Inspector's Addendum Report

ABP-320352-24

Development	'The Fort Dunree Project' - Conservation led restoration and upgrade of the existing visitor experience at Fort Dunree
Location	Fort Dunree, Dunree, Buncrana, Co. Donegal, F93 C424
Local Authority	Donegal County Council
Type of Application	Application for approval made under Section 177(AE) of the Planning and Development Act, 2000 (local authority development requiring appropriate assessment).
Prescribed Bodies	Development Applications Unit Failte Ireland
Observer(s)	Cathal Friel Cathal Kelly Ciaran and Siobhan Tourish Cllr. Fionan Bradley David Dickson Football Special Ltd Gareth Evans International Fund for Ireland James A Sharkey

Marius Harkin

Ramelton Men's Group

Regina McHugh

WT McCarter

Date of Site Inspection	03rd November 2024
Inspector	Donogh O'Donoghue

1.0 Introduction

1.1. This report is an addendum report to my Inspector's report in respect of ABP-320352-24 (dated 12th February 2025).

1.2. The submissions on the file and the Inspector's report were considered at a Board meeting held on the 27th of March 2025. The Board decided to defer consideration of this case and to issue a request for further information in accordance with Section 177AE(5) of the Planning and Development Act 2000, as amended, as follows:

(a) Details of the depth of the watertable and the depth of soil/subsoil beneath the proposed percolation area/polishing filter to serve the lower treatment plant (serving the Miliary Museum, Café, Wildlife centre etc.)

(b) Reference is made to the provision of a suitably sized primary settlement tank to serve the wastewater treatment plant. Please provide details of the location, size and whether the tank is to be located within the ground or above ground in further plans to be submitted to the Board.

(c) Reference is made in the Drainage and Water Supply Report, to the provision of a settlement tank, which "allows me to base the infiltration are (sic) on hydraulic loading rather than the organic loading". The Board is not aware of any precedent arrangements where the size of a percolation area/ polishing filter, is based purely on the hydraulic loading rates as opposed to both the hydraulic loading and organic loading rates. In the case of a conventional wastewater treatment system which includes a tank to allow primary settlement, percolation area/ polishing filters are calculated on the basis of the overall effluent loading rates ie hydraulic and organic loadings. In the case of the current application a conventional calculation of the polishing filter area would require an infiltration / polishing filter area of 666.25 sq.m. Please provide documentation/guiding principles/precedents on which the approach to size the percolation area on hydraulic loading rates only, is based.

(d) It is noted in Section 6.0 of the Site Characterisation submitted on 19th day of February as further information, that the hydraulic loading rate of 60litres/m²/day is anticipated for the polishing filter. It is noted in Table E.2 of the EPA Guidance On the Authorisation of Discharges to Groundwater that the design loading rate (LTAR)(1/m²/d) for secondary treated pumped effluent for T-values on the range of 5-

20 is 20litres/m²/d. Please comment in on any justification to permit such high hydraulic loading rates onto the polishing filter.

(e) The Drainage and Water Supply Report recommends a polishing filter area of 275 sq.m whereas the Site Characterisation Form submitted as part of the further information response indicates a polishing filter area of 327 sq.m. Please clarify.

(f) Please comment on the extent to which natural recharge infiltration rates though rainfall was incorporated into the hydraulic loading rates calculations for the polishing filter.

(g) Please provide detailed drawings/diagrams including cross sections of the proposed polishing filter and the detailed methodology to be employed in constructing the polishing filter including any gabions that may be required to stabilise the proposed polishing filter. The applicant is requested to provide site specific details rather than generic diagrams from manuals.

(h) Notwithstanding the fact that the lighthouse is to be infrequently used other than by staff, please provide details of existing/proposed wastewater treatment arrangements for the building.

Based on the information submitted the Board may be minded that the site characteristics at Dunree Fort may not be suitable to accommodate a conventional wastewater treatment system which discharges to groundwater. In the case where further investigations conclude that it may not be technically feasible to facilitate a wastewater treatment plant to discharge to groundwater, the applicant is requested to investigate alternative means to address wastewater treatment issues.

1.3. The Board did not invite any additional submissions from the parties in relation to this issue, and no further public notification was considered to be required.

2.0 **Response from Applicant**

2.1. A response to the Further Information was submitted on the 23rd April 2025. The assessment responded to each of the 8 items (a-h) listed in the further information request.

(a) The applicant set out that Appendix B ‘Site Investigation Report’ provides details of intrusive site investigations carried out. In total 28 no trial pits were

excavated at various location across the site to a maximum depth of 1.250m below ground level. Two excavations (Trial pits 17 and 18) were carried out in the lower treatment plant by a Hitachi 360 excavator. Trial pits 17 and 18 have a soil depth of 0.250 m and 0.700 m respectively and no groundwater was observed in either of the two the trial pits. Appendix C of the submission includes details of Trial Pit Logs and Photographs.

(b) The applicant confirms all required chambers are all located within the ground. The Bespoke Oxcrete 300 incorporates a pre-settlement tank which allows settlement of material as part of the system. With this specified system there is no requirement for a separate holding tank as the pre-settlement tank will be incorporated as part of the proposed unit. Ensuring the requirements for primary treatment are met. Appendix C 'Drainage Details' drawing no 6011 provides a location plan and sections and drawing no 20326 provides details of the Viltra 'OXC 300 Treatment Plant – General Layout'.

(c) The applicant states that the proposed wastewater treatment system comprises the following treatment stages - Primary Treatment (Sediment tank), Secondary Treatment (Biological treatment unit), Tertiary Treatment: (Intermittent monograde sand filter) and Final Disposal (Soil polishing filter -discharge to ground). These pre-treatment steps result in a significantly reduced organic loading rate on the monograde sand filter.

The monograde intermittent sand filter, as described in EPA CoP 2021, Section 10.3.1, is primarily a hydraulic polishing unit, receiving treated effluent with low BOD and SS concentrations. Therefore, the hydraulic load, not the organic load, becomes the critical design parameter. The applicant sets out that the EPA Code of Practice explicitly states: "Intermittent sand filters… shall be loaded at a maximum hydraulic loading rate of 60 L/m²/day." (EPA CoP 2021, Table 10.2: Design Loading Rates for Tertiary Treatment Units).

The applicant goes onto note that the final effluent received by the soil is already highly treated, thus further justifying the upstream use of hydraulic loading rate only for the sand filter design. The applicant concludes that based on EPA guidance, and considering the high quality of pre-treated effluent entering the

monograde sand filter, it is both appropriate and compliant to size the infiltration area of the sand filter using the hydraulic loading rate of 60 L/m²/day.

(d) The applicant sets out that for systems that incorporate a properly designed intermittent monograde sand filter, the use of a hydraulic loading rate of 60 litres/m²/day is both technically appropriate and fully compliant with the EPA Code of Practice. According to the EPA CoP 2021, the following applies to intermittent sand filters: "Intermittent sand filters are used to provide tertiary treatment of wastewater where effluent has been previously treated to secondary standards… They shall be loaded at a maximum hydraulic loading rate of 60 L/m²/day." (EPA CoP 2021, Section 10.3.1 and Table 10.2). Application of more conservative loading rates from EPS Table E2 is not relevant in this context, as that guidance applies solely to systems without tertiary filtration, where secondary treated effluent is discharged directly to soil. Therefore, the infiltration area of the monograde sand filter should be calculated using 60 L/m²/day, in accordance with EPA CoP 2021, Table 10.2.

(e) The applicant clarifies that a polishing filter area of 275 sq.m. for the lower treatment plant is recommended. A further polishing filter of 52 sq.m is required at the high fort site. The value of 327 sq.m contained within the Site Characterisation Form is the combined value of these 2 sites.

(f) The applicant sets out that the current EPA Code of Practice (2021) for Domestic Wastewater Treatment Systems (Population Equivalent ≤10) does not require or advise site assessors to include such rainfall infiltration figures in the calculation of HLRs for polishing filters. However, for completeness, the applicant has provided an indicative calculation of natural recharge infiltration undertaken for the polishing filter proposed on this site, which has an infiltration area of 275 m². This would equate to approximately 720 litres/day of natural recharge infiltration through the filter bed over the course of the year, on average. The applicant is of the opinion, the calculated natural recharge infiltration rate of approximately 720 litres/day would have no adverse effect on the quality of the final treated effluent. This is because the polishing filter is designed specifically to receive and treat wastewater only, and the additional infiltration from rainfall does not alter the nutrient load applied to the filter. Furthermore, the free-draining nature of the filter media ensures that excess

water, including infiltrated rainfall, is dispersed without compromising the filter's treatment capacity or retention time.

(g) The applicant refers to Appendix C 'Drainage Details' drawing no 6011' for the requested detailed cross sections, a retaining structure will be required and has been indicated.

(h) The applicant sets out that the occupancy of the lighthouse is to remain the same and there will be no change in the usage / loading. The existing lighthouse drains to an existing septic tank, no changes to the system are proposed. The applicant refers to Appendix D which illustrates the existing MH25 and septic tank connectivity map.

3.0 Technical Report

3.1. A Technical Report on the Further Information response and the acceptability of the proposed plans to treat wastewater, prepared by Finbarr Quigley' Environmental Scientist of the Inspectorate's Environmental Team is appended to this Addendum Report.

3.2. His assessment concludes that the applicant has not demonstrated to a satisfactory level that the proposal to treat and discharge the projected volumes of wastewater arising at this site will not negatively impact on groundwater and coastal water quality. Therefore, he recommends that the development be refused permission on the grounds that compliance with the objectives of Article 4 of the Water Framework Directive has not been demonstrated.

4.0 Assessment

4.1. In my assessment below I will go through the applicant's response to the Further Information Request. My assessment will include reference to the Technical Report prepared by the Finbarr Quigley, Environmental Scientist of the Inspectorate's Environmental Team.

Lower Treatment Plant/Museum Site

4.2. In relation to item (a) of the further information request the applicant provides details of two trial hole surveys (Trial Pits 17 and 18) carried out at the lower treatment

plant/museum site. Appendix C of the submission includes details of Trial Pit Logs and Photographs. They state that Trial Pits 17 and 18 have a soil depth of 0.250 m and 0.700 m respectively and no groundwater was observed in the trial pits.

4.3. A number of concerns are raised in relation to testing and detail submitted in relation lower treatment plant

1. At the lower treatment plant, the map shows the location of the proposed treatment plant relative to the infiltration test only. It does not show the location of the polishing filter which is proposed further south of the treatment plant. Having regard to the distance from where the infiltration test was carried out and the proposed polishing filter location it may not provide an accurate representation of the effectiveness of the proposed polishing filter.
2. The inspectorate's Environmental Scientist raises serious concerns in relation to the surface percolation test carried out. His report notes that the 'surface percolation test for the museum site were recorded at a location (IT03) which is approximately 40m from the proposed location of the polishing filter. No photographs of these percolation test holes were provided. The PV results were 1.75, 2 and 55 which when averaged, gave a value of 19.83. None of the three individual PV results obtained were within the preferred 3-20 range which coupled with the distance from the proposed polishing filter is of concern. There is a risk that PV values under the sand polishing filter will be too low (<3) which could indicate a direct discharge into the bedrock or fractured bedrock. The trial hole survey for the entire site has demonstrated significant variability in soil depth and bedrock level therefore, the outcome of the PV tests conducted 40m away and their relevance to the proposed polishing filter location is questionable.' In addition, I reiterate again further deficiencies with regard to the testing including the lack of water to carry out the tests as well as the varying size of the subsurface percolation tests holes.
3. The Code of Practice, 2021 specifies separation distances between elements of a proposed wastewater treatment system and various sensitive receptors and features. These are listed in table 6.2 (page 28 of the CoP) and include a 50m separation distance from a lake or foreshore. Part of the proposed polishing filter is less than 50m from the foreshore and therefore not compliant

with the requirements of the CoP. 2021. Figure 3-1 in the Inspectorate's Environmental Scientist report sets out details of the proximity of the polishing filter to the foreshore.

4. The Inspectorates Environmental Scientist also raises concerns in relation to the sloping nature of the location of the polishing filter and that the depths recorded at this location may reflect the contouring carried out to accommodate the nearby road and not be an accurate reflection of the expected depth of soil in this area. In addition, a retaining structure is proposed for the southern and eastern boundaries of the polishing filter to maintain the structure. The Inspectorates Environmental Scientist notes that because of the steep slope encountered, the applicant proposes to excavate an area the size of the footprint of the polishing filter which will require excavation down to 3m below the existing ground level. This potentially means the base of the new polishing filter could be located significantly below the expected levels of bedrock.

4.4. In relation to item (c) of the further information request the applicant has indicated that at the lower fort the sand polishing filter would discharge onto an area of 275m^2 of soil polishing filter. Table 10.1 of the CoP, 2021 specifies that where the percolation value (PV) of the site is between 3 and 20, the area required for the tertiary infiltration area is 3.75m^2 per person. Therefore, for a system required to treat a p.e. of 267, the area of infiltration required is 1,001$m.^3$ (267 x 3.75m^2). The proposed soil polishing filter at 275m^2 is well short of what is required and therefore not compliant with Table 10.1 of the CoP, 2021.

4.5. The applicant's wastewater proposals are based on compliance with the requirements of the EPA Code of Practice (Domestic Wastewater Treatment Systems), 2021. However, this code of practice provides guidance on domestic wastewater treatment systems for single houses or equivalent developments with a population equivalent (p.e.) of less than or equal to 10. The Inspectorate's Environmental Scientist points out that the proposed development intends to install two new wastewater treatment systems of 70 p.e. and 300 p.e. and whether the CoP, 2021 can be scaled up to assess developments of the size proposed in this case is questionable.

4.6. With regard to item (d) of the Further Information request the applicant sets out that Table E2 of the EPS Guidance for Discharges to Groundwater provides recommended

loading rates for secondary treated effluent pumped directly to ground, where no tertiary filter is provided. However, they note that in systems incorporating a tertiary monograde sand filter, this function is already being performed in a controlled, engineered environment. Therefore, applying Table E2 loading rates to the surface of a tertiary filter would amount to double-counting the treatment requirement, and drastically under-sizing the filter. The applicant concludes that for systems that incorporate a properly designed intermittent monograde sand filter, the use of a hydraulic loading rate of 60 litres/m²/day is both technically appropriate and fully compliant with the EPA Code of Practice.

4.7. I note the EPA produced document *Guidance on the Authorisation of Discharges to Groundwater*, 2011 includes guidance on the appropriate levels of technical assessment for different types and scales of discharges. Tier 1 assessments cover low-risk activities. Tier 2 assessments generally cover moderate risk activities, including inputs greater than 5 m3 /d and less than or equal to 20 m3 /d of domestic wastewater associated with OSWTS.

4.8. Based on a discharge rate of 16m^3/day of wastewater the EPA Guidance suggests that a Tier 2 assessment is required to establish the suitability of the site for this volume and type of discharge. The level of detail needed is case specific, but the objective is to provide representative hydrogeological data.

4.9. The Inspectorate's Environmental Scientist is not satisfied that it has been demonstrated that the area under the polishing filter can safely attenuate discharges of wastewater of up to 16m3/day in the absence of an appropriate Tier 2 site assessment being completed. His report goes onto note that the bedrock underlying the proposed polishing filters has a low ability to retain groundwater and subsurface discharges of partially treated wastewaters to the nearby coastal waters are likely to occur. This could lead to an increase in nutrients and/or the production of a biofilm and associated odours on the exposed bedrock along the foreshore. Overall having regard to the assessment criteria set out in the EPA *Guidance on the Authorisation of Discharges to Groundwater*, 2011 document I concur with this position.

High Fort site

4.10. The Inspectorate's Environmental Scientist also notes that the applicant has not carried out an appropriate site characterisation/assessment for the treatment system intended to serve the 'Hill Fort' site. No trial hole was excavated and while surface percolation test holes were excavated, no results for percolation tests were provided for this site. No cross section or plan drawings for the proposed treatment system to serve this site have been provided. This represents an inappropriate level of site investigation for a wastewater treatment system designed to cater for a p.e. of 51.

Water Framework Directive

4.11. The two proposed wastewater treatment systems are located on slopes which face the Lough Swilly (NW_G_059) Groundwater Waterbody. The distances from the proposed locations for the wastewater treatment systems to the closest part of the coast are 40m at the Lower Treatment plant site and 100m at the Hill Fort site and the slope towards the sea is steep (>1:5). The Lough Swilly (NW_220_0000) Coastal Waterbody is currently at Good Status based on 2016-2021 data. However, it has been characterised as being At Risk of not achieving its environmental objective of High Status by 2027. Urban wastewater, domestic wastewater and urban run-off have all been identified as significant pressures to the status on the Lough Swilly coastal waterbody.

4.12. The Inspectorate's Environmental Scientist sets out that because of the proximity (<50m) of the proposed OSWWTS at the Museum site to the coast, the high slope (Section 3.0 of the SCR states between 1:5 and 1:20) and the lack of appropriate site assessment, there exists a significant risk that partially treated wastewaters may discharge directly into coastal waters at this location by flowing along the interface between bedrock and soil or a fracture in the bedrock. The high volumes of wastewater discharges predicted to occur here increase the risk that elevated nutrients, and potentially pathogenic bacteria may be discharged into the coastal waters at this location.

4.13. Overall, in the absence of appropriate site assessments I am not satisfied that there is no conceivable risk to Lough Swilly. Discharges of partially treated wastewater into the sea from this project would potentially impact the quality of nearby bathing waters as well as shellfish waters in Lough Swilly.

5.0 Conclusion

Overall, the site characterisation/assessment carried out by the applicant has not been robust enough to demonstrate to a satisfactory level that the proposal to treat and discharge the projected volumes of wastewater arising at this site will not negatively impact on groundwater and coastal water quality.

6.0 **Recommendation**

I recommend planning is refused for the following reason:

Having regard to deficiencies in the site assessment/site characterisation report the Board cannot be satisfied, that effluent from the development can be satisfactorily treated and/or disposed of on site in a manner that would not give rise to the risk of pollution to surface water and/or ground water. The proposed development would, therefore, be prejudicial to public health and would negatively impact on the Lough Swilly waterbody achieving the relevant water quality status required under the Water Framework Directive.

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

Donogh O' Donoghue
Planning Inspector

01st July 2025

Technical Report to Inspector

ABP 320352-24_App1

Development	Restoration and upgrade of the existing visitor experience at Fort Dunree, Donegal
Type of Application	Section 177AE(4)(a)
Topic	Assessment of the proposals for On-Site Wastewater Treatment and Water Framework Directive Impact Assessment
Scientist	Finbarr Quigley B.Sc., M.Sc.
Planning Inspector	Donogh O'Donoghue

1.0 Introduction

1.1. Scope of Report to Inspector

1.1.1. This report to the Inspector and available to the Board is a written record of my review and examination of the submitted information provided by the applicant as it relates to water resources and the aquatic environment around the development. In my capacity of Inspectorate Environmental Scientist, I have the relevant expertise to provide a professional opinion as to the adequacy of the information for the Inspector and the Board to undertake a decision on the application for permission for the development of Dunree Fort as outlined in the application.

1.1.2. I have been requested to provide an opinion of the acceptability of plans to treat wastewater arising from this proposed project. My comments will be limited to those related to the issue of volumes and nature of wastewaters arising and the impacts of the disposal options on surface waters and groundwaters and potential impacts on water framework directive compliance.

1.1.3. In assessing this application, I have reviewed the following documentation and reference material:

- Report prepared by TecSoil Site Assessment Ltd. on the projected loadings and wastewater treatment system to be employed (August 2023).
- Drainage and Water Supply Report prepared by Design ID for the Fort Dunree Project
- EPA Code of Practice (2021) Site Characterisation Form submitted by the applicants
- EPA EDEN site for relevant Water Framework Directive information
- GSI site for relevant soil, bedrock, aquifer, and risk assessment information
- EPA Code of Practice (Wastewater Treatment and Disposal Systems Serving Single Houses p.e. <10), 2021
- EPA Guidance on the Authorisation of Discharges to Groundwater, 2011
- EPA Guidance Document “Treatment systems for small communities, business, leisure centres and hotels.,” 1999

2.0 Description of the Project

2.1. Existing Wastewater Infrastructure

2.1.1. Fort Dunree is a tourist attraction located on the western side of the Inishowen peninsula in County Donegal. It consists of a Military Museum, a Wildlife Discovery Room, Coffee Shop, and shop. These facilities are currently served by an FM Environmental Biofilter Model 3STD (20 p.e.) wastewater treatment system and percolation area/soakaway. There is also an area known as the “High Fort” located on the top of the hill, to the west of the Museum. This site was served by a derelict septic tank and soakaway area. The toilets and septic tank at this second location are not currently in use. There is also a septic tank serving the Lighthouse located to the north of the Museum. The toilet and associated septic tank are in use.

Figure 2-1 Location (approx.) of existing wastewater treatment facilities at Dunree Fort site

2.2. Proposed Wastewater Infrastructure

2.2.1. The project proposes that two new wastewater treatment systems be installed: one serving the ‘High Fort’ and one serving the Museum/Coffee Shop area. The septic

tank serving the lighthouse is not due to be changed as part of this project. I have not considered the septic tank serving the lighthouse any further in this report as no changes are proposed to either the loading or the treatment facilities at this location.

2.2.2. It is proposed to replace the septic tank serving the High Fort site with a secondary treatment plant with associated sand polishing filter incorporating imported sand and soil for the polishing filter. The existing treatment system serving the Museum and Coffee Shop is to be replaced by a new secondary treatment system with associated sand polishing filter. This sand polishing filter will require the importation of suitable sand and soil to the site.

2.2.3. The applicant submitted a loading estimate which was prepared by TecSoil Site Assessment Ltd. This loading estimate was based on the projected number of visitors to the site in the future. The source of this data is unclear. This report suggests that up to 1283 daily visitors (peak season) could be expected to visit the Dunree Fort site. Of these, 80% will contribute to the wastewater generated at the museum site and 20% will contribute to the wastewater generated at the High Fort site.

2.2.4. The report suggests that the following wastewater loadings will be used to design the treatments systems for the two locations:

Museum Site				
80% of 1283 visitors = 1026 users				
	Usage (l/day)	**Total Flow (m^3/day)**	**Usage (gBOD/day)**	**Total BOD (kg/day)**
1026 visitors	15	15.39	15	15.39
20 staff	60	1.2	30	0.6
Totals		16.59		15.99
Population Equivalent		**111**		**267**

The estimated hydraulic loading for the Museum site is expected to be 16.59m^3, which (assuming 150l/p/d) equates to a population equivalent p.e. of 110.6 (111). The daily organic loading based on the information above equates to 16kg BOD/day which (assuming 0.06kg BOD/p/d) equates to a population equivalent of 267 p.e.

High Fort Site				
20% of 1026 visitors = 205 users*				
	Usage (l/day)	**Total Flow (m^3/day)**	**Usage (gBOD/day)**	**Total BOD (kg/day)**
205 visitors	15	3.1	15	3.08
Population Equivalent		**21**		**51**

* Note the number of users should have been calculated using 20% of 1283 = 256

The estimated hydraulic loading for the High Fort site is expected to be 3.1m^3, which (assuming 150l/p/d) equates to a population equivalent p.e. of 20.5 (21). The daily organic loading based on the information above equates to 3.1kg BOD/day which (assuming 0.06kgBOD/p/d) equates to a population equivalent of 51 p.e.

It is not referenced in the report however it is assumed that the wastewater loading rates used in these calculations were obtained from Table 4: Recommended wastewater loading rates from commercial premises contained in the EPA Guidance Document *Treatment systems for small communities, business, leisure centres and hotels*., 1999.

2.3. **Site Characterisation**

2.3.1. The application included a Drainage and Water Supply Report (July 2024) prepared by Design ID which stated that "*As a high rock level is present on site at the location of both proposed treatment plants, a traditional drainage field disposal method is not suitable. An assessment has been carried out by TecSoil on the existing ground conditions which agrees that infiltration is not possible on this site. In this case it has been recommended that all materials relating to the disposal of treatment plant effluent will have to be imported."*

2.3.2. Tec Soil Site Assessment Ltd. Prepared a report (August 2023) outlining the options for wastewater treatment on the Dunree Fort site. The report details how the site was visited in August 2023 and the author (Hugh Boyle) formed the opinion that percolation tests would not be possible due to "*the lack of soil depth and gaining safe access for a digger to the land earmarked for the disposal of final wastewater.*" The report continues that the opinion of an Environmental Health Officer (Barry Callaghan, HSE) was sought who (following a site visit on 15th August 2023) agreed that it would not be possible to carry out the standard trial hole and percolation tests. The report states that Mr. Callaghan advised Mr. Boyle that "*because of the topography that strongly indicates flow paths that descend towards the shores & sea….that every effort be made to ensure the final effluent is of good quality and does not negatively impact on the environment, public health or receiving waters*."

2.3.3. This report also recommended that two new wastewater treatment systems be installed as follows. For the museum site, it was recommended that "*a Certified Secondary Wastewater Treatment Plant with a minimum capacity to serve a Population Equivalent of 267 be provided. It was recommended that treatment plant wastewater is pumped intermittently to an Intermittent Mono-grade Sand Filter (sand effective size 0.3 -0.5mm) with an infiltration area of 275sqm.*" The report also states "*Sand Filter wastewater will discharge to a 900mm bed of imported soil with a percolation rate in the 5-20 range. I am recommending that when importing the soils, that tests are carried out by a qualified person.* ***Note:*** *The existing topography of the land area earmarked for the disposal of secondary treated wastewater strongly indicates that Gabions or GRP impermeable panels or similar may need to be used to retain all imported materials.*"

In relation to the sizing of the polishing filter, the report states "*Usually, the infiltration area is calculated on the population equivalent of the required treatment plant which is 266.5 x 2.5sqm -this equates to an infiltration area of 666.25sqm. Considering the topography of this location, in my opinion, it would be challenging to achieve an infiltration of such a size. Therefore, the provision of a settlement tank allows me to base the infiltration are on hydraulic loading rather than the organic loading i.e. an infiltration of 275sqm.*"

For the High Fort site, it was recommended that "*a Certified Secondary Wastewater Treatment Plant with a minimum capacity to serve a Population Equivalent of 52 be*

provided. To enhance the quality of final effluent, I will be recommending, that treatment plant wastewater is pumped intermittently to an Intermittent Mono-grade Sand Filter with an infiltration area of 20sqm. Sand Filter wastewater will discharge to a 900mm bed of imported soil with a percolation rate in the 5-20 range. The surface area of the soil bed will be 52sqm. I will be recommending that when importing the soils, that tests are carried out by a qualified person. ***Note:*** *The sloping ground here suggests that retention of all imported materials may also be required.*"

This report also recommended that the following actions be undertaken at both sites as part of the installation of new wastewater facilities:

- A suitably sized grease trap be fitted.
- That all surface water be diverted away from the polishing filters.
- That two sampling ports be installed within the polishing filters, one below the sand layer and one below the soil polishing filter.
- The sides of the sand polishing filter be enclosed by an impermeable liner to prevent wastewater 'break-out.' A geotextile fabric is to be installed over the entire polishing filter to prevent silt and soil particles clogging the sand.
- The existing wastewater systems to be 'retired.'
- That a maintenance service agreement be entered into.

2.3.4. No site characterisation report was submitted with the application. The Board requested further information from the applicant on 3rd December 2024 specifically referencing the issue of site characterisation. The FI requested included "*a fully completed site characterisation report and technical reports (if required) to demonstrate that the proposed wastewater systems will not result in any conceivable risk to any surface and/or ground waterbodies including the Lough Swilly Waterbody in achieving their Water Framework Directive's environmental objectives. If satisfactory on-site wastewater proposals cannot be achieved, an alternative solution(s) to deal with wastewater should be proposed and full details submitted.*"

2.3.5. A site characterisation report (SCR) was submitted by Design ID on the 10th of January 2025 with the following comment attached "*please find attached Site Characterisation Form demonstrating no conceivable risk to any surface and/or groundwater bodies.*"

The SCR was completed and signed by Harriet Warnock from Design ID, but it is not clear from the report if she conducted the site investigations or has competed the Site Suitability for On-Site Wastewater Treatment course. The report was dated 16th January 2025, and the percolation tests were conducted on 9th January 2025.

2.3.6. The SCR described the bedrock geology as quartzite, the aquifer type as Poor (bedrock which is generally unproductive except for local zones), the groundwater vulnerability as extreme (with rock at the surface) and the soils are described as shallow, rocky, peaty complexes. There were no watercourse/streams identified in the SCR. Drinking water is supplied via an Uisce Eireann mains supply. In Section 2.0 General Details, the following comment was made "*The vulnerability of the site is "extreme" due to rock present at or near ground level – this is the nature of the site and can be considered a low-risk criteria given that, whilst the rock is at surface level, it is a poor aquifer, not in an SPA, etc.*"

Section 3.0 includes the following comment "*Proposed wastewater treatment plant locations are in areas of varying slope (>1:5 – 1:20)*".

2.3.7. No trial hole excavation was conducted for either site and the following comment was included in the SCR "*As discussed with Nicola McClean (HSE), trial holes have not been carried out due to the very shallow nature of the bedrock. Surface percolation tests have been carried out as requested*." No subsurface percolation tests were conducted however, Section 3.3(b) does provide results from three surface percolation tests for the site to serve the museum. The SCR suggests that three test holes were used with the following dimensions.

- Test hole 1 - 1.2m long x 0.3m wide x 0.5m deep
- Test hole 2 – 0.75m long x 0.3m wide x 0.5m deep
- Test hole 3 – 0.85m long x 0.3m wide x 0.5m deep

These test hole dimensions are not typical of those normally used in this assessment.

Two presoaks were conducted prior to undertaking the percolation tests on three test holes. The results for the three test holes were 2.00, 1.75 and 55.75. These three results were averaged to give a value of 19.83 (min/25mm).

The SCR included the following comment after reporting the average value of 19.83 for the surface percolation test "*Due to the constrained nature of the site, there was no availability of water to test hole locations and access with water was also constrained. As such, testing has comprised of two pre-soaks, and one round of infiltration testing at each of the three locations. As infiltration potential is favourable in all three locations, for both pre-soaks and the infiltration testing, the results have been deemed satisfactory in proving infiltration as a viable discharge method. Proposal is to import material above existing ground regardless to provide sufficient treatment.*"

The variability between the very low values in the first two test holes and the significantly higher value in the third test hole is noted and will be discussed later.

It should also be noted that no map was provided identifying the location of these percolation test holes and no photographs were included with the SCR of the test holes or their location within the surrounding landscape. Although not explicitly stated, it is assumed that the percolation test holes and data reported in the SCR relate to the proposed location for the wastewater treatment plant to serve the museum and coffee shop, as this is the larger of the two proposed treatment systems.

2.3.8. No trial hole or percolation test data was provided for the site of the proposed wastewater treatment system at the High Fort location.

2.3.9. The SCR concludes (Section 4.0) that the site is suitable for development and identifies that a secondary treatment system and soil polishing filter or a tertiary treatment system with infiltration area were suitable options. Section 5.0 described the selected treatment system and stated the following "*Due to the shallow nature of existing soil overlying bedrock at the site, the proposed wastewater treatment locations will be built up with 900 mm of imported soil with a percolation rate in the 5-20 range. This application notes that when importing soils / subsoils onto the site as part of site improvement works that it is necessary to carry out the necessary compaction and percolation tests as per Chapter 11.5 of the EPA Code of Practice. As the existing topography in the location of proposed wastewater treatment plants is steeper than 1:8, site improvement works will be implemented to achieve a gentler, compliant slope for construction. Both the importing of 900 mm soil beneath the*

tertiary system, and the proposed slope improvement works and shall be supervised by a suitably qualified and competent person."

Section 6.0 suggests that the following wastewater treatment systems would be installed:

- A bespoke Oxcrete 70 p.e. and.
- A bespoke Oxcrete 300 p.e.

The required polishing filter was described as 327m^2 in size and would be loaded at a rate of 60l/m^2/day and the discharge would be to groundwater.

2.4. **Further Information**

2.4.1. On 3rd April 2025, the Board requested further information from the applicant in relation to the wastewater treatment system proposal and the effects on the environment arising therefrom. The information requested was as follows:

A. Details of the depth of the water table and the depth of soil/subsoil beneath the proposed percolation area/ polishing filter to serve the lower treatment plant (serving the Miliary Museum, Café, Wildlife centre etc.)

B. Reference is made to a suitably sized primary settlement tank to serve the wastewater treatment plant. Please provide details of the location, size and whether the tank is to be located within the ground or above ground in further plans to be submitted to the Board.

C. Reference is made in the drainage and water supply report, to the provision of a settlement tank, which 'allows me to base the infiltration are (sic) on hydraulic loading rather than the organic loading' The board is not aware of any precedent arrangements where the size of a percolation area/ polishing filter, is based purely on the hydraulic loading rates as opposed to both the hydraulic loading and organic loading rates. In the case of a conventional wastewater treatment system which includes a tank to allow primary settlement, percolation area/ polishing filters are calculated based on the overall effluent loading rates i.e. hydraulic and organic loadings. In the case of the current application a conventional calculation of the polishing filter area would require an infiltration/ polishing filter area of 666.25 sq.m. Please

provide documentation/ guiding principles/ precedents on which the approach to size the percolation area on hydraulic loading rates only, is based.

D. Hydraulic loading rate of 60 litres/m2/day is anticipated for the polishing filter. It is noted in Table E.2 of the EPS Guidance on the authorisation of discharges to groundwater that the design loading rate (LTAR)(1/m2/d) for secondary treated pumped effluent for T values on the range of 5-20 is 20 litres/m2/day. Please comment in on any justification to permit such high hydraulic loading rates onto the polishing filter.

E. The Drainage and Water Supply Report recommends a polishing filter area of 275 sq.m whereas the Site Characterisation Form submitted as part of the further information response indicates a polishing filter area of 327 sq.m. Please clarify.

F. Please comment on the extent to which natural recharge infiltration rates through rainfall was incorporated into the hydraulic loading rates calculations for the polishing filter.

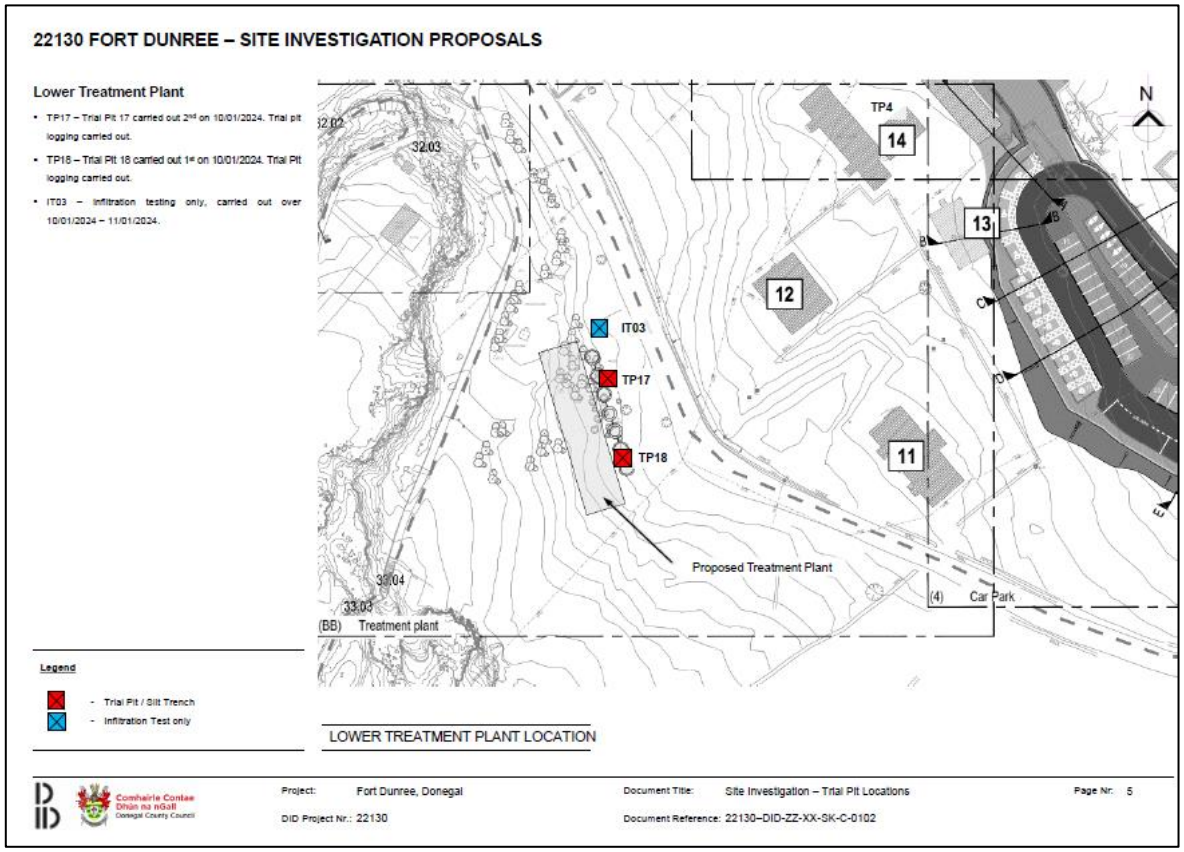
G. Please provide detailed drawings/diagrams including cross sections of the proposed polishing filter and the detailed methodology to be employed in constructing the polishing filter including any gabions that may be required to stabilise the proposed polishing filter. The applicant is requested to provide site specific details rather than generic diagrams from manuals.

H. Notwithstanding the fact that the lighthouse is to be infrequently used other than by staff, please provide details of existing/ proposed wastewater treatment arrangements for the building.

2.4.2. The applicants' responses to the RFI will now be discussed. In relation to Part A of the RFI, the applicant advised that as part of an investigative trial hole survey conducted over the entire site, two trial holes (TPs 17 and 18) were excavated adjacent to the proposed polishing filter. The trial hole logs were assessed and soil depths of 0.250m and 0.750m respectively were reported for these sites. Further investigation of the location of these trial pits show that they were excavated along a road in an area which has a steep slope (see photographs associated with trial pits 17 and 18). I have concerns that the depths recorded at this location may reflect the contouring carried out to accommodate the nearby road and not be an accurate

reflection of the expected depth of soil in this area. I also noted that the map (Figure 2-2 below) included in the RFI report identified the location of the surface percolation test holes referred to in the SCR at 2.3.7. This map also shows the location of the proposed treatment plant but not the polishing filter which suggests that IT03 may not be located in a representative location to assess the effectiveness of the proposed polishing filter.

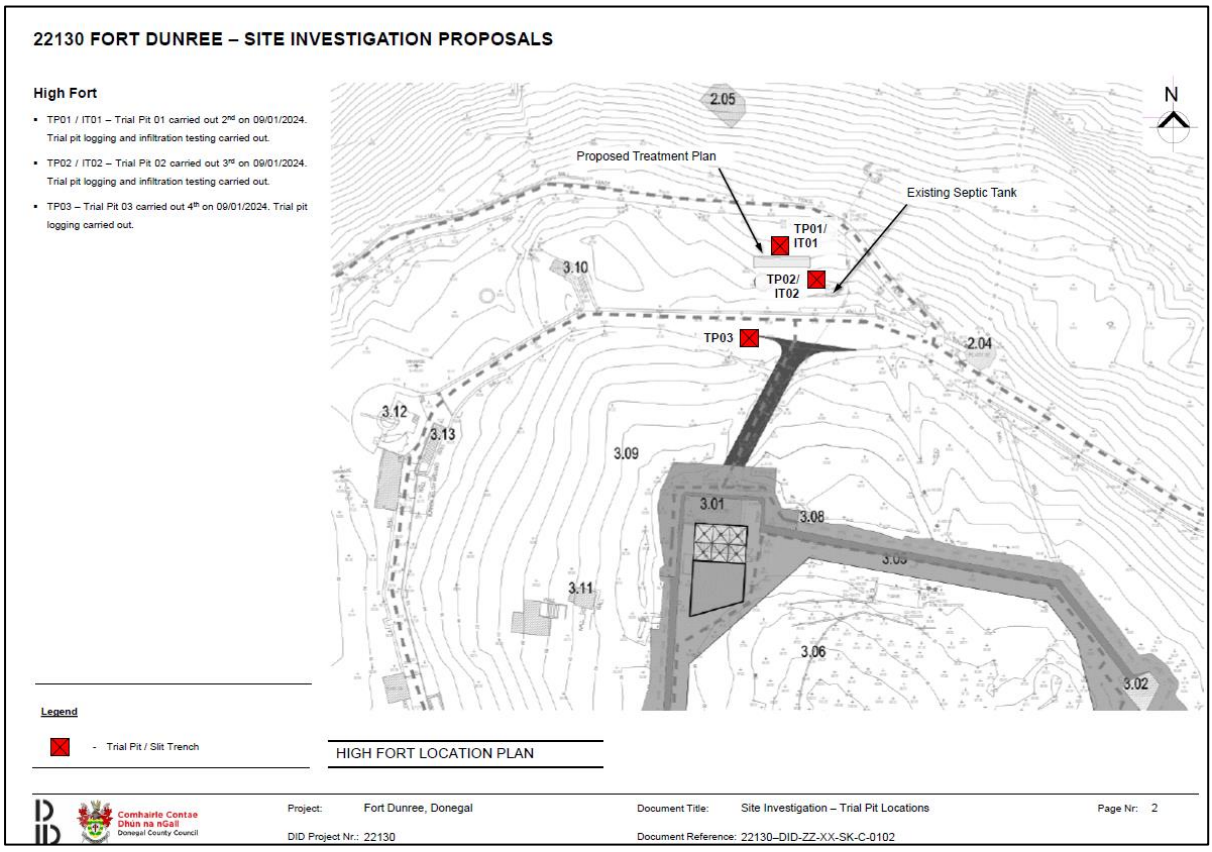
Figure 2-2 Location of Trial Pits 17, 18 and IT03



Although not specifically requested in the RFI, the report submitted by the applicant also included a map which appeared to identify the location of infiltration testing holes near the Hill Fort site. This area (see Figure 2-3 below) is located directly north of the Hill Fort itself. No information was provided by the applicant on the results of any infiltration testing conducted at this location. Three trial holes were excavated in this area. Trial Pit 1 (+IT01) was reported to have 0.5m of soil present, TP02 (+IT02) was reported to have 0.5m of soil present and TP03 which is further south adjacent to a road was found to have no soil present and was made up entirely of surface aggregate and weathered rock and boulders. TP03 is not expected to be

representative of the likely ground conditions for the polishing filter proposed for this site.

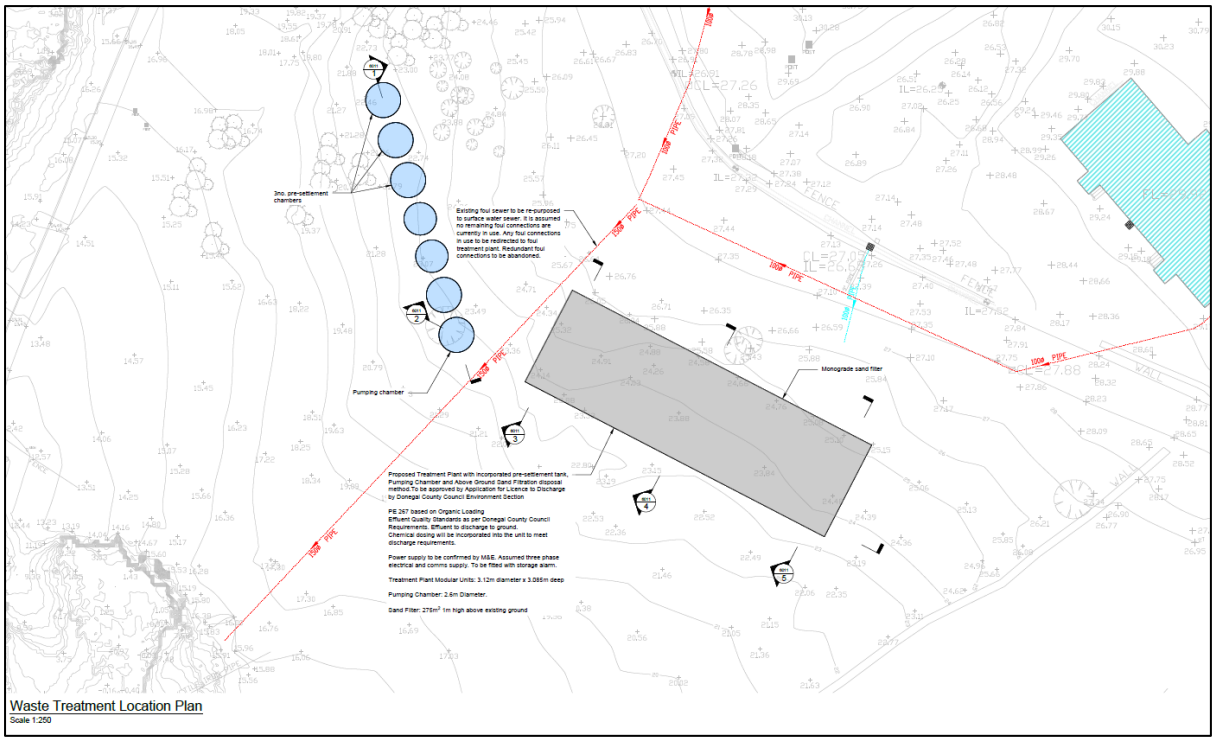
Figure 2-3 Location of Trial Pits 01(IT01), 02(IT02) and TP03



2.4.3. Part B of the RFI related to a proposed settlement tank associated with the wastewater treatment system to serve the museum. Appendix C of the submitted FI details the proposed wastewater treatment system for this part of the site. It is proposed that three concrete settlement chamber tanks are installed in series prior to the biological units. Each of these settlement tanks has a diameter of 3.12m, a depth of 3.09m and an effective volume of 18m^3 taking account of the invert levels of the inlet and outlet pipes. According to the submitted drawings, the tanks are to be buried below ground level which will require excavating >3m into the soil/bedrock. The location of these settlement tanks was provided on a map (see Figure 2.4 below).

2.4.4. Part C of the RFI concerned the sizing of the polishing filter and requested that the applicant provide a justification for the sizing of the percolation area based on hydraulic loading only. The applicant submitted FI (drafted by TecSoil Site Assessments Ltd.) which identifies Section 10 of the EPA COP (2021) as the

Figure 2-4 Proposed location of the settlement tanks, treatment system and polishing filter



relevant source for the guidance on sizing 'tertiary' polishing filters receiving secondary treated effluent. Section 10.2.1 *Tertiary Sand Polishing Filters* refers to a maximum hydraulic loading rate of 60l/m^2/d for either monograde or stratifies sand filters. This section also specifies that such filters should be a minimum of 900mm thick. This issue will be discussed further in my own assessment.

2.4.5. Part D of the RFI relates to Table E2 of the EPA document *Guidance on the Authorisation of Discharges to Groundwater,* 2011 which references a design loading of 20l/m^2/day for secondary treated pumped effluent for T-values in the range 5-20. The applicant submitted a response which suggests that the use of Table E2 was not appropriate in this case as the wastewater was to be discharged into a sand polishing before being discharged into the ground. The applicant concludes that the use of the figure 60l/m^2/d from the EPA CoP, 2021 is the correct loading rate to adopt in this instance. This issue will be discussed further in my own assessment.

2.4.6. Part E of the RFI referred to an apparent disparity between the size of the polishing filters required. The applicants clarified that "*the Drainage and Water Supply report recommends a polishing filter area of 275 sq.m. for the lower treatment plant. A further polishing filter of 52 sq.m is required at the high fort site. The value of 327*

sq.m contained within the Site Characterisation Form is the combined value of these 2 sites."

2.4.7. Part F of the RFI referred to rainfall infiltration and its inclusion in the hydraulic loading rates calculations for the polishing filter. The response noted that the current EPA Code of Practice does not require or advise site assessors to include such rainfall infiltration figures in the calculation of hydraulic loading rates for polishing filters. The response included details of an indicative calculation of natural recharge infiltration which estimated that the equivalent of 720litres/day of natural recharge through the filter bed was expected to occur in an average year. The report concludes as follows "*In my professional opinion, the calculated natural recharge infiltration rate of approximately 720 litres/day would have no adverse effect on the quality of the final treated effluent. This is because the polishing filter is designed specifically to receive and treat wastewater only, and the additional infiltration from rainfall does not alter the nutrient load applied to the filter."* It should be noted that the applicant submitted a detailed cross section drawing (Drainage Details Sheet 1) of the proposed sand polishing filter which shows the use of a geotextile membrane above the infiltration pipes and below the covering layer of topsoil. This membrane serves the function of protecting the integrity of the sand filter but can function as a potential barrier to some rainwater from entering the polishing filter as it will slow flow rates and lead to increased run-off to the side and over the top of the sand filter.

2.4.8. Part G of the RFI requested detailed drawings/diagrams including cross sections of the proposed polishing filter and the methodology to be employed in constructing the sand polishing filter. The applicants submitted a set of site-specific cross section drawings showing the existing ground levels and the dimensions of the proposed polishing filter and retaining structures to be employed. They also included a methodology for the installation of the polishing filter. The drawings show the base of the polishing filter up to 3m below existing ground level in places which is of concern given the lack of ground investigations in this location. It is unclear if the base of the polishing filter will be situated in bedrock at this depth.

2.4.9. Part H of the RFI requested details on the existing/proposed wastewater treatment arrangements for the lighthouse building. The applicant submitted a map (Appendix D) detailing the location of the septic tank currently serving the lighthouse and have

confirmed that there will be no change to the loading to the septic tank or changes to the septic tank itself.

3.0 Assessment

3.1. Compliance with EPA Code of Practice, 2021.

3.1.1. The Code of Practice, 2021 specifies separation distances between elements of a proposed wastewater treatment system and various sensitive receptors and features. These are listed in table 6.2 (page 28 of the CoP) and include a 50m separation distance from a lake or foreshore. The applicants included a location plan for the polishing filter to serve the museum area which is shown in figure 2.4 above. I have mapped (approximately) the 50m separation distance from the foreshore at this location and overlain the proposed location of the polishing filter. This can be seen in figure 3-1 above. This illustrates that some of the proposed polishing filter may be less than 50m from the foreshore and therefore not compliant with the requirements of the CoP. 2021.

Figure 3-1 Location of the polishing filter with 50m separation distance from foreshore highlighted.

3.1.2. The CoP, 2021 specifies that the natural slope of any site should be ≤1:8. Section 3 of the submitted Site Characterisation Report included the following statement: "*Proposed wastewater treatment plant locations are in areas of varying slope (>1:5 – 1:20)*". The applicant proposes that a retaining structure would be needed for the southern and eastern boundaries to maintain the structure of the polishing filter. Because of the steep slope encountered, the applicant proposes to excavate an area the size of the footprint of the polishing filter which will require excavation down to 3m below the existing ground level. This potentially means the base of the new polishing filter could be located significantly below the expected levels of bedrock. Figure 3-2 below shows the approximate location of the proposed polishing filter in the landscape relative to the foreshore as viewed from the carpark near the Fort facing south.

Figure 3-2 Proposed location of the polishing filter relative to the foreshore

3.1.3. The CoP, 2021 specifies that where sand polishing filters are to be employed, discharge areas are to be designed and sized in accordance with Table 10.1. This table states that where the percolation value (PV) of the site is between 3 and 20, the area required for the tertiary infiltration area is 3.75m^2 per person. For a system required to treat a p.e. of 267, the area of infiltration required is (267 x 3.75m^2) 1,001m^3. The applicant has indicated that the sand polishing filter would discharge onto an area of 275m^2 of soil polishing filter and has not indicated that an

appropriately sized infiltration area, compliant with Table 10.1 of the CoP, 2021 will be provided.

3.1.4. The surface percolation tests for the museum site were recorded at a location (IT03) which is approximately 40m from the proposed location of the polishing filter. No photographs of these percolation test holes were provided. The PV results were 1.75, 2 and 55 which when averaged, gave a value of 19.83. None of the three individual PV results obtained were within the preferred 3-20 range which coupled with the distance from the proposed polishing filter is of concern. There is a risk that PV values under the sand polishing filter will be too low (<3) which could indicate a direct discharge into the bedrock or fractured bedrock. The trial hole survey for the entire site has demonstrated significant variability in soil depth and bedrock level therefore, the outcome of the PV tests conducted 40m away and their relevance to the proposed polishing filter location is questionable.

3.1.5. The applicant asserts that the plans to treat wastewater from the proposed development as submitted are compliant with the requirements of the EPA Code of Practice (Domestic Wastewater Treatment Systems), 2021. However, this code of practice provides guidance on domestic wastewater treatment systems for single houses or equivalent developments with a population equivalent (p.e.) of less than or equal to 10. The proposed development intends to install two new wastewater treatment systems of 70 p.e. and 300 p.e. Whether the CoP, 2021 can be scaled up to assess developments of the size proposed in this case is questionable.

3.1.6. The EPA produced a document *Guidance on the Authorisation of Discharges to Groundwater* in 2011 which provided a practical framework for the processes, types of information, and criteria that are considered important for granting or refusing an authorisation to discharge into groundwaters, or alternatively, to point to what specific information might be needed to address technical areas of uncertainty. The document included guidance on the appropriate levels of technical assessment for different types and scales of discharges.

Three tiers of technical assessment are defined in the document:

Tier 1 Assessment – covers low-risk activities. The most significant discharge activity in this category is effluent from on-site wastewater treatment systems (OSWTSs) of less than 5 m3/d. A typical Tier 1 assessment should, therefore, follow

the characterisation procedures described in the EPA Code of Practice (CoP) for OSWTSs for single houses. No other requirements are specified.

Tier 2 Assessment – generally required for moderate risk activities, including inputs greater than 5 m3/d and less than or equal to 20 m3/d of domestic wastewater associated with OSWTS.

Tier 3 Assessment - generally required for higher risk activities, including Inputs greater than 20 m3/d of domestic wastewater.

The OSWWTS proposed for the Museum site is designed to treat a peak daily discharge rate of 16m^3/day of wastewater. The EPA Guidance suggests that a Tier 2 assessment is required to establish the suitability of the site for this volume and type of discharge.

A Tier 2 Assessment requires that the site must demonstrate sufficient infiltration capacity and adequate attenuation potential. However, Tier 2 assessments may also involve the prediction of an impact on groundwater quality using basic calculation procedures. The level of detail needed is case specific, but the objective is to provide representative hydrogeological data. A Tier 2 assessment must, therefore, be conducted by a suitably qualified person.

3.1.7. In the absence of an appropriate Tier 2 site assessment being completed for this site, I am not satisfied that the area under the polishing filter can safely attenuate discharges of wastewater of up to 16m3/day. While I accept that the wastewater treatment system proposed will provide a significant reduction in organics and nutrients in the treated wastewater, the ability of the sand polishing filter as designed to reduce nutrients and pathogenic bacteria to the required levels is not proven. In addition, the ability of the site to safely attenuate the projected volumes has not been demonstrated to my satisfaction. The bedrock underlying the proposed polishing filters is the Slieve Tooley Quartzite Formation which are considered to have low transmissivity values with some local faults offering increased transmissivity. In either case, the bedrock has a low ability to retain groundwater and subsurface discharges of partially treated wastewaters to the nearby coastal waters are likely to occur. This could lead to an increase in nutrients and/or the production of a biofilm and associated odours on the exposed bedrock along the foreshore. The site

characterisation/assessment carried out by the applicant has not been robust enough to rule out the possibility of this occurring.

3.1.8. The applicant has not carried out an appropriate site characterisation/assessment for the treatment system intended to serve the 'Hill Fort' site. No trial hole was excavated and while surface percolation test holes were excavated, no results for percolation tests were provided for this site. No cross section or plan drawings for the proposed treatment system to serve this site have been provided. This represents an inappropriate level of site investigation for a wastewater treatment system designed to cater for a p.e. of 51.

3.2. **Water Framework Directive Compliance**

3.2.1. The entire site is located within/adjacent to three waterbodies:

- The Owenerk_020 River Waterbody.
- The Lough Swilly (NW_G_059) Groundwater Waterbody and.
- The Lough Swilly (NW_220_0000) Coastal Waterbody

3.2.2. Although technically within the catchment area of the Owenerk_020 River Waterbody, none of the elements of this project can impact on the water quality of the Owenerk River due to the topography of the site and the proposed locations of the new OSWWTS. The two proposed OSWWTSs are located on slopes which face the coast and are not within the 'actual' contributing catchment area of the Owenerk_020 River. Therefore, the S-P-R relationship cannot be established for this waterbody and the risk to it can be discounted.

3.2.3. The Lough Swilly (NW_G_059) Groundwater Waterbody is a large waterbody covering an area of 910km^2 and is at good status both for quantity and quality of groundwater. There are no significant pressures identified for the waterbody at present. The proposed development has the potential to have negative impacts on local groundwater quality between the sites of the proposed OSWWTSs and the coast as the groundwater flows are towards the coast at both locations. No other wells or sensitive receptors are in these areas. The distances from the proposed locations for the OSWWTs to the closest part of the coast are 40m at the Museum site and 100m at the Hill Fort site and the slope towards the sea is steep (>1:5).

Therefore, it is only local groundwaters within these small areas that are likely to be impacted by the new OSWWTSs.

3.2.4. The Lough Swilly (NW_220_0000) Coastal Waterbody is currently at Good Status based on 2016-2021 data. However, it has been characterised as being At Risk of not achieving its environmental objective of High Status by 2027. While supporting chemistry conditions appear to be favouring High Status, some biological elements were failing to achieve the required high-status level when monitored. Urban wastewater, domestic wastewater and urban run-off have all been identified as significant pressures to the status on the Lough Swilly coastal waterbody.

Because of the proximity (<50m) of the proposed OSWWTS at the Museum site to the coast, the high slope (Section 3.0 of the SCR states between 1:5 and 1:20) and the lack of appropriate site assessment, there exists a significant risk that partially treated wastewaters may discharge directly into coastal waters at this location by flowing along the interface between bedrock and soil or a fracture in the bedrock. The high volumes of wastewater discharges predicted to occur here increase the risk that elevated nutrients, and potentially pathogenic bacteria may be discharged into the coastal waters at this location.

3.2.5. Portsalon is a designated bathing water and is located approximately 3km to the west of Dunree Fort on the other side of Lough Swilly. The bathing water quality has been recorded as ‘Excellent’ in all sixty-six samples taken at Portsalon between 2019 and the end of the 2024 season. Discharges of partially treated wastewater into the sea from this project would potentially impact the quality of bathing waters at Portsalon.

3.2.6. Lough Swilly (Fanad Head to Dunaff Head) is an important shellfish production area. There are currently 7 licenced aquaculture sites in Lough Swilly, in addition to 6 sites which are due for renewal. All sites are licenced for shellfish, growing blue mussel (Mytilus edulis) using bottom culture and oyster (Magallana gigas & Ostrea edulis) on bags and trestles. Discharges of partially treated wastewater into the sea from this project could potentially impact the quality of shellfish waters in Lough Swilly.

3.2.7. Portsalon Bathing Waters and the Lough Swilly Shellfish waters are both considered protected areas for the purposes of the Water Framework Directive and any potential increases in nutrients/pathogenic bacteria from the discharge of partially treated

wastewater into Lough Swilly from this project has the potential to impact the quality of waters for bathing and producing shellfish for consumption. In the absence of a definitive site characterisation/assessment which rules out the likelihood of discharges of partially treated wastewaters into coastal water, compliance with the requirements of the Water Framework Directive cannot be assumed.

4.0 Conclusion

4.1.1. For the reasons set out above, it is my opinion the applicants have not demonstrated to a satisfactory level that the proposal to treat and discharge the projected volumes of wastewater arising at this site will not negatively impact on groundwater and coastal water quality.

4.1.2. Therefore, I recommend that the development be refused permission on the grounds that compliance with the objectives of Article 4 of the Water Framework Directive has not been demonstrated.

Signed:

Finbarr Quigley BSc. M.Sc.
Inspectorate Scientist