

**TED O' DONOGHUE & SONS WASTE DISPOSAL**  
**KNOCKPOGE, WATERFALL, Co. CORK**

**ANNUAL ENVIRONMENTAL REPORT**

**Period: January 2012 - December 2012**

<b>Waste Licence Register Number:</b>	W00214-1
<b>Licensee:</b>	Ted O' Donoghue & Sons Limited
<b>Location of Facility:</b>	Knockpoge, Waterfall, County Cork

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## 1. INTRODUCTION

This Annual Environmental Report (AER) for Ted O' Donoghue & Sons Limited covers the reporting period January 2012 to December 2012. Ted O' Donoghue & Sons received a waste licence (Register Number W214-1) on 26th September 2005. The AER has been prepared in compliance with Condition 11.10 of the Waste Licence.

The content of the AER is based on Schedule D of the Waste Licence and the report format follows guidelines set in the "Draft Guidance on Environmental Management Systems and Reporting to the Agency" issued by the Environmental Protection Agency (Agency). The Waste Licence allows *the facility* to accept Commercial, Household and Construction and Demolition non-hazardous waste on-site and recovered from the incoming waste streams. The various waste streams are processed and stored on-site pending removal to authorised off-site recycling and disposal facilities. The annual licensed waste throughput is limited to 23,000 tonnes.

## **2. MANAGEMENT OF THE FACILITY**

### **2.1 Management of the Activity**

The site is managed and operated by O' Donoghue family. Details of the management structure for the facility were submitted to the Agency as part of the Environmental Management Programme in March 2006.

### **2.2 Environmental Management System**

An Environmental Management System (EMS) is in operation for the site and is updated annually in accordance with site requirements and conditions, as required under Condition 2.2 of the Waste Licence.

### **2.3 Environmental Management Programme**

The objective of the EMP is to act as the site manual, which will assist the site in achieving its objectives and targets during the current and future operation of the site. The EMP has been prepared and was submitted to the Agency in March 2006.

## **3. NOTIFICATION AND RECORD KEEPING**

### **3.1. Information stored on-site**

All copies of environmental data and prescribed reports obtained and prepared on behalf of the licensee are forwarded to the Agency. Copies of reports and correspondence are retained and available for inspection at the reception building.

The facility provides the following documentation to view:

- Waste Licence 214-1
- Waste Licence Application form
- Periodic reports
- All monitoring records
- Waste transfer and acceptance dockets
- Incident/Complaints reports
- Once-off reports submitted to the agency
- Rejected loads log
- Agency correspondence, EPA approvals and request for additional information
- Monitoring personnel, experience and training
- Audit records
- Rejected load, compliance, integrity of bunds
- Daily Site Log

- Weekly site inspection forms
- Surface Water Inspection forms

### **3.2. Waste Records**

Records of all waste loads entering and leaving the site is kept electronically by the weighbridge operator. Details such as date, time, origin, waste type, contractors name, waste collection permit number, quantities and vehicle registration number are recorded. Waste records are contained in Appendices I.

All waste materials accepted at the site are recorded on two separate documents, including a waste transfer document and a computer printout of the waste accepted. The following details are recorded:

#### **Computer Printout:**

- ◆ Ticket Number/Transaction Number
- ◆ Customer code
- ◆ Operator / driver signature
- ◆ Net weight
- ◆ Vehicle Registration Number
- ◆ Contractor Name
- ◆ Waste Code for site
- ◆ Waste Type
- ◆ Name of person who checked load
- ◆ Waste Source
- ◆ Accepted or rejected status
- ◆ Weight entering and weight of container leaving site

#### **Waste Transfer Docket includes additional headings of:**

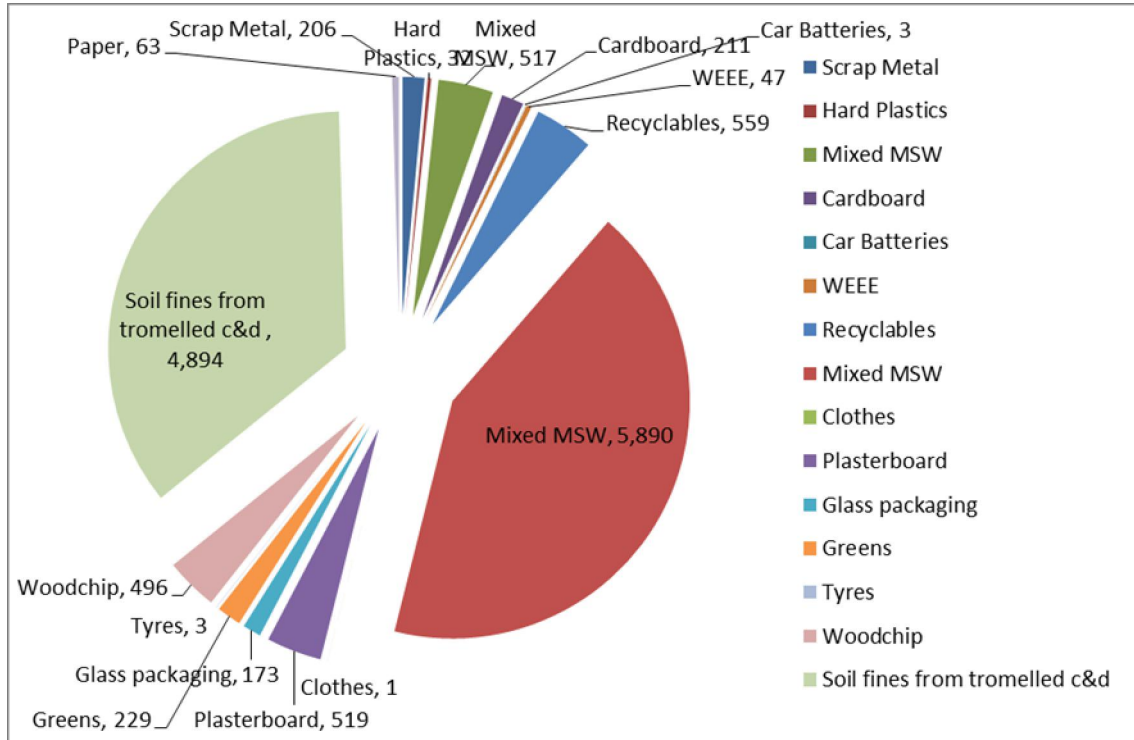
- ◆ How waste is contained
- ◆ European waste catalogue number
- ◆ Physical description
- ◆ Odour/Description of odour
- ◆ Special problems/requirements of waste
- ◆ Knowledge with regard to waste
- ◆ Waste Producer
- ◆ Waste Collection Permit Number

All waste records are retained at the site office.

### 3.3. Report on Waste Recovery

The waste volumes received at the facility have reduced significantly since 38,331 tonnes were received at the facility in 2008. In 2012 a total of 14,320 tonnes of waste were received at the facility.

**Figure 3.1 Waste Tonnes Removed from Facility in 2012**



### **3.4. Register of Complaints**

Details of all complaints made by the public are recorded in a Complaints Register. Complaints can be registered by contacting the facility manager or staff at the site. The register includes the name of the complainant, the nature of the complaint, the date of the complaint and the actions taken to remedy the complaint. The facility manager signs off the completed form. Operational Procedure 9.3 details the recording of complaints.

### **3.5. Non-Compliances**

Non-compliances were notified to the facility manager following EPA site inspections. These regarded exceedances in Waste Licence emission limit values for surface water run-off discharge to waters and unauthorised infrastructure.

All reports of non-compliances issued were responded to and remedial measures were implemented to close out the matters.

### **3.6. Complaints summaries**

No complaints were received by the facility manager during the reporting period.

### **3.7. Summary of Resource & Energy Consumption**

Table 3.1 presents an estimate of the resources used on-site during the reporting period.

**Table 3.1: Estimate of Resources Used On-Site**

<b>Resources</b>	<b>Quantities</b>
Diesel	52,000 litres
Hydraulic and Engine Oil	110 litres
Disinfectant	3 litres(concentrate)
Truck Wash Detergent	25 litres
Electricity	6,400 KWH

### **3.8. On-site Procedures**

Current procedures relating to the handling and storage of waste are being developed and will be forwarded to the Agency when completed.

## **4. ENVIRONMENTAL MONITORING SUMMARY**

The following is a summary of the noise, dust, and groundwater quality monitoring and monitoring carried out at the site during 2012.

#### 4.1. Noise Monitoring

The following are the details of the survey as carried out at Ted O' Donoghue and Sons Ltd premises on the 21<sup>st</sup> November 2012.

The following is a description of the noise sensitive locations monitored during the noise survey and the sources of noise in the area at the time.

The following is a description of the noise sensitive locations monitored during the noise survey and the sources of noise in the area at the time.

**Table 4.1: Monitoring Locations**

<u>Monitoring Location</u>	<u>Description</u>
<b>N1</b>	<u>Adjacent O Donoghue family residence</u>
<b>N2</b>	<u>South east corner of site adjacent transfer station and workshop</u>
<b>N3</b>	<u>North west corner of site, close to trailer parking area</u>
<b>N4</b>	<u>North east corner of site, close to timber shredder</u>
<b>N5</b>	<u>At sensitive dwelling, north east of site</u>

The results of the noise monitoring at locations N1-N5 is presented in Table 4.2.

**Table 4.2 Ambient Measurements (Locations N1-N5)**

<b>Monitoring Location</b>	<b>Time and Date</b>	<b>L<sub>Aeq</sub>, dB(A)</b>	<b>L<sub>A90</sub>, dB(A)</b>	<b>L<sub>A10</sub>, dB(A)</b>	<b>Main Noise Sources</b>
<b>N1</b>	09:10-09:40	58.3	47.9	60.3	Intermittent traffic noise
<b>N2</b>	09:47-10:17	57.6	50.2	58.8	Vehicle movements. Noise from transfer building.
<b>N3</b>	10:26-10:56	58.9	47.5	56.8	Low level noise from transfer building & traffic.
<b>N4</b>	11:01-11:31	59.4	48.7	61.2	Traffic on local road, no site noise
<b>N5</b>	11:35-12:05	62.2	46.9	60.2	Traffic on local road, no site noise

Measurements at location N1 were recorded adjacent to the O' Donoghue family residence adjacent to the entrance to the facility with traffic on the local road and access road influencing the ambient levels.



Noise measurements at N2 and N3 were recorded at the north-western and north-eastern corners of the site respectively. Site vehicle movements and the mechanical processes within the transfer station building were the main noise sources. The average noise levels were recorded at N2 and N3 were 57.6dB(A) and 58.9dB(A) respectively.

The noise from the facility was not considered a major source at locations N4 and N5. Intermittent local traffic movements were the main noise source.

#### **4.2. Dust Deposition Monitoring**

The dust gauges were set up at the locations D1, D2, D3 and D4 as listed in Table E.2.2 of the waste licence. The gauges were erected such that the containers were 1.8m above the ground surface and free from any obstruction. The containers were exposed from 5<sup>th</sup> May – 2<sup>nd</sup> June 2010.

The second round of sampling was conducted from 2<sup>nd</sup> June – 4<sup>th</sup> July 2010.

D1: This sample location is sited on the western boundary of the site close to the O' Donoghue family residence.

D2: This sample location is positioned at the south-east corner of the site close to the workshop and transfer building.

D3: This sample location is at the north-western side boundary

D4: Located at the north-eastern corner of the facility

#### **RESULTS:**

The results of the dust monitoring event are outlined in the table below.

**Table 2: Dust Monitoring Results 17<sup>th</sup> July – 15<sup>th</sup> August 2012.**

<b>Location</b>	<b>Total Dust mg/m<sup>2</sup>/day</b>
<b>D1</b>	145
<b>D2</b>	210
<b>D3</b>	133
<b>D4</b>	192

**Table 3: Dust Monitoring Results 15<sup>th</sup> August – 17<sup>th</sup> September 2012**

<b>Location</b>	<b>Total Dust mg/m<sup>2</sup>/day</b>
<b>D1</b>	103
<b>D2</b>	139
<b>D3</b>	209
<b>D4</b>	294

**CONCLUSIONS:**

The results of the both rounds of dust monitoring at the 4 locations are within the conditions stated in the EPA licence for the facility.

**4.3. Groundwater Monitoring**

A water sample from an external tap water source GW1 was sampled for analysis in December 2012. This sample is comparable with the drinking water quality in the O' Donoghue residence located adjacent the waste transfer activities. The sample was analysed for parameters as listed in the Schedule C of the waste licence for the facility.

The results of the water monitoring indicate a water quality that complies with the standards in the EC Drinking Water Directive [98/83/EC].

**4.4. Storm Water Monitoring**

Monthly samples were obtained and analysed from the storm water chamber at the separator. In 2011 elevated levels of bacteria were identified in a number of samples. Following the installation of a wastewater treatment plant at the facility downstream of the monitoring location SW1, an improvement in the water quality has been noted.

**Table 5.1: Schedule of Objective and Targets 2013**

No.	2013 Objective	Target	Responsibility	Timescale
1	Review options for composting on-site	Reduction in organic waste fraction going to landfill.	Facility Manager	September 2013
2	Improve Waste Acceptance procedures on-site	Continue to ensure that any unacceptable waste is quarantined and any hazardous waste is disposed of using only fully certified carriers and only to fully certified facilities. Maintain details of hazardous materials used on-site.	Facility Manager, Vehicle Drivers, Weighbridge Operators, Operations Manager	New Procedures in place by Q1 and active immediately. Further training if required by end of Q3
3	Maintain and improve the EMS	Continue to hold quarterly and annual Environmental management review meetings at the site.	Environmental Compliance Manager	31 December 2013

#### **4.5. Waste Management Activities**

The facility is licensed to accept the following waste types as specified in Schedule A of the Waste Licence: -

- Household,
- Commercial,
- Construction & Demolition,
- Industrial Non-Hazardous Solids

Hazardous waste is not accepted at the facility, with the exception of small quantities of machinery batteries that inadvertently arrive in waste deliveries. Such batteries are stored in a designated skip pending collection by an off-site recycling organisation. Any other materials suspected either to be hazardous or not acceptable under licence conditions (e.g. gas cylinders, sheets of asbestos) are temporarily stored on-site in the waste quarantine area, before removal off-site for treatment/disposal at an appropriate facility.

##### 4.5.1. Household and Commercial Waste Containing Putrescible Materials

Household and commercial wastes (originating in factories, hotels, pubs and supermarkets) containing an organic fraction are either deposited on the floor of the transfer building, or tipped directly into open trailers. All the household waste deposited on the floor is either pushed into an open trailer, or compacted for removal off-site for disposal at an off-site landfill, as agreed with the Agency. The commercial waste is inspected and segregated into recyclable cardboard, bottles, domestic waste, or compactor waste (supermarkets are generally the main origin of this waste). All uncontaminated cardboard and plastic packaging material, which is suitable for baling, is collected for recycling. Drink cans are collected, baled and stored on-site pending removal off-site for recycling. Glass bottles, which are either segregated prior to arrival on-site or deposited at the civic amenity area, are stored on-site pending removal for recycling off-site.

##### 4.5.2. Non Putrescible Household and Commercial Waste

Non putrescible household wastes, arising from the kerbside collection, and non putrescible commercial/industrial waste is deposited onto the floor of the transfer building and inspected for disposable and/or recoverable fractions. Non-recyclable/recoverable waste is stored within the building before transfer for disposal to an off-site landfill, as agreed with the Agency.

##### 4.5.3. Construction and Demolition Waste

All construction and demolition waste is inspected to determine if it is suitable for transfer and/or recovery. Wood and metal are separated using a mechanical grab and subsequently removed off-site to approved recovery/recycling facilities. The residual material is passed through a trommel to remove the fine fraction containing subsoil and topsoil. This material is either used on-site for restoration purposes, or is sold for agricultural and/or horticultural purposes. The heavy fraction from the trommel

containing concrete, brick etc is then passed through the crusher to produce a crushed inert aggregate.

#### 4.5.4. Wood, Timber Waste

Wood delivered to and recovered on-site is shredded and removed off-site for disposal.

#### 4.5.5. Other recovery Infrastructure

External storage bays are located at the facility for storing waste recovered for recycling. Concrete storage bays for soil, rubble green waste and chipped wood are located at the north east of the facility. At the south-west of the waste transfer building there will be bays for glass and scrap metal and also a quarantine area for white and electrical goods.

### **4.6. Quantity & Composition of Waste Recovered**

Details of the quantities of waste recovered are contained in Appendix I.

## **5. REPORT ON ENVIRONMENTAL NUISANCES & CONTROLS**

The site is inspected daily and weekly by the manager and recorded on separate inspection sheets as required by Condition 8.10. The daily inspection sheet records environmental nuisances such as flies, loose litter, vermin, birds, odour, dust, fires and complaints. The sheet also provides for the recording of descriptions of works on the day of inspection and provides for comments and required actions.

### **5.1. Litter Control**

Litter picking is carried out daily and as required. Daily and weekly inspection sheets are maintained at the site office. The site manager carries out daily litter inspection in the area surrounding the waste transfer station. An overhead CCTV camera is located at the weighbridge to enable inspection of loads brought to the facility. The weighbridge operator inspects each load brought to the facility and ensures that they are covered with appropriate netting.

Weekly inspection sheet provides for the recording of nuisances as well as site security, infrastructure and housekeeping.

A road sweeper vehicle attachment has been procured for use on the site and for local access roads when required.

### **5.2. Odour Control**

Operations at the waste transfer facility involve the transfer and compaction of solid waste only. No liquids, agricultural or sewage sludges will be accepted at the site.

Waste accepted at the facility will have generally undergone relatively little decomposition. The storage of waste in sealed containers following compaction and

fast turnaround times on site means that the potential for odour problems arising at the facility will be minimised.

### **5.3. Dust Control**

In dry weather all site access roads will be sprayed with a water bowser to suppress dust. To minimise dust generation traffic restrictions on the site will be implemented including a speed limit of 15 mph. Dust deposition monitoring at the site show that present dust emissions are unlikely to cause a nuisance.

However management propose to implement the following mitigation measures:

- Sprinkling water by applying a fine water mist over dusty waste as it's unloaded inside the transfer building
- Covering/dampening any external dusty waste stockpiles of C&D waste
- Sweeping and washing down the transfer building floor regularly
- Using a road sweeper on the facility yard and local road during dry weather

Dust deposition levels were recorded twice a year using Bergerhoff gauges, during the period May to September.

### **5.4. Noise Control**

Noise measurements have been recorded annually at the facility since 2003. The results from the monitoring indicate that noise from the facility is not a source of nuisance outside the perimeter of the facility. The doors of the waste transfer building remain closed during trommeling of waste. There have been no reports of noise nuisance complaints made to the facility manager.

Noise levels will continue to be monitored annually at locations. The  $L_{Aeq}$ ,  $L_{A10}$  and  $L_{A90}$  are monitored at each location for a thirty-minute duration.

**APPENDIX I**

**PRTR WASTE TRANSFR DATA**

## 5. ONSITE TREATMENT &amp; OFFSITE TRANSFERS OF

#/NA

14/05/2013 11:34

Please enter all quantities on this sheet in Tonnes

0

Transfer Destina	Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non-Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non-Haz Waste: Address of Recover/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (HAZARDOUS WASTE ONLY)
						M/C/E	Method Used					
Within the C17 05 04	No		416.0	soil and stones other than those mentioned in 17 05 03	R5	M	Weighed	Offsite in Ireland	Finbarr O Neill,CKWMC 536-08	Ovens,Cork,....Ireland		
Within the C17 05 04	No		958.0	soil and stones other than those mentioned in 17 05 03	R5	M	Weighed	Offsite in Ireland	Kevin McCarthy,WFPCK 10-55	Upton,Cork,....Ireland		
Within the C19 12 01	No		199.0	paper and cardboard	R3	M	Weighed	Offsite in Ireland	Panda Waste,CKWMC 381-08	.....Ireland		
Within the C19 12 03	No		138.0	non-ferrous metal	R5	M	Weighed	Offsite in Ireland	ATO A Recycling,.	.....Ireland		
Within the C19 12 03	No		43.0	non-ferrous metal	R5	M	Weighed	Offsite in Ireland	Pouladuff Dismantlers,CKWMC 146/04	Pouladuff Road,Forge Hill Cork,....Ireland		
Within the C19 12 03	No		25.0	non-ferrous metal	R5	M	Weighed	Offsite in Ireland	National Recycling,CKWMC1462/04	.....Ireland		
Within the C19 12 07	No		480.0	wood other than that mentioned in 19 12 06	R5	M	Weighed	Offsite in Ireland	Eirbloc,.	Macroon,....Ireland		
Within the C19 12 07	No		16.0	wood other than that mentioned in 19 12 06	R5	M	Weighed	Offsite in Ireland	VARIOUS,NONE	Various,....Ireland		
Within the C19 12 07	No		480.0	wood other than that mentioned in 19 12 06	R5	M	Weighed	Offsite in Ireland	Eirbloc,.	Macroon,....Ireland		
Within the C19 12 12	No		517.0	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	D14	M	Weighed	Offsite in Ireland	Panda Waste,CKWMC 381-08	.....Ireland		
Within the C19 12 12	No		764.0	mechanical treatment of wastes other than those mentioned in 19 12 11	D1	M	Weighed	Offsite in Ireland	Youghal Landfill,.	Youghal Landfill,....Ireland		
Within the C20 01 10	No		1.0	clothes	R5	M	Weighed	Offsite in Ireland	Lentec Ltd,WCP 09.0258.01	Kilkenny,....Ireland		
Within the C20 02 01	No		229.0	biodegradable waste	R10	M	Weighed	Offsite in Ireland	CTO Recycling,.	Cork,....Ireland		
Within the C20 03 01	No		5890.0	mixed municipal waste	D15	M	Weighed	Offsite in Ireland	Dollin Waste,.	Tralee,Co. Kerry,....Ireland		
Within the C19 12 04	No		18.0	plastic and rubber	R5	M	Weighed	Offsite in Ireland	Lenster Environmental,WP2008/06	Clermont Business Park Haggardstown Dundalk Co Louth,....Ireland		
Within the C19 12 01	No		12.0	paper and cardboard	R11	M	Weighed	Offsite in Ireland	Lenster Environmental,WP2008/06	Clermont Business Park Haggardstown Dundalk Co Louth,....Ireland		
Within the C19 12 04	No		14.0	plastic and rubber	R11	M	Weighed	Offsite in Ireland	Panda Waste,CKWMC 381-08	.....Ireland		
Within the C17 08 02	No		227.0	gypsum-based construction materials other than those mentioned in 17 08 01	R5	M	Weighed	Offsite in Ireland	Baron recycling BRL,LN09/113	Bellshill Road Castledawson ,....Ireland		
Within the C17 08 02	No		292.0	gypsum-based construction materials other than those mentioned in 17 08 01	R5	M	Weighed	Offsite in Ireland	plasterboard recycling solutions uk,.	.....United Kingdom		
Within the C17 05 04	No		1363.0	soil and stones other than those mentioned in 17 05 03	R5	M	Weighed	Offsite in Ireland	pat kenneally aherfa ,WFP-CK-11-0098-	Aherfa,Cork,....Ireland		
Within the C19 12 05	No		173.0	glass	R5	M	Weighed	Offsite in Ireland	Glassco,.	Naas,Co Kildare,....Ireland		
Within the C16 01 03	No		3.0	end-of-life tyres	R5	M	Weighed	Offsite in Ireland	Crossmore Transport,wcp-ck-11-1309	.....Ireland		
To Other Cr19 12 01	No		63.0	paper and cardboard	R3	M	Weighed	Abroad	Recycling UK,.	.....United Kingdom		
Within the C17 05 04	No		1393.0	soil and stones other than those mentioned in 17 05 03	R5	M	Weighed	Offsite in Ireland	Pat Ahern,CKWMC 16-01	Carrigtohill,Cork,....Ireland		



**APPENDIX II**

**INTERCEPTOR RUN-OFF WATER ANALYSIS RESULTS**



**AMS**  
ADVANCED MICRO SERVICES  
& ENVIRONMENTAL LABORATORIES LTD

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Report No: GSET-515130112  
Document No: EF0011

## CERTIFICATE OF ANALYSIS

---

<b>Client</b>	<b>Glenside Environmental</b> 24 The Heathers, Calses lake Ballincollig Cork.	<b>Date Received</b>	13/01/2012
		<b>Date Reported</b>	16/02/2012
		<b>Order Number</b>	N/A
<b>For the Attention</b>	Pat Power		
<b>Sample Reception</b>	1 sample(s) received in good condition.		
<b>Comments</b>	N/A		
<b>Note:</b>	A # next to the result indicates that there was insufficient sample to carry out testing as per SOP.		

---

Report Authorised by:

*Graham O'Halloran*

Graham O Halloran  
Group Microbiology Manager

**Conditions:**

1. Results in this report relate only to the items tested
2. Reports may not be reproduced except in full without the approval of Advanced Micro Services & Environmental Laboratories Ltd
3. All queries regarding this report should be addressed to the Technical Manager at the above address
4. A \* next to a method reference signifies that Advanced Micro Services & Environmental Laboratories Ltd are NOT INAB accredited for this method.
5. Results reported as CFU/cm<sup>2</sup> are calculated based on information supplied by customer regarding area swabbed
6. CFU indicates Colony Forming Units, MPN indicates Most Probable Number



**AMS**  
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Report No: GSET-515130112

Document No: EF0011

### CERTIFICATE OF ANALYSIS

**Date Received** 13/01/2012

**Date Reported** 16/02/2012

**Order Number** N/A

**Sample Type** Water  
**Client ID** Surface water sample from interceptor at waste facility.  
**Date Tested** 13/01/2012  
**AMS ID** 628612

<u>Test</u>	<u>Result</u>	<u>Unit</u>	<u>Method</u>
Faecal coliform bacteria	>18	MPN/100ml	SP 047 Based on ISO 9308-2 (1990)*
Coliform bacteria	0	CFU/100ml	SP 140 Microbiology of Drinking Water Part 4,B

Report Authorised by:

*Graham O'Halloran*

Graham O Halloran  
Group Microbiology Manager



## TEST CERTIFICATE

Ms Denise Doyle  
 Advance Micro Services & Environmental  
 Laboratories Ltd  
 Carrigeen Industrial Estate  
 Clonmel, Co. Tipperary  
 Ireland  
 Fax: 052 78133

Certificate Number: TWAT024049-1 Final

Order Number: gset-565130112

Date Analysis Started: 13/01/2012

Date Reported: 26/01/2012

Lab Ref.	Sample Details	Method Number	Test	Result	Units	Flag
WAT43795	Desc: 628739 glenside env- surface water sample from interceptor at waste facility. Date Sampled: 13/01/12. Order No: gset-565130112 Date Received: 13/01/2012	P280	BOD Total 5 Day with ATU	2.1	mg / l	
		P210	COD Total	13	mg / l O <sub>2</sub>	
		P212	Orthophosphate	<0.03	mg / l P	
		P243	Sulphate	<5	mg / l SO <sub>4</sub>	
		P236	Ammonia	0.52	mg / l N	
		P227	Conductivity	85.8	µS / cm	*
		P233	pH Value	7.7	Units	
P202	Solids Suspended	<10	mg / l			

Denis M Kent  
 Technical Manager

Disclaimers:

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Report No: GSET-515130112  
Document No: EF0011

## CERTIFICATE OF ANALYSIS

<b>Client</b>	<b>Glenside Environmental</b> 24 The Heathers, Calses lake Ballincollig Cork.	<b>Date Received</b>	13/01/2012
		<b>Date Reported</b>	16/02/2012
		<b>Order Number</b>	N/A

**For the Attention** Pat Power  
**Sample Reception** 1 sample(s) received in good condition.  
**Comments** N/A

**Note:** A # next to the result indicates that there was insufficient sample to carry out testing as per SOP.

Report Authorised by:

Graham O Halloran  
Group Microbiology Manager

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6. CFU indicates Colony Forming Units, MPN indicates Most Probable Number



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Report No: GSET-515130112

Document No: EF0011

### CERTIFICATE OF ANALYSIS

**Date Received** 13/01/2012

**Date Reported** 16/02/2012

**Order Number** N/A

**Sample Type** Water  
**Client ID** Surface water sample from interceptor at waste facility.  
**Date Tested** 13/01/2012  
**AMS ID** 628612

<u>Test</u>	<u>Result</u>	<u>Unit</u>	<u>Method</u>
Faecal coliform bacteria	>18	MPN/100ml	SP 047 Based on ISO 9308-2 (1990)*
Coliform bacteria	0	CFU/100ml	SP 140 Microbiology of Drinking Water Part 4,B

Report Authorised by:

*Graham O'Halloran*

Graham O Halloran  
Group Microbiology Manager



## TEST CERTIFICATE

Ms Denise Doyle  
 Advance Micro Services & Environmental  
 Laboratories Ltd  
 Carrigeen Industrial Estate  
 Clonmel, Co. Tipperary  
 Ireland  
 Fax: 052 78133

Certificate Number: TWAT025039-1 Final

Order Number: gset-536010312

Date Analysis Started: 02/03/2012

Date Reported: 12/03/2012

Lab Ref.	Sample Details	Method Number	Test	Result	Units	Flag
WAT45137	Desc: 689029 Surface water sample from interceptor at waste facility 29.02.12@18.00- glenside environmental Order No: gset-536010312 Date Received: 01/03/2012	P280	BOD Total 5 Day with ATU	2.3	mg / l	
		P210	COD Total	<10	mg / l O2	
		P212	Orthophosphate	<0.03	mg / l P	
		P243	Sulphate	<5	mg / l SO4	
		P236	Ammonia	0.30	mg / l N	
		P227	Conductivity	76	µS / cm	*
		P233	pH Value	7.6	Units	
		P202	Solids Suspended	1.6	mg / l	

Denise E Doyle  
 Site Quality Officer, Chemistry

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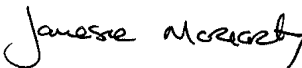
Report No: GSET-424040412  
Document No: EF0011

## CERTIFICATE OF ANALYSIS

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<b>Client</b>	<b>Glenside Environmental</b> 24 The Heathers, Calses lake Ballincollig Cork.	<b>Date Received</b>	04/04/2012
		<b>Date Reported</b>	08/04/2012
		<b>Order Number</b>	N/A
<b>For the Attention</b>	Pat Power		
<b>Sample Reception</b>	1 sample(s) received in good condition.		
<b>Comments</b>	N/A		
<b>Note:</b>	A # next to the result indicates that there was insufficient sample to carry out testing as per SOP.		

---

Report Authorised by:   
\_\_\_\_\_  
Jamesie Moriarty  
Shift Supervisor

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Report No: GSET-424040412

Document No: EF0011

### CERTIFICATE OF ANALYSIS

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**Date Received** 04/04/2012  
**Date Reported** 08/04/2012  
**Order Number** N/A

---

**Sample Type** Water  
**Client ID** surface water from interceptor at waste facility  
**Date Tested** 04/04/2012  
**AMS ID** 733872

<u>Test</u>	<u>Result</u>	<u>Unit</u>	<u>Method</u>
Faecal coliform bacteria	<1	MPN/100ml	SP 047 Based on ISO 9308-2 (1990)*
Coliform bacteria	15	CFU/100ml	SP 140 Microbiology of Drinking Water Part 4,B

---

Report Authorised by:

*Jamesie Moriarty*

Jamesie Moriarty  
Shift Supervisor



## TEST CERTIFICATE

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 Carrigeen Industrial Estate  
 Clonmel, Co. Tipperary  
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Certificate Number: TWAT025580-1 Final

Order Number: gset-428040412

Date Analysis Started: 04/04/2012

Date Reported: 13/04/2012

Lab Ref.	Sample Details	Method Number	Test	Result	Units	Flag
WAT46119	Desc: 733875 surface water from interceptor at waste facility - glenside env Order No: gset-428040412 Date Received: 04/04/2012	P280	BOD Total 5 Day with ATU	3.5	mg / l	
		P210	COD Total	16	mg / l O <sub>2</sub>	
		P212	Orthophosphate	0.04	mg / l P	
		P243	Sulphate	<5	mg / l SO <sub>4</sub>	
		P236	Ammonia	0.08	mg / l N	
		P227	Conductivity	80.4	µS / cm	*
		P233	pH Value	9.3	Units	
		P202	Solids Suspended	<10	mg / l	

Denise E Doyle  
 Site Quality Officer, Chemistry

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Report No: GSET-429270412  
Document No: EF0011

## CERTIFICATE OF ANALYSIS

<b>Client</b>	<b>Glenside Environmental</b> 24 The Heathers, Calses lake Ballincollig Cork.	<b>Date Received</b>	27/04/2012
		<b>Date Reported</b>	30/04/2012
		<b>Order Number</b>	N/A
<b>For the Attention</b>	Pat Power		
<b>Sample Reception</b>	1 sample(s) received in good condition.		
<b>Comments</b>	N/A		
<b>Note:</b>	A # next to the result indicates that there was insufficient sample to carry out testing as per SOP.		

Report Authorised by:

*Graham O'Halloran*

Graham O Halloran  
Group Microbiology Manager

**Conditions:**

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Report No: GSET-429270412

Document No: EF0011

### CERTIFICATE OF ANALYSIS

**Date Received** 27/04/2012

**Date Reported** 30/04/2012

**Order Number** N/A

**Sample Type** Water  
**Client ID** surface water sample from interceptor at waste facility  
**Date Tested** 27/04/2012  
**AMS ID** 761987

<u>Test</u>	<u>Result</u>	<u>Unit</u>	<u>Method</u>
Faecal coliform bacteria	<1	MPN/100ml	SP 047 Based on ISO 9308-2 (1990)*
Coliform bacteria	0	CFU/100ml	SP 140 Microbiology of Drinking Water Part 4,B

Report Authorised by:

*Graham O'Halloran*

Graham O Halloran  
Group Microbiology Manager



## TEST CERTIFICATE

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Certificate Number: TWAT026413-1 Final

Order Number: GSET-435270412

Date Analysis Started: 27/04/2012

Date Reported: 08/05/2012

Lab Ref.	Sample Details	Method Number	Test	Result	Units	Flag
WAT46735	Desc: 761989 SURFACE WATER SAMPLE FROM INTERCEPTOR AT WASTE FACILITY 27.04.12@10AM - Glenside env Order No: GSET-435270412 Date Received: 27/04/2012	P280	BOD Total 5 Day with ATU	5	mg / l	
		P210	COD Total	19	mg / l O <sub>2</sub>	
		P212	Orthophosphate	0.06	mg / l P	
		P243	Sulphate	<5	mg / l SO <sub>4</sub>	
		P236	Ammonia	<0.03	mg / l N	
		P227	Conductivity	63	µS / cm	*
		P233	pH Value	9.9	Units	
P202	Solids Suspended	<20	mg / l			

Denis M Kent  
 Technical Manager

Disclaimers:

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Report No: GSET-480300512  
Document No: EF0011

## CERTIFICATE OF ANALYSIS

**Client** **Glenside Environmental**  
24 The Heathers,  
Calses lake  
Ballincollig  
Cork.

**Date Received** 30/05/2012  
**Date Reported** 04/06/2012  
**Order Number** N/A

**For the Attention** Pat Power  
**Sample Reception** 1 sample(s) received in good condition.  
**Comments** N/A

**Note:** A # next to the result indicates that there was insufficient sample to carry out testing as per SOP.

Report Authorised by:

Graham O Halloran  
Group Microbiology Manager

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Report No: GSET-480300512

Document No: EF0011

### CERTIFICATE OF ANALYSIS

**Date Received** 30/05/2012

**Date Reported** 04/06/2012

**Order Number** N/A

**Sample Type** Water  
**Client ID** 30.05.12 @10.00 Surface water sample from interceptor at waste facility  
**Date Tested** 30/05/2012  
**AMS ID** 801423

<u>Test</u>	<u>Result</u>	<u>Unit</u>	<u>Method</u>
Faecal coliform bacteria	7	MPN/100ml	SP 047 Based on ISO 9308-2 (1990)*
Coliform bacteria	41	CFU/100ml	SP 140 Microbiology of Drinking Water Part 4,B

Report Authorised by:

*Graham O'Halloran*

Graham O Halloran  
Group Microbiology Manager



## TEST CERTIFICATE

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Certificate Number: TWAT026871-1 Final

Order Number: gset-481300512

Date Analysis Started: 30/05/2012

Date Reported: 05/06/2012

Lab Ref.	Sample Details	Method Number	Test	Result	Units	Flag
WAT47598	Desc: 801424 30.05.12@10.00 surface water sample from interceptor at waste facility - glenside env Order No: gset-481300512 Date Received: 30/05/2012	P280	BOD Total 5 Day with ATU	9.3	mg / l	
		P210	COD Total	16	mg / l O2	
		P212	Orthophosphate	0.08	mg / l P	
		P243	Sulphate	9.59	mg / l SO4	
		P236	Ammonia	0.05	mg / l N	
		P227	Conductivity	74	µS / cm	*
		P233	pH Value	10.0	Units	
P202	Solids Suspended	<20	mg / l			

Denis M Kent  
 Technical Manager

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Report No: GSET-451290612  
Document No: EF0011

## CERTIFICATE OF ANALYSIS

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<b>Client</b>	<b>Glenside Environmental</b> 24 The Heathers, Calses lake Ballincollig Cork.	<b>Date Received</b>	29/06/2012
		<b>Date Reported</b>	02/07/2012
		<b>Order Number</b>	N/A
<b>For the Attention</b>	Pat Power		
<b>Sample Reception</b>	1 sample(s) received in good condition.		
<b>Comments</b>	N/A		
<b>Note:</b>	A # next to the result indicates that there was insufficient sample to carry out testing as per SOP.		

---

Report Authorised by:

*Graham O'Halloran*

Graham O Halloran  
Group Microbiology Manager

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Report No: GSET-451290612

Document No: EF0011

### CERTIFICATE OF ANALYSIS

**Date Received** 29/06/2012

**Date Reported** 02/07/2012

**Order Number** N/A

**Sample Type** Water  
**Client ID** surface water sample from interceptor at waste facility 29.06.12 @ 10am  
**Date Tested** 29/06/2012  
**AMS ID** 836688

<u>Test</u>	<u>Result</u>	<u>Unit</u>	<u>Method</u>
Faecal coliform bacteria	2	MPN/100ml	SP 047 Based on ISO 9308-2 (1990)*
Coliform bacteria	0	CFU/100ml	SP 140 MODW Part 4,B 2009

Report Authorised by:

*Graham O'Halloran*

Graham O Halloran  
Group Microbiology Manager



## TEST CERTIFICATE

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 Advance Micro Services & Environmental  
 Laboratories Ltd  
 Carrigeen Industrial Estate  
 Clonmel, Co. Tipperary  
 Ireland  
 Fax: 052 78133

Certificate Number: TWAT027716-1 Final

Order Number: gset-479290612

Date Analysis Started: 29/06/2012

Date Reported: 06/07/2012

Lab Ref.	Sample Details	Method Number	Test	Result	Units	Flag
WAT48402	Desc: 836797 29.06.12 @10am surface water sample from interceptor at waste facility - glenside environmental Order No: gset-479290612 Date Received: 29/06/2012	P280	BOD Total 5 Day without ATU	6.4	mg / l	
		P210	COD Total	17	mg / l O <sub>2</sub>	
		P212	Orthophosphate	0.05	mg / l P	
		P243	Sulphate	27.2	mg / l SO <sub>4</sub>	
		P207	Total Phosphorus	0.23	mg / l P	
		P236	Ammonia	<0.03	mg / l N	
		P227	Conductivity	58	µS / cm	*
		P233	pH Value	4.2	Units	
		P202	Solids Suspended	<20	mg / l	

Emma H. Haughton  
 Deputy Chemistry Manager

Disclaimers:

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Report No: GSET-499210912

Document No: EF0011

## CERTIFICATE OF ANALYSIS

**Client** **Glenside Environmental**  
24 The Heathers,  
Calses lake  
Ballincollig  
Cork.

**Date Received** 21/09/2012

**Date Reported** 24/09/2012

**Order Number** N/A

**For the Attention** Pat Power

**Sample Reception** 2 sample(s) received in good condition.

**Comments** N/A

**Note:** A # next to the result indicates that there was insufficient sample to carry out testing as per SOP.

Report Authorised by:

Graham O Halloran  
Group Microbiology Manager

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Report No: GSET-499210912

Document No: EF0011

### CERTIFICATE OF ANALYSIS

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**Date Received** 21/09/2012  
**Date Reported** 24/09/2012  
**Order Number** N/A

---

**Sample Type** Water  
**Client ID** surface water sample from interceptor at waste facility  
**Date Tested** 21/09/2012  
**AMS ID** 931136

<u>Test</u>	<u>Result</u>	<u>Unit</u>	<u>Method</u>
Faecal coliform bacteria	>18	MPN/100ml	SP 047 Based on ISO 9308-2 (1990)*
Coliform bacteria	0	CFU/100ml	SP 140 MODW Part 4,B 2009

---

**Sample Type** Water  
**Client ID** surface water sample after treatment  
**Date Tested** 21/09/2012  
**AMS ID** 931137

<u>Test</u>	<u>Result</u>	<u>Unit</u>	<u>Method</u>
Faecal coliform bacteria	>18	MPN/100ml	SP 047 Based on ISO 9308-2 (1990)*
Coliform bacteria	0	CFU/100ml	SP 140 MODW Part 4,B 2009

---

Report Authorised by:

*Graham O'Halloran*

Graham O Halloran  
Group Microbiology Manager



## TEST CERTIFICATE

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 Laboratories Ltd  
 Carrigeen Industrial Estate  
 Clonmel, Co. Tipperary  
 Ireland  
 Fax: 052 78133

Certificate Number: TWAT029372-1 Final

Order Number: GSET-514210912

Date Analysis Started: 21/09/2012

Date Reported: 02/10/2012

Lab Ref.	Sample Details	Method Number	Test	Result	Units	Flag
WAT50393	Desc: 931141 Surface water sample from interceptor at waste facility - glenside environmental Order No: GSET-514210912 Date Received: 21/09/2012	P280	BOD Total 5 Day with ATU	11.1	mg / l	
		P210	COD Total	86	mg / l O <sub>2</sub>	
		P212	Orthophosphate	0.29	mg / l P	
		P243	Sulphate	462.3	mg / l SO <sub>4</sub>	
		P236	Ammonia	4.15	mg / l N	
		P227	Conductivity	1036	µS / cm	*
		P233	pH Value	7.4	Units	
P202	Solids Suspended	17	mg / l			

Emma H. Haughton  
 Deputy Chemistry Manager

Disclaimers:

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Patrick Power  
Glenside Environmental  
24 The Heathers  
Classes Lake  
Ballincollig  
Co. Cork  
Ireland

Certificate No.: 913545  
Job Ref: 12J07751  
Sample Ref No.: LSN 61/73216  
Page No.: 1 of 2  
Date Received: 12/10/2012  
Date Reported: 18/10/2012

## TEST REPORT

Sample Description Ground Well Water - GW1 - 12/  
10/12

Date Testing Initiated: 12/10/2012  
Category: MICRO  
Sample Condition: Satisfactory  
Order No.: Not Available  
Supplier Code:

Test	Result	Unit	Method	Comments	Est.
* Faecal Coliform MPN per 100mls	23	MPN/100mls	MT049 / APHA 2012 9221E.1		

Tests marked \* are not accredited.

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Results apply only to samples tested, and as received at the Laboratory.

Signed for and on behalf of Exova (Ireland) Ltd.

**Peter Piggott**  
Dip. Food Tech.  
Manager Microbiology Division





Patrick Power  
Glenside Environmental  
24 The Heathers  
Classes Lake  
Ballincollig  
Co. Cork  
Ireland

*Certificate No.:* 913545  
*Job Ref:* 12J07751  
*Sample Ref No.:* LSN 61/73217  
*Page No.:* 2 of 2  
*Date Received:* 12/10/2012  
*Date Reported:* 18/10/2012

## TEST REPORT

*Sample Description* Surface Water Run Off - SW1 -  
12/10/12

*Date Testing Initiated:* 12/10/2012  
*Category:* MICRO  
*Sample Condition:* Satisfactory  
*Order No.:* Not Available  
*Supplier Code:*

Test	Result	Unit	Method	Comments	Est.
* Total Coliform MPN per 100mls	7	MPN/100mls	MT048 / APHA 2012 9221B		
* Faecal Coliform MPN per 100mls	7	MPN/100mls	MT049 / APHA 2012 9221E.1		

Tests marked \* are not accredited.

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Results apply only to samples tested, and as received at the Laboratory.

Signed for and on behalf of Exova (Ireland) Ltd.

**Peter Piggott**

Dip. Food Tech.  
Manager Microbiology Division







Patrick Power  
Glenside Environmental  
24 The Heathers  
Classes Lake  
Ballincollig  
Co. Cork  
Ireland

*Certificate No.:* 913545  
*Job Ref:* 12J07751  
*Sample Ref No.:* LSN 61/73217  
*Page No.:* 2 of 2  
*Date Received:* 12/10/2012  
*Date Reported:* 18/10/2012

## TEST REPORT

*Sample Description* Surface Water Run Off - SW1 -  
12/10/12

*Date Testing Initiated:* 12/10/2012  
*Category:* MICRO  
*Sample Condition:* Satisfactory  
*Order No.:* Not Available  
*Supplier Code:*

Test	Result	Unit	Method	Comments	Est.
* Total Coliform MPN per 100mls	7	MPN/100mls	MT048 / APHA 2012 9221B		
* Faecal Coliform MPN per 100mls	7	MPN/100mls	MT049 / APHA 2012 9221E.1		

Tests marked \* are not accredited.

Comments, opinions and interpretations expressed herein are outside this current scope of INAB accreditation.  
Results apply only to samples tested, and as received at the Laboratory.

Signed for and on behalf of Exova (Ireland) Ltd.

**Peter Piggott**

Dip. Food Tech.  
Manager Microbiology Division





Patrick Power  
Glenside Environmental  
24 The Heathers  
Classes Lake  
Ballincollig  
Co. Cork  
Ireland

Certificate No.: 913545  
Job Ref: 12J07751  
Sample Ref No.: LSN 61/73216  
Page No.: 1 of 2  
Date Received: 12/10/2012  
Date Reported: 18/10/2012

## TEST REPORT

Sample Description Ground Well Water - GW1 - 12/  
10/12

Date Testing Initiated: 12/10/2012  
Category: MICRO  
Sample Condition: Satisfactory  
Order No.: Not Available  
Supplier Code:

Test	Result	Unit	Method	Comments	Est.
* Faecal Coliform MPN per 100mls	23	MPN/100mls	MT049 / APHA 2012 9221E.1		

Tests marked \* are not accredited.

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Manager Microbiology Division





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*Certificate No.:* 913545  
*Job Ref:* 12J07751  
*Sample Ref No.:* LSN 61/73217  
*Page No.:* 2 of 2  
*Date Received:* 12/10/2012  
*Date Reported:* 18/10/2012

## TEST REPORT

*Sample Description* Surface Water Run Off - SW1 -  
12/10/12

*Date Testing Initiated:* 12/10/2012  
*Category:* MICRO  
*Sample Condition:* Satisfactory  
*Order No.:* Not Available  
*Supplier Code:*

Test	Result	Unit	Method	Comments	Est.
* Total Coliform MPN per 100mls	7	MPN/100mls	MT048 / APHA 2012 9221B		
* Faecal Coliform MPN per 100mls	7	MPN/100mls	MT049 / APHA 2012 9221E.1		

Tests marked \* are not accredited.

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Results apply only to samples tested, and as received at the Laboratory.

Signed for and on behalf of Exova (Ireland) Ltd.

**Peter Piggott**

Dip. Food Tech.  
Manager Microbiology Division





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Certificate No.: 975585  
Job Ref: 12L09576  
Sample Ref No.: LSN 63/75615  
Page No.: 1 of 3  
Date Received: 18/12/2012  
Date Reported: 14/01/2013

## TEST REPORT

Sample Description Surface Water Run-Off - SW1  
December - 18/12/12

Date Testing Initiated: 18/12/2012  
Category: ENVIRONMENTAL  
Sample Condition: Satisfactory  
Order No.: Not Available

Test	Test Result	Unit	Method
Ammonia Nitrogen (as N)	0.57	mg/l	ET 038 MEWAM 1981
Suspended Solids	4	mg/l	ET 042 Based on APHA 2540:D
Conductivity @ 25degC	1110	uS/cm	ET 056 APHA 2005:2510:B
cBOD 5d with nitrification inhib	5	mg/l	ET 066 APHA 2005:5210:B
Chemical Oxygen Demand (COD)	31	mg/l	ET 067 APHA 2005:5220:C
pH Value	7.8	pH unit	ET 124 APHA 2005:4500:H:B
Sulphate by IC	15*	mg/l	ETC98 Based on APHA 4110 B
Total Phosphorus (as P)	<0.05	mg/l	ET G01 based on ISO 6878:2004
Soluble Reactive Phosphorus (as P)	<0.03	mg/l	ET G02 based on ISO 6878:2004

Comment: \* Test subcontracted to an accredited Laboratory due to instrument failure. The result is not covered under Exova Scope of Accreditation 183T

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Comments, opinions and interpretations expressed herein are outside this current scope of INAB accreditation.  
Results apply only to samples tested, and as received at the Laboratory.

Signed for and on behalf of Exova (Ireland) Ltd.

**Dan Healy**  
B.Sc (Hons)  
Technical Manager





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*Certificate No.:* 966068  
*Job Ref:* 12L09585  
*Sample Ref No.:* LSN 63/75671  
*Page No.:* 1 of 1  
*Date Received:* 18/12/2012  
*Date Reported:* 27/12/2012

## TEST REPORT

*Sample Description* Surface Water Run Off - SW1  
December - 18/12/12

*Date Testing Initiated:* 18/12/2012  
*Category:* MICRO  
*Sample Condition:* Satisfactory  
*Order No.:* Not Available  
*Supplier Code:*

Test	Result	Unit	Method	Comments	Est.
* Total Coliform MPN per 100mls	43	MPN/100mls	MT048 / APHA 2012 9221B		
* Faecal Coliform MPN per 100mls	15	MPN/100mls	MT049 / APHA 2012 9221E.1		

Tests marked \* are not accredited.

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Results apply only to samples tested, and as received at the Laboratory.

Signed for and on behalf of Exova (Ireland) Ltd.

**Michelle Everard**

B.Sc (Biosciences)  
Snr.Tech Microbiology Division



**APPENDIX II**

**SW3 RECEIVING WATER  
DOWNSTREAM ANALYSIS RESULTS**



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Glenside Environmental  
Cuil Greine House  
Ballincollig Commercial Park  
Link Road  
Ballincollig  
Co. Cork  
Ireland

Certificate No.: 975585  
Job Ref: 12L09576  
Sample Ref No.: LSN 63/75616  
Page No.: 2 of 3  
Date Received: 18/12/2012  
Date Reported: 14/01/2013

## TEST REPORT

Sample Description Upstream Receiving Water - SW2 Date Testing Initiated: 18/12/2012  
Upstream - 18/12/12 Category: ENVIRONMENTAL  
Sample Condition: Satisfactory  
Order No.: Not Available

Test	Test Result	Unit	Method
Ammonia Nitrogen (as N)	<0.05	mg/l	ET 038 MEWAM 1981
Suspended Solids	40	mg/l	ET 042 Based on APHA 2540:D
Conductivity @ 25degC	227	uS/cm	ET 056 APHA 2005:2510:B
cBOD 5d with nitrification inhib	<4	mg/l	ET 066 APHA 2005:5210:B
Chemical Oxygen Demand (COD)	<15	mg/l	ET 067 APHA 2005:5220:C
pH Value	6.6	pH unit	ET 124 APHA 2005:4500:H:B
Sulphate by IC	22*	mg/l	ETC98 Based on APHA 4110 B
Total Phosphorus (as P)	<0.05	mg/l	ET G01 based on ISO 6878:2004
Soluble Reactive Phosphorus (as P)	<0.03	mg/l	ET G02 based on ISO 6878:2004

Comment: \* Test subcontracted to an accredited Laboratory due to instrument failure. The result is not covered under Exova Scope of Accreditation 183T

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Results apply only to samples tested, and as received at the Laboratory.

Signed for and on behalf of Exova (Ireland) Ltd.

**Dan Healy**  
B.Sc (Hons)  
Technical Manager





Patrick Power  
Glenside Environmental  
Cuil Greine House  
Ballincollig Commercial Park  
Link Road  
Ballincollig  
Co. Cork  
Ireland

Certificate No.: 975585  
Job Ref: 12L09576  
Sample Ref No.: LSN 63/75617  
Page No.: 3 of 3  
Date Received: 18/12/2012  
Date Reported: 14/01/2013

## TEST REPORT

Sample Description Downstream Receiving Water -  
SW3 Downstream - 18/12/12

Date Testing Initiated: 18/12/2012  
Category: ENVIRONMENTAL  
Sample Condition: Satisfactory  
Order No.: Not Available

Test	Test Result	Unit	Method
Ammonia Nitrogen (as N)	<0.05	mg/l	ET 038 MEWAM 1981
Suspended Solids	63	mg/l	ET 042 Based on APHA 2540:D
Conductivity @ 25degC	233	uS/cm	ET 056 APHA 2005:2510:B
cBOD 5d with nitrification inhib	<4	mg/l	ET 066 APHA 2005:5210:B
Chemical Oxygen Demand (COD)	<15	mg/l	ET 067 APHA 2005:5220:C
pH Value	7.1	pH unit	ET 124 APHA 2005:4500:H:B
Sulphate by IC	14*	mg/l	ETC98 Based on APHA 4110 B
Total Phosphorus (as P)	<0.05	mg/l	ET G01 based on ISO 6878:2004
Soluble Reactive Phosphorus (as P)	0.03	mg/l	ET G02 based on ISO 6878:2004

Comment: \* Test subcontracted to an accredited Laboratory due to instrument failure. The result is not covered under Exova Scope of Accreditation 183T

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Signed for and on behalf of Exova (Ireland) Ltd.

**Dan Healy**  
B.Sc (Hons)  
Technical Manager





**APPENDIX III**

**GROUNDWATER WELL GW1  
ANALYSIS RESULTS**



Patrick Power  
Glenside Environmental  
24 The Heathers  
Classes Lake  
Ballincollig  
Co. Cork  
Ireland

Certificate No.: 913545  
Job Ref: 12J07751  
Sample Ref No.: LSN 61/73216  
Page No.: 1 of 2  
Date Received: 12/10/2012  
Date Reported: 18/10/2012

## TEST REPORT

Sample Description Ground Well Water - GW1 - 12/  
10/12

Date Testing Initiated: 12/10/2012  
Category: MICRO  
Sample Condition: Satisfactory  
Order No.: Not Available  
Supplier Code:

Test	Result	Unit	Method	Comments	Est.
* Faecal Coliform MPN per 100mls	23	MPN/100mls	MT049 / APHA 2012 9221E.1		

Tests marked \* are not accredited.

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Signed for and on behalf of Exova (Ireland) Ltd.

**Peter Piggott**

Dip. Food Tech.  
Manager Microbiology Division





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Certificate No.: 923604  
Job Ref: 12J07755  
Sample Ref No.: LSN 61/73222  
Page No.: 1 of 1  
Date Received: 12/10/2012  
Date Reported: 31/10/2012

## TEST REPORT

Sample Description Ground Water Well - GW1 - 12/  
10/12

Date Testing Initiated: 12/10/2012  
Category: ENVIRONMENTAL  
Sample Condition: Satisfactory  
Order No.: Not Available

Test	Test Result	Unit	Method
Ammonia Nitrogen (as N)	<0.05	mg/l	ET 038 MEWAM 1981
Nitrate Nitrogen (as N)	8.1	mg/l	ET 235 APHA 2005:4500:NO3:I
Conductivity @ 25degC	220	uS/cm	ET 056 APHA 2005:2510:B
pH Value	5.4	pH unit	ET 124 APHA 2005:4500:H:B
Chloride (Cl)	23	mg/l	ET 244 APHA 2005:4500:Cl:D
Nitrate (as NO3)	35.9	mg/l	ET235
Ammonium (NH4)	<0.06	mg/l	ET 038 MEWAM 1981

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Signed for and on behalf of Exova (Ireland) Ltd.

Owen Frahill

B.Sc (ACQUA)  
Environmental Laboratory Supervisor

