

Technical Report to Inspector

ABP-321713-25_App1

Development	Retention permission for a water recycling system w associated ancillary site development works at Roadstone quarry at Clasheen, Killarney, Co. Kerry							
Type of Application	Normal Planning Appeal							
Торіс	Assessment of potential groundwater and surface water issues arising, including an assessment of the capacity of the tanks.							
Scientist	Finbarr Quigley B.Sc., M.Sc. Appl. Sc.							
Date of Site Visit	31 st March, 2025							
Planning Inspector	Bernadette Quinn							

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 appeal in relation to the retention permission sought for the water recycling system and associated works in the Roadstone quarry at Clasheen, Killarney, Co. Kerry.
- 1.1.2. In assessing this application, I have visited the site, reviewed the submitted documents, reviewed the EPA's Abstraction Register, accessed Met Eireann's Rainfall Return Period database and used the resources available on the WFD App on the EPA's EDEN system for reference.

1.2. Expertise and technical content of Environmental Reports

- 1.2.1. As part of a response to a request for further information by Kerry County Council, the applicants contracted MKO Planning and Environmental Consultants who engaged Hydro Environmental Services (HES) to answer the further information request queries in relation to the recycling tank's capacity to deal with extreme rainfall events.
- 1.2.2. Hydro Environmental Services submitted a report outlining the following:
 - Item 1 The catchment area draining into the tank consists of 237m² (outside the redline boundary) and 913m² (within the red line boundary) giving a total area of 1,150m² from which rainfall will be collected in the tank.
 - Item 2 The total capacity of the 4 settlement tanks is 394m³. When the outlet level is lowered to 1.0m for operational purposes, the tank will hold 238m³. This allows an additional 155.1m³ to be stored by closing the outlet gate valve and retaining storm water.
 - Item 3 Clarification that there will be no overflow from the tank and one outlet pipe will be retained at 1.0m above the base of the tank which will be connected to the existing water storage tank adjacent to the concrete batching plant.
 - Item 4 Drawing D101 clarified the location of the existing water storage tank adjacent to the concrete batching plant.

• Item 5 The tank has the capacity to hold 238m³ during normal operation with an additional capacity of 155.1m³ when the gate valve is closed. HES provided a figure of 101mm 100yr, 24hr extreme rainfall event (Source: Met Eireann) for the site which generates a total rainfall volume of 127.64m³ (over a total area of 1,150m²) over a 24hr extreme 1 in 100yr event. This 24hr volume can be accommodated within the tank by closing the gate valve.

2.0 Assessment of the capacity of the water recycling tank

2.1. The capacity of the tank to hold storm water based on the criteria that HES outlined in the response to FI item 5 was assessed. The coordinates for the Roadstone Quarry at Clasheen, Killarney, Co. Kerry were used and the Met Eireann Return Period Rainfall Depths data accessed which is available at https://www.met.ie/climate/services. These coordinates gave a 24hr, 100yr return value of 146.4mm rainfall which is higher than the value quoted by HES (101mm).

Fig	ure	1 M	et F	Fireann	Return	Period	Rainfall	Denth	data fo	r coordinates	at	Clasheen	Killarnev	Co	Kerry
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	Re	eturn Period Ra Trish Grid: Ea	Met Eir infall De sting: 10	eann pths fo 1010, N	or slidi Northing	ng Dura : 88804	tions					
	Interval			_		Years						
DURATION	6months, 1year,	2,	3, 4,	5,	10,	20,	30,	50,	75,	100,	120,	
5 mins	3.8, 4.8,	5.2, 5.	9, 6.3,	6.6,	7.6,	8.7,	9.3,	10.2,	11.0,	11.5,	11.9,	
10 mins	5.3, 6.6,	7.3, 8.	2, 8.8,	9.2,	10.6,	12.1,	13.0,	14.2,	15.3,	16.0,	16.6,	
15 mins	6.3, 7.8,	8.6, 9.	7, 10.4,	10.9,	12.5,	14.2,	15.3,	16.7,	18.0,	18.9,	19.5,	
30 mins	8.5, 10.7,	11.7, 13.	2, 14.1,	14.8,	17.1,	19.4,	20.9,	22.8,	24.5,	25.7,	26.6,	
1 hours	11.6, 14.5,	16.0, 18.	0, 19.3,	20.2,	23.3,	26.5,	28.4,	31.1,	33.4,	35.1,	36.3,	
2 hours	15.9, 19.8,	21.8, 24.	5, 26.3,	27.6,	31.8,	36.1,	38.8,	42.5,	45.6,	47.9,	49.5,	
3 hours	19.1, 23.8,	26.1, 29.	4, 31.5,	33.1,	38.1,	43.3,	46.6,	51.0,	54.7,	57.5,	59.3,	
4 hours	21.7, 27.1,	29.7, 33.	5, 35.9,	37.7,	43.3,	49.3,	53.0,	58.0,	62.2,	65.4,	67.5,	
6 hours	26.0, 32.5,	35.7, 40.	2, 43.1,	45.2,	52.0,	59.1,	63.6,	69.6,	74.7,	78.5,	81.0,	
9 hours	31.2, 39.0,	42.8, 48.	2, 51.7,	54.3,	62.4,	70.9,	76.3,	83.5,	89.6,	94.2,	97.2,	
12 hours	35.5, 44.3,	48.7, 54.	8, 58.8,	61.8,	71.0,	80.7,	86.8,	95.0,	102.0,	107.2,	110.6,	
18 hours	42.7, 53.2,	58.4, 65.	8, 70.6,	74.1,	85.2,	96.9,	104.2,	114.0,	122.4,	128.6,	132.8,	
24 hours	48.6, 60.6,	66.5, 74.	9, 80.3,	84.4,	97.0,	110.3,	118.6,	129.8,	139.3,	146.4,	151.1,	
2 days	62.6, 76.4,	83.1, 92.	5, 98.4,	102.9,	116.6,	130.8,	139.6,	151.4,	161.3,	168.8,	173.6,	
3 days	75.2, 90.5,	97.9, 108.	2, 114.7,	119.5,	134.3,	149.6,	159.0,	171.4,	181.9,	189.7,	194.8,	
4 days	86.9, 103.6,	111.7, 122.	8, 129.7,	135.0,	150.8,	167.0,	176.9,	190.1,	201.1,	209.3,	214.6,	
6 days	108.9, 128.2,	137.3, 149.	9, 157.8,	163.6,	181.3,	199.3,	210.2,	224.6,	236.6,	245.5,	251.3,	
8 days	129.8, 151.3,	161.4, 175.	3, 184.0,	190.5,	209.8,	229.3,	241.2,	256.7,	269.7,	279.2,	285.4,	
10 days	150.0, 173.6,	184.6, 199.	8, 209.2,	216.1,	237.0,	258.0,	270.6,	287.3,	301.0,	311.1,	317.7,	
12 days	169.7, 195.3,	207.2, 223.	5, 233.6,	241.0,	263.3,	285.6,	299.1,	316.6,	331.2,	341.9,	348.8,	
16 days	208.5, 237.6,	251.2, 269.	5, 280.8,	289.2,	314.0,	338.8,	353.7,	373.1,	389.0,	400.7,	408.3,	
20 days	246.6, 279.1,	294.1, 314.	3, 326.8,	336.0,	363.2,	390.2,	406.4,	427.4,	444.6,	457.2,	465.4,	
25 days	294.0, 330.3,	347.0, 369.	5, 383.2,	393.3,	423.3,	452.8,	470.5,	493.3,	512.1,	525.7,	534.5,	
NOTES: These values are derived from a Depth Duration Frequency (DDF) Model update 2023 For details refer to: 'Mateus C., and Coonan, B. 2023. Estimation of point rainfall frequencies in Ireland. Technical Note No. 68. Met Eireann', Available for download at: http://hdl.handle.net/2262/102417												

Using the 146.4mm figure, the volume of rainfall to be collected over the catchment area draining into the tank (1,150m²) was calculated to be **168.4m³** for an extreme rainfall event as described. The tank will have the capacity to accept 155.1m³ of water above normal operational volumes which could lead to a deficit of **13.3m³** in the scenario described. In a scenario where extreme rainfall as described occurs the

excess rainfall would drain into the existing stormwater collection system and discharge into the open lagoon located to the southeast of the development. Any additional discharges to this existing lagoon do not represent an additional risk to surface or groundwater quality based on the lack of connectivity to surface waters and the nature of the water being collected.

Figure 2. describes the existing stormwater collection system on site which shows that storm water from the block storage area and all other working areas to the west of the new tank drains via a series of collection channels and gullies into the open lagoon located to the east of the weigh bridge. There is no discharge from this open lagoon into surface waters and it is possible that water from this lagoon may have an interaction with groundwaters locally.



Figure 2. Overview of the site with recycling tank, concrete plant and drainage descriptions (not to scale)

2.2. Having visited the site and inspected the works already carried out, I am satisfied that the catchment area for rainfall capture has been defined accurately by the applicants. The proposed tank has the capacity to contain the projected volume of rainfall for a 1 in 75-year 24hr event at this location as modelled by Met Eireann. I can also confirm that the recycling system will be of a closed-loop nature with no direct discharge from the tank to any outlet. Water which has passed through the recycling system will be pumped back to a storage tank and reused in the concrete manufacturing plant or used for washing the plant and trucks as described below.

3.0 Waste generated from the recycling system

- **3.1.** The recycling system is designed to accept washwater from the concrete batching plant which manufactures ready-mix concrete and concrete used to manufacture blocks. The concrete manufacturing plant is cleaned at the end of every working day and the washings flow via gravity into the reception area of the new tank. The tank will also be used to receive the washings from the ready-mix trucks after they clean their rotating containers.
- **3.2.** The reception area of the tank is sloped gently allowing the solid fraction of this washwater to settle out on the floor of this area. This can be cleaned out using a front loader and the contents deposited in an area to the north of the new tank. This area drains back into the reception tank allowing water to re-enter the recycling system and retaining the solid fraction which is essentially concrete. This material is inert in nature and is reused in the quarry for road construction/maintenance and edge/berm protection which is an acceptable reuse.
- **3.3.** The water from this reception area flows through openings in each of the 4 tanks in series and any solid fraction settles on the floor of the tank, progressively allowing finer material to settle as the through-flow slows. This solid material will be removed periodically using an excavator and will be stored in the area described in 3.2 above with re-use within the site as already described.
- **3.4.** Having visited the site, inspected the recycling system and viewed the solid settled fraction already removed from the tank and stored on site I am satisfied that this material is inert and is suitable for reuse within the site.

4.0 Treatment Process

4.1. The only treatment process employed in this system is settlement with the 4 tanks acting as individual 'silt traps'. The reception area is designed to capture the heavier fraction of the washwater which includes concrete, stone etc. As the washwater progresses through the recycling system, the finer material settles out onto the floor of the tanks with the clarity improving incrementally. The outlet from the final tank will be at 1.0m above the base of the tank which will allow the cleanest water to be removed and sent for reuse.

4.2. The ingredients used in the manufacture of concrete vary depending on the final product specification but can be any mix of cement, coarse aggregates, fine aggregates, admixtures and water. The wash water arising from the cleaning of the concrete batching plant or the ready-mix tankers does not require further treatment before being reused.

5.0 Assessment of Water Framework Directive (WFD) Impact

5.1. Groundwater WFD Impacts

- 5.1.1. The quarry is located within two groundwater waterbodies: the Laune Muckross groundwater waterbody (IE_SW_G_048) and the Scartaglin groundwater waterbody (IE_SW_G_073).
- 5.1.2. The current status of the Laune Muckross Groundwater waterbody (IE_SW_G_048) is 'Good Status' based on the monitoring period 2016-2021. However, the waterbody has been characterised as being "At Risk" of not meeting the Environmental Objective (Good Status) for the WFD Cycle 3.
- 5.1.3. The reason for this "At Risk" rating is that while overall aggregated values for orthophosphate in the waterbody were less than the threshold value, individual site orthophosphate readings have been greater than the threshold value. Groundwater contribution of phosphate from this waterbody to associated surface water bodies which are already "At Risk" (Deenagh_020 and Owneykeagh_010) pose a risk to these waterbodies achieving their Environmental Objectives. The operation of the water recycling system will not have any impact on the ortho-phosphate concentrations in groundwaters as phosphates in any form are not imported or employed for any purpose on the site.
- 5.1.4. For the period 2016-2021, the Laune Muckross Groundwater waterbody (IE_SW_G_048) passed all the Chemical and Quantitative tests and was assigned an Overall Groundwater Status of "Good".
- 5.1.5. The current status of the Scartaglin groundwater waterbody (IE_SW_G_073) is 'Good Status' based on the monitoring period 2016-2021 and the waterbody has been characterised as being "Not at Risk" of not meeting the Environmental Objective (Good Status) for the WFD Cycle 3.

- 5.1.6. For the period 2016-2021, the Scartaglin groundwater waterbody (IE_SW_G_073) passed all of the Chemical and Quantitative tests and was assigned an Overall Groundwater Status of "Good".
- 5.1.7. Based on reviewing the information supplied and observations made during the site visit, it is my opinion that the operation of the water recycling system in the Roadstone quarry at Clasheen, Killarney, Co. Kerry is not likely to have a significant impact on the quality or quantity of groundwater in either the Laune Muckross (IE_SW_G_048) or the Scartaglin (IE_SW_G_073) waterbodies.

5.2. Surface Water WFD Compliance

- 5.2.1. The quarry is located within the Flesk (Kerry)_060 waterbody (IE_SW_22F020310) which has a current status of "Good Status" based on the monitoring period 2016-2021. The waterbody has been characterised as being "Not at Risk" of failing to achieve the Environmental Objective (Good Ecological Status) for the WFD Cycle 3.
- 5.2.2. An assessment of the current status of the Flesk (Kerry)_060 waterbody (IE_SW_22F020310) shows that the monitoring programme demonstrates that Good Ecological Status is being achieved, and the supporting oxygen, acidification, nutrient and thermal conditions exist to support this objective.
- 5.2.3. The Roadstone quarry at Clasheen, Killarney, Co. Kerry has registered an abstraction of water from the river Flesk with the EPA in accordance with the requirements of S.I. No. 419/2024 - Water Environment (Abstractions and Associated Impoundments) Regulations 2024.
- 5.2.4. The abstraction data was accessed on the publicly available register located at <u>https://leap.epa.ie/abstractions/</u>. It was noted that Roadstone Killarney registered an abstraction of up to 600m³/day of water from the river Flesk for use within the quarry. The location of this abstraction was given at the following coordinates (Easting 100041.414, Northing 88667.25) and this was mapped as shown in Figure 3. below. This maximum daily abstraction rate (600m³/day) from the river Flesk represents approximately 0.44% of the daily 95%ile flow at this location, which indicates a negligible impact even during low flow conditions.
- 5.2.5. It was estimated that up to 60m³/day (~30m³/day for concrete manufacturing and ~30m³/day washing water) will be recycled within the site which will reduce the need to abstract from the river Flesk by a minimum of 10%. This could result in a net

improvement in surface water quality due to additional dilution available and quantity in the river Flesk resulting from the operation of the water recycling unit.



Figure 3. Location of the abstraction point from the river Flesk serving the Roadstone Quarry

- 5.2.6. There is no direct hydrological connection between the development site and any nearby watercourses (ditches, streams, or rivers). The site is located in an area of sand and gravel deposits which have had the topsoil removed and aggregates extracted. This means that rainfall which lands within the site either percolates through the ground and recharges into groundwaters or is collected and sent to a lagoon for reuse within the site.
- 5.2.7. Based on reviewing the information supplied and observations made during the site visit, it is my opinion that the operation of the water recycling system in the Roadstone quarry at Clasheen, Killarney, Co. Kerry is not likely to have a significant impact on the quality or quantity of surface water in the Flesk (Kerry)_060 waterbody (IE_SW_22F020310).

6.0 Conclusion

6.1. Following the site visit and a review of the material submitted as part of the appeal application in relation to the water recycling unit and ancillary works at the Roadstone

quarry at Clasheen, Killarney, Co. Kerry my findings and recommendations are as follows:

The Board can be confident that the proposed development will have no negative impact on surface waters or groundwaters.

Signed:

Inter Clugley

Finbarr Quigley BSc. M.Sc. Inspectorate Scientist

4th April 2025