased traffic and construction activity and resultant noise, dust and disturbance. The Construction and Environmental Management Plan will incorporate best practice measures.

Potential impacts on **biodiversity** and disturbance of badger on the site which would be mitigated by measures to be put in place to prevent disturbance or infringement on the badger sett.

Potential impacts on **land and soils** from risk of spread of invasive species at the site which would be mitigated by the implementation of the Invasive Species Management Plan and a method statement for the control of disturbance of soils containing the invasive species.

Risk of pollution of receiving **water** environment as a result of accidental spillages of chemicals, hydrocarbons or other contaminants entering the site drains and

discharging to the River Shannon during the construction phase. The impacts would be mitigated by measures within the Construction and Environmental Management Plan and adherence to best practice construction measures and incorporation of appropriate drainage facilities.

Positive impacts on **water** from the proposed stormwater storage which will result in a reduction in spills from on average 123 spills per year to on average less than 7 spills per year and 3 spills during bathing season which ensures that recreational water quality standards are met.

16.0 **Appropriate Assessment**

16.1. **Introduction**

16.1.1. The requirements of Article 6(3) as related to appropriate assessment of a project under part XAB, section 177AE of the Planning and Development Act 2000 (as amended) are considered fully in this section.

16.1.2. The areas addressed are as follows:

- Compliance with Article 6(3) of the Habitats Directive
- The Natura Impact Statement
- Screening for appropriate assessment
- Appropriate assessment of implications of the proposed development on the integrity of each European site

16.2. **Compliance with Article 6(3) of the Habitats Directive**

16.2.1. Article 6(3) of the Habitats Directive requires that any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. The competent authority must be satisfied that the proposal will not adversely affect the integrity of the European site before consent can be given.

16.3. Natura Impact Statement

- 16.3.1. A Natura Impact Statement (NIS) dated March 2023 and prepared by MKO Planning and Environmental Consultants was submitted with the application. It contains a main report supported by appendices.
- 16.3.2. The NIS outlines the methodology used for the assessing potential impacts on the habitats and species within the European Sites that have the potential to be affected by the proposed development. It predicts the potential impacts for these sites and their conservation objectives, it suggests mitigation measures, assesses in-combination effects with other plans and projects and it identifies any residual effects on the European sites and their conservation objectives.
- 16.3.3. The NIS was informed by the following studies, surveys and consultations:-
- Desk top study
 - Multidisciplinary walkover surveys on 06/04/22 and 23/07/20
 - Standard habitat classifications within/adjoining works area (Fossit, 2000)
 - Otter survey.
 - Review of EPA's water quality data and WFD status for adjacent rivers
 - Consultation and review of NPWS site synopsis and conservation objectives for relevant European sites.
- 16.3.4. The report concluded that, taking into account the project design and the implementation of mitigation measures identified in the NIS, the proposed development will not result in adverse effects on the integrity of any Natura 2000 site.
- 16.3.5. The observations received by the Board were circulated to the applicant for comment and its response received 26/07/23 is noted. Regard is had to the said submissions.
- 16.3.6. Having reviewed the NIS and the supporting documentation, I am satisfied that it provides adequate information in respect of the baseline conditions, clearly identifies the potential impacts, and uses best scientific information and knowledge to assess any potential impacts. It also provides details of mitigation measures to ensure that no adverse impacts arise in respect of Natura 2000 sites in the vicinity. I am satisfied

that the information is sufficient to allow for an appropriate assessment of the proposed development.

16.4. **Screening for Appropriate Assessment**

- 16.4.1. The proposed development is not directly connected with or necessary to the management of a European Site and, therefore, it needs to be determined if the development is likely to have significant effects on any European sites.
- 16.4.2. The proposed development is examined in relation to any possible interaction with European sites, i.e. designated Special Areas of Conservation (SAC) and Special Protection Areas (SPA) to assess whether it may give rise to significant effects on any European Site.
- 16.4.3. Taking account of the characteristics of the proposed development in terms of its location and the scale of works, the following sources of potential effects and the potential effects to receptors are considered for examination in terms of implications for likely significant effects on European sites during the construction and operational phases.

Construction Phase

- 16.4.4. Construction phase works including movement of soils and machinery, excavation works, use of hydrocarbons, tree felling, construction and upgrading of water crossings, soil stockpiling and reinstatement works leading to potential:
- Effects on river water quality (silting and/or contamination);
 - Spread of invasive species
 - Indirect effects to downstream protected habitats.

Operational Phase

- Effects on river water quality;
- 16.4.5. The applicant, in its screening report, which is included as an appendix of the NIS document, sets out the methodology for the identification of relevant European sites using the source-pathway-receptor model. In terms of SPAs regard was had to Scottish Natural Heritage Guidance 'Assessing Connectivity with Special Protection Areas'. The screening report concluded that the possibility of significant effects

could not be ruled out for 2 of the 8 sites and, therefore, the proposed development works must proceed to appropriate assessment. I have provided a summary of the information in relation to the potential impacts identified in the screening stage below.

16.4.6. I would also refer the Board to the test at screening stage which seeks to identify if a project is likely to have **significant effects** (my emphasis) either individually or in combination with other plans or projects on European sites in view of the sites conservation objective.

Site Name	Qualifying Interests (QI's)	Potential receptor-pathway-source links to Development Site
<p>Lower River Shannon SAC</p> <p>Site Code - 002165</p> <p>Immediately to the north of the development site boundary.</p>	<ul style="list-style-type: none"> • Sandbanks which are slightly covered by sea water all the time [1110] • Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Coastal lagoons [1150] • Large shallow inlets and bays [1160] • Reefs [1170] • Perennial vegetation of stony banks [1220] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • Salicornia and other annuals colonising mud and sand [1310] 	<p>Yes – Hydrological connection between the proposed development and the SAC via outfall from the WwTP and via surface water drains, groundwater pathways and flood risk.</p> <p>Can potential likely significant effects be excluded? – No – site to proceed to AA.</p>

	<ul style="list-style-type: none"> • Atlantic salt meadows (Glauco-Puccinellietalia maritima) [1330] • Mediterranean salt meadows (Juncetalia maritimi) [1410] • Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260] • Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] • Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion alba) [91E0] • Margaritifera (Freshwater Pearl Mussel) [1029] • Petromyzon marinus (Sea Lamprey) [1095] • Lampetra planeri (Brook Lamprey) [1096] • Lampetra fluviatilis (River Lamprey) [1099] • Salmo salar (Salmon) [1106] 	
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	<ul style="list-style-type: none"> • Tursiops truncatus (Common Bottlenose Dolphin) [1349] • Lutra (Otter) [1355] 	
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Site Name	Special Conservation Interests (SCIs)	Potential receptor-pathway-source links to Development Site
River Shannon and River Fergus Estuaries SPA Site Code - 004077 c. 3.8km to west	<ul style="list-style-type: none"> • Cormorant (Phalacrocorax carbo) [A017] • Whooper Swan (Cygnus cygnus) [A038] • Light-bellied Brent Goose (Branta bernicla hrota) [A046] • Shelduck (Tadorna tadorna) [A048] • Wigeon (Anas penelope) [A050] • Teal (Anas crecca) [A052] • Pintail (Anas acuta) [A054] • Shoveler (Anas clypeata) [A056] • Scaup (Aythya marila) [A062] • Ringed Plover (Charadrius hiaticula) [A137] 	<p>Yes – hydrological connection via existing outfall from site, surface water drains, groundwater pathways and flood risk.</p> <p>Can potential likely significant effects be excluded? – No – site to proceed to AA.</p>

	<ul style="list-style-type: none"> • Golden Plover (<i>Pluvialis apricaria</i>) [A140] • Grey Plover (<i>Pluvialis squatarola</i>) [A141] • Lapwing (<i>Vanellus vanellus</i>) [A142] • Knot (<i>Calidris canutus</i>) [A143] • Dunlin (<i>Calidris alpina</i>) [A149] • Black-tailed Godwit (<i>Limosa limosa</i>) [A156] • Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] • Curlew (<i>Numenius arquata</i>) [A160] • Redshank (<i>Tringa totanus</i>) [A162] • Greenshank (<i>Tringa nebularia</i>) [A164] • Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] • Wetland and Waterbirds [A999] 	
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Site Name	Qualifying Interests (QI's)	Potential receptor-pathway-source links to Development Site
Glenomra Wood SAC Site Code – 001013 c.8km to the north	<ul style="list-style-type: none"> Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] 	No – due to the terrestrial nature of the QI habitat and intervening distance. Can potential likely significant effects be excluded? - Yes

Site Name	Special Conservation Interests (SCIs)	Potential receptor-pathway-source links to Development Site
Slievefelim to Silvermines Mountains SPA Site Code – 004165 c.12 km to the east	<ul style="list-style-type: none"> Hen Harrier [A082] 	No – the site is outside the 2km core foraging range of the SCI. The site does not support any suitable habitat. Can potential likely significant effects be excluded? - Yes

Site Name	Qualifying Interests (QI's)	Potential receptor-pathway-source links to Development Site
Clare Glen SAC Site Code – 000930 c.12km to the east	<ul style="list-style-type: none"> Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Trichomanes speciosum (Killarney Fern) [1421] 	No – due to the terrestrial nature of the QI habitat and intervening distance. Can potential likely significant effects be excluded? - Yes

Site Name	Qualifying Interests (QI's)	Potential receptor-pathway-source links to Development Site
Glenstal Wood SAC Site Code – 001432 c.13km to the east	<ul style="list-style-type: none"> Trichomanes speciosum (Killarney Fern) [1421] 	No – due to the terrestrial nature of the QI habitat and intervening distance. Can potential likely significant effects be excluded? - Yes

Site Name	Qualifying Interests (QI's)	Potential receptor-pathway-source links to Development Site
Slieve Bernagh SAC Site Code – 002312 c. 14.5km to north	<ul style="list-style-type: none"> Northern Atlantic wet heaths with Erica tetralix [4010] European dry heaths [4030] Blanket bogs (* if active bog) [7130] 	No – due to the terrestrial nature of the QI habitat and intervening distance. Can potential likely significant effects be excluded? - Yes

Site Name	Qualifying Interests (QI's)	Potential receptor-pathway-source links to Development Site
Danes Hole, Poulnalecka SAC Site Code - 00030 c. 14.7km to northwest	<ul style="list-style-type: none"> Caves not open to the public [8310] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303] 	No – due to the terrestrial nature of the QI habitat and intervening distance. The development site is outside the 2.5km foraging range of the Lesser Horseshoe Bat. Can potential likely significant effects be excluded? - Yes

Mitigation Measures

16.4.7. No measures designed or intended to avoid or reduce any harmful effects of the project on a European Site have been relied upon in this screening exercise.

Screening Determination

16.4.8. Having regard to the information presented in the Screening Report and NIS, the nature, size and location of the proposed development and its likely direct, indirect and in-combination effects, the source pathway receptor principle and sensitivities of the ecological receptors, I concur with the applicant's screening that significant effects cannot be ruled out for the following sites in view of their respective conservation objectives:

- Lower River Shannon SAC [002165]
- River Shannon and River Fergus Estuaries SPA [004077]

The following European Sites -

- Glennomra Wood SAC [001013]
- Clare Glen SAC [000930]
- Glenstal Wood SAC [001432]
- Slieve Bernagh Bog SAC [002312]
- Danes Hole, Poulnalecka SAC [00030]
- Slievefelim to Silvermines Mountains SPA [004165]

could not be significantly affected by the proposed development works. I am satisfied that the applicant has demonstrated this objectively with reference to the geographical separation and the absence of ecological pathways between those sites. It is therefore reasonable to conclude on the basis of the information on the file, which I consider adequate in order to issue a screening determination, that the proposed development, individually or in combination with other plans or projects, would not be likely to have a significant effect on these European Sites in view of the sites' conservation objectives and a Stage 2 appropriate assessment is not therefore required for these sites.

16.5. Appropriate Assessment of Relevant European sites

16.5.1. The following is an objective assessment of the implications of the proposal on the relevant conservation objectives of the European sites using the best scientific knowledge in the field. All aspects of the project which could result in significant effects are assessed and mitigation measures designed to avoid or reduce any adverse effects are examined and assessed for effectiveness. I have relied on the following guidance:

- DoEHLG (2009). Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government, National Parks and Wildlife Service. Dublin
- EC (2021) Assessment of plans and projects in relation to Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EC
- EC (2018) Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC

European Sites

16.5.2. 2 no. sites as outlined above could not be excluded from the screening exercise undertaken on the basis that significant effects could not be ruled out for reasons related to hydrological pathways and potential for deterioration in water quality.

16.5.3. The **Lower River Shannon SAC [02165]** which bounds the site to the north is a very large site stretching along the Shannon valley from Killaloe in Co. Clare to Loop Head/ Kerry Head, a distance of some 120 km. The site encompasses the Shannon, Feale, Mulkear and Fergus estuaries, the freshwater lower reaches of the River Shannon (between Killaloe and Limerick), the freshwater stretches of much of the Feale and Mulkear catchments and the marine area between Loop Head and Kerry Head. This site is of great ecological interest as it contains a high number of habitats and species listed on Annexes I and II of the E.U. Habitats Directive, including the priority habitats lagoon and alluvial woodland, the only known resident population of Bottle-nosed Dolphin in Ireland and all three Irish lamprey species. A good number of Red Data Book species are also present. A number of species listed on Annex I of the E.U. Birds Directive are also present, either wintering or breeding.

- 16.5.1. Domestic and industrial wastes are discharged into the Shannon, but water quality is generally satisfactory, except in the upper estuary where it reflects the sewage load from Limerick City. Analyses for trace metals suggest a relatively clean estuary with no influences of industrial discharges apparent. Further industrial development along the Shannon and water polluting operations are potential threats.
- 16.5.2. **River Shannon and River Fergus Estuaries SPA [004077]** is c. 3.8km geographic distance to the west and a hydrological distance of approx. 8km. The estuaries of the River Shannon and River Fergus form the largest estuarine complex in Ireland. The site comprises the entire estuarine habitat from Limerick City westwards as far as Doonaha in Co. Clare and Dooneen Point in Co. Kerry. The SPA is an internationally important site that supports an assemblage of over 20,000 wintering waterbirds. It holds internationally important populations of four species, i.e. Light-bellied Brent Goose, Dunlin, Black-tailed Godwit and Redshank. In addition, there are 17 species that have wintering populations of national importance. The site also supports a nationally important breeding population of Cormorant. Of particular note is that three of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Golden Plover and Bar-tailed Godwit. Parts of the River Shannon and River Fergus Estuaries SPA are Wildfowl Sanctuaries.
- 16.5.3. I have examined the Natura 2000 data forms as relevant and the Conservation supporting documents for these site available through the NPWS website.

Characteristics of Proposed Development

- 16.5.4. The WwTP is an aging plant and requires the refurbishment or replacement of several items of equipment, details of which are set out in section 2 of this report. It will be upgraded to accommodate a 77,500 PE with provision made for future phase 2 works expansion to 81,100 PE. The works include the installation of new plant processes and upgrades to existing infrastructure. Additional grit traps and new primary filters are to be installed in addition to installation of Integrated Fixed-Film Activated Sludge (IFAS) technology and additional air blowers to the existing aeration tanks. A new chemical dosing tank for additional ortho-Phosphate treatment is proposed with alterations to sludge treatment with a new 12 m diameter Picket Fence Thickener (PFT) with a volume of 350m³ is proposed with the existing 7.1 metre diameter PFT to be repurposed as a 'Thickened Sludge Storage Tank' . A full upgrade of the sludge dewatering system is proposed. Two skips of storage of

dewatered sludge will be required with a 3rd provided for additional capacity. The development will also include a stormwater storage tank with a capacity of 4500m³ which provides for +20% climate change. A flood event pumping station is required to allow the plant to remain operational during a flood event. The anticipated excavation level for the installation of the proposed storm tank structure and forward feed pump station is approx. 5 metres below existing ground surface. 3no. boreholes showed that water table levels to between 4.3 m and 6.8 m below ground levels (bgl). Works are, therefore, to be carried out within the water table.

16.5.5. The 2 no. existing emergency overflows connecting to the existing overflow 1,050mm pipe will be retained for emergency measures. The 900mm overflow from the SWO chamber will be intercepted and diverted to the new storm tank via a 1000mm diameter pipe.

16.5.6. Outfall to the River Shannon is to remain unaltered and is via 3 no. outfall pipes. The pipes extend approx. 75 metres into the main river channel and each is fitted with 2 no. diffuser heads. The diffuser heads have 4 no. legs to disperse and enhance mixing with the river flow.

Hydrological Environment within which the site is Located

16.5.7. Water quality is a key environmental factor underpinning the conservation condition of a number of the qualifying interests and special conservation interests. The existing WwTP outfalls to the Lower River Shannon and is subject of a Wastewater Discharge Licence.

16.5.8. The Emission limit values (ELVs) as specified in the Wastewater Discharge Licence (WWDL) no. D0019-01 issued in 2009 are as follows:

Table 1 – Emission Limit Values

Parameter	ELV
BOD (mg/l)	25
COD (mg/l)	125
Suspended Solids (mg/l)	35
Ammonia (mg/l N)	5
Ortho-Phosphate (mg/l P)	1
Total Phosphorus (mg/l P)	2

16.5.9. In terms of the Water Framework Directive status the outfall point is located in the Shannon River (lower), European Code IE_SH_25SO12600. The reach is classed as 'moderate'. It was assigned a WFD risk score 1a in 2008, which indicates the waterbody is at risk of not achieving 'good' status.

16.5.10. Baseline water quality analysis undertaken from ambient chemistry data were obtained from catchments.ie (accessed 10/08/2022) for upstream and downstream monitoring stations. Results for the EQS parameters BOD, Ortho-P and Ammonia were analysed. All sample results for measured concentrations are of WFD High Water Quality Status.

Table 2 Water Quality Upstream and Downstream of Discharge Point (2019-2022)

Parameter	Units	Upstream	Downstream	EQS High Status (95%ile)
BOD	Mg/l	1	1	2.2
Ortho-P	Mg/l	0.039	0.037	0.045
Ammonia	Mg/l	0.043	0.053	0.09

16.5.11. Whilst there may have been exceedances in the wastewater discharge licence from the WwTP there was no significant impact on the Lower River Shannon.

16.5.12. In terms of baseline Waste Assimilative Capacity (WAC) the upstream and downstream figures for both median and Q95 flow rates with respective (high status) mean and 95%ile EQS limits were calculated. There are no significant differences between the upstream and downstream values.

Table 3 - Calculated WAC Figures using Measured Concentrations

Baseline Upstream	BOD	Ortho-P	Ammonia
Mean & Median Flow	19%	36%	45%
95%ile & Q95 flow	55%	13%	52%
Baseline Upstream			
Mean & Median Flow	18%	28%	42%
95%ile & Q95 flow	54%	17%	41%

16.5.13. Conclusions from the baseline water quality assessment indicate that water quality in the vicinity of the discharge point is of good standard. The WwTP is not currently having any significant impact on receiving water quality in terms of increases in d/s concentrations or deterioration in the river's WAC. It was also observed that the WwTP is producing a final effluent with significantly lower emissions than the allowable ELVs. Therefore, it can be deduced that there are currently no negative impacts on water quality and aquatic habitats and species as a result of the current discharges from the WwTP.

16.5.14. In terms of future impacts on water quality due to discharge, calculated predictions were carried out to assess worst case future impacts of the final effluent on water quality in the Lower River Shannon according to high status EQS concentration limits. This is based on median river flow, future hydraulic loading rates (ADF) at the WwTP and relative effluent concentrations when maximum ELVs are utilised. The assessment for the long term +25 year scenario is provided for comparative purposes only. In such a scenario ammonia will exceed the EQS and orthophosphate is borderline. WAC would be exceeded and would become increasingly deficient.

Table 4: Predicted D/s Concentrations using Existing ELVs

Parameter	BOD (mg/l)	Ortho-P (mg/l)	Ammonia (mg/l)
EQS (High/Mean)	1.3	0.025	0.04
45,000 PE (Design PE)	1.19	0.022	0.051
77,500 PE (+10 yr)	1.25	0.024	0.062
81,100 pe (+25 year)	1.27	0.025	0.065

Table 5: Predicted WAC using Existing ELVs

Loading Scenario	BOD	Ortho-P	Ammonia
45,000 PE (Design PE)	8%	13%	-27%
77,500 PE (+10 yr)	4%	3%	-57%
81,100 pe (+25 year)	2%	1%	-65%

16.5.15. Calculations for the future scenario were altered to consider d/s effects if the ELVs were reduced, subject to a WWDL review. Whilst demands on the WwTP plant will increase, the improvements in treatment capacity are designed to meet future requirements. There should be no reduction in WwTP performance compared to the current situation with regard to quality of the final effluent. Therefore meeting more stringent ELVs (subject to WWDL review) is achievable. For the purpose of the assessment the following limits have been applied: BOD 20mg/l, Orth -P .75mg/l and ammonia 2mg/l.

Table 6: Predicted D/S Concentrations Using Proposed ELVs

Parameter	BOD (20 mg/l)	Ortho-P (.75 mg/l)	Ammonia (2mg/l)
EQS (High Mean)	1.3	0.025	0.04
45,000PE (Design PE)	1.16	0,020	0.033
75,000 PE (+10 Year)	1.21	0.022	0.038
81,100 PE (+25 year)	1.22	0.023	0.039

16.5.16. This indicates that by reducing the ELVs downstream water quality will remain within high status mean EQS values.

16.5.17. Taking into consideration reduced emission limits whilst there would be % reduction in WAC as the WwTP increases, it would not breach high status environmental constraints if more stringent ELVs are put in place.

Table 7: Predicted D/S Concentrations Using Proposed ELVs

Loading Scenario	BOD	Ortho-P	Ammonia
45,000PE	10%	19%	16%
77,500 PE	7%	20%	14%
81,100 pe	6%	18%	12%

16.5.18. There will be significant improvements in the rate of stormwater overflows due to the addition of stormwater storage and, therefore, an improvement in treatment of effluent. Flows in excess of three times the Dry Weather Flow baseline and emergency overflows will be directed to the new stormwater storage tank. The wastewater will be screened and held until such a time that incoming flows to the WwTP subside, then it will be returned to the main process stream for full treatment. In the event that the storm intensity causes the tank to reach capacity, the (screened) spills will be directed to the final effluent chamber as per the current situation. It is estimated that the future scenario in terms of average annual spills will be 7, a significant reduction from the current baseline of 123.

16.5.19. In conclusion the baseline water quality data shows that the effluent is currently being discharged to the aquatic environments in line with EPA and WFD objectives. The calculations of effluent arising from the proposed upgrade works and impacts on WAC of the Lower River Shannon demonstrate that it will continue to do so.

Potential Effects (Direct and Indirect)

16.5.20. As noted the WwTP currently discharges into the Lower River Shannon SAC and this is to remain the case in under the proposed upgrade. The existing outfall from

the WwTP is to be retained and used with no alterations/modifications proposed to same. Thus no works in the SAC are proposed.

16.5.21. Due to connectivity, the QIs and SCIs of the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA have the potential to be vulnerable to the following during the construction phase:

- Possibility of silt-laden or otherwise contaminated runoff and drainage of the site being released to drains bounding the site.
- Groundwater pathways due to deep excavations required.
- Spread of invasive alien species through the movement of soils and/or use of machinery.
- Disturbance of species.
- Flood risk and risk of contamination.

16.5.22. It is reasonable to conclude on the basis of the information before the Board that all of the above, in the absence of mitigation, may comprise a risk of adverse effects on the integrity of the sites.

Mitigation Measures

16.5.23. Section 5 of the NIS details mitigation measures to be employed during the construction and operational phases of the development, the majority of which are considered to represent best construction practice measures and are included in the interests of completeness.

16.5.24. Specific measures include:

- Assignment of Environmental Manager.
- Ecological Clerk of Works to be retained to be present during site set up and to inspect the silt fence and other mitigation measures prior to commencement. ECoW visits will be conducted at least twice monthly to ensure all mitigations are in place.
- Installation of a double silt fence along the drains to the west, north and east. The extent of the fence is delineated on Figure 5-1 in the NIS.

- The access route to the site is that as existing. Access will be restricted to land within the outlined works area with low vehicular speeds.
- Excavations are to be kept to a minimum. The excavation depth required for the storm tank is 2mOD or approx. 5 metres below existing ground surface. The tank dimensions are 45 (length) x 20 (breadth) and 4.2m (depth).
- Stockpiling of material will be temporary and located in a clearly defined and demarcated area away from watercourses. Stockpiles will be removed on a regular basis. Any stockpiles will be surrounded with an additional silt fence.
- The portion of the site which will contain the site compound will be raised and will be fully bunded to guard against flood risk.
- Strict short and long range weather forecasting will be carried out such that no earthworks will be undertaken if the following rain levels are predicted: rainfall > 10mm/hr, rainfall >25mm in a 24 hour period, or rainfall total greater than the monthly average recorded in 7 consecutive days.
- Any ingress of groundwater into excavations will be pumped out to ground via a silt bag, the location of which is delineated on Figure 15-1. The area will be enclosed by a perimeter of silt fencing with a straw bale/silt fence to be provided in the north-western corner of the adjoining site drain. Alternatively the groundwater would be pumped to a sealed clean tanker and removed from the site.
- No batching of wet cement products to occur on site with no washing out of any plant used in concrete transport or concreting operations on site. Only chute cleaning will be permitted within an area within the compound at least 30 metres away from any drain. As noted above the said compound will be bunded.
- Best practice measures in plant maintenance and refuelling.
- Best practice measures for dust control.
- Under environmental monitoring it is proposed to monitor turbidity levels upstream and downstream of the drain outfall point from the site which is within the adjacent mill race channel east of the site (see drawing included) which is outside the SAC. These monitoring points will assess the quality of

water within the mill race channel in advance of its discharge to the Lower River Shannon SAC. If downstream turbidity is 10% higher than the upstream turbidity within the mill race channel works will be paused until turbidity in the channel is lowered.

- The contractor will devise an appropriate construction phase flood defence around works areas such as a defined area bunded with sandbags.
- If flood is forecast potentially pollutant materials are to be removed from the site.
- Emergency response procedures including in the event of an oil/fuel spill including procedures to notify the appropriate stakeholders.
- Pre-commencement otter survey to be undertaken
- Measures in terms of operation and noise of plant and equipment to be put in place to avoid disturbance effects to otter.
- A site specific invasive species management plan has been prepared and provides for an appropriate biosecurity protocol to prevent the spread of plants out of the site and recommendations for their continued treatment during operation.

Comment

16.5.25. The operation of the WwTP, when upgraded, will not impact on water quality in the SAC. This conclusion is based on the scientific analysis of the predicted nutrient loads and stormwater spills as a result of the proposed upgrades. Consideration is had of the baseline water quality of the SAC in the vicinity of the existing discharge, the predicted future loads and Waste Assimilative Capacity of the Lower River Shannon. I refer the Board to Sections 3.2 and 3.3 of the NIS and sections 15.5.7 – 15.5.18 above. The assessment of operational impacts on water quality has shown that operation of the WwTP will ensure that the effluent will not prevent water quality within the Lower River Shannon SAC from attaining at least 'Good' status EQs.

16.5.26. The reduction in annual stormwater spill volumes from the WwTP following the proposed development has been described in section 3.2.3.1.3 of the NIS. The proposed storm tank will increase stormwater storage capacity and will reduce the annual rate of stormwater spills to the Lower River Shannon. A Drainage Area Plan

(DAP) model using baseline flow survey data has shown that there is currently an Average Annual Spill Rate of approx. 23 spills/annum. This will be reduced following the installation of stormwater storage to approx. 7 spills/Anum.

- 16.5.27. As noted by the applicant the Wastewater Discharge Licence Review and EPA permissions have not been listed as mitigation measures in the NIS. The inclusion of such information is not considered to create any lacuna in the context of the report as a whole.
- 16.5.28. I consider that the potential for adverse effects during the construction phase have been fully assessed and, as supplemented/clarified by the details provided in the applicant's response to the observations received, provide for clear and definitive mitigation to be put in place to block all identified pathways for effect. Whilst best practice measures are incorporated into the mitigation measures for the avoidance of doubt I would concur with the applicant this does not present a lacunae which would prevent the Board from concluding that there will be no adverse effects on the European site.
- 16.5.29. The two options presented for dewatering mitigation have been assessed as part of the NIS. Both are detailed in section 5.2.1.1.1 of the NIS. The 1st option entails groundwater being pumped out to ground via a silt bag which will filter remaining sediment from pumped water. The entire discharge area from silt bags will be enclosed by a perimeter of silt fencing. The 2nd option entailing it being tankered off site will only be undertaken during planned maintenance or where modifications to silt bags and/or fencing is required. There is no potential for adverse effects on the SAC from either option.
- 16.5.30. Tables 1 and 2 below summarise the appropriate assessment and integrity test. The conservation objectives, targets and attributes as relevant to the identified potential adverse effects have been examined and assessed in relation to all aspects of the project (alone and in combination with other plans and projects). Mitigation measures proposed to avoid and reduce impacts to a non-significant level have been assessed.

In-combination effects with plans, projects and activities

- 16.5.31. In terms of possible in-combination effects, plans, programmes and existing and proposed developments were considered including Limerick City Development Plan

2022, Limerick City Council Biodiversity Action Plan, National Biodiversity Action Plan, Regional Spatial and Economic Strategy for the Southern Region, other Uisce Eireann projects including Bunlicky Wastewater Treatment Plant, and other permitted discharges along the Lower River Shannon. This complete assessment allows for clear, precise and definitive conclusions to be reached in terms of adverse effects on the integrity of European sites.

16.5.32. I do not consider that there are any specific in-combination effects that arise from other plans or projects. The NIS considered the combined impacts of the overall development proposal on the site. I consider that any potential for in-combination effects on water quality in the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA is negligible. Furthermore, other projects within the area which can influence water quality via rivers and other surface water features are also subject to AA.

Table 1

Summary Table – Lower River Shannon SAC [site code 02165]

Key Issues:

- Water quality impacts due to pollutants or soil/silt run off during construction, groundwater and flood risk
- Disturbance of protected species

Conservation Objectives: [Site specific cons obj \(npws.ie\)](http://npws.ie)

Summary of Appropriate Assessment

Conservation Objective To maintain (M) or Restore (R) the favourable conservation condition of the following:	Targets and attributes (summary-as relevant)	Potential adverse effects	Mitigation measures (including monitoring)	In-combination effects	Can adverse effects on integrity be excluded?
Freshwater Pearl Mussel (R) (Map 15)	Maintain distribution at 7km. Restore to 10,000 adult mussels Restore at least 20% population no more than 65mm and at least 5% not more than 30mm No more than 5% decline from previous	The development is located within a separate catchment to that of the development Therefore no pathway for effect exists	N/A	N/A	Yes There is no doubt as to absence of effects on the species.

	<p>number of live adults counted</p> <p>Restore suitable habitat in more than 3.3km and any additional stretches necessary for salmonid spawning</p> <p>Restore water quality macroinvertebrate and phytobenthos</p> <p>Restore substratum quality</p> <p>Restore hydrological regimes</p> <p>Maintain sufficient salmonids.</p>				
<p>Sea Lamprey [1095] (R)</p> <p>Likely to be present upstream and downstream</p>	<p>75% of mainstream length of rivers accessible from e estuary, minimum 3 no. age/size groups present, juvenile density, no decline in extent and distribution</p>	<p>Species sensitive to changes in water quality and habitat degradation</p>	<p>Suite of surface water, groundwater and flood risk protection measures identified for construction phase as detailed in section 15.5.24 above.</p>	<p>None</p>	<p>Yes</p> <p>There is no doubt as to the effectiveness or implementation of the mitigation measures proposed to prevent direct and indirect effects on integrity.</p>

	of spawning beds, availability of juvenile habitat.				
<p>Brook Lamprey [1096](M)</p> <p>River Lamprey [1099](M)</p> <p>(map 10)</p> <p>Likely to be present upstream and downstream</p>	<p>Access to all watercourses down to 1st order streams, at least 3 age/size groups present, mean catchment juvenile density at least 2/m², no decline in extent and distribution of spawning beds, availability of juvenile habitat (50% of sample sites positive).</p>	<p>Species sensitive to changes in water quality and habitat degradation</p>	<p>Suite of surface water, groundwater and flood risk protection measures identified for construction phase as detailed in section 15.5.24 above.</p>	<p>None</p>	<p>Yes</p> <p>There is no doubt as to the effectiveness or implementation of the mitigation measures proposed to prevent direct and indirect effects on integrity.</p>
<p>Salmon [1106] (R)</p> <p>Likely to be present upstream and downstream</p>	<p>100% channel down to 2nd order accessible from estuary, CL for adult spawning fish to be exceeded, maintain or exceed fry mean catchment wide</p>	<p>Species sensitive to changes in water quality and habitat degradation</p>	<p>Suite of surface water, groundwater and flood risk protection measures identified for construction phase as detailed in section 15.5.24 above.</p>	<p>None</p>	<p>Yes</p> <p>There is no doubt as to the effectiveness or implementation of the mitigation measures proposed to prevent direct and indirect effects on integrity</p>

	abundance threshold set at 17 salmon fre/min sampling, no significant decline in out-migrating smolt abundance, water quality to be at least Q4 and no decline in number and distribution of spawning redds.				
Sandbanks which are slightly cover by sea water at all times [1110] (M) Maps 3 & 9 c.80km downstream	Habitat area and distribution stable subject to natural processes, Conserve the subtidal sand to mixed sediment with Nephtys spp. community complex. in a natural condition.	Habitat sensitive to changes in water quality.	Suite of surface water, groundwater and flood risk protection measures identified for construction phase as detailed in section 15.5.24 above.	None	Yes There is no doubt as to the effectiveness or implementation of the mitigation measures proposed to prevent direct and indirect effects on integrity.
Coastal lagoons [1150] (R)	Area and distribution stable or increasing,	Habitat sensitive to changes in water quality.	Suite of surface water, groundwater and flood risk protection measures	None	Yes There is no doubt as to the effectiveness or implementation of the mitigation

<p>Map 6 c.70km downstream</p>	<p>subject to natural processes. Median annual salinity and temporal variation within natural ranges, Annual water level fluctuations and minima within natural ranges, Appropriate hydrological connections between lagoons and sea, Annual median chlorophyll a within natural ranges and less than 5µg/L, Annual median MRP within natural ranges and less than 0.1mg/L, Annual median DIN within natural ranges and less than 0.15mg/L, Macrophyte colonisation to maximum depth of</p>		<p>identified for construction phase as detailed in section 15.5.24 above.</p>		<p>measures proposed to prevent direct and indirect effects on integrity.</p>
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	lagoons, Maintain number and extent of listed lagoon specialists, subject to natural variation, Negative indicator species absent or under control.				
Large shallow inlets and bays [1169] (M) Maps 7 & 9 c.70km downstream	permanent habitat area is stable or increasing, subject to natural processes, Conserve specified community types in a natural condition.	Habitat sensitive to changes in water quality.	Suite of surface water, groundwater and flood risk protection measures identified for construction phase as detailed in section 15.5.24 above.	None	Yes There is no doubt as to the effectiveness or implementation of the mitigation measures proposed to prevent direct and indirect effects on integrity.
Reefs [1170] (M) (Maps 8 & 9) c.40km downstream	Permanent habitat and Distribution of habitat is stable subject to natural processes. Conserve specified reef community types in a natural condition.	Habitat sensitive to changes in water quality.	Suite of surface water, groundwater and flood risk protection measures identified for construction phase as detailed in section 15.5.24 above.	None	Yes There is no doubt as to the effectiveness or implementation of the mitigation measures proposed to prevent direct and indirect effects on integrity.

<p>Estuaries [1130] (M) (Maps 4 & 9) c.3km downstream</p>		<p>Habitats sensitive to changes in water quality.</p>	<p>Suite of surface water, groundwater and flood risk protection measures identified for construction phase as detailed in section 15.5.24 above.</p>	<p>None</p>	<p>Yes There is no doubt as to the effectiveness or implementation of the mitigation measures proposed to prevent direct and indirect effects on integrity.</p>
<p>Mudflats and sandflats not covered by seawater at low tide [1140] (M) Map 5 c.7.7km downstream</p>	<p>Stability of permanent habitat area, maintenance and conservation of specified Intertidal sand communities community complex in a natural condition</p>	<p>Habitats sensitive to changes in water quality.</p>	<p>Suite of surface water, groundwater and flood risk protection measures identified for construction phase as detailed in section 15.5.24 above.</p>	<p>None</p>	<p>Yes There is no doubt as to the effectiveness or implementation of the mitigation measures proposed to prevent direct and indirect effects on integrity</p>

<p>Salicornia and other annuals colonising mud and sand [1310] (M)</p> <p>(Map 12)</p>	<p>Area stability, no decline or change in habitat distribution, maintain natural circulation of sediments and organic matter, maintain natural tidal regime, maintain range of coastal habitat, structural variation within sward, presence of species poor communities and no significant expansion of common cordgrass.</p>	<p>Habitat sensitive to changes in water quality.</p>	<p>Suite of surface water, groundwater and flood risk protection measures identified for construction phase as detailed in section 15.5.24 above.</p>	<p>None</p>	<p>Yes</p> <p>There is no doubt as to the effectiveness or implementation of the mitigation measures proposed to prevent direct and indirect effects on integrity.</p>
<p>Mediterranean salt meadows [1410] (R)</p> <p>Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] (R)</p>	<p>Stability of area, no decline or change in habitat distribution, maintain natural circulation of sediments and organic matter, maintain/restore creek</p>	<p>Habitats sensitive to changes in water quality.</p>	<p>Suite of surface water, groundwater and flood risk protection measures identified for construction phase as detailed in section 15.5.24 above.</p>	<p>None</p>	<p>Yes</p> <p>There is no doubt as to the effectiveness or implementation of the mitigation measures proposed to prevent direct and indirect effects on integrity.</p>

<p>(Map 12) c.17km downstream</p>	<p>and pan structure. Maintain natural tidal regime, Main range of coastal habitats, maintain structural variation within sward, maintain more than 90% of the saltmarsh area/90% of area outside creeks vegetated, maintain range of sub-communities with typical species, no significant expansion of common cordgrass.</p>				
<p>Otter [1355] (R) (Map 17) Potential to be in wider area</p>	<p>No significant decline in distribution or extent of terrestrial, marine or freshwater habitat. No significant decline in couching or holt sites. No significant decline in fish biomass available, no</p>	<p>No signs of otter recorded on site Species sensitive to changes in water quality and habitat degradation. Disturbance during construction phase.</p>	<p>Suite of surface water, groundwater and flood risk protection measures identified for construction phase as detailed in section 15.5.24 above Preconstruction survey to be undertaken</p>	<p>None</p>	<p>Yes There is no doubt as to the effectiveness or implementation of the mitigation measures proposed to prevent direct or indirect effects on integrity.</p>

	significant increase in barriers to connectivity.		Best practice measures in terms of noise abatement and operation of plant.		
<p>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] (M)</p> <p>Perennial vegetation of stony banks [1220](M)</p> <p>Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] (M)</p>	<p>These qualifying interest habitats are not aquatic habitat. Significant separation in distance from the proposed works area and absence of any complete source-pathway-receptor chain for impact:</p> <p>No affect can be considered likely.</p>	N/A	N/A	N/A	<p>Yes</p> <p>There is no doubt as to absence of effects on these species in view of the conservation objectives.</p>
<p>Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] (R)</p>	<p>Habitat area stable or increasing, subject to natural processes; no decline in habitat distribution; diversity in structure and maintenance in diversity and extent of</p>	<p>Habitat sensitive to changes in water quality and degradation</p>	<p>Suite of surface water, groundwater and flood risk protection measures identified for construction phase as detailed in section 15.5.24 above.</p>	None	<p>Yes</p> <p>There is no doubt as to the effectiveness or implementation of the mitigation measures proposed to prevent direct and indirect effects on integrity.</p>

<p>c.500 metres upstream potential for habitat to occur downstream</p>	<p>community types; Seedlings, saplings and pole age-classes occur in adequate proportions; Appropriate hydrological regime necessary for maintenance of alluvial vegetation.</p> <p>At least 30m³/ha of fallen timber greater than 10cm diameter.</p> <p>No decline in woodland structure and vegetation with a variety of typical native species present</p> <p>Negative indicator species, particularly non-native invasive species, absent or under control.</p>		<p>Invasive Species Management Plan and Biosecurity measures.</p>		
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<p>Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260] (M)</p> <p>Map 13</p> <p>Occurs downstream</p>	<p>No decline in habitat distribution with habitat area stable or increasing, maintain appropriate hydrological regimes, maintain natural tidal regime, substratum composition, water quality nutrients, typical species in vegetation composition and maintenance of active floodplain at and upstream, of the habitat, The area of riparian woodland at and upstream of the bryophyte-rich subtype should be maintained.</p>	<p>Habitat sensitive to changes in water quality and habitat disturbance.</p> <p>There will be no changes to the area of active floodplain associated with the development. The flood zone area within the development will continue to act as a flood plain when the development is complete.</p> <p>Project has been designed so that most significant infrastructure is built within Flood Zone C.</p>	<p>Suite of surface water, groundwater and flood risk protection measures identified for construction phase as detailed in section 15.5.24 above.</p> <p>Compensatory storage to be provided for infrastructure required to be provided in flood zone A.</p>	<p>None</p>	<p>Yes</p> <p>There is no doubt as to the effectiveness or implementation of the mitigation measures proposed to prevent direct and indirect effects on integrity.</p>
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<p>Bottlenose Dolphin [1349] (M) (Map 16)</p> <p>Suitable habitat c. 13km downstream</p>	<p>No restrictions to access to suitable habitat, maintenance of areas preferentially use to be maintained in natural condition, limit disturbance from human activities</p>	<p>Species sensitive to changes in water quality</p>	<p>Suite of surface water, groundwater and flood risk protection measures identified for construction phase as detailed in section 15.5.24.</p>	<p>N/A</p>	<p>Yes</p> <p>There is no doubt as to the effectiveness or implementation of the mitigation measures proposed to prevent direct and indirect effects on integrity.</p>
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Overall conclusion: Integrity test

Following the implementation of mitigation, the construction and operation of this proposed development will not adversely affect the integrity of Lower River Shannon SAC in view of the site's conservation objectives. No reasonable scientific doubt remains as to the absence of such effects. **Note:** monitoring is included as best practice and does not imply any uncertainty regarding adverse effects or the effectiveness of any mitigation measures

Table 2

Summary Table – River Shannon and River Fergus Estuaries SPA [Site Code 004077]

Key Issues:

- **Water quality impacts due to pollutants or soil/silt run off during construction and operation, groundwater and flood risk**

Conservation Objectives: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf

Summary of Appropriate Assessment

Conservation Objective To maintain the favourable conservation condition of the following:	Targets and attributes (summary-as relevant)	Potential adverse effects	Mitigation measures (including monitoring)	In-combination effects	Can adverse effects on integrity be excluded?
Cormorant [A017] Whooper Swan [A038] Light-bellied Brent Goose [A046] Shelduck [A048] Wigeon [A050] Teal [A052] Pintail [A054] Shoveler [A056] Scaup [A062] Ringed Plover [A137] Golden Plover [A140]	Long term population trend stable or increasing No significant decrease in the range, timing and intensity of use of areas	Deterioration in water quality and effects on supporting habitats for the species.	Suite of surface water, groundwater and flood risk protection measures identified for construction phase as detailed in section 15.5.24 above. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions.	N/A	Yes There is no doubt as to the effectiveness or implementation of the mitigation measures proposed to prevent direct and indirect effects on integrity.

Grey Plover [A141] Lapwing) [A142] Knot [A143] Dunlin [A149] Black-tailed Godwit [A156] Bar-tailed Godwit [A157] Curlew [A160] Redshank [A162] Greenshank [A164] Black-headed Gull [A179] Wetland and Waterbirds [A999] c.3.8km to west (c.8km hydrological distance)					
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Overall conclusion: Integrity test

Following the implementation of mitigation, the construction and operation of this proposed development will not adversely affect the integrity of the River Shannon and River Fergus Estuaries SPA in view of the site's conservation objectives. No reasonable scientific doubt remains as to the absence of such effects. **Note:** monitoring is included as best practice and does not imply any uncertainty regarding adverse effects or the effectiveness of any mitigation measures

16.6. Appropriate Assessment Conclusion

- 16.6.1. The proposed development has been considered in light of the assessment requirements of Section 177AE of the Planning and Development Act, 2000, as amended.
- 16.6.2. Having carried out screening for appropriate assessment of the project, it was concluded that it may have a significant effect on Lower River Shannon SAC [site code 002165] and River Shannon and River Fergus Estuaries SPA [site code 004077]. Consequently, an appropriate assessment was required of the implications of the project on the qualifying features of those sites in light of their conservation objectives.
- 16.6.3. Following an Appropriate Assessment, it has been ascertained that the proposed development, individually or in combination with other plans or projects would not adversely affect the integrity of the European site Nos 0021656 and 004077, or any other European site, in view of the sites' Conservation Objectives.
- 16.6.4. This conclusion is based on a complete assessment of all aspects of the proposed project and there is no reasonable doubt as to the absence of adverse effects.
- 16.6.5. This conclusion is based on the following:
 - A full and detailed assessment of all aspects of the proposed works including proposed mitigation and monitoring in relation to the conservation objectives Lower River Shannon SAC [site code 0021656] and River Shannon and River Fergus Estuaries SPA [site code 004077].
 - The proposed WwTP improvements works will not compromise the objectives of the Water Framework Directive and the effluent will remain within the EQSs during the operation of the development.
 - With the application of all mitigation measures the proposed development will not undermine the conservation objective of maintaining and restoring the favourable conservation condition of the relevant qualifying interests and special conservation interests in the Lower River Shannon SAC [site code 0021656] and River Shannon and River Fergus Estuaries SPA [site code 004077]

- The detailed assessment of in combination effects with other plans and projects including historical projects, current proposals and future plans.
- No reasonable scientific doubt as to the absence of adverse effects on the integrity of Lower River Shannon SAC [site code 0021656] and River Shannon and River Fergus Estuaries SPA [site code 004077].

17.0 Recommendation

Having regard to the foregoing I recommend that permission for the above described development be granted for the following reasons and considerations subject to conditions.

18.0 Reasons and Considerations

In coming to its decision, the Board had regard to a range of matters including the following:

- the relevant provisions of Council Directive 2014/52/EU amending Directive 2011/92/EU (EIA Directive) on the assessment of the effects of certain public and private projects on the environment, Directive 92/43/EEC (Habitats Directive) and Directive 79/409/EEC as amended by 2009/147/EC (Birds Directives) which set the requirements for Conservation of Natural Habitats and of Wild Fauna and Flora throughout the European Union.
- European Union Water Framework Directive 2000/60/EC;
- the European Union Urban Waste Water Treatment Directive 91/271/EEC;
- the European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended;
- the national, regional and local strategic policies and objectives, inclusive of those set out in National Planning Framework – Ireland 2040, The Water Services Strategic Plan 2015-2040, the Water Services Policy Statement 2018-2025, the Regional Spatial and Economic Strategy for the Southern Region and the Limerick City and County Development Plan, 2022
- the established site context and the pattern of development in the area;

- the entirety of the documentation that accompanied the planning application and reports and submissions, which were submitted by the planning authority, prescribed bodies and observers and the further submission made by the applicant during the course of the application;
- the range of proposed mitigation measures set out in the submitted Environmental Impact Assessment Report and Natura Impact Statement (incorporating Appropriate Assessment Screening);
- and the report and recommendation of the inspector;

The Board considered that, subject to compliance with the conditions set out below that the proposed development would enable sustainable residential and economic growth through the delivery of increased wastewater treatment capacity, would assist Ireland in meeting obligations set down under EU Directives, national legislation and planning policy, and would be acceptable in respect of its likely effects on the environment and its likely consequences for the proper planning and sustainable development of the area, including matters of odour, noise, traffic and visual impact. The proposed development would, therefore, be in accordance with the proper planning and sustainable development of the area.

Appropriate Assessment:

The Board noted that the proposed development is not directly connected with or necessary for the management of a European Site.

In completing the screening for Appropriate Assessment, the Board accepted and adopted the screening assessment and conclusion reached in the Inspector's report that the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA are the European sites for which there is a possibility of significant effects and which, must therefore be subject to appropriate assessment.

The Board considered the Natura Impact Statement and all other relevant submissions and carried out an appropriate assessment of the implications of the proposal for the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA, in view of the sites' conservation objectives. The Board concluded that the information before it was adequate to allow for a complete assessment of all

aspects of the proposed development and to allow them reach complete, precise and definitive conclusions for appropriate assessment.

In completing the Appropriate Assessment, the Board considered, in particular, the following:

- i. the likely direct and indirect impacts arising from the proposed development both individually or in combination with other plans or projects,
- ii. the mitigation measures which are included as part of the proposal,
- iii. the conservation objectives for the European Sites' and
- iv. the views contained in the submissions.

In completing the appropriate assessment, the Board accepted and adopted the appropriate assessment carried out in the Inspector's report in respect of the potential effects of the proposed development on the integrity of the aforementioned European Sites, having regard to the site's conservation objectives.

Environmental Impact Assessment

The Board completed an environmental impact assessment of the proposed development taking into account:

- (a) The nature, scale, location and extent of the proposed development
- (b) The environmental impact assessment report and associated documentation submitted with the application;
- (c) The reports and submissions received from the planning authority, observers and prescribed bodies and the applicant's further submission in the course of the application;
- (d) The Inspector's report;

The Board agreed with the summary and examination set out in the inspector's report, of the information contained in the environmental impact assessment report and associated documentation submitted by the applicant and submissions made in the course of the application. The Board is satisfied that the inspector's report sets out how these were addressed in the examination and recommendation and are incorporated into the Board's decision.

Reasoned Conclusions on the Significant Effects

The Board considered that the environmental impact assessment report, supported by the documentation submitted by the applicant, adequately considers alternatives to the proposed development and identifies and describes adequately the direct, indirect, secondary and cumulative effects of the proposed development on the environment. The Board agreed with the examination, set out in the Inspector's report, of the information contained in the environmental impact assessment report and associated documentation submitted by the applicant and submissions made in the course of the planning application.

Following on from this assessment, it is considered that the main significant direct and indirect effects (positive and negative) of the proposed development on the environment are those arising from the impacts listed below. An Outline Construction Environmental Management Plan (CEMP), contained in Appendix 4A, together with mitigation measures to be employed, as summarised in Chapter 20 of the EIAR, provide a description of the overarching general mitigation measures embedded in the project design and delivery for construction and operational stages. The main likely impacts, both positive and negative are as follows:

Benefits/positive impacts to **population and human health** arising as a result of the overall wastewater treatment plant upgrade due to providing increased treatment infrastructural capacity and improved level of treatment which would be pivotal in supporting planned residential and economic growth in Limerick city and the southern region. The improvements will also provide for measures to reduce noise and odour levels at nearest sensitive receptors.

Negative temporary impact on **population and human health** during the construction phase arising from increased traffic and construction activity and resultant noise, dust and disturbance. The Construction and Environmental Management Plan will incorporate best practice measures.

Potential impacts on **biodiversity** and disturbance of badger on the site which would be mitigated by measures to be put in place to prevent disturbance or infringement on the badger sett.

Potential impacts on **land and soils** from risk of spread of invasive species at the site which would be mitigated by the implementation of the Invasive Species

Management Plan and a method statement for the control of disturbance of soils containing the invasive species.

Risk of pollution of receiving **water** environment as a result of accidental spillages of chemicals, hydrocarbons or other contaminants entering the site drains and discharging to the River Shannon during the construction phase. The impacts would be mitigated by measures within the Construction and Environmental Management Plan and adherence to best practice construction measures and incorporation of appropriate drainage facilities.

Positive impacts on **water** from the proposed stormwater storage which will result in a reduction in spills from on average 123 spills per year to on average less than 7 spills per year and 3 spills during bathing season which ensures that recreational water quality standards are met.

Conclusion on Proper Planning and Sustainable Development

The benefits of the proposed development are considered to be positive. Its delivery would assist Ireland in meeting obligations set down under EU Directives, national legislation and planning policy expressed through the hierarchy of plans which regulate development at a national, regional and local level. The proposed development would enable sustainable and properly planned residential, employment and other development within Limerick through the delivery of increased wastewater treatment capacity and provision for stormwater storage. It can, therefore, be concluded that the proposed development is in accordance with the proper planning and sustainable development of the area.

19.0 Conditions

1. The proposed development shall be carried out and completed in accordance with the plans and particulars lodged with the planning application and the information contained in the Environmental Impact Assessment Report and Natura Impact Statement, as amended by the further particulars submitted to the Board on the 26th day of July, 2023, except as may otherwise be required in order to comply with the following conditions. Where such conditions require details to be agreed with the planning authority, the developer shall agree such details in writing with the planning authority prior to commencement of development, or in default of agreement, shall be referred to An Bord Pleanála for determination, and the proposed development shall be carried out and completed in accordance with the agreed particulars.

Reason: In the interest of clarity and the proper planning and sustainable development of the area and to ensure the protection of the environment.

2. All mitigation and environmental commitments, including monitoring measures identified in the EIAR and the Natura Impact Statement shall be implemented in full as part of the proposed development except as may otherwise be required to comply with the following conditions.

Reason: In the interest of clarity and to protect the environment.

3. The period during which the development hereby permitted may be carried out shall be ten years from the date of this order.

Reason: Having regard to the nature and extent of the proposed development, the Board considered it appropriate to specify a period of validity of this permission in excess of five years.

4. Odour levels at the site boundary shall comply with an odour concentration limit of 3 ouE/m³ on a 98th percentile basis of hourly averages. Procedures for the purpose of determining compliance with this limit shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development.

Reason: To protect residential amenity of property in the vicinity.

5. No part of the proposed compensatory flood storage shall be within Flood Zone A. A revised plan with the area shown thereon shall be submitted to the planning authority for written agreement prior to commencement of development.

Reason: In the interest of reducing flood risk.

6. Prior to the commencement of development, the applicant shall submit to, and agree in writing with the planning authority a detailed Construction and Environmental Management Plan. This plan shall provide details of the proposed construction practice for the development including traffic management, noise management measures, hours of construction and offsite disposal of construction/demolition waste and shall clearly identify all measures / commitments as set out in the EIAR and NIS in relation to construction activities.

Reason: In the interest of amenities, public health and safety.

7. Prior to the commencement of development, the developer or any agent acting on its behalf, shall prepare a Resource Waste Management Plan (RWMP) as set out in the EPA's Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects (2021) including demonstration of proposals to adhere to best practice and protocols. The RWMP shall include specific proposals as to how the RWMP will be measured and monitored for

effectiveness; these details shall be placed on the file and retained as part of the public record. The RWMP must be submitted to the planning authority for written agreement prior to the commencement of development. All records (including for waste and all resources) pursuant to the agreed RWMP shall be made available for inspection at the site office at all times.

Reason: In the interest of sustainable waste management.

8. Prior to commencement of the development, a Traffic Management Plan for the construction phase shall be submitted to, and agreed in writing with the planning authority. The developer shall comply with the requirements of the planning authority in respect of minimising traffic disruption on the local communities, cleaning and repair of any damage to the public road networks during the construction phase.

Reason: To protect the public road network and in the interest of traffic safety.

9. The developer shall facilitate the archaeological appraisal of the site and shall provide for the preservation, recording and protection of archaeological materials or features which may exist within the site. In this regard, the developer shall:

- (a) notify the planning authority in writing at least four weeks prior to the commencement of any site operation (including hydrological and geotechnical investigations) relating to the proposed development, and
- (b) employ a suitably-qualified archaeologist prior to the commencement of development. The archaeologist shall assess the site and monitor all site development works.

The assessment shall address the following issues:

- (i) the nature and location of archaeological material on the site, and

(ii) the impact of the proposed development on such archaeological material.

A report, containing the results of the assessment, shall be submitted to the planning authority and the Department of Housing, Local Government and Heritage and, arising from this assessment, the developer shall agree in writing with the planning authority details regarding any further archaeological requirements (including, if necessary, archaeological excavation) prior to commencement of construction works.

In default of agreement on any of these requirements, the matter shall be referred to An Bord Pleanála for determination.

Reason: In order to conserve the archaeological heritage of the area and to secure the preservation (in-situ or by record) and protection of any archaeological remains that may exist within the site.

10. Site development and building works shall be carried out only between the hours of 0800 to 1800 Mondays to Saturdays inclusive and not at all on Sundays or public holidays. Deviation from these times will only be allowed in exceptional circumstances where prior written approval has been received from the planning authority.

Reason: In order to safeguard the amenities of property in the vicinity.

11. The development shall comply with the requirements of the planning authority in respect of surface water management.

Reason: In order to protect water quality and avoid the creation of flood risk.

12. All external lighting within the proposed development shall be sufficiently cowled so as to ensure that light spillage beyond the boundary of the site is minimised.

Reason: In the interest of residential amenity

I confirm that the report represents my professional planning assessment, judgement and opinion on the matter assigned to me and that no person has influenced or sought to influence, directly or indirectly, the exercise of my professional judgement in an improper or inappropriate way.

Pauline Fitzpatrick
Senior Planning Inspector

September, 2023