



3.3 WATER

3.3.1 Introduction

This section of the EIS deals with water and has been compiled and prepared by the following specialist:

- Mr. Freddie P.R. Symmons B.Env.Sc. MIEEM – Senior Environmental Consultant – Kingfisher Environmental Consultants

The purpose of this section of the EIS is to assess the water environment within and surrounding the subject site.

Potential impacts on surface waters are identified together with appropriate mitigation measures to limit or eliminate any impact on the receiving surface water environment.

The site is located in a sparsely populated rural area with surrounding land uses comprising of sheep farming, peat extraction, GAA pitch, former Mushroom Farm and dispersed one-off housing developments and old farmsteads. The nearest densely populated area close to the site is Belmullet some 2 ½ km to the south.

3.3.2 Study Methodology

The assessment of the water environment consisted of:

- 1 A desk study of available information including the original Waste Licence Application; Waste Licence W0256-01; the Licence Review Application for W0256-01; All Surface Water Monitoring Data to date.
- 2 A site walk-over of the site and surrounding area;
- 3 Site specific information was also supplied from Lennon Quarries Ltd;
- 4 Interpretation of all data.
- 5 Liaison with Inland Fisheries Ireland

3.3.3 Existing Surface Water Environment

There are no changes to the surface water environment, surface water monitoring proposals or to the potential impact to surface waters arising from the application for the Review of the waste Licence and the currently licensed requirements relating to surface water, per W0256-01, will continue to be maintained.

The site is drained by a number of open surface water drains, as can be seen on **Figure 3.3.3.1**. An open surface water drain surrounds the perimeter of the entire deposition site (with the exception of the northwest corner of the site), and a number of open drains are cut through the deposition site in a north-south direction. All of the open drains, drain into the local Clooneen River (which runs along the northern site application boundary in an easterly direction), at five locations. The five locations as shown on **Figure 3.3.3.1** refer to the five no. currently licensed emission points to surface water (Clooneen River) from the site (EMSW-1, EMSW-2, EMSW-3, EMSW-4 & EMSW-5).

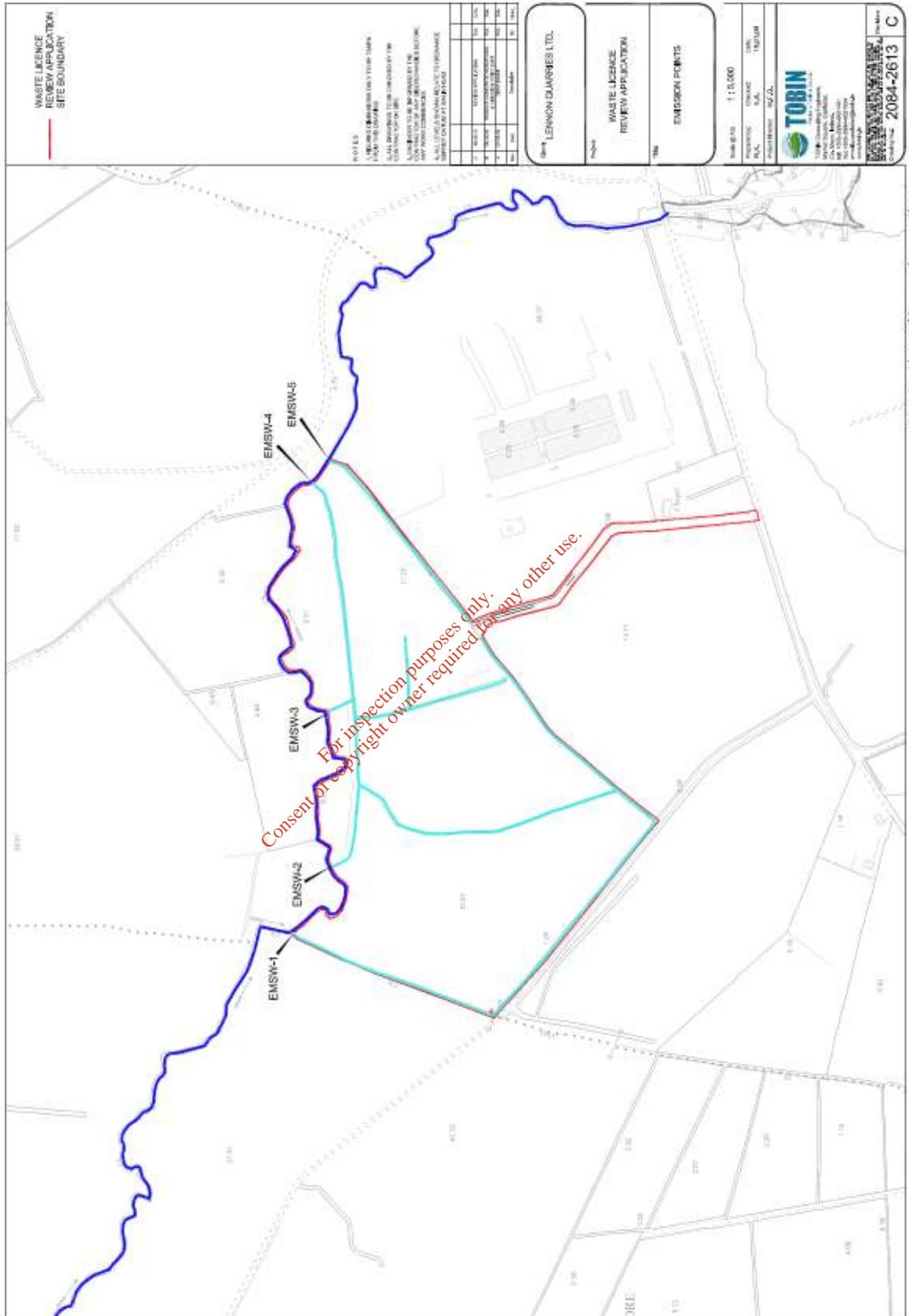


Figure 3.3.3.1: Surface Water Drainage Plan and Emission Points



Information on the 'Flow Rate' in the receiving water (Clooneen River) is not provided, as there is no flow data available from the OPW or the EPA Hydrometric Section. 'Assimilative Capacities' cannot be calculated, due to the lack of flow data available for the Clooneen River, and due to the fact that the discharge from the site is not continuous or consistent at any of the emission points. The 'Volumes to be Emitted' and the 'Periods of Emission' cannot be stated, as they are dependant on rainfall amount and the site drainage.

Baseline Surface water monitoring was undertaken (December 2008) for the application for the existing waste licence. Water samples (grab samples) were collected on 08 December 2008 from the Clooneen River at 3 no. sampling locations (SW-1, SW-2 & SW-3,) as shown on **Figure 3.3.3.2.**

SW-1 is located upstream of the site and the location is E469552.459 N836024.337. SW-2 is located along the northern boundary of the site, downstream of the main surface water drainage outlet from the site, location: E469898.874 N835978.089; and SW-3 is located at the northwest corner of the site, downstream of a surface water drain outlet from the site location: E470263.519 N835956.711.

The surface water monitoring data is presented later in this section along with the 2012 monitoring data in **Appendix 3.3.** Monitoring was undertaken in April 2012, per the waste licence requirements, at 5 no. sampling locations (SW-1, SW-2, SW-3, SW-4 & SW-5, as shown on **Figure 3.3.3.2.**

SW-4 is located downstream of a surface water drain outlet from the site, location: E470297.078 N835935.629 and SW-5 is located downstream of the final surface water drain outlet from the site, location E470297.007 N835943.645.

3.3.4 Potential Environmental Impacts

The inert Soil & Stone recovered at the site have the potential to increase the 'Total Suspended Solids' concentration of the surface water draining from the site (through open surface water drains) into the Clooneen River.

The inert nature of the material being recovered/reclaimed should not result in other chemical contaminants having a potential impact to surface water.

It is not proposed to store any fuel onsite. A fuel tanker will visit the site, when required and fill the onsite plant (Hitachi 200 excavator). Refuelling takes place on the hardstanding area of the site access road, adjacent to the site office. Booms and spill kits are kept adjacent to this.

The potential impacts from the proposal to increase the annual tonnage from 24,900 tonnes to 90,000 tonnes poses no change in the scope of the activity, the nature of the activity or potential emissions from the activity (as presently licensed).

- The development sequence will still be to fill the site progressively (as presently licensed).



- The lands are presently marginal agricultural land and will be restored using imported soil and stones to more productive agricultural land thereby having a consequential benefit to agriculture (as presently licensed).
- The exact same proposed activity will occur as licensed i.e. a total of 265,000 tonnes of soil and stones but over a shorter time span (i.e. ca. 2.5 – 3 years). The activity will just take a shorter time span to complete and fully restore to beneficial agricultural use.
- The site survey drawings submitted with the Waste Licence Review remain unaltered as there will be no change whatsoever in the proposed topographical levels based on the reclamation of the site occurring over a shorter time period. Therefore there is no change to finished site survey drawings.
- Therefore the proposed technical review creates no proposed change to the content, nature, composition or volume of materials intended for recovery by deposition at the site, and the overall tonnage of 265,000 tonnes for which the existing license was issued remains unaffected.

The site has been up and running for the past ca. 2 years without any complaints or enforcement issues relating to water or water pollution as proven by Agency records. Furthermore, the compliance monitoring is all up to date and is all compliant with the license requirements. All in all it is considered that Lennon Quarries Ltd. operate an extremely well run and well-monitored licensed soil recovery facility

3.3.5 Mitigation Measures

5 no. 'Settlement Ponds' have been put in place on the drainage channels, prior to their emission to the main surface water body as shown on **Figure 3.3.5.1**. The purpose of these Settlement Ponds is to allow suspended solids drop out of solution, prior to the surface water discharging from the site, into the Clooneen River.

Surface water monitoring of the Clooneen River continues on a quarterly basis, per the existing licence requirements, in order to identify any possible contamination to the river. Surface water monitoring is done for the parameters listed below and no change is required to these parameters in the application for a Review of the Waste Licence:

Parameters to be Monitored:

pH
Electrical Conductivity
Total Suspended Solids
Mineral Oils
Total heavy Metals

In completing the soil recovery works, the Deputy Facility Manager/Machine Operative has the opportunity to re-examine the material and to identify any non-compliant material. Should suspect materials be discovered during this process, they will be immediately removed to the site Quarantine skips for authorised removal from the facility and appropriate disposal/recovery.



With regards to potential impacts relating to Surface Water and dust, the proposed proposals in the licence review to increase the annual tonnage from 24,900 to 90,000 tonnes provides **an environmental gain**.

The phasing and restoration of the site will occur over a much shorter time period thereby speeding up the process by which the lands are seeded; stabilised and put back into productive agriculture. This obviously minimises the potential for sedimentation of surface waters (not withstanding the control measures already in place) and it provides even greater compliance with Condition 6.11.3: *Developed areas shall be seeded as soon as practicable after placement of cover soils, in a manner appropriate to the surrounding area and in any event in accordance with condition 10.2.2.*

Lennon Quarries have consulted with and have received a letter of support from the Fisheries Board for the proposed Licence amendments with mitigation measures outlined in this EIS and the review application of Waste Licence W0256-01 (see **Figure 3.3.5.2**).

To conclude, there will be no significant impacts upon the water environment as identified in this section of the EIS.

Figure 3.3.5.2: Letter of Consultation from Inland Fisheries Ireland Concerning the Technical Review of Waste Licence W0256-01





Appendix 3.3: Water Monitoring Results for 2008 and 2012

Table L2(i) SURFACE WATER QUALITY

(Sheet 1 of 3) Monitoring Point/ Grid Reference: [SW-1 - \(E469552.459 N836024.337\)](#)

Parameter	Results (mg/l)				Sampling method ² (grab, drift etc.)	Normal Analytical Range ²	Analysis method / technique
	Date 08/12/08	Date	Date	Date			
pH	6.1	-	-	-	Grab		
Temperature	-	-	-	-	Grab		
Electrical conductivity EC	339 uS/cm	-	-	-	Grab		
Ammoniacal nitrogen NH ₄ -N	0.111 mg/l	-	-	-	Grab		
Chemical oxygen demand	28 mg/l	-	-	-	Grab		
Biochemical oxygen demand	<1 mg/l	-	-	-	Grab		
Dissolved oxygen DO	-	-	-	-	Grab		
Calcium Ca	5 mg/l	-	-	-	Grab		
Cadmium Cd	<0.5 mg/l	-	-	-	Grab		
Chromium Cr	<0.5 mg/l	-	-	-	Grab		
Chloride Cl	82.66 mg/l	-	-	-	Grab		
Copper Cu	<1 ug/l	-	-	-	Grab		
Iron Fe	379 ug/l	-	-	-	Grab		
Lead Pb	<0.5 ug/l	-	-	-	Grab		
Magnesium Mg	6 mg/l	-	-	-	Grab		
Manganese Mn	75 ug/l	-	-	-	Grab		
Mercury Hg	<0.05 ug/l	-	-	-	Grab		

Surface Water Quality (Sheet 2 of 3) [SW-1 - \(E469552.459 N836024.337\)](#)

Parameter	Results (mg/l)				Sampling method ² (grab, drift etc.)	Normal Analytical Range	Analysis method / technique
	Date 08/12/08	Date	Date	Date			
Nickel Ni	<0.5 ug/l	-	-	-	Grab		
Potassium K	3 mg/l	-	-	-	Grab		
Sodium Na	38 mg/l	-	-	-	Grab		
Sulphate SO ₄	15.38 mg/l	-	-	-	Grab		
Zinc Zn	<5 ug/l	-	-	-	Grab		
Total alkalinity (as CaCO ₃)	339 mg/l CaCO ₃	-	-	-	Grab		
Total organic carbon TOC	16.6 mg/l	-	-	-	Grab		
Total oxidised nitrogen TON	0.12 mg/l	-	-	-	Grab		
Nitrite NO ₂	<0.017 mg/l	-	-	-	Grab		
Nitrate NO ₃	0.517 mg/l	-	-	-	Grab		
Faecal coliforms (/100mls)	33 cfu/100ml	-	-	-	Grab		
Total coliforms (/100mls)	322 cfu/100ml	-	-	-	Grab		
Phosphate PO ₄	0.251 mg/l	-	-	-	Grab		

Surface Water Quality (Sheet 3 of 3) [SW-1 - \(E469552.459 N836024.337\)](#)

Parameter	Results (mg/l)				Sampling method (grab, drift etc.)	Normal Analytical Range	Analysis method / technique
	Date 08/12/08	Date 04/04/12	Date	Date			
pH	6.1	6.8	-	-	Grab		
Electrical conductivity EC	339 uS/cm	378 uS/cm	-	-	Grab		
Suspended Solids	-	8 mg/l	-	-	Grab		
Mineral oil	-	210 ug/l	-	-	Grab		
Antimony	-	<0.5 ug/l	-	-	Grab		
Arsenic	-	<0.5 ug/l	-	-	Grab		
Beryllium	-	<0.5 ug/l	-	-	Grab		
Cadmium	<0.5 ug/l	<0.5 ug/l	-	-	Grab		
Chromium	<0.5 ug/l	0.5 ug/l	-	-	Grab		
Cobalt	-	<0.5 ug/l	-	-	Grab		
Copper	<1 ug/l	<1 ug/l	-	-	Grab		
Lead	<0.5 ug/l	<0.5 ug/l	-	-	Grab		
Molybdenum	-	<0.5 ug/l	-	-	Grab		
Nickel	<0.5 ug/l	<0.5 ug/l	-	-	Grab		
Selenium	-	<0.5 ug/l	-	-	Grab		
Tellurium	-	<0.5 ug/l	-	-	Grab		
Thallium	-	<0.5 ug/l	-	-	Grab		
Tin	-	<0.5 ug/l	-	-	Grab		
Vanadium	-	0.8 ug/l	-	-	Grab		
Zinc	<5 ug/l	<5 ug/l	-	-	Grab		
Total Heavy Metals	-	1.3 ug/l	-	-	Grab		



Table I.2(i) SURFACE WATER QUALITY

(Sheet 1 of 3) Monitoring Point/ Grid Reference: SW-2 - (E469898.874 N835978.089)

Parameter	Results (mg/l)				Sampling method ¹ (grab, drift etc.)	Normal Analytical Range ²	Analysis method / technique
	Date 08/12/08	Date	Date	Date			
pH	6.1	-	-	-	Grab	-	-
Temperature	-	-	-	-	Grab	-	-
Electrical conductivity EC	340 uS/cm	-	-	-	Grab	-	-
Ammoniacal nitrogen NH ₄ -N	0.090 mg/l	-	-	-	Grab	-	-
Chemical oxygen demand	26 mg/l	-	-	-	Grab	-	-
Biochemical oxygen demand	<1 mg/l	-	-	-	Grab	-	-
Dissolved oxygen DO	-	-	-	-	Grab	-	-
Calcium Ca	5 mg/l	-	-	-	Grab	-	-
Cadmium Cd	<0.5 mg/l	-	-	-	Grab	-	-
Chromium Cr	<0.5 mg/l	-	-	-	Grab	-	-
Chloride Cl	82.50 mg/l	-	-	-	Grab	-	-
Copper Cu	34 ug/l	-	-	-	Grab	-	-
Iron Fe	499 ug/l	-	-	-	Grab	-	-
Lead Pb	<0.5 ug/l	-	-	-	Grab	-	-
Magnesium Mg	6 mg/l	-	-	-	Grab	-	-
Manganese Mn	79 ug/l	-	-	-	Grab	-	-
Mercury Hg	<0.05 ug/l	-	-	-	Grab	-	-

Surface Water Quality (Sheet 2 of 3) SW-2 - (E469898.874 N835978.089)

Parameter	Results (mg/l)				Sampling method (grab, drift etc.)	Normal Analytical Range	Analysis method / technique
	Date 08/12/08	Date	Date	Date			
Nickel Ni	1 ug/l	-	-	-	Grab	-	-
Potassium K	3 mg/l	-	-	-	Grab	-	-
Sodium Na	39 mg/l	-	-	-	Grab	-	-
Sulphate SO ₄	15.16 mg/l	-	-	-	Grab	-	-
Zinc Zn	10 ug/l	-	-	-	Grab	-	-
Total alkalinity (as CaCO ₃)	338 mg/l CaCO ₃	-	-	-	Grab	-	-
Total organic carbon TOC	17.0 mg/l	-	-	-	Grab	-	-
Total oxidised nitrogen TON	0.13 mg/l	-	-	-	Grab	-	-
Nitrite NO ₂	<0.017 mg/l	-	-	-	Grab	-	-
Nitrate NO ₃	0.582 mg/l	-	-	-	Grab	-	-
Faecal coliforms (/100mls)	89 cfu/100ml	-	-	-	Grab	-	-
Total coliforms (/100mls)	305 cfu/100ml	-	-	-	Grab	-	-
Phosphate PO ₄	0.231 mg/l	-	-	-	Grab	-	-

Surface Water Quality (Sheet 3 of 3) SW-2 - (E469898.874 N835978.089)

Parameter	Results (mg/l)				Sampling method (grab, drift etc.)	Normal Analytical Range	Analysis method / technique
	Date 08/12/08	Date 04/04/12	Date	Date			
pH	6.1	6.7	-	-	Grab	-	-
Electrical conductivity EC	340 uS/cm	369 uS/cm	-	-	Grab	-	-
Suspended Solids	-	5 mg/l	-	-	Grab	-	-
Mineral oil	-	<100 ug/l	-	-	Grab	-	-
Antimony	-	<0.5 ug/l	-	-	Grab	-	-
Arsenic	-	<0.5 ug/l	-	-	Grab	-	-
Beryllium	-	<0.5 ug/l	-	-	Grab	-	-
Cadmium	<0.5 ug/l	<0.5 ug/l	-	-	Grab	-	-
Chromium	<0.5 ug/l	0.7 ug/l	-	-	Grab	-	-
Cobalt	-	0.6 ug/l	-	-	Grab	-	-
Copper	34 ug/l	<1 ug/l	-	-	Grab	-	-
Lead	<0.5 ug/l	0.8 ug/l	-	-	Grab	-	-
Molybdenum	-	<0.5 ug/l	-	-	Grab	-	-
Nickel	<1 ug/l	<0.5 ug/l	-	-	Grab	-	-
Selenium	-	<0.5 ug/l	-	-	Grab	-	-
Tellurium	-	<0.5 ug/l	-	-	Grab	-	-
Thallium	-	<0.5 ug/l	-	-	Grab	-	-
Tin	-	<0.5 ug/l	-	-	Grab	-	-
Vanadium	-	2 ug/l	-	-	Grab	-	-
Zinc	10 ug/l	<5 ug/l	-	-	Grab	-	-
Total Heavy Metals	-	4.1 ug/l	-	-	Grab	-	-



Table L.2(i) SURFACE WATER QUALITY

(Sheet 1 of 3) Monitoring Point/ Grid Reference: SW-3 - (E470263.519 N835956.711)

Parameter	Results (mg/l)				Sampling method ¹ (grab, drift etc.)	Normal Analytical Range ²	Analysis method / technique
	Date 08/12/08	Date	Date	Date			
pH	6.1	-	-	-	Grab	-	-
Temperature	-	-	-	-	Grab	-	-
Electrical conductivity EC	327 uS/cm	-	-	-	Grab	-	-
Ammoniacal nitrogen NH ₂ -N	0.64 mg/l	-	-	-	Grab	-	-
Chemical oxygen demand	26 mg/l	-	-	-	Grab	-	-
Biochemical oxygen demand	<1 mg/l	-	-	-	Grab	-	-
Dissolved oxygen DO	-	-	-	-	Grab	-	-
Calcium Ca	5 mg/l	-	-	-	Grab	-	-
Cadmium Cd	<0.5 mg/l	-	-	-	Grab	-	-
Chromium Cr	< 0.5 mg/l	-	-	-	Grab	-	-
Chloride Cl	79.14 mg/l	-	-	-	Grab	-	-
Copper Cu	36 ug/l	-	-	-	Grab	-	-
Iron Fe	590 ug/l	-	-	-	Grab	-	-
Lead Pb	<0.5 ug/l	-	-	-	Grab	-	-
Magnesium Mg	6 mg/l	-	-	-	Grab	-	-
Manganese Mn	77 ug/l	-	-	-	Grab	-	-
Mercury Hg	<0.05 ug/l	-	-	-	Grab	-	-

Surface Water Quality (Sheet 2 of 3) SW-3 - (E470263.519 N835956.711)

Parameter	Results (mg/l)				Sampling method (grab, drift etc.)	Normal Analytical Range	Analysis method / technique
	Date 08/12/08	Date	Date	Date			
Nickel Ni	0.7 ug/l	-	-	-	Grab	-	-
Potassium K	3 mg/l	-	-	-	Grab	-	-
Sodium Na	37 mg/l	-	-	-	Grab	-	-
Sulphate SO ₄	14.37 mg/l	-	-	-	Grab	-	-
Zinc Zn	10 ug/l	-	-	-	Grab	-	-
Total alkalinity (as CaCO ₃)	327 mg/l CaCO ₃	-	-	-	Grab	-	-
Total organic carbon TOC	16.7 mg/l	-	-	-	Grab	-	-
Total oxidised nitrogen TON	0.12 mg/l	-	-	-	Grab	-	-
Nitrite NO ₂	<0.017 mg/l	-	-	-	Grab	-	-
Nitrate NO ₃	0.514 mg/l	-	-	-	Grab	-	-
Faecal coliforms (/100mls)	51 cfu/100ml	-	-	-	Grab	-	-
Total coliforms (/100mls)	364 cfu/100ml	-	-	-	Grab	-	-
Phosphate PO ₄	0.188 mg/l	-	-	-	Grab	-	-

Surface Water Quality (Sheet 3 of 3) SW-3 (E470263.519 N835956.711)

Parameter	Results (mg/l)				Sampling method (grab, drift etc.)	Normal Analytical Range	Analysis method / technique
	Date 08/12/08	Date 04/04/12	Date	Date			
pH	6.1	6.7	-	-	Grab		
Electrical conductivity EC	327 uS/cm	370 uS/cm	-	-	Grab		
Suspended Solids	-	< 2 mg/l	-	-	Grab		
Mineral oil	-	< 100 ug/l	-	-	Grab		
Antimony	-	<0.5 ug/l	-	-	Grab		
Arsenic	-	<0.5 ug/l	-	-	Grab		
Beryllium	-	<0.5 ug/l	-	-	Grab		
Cadmium	<0.5 ug/l	<0.5 ug/l	-	-	Grab		
Chromium	<0.5 ug/l	0.9 ug/l	-	-	Grab		
Cobalt	-	0.6 ug/l	-	-	Grab		
Copper	36 ug/l	<1 ug/l	-	-	Grab		
Lead	<0.5 ug/l	1 ug/l	-	-	Grab		
Molybdenum	-	<0.5 ug/l	-	-	Grab		
Nickel	0.7 ug/l	<0.5 ug/l	-	-	Grab		
Selenium	-	<0.5 ug/l	-	-	Grab		
Tellurium	-	<0.5 ug/l	-	-	Grab		
Thallium	-	<0.5 ug/l	-	-	Grab		
Tin	-	<0.5 ug/l	-	-	Grab		
Vanadium	-	2 ug/l	-	-	Grab		
Zinc	10 ug/l	6 ug/l	-	-	Grab		
Total Heavy Metals	-	10.5 ug/l	-	-	Grab		



01-04-2012



Complete Laboratory Solutions
Ros Muc, Co. Galway,
[Tel] 091 574355
[Fax] 091 574356
[Email] services@cls.ie
[web] www.complete-lab-solutions.com

Client	Dermot Lennon Lennon's Quarries Glen Castle Bunnahoeen Ballina, Co. Mayo	Report No.	160525
		Date of Receipt	04/04/2012
		Start Date of Analysis	04/04/2012
		Date of Report	17/04/2012
		Order Number	
		Sample taken by	Client

CERTIFICATE OF ANALYSIS

Results

Lab No.	Sample Description	Test	Result	Units
368194	Surface Water 1. Downstream	Antimony, total	<0.5	ug/l
		Arsenic, total	<0.5	ug/l
		Beryllium, total	<0.5	ug/l
		Cadmium, total	<0.5	ug/l
		Chromium, total	0.5	ug/l
		Cobalt, total	<0.5	ug/l
		Conductivity @20C	378	uS/cm
		Copper, total	<1	ug/l
		Extractable HC/ DR0 (CR-C)	210 Unknown Pattern*	ug/l
		Lead, total	<0.5	ug/l
		Mineral Oil (by ion chromat)	210	ug/l
		Molybdenum, total	<0.5	ug/l
		Nickel, total	<0.5	ug/l
		pH	6.8	pH Units
		Selenium, total	<0.5	ug/l
		Suspended Solids	8	mg/l
		Thallium, total	<0.5	ug/l
		Vanadium, total	<0.5	ug/l
		Zinc, total	<5	ug/l
				Total Heavy Metals
		Vanadium, total	0.8	ug/l
		Zinc, total	<5	ug/l

* Note: The comment expressed here is an interpretation and is not INAB accredited



Approved by: *Barbara Lee*
Barbara Lee
Environmental Scientist

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100, Main St. Galway
Tel: 091 574355
Fax: 091 574356
Email: info@complete.ie
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Client:	Belmont Quarry Lennon's Quarries 100m Dottle Belmullet Belmullet, Co. Mayo	Report No:	160526
		Date of Receipt:	04/04/2012
		Start Date of Analysis:	04/04/2012
		Date of Report:	17/04/2012
		Order Number:	
		Sample taken by:	Client

CERTIFICATE OF ANALYSIS

Results

Lab No	Sample Description	Test	Result	Units
160526	Surface Water 2. Downstream	Antimony, total	<0.5	ug/l
		Arsenic, total	<0.5	ug/l
		Beryllium, total	<0.5	ug/l
		Cadmium, total	<0.5	ug/l
		Chromium, total	0.7	ug/l
		Cobalt, total	0.6	ug/l
		Conductivity @20C	269	uS/cm
		Copper, total	1	ug/l
		Extractable HC/ DIBD (CB-C40) total and dissolved	<100	ug/l
		Lead, total	0.8	ug/l
		Mineral Oil (by calc)	<100	ug/l
		Molybdenum, total	<0.5	ug/l
		Nickel, total	<0.5	ug/l
		pH	5.7	ref Units
		Selenium, total	<0.5	ug/l
		Suspended Solids	5	mg/l
		Vanadium, total	<0.5	ug/l
		Zinc, total	<0.5	ug/l
		Heavy Metals	4.3	ug/l
		Radium, total	2	ug/l
		Zinc, total	<5	ug/l

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Approved by:

Barbara Lee

Barbara Lee
Environmental Scientist

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 100 Mac, Co. Galway
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Client: Lennon Quarries	Report No.: 160527
Location: Quilley	Date of Receipt: 04/04/2012
Site: Quilley	Start Date of Analysis: 04/04/2012
Client: Lennon Quarries	Date of Report: 17/04/2012
Order Number:	Order Number:
Sample taken by: Client	Sample taken by: Client

CERTIFICATE OF ANALYSIS

Results

Lab No	Sample Description	Test	Result	Units
160527	Surface Water 3. Downstream	Antimony, total	<0.5	ug/l
		Arsenic, total	<0.5	ug/l
		Beryllium, total	<0.5	ug/l
		Cadmium, total	<0.5	ug/l
		Chromium, total	0.9	ug/l
		Cobalt, total	0.6	ug/l
		Conductivity @20C	370	uS/cm
		Copper, total	<0.5	ug/l
		Extractable HC/ DRD (GR-C40) total and dissolved	100	ug/l
		Lead, total	1	ug/l
		Mineral Oil (by calculation)	<100	ug/l
		Molybdenum, total	<0.5	ug/l
		Nickel, total	<0.5	ug/l
		pH	6.7	pH Units
		Selenium, total	<0.5	ug/l
		Suspended Solids	<2	mg/l
		Tellurium, total	<0.5	ug/l
		Thallium, total	<0.5	ug/l
		Tin, total	<0.5	ug/l
		Trace Heavy Metals	10.5	ug/l
		Zinc, total	2	ug/l
		Zinc, total	6	ug/l

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Approved by:

Barbara Leo

Barbara Leo
Environmental Scientist

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Complete Laboratory Solutions
Ros Muc, Co. Galway.
[Tel] 091 574355
[Fax] 091 574356
[Email] services@cls.ie
[web] www.completelabsolutions.com

Client : Dermot Lennon
Lennon's Quarries
Glen Castle
Bunnahoeen
Ballina, Co. Mayo

Report No. : 160528
Date of Receipt : 04/04/2012
Start Date of Analysis : 04/04/2012
Date of Report : 17/04/2012
Order Number :
Sample taken by : Client

CERTIFICATE OF ANALYSIS

Results

Lab No	Sample Description	Test	Result	Units
368197	Surface Water 4. Downstream	Antimony, total	<0.5	ug/l
		Arsenic, total	<0.5	ug/l
		Beryllium, total	<0.5	ug/l
		Cadmium, total	<0.5	ug/l
		Chromium, total	0.8	ug/l
		Cobalt, total	0.6	ug/l
		Conductivity @20C	669	uS/cm
		Copper, total	<1	ug/l
		Extractable HC/ DRD (C8-C40) total and dissolved	<100	ug/l
		Lead, total	0.9	ug/l
		Mineral Oil (by calculation)	<100	ug/l
		Molybdenum, total	<0.5	ug/l
		Nickel, total	<0.5	ug/l
		pH	6.7	pH Units
		Selenium, total	<0.5	ug/l
		Suspended Solids	<2	mg/l
		Tellurium, total	<0.5	ug/l
		Thallium, total	<0.5	ug/l
		Tin, total	<0.5	ug/l
		Total Heavy Metals	10.3	ug/l
Vanadium, total	2	ug/l		
Zinc, total	6	ug/l		

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Barbara Lee

Barbara Lee
Environmental Scientist

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Complete Laboratory Solutions

Complete Laboratory Solutions
Ros Muc, Co. Galway,
[Tel] 091 574355
[Fax] 091 574356
[Email] services@cls.ie
[web] www.completelabsolutions.com

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Lennon's Quarries
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Order Number :
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CERTIFICATE OF ANALYSIS

Results				
Lab No	Sample Description	Test	Result	Units
368198	Surface Water S, Downstream	Antimony, total	<0.5	ug/l
		Arsenic, total	<0.5	ug/l
		Beryllium, total	<0.5	ug/l
		Cadmium, total	<0.5	ug/l
		Chromium, total	0.8	ug/l
		Cobalt, total	0.6	ug/l
		Conductivity @20C	170	uS/cm
		Copper, total	<1	ug/l
		Extractable HC/ DRO (C8-C40 total and dissolved)	132 Unknown Pattern *	ug/l
		Lead, total	0.6	ug/l
		Mineral Oil (by calculation)	132	ug/l
		Molybdenum, total	<0.5	ug/l
		Nickel, total	<0.5	ug/l
		pH	6.7	pH Units
		Selenium, total	<0.5	ug/l
		Suspended Solids	5	mg/l
		Tellurium, total	<0.5	ug/l
		Thallium, total	<0.5	ug/l
		Iron, total	<0.5	ug/l
		Total Heavy Metals	4	ug/l
Vanadium, total	2	ug/l		
Zinc, total	<5	ug/l		

* Note: The comment expressed here is an interpretation and is not INAB accredited



Approved by:

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Barbara Lee
Environmental Scientist

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