

This Report has been cleared for submission to the Director by Programme Manager, Tara Higgins

Signed:

Tara Higgins

Date: 22/10/2025



OFFICE OF ENVIRONMENTAL SUSTAINABILITY

INSPECTORS REPORT ON A WASTE WATER DISCHARGE LICENCE REVIEW APPLICATION

To: Eimear Cotter, Director

From: Ann Marie Donlon Water, Energy and Business Support Programme

Date: 22 October 2025

RE: Application for a review of a Waste Water Discharge Licence from Uisce Éireann for the agglomeration named Glenamaddy, Reg. No. D0379-02.

Summary Details of an Application for the review of a licence under the European Union (Waste Water Discharge) Regulations 2007 as amended

Agglomeration Name:	Glenamaddy
Location:	Co. Galway
Number and type of waste water discharges from the waste water works:	1 No. primary discharge, 1 No. discharge from storm water overflow
Location of waste water treatment plant (WWTP)	Mountkelly, Glenamaddy, Co. Galway 163990E 262121N
Schedule of discharge licensed:	Discharges from agglomerations with a population equivalent of 500 to 1,000
Population equivalent to which the application relates:	700
Design Population Equivalent of WWTP:	700
Reported current Population Equivalent:	995 (2024)
Licence application received:	22 June 2017
Additional information received:	Yes (12/07/2018, 06/05/2020 04/11/2020, 07/10/2024 16/12/2024, 07/04/2025)
Regulation 18(2) Compliance Acknowledgement:	18 August 2025
Site Visit:	10 May 2024

Submissions Received:	3 - Dept of Arts, Heritage, Regional, Rural and Gaeltach Affairs (22/08/2017), Michael Fitzmaurice T.D (24/10/2017), Peter Sweetman (20/07/2020)
Environmental Impact Assessment (EIA) Required:	No
Stage 2 Appropriate Assessment required:	Yes
Natura Impact Statement (NIS) submitted:	26/07/2017 and updated on 04/11/2020

1. Introduction to application

This review application relates to waste water discharges from the waste water works serving the agglomeration of Glenamaddy, Co. Galway. Glenamaddy area is characterised by karst features most notably the Glenamaddy turlough located to the southeast of the town.

Uisce Éireann applied for a review of its licence (register number D0379-01) to retain the existing primary discharge point (GW1) to the Pollanderice swallow hole, located within the Glenamaddy turlough (a direct discharge to groundwater). The existing waste water discharge licence (WWDL) (D0379-01) required all waste water discharges to cease on 31st December 2016 in line with the prohibition of direct discharges to groundwater under regulation 8 of the European Communities Environmental Objectives (Groundwater) Regulations 2010 as amended (Groundwater Regulations). The licensee is seeking an exemption under the Groundwater Regulations to allow the continued discharge of waste water to the Pollanderice swallow hole.

The level of treatment provided at the time of licensing was primary treatment by Imhoff tank which was in place from the 1950's to 2020. This application is for the treatment of domestic waste water at a new waste water treatment plant (WWTP) with a design p.e. of 700 (tertiary treatment with UV disinfection), a new SWO and decommissioning of the discharge from the SWO reference GW2. The new WWTP and ancillary works, to which this application relates, are built and operational since April 2020.

2. Regulatory framework

The discharges from the waste water works serving the Glenamaddy agglomeration require authorisation under the European Union (Waste Water Discharge) Regulations 2007 as amended.

The waste water discharges are direct discharges to groundwater which is prohibited under regulation 8(a) of the Groundwater Regulations. Under regulation 14, categories of pollutant inputs may be exempted from the provision of Part II (includes regulation 8(a)) where the Agency has established detailed technical rules. Uisce Éireann are seeking an exemption under regulation 14(b) for the direct discharge to groundwater of treated waste water as follows:

14. The Agency may, where it considers it appropriate or necessary, establish detailed technical rules under which the following categories of pollutant inputs may be exempted from the provisions of this Part:

...

(b) inputs considered to be of a quantity and concentration so small as to obviate any present or future danger of deterioration in the quality of the receiving groundwater;

The EPA 2014 *Guidance on the Authorisation of Direct Discharges to Groundwater* sets out the technical rules to be used for identifying exempted pollutant inputs and when considering authorising direct discharges of domestic-type waste water effluent. The categories of exempted pollutant inputs represent special cases where the requirement to take measures to prevent or limit pollutant inputs to groundwater may be relaxed provided the technical rules are complied with.

The guidance states that domestic-type waste water effluents relates to effluents that have received a high level of treatment and /or types of effluent where hazardous substances are generally or typically not present.

This inspector's report considers the technical rules for a direct discharge to groundwater under Regulation 14(b) as set out in EPA 2014 *Guidance on the Authorisation of Direct Discharges to Groundwater* for domestic-type effluent, the relevant requirements of the European Union (Waste Water Discharge) Regulations 2007 as amended and the requirements of the European Communities (Birds and Natural Habitats) Regulations 2011 as amended.

3. Options assessment

In line with the technical rules on authorisation approach specified in the EPA 2014 *Guidance on the Authorisation of Direct Discharges to Groundwater*, Uisce Éireann considered other options before advancing the proposal to continue discharging to the Glenamaddy turlough. The following summarises the results of their assessment of options:

- Indirect discharge via a percolation area was considered not to be technically feasible.
- Two options on discharges to surface water were ruled out due to insufficient surface water flow or available dilution at the selected points (Blackers bridge, Boyounagh bridge) as well as associated costs.
- Two other locations (Yellow/Sinking river confluence and Island river) on discharges to surface water were technically feasible but eliminated due to capital and operational costs associated with pumping waste water over a distance of 10.5 km or 14.8 km.

Whole life cost analyses demonstrated a doubling of costs between the proposed option of discharging to Glenamaddy turlough and the Yellow/Sinking river confluence option (next best).

I am satisfied that Uisce Éireann have assessed surface water and indirect discharge options and having regard to technical feasibility and disproportionate costs, the proposal to discharge directly to groundwater is acceptable.

4. Planning status

Planning permission for the new WWTP and pumping station was granted on 08 May 2017 (ref No. 16/1161) by Galway County Council. A copy of the grant of planning permission was submitted with the application. An EIAR/EIS did not accompany the planning application and an EIA was not carried out by Galway Co. Co.

5. EIA screening

As the Waste Water Discharge (Authorisation) Regulations 2020 do not provide for transitional arrangements for waste water discharge applications received before June 2020, the Agency is directly applying the EIA Directive and has carried out EIA screening.

In accordance with the EIA Screening Determination (dated 03 December 2020), the Agency determined that EIA, as respects the matters that come within the functions of the Agency, is not required. The determination states the following:

Having considered the information provided by the applicant, which satisfies the requirements of Annex II A of the EIA Directive (in so far as it respects the matters that come within the functions of the Agency), the authorisation is unlikely to give rise to significant effects on the environment by virtue of its nature, size or location. This determination has been made having regard to the following:

1. *The wastewater discharge authorisation application is not of a project type specified in Annex I of the EIA Directive and;*
2. *The wastewater treatment plant serves an agglomeration with a population equivalent <10,000 which is considered small in scale.*
3. *Domestic wastewater is the largest contributor to the waste water treatment plant and is readily biodegradable.*
4. *Wastewater is treated prior to discharge to the receiving groundwater body.*
5. *With regard to European sites, the potential effects of discharges on European Sites and their water dependant qualifying interests will be assessed under the Habitats Directive (Appropriate Assessment).*
6. *The cumulative effect with other existing and planned discharges are not likely to give rise to significant effects.*

6. Discharges to waters

The following table outlines details relating to the waste water discharges to groundwater from the waste water works serving this agglomeration.

Table 1: Waste Water Discharges

Primary discharge point (GW1)	
Type of treatment:	Tertiary treatment with UV disinfection
Waste water treatment plant (WWTP) description:	The plant consists of: <ul style="list-style-type: none"> - Screening and grit removal - Aeration tank and clarifier - Disc filter - Ferric dosing for P removal - UV disinfection
Receiving water name	Pollanderice swallow hole which forms part of the Glenamaddy turlough IE_WE_G_0094
Design Dry weather flow (DWF) of the WWTP	126 m ³ /day
Maximum flow design of the WWTP	378 m ³ /day. The WWTP is designed to treat a maximum of 3DWF.

Storm water overflow	
Storm water overflow	Yes (1) -GW3 (discharging at the same location as GW1)
Receiving water name	Pollanderice Swallow Hole which forms part of the Glenamaddy turlough IE_WE_G_0094
Storm water storage	Screening and storage of 380 m ³ – 4 hours of storage based on a peak storm flow of 95 m ³ /hour
Emergency overflow	
Emergency overflow	Yes (1) -GW3

The discharge concentrations requested by the licensee and set out in Table 4, represent tertiary treatment with UV disinfection. In terms of treatment of nutrients, ammonia will be nitrified, and phosphorus will be removed. The low total nitrogen concentration infers that nitrogen will be removed via denitrification.

Table 2: Requested discharge concentration

Parameter	Requested discharge concentration
cBOD	10 mg/l
Suspended solids	10 mg/l
Total Ammonia	1.0 mg/l
Total Nitrogen	15 mg/l
Ortho-Phosphate	0.5 mg/l
Pathogenic reduction	3 log reduction - 1,000 faecal coliforms /100ml

For Glenamaddy agglomeration, “*appropriate treatment*” is required under the Urban Waste Water Treatment Regulations, 2001, as amended. The term ‘appropriate treatment’ is defined in the Urban Waste Water Treatment Directive (UWWTD) and Regulations as ‘*treatment of urban waste water by any process and/or disposal system which after discharge allows the receiving waters to meet the relevant quality objectives and the relevant provisions of the Directive and of other Community Directives*’. Therefore, appropriate treatment is informed by the findings of the impact assessment (see section 7 of this report).

With respect to treatment requirements, the technical rules for direct discharges under regulation 14(b) require:

- the treated effluent quality has to meet a high standard to be determined by full technical assessment that is both site and case specific, that treatment design and achievable quality standards are clearly identified and presented and that a high standard means tertiary treatment via sand or other filter and possible sterilisation techniques, and
- ammonia has to be nitrified to the point that after dilution in groundwater, relevant receptor-based water quality standards are met.

The proposed standard of effluent quality meets the minimum requirements of tertiary treatment and disinfection. The proposed standard of effluent quality is considered in more detail under section 7 of this report with respect to the receiving groundwater.

A single effluent grab sample (2016) was analysed for certain pesticides, solvents and metals (14 parameters). The Toluene level (5.88 µg/l) exceeded the minimum

reporting value for selected hazardous substances in groundwater (4 µg/l Toluene). Having regard to the EPA 2014 *Guidance on the Authorisation of Direct Discharges to Groundwater* for domestic-type effluent (hazardous substances are generally or typically not present), the proposed tertiary treatment standards, the low concentration of a single sample result and likely concentration in groundwater after mixing, it is considered that the occurrence of hazardous inputs in waste water discharges are not environmentally significant. Further consideration is given to hazardous substances under section 7 of this report.

The discharges from the SWO are designed to comply with the 1995 DoEHLG *'Procedures and criteria in relation to storm water overflows'*. The design includes the use of storm water storage tank and screen and thereby limit discharges to significant and prolonged rainfall events. The SWO has been designed to permit no more than 20% of storm water run-off to be spilled.

Overloading and plant performance

The load of waste water entering a waste water works can be expressed in population equivalent (p.e.). Since making the application, the p.e. has exceeded the capacity of the WWTP (700 p.e.) with a reported p.e. of 995 in 2024. The p.e. of the waste water collected has increased from 527 in 2020 to 995 in 2024. It was noted during the site visit and in personal communication with Uisce Éireann that the additional p.e. arises from the expansion of a food industry 'West Bake' which discharges to the sewer network and is overloading of the WWTP. The overloading of the works by a trade effluent affects the consideration of this application in two respects:

- a) waste water loading exceeds the 700 p.e. agglomeration to which this application relates and the corresponding impact assessment of waste water discharges, and
- b) potentially compromises the technical rules which relate to domestic-type effluent.

Uisce Éireann have confirmed that the p.e. to which the application relates is 700 and the impact assessment is carried out on this basis. To address the overloading, Uisce Éireann commenced, in March 2025, a review of the industrial trade effluent to sewer licence and is engaging with the industry in order to reduce the pollutant load entering the works. They expect that this review will take 6 to 10 months to complete. Uisce Éireann advised that the review may result in an amendment of conditions or a revocation of their trade effluent licence.

Uisce Éireann in correspondence confirmed that their application relates to the treatment of domestic waste water only. An industrial trade effluent is therefore not in scope of this application. Domestic waste water¹ is defined in the 2024 UWWTD.

It is noted that the monitoring data for the primary discharge broadly shows good plant performance for BOD, SS and total phosphorus when compared with the requested discharge concentrations (table 2). However, ammonia and total nitrogen levels exceeded the requested concentrations frequently in 2023 and 2024. It was reported by ORM and noted during this Inspector's site visit that the UV disinfection system was not operating.

The overloading of the plant and the failure to operate the UV disinfection system in the context of seeking an exemption under the Groundwater Regulations is concerning. It is a matter for Uisce Éireann to comply with the licence review application that they have requested the Agency consider (i.e. 700 p.e. and domestic waste water only) and thereby address the overloading of the treatment plant. In order to prevent pollution

¹ 'domestic wastewater' means wastewater from residential settlements, services and institutions which originates predominantly from the human metabolism or from household activities, or from both.

of waters, it is considered that the waste water discharges from this agglomeration are best controlled by way of a revised licence.

7. Impact of waste water discharges

Uisce Éireann undertook an impact assessment of the waste water discharges based on a 700 p.e. agglomeration. In considering this application, I have examined and taken account of the findings of their assessment and supplemented it with an examination of additional evidence.

The Glenamaddy upgrade works, now complete, was specified in Appendix 1 of the River Basin Management Plan 2018 to 2021 to support the prevention of deterioration and support targeted water quality improvements.

Hydrogeology of the receiving water

The following table summarises the main considerations in relation to the receiving water (groundwater) of the primary discharge and discharges from the storm water overflow.

Table 3: Receiving water

Characteristic	Classification	Comment
Name	GWDTE-Glenamaddy Turlough (SAC000301) - WFD Code: IE_WE_G_0094	Groundwater body 18.38 km ² . Bed rock and regionally important aquifer - karstified (conduit)
WFD status	Good (2016-2021)	Water body is 'Not at Risk' and no deteriorating trend.
WFD environmental objective	Good	To be maintained.
Surface water receptor	Sinking River IE_WE_30S010100 SINKING_010	Groundwater emerges at Lettera spring 3.5 km west of swallow hole, at the headwater of the Sinking river. The Sinking river is at Good status and not at risk.
WFD Protected areas / receptors	<ol style="list-style-type: none"> 1. GWDTE-Glenamaddy Turlough (SAC000301) - WFD Code: IE_WE_G_0094 2. Lough Lurgeen bog/Glenamaddy turlough SAC site code 000301 3. Lisnageeragh bog and Ballinastack turlough SAC site code 000296 ^{Note 1} 4. Lough Corrib SAC 	<p>Whole waterbody is a designated drinking water protected area.</p> <p>Water dependant SACs 000296 and 000301 overlap / within the groundwater waterbody.</p> <p>Lough Corrib SAC is 1.15km downstream of Letterea spring.</p>

Note 1: No hydrogeological pathway between the discharges and 000296 SAC identified.

The Glenamaddy area is underlain by a highly karstified dark grey limestone bedrock, characterised by karst features (swallow holes, turlough, springs). The underlying aquifer is classed as regionally important. Groundwater vulnerability of the Glenamaddy turlough is mapped as 'extreme' due to the presence of swallow holes and is an area of concentrated recharge. However, much of the catchment is rated low vulnerability with low permeability and therefore influenced by overland flow.

The Glenamaddy turlough occupies an area of 175 ha and is a large deep water-filled turlough that is rarely uncovered. A turlough is a topographic depression in karst which is intermittently inundated on an annual basis, mainly from groundwater, and which has a substrate and/or ecological communities characteristic of wetlands. Turloughs are semi-natural habitats that are virtually unique to Ireland. Glenamaddy turlough is a groundwater dependant terrestrial ecosystem (GWDTE) (it is not a surface water system) under the WFD. Turloughs are a qualifying interest of special areas of conservation (SAC) and a priority habitat under the Habitats Directive.

The Lough Lurgeen Bog/Glenamaddy turlough SAC (site code 000301) consists of a 175 ha turlough and raised bog of over 1,000 ha. A small lake (lough Lurgeen) occurs on top of the bog. Water from the bog feeds into the lake, which in turn is linked to the turlough, and thus the three habitats are in close association (see appendix 1 map). The conservation objective of the Glenamaddy turlough is to restore its favourable conservation condition.

There are two swallow holes (Pollandeirce and Pollanargid) located in the northwestern section of the turlough. Groundwater is likely to enter and leave Glenamaddy turlough through these swallow holes. The Glenamaddy turlough is also fed by two streams, one of which rises in the raised bog to the east and southeast of the turlough. The streams feeding the turlough are assigned a moderate WFD status (streams are in the Gortgarrow stream_010 river sub-basin).

There are no surface water drains from the turlough. The turlough drains by conduit flow via the swallow holes (Pollandeirce and Pollanargid) with ground water flow in a westward direction, emerging at the Lettera spring, the headwaters of the Sinking river (at Good status and not at risk). Two other swallow holes outside the turlough are linked to the Lettera spring. Lettera spring reacts quickly to rainfall and has high turbidity levels. The hydrogeological assessment carried out by the licensee, describes groundwater flow as rapid with a calculated mean flow at the Lettera spring of 35 to 50 l/s from 34 km² catchment (See appendix 1 map).

The turlough is prone to pluvial flooding. On inspection in May 2024, the turlough was full and the Lettera spring was a river surfacing with high level of colour (see figure 1).



Figure 1: Lettera spring

Water Quality

The 3rd WFD cycle status of the relatively small receiving ground water body (18.38 Km²) is Good and the water dependant objective and standards for the associated

protected area of drinking water is reported on the WFD app as having been met. There is no known abstraction for drinking water from the turlough or in its vicinity.

Groundwater chemical status is assessed under 5 tests (1. Saline intrusion, 2. Surface Water Ecology/Chemical, 3. GWDTE, 4. Drinking water protected area, 5. General Chemical). Threshold values (groundwater quality standards) specified in the Groundwater Regulations are used to assess groundwater chemical status. However, no threshold values for GWDTE test No.3 are set currently. The GWDTE assessment is based on information provided by the NPWS on the condition of the qualifying interest and an assessment of the background nutrient concentrations in groundwater. Turloughs behave like lakes and the Surface Water Regulations specifies quality standards for total phosphorus (TP) and total ammonia for lakes. Further, the 2016 NPWS *Conservation objectives supporting document -Turloughs and Rivers with muddy banks with *Chenopodium rubri p.p.* and *Bidention p.p.* vegetation* sets a target to maintain/restore average annual TP concentration of $\leq 10 \mu\text{g/l}$ TP, or $\leq 20 \mu\text{g/l}$ TP, as appropriate. The document states that based on a 2005 assessment the appropriate target is $\leq 20 \mu\text{g/l}$ TP for Glenamaddy turlough.

The background turlough concentrations (licensee 2020 monitoring results) are consistent with groundwater monitoring data from two EPA groundwater monitoring points (Gortgarrow and Kilkerrin Moylough 2016-2023) (see Table 44). The total phosphorus levels in the turlough are at the standard specified for lakes in the surface water regulations and the target specified in the supporting documentation to the conservation objectives. The Lettera spring (headwaters of the Sinking river) monitoring data indicates compliance with water quality standards for surface waters. As the discharge of waste water is ongoing, it is an influencing factor on the background and downstream Lettera spring monitoring data as presented in Table 44. The licensee monitoring data is consistent with the Good status assigned to the receiving groundwater body and the Sinking river.

The licensee undertook invertebrate sampling of the upper reaches of an inflowing stream to the turlough which resulted in a Q3 score and identified localised pollution at another inflowing stream during their assessment (high BOD values). The quality of the streams is reflected in the moderate WFD status assigned to them (streams are in the Gortgarrow stream_010 river sub-basin).

Table 4: Summary of monitoring data

Parameter	Average conc. at Gortgarrow and Kilkerrin Moylough EPA 2016-2023 (mg/l)	Average conc. at inlet stream to turlough (Upstream) Licensee 2020 (mg/l)	Average conc. at Turlough (background) Licensee 2020 (mg/l)	Measured conc. at Lettera spring (downstream) Licensee 2020 (mg/l)	Relevant standard/threshold value (mg/l)
Total phosphorus	0.011-0.023	--	0.02	--	0.025 (mean-Good) ^{Note 1} 0.02 mg/l (mean) ^{Note 2}
Ortho-phosphate	0.007 - 0.022	0.011	0.009	0.018	0.035 ^{Note 1}

Total Ammonia	0.01-0.042	0.016	0.011	0.011	0.065 - 0.175 ^{Note 1}
BOD	--	6.2	(1.7) ^{Note 3}	1	1.5 ^{Note 1}

Note 1: Relevant standards/ threshold values (expressed as mean) from the European Communities Environmental Objectives (Surface Waters) Regulations 2009 as amended, European Communities Environmental Objectives (Groundwater) Regulations 2010 as amended

Note 2: 2016 NPWS *Conservation objectives supporting document -Turloughs and Rivers with muddy banks with Chenopodium rubri p.p. and Bidention p.p. vegetation*

Note 3: There is no BOD quality standard for a surface water lake or groundwater.

Predicted impact of primary discharge

In line with the technical rules for direct discharges to groundwater, Uisce Éireann have carried out a Tier 3 technical assessment (hydrogeological) by a suitably qualified professional (in accordance with the 2011 *EPA Guidance on the Authorisation of Discharges to Groundwater*). The risk assessment was based on the source-pathway-receptor model (SPR).

In the SPR model, the primary waste water discharge is the source as characterised in table 2. The pathway to groundwater is direct via a swallow hole with the discharge point being located at the Pollandeirce swallow hole. Attenuation is primarily by dilution. The receiving environment varies with the flood cycle and the receptors are the groundwater body (IE_WE_G_0094), designated drinking water (groundwater) protected area, Glenamaddy Turlough SAC site code 000301 and the Sinking river. The turlough is not a direct receptor on the occasion that it goes dry.

Uisce Éireann used two dilution calculations to determine the assimilative capacity for BOD, ortho-phosphate and total ammonia in groundwater (dry turlough) and total phosphorus and total ammonia in the wet turlough. Uisce Éireann revised their 2017 impact assessment in 2020. The calculations have been updated in this report to include total nitrogen and faecal coliforms.

For the groundwater body, a mass balance calculation was used with the following data:

- Groundwater flux is estimated at a mean flow of 35 l/s (estimated for Lettera spring based on water balance calculation and measurements).
- Background concentrations for BOD, total ammonia and phosphorus are the average of licensee monitoring results for the turlough (4 samples in 2020).
- Discharge concentration of 0.5 mg/l ortho-phosphate, 0.5 mg/l total phosphorus and 1 mg/l total ammonia at a flow of 157.5 m³/day (225l/p.e./day).

For the turlough, a simple lake dilution calculation is used where the lake is assumed to be static and the depth of the turlough is taken as 3m and 0.3m (inferred from ordnance survey data). The worst case of 0.3m water depth is considered hereafter.

The estimated mean flow of 35 l/s used in the calculations (Table 5) is considered conservative and acceptable. The licensee assumed the same concentration for total phosphorus and ortho-phosphate in their assessment of impact. Ortho-phosphate is typically 60% of total phosphorus. The use of mean background concentration ensures that the cumulative impact of the discharges with other sources is considered.

The predicted concentration of key parameters in groundwater and in the wet turlough are estimated from these dilution calculations and the results of these scenarios are summarised in Table 5 and Table 66 respectively.

Table 5: Groundwater mass balance calculations @ 35 l/s

Parameter	Background turlough conc. (mg/l)	Proposed conc. (mg/l)	Contribution from discharge (mg/l)	Predicted conc. mg/l)	Measured conc. at Lettera spring (mg/l)	Relevant standard/threshold value (mg/l)
BOD	1.7	10	0.41	2.11	1	1.5 ^{Note 1}
Ortho-phosphate as P	0.009	0.5	0.024	0.033	0.018	0.035 ^{Note 1}
Total Ammonia as N	0.011	1	0.048	0.06	0.011	0.065 - 0.175 ^{Note 1}
Nitrate as N	1.39 ^{Note 2}	15 ^{Note 4}	0.7	2		8.5 (as N) ^{Note 1}
Faecal coliforms no./100ml	34 ^{Note 2}	1000	48	82		1000/100ml ^{Note 3}

Note 1: Relevant standards/ threshold values (expressed as mean) from the European Communities Environmental Objectives (Surface Waters) Regulations 2009 as amended, European Communities Environmental Objectives (Groundwater) Regulations 2010 as amended

Note 2: Average concentration in groundwater at Gortgarrow groundwater monitoring location (2016 -2023)

Note 3: Assuming all TN is Nitrate.

Note 4: European Communities (Quality of Surface Water Intended for The Abstraction of Drinking Water) Regulations, 1989

Table 6: Turlough Dilution Calculation at 0.3m water depth

Parameter	Background turlough conc. (mg/l)	Proposed conc. (mg/l)	Contribution from discharge (mg/l)	Predicted conc. (mg/l)	Relevant standard/threshold value (mg/l)
Total phosphorus as P	0.02	0.5	0.001	0.021	0.025 (mean-Good) ^{Note 1} 0.02 mg/l (mean) ^{Note 2}
Total Ammonia as N	0.011	1	0.002	0.013	0.140 (95%ile - Good) ^{Note 1}

Note 1: The European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended.

Note 2: 2016 NPWS *Conservation objectives supporting document -Turloughs and Rivers with muddy banks with *Chenopodium rubri p.p.* and *Bidention p.p.* vegetation*

Findings

(1) Groundwater chemical status

As previously stated, the 3rd cycle WFD status of the groundwater body and the Sinking river is classed Good. The waste water discharges, in combination with other sources, has not caused a deterioration in WFD status to date. With regard to the groundwater

chemical status, 4 of the 5 tests (No. 2, 3, 4 and 5)² are relevant when considering the impact of waste water discharges on groundwater quality.

The predicted concentration of ammonia, orthophosphate and nitrate are within threshold values for groundwater impacts on surface water (test No. 2), for drinking water impacts (test No. 4) and general quality (test No. 5) (Table 5). Meeting the ammonia standard in groundwater complies with a technical rule.

Table 5 calculations indicate that the waste water discharges contribute greater than 50% of the threshold value for ortho-phosphate and ammonia @ 35 l/s groundwater flux and as a result have a significant influence on water quality. When loadings are annualised, the impact assessment (table 5) is based on an ortho-phosphate and ammonia loading of 28.7 kg/annum and 57.5 kg/annum respectively. To be a category of pollutant input that can be exempted under the Groundwater Regulations, it must be *of a quantity and concentration so small as to obviate any present or future danger of deterioration in the quality of the receiving groundwater*. Therefore, both concentration and load must be controlled. Where the load from the primary discharge is within these concentration and load limits, the groundwater chemical status will not be compromised.

The predicted concentration of total ammonia and total phosphorus in the turlough (at 0.3m) does not exceed the 95%ile total ammonia standard for good status for lakes and marginally exceeds the total phosphorus target specified in the supporting documentation to the conservation objectives (GWDTE test 3). The contribution from the waste water discharges is calculated as 1 µg/l TP at a lower turlough level of 0.3m and is 5% of the 20 µg/l TP target. In view of the fact that the on-going waste water discharges influence the background monitoring data used in the calculation, the waste water discharges are not considered a significant contributor of total phosphorus to the GWDTE status. Further assessment and consideration of the impact on the groundwater dependant qualifying interests of SAC are set out in Section 8 and appendix 2 of this report.

(2) Surface water receptor

In addition to the groundwater impact on surface water test, the predicted concentration of BOD at Lettera spring exceeds the surface water quality standard due to high background levels. The measured value at Lettera meets the standard. As the contribution of the waste water discharges is less than 30% of the relevant standard, it is not considered to be significant contributor of BOD. The average concentration of BOD reported in the last three AERs ranged from 3.5 to 13 mg/l BOD indicating potential for good plant performance.

(3) Designated groundwater drinking water protected area

The Groundwater Regulations designated all groundwater as a protected area for drinking water. The Groundwater Regulations focus on chemical substances and there are no threshold values for microbial pathogens in the drinking water protected area test No. 4. However, drinking water quality standards are specified for microbiological parameters in the European Union (Drinking Water) Regulations 2023 and the aim of Article 7 of the WFD is to avoid deterioration in quality in order to reduce the level of purification treatment required in the production of drinking water. Therefore, microbial pathogens are relevant to the designated groundwater drinking water protected area. In the absence of prescribed standards for waters intended for abstraction of drinking water, regard was had to the standards and categories set out in the European Communities (Quality of Surface Water intended for the Abstraction

² EPA 2024 Methodology for Establishing Threshold Values, and the Assessment of Groundwater Status and Pollution Trends

of Drinking Water) Regulations, 1989 (revoked) to assess the impact of the waste water discharges on the designated drinking water protected area.

EPA and licensee monitoring indicates microbial contamination of groundwater in the wider area and therefore any future use of groundwater as drinking water will require purification. The predicted faecal coliform concentrations (Table 5) remain within A1 category surface water (requiring simple physical treatment and disinfection) and indicates that it does not require an increase in treatment levels above that which is already required in the area. Disinfection of the waste water discharges is necessary to reduce the microbial load in the waste water to achieve near background levels in the groundwater following mixing.

Conclusion on impact assessment and compliance with WFD requirements

The concentration of BOD, ortho-phosphate, total ammonia, total nitrogen and faecal coliforms in waste water need to be limited and controlled in line with the proposed concentrations (table 2) and with an additional limit for a yearly load of ortho-phosphate and total ammonia of 28.7 kg/year and 57.5 kg/year respectively, in order to protect the receiving waters and comply with the objective to limit the input of non-hazardous pollutants into groundwater. In view of the importance of total phosphorus to the turlough and in line with the impact assessment, concentration of TP in waste water is set at 0.5 mg/l as an annual average. Where the primary discharge is managed, operated and controlled in accordance with the foregoing assessment, the primary discharge will not have an adverse effect on water quality.

It is concluded that the primary discharge will not cause a deterioration of the chemical status of groundwater or chemical quality of surface water, will not compromise the maintenance of 'good' status, fulfils the requirements of the RBMP and does not compromise the objectives and standards for associated protected areas. It is concluded that the technical rules when considering authorisation of direct discharges of domestic-type effluent have been met. Based on the foregoing assessment of the primary discharge, tertiary treatment with nutrient removal and disinfection is considered appropriate treatment.

Recommended licence conditions for primary discharge

The licensee stated that the p.e. of the agglomeration to which this application relates is 700. The impact assessment of waste water discharges was carried out based on this p.e. In line with the application made, the recommended licence (RL) specifies a limit of 700 p.e. and requires that the waste water entering the works is domestic waste water only. Uisce Eireann must take immediate measures to comply with these requirements.

The ELVs set in *Schedule A: Discharges & Discharge Monitoring* of the RL for the primary discharge are established, in accordance with the combined approach, for the purpose of achieving the environmental objectives for groundwater, surface water, and protected areas for the water body into which the discharge is made.

The technical rules describe domestic-type effluent as not typically containing hazardous substances. However, the rules acknowledge that it's not possible to completely prevent such inputs and that an exemption may apply where the input of hazardous substance is not environmentally significant. To meet this requirement of the technical rules and in line with the 2014 guidance, the RL limits the concentration of relevant hazardous substances in the primary discharge to less than its Minimum Reporting Value or limit of detection as set out in Appendix C of the EPA 2011 *Guidance on the Authorisation of Discharges to Groundwater* or specified in the *WHO 2022 Guidelines for Drinking Water Quality, Fourth edition incorporating the first and second addenda*. The RL requires a risk assessment to select appropriate hazardous substances for monitoring.

For the purposes of monitoring effects on the environment and in line with the technical rules, *Schedule B: Ambient Monitoring* of the RL specifies monitoring of chemical parameters at Lurgeen bog inflowing stream, the turlough and the Lettera spring. In line with the technical rules and the 2011 EPA *Guidance on the Authorisation of Discharges to Groundwater*, compliance values based on groundwater/ surface water standards are specified in the RL for the turlough (aGW1a) and Lettera (aGW1d) monitoring locations. An exceedance of a compliance value (annual average concentration) will be treated as an incident under the licence and the RL requires a response programme to be implemented.

To address the effects of climate change, the RL requires a climate change adaptation plan to be prepared and submitted within 24 months with annual reporting on implementation as part of the AER.

Storm Water Overflows (SWO)

The Glenamaddy sewer is a combined network collecting surface water as well as waste water and requires a storm water overflow device to relieve the system during periods of heavy rain. The upgrade works involved the provision of a pumping station and storm water storage for 4 hours, as well as screening of waste water when storage capacity is exceeded prior to discharge to the swallow hole.

The licensee carried out time series analysis of flows that predicted at least 96% of total annual flow generated passes through to full treatment with a predicted spill event range of 1 to 8. The licensee states that the storm water overflow is designed to permit no more than 20 % of storm water run-off to be spilled and complies with DoECLG 'Procedures and Criteria in Relation to Storm Water Overflows', 1995.

Given the SWO design and the available dilutions during wet weather, the discharges from the SWO are not considered environmentally significant. The RL requires compliance with the procedures and criteria for storm water overflows, flow monitoring at the SWO and sets a limit of 20 % of the annual volume of waste water entering the works to discharge via the storm water overflow.

These limits and controls are for the purpose of compliance with the technical rules for direct discharges and not to compromise the environmental objectives for groundwater, surface water, and associated protected areas.

Unintended or accidental discharges

The measures to prevent unintended discharges include a duty and standby pump at the pumping station, storage in the event of power failure and a facility to connect a mobile generator in the event of power failure.

The RL requires the following:

- An operation and maintenance programme for all plant and equipment.
- An annual statement of measures to minimise any environmental damage associated with discharges from the waste water works following anticipated events or accidents/incidents.
- In the event of an incident or other malfunction of critical equipment, alarm activation must trigger a notification to the licensee as soon as practicable.
- Provide details on corrective action and preventative measures taken following the occurrence of any incidents associated with the waste water works.
- Maintain corrective action and emergency response procedures to minimise the effects of any emergency on the environment.
- Implement a programme of improvements.

8. Appropriate Assessment

Appendix 2/Table 8 lists the European Sites assessed, their associated qualifying interests and conservation objectives along with the assessment of the effects of the waste water discharges on the European Sites.

A screening for Appropriate Assessment was undertaken to assess, in view of best scientific knowledge and the conservation objectives of the sites, if the waste water discharges, individually or in combination with other plans or projects are likely to have a significant effect on any European Site. In this context, particular attention was paid to the European Sites at Lough Lurgeen Bog/Glenamaddy Turlough SAC (Site Code: 000301) and Lough Corrib SAC (Site Code:000297).

The waste water discharges are not directly connected with or necessary to the management of any European Site and the Agency considered, for the reasons set out below, that it cannot be excluded, on the basis of objective information, that the waste water discharges, individually or in combination with other plans or projects, will have a significant effect on any European Site and accordingly determined that an Appropriate Assessment of the waste water discharges was required.

This determination has been made in light of the following reasons:

- The Glenamaddy discharge is directly into the Lough Lurgeen Bog/Glenamaddy Turlough SAC and in close proximity to the Lough Corrib SAC. The contribution from the Glenamaddy discharges, in combination with other activities within the catchment may have implications for the qualifying interests of the SAC.
- The Glenamaddy discharge is considered as a direct discharge to ground.

A Natura Impact Statement was received by the Agency on 22/06/2017 and updated on 04/11/2020.

An Inspector's Appropriate Assessment has been completed and has determined, based on best scientific knowledge in the field and in accordance with the European Communities (Birds and Natural Habitats) Regulations 2011 as amended, pursuant to Article 6(3) of the Habitats Directive, that the waste water discharges, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site, in particular Lough Lurgeen Bog/Glenamaddy Turlough SAC (Site Code: 000301) and Lough Corrib SAC (Site Code:000297), having regard to their conservation objectives and will not affect the preservation of these sites at favourable conservation status if carried out in accordance with this recommended licence and the conditions attached hereto for the following reasons:

- The GWDTE-Glenamaddy Turlough (SAC000301) groundwater body and the Sinking River are classed at Good status (2016-2021). The groundwater body status assessment includes the groundwater dependant terrestrial ecosystem test.
- The waste water undergoes tertiary treatment prior to discharge and the storm water overflow is designed to comply with the DoECLG *Procedures and Criteria in relation to Storm Water Overflows* (includes screening and storage). These improvements significantly reduce the quantity of nutrients and organic matter being discharged.
- The findings and conclusion of the waste water impact assessment is that waste water discharges, in combination with other sources, do not contribute significantly to the water quality of the turlough at low and high water levels in terms of the key parameter, total phosphorus.
- A condition of the licence limits the population equivalent of the agglomeration to 700.
- The ELVs for the waste water discharges have been established in accordance with the combined approach for the purposes of not compromising the objective of Good status nor the water quality objectives and standards for the

water dependant qualifying interests of these European sites. In particular, an ELV is set to control the concentration of total phosphorus in the primary discharge.

- Conditions attached to the licence specify controls and monitoring of waste water discharges.
- Conditions attached to the licence require monitoring of ambient water quality and compliance values to be met.
- A condition attached to the licence requires the licensee to take such measures as necessary to ensure that no deterioration in the quality of the receiving water shall occur as a result of the discharge.
- Conditions attached to the licence require measures to prevent and limit the consequences of unintended discharges and reduce the waste water load entering the works.

Regard has been had to the submissions received concerning Appropriate Assessment as detailed in the Submissions section of this report.

In light of the foregoing reasons no reasonable scientific doubt remains as to the absence of adverse effects on the integrity of those European Sites at Lough Lurgeen Bog/Glenamaddy Turlough SAC (Site Code: 000301) and Lough Corrib SAC (Site Code:000297).

9. EU Directives and National Regulations

In considering the application and the drafting of the recommended licence, regard was had to the requirements of Regulation 6(2) (a) to (g) of the European Union (Waste Water Discharge) Regulations 2007 as amended and notably the EU Directives and Regulations set out in Table 7.

Table 4: EU Directives/Regulations

Directives/Regulations
Urban Waste Water Treatment Directive [91/271/EEC] and Articles 4, 7 and 9 of, and the Second, Fourth and Fifth Schedules to, the Urban Waste Water Regulations 2001 as amended
Water Framework Directive [2000/60/EC] and EC Environmental Objectives (Surface Water) Regulations 2009 (S.I. No. 272 of 2009), as amended
Groundwater Directive 2006/118/EC and EC Environmental Objectives (Groundwater) Regulations 2010 as amended
The Drinking Water Directive [2020/2184]
Environmental Impact Assessment Directive (2011/92/EU as amended by 2014/52/EU)
Habitats Directive [92/43/EEC] & Birds Directive [79/409/EC] and European Communities (Birds and Natural Habitats) Regulations 2011 as amended

10. Submissions

While the main points raised in the three submissions are briefly summarised in the table below, the original submission should be referred to at all times for greater detail and expansion of particular points.

Submission No. 1 – Department of Arts, Heritage, Regional, Rural and Gaeltacht affairs

The Department made observations in relation to nature conservation to assist the Agency in meeting nature conservation obligations. The Department notes that the discharge point is on lands within the ownership of the Department and acknowledge that the new WWTP will be an improvement and notes constraints in finding an alternative discharge location.

The Department refer to the site-specific conservation objectives dated 04/0/4/16 and the objective for the qualifying interest, turlough, is to restore the favourable conservation condition of this habitat within the SAC. The Department note that attributes of particular relevance in this case of discharges of treated effluent to the swallow hole are:

- Soil nutrient status: N and P
- Water quality: nutrients, colour, phytoplankton, epiphyton
- Vegetation composition: area of vegetation communities.

Having considered the NIS submitted with the application, the Department considered that it was insufficient in data and information, and that a January survey was inappropriate. The Department set out 6 points in relation to the NIS summarised as follows:

1. Concern that the inflowing stream from Lough Lurgen was not monitored for total phosphorus contrary to Department advice.
2. Incorrect in the limits of detection for phosphorus reported and inconsistency in the units of measurement.
3. Inconsistency in the use of parameters that relate to phosphorus.
4. In combination effects on the SAC arising from diffuse pollution do not appear to have been considered.
5. Derivation of dilution factors was not set out.
6. The impact of phosphorus on the naturally occurring background level, and not the levels that exist at present, that needs to be assessed in the context of the site's conservation objectives, noting that this is to restore favourable conservation condition in the case of the Annex I priority habitat, Turloughs.

With respect to Appropriate Assessment, the Department advised that it is required to take account of the NIS (adequacy and scientific content) and submissions regarding the likely effects on European sites. The Department highlights that an Appropriate Assessment cannot have lacunae, must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of a project on the European site concerned. These standards, and best scientific knowledge, should underpin the final analysis and the EPA's determination made regarding the implications of the proposed development for the conservation objectives and integrity of the European site, Lough Lurgen Bog/Glenamaddy Turlough SAC. Where an existing unfavourable scenario is in existence and will be improved, this improvement must be analysed with respect to progress towards the achievement of the conservation objectives of the site.

Response:

On foot of this submission, the Agency required the licensee to update the NIS and address the submission made by the Department. The updated NIS was submitted on the 04/11/2020 which addressed the Departments concerns on insufficiency in data and information. The licensee noted that the Lough Lurgen bog stream could not be accessed for sampling and that the in combination effects on the SAC was considered in the revised NIS through the use of turlough sampling data which takes account of existing background pressures.

In carrying out the inspector's Appropriate Assessment, the Department's submission was considered and the findings and conclusion of the Appropriate Assessment are set out in appendix 2 and section 8 of this report.

Submission No. 2 – Michael Fitzmaurice T.D. (26/10/2017)

In his submission, Deputy Fitzmaurice set out that the new treatment plant would be a huge change to the area as it will eliminate raw sewage to at least 96% perfect. He notes that Uisce Éireann have restraints in budget. Deputy Fitzmaurice is concerned that the expansion of the town would be stifled and the new plant put in jeopardy due to talk of being forced to go miles with discharge towards a river. He prefers the option of discharging to the turlough if the sewage is treated to the best possible standards and it stops outrageous spending of money sending pipes miles further. He hopes the EPA do not hinder a new treatment plant with unrealistic and unaffordable stipulations in the discharge licence.

Response:

Since Deputy Fitzmaurice submission, a new WWTP has been built and operating in Glenamaddy with a capacity to treat 700 p.e. The technical rules for the authorisation of direct discharges to groundwater requires the consideration of alternatives including discharges to surface water. This assessment was carried out by Uisce Éireann and I am satisfied that the proposal to discharge directly to groundwater is the most technical feasible and cost-effective option for the discharge of domestic-type waste water. The controls and limitations set out in the RL are in line with legislative requirements as set out in this report.

Submission No. 3 - Peter Sweetman on behalf of Wild Ireland Defense CLG (20/07/2020)

In his submission, Mr. Sweetman states the test for Appropriate Assessment Screening is in case law and refers to and includes an extract from the 2014 Kelly v An Bord Pleanála case. He states that it is necessary to perform an Appropriate Assessment according to the interpretations of the Directive by the CJEU (the EPA does not have the right to deviate from these) and that any Environmental Impact Assessment must also be carried out according to the interpretations of the CJEU.

Response:

A screening for Appropriate Assessment was undertaken and it was determined that an Appropriate Assessment of the waste water discharges was required. An Appropriate Assessment has been completed in accordance with the European Communities (Birds and Natural Habitats) Regulations 2011 as amended, pursuant to Article 6(3) of the Habitats Directive.

The Agency is directly applying the EIA Directive and has carried out EIA screening. In accordance with the EIA Screening Determination (dated 03 December 2020), the Agency determined that EIA, as respects the matters that come within the functions of the Agency, is not required.

11. Cross Office Liaison

I consulted with OEA Scientific Officer in relation to the technical rules for direct discharges to groundwater and the Tier 3 technical assessment (hydrogeological).

In respect of the current licence D0379-01, ORM have a compliance investigation open regarding the cessation of discharges to groundwater since 2016.

12. Charges

The RL requires that the licensee shall pay to the Agency, such sum as the Agency from time to time determines is reflective of the monitoring and enforcement regime being proposed for the agglomeration.

13. Recommendation

In considering an application for the review of a licence, the Agency shall have regard to:

- the requirements of Regulation 6(2) of the European Union (Waste Water Discharge) Regulations 2007 as amended.

In deciding on an application, the Agency shall:

- set emission limit values and timeframe(s) in which these are to be achieved with the aim of achieving environmental objectives for the groundwater body into which the discharges are or will be made including any objectives and standards established for associated protected areas;
- have regard to the conclusions of the Appropriate Assessment; and
- has regard to submissions received in accordance with these Regulations.

The Agency shall not grant a revised licence which in the opinion of the Agency will cause a deterioration in the status of the receiving groundwater body or compromise the achievement of objectives or environmental quality standards.

In setting emission limit values for the discharge, the Agency shall ensure that the discharge is controlled according to the combined approach where the limits are established on the basis of the stricter of either or both, the limits and controls required under the Urban Waste Water Regulations, and the limits determined under statute or Directive for the purpose of achieving the environmental objectives established for surface waters, groundwater or protected areas for the water body into which the discharge is made.

In accordance with Section 15 of the Climate Action and Low Carbon Development Act 2015 as amended, the Agency shall perform its functions in a manner consistent with the Department of Housing, Planning and Local Government *Water Quality and Water Services Infrastructure – Climate Change Sectoral Adaptation Plan*.

I am satisfied, on the basis of the information available, that the conditions of the Recommended Licence (RL) give effect to the requirements set out above and comply with the technical rules when considering authorising direct discharges to groundwater of domestic-type waste water effluent. Subject to compliance with the conditions of this RL, any discharges from the agglomeration served by the waste water works will comply with and will not contravene any of these requirements.

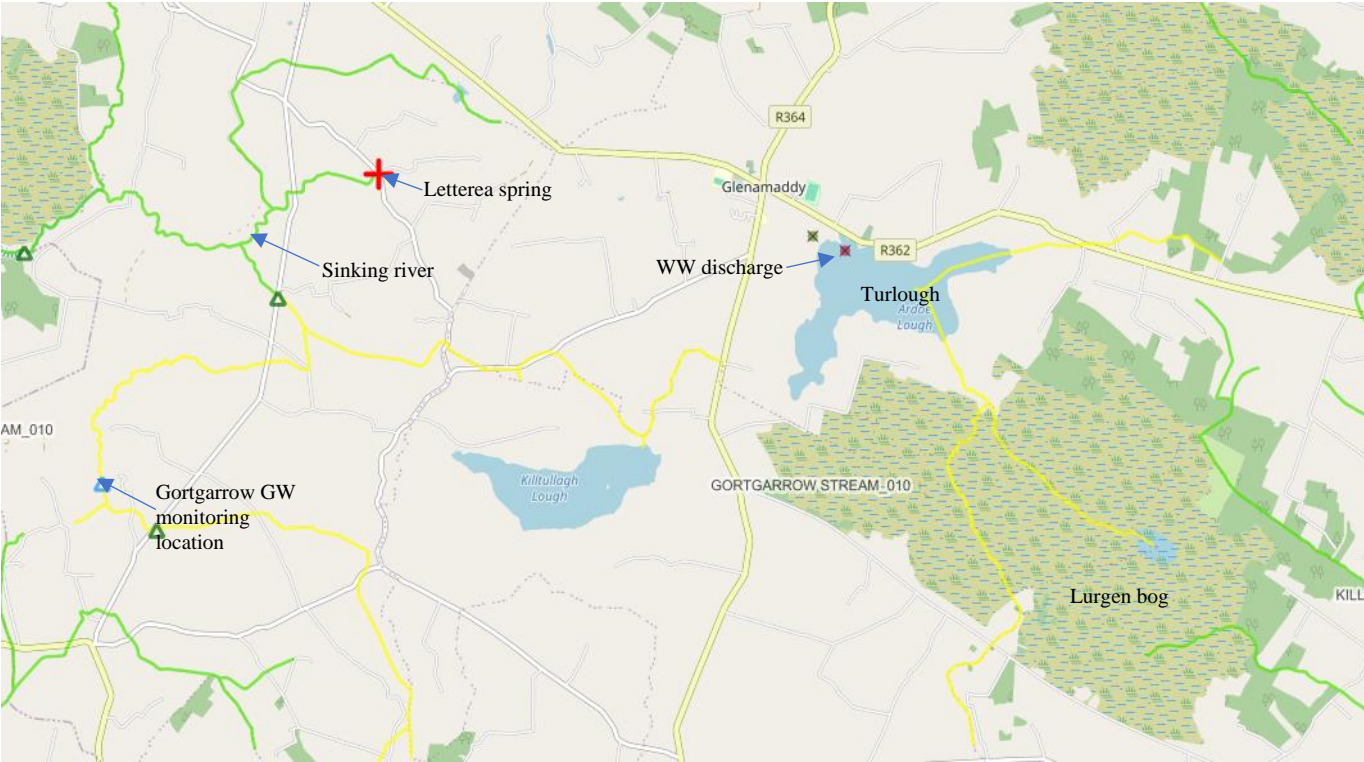
I recommend that a Final Licence be granted subject to the conditions and for the reasons as set out in the attached Recommended Licence.

Signed



Ann Marie Donlon
Inspector
Water, Energy and Business Support Programme

Appendix 1: Map showing location of Glenamaddy waste water discharge location and receiving environment.



Appendix 2 Appropriate Assessment

Table 8: Assessment of the effect of discharges on European sites.

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives
0003 01	Lough Lurgeen Bog/Glenamaddy Turlough SAC	Habitats 3180 Turloughs* 3270 Rivers with muddy banks with Chenopodion rubri p.p. and Bidention p.p. vegetation 7110 Active raised bogs* 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the Rhynchosporion	NPWS (2016) Conservation Objectives: Lough Lurgeen Bog/Glenamaddy Turlough SAC 000301. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

Assessment

Waste water discharges to groundwater can lead to impacts on groundwater quality. Water quality supports the natural structure and functioning of water dependant qualifying interests of this European Site. The turlough is an Annex I priority habitat and is groundwater dependant terrestrial ecosystem (GWDTE). The conservation objective is to restore the favourable conservation condition of the turlough and maintain the favourable conservation condition of rivers with muddy banks with *Chenopodion rubri p.p.* and *Bidention p.p.* vegetation.

With respect to water quality, GWDTE test forms part of the determination of groundwater status under the Groundwater Regulations. The current status of the receiving groundwater body is classed Good. The GWDTE assessment is based on information provided by the NPWS on the condition of the qualifying interest and an assessment of the background nutrient concentrations in groundwater.

Turloughs behave like lakes and the Surface Water Regulations specifies quality standards for total phosphorus (TP) and total ammonia for lakes. The 2016 *NPWS Conservation objectives supporting document -Turloughs and Rivers with muddy banks with Chenopodion rubri p.p. and Bidention p.p. vegetation* sets a target to maintain/restore average annual TP concentration of $\leq 10 \mu\text{g/l}$ TP, or $\leq 20 \mu\text{g/l}$ TP, as appropriate. The document states that based on a 2005 assessment the appropriate target is $\leq 20 \mu\text{g/l}$ TP for Glenamaddy turlough. In view of the groundwater quality in the region and measured in the turlough, the Good WFD status of the receiving groundwater body and the quality of inflowing streams, the target TP concentration of $\leq 20 \mu\text{g/l}$ as annual average is considered appropriate currently.

There is evidence of nutrient enrichment on the inflowing stream to the turlough. The low permeability of the catchment means the turlough water quality is influenced by

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives
<p>overland flow from inflowing streams which also influences the humic colour of the water as observed at the Lettera spring.</p> <p>Nutrients in water may affect soil nutrient status, phytoplankton biomass (as chlorophyll a) and epiphyton biomass. Soil nutrient status affects the vegetation composition. Controlling the total phosphorus levels in water is key to controlling other water quality parameters (phytoplankton and epiphyton biomass).</p> <p>A 2017 botanical survey did not highlight differences between two transects, one of which was close to the discharge location and did not identify any major changes in vegetation since 1992 survey. Both nutrient sensitive and tolerant species were present. Consequently, a water-soil fertility relationship hasn't been established for this site. A further re-survey in June 2020 could not proceed due to high water levels. The licensee proposed vegetation monitoring during low water levels in the turlough.</p> <p>The waste water from the Glenamaddy agglomeration has been discharging to the swallow hole in the turlough since the 1950's. In 2020 the treatment plant was upgraded and waste water is now treated to tertiary standards with nutrient removal and the storm water overflow is designed to comply with the DoECLG 'Procedures and Criteria in Relation to Storm Water Overflows' (includes screening and storage). The nutrient contribution from waste water discharges has significantly reduced (from ~ 10 mg/l to 0.5 mg/l TP annual average) with the upgrade to the WWTP in 2020. The improvement from primary to tertiary treatment also reduces the quantity of organic matter (suspended solids) being discharged by an order of magnitude that previously may have artificially elevated soil nutrient status in the turlough.</p> <p>Cumulative impact assessment set out in section 7 concluded that waste water discharges do not contribute significantly to the water quality of the turlough at low and high water levels. Therefore, the waste water discharges, in combination with other sources, are not likely to adversely affect water quality, soil nutrient status, and vegetation composition that support the structure and functioning of the turlough habitat. It is not considered necessary to monitor vegetation composition when the turlough is dry or nearly dry as part of this recommended licence.</p> <p>In view of the importance of total phosphorus to the turlough and in line with the impact assessment, concentration of TP in the primary discharge needs to be controlled with a limit of 0.5 mg/l TP annual average.</p> <p>The RL specifies ELVs which were established to ensure that waste water discharge will not compromise the achievement of the objective and standards for this protected area and includes concentration and load limits for orthophosphate and total ammonia. The RL requires all storm water overflows comply with criteria set out in the DoECLG 'Procedures and Criteria in Relation to Storm Water Overflows', 1995 and sets a limit of 20% of annual waste water generated to discharge via the storm water. Condition 3.3 of the RL requires the licensee to take such measures as necessary to ensure that no deterioration in the quality of the receiving waters shall occur as a result of the discharge. Compliance with these controls and limits will contribute to improvements</p>			

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives
<p>in water quality within the turlough. The RL also requires ambient water quality monitoring and sets compliance values for the turlough.</p> <p>There is the potential for accidents and emergency situations arising at a waste water works resulting in partially treated or untreated waste waters discharging to the receiving waters. The overloading of the treatment plant may also result in the breach of ELVs and the discharge of elevated levels of polluting organic matter. Section 6 and 7 of this report consider accidental discharges and overloading. The RL requires measures to prevent and limit the consequences of unintended discharges and limits the population equivalent of the agglomeration to 700 and restricts waste water entering the works to domestic waste water.</p>			
0002 97	Lough Corrib SAC	<p>Habitats</p> <p>3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)</p> <p>3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea</p> <p>3140 Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.</p> <p>3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation</p> <p>6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)</p> <p>6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)</p> <p>7110 Active raised bogs*</p> <p>7120 Degraded raised bogs still capable of natural regeneration</p> <p>7150 Depressions on peat substrates of the Rhynchosporion</p> <p>7210 Calcareous fens with Cladium mariscus and species of the Caricion davallianae*</p> <p>7220 Petrifying springs with tufa formation (Cratoneurion)*</p> <p>7230 Alkaline fens</p> <p>8240 Limestone pavements*</p> <p>91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles</p> <p>91D0 Bog woodland*</p>	<p>NPWS (2017) Conservation Objectives: Lough Corrib SAC 000297. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.</p>

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives
		Species 1029 Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>) 1092 White-clawed Crayfish (<i>Austropotamobius pallipes</i>) 1095 Sea Lamprey (<i>Petromyzon marinus</i>) 1096 Brook Lamprey (<i>Lampetra planeri</i>) 1106 Salmon (<i>Salmo salar</i>) 1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>) 1355 Otter (<i>Lutra lutra</i>) 1833 Slender Naiad (<i>Najas flexilis</i>) 6216 Slender Green Feather-moss (<i>Hamatocaulis vernicosus</i>)	

Assessment

Waste water discharges to groundwater can lead to impacts on the surface water quality of the Sinking river (Sinking_10). Water quality supports the natural structure and functioning of water dependant qualifying interests of this European Site that occur in the Sinking river (water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation, White-clawed Crayfish, and Atlantic Salmon).

The conservation objective of these qualifying interests is to maintain the favourable conservation condition. The water quality target varies among the qualifying interests and is at least Q3-4, Q4 or WFD Good status. The 3rd cycle WFD status of the Sinking river is Good and the associated protected area of Lough Corrib SAC is reported in the WFD app as having met its environmental objective. In 2024 the Q value at bridge 3km upstream of Dunmore bridge was recorded as Q4.

The upgraded treatment plant and network in place since 2020 has significantly reduced nutrient load discharged to the receiving groundwater and the Sinking river receptor.

Cumulative impact assessment set out in section 7 concluded that waste water discharges do not compromise the achievement of environmental objectives for the Sinking river.

The ELVs set in *Schedule A: Discharges & Discharge Monitoring* of the RL for the primary discharge are established, in accordance with the combined approach, for the purpose of achieving the environmental objectives for groundwater, surface water, and protected areas for the water body into which the discharge is made. The RL also requires ambient water quality monitoring and sets compliance values for the Lettera spring.

There is the potential for accidents and emergency situations arising at a waste water works resulting in partially treated or untreated waste waters discharging to the receiving waters. The overloading of the treatment plant may also result in the breach

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives
<p>of ELVs and the discharge of elevated levels of polluting organic matter. Section 6 and 7 of this report consider accidental discharges and overloading. The RL requires measures to prevent and limit the consequences of unintended discharges and limits the population equivalent of the agglomeration to 700 and restricts waste water entering the works to domestic waste water.</p>			

Appendix 3 Acknowledgement and Attribution:

This report uses map imagery as set out in **Table 9** below.

Table 9: Acknowledgement and attribution of the imagery used from EPA Maps in Appendix 1 of this report.

Map Source	Link to Source	Data Provider	Usage Licence	Attribution Statement	Location in Report
EPA Maps	https://gis.epa.ie/EPAMaps/	OpenStreetMap®	AhareAlike 2.0 Generic (CC BY-SA 2.0)	Data is available under the Open Database Licence	Appendix 1