Inspector's Report
ABP-322055-25

Development	Application for a discharge licence under section 4 of the Local Government (Water Pollution) Act 1977 and Regulations 1978 as amended.
Location	Kippure Lodge & Holiday Village, Kippure Estate, Manor Kilbride, Blessington, Co. Wicklow.
Planning Authority	Wicklow County Council
Planning Authority Reg. Ref.	L02-24
Applicant(s)	Seefin Events Unlimited Company, Kippure Estate, Manor Kilbride, Blessington, Co. Wicklow
Type of Application	Appeal under Section 8 Local Government (Water Pollution) Act 1977 and 1990 as amended
Planning Authority Decision	Refuse
Inspector/Scientist	Finbarr Quigley

Date of Site Inspection	1st July 2025.
Inspector	Finbarr Quigley

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Appendix 1 – Form 1: AA Screening

Appendix 2 – WFD Impact Assessment Stage 1: Screening

1.0 Scope of Report

1.1.1. This report can be read in tandem with the following files; ABP-322363-25, ABP-321463-24 and RL27.320327. This report to the Commission is a written record of my review and examination of an appeal under Section 8(1)(a) of the Local Government (Water Pollution) Act, 1977 as amended. This report relates solely to the issue of the suitability or otherwise of the proposed wastewater treatment system and discharge to groundwaters and any likely impacts on groundwaters, surface waters or water dependant habitats.

2.0 Site Location and Background

2.1. Location

2.1.1. The site is located at Kippure Lodge, Kippure, Manor Kilbride, Blessington, County Wicklow, W91 VE04. The site is located approximately 6.3km southeast of the village of Kilbride and approximately 6.5km southwest of the village of Glencree, at an elevation of approximately 280 – 295 mAOD and is approached by the Regional R759 road which lies to the north of the site.

2.2. Background

2.2.1. The existing development on the site historically consisted of a holiday resort, which specialised in hosting weddings and events as well as having an outdoor activity centre. The site also provided the option of both accommodation and meals to guests. This development was served by a wastewater treatment system which discharged treated wastewater to a soil polishing filter and in turn discharged to the *in-situ* subsoil by gravity. The original soil polishing filter was installed in 2000 and was 880m^2 in area. This existing treatment system and polishing filter was located approx. 400m west of the holiday resort and 150m north of the river Liffey.

2.2.2. In 2017, Wicklow County Council granted a Licence under section 4 of the Local Government (Water Pollution) Act 1977 as amended to the owners of the site which permitted the discharge of 32m^3 per day of treated wastewater into soil polishing filters and in turn to the *in-situ* subsoil. In 2018, a second soil polishing filter was installed covering an area of approximately 720m^2, meaning a total filter area of 1,600m^2 was present on the site. This large soil polishing filter was installed to cater for the discharge of 32m^3 per day at a loading rate of 20 litres per m^2 per day. This equated to a population equivalent of 213 (p.e.) in 2018. The treatment system (Stingray Environmental Sewerage Treatment Plant) serving the site was designed to cater for 300 p.e. This second polishing filter was installed adjacent to the original filter approx. 150m north of the river Liffey.

2.2.3. In 2020 the site was sold and in 2022, the site use changed and since then has been used as an accommodation facility under the International Protection Accommodation Service (IPAS) system. The hydraulic loading to the wastewater treatment system subsequently increased and was measured to be an average of 46.5m^3 per day in April 2023 with peak daily values up to a maximum of 53.9m^3 per day which is significantly more than the permitted loading rates of 32m^3 per day which the current discharge licence permits.

2.3. Site Inspection

2.3.1. On the 1st July 2025 I visited the site at Kippure Lodge & Holiday Village for the purposes of inspecting the existing wastewater treatment plant, the existing soil polishing filters, the location of the proposed soil polishing filter, the groundwater monitoring boreholes and the river Liffey and Athdown Brook surface water receptors. During the inspection several photographs were taken which are available in a separate document (P322055) which accompanies this report.

2.3.2. I noted the location where the new polishing filter is proposed appears to be dry and has a suitable slope for the installation of a soil polishing filter. The land to the south and southwest of this area slopes towards the river Liffey and Athdown Brook.

2.3.3. While carrying out my inspection, a 20m^3 capacity tanker truck was observed to be in the process of removing raw wastewater from the treatment system as described in the application documents and discussed later in this report.

2.3.4. I inspected the existing soil polishing filter and did not observe any breakout of effluent on the surface of the ground. I did note an area (the approximate location is identified on Figure 6.1) where break out of effluent is likely to have taken place in the past. This was evident from the lack of grass growth and the presence of wood chip used to cover the impacted site during the cleanup operation. It was also noted that this location is directly upgradient from the groundwater monitoring borehole GW3 where the elevated ammonia readings were recorded. I noted that the land between the breakout area and the borehole sloped downhill in a channel which indicated that any effluent pooling on the surface of the ground could flow directly towards the borehole GW3.

I inspected the river Liffey and Athdown Brook stream adjacent to the site and did not note any visual evidence of eutrophication or pollution of any kind in either watercourse.

3.0 **Application for a discharge licence**

3.1.1. On 12th December 2024 Seefin Events Unlimited Company (hereafter referred to as the appellant) applied to Wicklow County Council for a Discharge Licence under section 4 of the Local Government (Water Pollution) Acts, 1977 & 1990 as amended.

3.1.2. The appellant confirmed that there was an existing discharge licence (reference number WPL 111) in existence for the site. They also identified that the sector from which the proposed discharge would be generated was 'Other' with the description 'Accommodation Centre' provided. The appellant confirmed that approx. 45-55m^3 of groundwater is sourced daily from an on-site well and is used for drinking water, washing (sinks, showers, baths, washing machines, dishwashers), supplying toilets and food preparation. The appellant stated that the wastewater being generated is of the domestic type.

3.1.3. The details of the proposed discharge volume were also provided by the appellant. The population equivalent was given as 367. This figure was calculated from the maximum recorded daily flow to the existing treatment system of 55m^3 and 150L per person per day (55,000L/150L = 367 p.e.). The daily discharge flow was expected to be relatively consistent dependent on occupancy of the facility.

3.1.4. The proposed wastewater treatment system would be an O'Reilly Oakstown 600 p.e. Treatment Plant discharging to a soil polishing filter with a total area of 3,000m^2 (1,400m^2 additional to that in existence). The discharge type was described as an indirect discharge via percolation area, soakage pit, filter system or other method.

3.1.5. The appellant provided details on the treatment system maintenance, plant failure detection arrangements and sludge level management procedures. The appellant identified that weekly visual checks, monthly operational checks and biannual and annual checks on the tanks, sludge levels, suction hose, blower unit and blower unit diaphragms would be undertaken as part of routine maintenance. Potential failures of the plant would be identified using the 'Fault Finding' protocol sheets for the weekly visual and monthly operational checks. Desludging would be carried out annually and sludge levels would be visually assessed monthly and using a 'sludge judge' every six months.

3.1.6. The appellant identified that samples of the treated wastewater would be sampled every 2 months and analysed for the following parameters: pH, Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Ammonia (NH_3 - N), Ortho-phosphates, Suspended Solids, Nitrate and Nitrite. These samples would be collected from an existing sampling chamber down-gradient of the treatment system outfall manhole which allows sampling of the wastewater prior to discharge into the soil polishing filters. Measurement of flows of wastewaters into the proposed treatment plant (as per the current arrangement) would be carried out using a flow sensor.

3.1.7. The appellant identified that the use of level and pressure sensors within the wastewater treatment plant would be the method of ensuring appropriate operation of the plant within the design flows. The appellant provided contact details for a person responsible for responding to unexpected incidents and advised that a project management team consisting or representatives from O'Reilly Oakstown and Mitchell Environmental Ltd. would be in place for the continual operation of the plant. Details of a proposed Operational Service Contract for the operation/maintenance of the treatment plant were also provided.

3.1.8. The appellant provided details on the location of the discharge and advised that the discharge would be into the Kilcullen Groundwater Waterbody (IE_EA_G_003) which

was described as ‘Good’ status for the purposes of Water Framework Directive assessment. The appellant indicated that the receiving water was not located within the boundary of a Special Area of Conservation or a Special Protection Area. They also indicated that no Groundwater Dependent Terrestrial Ecosystem (GWDTE) was located within 1km of the discharge.

3.1.9. The appellant provided details on the soil & bedrock, aquifer category and vulnerability, topography & groundwater flow direction and depth to water table. They also provided groundwater background concentrations for 18 parameters from samples taken either on 7th March 2024 or subsequent investigate sampling episodes the results of which will be discussed later in this report.

3.1.10. The appellant provided details of a Tier 3 Assessment as specified in the guidance document “Licensing of discharges to Groundwaters by Local Authorities” prepared by the Local Authority Services National Training Group, 2011. This type of assessment is required where greater than 20m^3/day of domestic wastewater is proposed to be discharged into groundwaters. The Tier 3 Assessment involved the detailed description of the following site characteristics: subsoil characterisation and classification to bedrock depth, subsoil permeability, groundwater characteristics (flow direction, aquifer type, hydraulic connectivity, background quality, quantification of interaction between groundwater and surface water) and a detailed conceptual model of the site. The assessment along with a series of site characterisation reports was prepared by Dr. Robbie Meehan, Consultant Geologist (EurGeol) and the findings will be discussed later in this report.

3.1.11. The application also included a report prepared by Mitchell Environmental Ltd. on the design of the proposed wastewater treatment plant which will be discussed later in this report.

4.0 Licensing Authority Decision

4.1. Prescribed Bodies

4.1.1. The application was referred to the statutory consultees on the 28th January 2025.

4.1.2. On 6th February 2025 Inland Fisheries Ireland (IFI) made a submission (by email) to Wicklow County Council in relation to the application. Their submission made the following points:

- Concerns were expressed in relation to the assimilative capacity in the groundwater body beneath the infiltration area. The submission referred to historic monitoring results which indicated elevated ammonia levels in groundwater downstream of the infiltration area. IFI stated that the infiltration area was located within high permeable gravels above granite bedrock, in an area of high vulnerability close to the river Liffey, which is a salmonid waterbody, currently rated as having good ecological status. The submission stated that "all these factors pose a significant risk to water quality within the river Liffey if operational standards are not always at 100% or, if there have been inadvertent errors in the design of the WWTS".
- The licence application was within an SAC and adjacent to an SPA which may require AA screening which appeared to be absent from the application.
- This submission also made some general observations relating to 'stand-alone' wastewater treatment facilities subject to licensing being 'problematic' in maintaining standards and are 'often non-compliant with the discharge licence'. IFI stated that the primary cause of non-compliances is due to poor maintenance practices, lack of knowledge by the owners in operating complex biological systems and change in ownerships of facilities and the inconsistency that sometimes arise from such events.
- IFI recommended that historic data, performance and operation of the existing WWTS should be considered in the licence application, and that appropriate standards and operational conditions should be prescribed by the licensing authority to protect the aquatic environment if they are to consider granting the licence.

4.2. Licensing Authority Reports

4.2.1. I refer to a report prepared by Executive Scientist, Wicklow County Council and sent to Senior Executive Chemist, Wicklow County Council dated 10th February 2025. This report was accompanied by an excel workbook which is used by licensing

authorities to calculate the resulting concentrations of contaminants from onsite wastewater treatment systems in groundwater and nearby surface water resources. This workbook was developed by the EPA in 2012 and was designed to be used in conjunction with the 'Guidance on the Authorisation of Discharges to Groundwater' document published by the EPA in 2011. The version of the workbook submitted was edited by the Executive Scientist to take account of updated research findings on load reduction values for BOD, Ammonia and Nitrate.

4.2.2. Using the data provided by the appellant in the application, the excel workbook calculated that the discharge from the polishing filters, travelling through the groundwaters and recharging into surface waters would use between 0-10% of the available 'headroom' (to achieve High Status as specified in regulations or otherwise) for the following parameters in the river Liffey adjacent to the site; BOD, COD, Suspended Solids, Ortho-P (MRP), Ammonia, Total Oxidised Nitrogen (TON) and Nitrite. This was based on several assumptions including:

- Background groundwater concentrations used results from the upgradient boreholes only
- Worst case scenario interaction between the groundwater and river Liffey assumed no further attenuation of parameters following the polishing filter and subsoil.
- Assumed effluent quality is consistent with wastewater treatment manufacturer specifications.
- Assumed effective porosity of 0.01 for fractured bedrock aquifer.

These calculations were used to assist the licensing authorities in deciding whether any potential discharge to groundwater is likely to have a significant impact on receiving groundwaters and via recharge on adjacent surface wasters. In this instance, the calculations demonstrated that assuming the background groundwater concentrations were as recorded in the upgradient boreholes and the wastewater effluent quality was as per manufacturers specifications, the discharge from this wastewater treatment system would not have a significant impact on the groundwater quality and on the surface water quality in the river Liffey.

4.2.3. The report from the Executive Scientist provided a detailed background to the site. It detailed that the current loading to the existing treatment plant was “too big for the treatment plant to handle resulting in poor treatment, non-compliance with limits on pollutants in the discharge licence and overloading of the existing percolation area”. The report detailed that this overloading of the percolation area led to significant pollution of the groundwater downgradient of the percolation area in 2023 and 2024. The report detailed that the appellant was instructed by the licensing authority in 2024 to remove excess wastewater volumes above 32m^3/day (existing licence limit). Since then, between 10-20m^3/day was tankered off-site for treatment and the Ammonia levels downgradient of the polishing filter have been reducing. The report stated that no impact from the elevated Ammonia in the groundwater observed in 2023 & 2024 was measured in the River Liffey which is located 150m downgradient of the discharge.

4.2.4. In relation to the assimilative capacity assessment, the report concluded that there would in theory be assimilation in the groundwater under the proposed discharge if the treatment plant operated to the very high standard proposed, and this excludes the high Ammonia results observed in the groundwater downgradient. In relation to these elevated Ammonia readings, the report also stated that it was not clear how long it will take to return to normal. This raised a question as to when there would be sufficient assimilative capacity in the groundwater to dilute the treated effluent to the required standard to protect the groundwater.

4.2.5. The report referenced the location of the proposed wastewater treatment plant and percolation area relative to adjacent protected areas such as the Wicklow Mountains SAC and the Poulaphuca SPA. The report stated that the Wicklow Mountains SAC is located approximately 130m downgradient and the Poulaphuca SPA approximately 7km downstream of the site. The report noted that no screening report assessing any impact on these two natura sites was submitted as part of the application.

4.2.6. The report concluded by recommending that the application for a discharge licence be refused for the following two reasons:

- Given the risk of a larger wastewater treatment system, either during construction, or if poorly operated, impacting on groundwater and the River Liffey downgradient which is hydraulically connected to the Poulaphuca

Reservoir Special Protection Area, and in the absence of a Natura Impact Statement, I cannot be satisfied that the project either individually or in combination with other plans or projects, would not be contrary to the habitats directive. and;

- Having regard to the unauthorised development status of a significant proportion of the development that would give rise to the additional wastewater loading for which the discharge licence is sought, granting a licence would be premature pending authorisation of such development and would result in an unacceptable risk to groundwater and river water at a sensitive location.

4.3. Third Party Observations

4.3.1. No third-party observations were received by the licensing authority in relation to the application.

4.4. Decision

4.4.1. On 12th February 2025 Wicklow County Council decided by Order No. 114/2025 to refuse permission for a discharge licence for the following reason:

The risk of a larger wastewater treatment system, either during construction, or if poorly operated, impacting on groundwater and the River Liffey downgradient which is hydraulically connected to the Poulaphuca Reservoir Special Protected Area and in the absence of a Natura Impact Statement, that the project either individually, or in combination with other plans or projects, would have a significant impact on the Poulaphuca SPA, Wicklow Mountains SPA and Wicklow Mountains SAC.

The appellant was advised on the same date of the decision of the licensing authority.

5.0 The Appeal

5.1.1. On 11th March 2025 An Coimisiún Pleanála received a first party appeal from Seefin Events Unlimited in relation to the decision of Wicklow County Council to refuse their application for a licence under Section 4 of the Local Government (Water Pollution)

Acts 1977 and 1990 as amended. This appeal was made in accordance with Section 8(1)(a) of the Local Government (Water Pollution) Acts 1977 and 1990 as amended.

5.2. Grounds of Appeal

5.2.1. Improper Consideration of Screening Conclusion

The appellant advised that a screening for Appropriate Assessment for the proposed development was conducted by consultants ESC Environmental in accordance with the EU Habitats Directive. A copy of this report was lodged with a planning application for the new WWTP but not with the discharge licence application. The appellant suggested the screening report determined that a Natura Impact Statement was not required, as the proposed wastewater treatment system would not have significant impacts on the Poulaphuca SPA, Wicklow Mountains SPA and Wicklow Mountains SAC. The appellant suggested that the licensing authority failed to acknowledge this assessment and as the competent authority, provided no substantive evidence to contradict the screening conclusion and did not carry out its own Appropriate Assessment. The appellant provided a copy of the AA Screening Report with the appeal documents.

5.2.2. Lack of evidence of Significant Environmental Impact

The appellant asserted that the refusal was based on an assumed risk of pollution to groundwater and the river Liffey without any factual basis or supporting evidence provided by the licensing authority. They suggest the treatment system proposed has been designed in line with nest practice engineering and environmental practice and the hydrogeological assessment confirms that the projects impact on groundwaters would be negligible and does not pose a risk to the Poulaphuca Reservoir or any Natura 2000 site. In addition, the appellant suggested that proper operational measures and ongoing monitoring will ensure the system remains compliant with discharge standards.

5.2.3. Failure to apply the Precautionary Principle proportionately

The appellant argued that while the precautionary principle is important in environmental decision-making, it must not be used as a justification for refusal in the absence of clear, science-based evidence of risk. They stated that in this case the refusal is based on hypothetical concerns rather than objective, evidence-based

conclusions. It was their contention that the licensing authority could impose conditions rather than issue a full refusal.

5.2.4. Compliance with National and EU Environmental Standards

The appellant stated that the project fully complies with the Local Government (Water Pollution) Act, 1977, the EU Habitats Directive (92/43/EEC), the Birds Directive (2009/147/EC) and the Water Framework Directive (2000/60/EC) and therefore the refusal decision contradicts the principles of fair and reasonable decision-making.

5.3. Licensing Authority Response

5.3.1. On the 11th April 2025 (by email) Wicklow County Council made a submission on the appeal which is summarised below:

- No information relating to Appropriate Assessment (AA) was received with the application for a discharge licence. In the absence of this information, the licensing authority concluded that to grant the licence would be contrary to the Habitats Directive.
- It was noted the appellant had submitted a Natura Impact Statement (NIS) screening report and having considered its contents remained of the opinion that AA of the proposed development was required. In particular, the licensing authority noted there was an “inadequate examination of the impact of the ammonia discharge on the assimilative capacity of the groundwater, given the existing ammonia concentration in the groundwater.”
- The in-combination impacts of the proposed development and the existing operations/development on the site had not been properly examined in the submitted documentation. The licensing authority asserted that the Board (Commission) would not be able to carry out an Appropriate Assessment in the absence of a NIS and repeated that to grant the licence in the absence of carrying out an AA would be contrary to the Habitats Directive.
- The assimilative capacity of the groundwater was assessed by the licensing authority and found to be adequate for all parameters except ammonia, which currently fails to meet the groundwater threshold value of 0.065mg/l N in

schedule 5 of the European Communities Environmental Objectives (Groundwater) Regulations, 2010 as amended.

- The reason for the elevated ammonia in the groundwater is due to the actions of the appellant who allowed the design capacities of the wastewater treatment plant and percolation areas to be overloaded, which is in breach of the conditions of the existing discharge licence (WPL111, issued in February 2018).
- The removal of wastewater via tanker has led to the ammonia levels declining in the groundwater but the licensing authority consider this practice of removing wastewater in this manner to be not a “sustainable practice in the long run.”
- Contrary to the appellants assertion, the licensing authority considers the elevated ammonia levels, coupled with the appellants “demonstrated disregard for regulatory constraints” to pose a risk to the water quality of the river Liffey, the Poulaphuca Reservoir and the Poulaphuca SPA. It was the opinion of the licensing authority that the risk of impacts on the Poulaphuca Reservoir which supplies the Greater Dublin Area with drinking water led them to exercise the precautionary principle appropriately.
- Parts of the development on the site are subject to a planning appeal by the appellant to the Commission and the licensing authority expressed concerns that granting a discharge licence for a larger volume of wastewater arising from development which was not permitted by the planning authority would consolidate un-authorised development which could result in pollution of the relevant waterbodies and significant impacts on the connected Natura 2000 sites.

In accordance with Article 19 of the Local Government (Water Pollution) Regulations, 1992 this response was circulated to the appellant on 16th May 2025.

5.4. Observations

No further observations or submissions were received by the Commission in relation to this appeal following the circulation of the licensing authority’s submission.

6.0 **Assessment**

6.1.1. I consider that the significant issues which arise in relation to this appeal are the impacts of the proposal on groundwater and surface water and appropriate assessment screening and the following assessment is dealt with under those headings.

6.2. Existing Wastewater Treatment System

6.2.1. The existing wastewater treatment system is a 300 p.e. Stingray Environmental Sewerage Treatment Plant which was last upgraded in 2020 (Stingray Environmental Engineering Report SEE-E007) and consists of the following components:

- Primary settlement/balancing takes place in a $30m^3$ reinforced GRP underground tank. Raw sewage enters this tank by gravity via a 150mm sewer pipe. No screening takes place and partially settled sewage is transferred by lift pumps operated via timers into the aeration zone.
- An anoxic zone is established in a $6m^3$ reinforced GRP underground tank. Nitrified effluent is returned to this chamber via a Mixed Liquor Suspended Solids (MLSS) return pump operated via timer. The oxygen levels in this chamber are maintained between 0-1 mgO_2/L with denitrifying bacteria converting nitrate and nitrite to gaseous forms of nitrogen (mostly N_2).
- Aeration takes place in four $20m^3$ reinforced precast underground concrete tanks. MLSS pumps return nitrified liquor back to the anoxic zone from these tanks for further denitrification.
- Wastewater from the four aeration tanks flows into two $20m^3$ reinforced precast underground concrete tanks where clarification takes place. These tanks also contain suspended solids filters. Settled sludge from these tanks is circulated back to the primary settlement/balancing tank.
- Wastewater from the clarification tanks flows to an $8.5m^3$ effluent pump chamber. From this chamber, the effluent is pumped to the associated polishing filters. This chamber has a flow meter present which records the volume being discharged to the polishing filters.

- An Owner's Manual report for the treatment plant was prepared by Stingray Environmental Engineering (SEE-E007) in July 2023 and stated that the sewage treatment plant was designed to treat the wastewater from 280 p.e. (280 residents * 150L/p/d = 42,000L per day or 280 * 0.06kg = 16.8kg BOD/day). This report stated that the plant was designed to allow for 25% exceedance in the event of periodic overloading. The report noted that the discharge licence limit was 32m^3/day and advised that a new discharge licence application be made if the "numbers increase".
- Effluent from the wastewater treatment plant is pumped into two soil polishing filters located to the south of the plant. The first soil polishing filter was installed in 2000 and covers an area of 880m^2 (55m * 16m) which in turn discharges to the in-situ subsoil by gravity. A second pressurised soil polishing filter was installed in 2020 by Mitchell Environmental, covering an area of approximately 720m^2 meaning a total filter area of 1,600m^2 is present. This entire polishing filter could cater for the discharge of 32m^3/day assuming a dosing rate of 20L /m^2/day.

6.2.2. Having regard to the technical information submitted with the appeal I am satisfied that the current loading to the existing wastewater treatment plant and polishing filters is in excess of the design capacity. This design exceedance has led to inefficient treatment processes and overloading of the soil polishing filters which has caused contamination of ground waters, surface waters and in the case of effluent break out, potential impacts on human health.

6.3. Wastewater loading change and issues arising

6.3.1. In 2022, the site use changed and the wastewater loadings to the treatment system increased. Monitoring of the existing treatment plant throughout 2023 and 2024 was carried out by Mitchell Environmental and included the measurement of flow rates of wastewater to the plant. The maximum daily average was recorded throughout April 2023, when a daily average of 46,489 litres (46.5m^3) was recorded. Flow rates increased from February 2024 onwards and were as high as 53.9m^3 per day in March 2024. The reasons for these increases are not stated but were likely to be linked to higher occupancy rates in the accommodation.

6.3.2. The existing soil polishing filter was designed to accommodate loadings of 32m^3/day and having been exposed to daily loadings >168% of its capacity, the filter could no longer adequately attenuate the volumes and breakout of partially treated effluent occurred near the western side of the original (2000-installed) gravity fed soil polishing filter. This issue was identified in late Spring – early Summer 2024.

6.3.3. Following this incident, the licensing authority instructed the appellant to remove (via tanker) an agreed volume of raw wastewater to be treated off-site in an Uisce Eireann operated WWTP. Thus, since June 2024, 100m^3 of wastewater has been tankered off-site each week via a daily load of approximately 20m^3 over 5 days. The break-out issue ceased due to the reduction in volume going to the polishing filter. Mitchell Environmental also carried out repair works on existing pipework in the soil polishing filter in late Summer and early Autumn 2024 to evenly distribute the treated effluent and minimise the risk of overloading of this part of the filter in future.

6.3.4. In summarising the activities outlined above in his Hydrogeological Modelling Report, Dr. Robbie Meehan suggested that “given the capacity of the existing wastewater treatment plant and the sizing of the existing soil polishing filter, they are therefore not fit for purpose currently with an overall discharge from the facility daily of over 50m^3 per day, despite favourable historical (2017) site characterisation and assessment results.”

6.3.5. Mitchell Environmental prepared a report in November 2024 on the proposal for a new wastewater treatment system to serve the site. In the report they commented on the performance of the existing treatment system and stated the following “the plant has struggled with effluent quality with poor results for BOD, COD, Ammonia and Suspended Solids. The plants biggest issue is the lack of balancing and no anoxic elements.”

6.3.6. Having regard to the reports prepared by the Licensing Authority, Dr. Meehan and Mitchell Environmental, I am satisfied that the current loading to the existing wastewater treatment plant and polishing filters is in excess of the design capacity. This design exceedance has led to the treatment plant producing an effluent with BOD, COD and Ammonia levels in excess of the emission limit values set by the Licensing Authority. The excessive hydraulic loading to the system has caused effluent to break out from the polishing filter onto the surface of the ground. The

existing treatment system is no longer fit for purpose and needs to be upgraded in order to protect the groundwaters and surface waters in the locality.

6.4. Proposed new Wastewater Treatment System

6.4.1. The appellant has proposed to install a new wastewater treatment system which will incorporate and re-purpose some elements of the existing treatment plant and install new elements to improve the treatment efficiency of the system. The proposed treatment system has been designed to have a total hydraulic loading of 90,000L/day (maximum) and total organic loading of 36,000g BOD/day (maximum) and a maximum design population equivalent of 600. The rationale behind the proposal is to allow for the future development of the facility as a tourism venue. The appellant stated that the discharge will be limited to $60m^3$/day or 400 p.e.

6.4.2. The proposed treatment system will contain the following elements:

- Three primary settlement tanks providing a total of $70m^3$ capacity
- Two balancing/buffer tanks ($20m^3$ each) to balance the flow into the treatment plants
- Four anoxic tanks ($20m^3$ each) which are fed from the buffer tanks. The Anoxic tanks give sufficient retention time for denitrification, and in-tank mixing generating no more than 0.2 mg/L of Dissolved Oxygen. This environment enhances the uptake of nitrate recycled from the aeration tanks. Mesophilic bacteria, in the absence of Dissolved Oxygen and a presence of contaminated matter, will utilise the oxygen from nitrate (which is released to atmosphere as N_2) to remove BOD/COD. The amount of nitrate removal in this system can be varied by the recirculation rate and the retention time.
- Eight aeration tanks ($20m^3$ each) with 5 diffusers on each side of each tank to provide sufficient air to keep the system aerobic to allow aerobic conditions for the removal of BOD/COD and ammonia in the wastewater. By control of the adequate Dissolved Oxygen, and retention times and recirculation rates to the anoxic tanks, the nitrifying bacteria which occur naturally in the sludge will remove ammonia. The remaining COD will be taken out by the normal mesophilic bacteria.

- Three clarification/final effluent tanks settle the sludge and returns the settled sludge to the anoxic tank or primary settlement tank. This is the final step in the biological process and is designed to allow solid-liquid separation of the biological mass from the treated wastewater. The clarified effluent overflows from the final effluent section of the tank into the discharge chamber.

The proposed treatment system will consist of re-purposed elements of the existing treatment system (7 tanks) and new elements (14 tanks) to be provided by O'Reilly Oakstown Environmental. The treatment system has been designed to produce the following minimum percentage pollutant reductions:

Parameters	Incoming Effluent	Design Discharge Standard	Existing Discharge ELVs
Flow Design (m^3/d)	60	60	32
pH	7.0-8.0	6.0-9.0	6.0-9.0
BOD (mg/L)	300	10	25
COD (mg/L)	600	80	125
Total Ammonia (mg/L NH_3-N)	50	2	10
Total P (mg/L P)	15	0.5	No Limit
Ortho-P (mg/L P)	15	0.3	10
Total Kjeldahl N (mg/L N)	100	5	No Limit
FOG's (mg/L)	200	2	No Limit
Suspended Solids (mg/L)	1000	10	35
Nitrates (mg/L)	10	3	15

Table 6.1 Predicted effluent standards following treatment

6.4.3. The suggested design discharge standards of the proposed wastewater treatment system are all lower than the existing discharge emission limit values as imposed by Discharge Licence WPL116.

6.4.4. Having regard to the design of the proposed wastewater treatment system as detailed in the reports prepared by Mitchell Environmental and O'Reilly Oakstown, I am satisfied that this treatment system can treat the projected volumes of

wastewater to the required standard. The proposed organic and nutrient levels in the final effluent to be discharged to the soil polishing filters will allow the in-situ soil to safely attenuate the wastewater and not lead to significant impacts in receiving groundwaters or surface waters.

6.5. Proposed new soil polishing filter

6.5.1. The application includes a proposal to install a new soil polishing filter of 1,400m^2 in an area to the west of the current treatment plant location. To assess the suitability of this location to accommodate this new polishing filter a site characterisation assessment was carried out by Dr. Robbie Meehan in 2023. Due to the scale of the proposed filter, four site characterisation forms were completed and combined in one report.

6.5.2. The soils on the site are described as a mixture of peaty podzols, lithosols and blanket peat and are underlain by a subsoil described as till derived chiefly from granites. The bedrock type is granites and other igneous intrusive rocks, and the accompanying aquifer is poorly productive, and the ground water vulnerability is described by the GSI as being 'High'. The Groundwater Response for the site is therefore noted to be R1 which means it is considered acceptable subject to normal good practice (i.e. system selection, construction, operation and maintenance best practices).

6.5.3. The site has areas described as being steep (>1:5), shallow (1:5 -1:20) and relatively flat (<1:20) in places. The location of the proposed filter is situated on the southwestern mid-backslope of a low moraine ridge on a shallow slope. The river Liffey flows east to west along the site's southern boundary, approx. 120m south of the existing soil polishing filters and 175m south of the proposed new filter area. A smaller watercourse, the Athdown Brook flows from north to south along the western boundary of the site approx. 115m west-northwest of the proposed new filter and meets the Liffey southwest of the site.

6.5.4. There are no water supply wells within 250m of the existing WWTP and soil polishing filter area, and none within 250m of the proposed new polishing filter. The water supply wells for the site are all over 300m to the northeast (and up-gradient) of the WWTP and soil polishing filters (existing and proposed). Two monitoring wells have been drilled historically, the first approx. 62m north (and upgradient) of the existing

WWTP and soil polishing filter, and approx. 35m east-northeast (and upgradient) of the proposed filter and the second approx. 50m southwest (and downgradient) of the existing WWTP and soil polishing filter, and approx. 115m south of the proposed new filter.

6.5.5. As part of the site characterisation assessment, 4 trial holes were excavated to the north, south, east and west of the proposed polishing filter area. These trial holes were dug to a depth of between 2.85m and 3.45m and the soil profiles encountered in each were considered quite uniform. An upper 'A' horizon of black, compact to very soft, crumb, organic loam topsoil extended to a depth of between 0.4 - 0.6m below ground level (bgl). This was followed by the 'B' horizon of a yellowish red, soft to firm, subangular and blocky sandy SILT which was noted to a depth of between 0.7 - 1.0m bgl. The subsoil below this consists of the 'C' horizon which extends to depths > 2.85m bgl and was a pinkish grey, massive yet fissile, very soft, slightly silty SAND with occasional gravels, cobbles and boulders. This unit was unmottled and therefore unsaturated throughout the year. The trial holes demonstrated that the soils and subsoil units appeared to be permeable with ≥ 2.85m depth of unsaturated soil and subsoil to accept partially treated wastewater on the site which makes the site potentially suitable.

6.5.6. A total of 6 subsurface and 6 surface percolation tests were carried out around the perimeter of the proposed soil polishing filter. These tests provided average subsurface percolation values of 7.69 and 8.19 and average surface percolation values (PV) of 6.78 and 5.81 which confirm the classification of the soils and subsoils undertaken in the trial hole assessments. In particular, the subsurface test rates supported the observations made and the visual assessment with respect to the textural nature and drainage class of the subsoil.

6.5.7. The proposed soil polishing filter will be 1,400m^2 in area (43m x 32.6m) and will accept 28m^3/day of partially treated wastewater at a loading rate of 20l/m^2/day. This represents approx. 47% of the maximum daily loading to be permitted under the requested discharge licence. The recommended design for the polishing filter is that it be installed at 0.7m bgl with 300mm of pea gravel to be firstly placed at 700mm depth, followed by a 35mm pipe manifold distribution system and a covering of 100mm depth of gravel. The gravel will be capped with a geotextile layer (to protect the distribution holes) and 300mm of topsoil to the finished ground level.

6.5.8. Having regard to the site characterisation report prepared by Dr. Meehan, I am satisfied that the location proposed for the new soil polishing filter is suitable for a discharge of wastewater of the nature and volume as described above and will not lead to significant impacts to groundwater or surface water quality.

6.6. Tier 3 Hydrogeological Assessment of the site

6.6.1. The EPA guidance document on the *Authorisation of Discharges to Groundwater* (2011) states that the level of technical assessment to be applied when dealing with discharges to groundwater should be proportionate to the risk posed by the discharge activity. Three tiers of assessment are defined within the guidance and for discharges of domestic wastewater greater than $20m^3/d$ a Tier 3 assessment is recommended. This assessment should aim to demonstrate that a site:

- Is hydraulically suitable and has sufficient infiltration capacity; and
- Has sufficient attenuation capacity to ensure that the discharge will not result in an unacceptable impact on receptors and non-compliance with groundwater and surface water quality standards and objectives.

A Tier 3 Assessment involves the estimation and/or calculation of :

- Hydraulic loading to groundwater;
- Chemical loading to groundwater; and
- Resulting concentrations of substances of concern that can be expected in groundwater following mixing between the effluent and groundwater; and
- Resulting concentrations of substances of concern that can be expected in a surface water following interaction with groundwater.

6.6.2. A report detailing the findings of a hydrogeological Tier 3 technical assessment was prepared by Dr. Meehan and submitted with the application for a discharge licence. The report was prepared in accordance with the “Source-Pathway-Receptor “ model for environmental management and with the EPA’s prescribed guidance document referenced above. The aim of the report was to answer the questions posed in 6.5.1 and prepare a conceptual site model to understand the expected interactions between the wastewater, the soils, the bedrock, the groundwater and nearby surface

waters to understand the likelihood of significant impacts on sensitive receptors. The main findings of this report are discussed in the following sections of my report.

Subsoil and Bedrock Assessment

6.6.3. A particle size analysis of the subsoil was undertaken on samples from all four trial pits at depths > 2m bgl which showed percentages of CLAY between 4 – 7% and percentages of fines of between 7 and 24% which places the subsoils within the SAND class. These results placed the subsoils at the higher end of the 'Moderate' subsoil permeability class, and the measured PV values of 7.69 and 8.19 confirm this to be the case. An average PV value of 7.95 places this site towards the lower end of the acceptable PV range (3 – 120 as per EPA CoP, 2021) and means the dosing of the proposed soil polishing filter at a rate of 20 litres per square metre per day will not result in groundwater mounding beneath or around the soil polishing filter area.

6.6.4. Groundwater flow direction was found to be generally from northeast to southwest, downslope towards the lower ground and the River Liffey and Athdown Brook and their confluence. This was corroborated by the groundwater levels measured on site in 4 boreholes (1 upgradient and 3 downgradient of the proposed and existing soil polishing filters). Groundwater was measured at 2.63m bgl in the up-gradient piezometer GW1, and 2.73m, 4.41m and 3.18m bgl in the down-gradient piezometers GW2, GW3 and GW4 respectively. These local groundwater levels suggest flow is in line with topography and the regional flow for the area in northeast to southwest direction.

6.6.5. The national aquifer map has classified the bedrock type for the area as poorly productive bedrock aquifers (Pl) – bedrock, which is generally unproductive , except for local zones. In general in these poor aquifers (Pl), the lack of connection between the limited fissures results in relatively poor aquifer storage and flow paths that may only extend a few hundred metres at a maximum. Due to the low permeability and poor storage capacity, the aquifers will have a low 'recharge acceptance'. Some recharge in the upper, more fractured/weathered zone is likely to flow along the relatively short flow paths and rapidly discharge to streams, small springs and seeps. The bedrock type under the site is classed as Type 2e equigranular granite rocks and groundwater flow is considered to take place in the upper weathered zone of the

aquifer. Flow paths are not considered to extend further than the nearest surface water features and generally not be greater than 250m. The report highlights that little hydrogeological data is available for this type of groundwater body and specific single figures with respect to permeability, transmissivity and storativity cannot be quoted from existing research. The GSI-EPA Publication on 'Irish Aquifer Properties – a reference manual and guide' suggests that poorly productive aquifers (both Pl and Pu) have transmissivity values in general averaging at maximum around $10m^2/d$ and the GSI Groundwater Body Summary sheet estimates even lower transmissivities, at 1 – 6 m^2/d. Transmissivity (T) [m^2/d] is defined as the rate at which water can pass through the full aquifer thickness.

6.6.6. Recharge is a term used to describe the amount of water replenishing the groundwater flow system and is assumed to consist of an input (i.e. annual rainfall) less water losses (i.e. annual evapotranspiration and runoff). The National Recharge Map produced by GSI classified the site in question as having a recharge rate of only 100mm, owing more to the limited recharge acceptance in the 'poor' aquifer under the site, rather than the amount of effective rainfall and the permeability of the subsoils in the locality. The annual average effective rainfall for the site was estimated to be 594mm which is calculated by subtracting the actual evapotranspiration value (482mm sourced from the Met Eireann website) from the annual average rainfall value (1,076mm sourced from the Met Eireann website).

6.6.7. Following a walk-over survey of the site, four locations for the installation of monitoring piezometers were selected by the author. The locations and details of these borehole piezometers was provided on pages 24 and 25 of the report. One piezometer (GW1) was located upgradient of the existing and proposed treatment system and infiltration areas and the second, third and fourth locations were down-gradient; one to the west-southwest of the proposed new filter area (GW2), one to the south-west of the existing filter area (GW3) and one to the south of the existing filter area (GW4). Full borehole logs for each of the monitoring piezometers were recorded and are reported in Appendix B of the report. These piezometers were installed outside the influence of infiltrating partially treated effluent, yet as close to the proposed infiltration/treatment area as possible. The report noted that these monitoring boreholes as well as providing information for the purposes of this assessment could be used to monitor the performance of the proposed treatment

system and the migration of any contaminants in the future, should the discharge licence be granted.

6.6.8. The borehole logs demonstrated that the bedrock is 6.7m bgl across the locality of the up-gradient piezometer and between 1.8m and 6.5m bgl beneath the down-gradient piezometers. Bedrock crops out in the bed of the River Liffey also. The water table was encountered 2.63m bgl in the up-gradient piezometer and between 2.73m and 4.41m bgl in the down-gradient piezometers. This demonstrated that the site was well drained with adequate depth of unsaturated subsoils above both the water table and bedrock to attenuate partially treated wastewater.

6.6.9. Having regard to the contents of Dr. Meehan's report and the available GSI data for the site I agree with the findings and am satisfied that the soil underlying the proposed soil polishing filter is of such type, depth and percolation characteristics to be suitable for the discharge of the proposed volumes of treated effluent.

Wastewater Attenuation

6.6.10. The assessment used the data on nutrient concentrations in the treated effluent provided in Table 6.1 above to predict the concentrations at a depth of 0.9m below the invert level of the proposed soil polishing filter. The fate of nitrogen in the *in-situ* soil/subsoil is dependent on the form in which it is introduced. Under anaerobic conditions, where nitrification is inhibited, ammonium ions are readily adsorbed onto negatively charged soil particles. Under aerobic conditions (which are likely to be present in this instance due to the unsaturated soils present) ammonium undergoes nitrification and nitrate can be readily leached to the groundwater. Therefore, to reduce the potential for elevated nitrate concentrations discharging to surface waters, it is important that the treatment system removes the maximum amount of nitrogen (ammonia and nitrates) as specified in Table 6.1.

6.6.11. Phosphorous attenuation in the subsoil is controlled by adsorption and mineral precipitation reactions and is dependent on soil/subsoil properties. The proposed treatment system includes a coagulant dosing process to assist phosphorous removal and achieve final ortho-phosphate readings below 0.5mg P/L which would represent a highly treated wastewater from a P-removal perspective. The report concluded that the nutrient concentrations in the percolating effluent at 0.9m below the discharge point would be as outlined in Table 6.2 below.

Parameter	O'Reilly Oakstown BAF WWTS Concentration (mg/L) 1m below discharge point
COD (mg/L O_2)	< 15
BOD (mg/L O_2)	< 1
Suspended Solids (mg/L)	< 2 (close to 0)
Total Phosphorous (mg/L P)	< 0.1
Ammonia as NH_3 (mg/L N)	< 0.25

Table 6.2 Estimated concentrations in effluent 0.9m below discharge point

The report concluded that given the above results, the levels of contaminants at 0.9m below the discharge point for the system are likely to be negligible. With dilution in the groundwater body occurring following this, the infiltration area is likely to have little effect on the down-gradient aquifer owing to the well-drained soil and subsoil at the locality, the depth to bedrock and the absence of immediate down-gradient receptors.

6.6.12. Having regard to the proposed nutrient-removal rates for the wastewater treatment system and the suitability of the proposed soil polishing filter, I am satisfied that the contaminant levels of the discharge at a depth of 0.9m below the base of the filter will be so low as to pose no risk to the quality of groundwaters and surface waters.

Assimilative Capacity Assessment

6.6.13. The report detailed the results of an assimilative capacity assessment which was carried out on the groundwater body. To achieve this, background concentrations of various water quality parameters were required. On the 7th March 2024 water samples were taken from the 4 piezometer boreholes and from the drinking water well serving the site (GW5). The samples were analysed by an ISO 17025 INAB accredited laboratory and the results presented in Table 8 on page 34 of the report.

6.6.14. The results for the upgradient piezometer GW1 showed that Total Coliforms, Faecal Coliforms and Clostridium Perfringens were found to be present and no explanation for this was presented. GW1 is located up-gradient of the existing polishing filter and the absence of elevated ammonia readings in the sample suggested the polishing filter is not linked to the elevated microbial pathogen values noted. Elevated Aluminium, Iron and Manganese were also recorded in this sample, and the report

concludes that these hydrochemical exceedances were due to the natural geology of the locality and this explanation is accepted given the presence of muscovite (mineral of aluminium and potassium) and historic iron and manganese mining operations near the site.

6.6.15. The parameters used by the GSI to provide an indication of potential sources of contamination indicate an acceptable quality groundwater at GW1 with a low nitrate concentration (2.04 mg/L NO_3 as N) and ammonium concentration (0.029 mg/L NH_4 as N). The level of ortho-phosphate is also very low (<0.01 mg/L PO_4 as P).

6.6.16. The results for GW2, GW3 and GW4 showed that elevated Total Coliforms, Faecal Coliforms and Clostridium Perfringens were found to be present. Elevated Aluminium, Iron and Manganese were also recorded in these boreholes, and the report concluded that the natural geology of the locality is responsible for these observed levels. The report suggested that observed exceedances for arsenic and chromium are also due to the local geology.

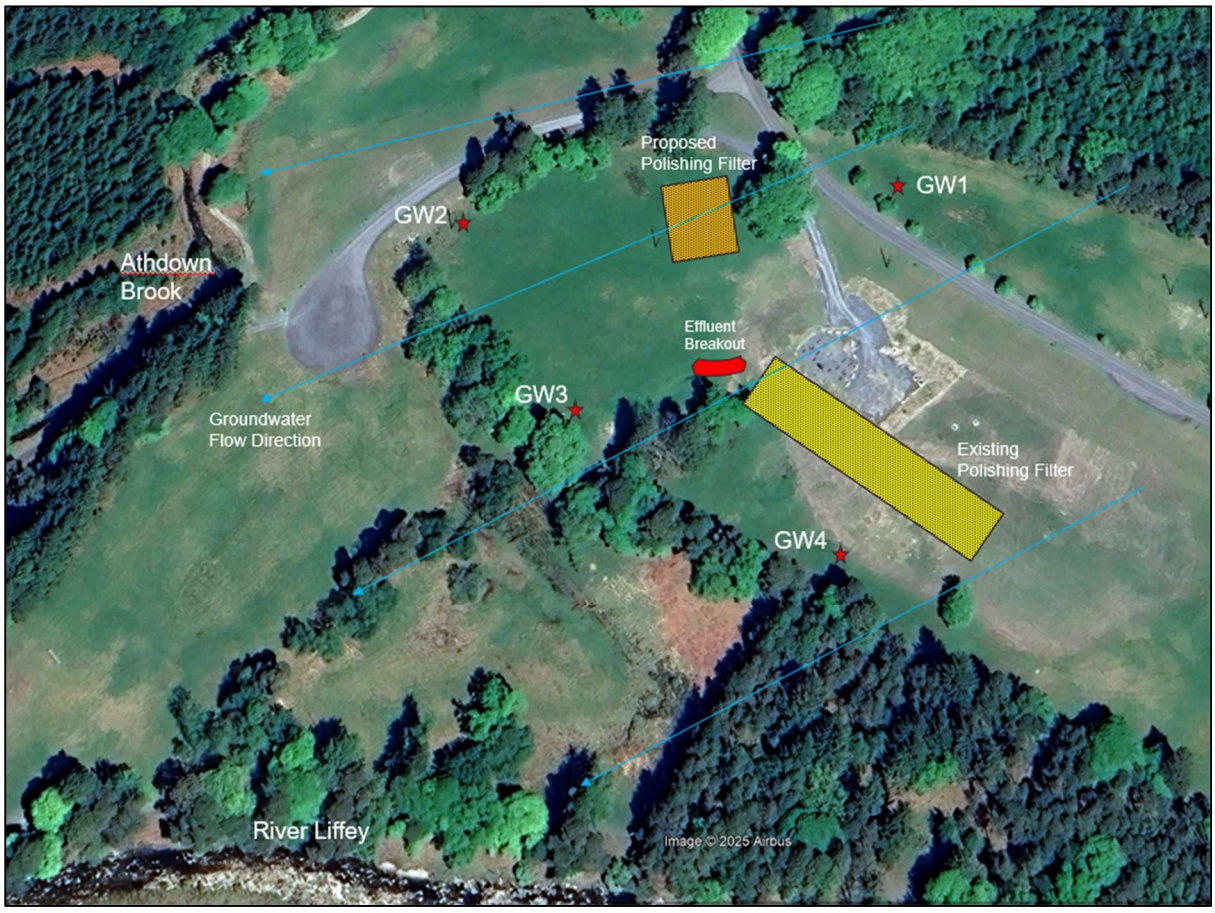

Figure 6.1 Groundwater sampling locations and salient features (locations approximate)

6.6.17. The results for GW2, GW3 and GW4 showed that elevated Total Coliforms, Faecal Coliforms and Clostridium Perfringens were found to be present. Elevated Aluminium, Iron and Manganese were also recorded in these boreholes, and the report concluded that the natural geology of the locality is responsible for these observed levels. The report suggested that observed exceedances for arsenic and chromium are also due to the local geology.

6.6.18. The nitrate concentrations recorded in GW2, GW3 and GW4 were mostly high (1.25, 6.71 and 4.93 mg/L NO_3 -N respectively) when compared to that noted in the upgradient GW1 site (2.04 mg/L NO_3 -N). The levels of ortho-phosphate in GW2, GW3 and GW4 were found to be low (0.015, <0.01 and 0.017 mg/L PO_4 as P respectively). The readings of ammonia in GW2 and GW4 were low (0.031 and 0.037 mg/L NH_4 as N) however a very high reading was noted in GW3. This elevated reading (8.33 mg/L NH_4 as N) is indicative of significant contamination. Given the location of GW3, downgradient of the breakout of partially treated effluent from the existing soil polishing filter, it is highly likely that the elevated ammonia reading noted was due to ingress of this effluent into the borehole.

6.6.19. The potassium (K):sodium (Na) ratio is often used as an indicator of organic contamination and values of this ratio above 0.3 would suggest contamination from organic wastes. The K:Na ratio was found to be high at GW4 (0.72) indicating that the malfunctioning WWTP and overloaded soil polishing filter was impacting this borehole despite ammonia, nitrate and ortho-phosphate readings being relatively low in the same sample.

6.6.20. A sample of groundwater was also taken from the well supplying drinking water for the site (GW5) and this sample showed elevated values for ortho-phosphates, manganese, arsenic and uranium. The local geology explained the readings for manganese, arsenic and uranium but not the ortho-phosphate. The report suggested a nearby forestry plantation may have contributed to this reading (0.053 mg/L mg/L PO_4 as P).

Parameter	Concentration (mg/L)					
	07/03/2024 GW1	07/03/2024 GW2	07/03/2024 GW3	07/03/2024 GW4	07/03/2024 GW5	Groundwater Regulations /Interim Guideline Value
Nitrate (as NO_3)	9.04	5.54	29.73	21.84	2.42	37.5
Ammonium (as NH_4-N)	0.029	0.031	8.33	0.037	0.011	0.065 – 0.175
Orthophosphate (mg/L P)	<0.01	0.015	<0.01	0.017	0.053	0.03
Potassium:Sodium Ratio	0.27	0.19	0.1	0.72	<0.063	0.3

Table 6.3 Summary of background concentrations compared to standards

6.6.21. The assessment quantified the volumetric flow rate of groundwater through the area underlying the soil polishing filters to be 3.01 x 10^{-3} m^3/s. This was calculated by dividing the hydraulic gradient (difference in elevation between the static level in GW1 and GW3) by the perpendicular distance between GW1 and GW3. The figure of 10m^2/d for transmissivity was adopted in the absence of site-specific data for use in applying Darcy's Law to the site.

Darcy's Law for groundwater flow:

Q = KiA

Where,

Q = groundwater flow rate in aquifer (m3/d);

K = hydraulic conductivity (m/d);

i = hydraulic gradient (m/m);

A = cross-sectional area of part of the aquifer (m2).

6.6.22. The assimilation capacity of the groundwater body was assessed by simulating the potential downstream nutrient concentration post discharge. The calculated volumetric flowrate, the background nutrient concentrations in the groundwater along with the proposed maximum hydraulic load and the effluent concentrations were used in a mass balance equation to calculate the resultant nutrient concentration in the groundwater body post discharge. The equation used was not provided in the report but is assumed to be as is provided in the EPA guidance document (see below):

$$C_{gw} = [(C_{in} \times Q_{in}) + (C_{gwu} \times Q_{gw})]/(Q_{in} + Q_{gw})$$

Where,

C_{gw} = resulting concentration in groundwater (mass/volume; M/V);

C_{in} = concentration in the infiltrating water (M/V); (chemical loading, as concentration)

Q_{in} = volumetric rate of infiltrating water (V/t); (hydraulic loading)

C_{gwu} = concentration in the aquifer from upgradient areas (M/V); (measured from monitoring wells)

Q_{gw} = groundwater flow rate through the aquifer (V/t)

Using this equation, the report suggested the following nutrient concentrations will exist in the aquifer following discharge of the wastewater:

Parameter	Resultant Concentration	Groundwater Regulations SI 366 of 2016 Threshold Values
Nitrate (as NO3)	7.72	37.5
Ammonia (as NH4 - N)	0.073	0.065 – 0.175
Orthophosphate (as PO_4 - P)	0.029	0.035

Table 6.4 Simulated resultant nutrient concentrations in aquifer compared to Groundwater Regulations threshold values

The report also suggests that the effluent would be diluted by a factor of at least 4.33 which will further reduce the concentrations of nutrients in the groundwater.

6.6.23. In calculating these simulated nutrient concentrations, the assessment has excluded the high ammonia reading noted in borehole GW3 and referenced this omission in

the report. The rationale for excluding this result was that the overloading of the soil polishing filter and the malfunction of the treatment system led to a failure of the existing system which does not represent the 'normal' operating conditions of the proposed system with loading rates of 20l/m^2/day of a higher quality (lower nutrient level) effluent than is currently the situation.

6.6.24. The equations include a background concentration of ammonia in the groundwater which used an average of the levels recorded on the 7th March 2024 in GW1, GW2 and GW4, calculated to be 0.032 mg/L NH_4-N. Subsequent sampling of the groundwater quality in all boreholes demonstrated that the levels of ammonia in GW3 have decreased by 97% from an initial value of 8.33 to 0.229 mg/L NH_4-N between March 7th and August 30th 2024. This reduction was due to the impacts of the repair works carried out on the soil polishing filter and the reduction in hydraulic loading to the filter due to the removal of wastewater for treatment off-site. This reduction in hydraulic loading has led to improved assimilative capacity in the groundwater under the existing polishing filter.

6.6.25. I carried out an assessment of this reduction in ammonia levels in GW3 to estimate when the levels would reduce to background concentrations. The monitoring data for GW3 ammonia results for this period was plotted against time and a trendline calculated (see figure 6.2 below). Using the equation of this line, it was estimated that the concentration of ammonia within GW3 could return to background levels (assumed to be 0.032 mg/L NH_4-N) by September 20th, 2024, assuming the same rate of depletion/attenuation within the borehole. The assumption that the attenuation/depletion rate remains constant is dependent on several factors such as the performance of the treatment system, removal rates of raw wastewater for treatment off-site, rainfall amounts, groundwater flow rates etc. This timeframe is not definitive but can be taken as indicative based on the data provided in the report.

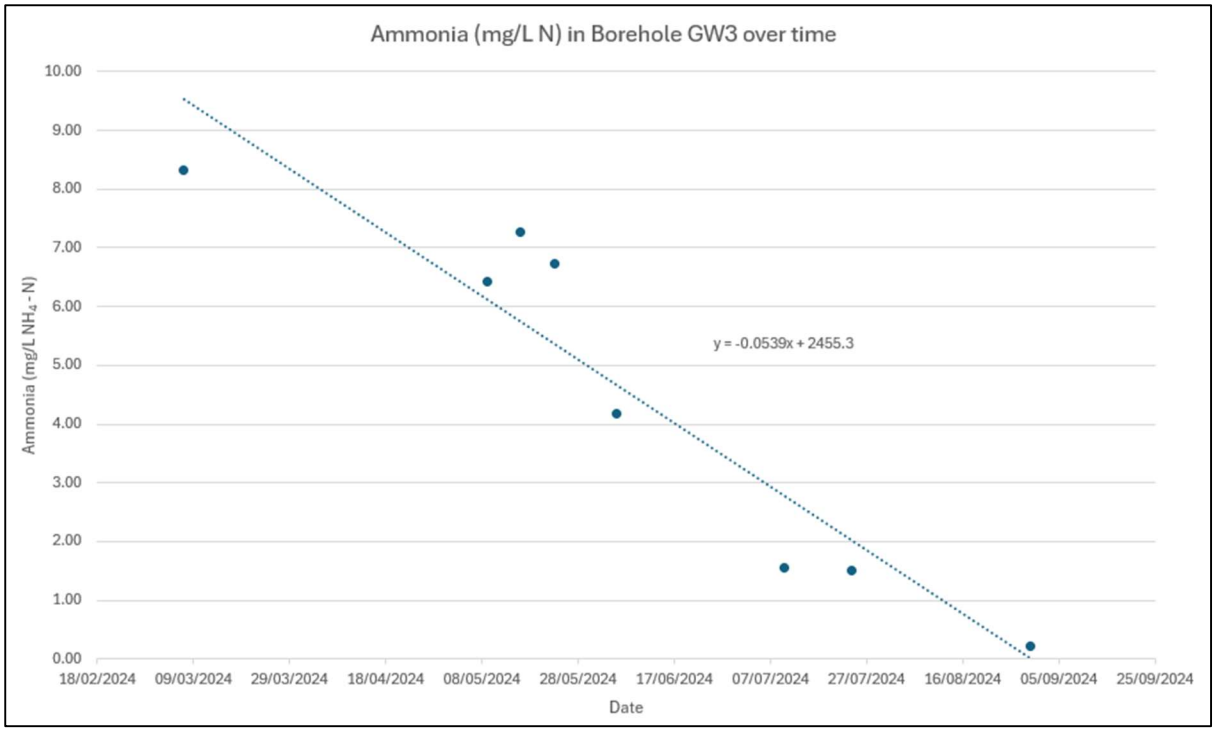

Figure 6.2 Concentration of Ammonia (mg/L NH_4-N) in GW3 over 177 days in 2024

6.6.26. The licensing authority in their reasons for refusal and submission to this appeal have suggested there was an inadequate examination of the impact of the ammonia discharge on the assimilative capacity of the groundwater, given the existing ammonia concentrations in the groundwater. The monitoring results have shown that ammonia levels have decreased by 97% in GW3 in the period identified above. To use the highest recorded levels resulting from the overloading and malfunction of the treatment system as the baseline for an assimilative capacity assessment would have been onerous and unnecessary. The elevated ammonia readings noted in borehole GW3 have been reducing towards background levels and no impacts on surface water quality in the river Liffey have been observed as a result of the malfunction.

6.6.27. The proposed new polishing filter will discharge into subsoils and groundwaters which have not received effluents from the existing WWTP. The results from the monitoring of GW2, which is located downgradient of the new polishing filter, demonstrated that the groundwater in this area was low in nutrients and more representative of background (upgradient) conditions. Therefore, the new polishing filter will not be discharging partially treated effluent into an already elevated-nutrient environment. The Tier 3 Assessment has demonstrated that this groundwater

environment will be capable of attenuating the volume of wastewater the new polishing filter is designed to accept which is 28m^3/day.

6.6.28. In conclusion, I consider that the rationale for excluding the elevated ammonia value recorded in GW3 on March 7th, 2024, from the assimilative capacity calculations used in the Tier 3 Assessment is understood, valid and in accordance with best practice. I believe having undertaken the above analysis of available data and considering the proposed location of the new soil polishing filter, the Tier 3 Assessment uses valid background readings and proves that the installation of the new wastewater treatment system and polishing filter will not have any significant impacts on groundwater quality.

6.6.29. The Tier 3 Assessment concluded with a conceptual hydrogeological model of the Kippure site which outlined that:

- Simulations suggested that the levels of contaminants at 1.2m below the discharge point were likely to be negligible.
- With dilution in the groundwater body occurring following this, the infiltration area would have little effect on the down-gradient aquifer owing to the well-drained soil and subsoil, the depth to bedrock, the design and construction of the on-site polishing filter and the absence of down-gradient drinking water receptors.
- Nutrient concentrations in groundwater will comply with Drinking Water and Groundwater Regulations threshold values.
- There will be a dilution factor of 4.33 at a mixing depth of 6m in the saturated granular material therefore, as the proposed discharge volume is low relative to the volumetric flowrate of the groundwater body, it is envisaged that the proposed discharge will not result in a reduction of the quality status of the underlying aquifer.

6.6.30. Having regard to the Tier 3 Hydrogeological Assessment, I am satisfied that the investigations and report were prepared in accordance with the guidance provided by the EPA for managing discharges to groundwaters. The report has demonstrated that the installation of the wastewater treatment system and soil polishing filter will not have a significant impact on groundwater quality.

Impacts on River Liffey

6.6.31. The report also discussed the potential for impacts on the adjacent River Liffey. The report outlined that water samples were taken from the river Liffey upgradient and down gradient of the Kippure site on 7 occasions between May and November 2024. The results obtained over this period indicated the river Liffey is a 'High Status' water with low concentrations of nutrients and no impact from either the normal operation or malfunction of the existing wastewater treatment system was evident.

6.6.32. To verify this conclusion relating to the receiving waters of the river Liffey I carried out a desktop-based investigation using available data from the EPA's water quality monitoring programme. I identified a sampling location at Ballysmuttan Bridge (Site code IE_EA_09L010200) which is approximately 3km downstream of the Kippure site. This site is routinely sampled as part of the operational water quality monitoring programme managed by the EPA. The location of this monitoring station is appropriate to assess any significant changes in water quality observed in the river Liffey in the vicinity of the site in question over the previous 7 years. Two smaller watercourses, the Ballylow Brook_010 and the Ballydonnell Brook_010 flow from the south, join into one watercourse which flows into the river Liffey between the Kippure site and the monitoring location at Ballysmuttan Bridge. I chose the period from 2017 to 2024 (inclusive) as an appropriate time frame for this assessment. See Figure 6.3 below for details of the sampling locations used by the EPA.

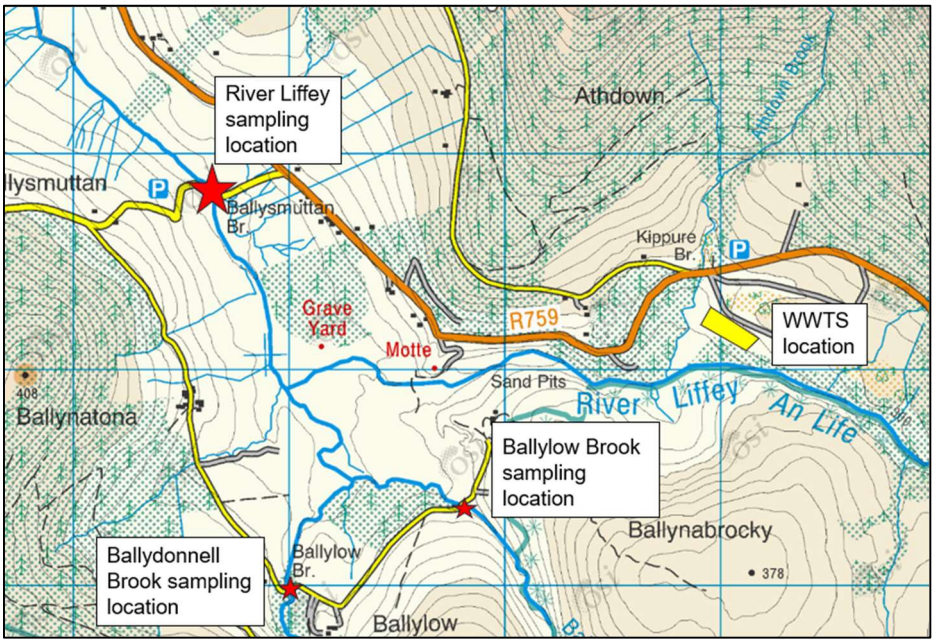

Figure 6.3 The sampling locations relative to the WWTS on the Kippure site

Control Waterbodies

6.6.33. I also assessed the water quality data for the Ballylow Brook_010 and Ballydonnell Brook_010 waterbodies for the same period (2017 -2024). These 2 waterbodies act as 'control' sites in this scenario as they cannot be impacted by any activity at the Kippure site. The comparison of water quality data from these waterbodies and the river Liffey site downstream of Kippure allows an objective assessment of any changes in nutrient concentrations noted.

Ammonia Data

6.6.34. The ammonia data for Ballysmuttan Bridge was assessed and is presented in figures 6.4 and 6.5 below. The data for 2017 to 2024 shows that ammonia levels at Ballysmuttan Bridge have often been below the limit of detection (0.02 mg/l N) for the analysis of ammonia indicating a predominately low-ammonia environment is present in the river Liffey at this location. Occasional readings > 0.02mg/L N have been noted since 2017 and one reading >0.035mg/L N recorded in September 2023.

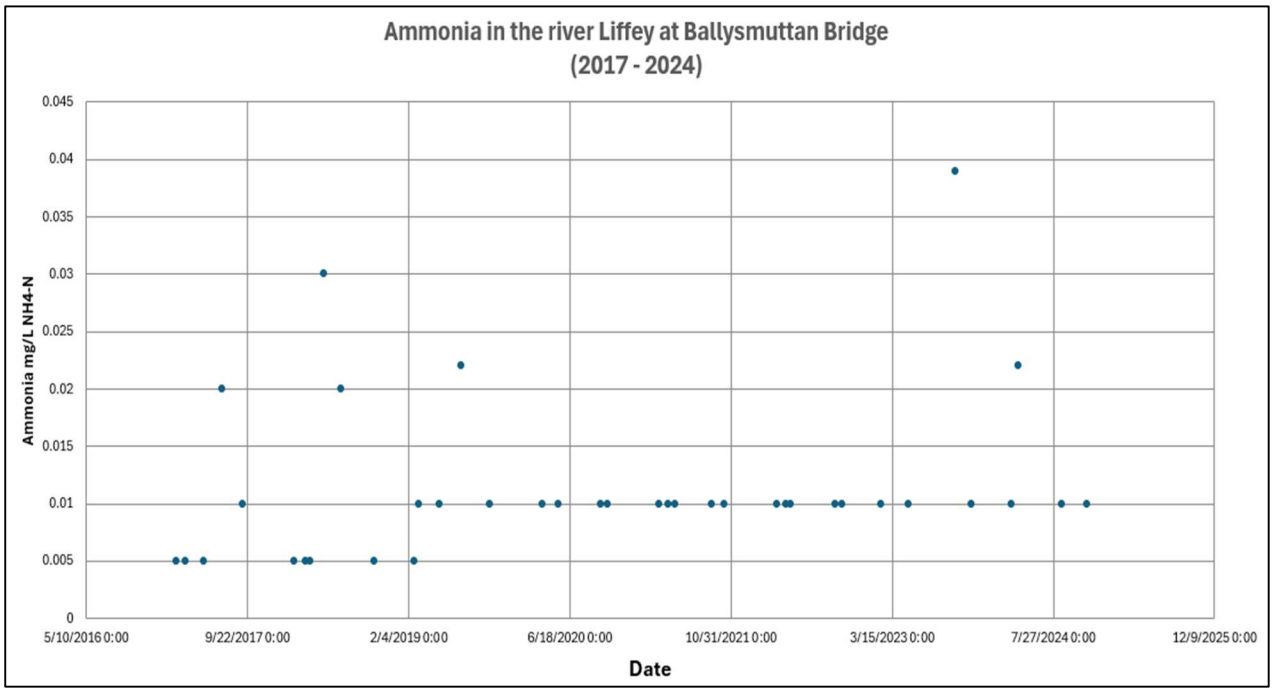

Figure 6.4 Ammonia concentration readings at Ballysmuttan Bridge (2017 – 2024)

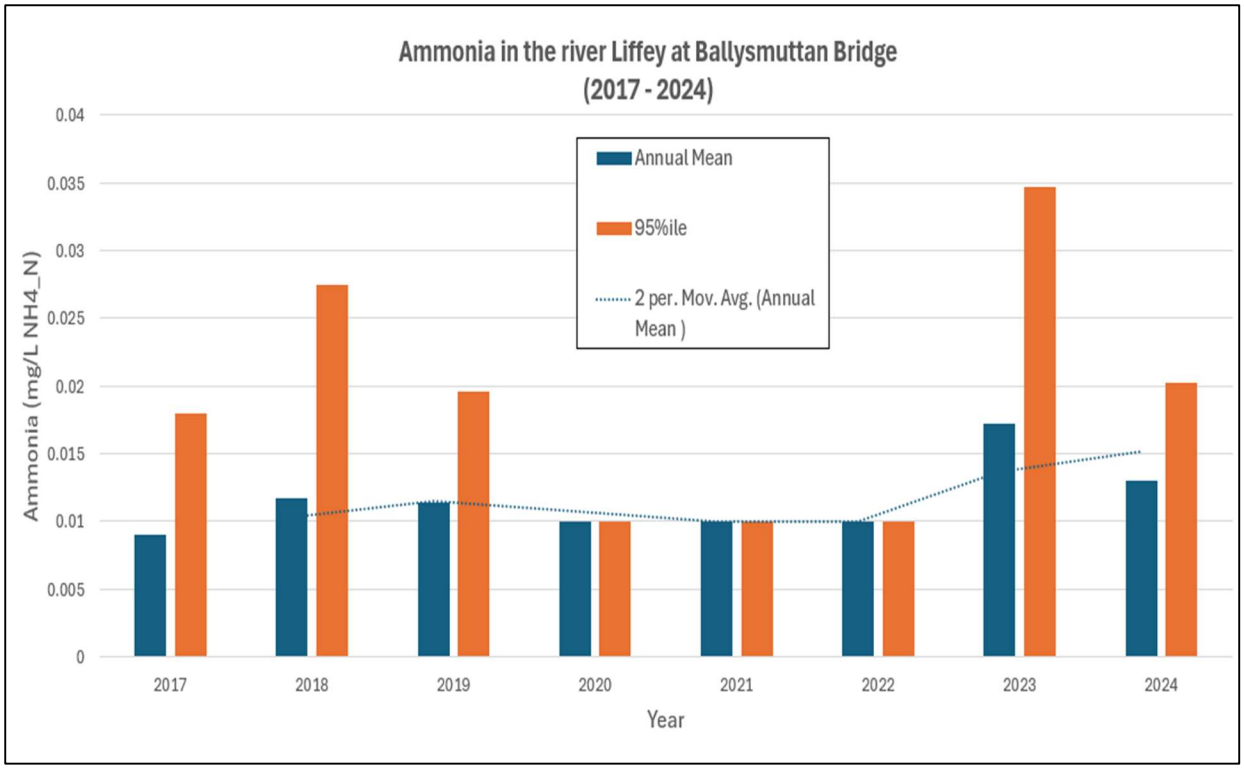

Figure 6.5 Annual average and 95%ile readings for Ammonia concentration at Ballysmuttan Bridge (2017 – 2024)

6.6.35. When the annual averages and 95%ile values were calculated it suggested that the annual values have increased in 2023 and 2024 compared to the previous 5 years. However, most samples taken over this period were below the limit of detection, and the inclusion of one higher sample result can have a significant impact on the average values when sampling takes place 4 or 5 times per year. In the 2023 and 2024 sampling period, 6 out of the 8 samples taken had ammonia values below the limit of detection.

6.6.36. These annual averages and 95%ile values remain indicative of a 'High Status' river waterbody being less than the Surface Water Regulations threshold values of 0.040 and 0.090 respectively for Total Ammonia. Having regard to the water quality data, there is no evidence that the malfunctioning wastewater treatment system at Kippure has had an impact on Ammonia concentrations in the river Liffey. This finding confirms what the appellant suggested in the grounds of appeal discussed in 5.2.2 above.

6.6.37. I also assessed the water quality data for the Ballylow Brook_010 and Ballydonnell Brook_010 waterbodies for the same period (2017 -2024) and noted no significant

increases in ammonia values in both waterbodies between 2022 and 2024 which mirrors that noted downstream in the river Liffey at Ballysmuttan Bridge. These 2 waterbodies act as ‘control’ sites in this scenario as they cannot be impacted by any activity at the Kippure site.

Total Oxidised Nitrogen (TON)

6.6.38. The Total Oxidised Nitrogen (TON) data for the river Liffey at Ballysmuttan Bridge was assessed and is presented in figures 6.6 and 6.7 below. The data for 2017 to 2024 showed that TON results at Ballysmuttan Bridge have often been below the limit of detection indicating a predominately low-oxidised nitrogen environment is present in the river Liffey at this location. Occasional readings > 0.02mg/L N have been noted since 2017 with one reading of 0.85mg/L N in 2022. The data presented in Figure 6.6 indicates that the levels of TON may have increased at this location since 2022.

When the TON annual averages were calculated along with the 95%ile values for the same periods, it confirms that the annual average values have increased in 2022, 2023 and 2024 compared to the previous 5 years.

There are no threshold values for TON or Nitrates in the Surface Water Regulations however a value of 1.8mg NO_3-N is used by the EPA as the level at which impacts to the ecological health of rivers and associated downstream marine waters occurs. The annual average TON values noted in the river Liffey at Ballysmuttan Bridge in the period in question although increased, were generally below this value by a factor of 5 or more.

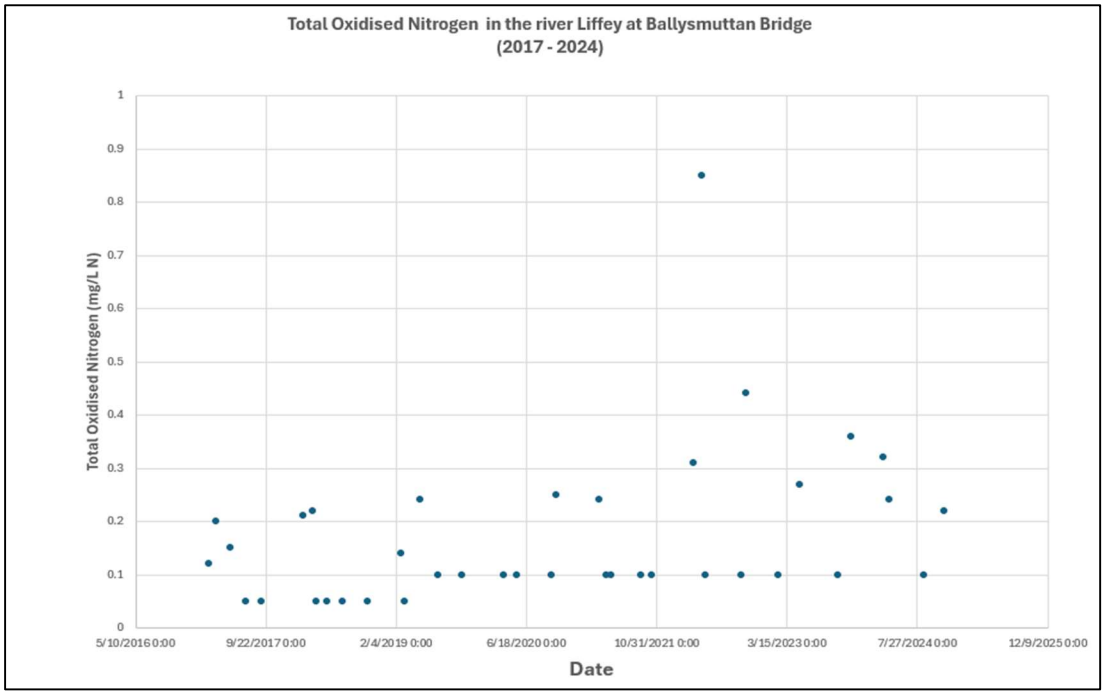

Figure 6.6 Total Oxidised Nitrogen concentration readings at Ballysmuttan Bridge (2017 – 2024)

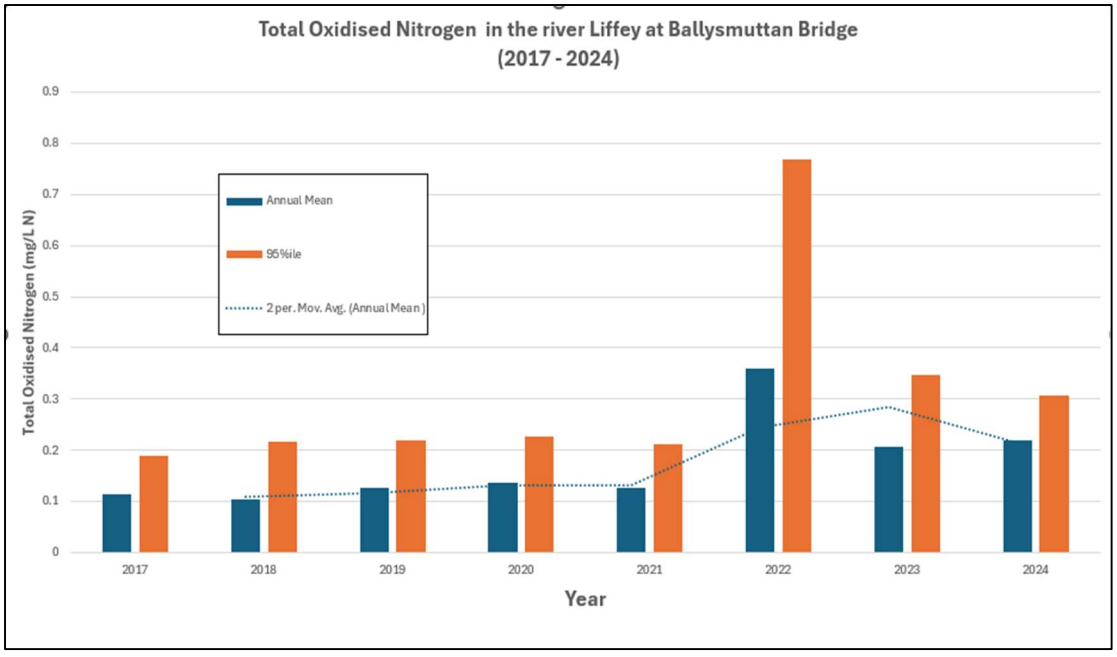

Figure 6.7 Annual average and 95%ile readings for TON concentration at Ballysmuttan Bridge (2017 – 2024)

6.6.39. I assessed the available water quality data for the two 'control sites' Ballylow Brook_010 and Ballydonnell Brook_010 waterbodies for the same period (2017 - 2024) and noted an increase in TON values in both waterbodies between 2022 and

2024 which mirrored that noted downstream in the river Liffey at Ballysmuttan Bridge. This suggested that the increases in TON noted at Ballysmuttan Bridge are highly likely to be due to regional impacts from agriculture/forestry etc and not due to any activities at the Kippure site.

6.6.40. Having regard to the water quality data noted in the river Liffey at Ballysmuttan Bridge and at the 2 control sites discussed above, there is no evidence that the malfunctioning wastewater treatment system at Kippure has had an impact on TON concentrations in the river Liffey. This finding confirms what the appellant suggested in the grounds of appeal discussed in 5.2.2 above.

Ortho-phosphate

6.6.41. The Ortho-phosphate data for Ballysmuttan Bridge was assessed and is presented in figures 6.8 and 6.9 below. The data for 2017 to 2024 showed that orthophosphate levels in the river Liffey at Ballysmuttan Bridge have often been below the limit of detection (0.01 mg/l P) indicating a predominately low-phosphate environment is present at this location. Occasional readings > 0.02mg/L P have been noted since 2017 and two reading >0.036mg/L N recorded in recent years.

When the annual averages were calculated along with 95%ile values for the same periods, it suggests that the annual average values have increased in 2023 and 2024 compared to the previous 4 years. However, 5 of the 8 samples taken over these 2 years were either below the limit of detection or within 20% of the limit of detection.

The annual averages and 95%ile values are indicative of a ‘High Status’ river waterbody being less than the Surface Water Regulations threshold values of ≤0.025 mgP/l and ≤0.040 mgP/l respectively for Molybdate Reactive Phosphorous (Ortho-phosphate).

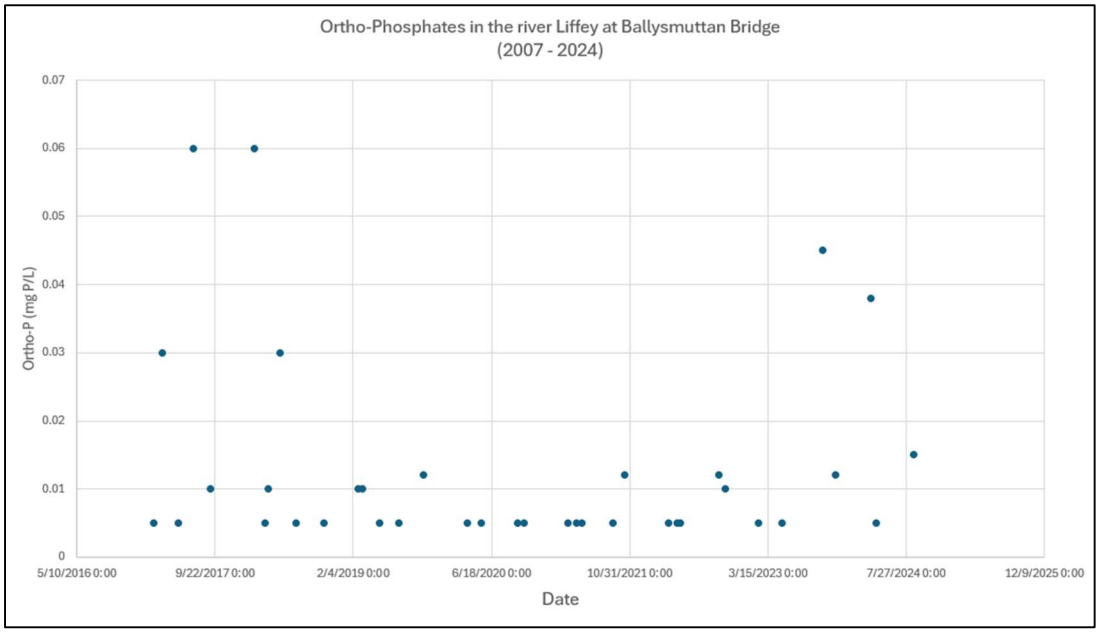

Figure 6.8 Ortho-phosphate concentration readings at Ballysmuttan Bridge (2017 – 2024)

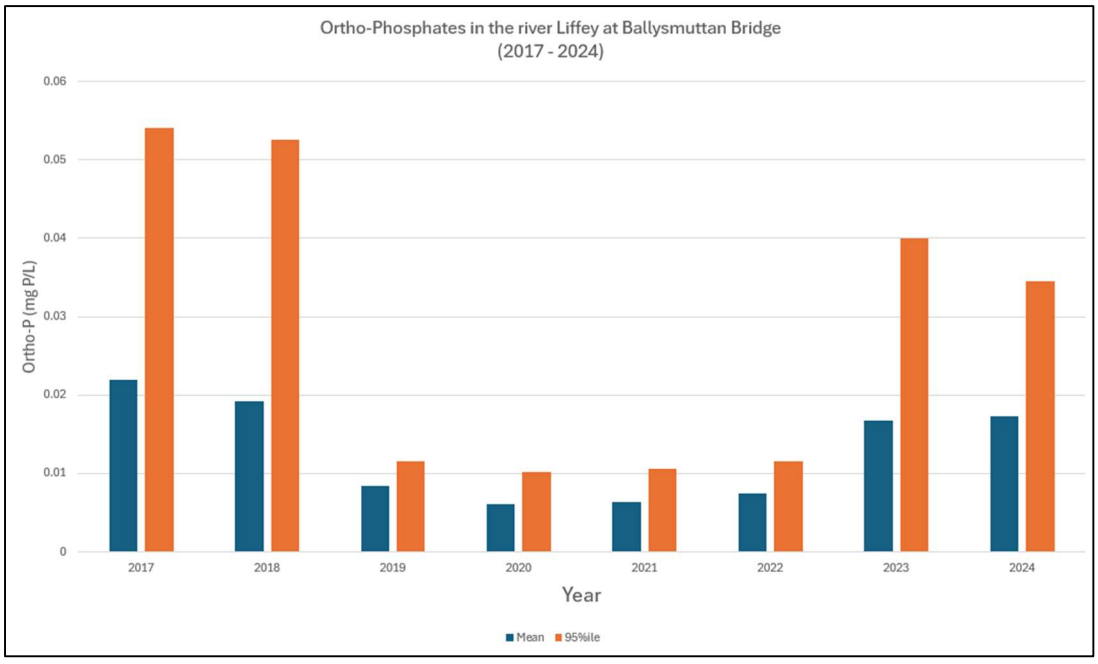

Figure 6.9 Annual average and 95%ile readings for Ortho-phosphate concentration at Ballysmuttan Bridge (2017 – 2024)

6.6.42. I also assessed the water quality data for the Ballylow Brook_010 and Ballydonnell Brook_010 waterbodies for the same period (2017 - 2024) and noted no significant increases in ortho-phosphate values in both waterbodies between 2022 and 2024 which mirrors that noted downstream in the river Liffey at Ballysmuttan Bridge.

These 2 waterbodies act as ‘control’ sites in this scenario as they are not impacted by the Kippure site.

6.6.43. Having regard to the water quality data noted in the river Liffey at Ballysmuttan Bridge and at the 2 control sites discussed above, there is no evidence that the malfunctioning wastewater treatment system at Kippure has had an impact on Ortho-phosphate concentrations in the river Liffey. This finding confirms what the appellant suggested in the grounds of appeal discussed in 5.2.2 above.

6.6.44. In conclusion, having regard to the available water quality chemistry data it is highly unlikely that the existing wastewater treatment plant at Kippure has had any discernible impact on water quality in the river Liffey as measured at Ballysmuttan Bridge.

Biological Monitoring data

6.6.45. In addition to the nutrient data discussed above, I also assessed the available biological monitoring data (Q-values) as recorded by the EPA for the station at Ballysmuttan Bridge from 1988 to 2022. In 2010 the Q-value was recorded as 3-4 but all other samples over the 34-year period were Q4 or higher and the most recent sampling in 2022 showed the site was of ‘High Status” having a Q-value of 5, which is the highest possible value. This data is presented in figure 6.10 below. This indicates that the water quality in the river Liffey downstream of the Kippure site at Ballysmuttan Bridge has historically been of good or high status and shows no signs of being impacted by the presence of the existing wastewater treatment system.

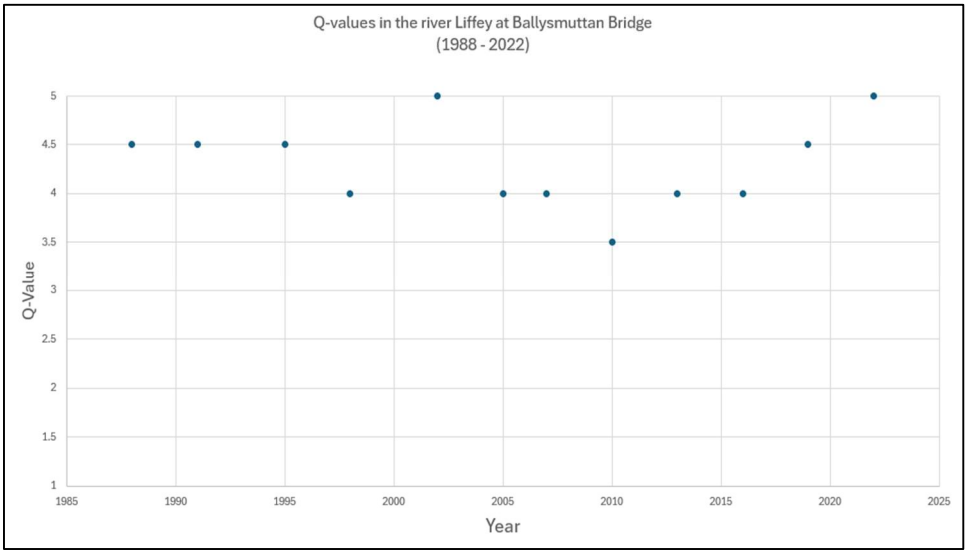

Figure 6.10 Q-Value results for the river Liffey at Ballysmuttan Bridge (1988 – 2022)

6.6.46. I also assessed the available biological monitoring data (Q-values) for the two 'control' sites at Ballylow Brook_010 and Ballydonnell Brook_010 waterbodies and noted that both sites had recorded Q-values of 4-5 when sampled by the EPA in 2022, which is also indicative of High-Status waterbodies.

6.6.47. Having regard to the available biological water quality data for the river Liffey and control sites, the overall conclusion of my assessment is that the water quality in the river Liffey directly downstream of the Kippure site is of a high standard and displays no evidence of having been impacted negatively by the presence of the existing wastewater treatment system.

7.0 **Appropriate Assessment – Screening Determination**

7.1.1. In accordance with obligations under the Habitats Directives and implementing legislation, to take into consideration the possible effects a project may have, either on its own or in combination with other plans and projects, on a Natura 2000 site, there is a requirement on the Commission, as the competent authority in this case, to consider the possible nature conservation implications of the proposed development on the Natura 2000 network, before making a decision.

7.1.2. ESC Environmental Ltd. conducted a NIS screening exercise in relation to the proposed new wastewater treatment system in November 2024. This document was submitted to Wicklow County Council as part of an application for planning permission but was not included in the documentation submitted to Wicklow County Council (the Licensing Authority) as part of the application for a discharge licence under section 4 of the Local Government (Water Pollution) Act 1977 as amended.

7.1.3. This NIS Screening Report concluded that a NIS was not required for the development of a new wastewater treatment plant and soil polishing filter as the location, scale and nature of the works would not directly or indirectly impact on any of the habitats or species of the Natura sites considered.

7.1.4. The Licensing Authority in its submission on the appeal suggested there was an inadequate examination of the impact of the ammonia discharge on the assimilative capacity of the groundwater. As outlined in the Assessment section of this report, the hydrogeological assessment has demonstrated that the new soil polishing filter will discharge highly treated wastewater into a suitable depth of unsaturated subsoil

which has the capacity to attenuate the volume of wastewater as described with no impacts on the underlying aquifer and subsequently the water quality in the river Liffey.

7.1.5. Screening for Appropriate Assessment has been carried out and is attached as Appendix 1 to this Report. The assessment of impacts on the River Liffey already undertaken in this report has concluded that the existing wastewater treatment plant has had no impact on water quality in the river Liffey. In addition, the proposed new wastewater treatment plant and soil polishing filter has been assessed in accordance with the requirements of the EPA *Guidance on the Authorisation of Discharges to Groundwater*, 2011 and having undergone a Tier 3 Hydrogeological Assessment, has been proven to be capable of treating the wastewater to the required level while having no discernible impact on groundwaters and surface water quality.

7.1.6. Given the conclusion that the installation of the new wastewater treatment system will not have any significant adverse impacts on water quality, the likelihood of any downstream impacts from this treatment system on any Natura sites is highly unlikely. In coming to this conclusion, I have also considered the Commission's Ecologists report (R322363_App2 prepared for Case 322363) which concluded that *likely significant effects on any European Site from the proposed development* (installation of a new wastewater treatment system and ancillary works) *either alone or in combination with other plans or projects can be excluded beyond reasonable scientific doubt. Therefore, Appropriate Assessment (stage 2) (under Section 177V of the Planning and Development Act 2000) is not required.*

7.1.7. Conclusions of Screening

In accordance with Section 177U of the Planning and Development Act 2000 (as amended) and on the basis of the information considered in the AA screening, I conclude that the proposed development individually or in combination with other plans or projects would not be likely to give rise to significant effects on Wicklow Mountains SAC IE0002122, Wicklow Mountains SPA IE0004040 or Poulaphouca Reservoir SPA IE0004063 in view of the conservation objectives of these sites and is therefore excluded from further consideration. Appropriate Assessment is not required.

This determination is based on:

- The nature of the works
- The location/distance from the European sites and nature of connections

8.0 Water Framework Directive Impact Assessment

8.1.1. In accordance with obligations under the Water Framework Directive and implementing legislation, there is a requirement on the Commission, as the competent authority in this case, to consider whether proposals for plans or new developments have the potential to prevent compliance with the WFD objectives i.e. will they cause a deterioration of the status of a water body and / or prevent future attainment of good surface water status or good ecological potential and good groundwater status where not already achieved.

8.1.2. A screening exercise for Water Framework Directive Impact Assessment has been carried out and the screening report is attached as Appendix 2 to this report.

8.1.3. Conclusions of Screening

It has been concluded that the status of the surface and ground water bodies hydrologically linked to this site will not be significantly impacted due to the construction or operation of the wastewater treatment plant. The Tier 3 Hydrogeological Assessment Report submitted with the licence application has demonstrated beyond any reasonable scientific doubt that the in-situ soils can safely attenuate the proposed volumes of treated wastewaters. It has been demonstrated that the status of these waterbodies will not change due to the discharge of treated effluent to groundwaters and therefore the project is compliant with the requirements of Article 4(1) of the Water Framework Directive.

9.0 Environmental Impact Assessment

9.1. Pre Screening for Environmental Impact Assessment

9.1.1. Part 2 of Schedule 5 of the Planning and Development Regulations 2001, as amended (2001 Regulations), and section 172(1)(a) of the Planning and Development Act 2000, as amended (2000 Act), identify classes of development with

specified thresholds for which EIA is required. I have assessed this application and concluded that the appeal made in accordance with Section 8(1)(a) of the Local Government (Water Pollution) Acts 1977 and 1990 as amended does not fall within the meaning of a project for the purposes of Environmental Impact Assessment.

9.1.2. This file falls within a larger project which is further described in the following files: ABP-322363-25, ABP-321463-24 and RL27.320327 and EIA Screening has been undertaken for the installation and operation of the wastewater treatment system and polishing filter in the Inspectors Report R322363-25. The Inspector concluded that the proposed development would not be likely to have significant effects (in terms of extent, magnitude, complexity, probability, duration, frequency, or reversibility) on the environment and that the preparation and submission of an environmental impact assessment report is not therefore required.

10.0 Discussion on Other Grounds of Appeal

10.1. Failure to apply the Precautionary Principle proportionately

10.1.1. The appellant stated that the refusal is based on hypothetical concerns rather than objective, evidence-based conclusions. It was their contention that the Licensing Authority could impose conditions rather than issue a full refusal.

10.1.2. The Licensing Authority in its submission on the appeal stated that the appellant had demonstrated a propensity to disregard the design constraints of the existing wastewater treatment plant and the conditions of the existing discharge licence. In their reasons for refusal, the Licensing Authority suggested that one reason was the risk of a larger wastewater treatment system *if poorly operated* impacting on groundwater and the River Liffey and Natura sites.

10.1.3. The current situation where tankers are used to remove raw wastewater from the site for treatment elsewhere has also been identified by the Licensing Authority as being not sustainable and I concur with this conclusion.

10.1.4. The existing treatment system cannot adequately treat the current loading which is more than the existing discharge licence allowed. The installation of an improved treatment system and new polishing filter represents a sustainable outcome for the site and the receiving environment. The provision of appropriate conditions in a new

discharge licence will allow the Licensing Authority to ensure that the adjacent groundwaters and surface waters will be protected. The Licensing Authority have enforcement powers available under the Water Pollution Acts, 1977 and 1990 as amended to ensure compliance with the conditions imposed on any new licence issued.

10.1.5. It is assumed that rather than posing a risk if poorly operated, the proposed treatment system will be maintained and operated as described in the application and in accordance with appropriate licence conditions. Therefore, I recommend that the appeal be upheld, and the discharge licence be granted subject to the conditions outlined in section 13 of this report.

10.2. Compliance with National and EU Environmental Standards

10.2.1. The appellant stated that the project fully complies with the Local Government (Water Pollution) Act, 1977, the EU Habitats Directive (92/43/EEC), the Birds Directive (2009/147/EC) and the Water Framework Directive (2000/60/EC) and therefore the refusal decision contradicts the principles of fair and reasonable decision-making.

10.2.2. The application to the licensing authority was made in accordance with the requirements of the Local Government (Water Pollution) Acts, 1977 and 1990 as amended and the Local Government (Water Pollution) Regulations, 1978 as amended in 1992 and 1996. The future compliance of this project will be measured against the conditions of a Discharge Licence should the Commission consider it appropriate to grant one. Compliance with the Habitats Directive, the Birds Directive and the Water Framework Directive (including Surface Water and Groundwater Regulations) has already been discussed in Sections 8 and 9 of this report and confirmed to be proven.

11.0 **Recommendation**

11.1.1. Section 8(2) of the Local Government (Water Pollution) Act 1977 and 1990 as amended requires that An Comisiún Pleanála, after consideration of an appeal under this section, shall (as it thinks proper) allow or refuse the appeal and may give any direction consequent on its decision that it considers appropriate to the local authority concerned (including a direction that a specified condition be attached to

the licence concerned or be amended or deleted) and a local authority shall comply with any such direction.

11.1.2. In exercise of the powers conferred on it by Section 8(2) of the Local Government (Water Pollution) Act 1977 and 1990 as amended I recommend that the Commission uphold the appeal for reasons set out below and grant a licence subject to the conditions set out in section 13.

12.0 **Reasons and Considerations**

12.1.1. Having regard to:

Guidance, Procedures and Training on the Licensing of Discharges to Surface Waters, Groundwater and to Sewer for Local Authorities 2011

Guidance on the Authorisation of Discharges to Groundwater, EPA 2011

The Site Characterisation and Tier 3 Hydrogeological Assessment

The Design Report for the proposed WWTP

The Appropriate Assessment Screening Report submitted;

The submissions and observations made in connection with the planning application and appeal;

The findings in this report that the proposed wastewater treatment system has been designed appropriately, will be installed in a suitable setting and location, can be operated within the required parameters and conditions and will have no lasting adverse impacts on groundwaters, surface waters and downstream Natura sites.

It is considered that, subject to the following conditions, the granting of a Discharge Licence in accordance with Section 4 of the Local Government (Water Pollution) Act 1977 and 1990 would be in accordance with the proper sustainable development of the site.

13.0 **Conditions**

1. General Layout and Operations

1.1. This Licence shall be in respect of the discharge of sewage effluent arising at Kippure Lodge & Holiday Village at Kippure Estate, Manor Kilbride, Blessington, Co. Wicklow to groundwaters at Kippure Estate, Manor Kilbride, Blessington, Co. Wicklow.

1.2. All effluent arising at Kippure Lodge & Holiday Village shall be collected and treated in the on-site wastewater treatment system, as detailed in specifications and documentation submitted by the Licensee to Wicklow County Council in application dated 12th December 2024, except where otherwise required by this licence.

1.3. The wastewater treatment plant shall be served by an alarm system which will activate in the event of effluent pumping malfunction, effluent high level alarm exceedance, aeration malfunction or power supply failure. The alarm system shall provide for audible and visual alarms and telemetry GSM fault texting to the site operator and WWTS service and maintenance contractor.

1.4. All uncontaminated surface water, including roof water, shall be separately collected and discharged *via* a separate surface water drainage system. Rainwater shall not be discharged to the wastewater treatment plant under any circumstances.

1.5. A certificate from a suitable qualified person (with professional indemnity insurance) shall be submitted to the licensing authority within one month of installation, stating that the wastewater treatment system has been designed and installed as detailed in specifications and documentation submitted by the Licensee to the Licensing Authority. This shall include certification of the design and performance of all the components, including the treatment plant and polishing filter construction. It shall also include photographic evidence of the components and their installation.

1.6. The Licensee shall ensure that the wastewater treatment system is operated and maintained in such a manner as to ensure the discharge of effluent is in accordance with the volume and emission limit values set out in this licence.

1.7. In the event of pollution of any waters arising from the Licensee's activities, whether due to accidental discharge or discharge other than in accordance with the terms and conditions of this licence, the Licensee shall make good all damage resulting from such pollution, including, if necessary:

- the replacement of fish stocks,
- the restoration of spawning grounds,
- the removal of polluting matter from waters
- the modification of its discharge regime to prevent re-occurrence,
- or such other measures as may be directed by the Licensing Authority.

1.8. The Licensee shall notify the Licensing Authority of any breakdown, failure, or incident at the wastewater treatment system or at the site which could adversely affect the operation of the wastewater treatment system or the standard of effluent discharge, or which could give rise to pollution of waters as soon as possible after the incident becomes known.

1.9. The Licensee shall keep on site a log of all inspections at the wastewater treatment system in respect of operation and maintenance of the wastewater treatment system, recording date and time of inspection, findings of inspection and signature of inspector. The log shall be kept on site and made available for inspection by the Licensing Authority. A copy of the log shall be submitted to the Licensing Authority on request.

1.10. The Licensee shall install and maintain a flow meter to provide for the measurement and recording of the total volume of effluent discharged from the wastewater treatment plant to the soil polishing filter. The flow meter shall be calibrated and maintained to ensure the accuracy of measurements. Calibration records shall be maintained on site and made available for inspection by the Licensing Authority on request.

1.11. The Licensee shall provide and maintain a sampling and access point for sampling treated effluent discharged from the wastewater treatment plant to the soil polishing filter. The sampling and access point shall be located after the clarifier tanks and prior to the soil polishing filter. The wastewater treatment plant and sampling point shall be maintained to provide safe access for effluent sampling. Any keys required for access to the sampling point shall be kept on site for the use of the Licensing Authority.

1.12. All sludge collected from the wastewater treatment plant shall be brought for disposal to a municipal wastewater treatment plant licensed under the Wastewater Discharge (Authorisation) Regulations 2007, as amended.

1.13. Only a waste collection contractor permitted in accordance with the Waste Management (Collection Permit) Regulations 2007, as amended, shall collect sludge arising from the wastewater treatment plant. The Licensee shall keep on site copies of the signed receipts issued by the permitted waste collection contractor in respect of the collection of all sludge from the site.

1.14. The Licensee shall maintain a sludge register, to be kept on site for inspection by the licensing authority. A copy of the register shall be submitted to the Licensing Authority annually. The sludge register shall include the following information:

- the name of the waste contractor used to collect sludge,
- the date sludge was taken off-site,
- the quantity of sludge in tonnes (or litres) taken off-site,
- the destination of sludge taken off-site,
- a copy of all signed receipts issued by the permitted waste collection contractor in respect of the collection of all sludge from the site.

1.15. The Licensee shall ensure that a suitable passive grease separator or grease removal unit is installed to serve all effluent drainage from all kitchens and cooking areas of the facility. Specification and installation of a grease separator shall comply with the requirements of I.S. EN 1825: Parts 1 & 2.

1.16. The Licensee shall maintain the grease separator or grease removal unit as per manufacturer's instructions. A record of maintenance including daily, weekly, monthly, and yearly maintenance, removal of waste oil and any desludging operations shall be maintained on site and made available for inspection by the Licensing Authority on request.

1.17. Waste collected from the grease separator or grease removal unit shall only be disposed of through an appropriately permitted and licensed waste removal contractor. The Licensee shall keep records of all collections of such waste.

Reason: To ensure that the wastewater treatment system operates so as not to give rise to the risk of pollution of receiving waters, in the interest of the protection of waters from pollution.

2. Effluent Characteristics

2.1. The treated effluent from the wastewater treatment plant shall be uniformly discharged over a 24-hour period, 7 days a week. The total volume of effluent to be discharged from the wastewater treatment plant shall not exceed 60m³ per day.

2.2. Effluent discharged from the wastewater treatment plant to the soil polishing filter shall comply with the emission limit values set out in accordance with Table 1:

Table 1. Final Discharge Standards and Monitoring Frequency

Parameter	Units	Emission Limit Value	Frequency
pH	pH Units	6 - 9	Every month
$_{c}BOD_{5}$	mg/l	25	Every month
COD	mg/l	125	Every month
Suspended Solids	mg/l	35	Every month
Total Ammoniacal Nitrogen (as N)	mg/l	10	Every month

Nitrate (as N)	mg/l	15	Every month
Nitrite (as N)	mg/l	0.5	Every month
Orthophosphate (as P)	mg/l	10	Every month

Reason: In the interest of clarity.

3. Monitoring Regime

3.1. The Licensee shall arrange for sampling and analysis of the discharge from the wastewater treatment plant to the soil polishing filter for the determinants listed in Table 1 above at a frequency of once every month. The analysis shall be conducted by an independent laboratory holding ISO 17025 accreditation for the relevant parameters.

3.2. Records of daily flow rates (total volume of treated effluent discharged per day) shall be maintained and submitted to the Licensing Authority on a quarterly basis.

3.3. The Licensee shall arrange for sampling and analysis of the following ambient samples at the locations described in Table 2 in respect of the parameters listed in Table 3.

Table 2. Ambient Sample Locations

Sample Location	ITM Easting	ITM Northing
GW1 Borehole upgradient of polishing filters	707992	714290
GW2 Borehole downgradient of polishing filters	707844	714264
GW3 Borehole downgradient of polishing filters	707913	714199
GW4 Borehole downgradient of polishing filters	707991	714157
River Liffey up-gradient of the infiltration area	708230	713994
River Liffey down-gradient of the infiltration area	707580	713961

Table 3. Ambient Monitoring Requirements

Parameter	Units	Frequency
pH	pH Units	Every 2 months
$_{c}BOD_{5}$	mg/l	Every 2 months
COD	mg/l	Every 2 months
Conductivity	µS/cm @20°C	Every 2 months
Total Ammoniacal Nitrogen (as N)	mg/l	Every 2 months
Nitrate (as N)	mg/l	Every 2 months
Nitrite (as N)	mg/l	Every 2 months
Orthophosphate (as P)	mg/l	Every 2 months
Chloride	mg/l	Every 2 months
E. Coli	MPN/100ml	Every 2 months

3.4. The Licensing Authority may give its written consent to a reduced frequency of monitoring of the treated effluent or ambient sampling where a pattern of full compliance with the licence conditions has become established.

3.5. Where the treatment plant does not perform satisfactorily, monitoring of influent and process wastewater shall also be arranged by the Licensee as per EPA Wastewater Treatment Manual: Treatment Systems for Small Communities, Business, Leisure Centres and Hotels (Page 30 section 5.4.7).

3.6. The Licensee shall arrange for sampling and analysis of untreated groundwater from the on-site drinking water supply borehole which serves the facility. Sampling shall be conducted at 6-month intervals. Samples shall be analysed for pH, Conductivity, Ammonium, Nitrate, Orthophosphate, Total Hardness, Sodium, Potassium, Chloride, E.coli, Total Coliforms. The analysis shall be conducted by an independent laboratory holding ISO 17025 accreditation for the relevant parameters. Groundwater monitoring requirements may be amended on the agreement of the Licensing Authority after 2 years from date of grant of licence.

3.7. Copies of the results of monitoring and analysis in respect of Condition 3.1 and 3.3 shall be submitted to the Licensing Authority at dischargelicences@wicklowcoco.ie within 1 month of the date of monitoring. Copies of the results of monitoring and analysis in respect of Condition 3.2 shall be submitted to the Licensing Authority within 1 month of the end of each quarterly monitoring period. A copy of the Certificates of Analysis produced by the analysing laboratory shall be included in respect of results submitted under Condition 3.1 and 3.3. The sample label on the certificates of analysis shall clearly identify the origin, sampling date and sampling time of the samples. The records shall also be made available for inspection on site during normal working hours by Authorised Officers of the Licensing Authority, and any other person authorised under Section 28 of the Local Government (Water Pollution) Act 1977, as amended.

3.8. Service reports on any maintenance conducted on the wastewater treatment system, grease traps, discharge sampling and monitoring infrastructure, shall be submitted to the Licensing Authority at quarterly frequency.

3.9. The discharge sampling and monitoring points shall be operated and maintained in such a manner as to allow safe access by authorised personnel of the Licensing Authority.

Reason: To ensure that an adequate monitoring regime is in place, in the interest of the protection of waters from pollution.

4. Access by Authorised Personnel

4.1. Details of emergency contact personnel, including addresses and telephone numbers, shall be made available to the Licensing Authority within 2 months of the date of grant of this licence. At least one such person shall be available for contact at all reasonable times, having due authorisation from the Licensee to expedite emergency measures as may be required.

4.2. Authorised Officers of the Licensing Authority, or its agents, or any other person authorised under Section 28 of the Local Government (Water Pollution) Act, 1977 shall have access to the site at all reasonable times, including, if necessary, times other than normal working hours.

Reason: To enable access outside normal working hours.

5. Change of Use of the Development

5.1. The Licensee shall notify the Licensing Authority in writing of any change in ownership of the premises or change in company name.

5.2. The Licensee shall notify the Licensing Authority of any proposed change in the operation of the premises, which would cause, or be likely to cause, a material alteration in the nature, or increase in the volume of effluent discharged.

5.3. No changes in relation to the discharge (flow rates, effluent concentrations) shall take place without the prior written agreement of the Licensing Authority.

5.4. The Licensing Authority shall interpret whether any such change is material or not, and whether a review of the Licence is required as a result.

Reason: To ensure that the wastewater treatment system can adequately accommodate effluent from the associated development, arising from changes in operation.

6. Plant maintenance

6.1. The name, address, and telephone number of the person(s) responsible for the daily maintenance of the wastewater treatment system shall be advised to the Licensing Authority within 2 months of the date of grant of this licence. The Licensee shall make provision for stand by staff as may be necessary during the absence of the nominated person(s).

6.2. The Licensee shall enter into service and maintenance contract(s) with competent specialist firm(s) for the on-going operation, preventative maintenance, and servicing of the wastewater treatment system. The preventative maintenance programme shall include for quarterly checks and

servicing of the treatment system and shall include checks and servicing of the distribution pipework of the soil polishing filter in accordance with supplier recommendations. A copy of such contract shall be submitted to the Licensing Authority within 2 months of the date of grant of this licence and annually thereafter.

6.3. The Licensee shall keep a record of all servicing and maintenance conducted on the wastewater treatment system, grease traps, discharge sampling and monitoring infrastructure. Service reports on any maintenance conducted on the wastewater treatment system, grease traps, discharge sampling and monitoring infrastructure, shall be submitted to the Licensing Authority at quarterly frequency.

6.4. The Licensee shall ensure that an annual report detailing the condition and performance of the wastewater treatment system and recording all service and maintenance operations on the wastewater treatment system in the preceding year is submitted to the Licensing Authority within 14 months of the date of grant of this licence and annually thereafter.

Reason: To ensure that the wastewater treatment plant is regularly maintained, in the interest of the protection of waters from pollution.

7. Contributions to the Licensing Authority

7.1. The Licensee shall pay to the Licensing Authority an annual contribution of such sum as the Licensing Authority from time to time determines, towards the costs incurred by the Licensing Authority of monitoring the discharge. For 2025, the Licensee shall pay a pro rata amount from the date of grant of this licence to the 31st of December 2025. This amount shall be paid to the Licensing Authority within one month of the date of grant of this licence. The Licensee shall in 2025 and subsequent years, pay to the Licensing Authority such revised annual contribution as the Licensing Authority determines for the monitoring of the discharge, and all such payments shall be made within 1 month of the date upon which demanded.

7.2. If the frequency or extent of monitoring, investigations or testing conducted by the Licensing Authority needs to be increased, the Licensee shall contribute such sums as determined by the Licensing Authority to defray its costs in relation to the additional monitoring, investigations, or testing.

Reason: To adequate defray the costs of monitoring by the licensing authority.

I confirm that this report represents my professional 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.

Finbarr Quigley
Environmental Scientist

20th October 2025

Appendix 1

Standard AA Screening Determination

Screening for Appropriate Assessment Test for likely significant effects	
Step 1: Description of the project and local site characteristics	
Brief description of project	Application for a discharge licence under section 4 of the Local Government (Water Pollution) Act 1977 and Regulations 1978 as amended.
Brief description of development site characteristics and potential impact mechanisms	The project involves an application for a licence to discharge 60m^3/day of treated domestic wastewater into the ground via a soil polishing filter. The project does not involve any physical works to the site and this Appropriate Assessment Screening is for the discharge licence only. The upgrade of the wastewater treatment system is subject to a separate AA screening (carried oud under file ref 322363) but has been considered in-combination with the discharge licence (see step 3 below). The site is located outside any European site but approximately 100m from the Wicklow Mountains SAC and the Wicklow Mountains SPA. The site is hydrologically linked to the river Liffey which flows into the Poulaphouca Reservoir SPA approx.10km downstream. A Tier 3 Hydrogeological Assessment has been completed for the project which demonstrates that water quality in the river Liffey will not be impacted by the granting of a discharge licence.
Screening report	Y/[redacted]
Natura Impact Statement	[redacted]/N
Relevant submissions	
[Additional information]: *where relevant and appropriate.	
Step 2. Identification of relevant European sites using the Source-pathway-receptor model	

European Site (code)	Qualifying interests[1] Link to conservation objectives (NPWS, date)	Distance from proposed development (km)	Ecological connections[2]	Consider further in screening[3] Y/N
Wicklow Mountains SAC IE0002122	IE0002122	0.102km (100m) S	The site is located near this SAC and groundwater flows south towards the river Liffey which is part of the SAC	Y

Glenasmole Valley SAC IE0001209	IE0001209	6.9km N	No hydrological /geographical pathways or connections	N
Red Bog, Kildare SAC IE0000397	IE0000397	10.49km W	No hydrological /geographical pathways or connections	N
Knocksink Wood SAC IE0000725	IE000725	12.4km NE	No hydrological /geographical pathways or connections	N
Ballyman Glen SAC IE0000713	IE0000713	14.7km NE	No hydrological /geographical pathways or connections	N
Wicklow Mountains SPA IE0004040	IE0004040	0.106km (106m) S	The site is located near this SPA and groundwater flows south towards the river Liffey which is part of the SPA	Y
Poulaphouca Reservoir SPA IE0004063	IE0004063	6.68km W	The river Liffey is 100m south of the site and this flows directly into Poulaphouca Reservoir c. 10km downstream	Y

[1] Summary description / **cross reference to NPWS website** is acceptable at this stage in the report
[2] Based on source-pathway-receptor: Direct/ indirect/ tentative/ none, via surface water/ ground water/ air/ use of habitats by mobile species
[3]if no connections: N

Step 3. Describe the likely effects of the project (if any, alone or in combination) on European Sites

[From the AA Screening Report or the Inspector's own assessment if no Screening Report submitted, complete the following table where European sites need further consideration taking the following into account:

(a) Identify potential direct or indirect impacts (if any) arising from the project alone that could have an effect on the European Site(s) taking into account the size and scale of the proposed development and all relevant stages of the project (See Appendix 9 in Advice note 1A).

(b) Are there any design or standard practice measures proposed that would reduce the risk of impacts on surface water, wastewater etc. that would be implemented regardless of proximity to a European Site?

(c) Identify possible significant effects on the European sites in view of the conservation objectives (alone or in combination with other plans and projects)

AA Screening matrix		
Site name Qualifying interests	**Possibility of significant effects (alone) in view of the conservation objectives of the site***	
	Impacts	**Effects**
Wicklow Mountains SAC IE0002122		
Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]	The conservation objective for this habitat is to maintain favourable conservation conditions. The site is downgradient of the lakes within the SAC, and therefore, there is no potential for a significant effect.	No effects expected.
Natural dystrophic lakes and ponds [3160]	The conservation objective for this habitat is to maintain favourable conservation conditions. The site is downgradient of the lakes within the SAC, and therefore, there is no potential for a significant effect.	No effects expected.
Northern Atlantic wet heaths with Erica tetralix [4010]	The conservation objective for this habitat is to restore favourable conservation conditions. The habitats in the SAC around Kippure are upgradient of the construction works, and on the other side of the valley. Due to this, there is no potential for the discharge to have a significant effect on this habitat	No effects expected
European dry heaths [4030]	The conservation objective for this habitat is to restore favourable conservation conditions. The habitat is upgradient of the discharge site, and on the other side of the valley. Therefore, there is no potential for the discharge to have a significant effect on this habitat	No effects expected
Alpine and Boreal heaths [4060]	The conservation objective for this habitat is to restore favourable conservation conditions. The habitat is upgradient of the discharge site, and on the other side of the valley. Therefore, there is no potential for the discharge to have a significant effect on this habitat.	No effects expected
Calaminarian grasslands of the Violetalia calaminariae [6130]	The conservation objective for this habitat is to restore favourable conservation conditions. This habitat occurs in three subsites in the SAC. These subsites are located approximately 16 km south of the site, and therefore outside the Zone of Influence. Due to this there is no potential for significant effect due to the development	No effects expected
Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230]	The conservation objective for this habitat is to restore favourable conservation conditions. The discharge site is not hydrologically connected to areas containing these habitats, therefore there is no potential for significant effect due to the project.	No effects expected
Blanket bogs (* if active bog) [7130]	The conservation objective for this habitat is to restore favorable conservation conditions. The habitats in the SAC around Kippure are upgradient of the construction works, and on the other side of	No effects expected

	the valley. Therefore, there is no potential for the discharge to have a significant effect on this habitat.	
Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110]	The conservation objective for this habitat is to restore favorable conservation conditions. The habitats in the SAC are upgradient of the construction works, and on the other side of the valley. Therefore, there is no potential for the discharge to have a significant effect on this habitat.	No effects expected
Calcareous rocky slopes with chasmophytic vegetation [8210]	The conservation objective for this habitat is to restore favorable conservation conditions. The habitats in the SAC are upgradient of the construction works, and on the other side of the valley. Therefore, there is no potential for the discharge to have a significant effect on this habitat.	No effects expected
Siliceous rocky slopes with chasmophytic vegetation [8220]	The conservation objective for this habitat is to restore favorable conservation conditions. The habitats in the SAC are upgradient of the construction works, and on the other side of the valley. Therefore, there is no potential for the discharge to have a significant effect on this habitat.	No effects expected
Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	The conservation objective for this habitat is to restore favourable conservation conditions. This habitat has been mapped in the conservation objectives document for the SAC. The closest location of this habitat is 9.6krn southeast of the site. There is no hydrological link to this habitat from the development, and therefore there is no potential for significant effect due to the development.	No effects expected
Lutra lutra (Otter) [1355]	The conservation objective for this species is to maintain favourable conservation conditions. The water quality in the river Liffey will not be impacted by the development. Therefore, there is no potential for a significant effect.	No effects expected
	Likelihood of significant effects from proposed development (alone): N	
	If No, is there a likelihood of significant effects occurring in combination with other plans or projects? No	
	Possibility of significant effects (alone) in view of the conservation objectives of the site*	
Wicklow Mountains SPA IE0004040		
Merlin - *Falco columbarius*	The conservation objective for this species is to maintain favourable conservation conditions. The discharge is into groundwaters and will not impact on habitats important to this species. Therefore, there is no potential for a significant effect.	No effects expected
Peregrine- *Falco peregrinus*	The conservation objective for this species is to maintain favourable conservation conditions. The discharge is into groundwaters and will not impact on habitats important to this species. Therefore, there is no potential for a significant effect.	No effects expected

	Likelihood of significant effects from proposed development (alone): N	
	If No, is there a likelihood of significant effects occurring in combination with other plans or projects? No	
	Possibility of significant effects (alone) in view of the conservation objectives of the site*	
Poulaphouca Reservoir SPA IE0004063		
Greylag Goose - *Anser anser*	The conservation objective for this species is to maintain favourable conservation conditions. This SPA is 10km downstream from the proposed development. The discharge will be into the ground and the water quality in the river Liffey will not be impacted. Therefore, there is no potential for a significant effect.	No effects expected
Lesser Black-backed Gull *Larus fuscus*	The conservation objective for this species is to maintain favourable conservation conditions. This SPA is 10km downstream from the proposed development. The discharge will be into the ground and the water quality in the river Liffey will not be impacted. Therefore, there is no potential for a significant effect.	No effects expected
	Likelihood of significant effects from proposed development (alone): N	
	If No, is there likelihood of significant effects occurring in combination with other plans or projects? No	
	Possibility of significant effects (alone) in view of the conservation objectives of the site*	
* Where a restore objective applies it is necessary to consider whether the project might compromise the objective of restoration or make restoration more difficult.		
Further Commentary/ discussion (only where necessary)		
Step 4 Conclude if the proposed development could result in likely significant effects on a European site	It is not likely that there would be any significant impact either directly or indirectly on the identified Natura sites with respect to the granting of a discharge licence. The discharge of treated wastewater into the ground will not directly or indirectly impact on any of the habitats or species of the Natura sites considered, nor will it contravene their conservation objectives, plans, or	

	targets. The development location consists of non-annexed habitat. The proposed development does not require water abstraction or direct discharge to surface water, land, or air. The development has no potential for significantly impacting on the conservation objectives of the Wicklow Mountains SAC. The Wicklow Mountains SPA and the Poulaphouca Reservoir SPA have no potential for impact due to the project as there are no potential impacts which would influence the conservation objectives for these SPAs
Conclusion	I conclude that the proposed development (alone) would not result in likely significant effects on the Wicklow Mountains SAC IE0002122, Wicklow Mountains SPA IE0004040 or Poulaphouca Reservoir SPA IE0004063. The proposed development would have no likely significant effect in combination with other plans and projects on any European site(s). No further assessment is required for the project.

Appendix 2

WFD IMPACT ASSESSMENT STAGE 1: SCREENING			
Step 1: Nature of the Project, the Site and Locality			
An Bord Pleanála ref. no.	**ABP-322055-25**	**Townland, address**	Kippure Lodge & Holiday Village, Kippure Estate, Manor Kilbride, Blessington, Co. Wicklow
Description of project		Application for a discharge licence under section 4 of the Local Government (Water Pollution) Act 1977 and Regulations 1978 as amended.	
Brief site description, relevant to WFD Screening,		The site is located on an elevated site with free draining soils overlying a poorly productive aquifer. The application was for the discharge of up to 60m^3/day of treated domestic wastewater into a soil polishing filter which discharges into groundwaters. The groundwater travels <200m before recharging into surface waters of the River Liffey and its tributary the Athdown Brook.	
Proposed surface water details		Rainwater will percolate through the ground into groundwaters. No other surface waters arising.	
Proposed water supply source & available capacity		Drinking water is supplied from an on-site well with no capacity issues identified	
Proposed wastewater treatment system & available capacity, other issues		Wastewater will be treated in a new 600 pe O'Reilly Oakstown BAF System with denitrification and phosphorous removal. The treated wastewater will discharge into a 3,000m^2 soil polishing filter.	

Step 2: Identification of relevant water bodies and Step 3: S-P-R connection						
Identified water body Type	**Distance to (m)**	**Water body name(s) (code)**	**WFD Status**	**Risk of not achieving WFD Objective e.g.at risk, review, not at risk**	**Identified pressures on that water body**	**Pathway linkage to water feature (e.g. surface run-off, drainage, groundwater)**
River Waterbody	100 - 200m	Liffey_020	Good	Under Review (pH identified as a potential issue)	Forestry, Peat Extraction	No direct connection to surface water but underlying groundwater flows down gradient and discharges to the river Liffey. Strong S-P-R linkage established
Groundwater Waterbody	Underlying site	Kilcullen IE_EA_G_003	Good	At risk – aggregated pollutant (Phosphate) concentration < TV(s), but individual site concentrations higher than TV(s).	Anthropogenic, Agriculture & Forestry	S-P-R Linkage well established. Discharges of treated wastewater via soil polishing filter into groundwaters

Step 4: Detailed description of any component of the development or activity that may cause a risk of not achieving the WFD Objectives having regard to the S-P-R linkage.							
CONSTRUCTION PHASE							
No.	Component	Waterbody receptor (EPA Code)	Pathway (existing and new)	Potential for impact/ what is the possible impact	Screening Stage Mitigation Measure*	Residual Risk (yes/no) Detail	**Determination** to proceed to Stage 2. Is there a risk to the water environment? (if 'screened' in or 'uncertain' proceed to Stage 2.**
1.	Surface	Liffey_020	No direct discharge pathway. Risk of overland flows to watercourses is low due to distances	Siltation, hydrocarbon spillages	Standard construction practice CEMP	No	Screened out
2.	Ground	Kilcullen IE_EA_G_003	Pathway exists as soils are free draining, improving the connectivity to groundwaters	hydrocarbon spillages	As above	No	Screened out
OPERATIONAL PHASE							
3.	Surface	Liffey_020	No direct discharge pathway. Risk of overland flows to watercourses is low due to distances	Discharges of raw sewage to surface waters via overland flow	Implementation of WWTP Operational & Maintenance Plan. Compliance	No	Screened out

					with Discharge Licence		
4.	Ground	Kilcullen IE_EA_G_003	Pathway exists as soils are free draining, improving the connectivity to groundwaters	Discharges of excess volumes of untreated sewage to groundwaters	Implementation of WWTP Operational & Maintenance Plan. Compliance with Discharge Licence	No	Screened out