Report No. JBA 3933/R03/lb/dl

Roadstone Dublin Ltd.

Inert Waste Recovery Facility
Milverton, Skerries, Co. Dublin

Factual Report on Groundwater Well Installation and Hydrochemical Testing

January 2009

Prepared by :

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SLR

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CONTENTS

1 INTRODUCTION

This factual report was prepared for Roadstone Dublin Ltd. by SLR Consulting and presents details of the installation of groundwater monitoring wells at Milverton quarry during December 2008 by Glover Site investigations under the supervision of SLR staff.

1.1 Purpose of Site Investigations

The purpose of the well installations was to determine the geology at the site, to allow the monitoring of groundwater level around the periphery of the quarry and to facilitate sampling of groundwater for hydrochemical analysis. These investigations were undertaken in support of an application for a waste licence for the recovery of inert soil waste at the worked-out quarry.

1.2 Site Description

The site at Milverton, County Dublin is located approximately 2km to the southwest of Skerries. The site is a limestone quarry that was closed in 2007.

2 REGIONAL GEOLOGY

2.1 Quaternary Subsoil Geology

The Teagasc Subsoil map (2004) indicates that the site at Milverton and an area to the south and east, at the top of the hill, has bedrock outcropping at the surface. The surrounding area is generally indicated to be underlain by glacial till material of Irish Sea Basin origin. Quaternary subsoil east of the application site and the rail line comprises sand and gravel of Lower Palaeozoic sandstone and shale origin. Exposures at the existing quarry indicate that the subsoil material is up to a maximum of 5m deep.

2.2 Solid Geology

The 1:100,000 scale solid geology map (*Geology of Meath, Sheet 13)* published by the Geological Survey of Ireland indicates that the regional bedrock geology at the site comprises well bedded, bioclastic limestone (with oolite in the lower part) of the Holmpatrick Formation. This forms part of the Milverton Group which is believed to be of Carboniferous (Visean) age (approximately 330 million years old). Rock strata within this formation are generally indicated to dip in a southerly direction.

3 INSTALLATION OF GROUNDWATER MONITORING WELLS

Groundwater well drilling started at Milverton on the 11th December 2008. The objective of the drilling was

i. to identify the nature of the geology,
ii. to obtain rock chippings for visual description,
iii. to establish the depth to groundwater and
iv. to facilitate groundwater sampling

A total of three monitoring wells were installed at Milverton, BH01, BH02 and BH03. The well locations are shown in Figure 1. Groundwater well logs are presented in Appendix A.

BH01

Monitoring well BH01 is located down gradient of the excavation in the western part of the site. The well was drilled at 152mm (6 inches) with self advancing casing (symmetrix). BH01 is located on the upper quarry bench and did not encounter any made ground, soil or subsoil. The borehole was open holed from 3m to a final depth of 21m. A water strike was encountered at 18m below surface.

The piezometer installation comprised of 3m of slotted pipe with 18.5m of riser. The annulus of the borehole was filled with 4m of a gravel filter pack from the base upwards and backfilled to the surface with bentonite. The top 1m of the borehole was completed with concrete and a protective well head installed.

BH02

Monitoring well BH02 is located up gradient of the excavation in the northern part of the site. Subsoil had been removed from the bedrock surface as part of the quarry operations and as such the drilling commenced immediately into limestone rock The well was open holed at a diameter of 152mm to a final depth of 30m . A significant water strike was encountered at 19m.

The piezometer installation comprised of 6m slotted pipe with 24.5m of riser. The annulus of the borehole was filled with 7m of a gravel filter pack at the base and backfilled to the surface with bentonite. The top 1m of the borehole was completed with concrete and a protective well head installed.

BH03

Monitoring well BH03 is located up gradient of the excavation at the north-western side of the site. The well was drilled by symmetrix at a diameter of 152mm. Casing was advanced through made ground (comprising of sandy clay) to 13m where limestone bedrock was encountered. The casing was advanced to 14m and was then open holed to a final depth of 24m. There was a moderate water strike at a depth of 18m.

The piezometer installation comprised of 3m of slotted pipe with 21.5m of riser. The annulus of the borehole was filled with 4m of a gravel filter pack at the base and backfilled to the surface with bentonite. The top 1m of the borehole was completed with concrete and a protective well head installed.

4 GROUNDWATER LEVEL DATA

Groundwater levels were measured during and following completion of each well. The groundwater level may be temporarily raised during the drilling process and piezometer installation and as such, following completion of the wells, the groundwater level was allowed to stabilise. Stabilisation of a well in a bedrock aquifer may be relatively slow and can take a number of weeks to complete. The groundwater levels for each well are presented in the table below.

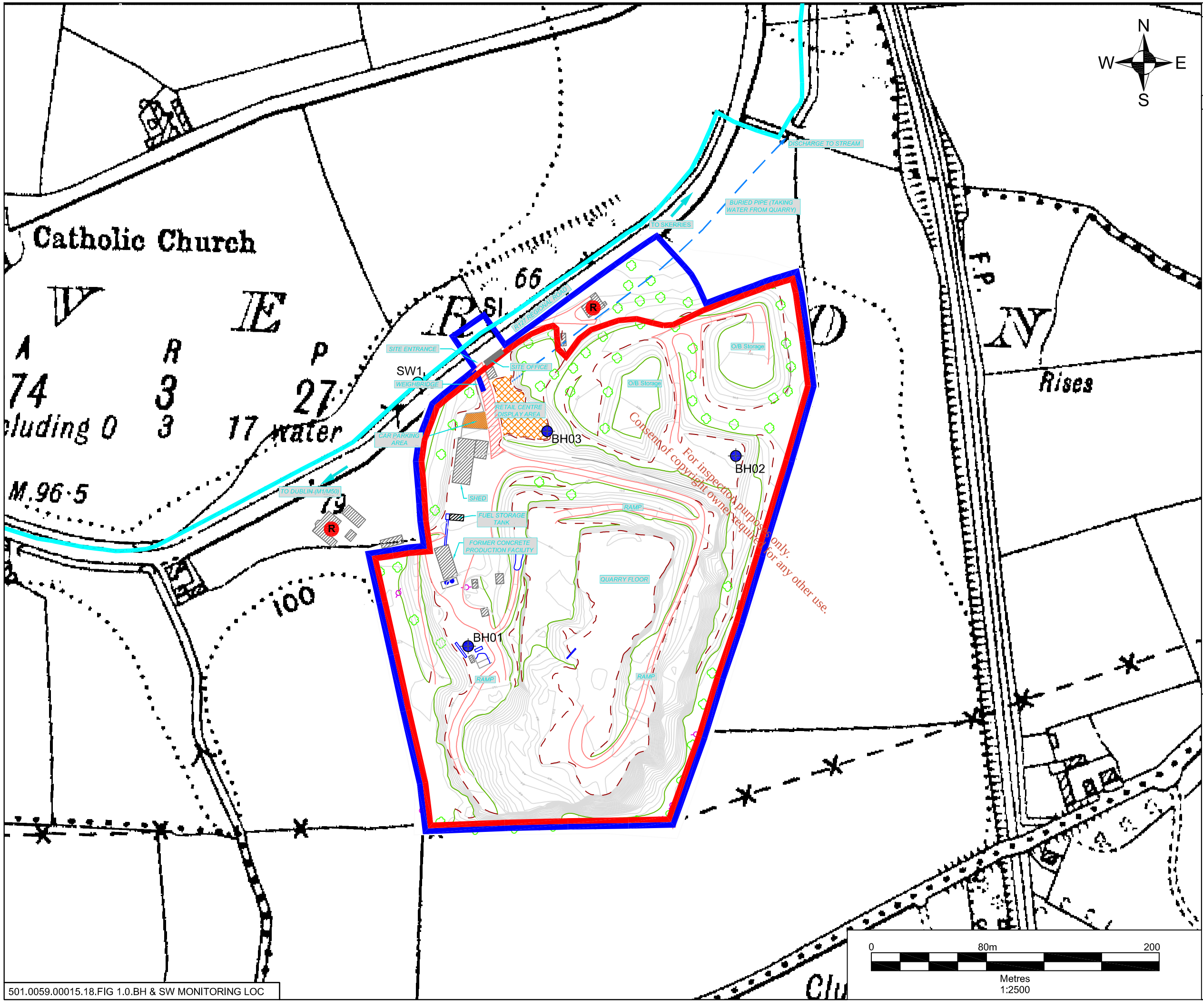
Borehole Name	Ground Level mOD	Depth of Hole	Water Strike during drilling	Water level 08/01/09
BH01	15	21.00	c.18	14.30
BH02	26	30.00	c.19	10.80
BH03	19.5	24.00	c.18	12.20

Table 1 Groundwater level data (all measurements in metres below ground level)

5 LABORATORY HYDROCHEMICAL DATA

Groundwater wells and a surface water sample were sampled on the 8th January 2009 by SLR staff. The wells were purged prior to sampling as detailed in the groundwater and surface field sheets presented in Appendix B. The samples were forwarded to ALcontrol Geochem for hydrochemical analysis and the resultant data is presented in Appendix C.

FIGURES



NOTES

1. Based on OSi 25inch Dublin Sheet No. 5 & 5a

2. Ordnance Survey of Ireland Licence No. SU 0000709 (c) Ordnance Survey of Ireland & Government of Ireland

LEGEND

- Applicant's Land Interest (c. 8.6ha)
- Waste Licence Application Area (c. 7.9ha)
- Groundwater Monitoring Well
- Surface Water Monitoring Location
- Buried Pipe
- Top of Bank
- Bottom of Bank
- Road
- Contour Line
- Building
- Internal Unpaved Road
- Internal Paved Road
- R Location of Residence

ROADSTONE DUBLIN LTD.
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WASTE LICENCE APPLICATION

WASTE RECOVERY FACILITY,
MILVERTON, SKERRIES, CO.DUBLIN

BH and SW MONITORING LOCATIONS

FIGURE 1

Scale: 1:2,500 @ A3

Date: AUGUST 2009

501.0059.00015.18.FIG 1.0.BH & SW MONITORING LOC

APPENDIX A

DRILLING LOGS

Glover Site Investigations Ltd

Site: Fassaroe Quarry, Bray, Co. Wicklow			Borehole Number: BH01
Boring Method: Symmetrix & Open Hole Drilling	Casing Diameter: 152mm cased to 21.00m	Ground Level (mOD):	Client: Roadstone Dublin Ltd
	Location:	Dates: 01/12/2008	Engineer: John Barnett & Associates/SLR Consulting Ireland
			Job Number: 08-0821
			Sheet: 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(21.00)	Brown sandy subangular to subrounded fine to coarse GRAVEL and fine SAND (Driller's description)		
				Water Strike(1) at 18.00m.					▽1
				01/12/2008:		21.00	Complete at 21.00m		

Remarks
Standpipe installed to 21.00m.

Scale (approx): 1:200

Logged By: PD/HH

Figure No.
08-0821.BH01

Glover Site Investigations Ltd

Site: Fassaroe Quarry, Bray, Co. Wicklow

Borehole Number: BH01

Installation Type: Standpipe

Dimensions: Internal Diameter of Tube [A] = 50 mm
Diameter of Filter Zone = 152 mm

Client: Roadstone Dublin Ltd

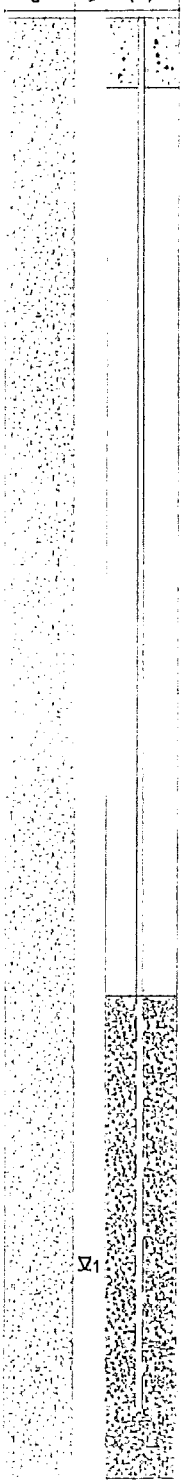
Job Number: 08-0821

Location:

Ground Level (mOD):

Engineer: John Barnett & Associates/SLR Consulting Ireland

Sheet: 1/1



Groundwater Strikes During Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings 5 min	10 min	15 min	20 min	Depth Sealed (m)
		18.00		Water Strike					

Groundwater Observations During Drilling

Date	Start of Shift Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	End of Shift Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)
01/12/08							21.00			

Instrument Groundwater Observations

Inst. [A] Type :

Date	Instrument [A] Time	Depth (m)	Level (mOD)	Remarks

Remarks
Upright cover fitted.

Glover Site Investigations Ltd

Site: Fassaroe Quarry, Bray, Co. Wicklow			Borehole Number: BH02
Boring Method: Symmetrix & Open Hole Drilling	Casing Diameter: 152mm cased to 24.00m	Ground Level (mOD)	Client: Roadstone Dublin Ltd / Job Number: 08-0821
	Location	Dates: 03/12/2008	Engineer: John Barnett & Associates/SLR Consulting Ireland / Sheet: 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							Brown sandy subangular to subrounded fine to coarse GRAVEL and very fine SAND (Driller's description)		
						(20.00)			
				Water Strike(1) at 20.00m.		20.00	Brown sandy subangular to subrounded fine to coarse GRAVEL and very fine SAND (Driller's description)		▽1
						(4.00)			
				03/12/2008:		24.00	Complete at 24.00m		

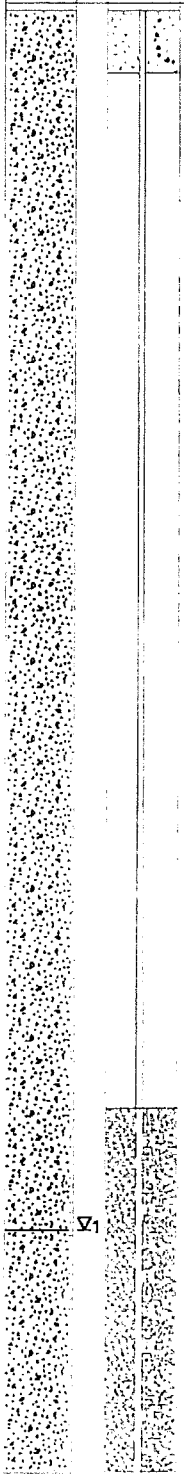
Remarks
Standpipe installed to 24.00m.

Scale (approx): 1:200
Logged By: PD/HH

Figure No.
08-0821.BH02

Glover Site Investigations Ltd

Site: Fassaroe Quarry, Bray, Co. Wicklow			Borehole Number: BH02
Installation Type: Standpipe	Dimensions: Internal Diameter of Tube [A] = 50 mm; Diameter of Filter Zone = 152 mm	Client: Roadstone Dublin Ltd	Job Number: 08-0821
Location	Ground Level (mOD)	Engineer: John Barnett & Associates/SLR Consulting Ireland	Sheet: 1/1



Groundwater Strikes During Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings 5 min	10 min	15 min	20 min	Depth Sealed (m)
		20.00		Water Strike					

Groundwater Observations During Drilling

Date	Start of Shift Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	End of Shift Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)
03/12/08							24.00			

Instrument Groundwater Observations

Inst. [A] Type :

Instrument [A] Date	Time	Depth (m)	Level (mOD)	Remarks

Remarks
Upright cover fitted.

Glover Site Investigations Ltd

Site: Fassaroe Quarry, Bray, Co. Wicklow			Borehole Number: BH03
Boring Method: Symmetrix & Open Hole Drilling	Casing Diameter: 152mm cased to 30.00m	Ground Level (mOD)	Client: Roadstone Dublin Ltd
Job Number: 08-0821	Location	Dates: 09/12/2008	Engineer: John Barnett & Associates/SLR Consulting Ireland
Sheet: 1/1			

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							Brown sandy SILT and fine SAND and GRAVEL (Driller's description)		
						(15.00)			
				Water Strike(1) at 15.00m.		15.00	Stiff brown CLAY (Driller's description)		▽1
						(3.00)			
						18.00	Brown gravelly CLAY (Driller's description)		
						(12.00)			
				09/12/2008:		30.00	Complete at 30.00m		

Remarks
Standpipe installed to 30.00m.

Scale (approx): 1:200

Logged By: PD/HH

Figure No.
08-0821.BH03

Glover Site Investigations Ltd

Site: Fassaroe Quarry, Bray, Co. Wicklow

Borehole Number: BH03

Installation Type: Standpipe

Dimensions: Internal Diameter of Tube [A] = 50 mm
Diameter of Filter Zone = 152 mm

Client: Roadstone Dublin Ltd

Job Number: 08-0821

Location:

Ground Level (mOD):

Engineer: John Barnett & Associates/SLR Consulting Ireland

Sheet: 1/1

Groundwater Strikes During Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings 5 min	10 min	15 min	20 min	Depth Sealed (m)
		15.00		Water Strike					

Groundwater Observations During Drilling

Date	Start of Shift Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	End of Shift Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)
09/12/08							30.00			

Instrument Groundwater Observations

Inst. [A] Type :

Instrument [A]

Date	Time	Depth (m)	Level (mOD)	Remarks

Remarks
Upright cover fitted.

APPENDIX B

SAMPLING RECORD SHEETS

SAMPLING PROTOCOLS

(Adapted from the Landfill Manual: Landfill Monitoring, Environmental Protection Agency, 1995)

Sampling Protocol For: Groundwater, Surface Water and Leachate.	
Compiled By: Peter Glanville (SLR)	
Protocol No. 01	Version: 0
Issue date: 9th January 2009	Supersedes Version – 0 (Jan. 2003)
Reasons for update – SLR Consulting Ireland	

1 *Background (to be completed)*

Sampling: (groundwater/surface water/leachate) Purpose of sample: Obtain baseline water quality sample for EIS	
Location: Milverton, Skerries, Co. Dublin	Date: 7th January 2009
Client: RDL	Protocol form completed by: PG
Sampling Regime: (monthly/quarterly/annual): EIS	
Persons on site: (Client/Engineers/Contractors/Sub Consultants/ Others) Peter Glanville and Tom Moore	
Weather Conditions: Very cold and sunny.	

2 *Site Responsibilities (to be completed)*

Supervision of sampling on Site:	
Name: Peter Glanville	Company: SLR Consulting Ireland

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3 *Locations Sampled (to be completed)*

No.	Location ID	Date	No.	Location ID	Date
1	MW1	2009/01/08	21		
2	MW2	2009/01/08	22		
3	MW3	2009/01/08	23		
4	SW1	2009/01/08	24		
5			25		
6			26		
7			27		
8			28		
9			29		
10			30		
11			31		
12			32		
13			33		
14			34		
15			35		
16			36		
17			37		
18			38		
19			39		
20			40		

4 *Materials (to be completed)*

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Instrumentation and Equipment: (Equipment used to obtain a valid and representative sample of the medium being investigated, including equipment used to measure field parameters)

Pump/Bailer: Waterra Peristaltic Pump and high flow tubing	
Sample Bailers: Waterra Disposable Bailers	Dip metre: 30m Electronic
Equipment decontamination:	
Sample containers used: 1l Glass, 1l Plastic, 125ml Plastic for Anions, 125ml Plastic with H2So4 preservative	
Field record sheets: Field Note Book	Chain of custody documentation: 42032 Laboratory: Alcontrol
Ancillary Items: (maps/drawings/stationary/PPE etc.) Standard PPE including latex gloves	

5 *Methods (to be completed)*

Sampling Procedure: (Stepwise procedure for sampling)

(a) Dip Well.

(b) Purge well with Waterra pump and high flow tubing to obtain minimum of 3 no. well volumes where possible (i.e where well does not run dry).

(c) Remove purging equipment and take water sample with disposable bailer.

Equipment used for sampling: Disposable well bailers (Aquabailers/Clearview).

Procedure for labelling of samples:

Client/Site/Sample ID/Date

Sample Storage: Cooler box to Alcontrol Lab.

Sample collection and delivery to lab: Same day to ALcontrol Lab.

Procedure for field parameter measurement:

Sub Sample taken from well - field readings prior to sampling or at end of each well volume.

Equipment used for measurement if field parameters: YSI Multiprobe meter; T (°C), EC (ms), DO (%), DO (mg/l), pH (pH units), pH mV, ORP.

6 *Sample Plan (to be completed)*

Sample details: For number and date of samples see Section 3.

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Location of surface water samples:

Location ID	Location	Location ID	Location
SW1	50m upstream from Quarry entrance		

Frequency of sampling:

No.	Sample ID	Depth of sample (m)	No.	Sample ID	Depth of sample (m)
1	MW1	Na.	19		
2	MW2	Na.	20		
3	MW3	Na.	21		
4	SW1	NA.	22		
5			23		
6			24		
7			25		
8			26		
9			27		
10			38		
11			39		
12			30		
13			31		
14			32		
15			33		
16			34		
17			35		
18			36		

Quantity Sample Obtained.	
Sample volume: 2.5l	
Sample container type and no.:	1l Glass 1l Plastic 1 125ml plastic (Anions) 1 125ml plastic H2S04 preservative
Sample preservatives used (if any)	H2SO4

7 *Records (to be completed at end of sampling round)*

QA Records: The following records are required to demonstrate sampling protocol has been adhered to (check Box).

Record of:	**Completed**
Date of sampling	✓
Name of sampling personnel	✓
Weather conditions	✓
Amount of sample obtained	✓
Location sample points	✓
Sample preservatives used	✓
Results of field parameters (see site record of groundwater sampling sheet)	✓
Compilation of appropriate forms (i.e. site record, sampling sheet, chain of custody form)	✓
Deviations from protocol (see notes)	✓
Sampling difficulties (see notes)	✓

8 Comments

Notes:

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Well MW1: Well was pumped dry after 35l. Left to recharge for 30 min. and a further 8-10l was purged. Purged water was light brown in colour. Sampled.

Well MW2: Well was pumped dry after 35l. Left to recharge for 30 min. and a further 10l was purged. Purged water was light brown in colour. Returned to take sample after sampling after purging well MW1. Sampled

Well MW3: 120l purged from the well. Field readings were taken every 40l. Water purged was very brown and slightly sandy. Sampled.

Surface Water SW1: Sample of surface water taken from the stream opposite the site entrance. Access to the stream us via a farm gate and small bridge approximately 50m upstream from the site entrance.

Groundwater Sampling Field Record Sheet

SLR Consulting Ireland Ltd.,
Unit 7, Dundrum Business Park,
Windy Arbour, Dublin 14.

RECORD OF GROUNDWATER SAMPLING

Site Location: Milverton, Co. Dublin	SLR Job No. 3933
Date/Time: 08/01/2009	
Borehole ID. BH01	
Borehole Location: Quarry	
Engineer: SLR	Sub Consultant:

WELL DETAILS

Elevation of steel casing cover above ground level (m)	0.99
Groundwater level from ground level (m)	14.31 bgl
Depth of well from ground level (m)	22
Standpipe diameter (mm)	50mm
Well Volume (m^3)	45 l

Well Development	Volume removed (l) 40

WELL PURGING (see Field Parameters Sheet)

Purge volume	pH	EC (µS)	Temp (°C)	Dissolved Oxygen (mg/l)	ORP
40 l	7.89	739	9.8	9.28	-197.9

Notes: Purged using Waterra Inertial Pump, and dedicated Waterra Tubing

Visual inspection:

Odour: None

Colour: Purged groundwater was light brown and slightly silty.

Sheen: No oil sheen or film.

Groundwater Sampling Field Record Sheet

SLR Consulting Ireland Ltd.,
Unit 7, Dundrum Business Park,
Windy Arbour, Dublin 14.

RECORD OF GROUNDWATER SAMPLING

Site Location: Milverton, Co. Dublin	SLR Job No. 3933
Date/Time: 08/01/2009	
Borehole ID. BH02	
Borehole Location: Quarry	
Engineer: SLR	Sub Consultant:

WELL DETAILS

Elevation of steel casing cover above ground level (m)	0.94
Groundwater level from ground level (m)	10.82 bgl
Depth of well from ground level (m)	
Standpipe diameter (mm)	50mm
Well Volume (m^3)	- l

Well Development	Volume removed (l) 120

WELL PURGING (see Field Parameters Sheet)

Purge volume	pH	EC (µS)	Temp (°C)	Dissolved Oxygen (mg/l)	ORP
40 l	7.71	990	10.07	7.55	84
80 l	7.53	979	10.78	6.95	82.1
120 l	7.42	943	10.6	6.77	

Notes: Purged using Clearview disposable bailer

Visual inspection Very silty and slightly sandy

Odour: None

Colour: Silty

Oil Sheen: None

Groundwater Sampling Field Record Sheet

SLR Consulting Ireland Ltd.,
Unit 7, Dundrum Business Park,
Windy Arbour, Dublin 14.

RECORD OF GROUNDWATER SAMPLING

Site Location: Milverton, Co. Dublin	SLR Job No. 3933
Date/Time: 08/01/2009	
Borehole ID. BH03	
Borehole Location: Quarry	
Engineer: SLR	Sub Consultant:

WELL DETAILS

Elevation of steel casing cover above ground level (m)	1.085
Groundwater level from ground level (m)	12.18 bgl
Depth of well from ground level (m)	23
Standpipe diameter (mm)	50mm
Well Volume (m^3)	62 l

Well Development	Volume removed (l) 30

WELL PURGING (see Field Parameters Sheet)

Purge volume	pH	EC (µS)	Temp (°C)	Dissolved Oxygen (mg/l)	ORP
30 l	7.61	968	10.48	6.81	-295

Notes: Purged using Clearview disposable bailer

Visual inspection Silty and slightly sandy

Odour: None

Colour: Silty

Oil Sheen: None

APPENDIX C

HYDROCHEMICAL TEST RESULTS

ALcontrol Laboratories (Dublin)

18a Rosemount Business Park,
Ballycoolin,
Dublin 11
Ireland
Tel: +353 (0) 1 8829893
Fax: +353 (0) 1 8829895

CERTIFICATE OF ANALYSIS

Client: SLR Consulting Ltd.

Treenwood House
Rowden Lane
Bradford On Avon
Wiltshire
BA15 2AU

Attention: Peter Glanville

Date: 19 January, 2009

Our Reference: 09-B00061/01

Your Reference: SO1.0059.0021

Location: MILVERTON EIS

A total of 4 samples was received for analysis on Thursday, 8 January 2009. Accredited laboratory tests are defined in the log sheet, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation. We are pleased to enclose our final report, it was a pleasure to be of service to you, and we look forward to our continuing association.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Signed

Dylan Halpin

Lorraine Mc Namara

Dylan Halpin
Team Leader Project Co-ordination

Lorraine McNamara
General Manager

Caoimhe McLoughlin

Compiled By

Caoimhe McLoughlin

UKAS TESTING
1291
GROUP

Printed at 14:43 on 20/01/2009

ALcontrol Laboratories Ireland

Test Schedule

Ref Number: 09-B00061/01

Client: SLR Consulting Ltd.

Date of Receipt: 08/01/2009

Sample Type: WATER

Location: MILVERTON EIS

Client Contact: Peter Glanville

Client Ref: SO1.0059.0021

Detection Method				5 DAY ATU	GC	GC	GC	GC	GC	GC	GC	GC	GC	ICP MS	ICP MS	ICP MS	ICP MS
UKAS Accredited [Testing Laboratory] No. 1291				✓	✓			✓	✓	✓	✓	✓	✓		✓	✓	✓
ALcontrol Reference	Sample Identity	Other ID	P / V	BOD Unfiltered	Diesel Range Organics	Mineral Oil by GC	DRO Interpretation	Benzene	Ethylbenzene	Petrol Range Organics C5-C9	Petrol Range Organics C10-12	Toluene	Total Xylene	Total Hardness	Dissolved Magnesium Low Level	Dissolved Calcium Low Level	Dissolved Manganese Low Level
09-B00061-S0010-A01	MW1	UNKNOWN	Glass Bottle	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09-B00061-S0010-A03	MW1	UNKNOWN	Plastic Bottle	-	-	-	-	-	-	-	-	-	-	X	X	X	X
09-B00061-S0010-A08	MW1	UNKNOWN	Plastic Bottle + H2SO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09-B00061-S0010-A10	MW1	UNKNOWN	100ml Plastic Anion Bottle	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09-B00061-S0011-A01	MW2	UNKNOWN	Glass Bottle	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09-B00061-S0011-A03	MW2	UNKNOWN	Plastic Bottle	-	-	-	-	-	-	-	-	-	-	X	X	X	X
09-B00061-S0011-A08	MW2	UNKNOWN	Plastic Bottle + H2SO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09-B00061-S0011-A10	MW2	UNKNOWN	100ml Plastic Anion Bottle	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09-B00061-S0012-A01	MW3	UNKNOWN	Glass Bottle	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09-B00061-S0012-A03	MW3	UNKNOWN	Plastic Bottle	-	-	-	-	-	-	-	-	-	-	X	X	X	X
09-B00061-S0012-A08	MW3	UNKNOWN	Plastic Bottle + H2SO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09-B00061-S0012-A10	MW3	UNKNOWN	100ml Plastic Anion Bottle	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09-B00061-S0013-A01	SW1	UNKNOWN	Glass Bottle	-	X	-	X	X	X	X	X	X	X	-	-	-	-
09-B00061-S0013-A05	SW1	UNKNOWN	Plastic Bottle	X	-	-	-	-	-	-	-	-	-	X	X	X	X
09-B00061-S0013-A11	SW1	UNKNOWN	Plastic Bottle + H2SO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09-B00061-S0013-A13	SW1	UNKNOWN	100ml Plastic Anion Bottle	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes : NUMERIC VALUES INDICATE ADDITIONAL SCHEDULING

ALcontrol Laboratories Ireland

Test Schedule

Ref Number: 09-B00061/01

Client: SLR Consulting Ltd.

Date of Receipt: 08/01/2009

Sample Type: WATER

Location: MILVERTON EIS

Client Contact: Peter Glanville

Client Ref: SO1.0059.0021

Detection Method				ICP MS	ICP MS	ICP OES	ICP OES	IR	KONE	KONE	KONE	KONE	KONE	SPECTRO	TITRATION		
UKAS Accredited [Testing Laboratory] No. 1291				✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		
ALcontrol Reference	Sample Identity	Other ID	P / V	Dissolved Iron Low Level	Dissolved Aluminium Low Level	Dissolved Potassium	Dissolved Sodium	Total Organic Carbon	Nitrate as NO3	ortho Phosphate as PO4	Nitrite as NO2	Chloride	Sulphate	Ammoniacal Nitrogen as N	Total Alkalinity as CaCO3		
09-B00061-S0010-A01	MW1	UNKNOWN	Glass Bottle	-	-	-	-	X	-	-	-	-	-	-	-		
09-B00061-S0010-A03	MW1	UNKNOWN	Plastic Bottle	X	X	X	X	-	-	-	-	-	-	-	X		
09-B00061-S0010-A08	MW1	UNKNOWN	Plastic Bottle + H2SO4	-	-	-	-	-	-	-	-	-	-	X	-		
09-B00061-S0010-A10	MW1	UNKNOWN	100ml Plastic Anion Bottle	-	-	-	-	-	X	X	X	X	X	-	-		
09-B00061-S0011-A01	MW2	UNKNOWN	Glass Bottle	-	-	-	-	X	-	-	-	-	-	-	-		
09-B00061-S0011-A03	MW2	UNKNOWN	Plastic Bottle	X	X	X	X	-	-	-	-	-	-	-	X		
09-B00061-S0011-A08	MW2	UNKNOWN	Plastic Bottle + H2SO4	-	-	-	-	-	-	-	-	-	-	X	-		
09-B00061-S0011-A10	MW2	UNKNOWN	100ml Plastic Anion Bottle	-	-	-	-	-	X	X	X	X	X	-	-		
09-B00061-S0012-A01	MW3	UNKNOWN	Glass Bottle	-	-	-	-	X	-	-	-	-	-	-	-		
09-B00061-S0012-A03	MW3	UNKNOWN	Plastic Bottle	X	X	X	X	-	-	-	-	-	-	-	X		
09-B00061-S0012-A08	MW3	UNKNOWN	Plastic Bottle + H2SO4	-	-	-	-	-	-	-	-	-	-	X	-		
09-B00061-S0012-A10	MW3	UNKNOWN	100ml Plastic Anion Bottle	-	-	-	-	-	X	X	X	X	X	-	-		
09-B00061-S0013-A01	SW1	UNKNOWN	Glass Bottle	-	-	-	-	-	-	-	-	-	-	-	-		
09-B00061-S0013-A05	SW1	UNKNOWN	Plastic Bottle	X	X	X	X	-	-	-	-	-	-	-	X		
09-B00061-S0013-A11	SW1	UNKNOWN	Plastic Bottle + H2SO4	-	-	-	-	-	-	-	-	-	-	X	-		
09-B00061-S0013-A13	SW1	UNKNOWN	100ml Plastic Anion Bottle	-	-	-	-	-	X	X	X	X	X	-	-		

Notes : NUMERIC VALUES INDICATE ADDITIONAL SCHEDULING

* SUBCONTRACTED TO OTHER LABORATORY / ** SAMPLES ANALYSED AT THE CHESTER LABORATORY

ALcontrol Laboratories Ireland

Test Schedule Summary

Ref Number: **09-B00061/01**
Client: SLR Consulting Ltd.
Date of Receipt: 08/01/2009

Sample Type: **WATER**
Location: MILVERTON EIS
Client Contact: Peter Glanville
Client Ref: SO1.0059.0021

* SUBCONTRACTED TO OTHER LABORATORY / ** SAMPLES ANALYSED AT THE CHESTER LABORATORY

SCHEDULE	METHOD	TEST NAME	TOTAL
X	5 DAY ATU	BOD Unfiltered	1
X	GC	DRO + Mineral Oil by GC	1
X	GC	DRO Interpretation	1
X	GC	PRO & BTEX	1
X	ICP MS	Total Hardness (ICP MS)	4
X	ICP MS	Dissolved Aluminium Low Level	4
X	ICP MS	Dissolved Calcium Low Level	4
X	ICP MS	Dissolved Iron Low Level	4
X	ICP MS	Dissolved Magnesium Low Level	4
X	ICP MS	Dissolved Manganese Low Level	4
X	ICP OES	Dissolved Potassium	4
X	ICP OES	Dissolved Sodium	4
X	IR	Total Organic Carbon	3
X	KONE	Chloride	4
X	KONE	Nitrate as NO3	4
X	KONE	Nitrite as NO2	4
X	KONE	ortho Phosphate	4
X	KONE	Sulphate	4
X	SPECTRO	Ammoniacal Nitrogen	4
X	TITRATION	Total Alkalinity	4

☐ Interim
☑ Validated

ALcontrol Laboratories Ireland

Table Of Results

Ref Number: 09-B00061/01
Client: SLR Consulting Ltd.
Date of Receipt: 08/01/2009
(of first sample)

Sample Type: WATER
Location: MILVERTON EIS
Client Contact: Peter Glanville
Client Ref: SO1.0059.0021

	Detection Method	5 DAY ATU	GC	GC	GC	GC	GC	GC	GC	GC	GC	ICP MS	ICP MS	ICP MS	ICP MS	ICP MS
	Method Detection Limit	<2mg/l	<10ug/l	<10ug/l	n/a	<10ug/l	<10ug/l	<10ug/l	<10ug/l	<10ug/l	<10ug/l	<1mg/l	<2ug/l	<120ug/l	<2ug/l	<100ug/l
UKAS Accredited [Testing Laboratory] No. 1291		✓	✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
ALcontrol Reference	Sample Identity	Other ID	BOD Unfiltered	Diesel Range Organics	Mineral Oil by GC	DRO Interpretation	Petrol Range Organics C5-C9	Petrol Range Organics C10-12	Benzene	Toluene	Ethylbenzene	Total Xylene	Total Hardness	Dissolved Aluminium Low Level	Dissolved Calcium Low Level	Dissolved Iron Low Level	Dissolved Magnesium Low Level
			mg/l	ug/l	ug/l		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	mg/l	ug/l	ug/l	ug/l	ug/l
09-B00061-S0010	MW1	UNKNOWN	-	-	-	-	-	-	-	-	-	-	242	<2	67520	47	17780
09-B00061-S0011	MW2	UNKNOWN	-	-	-	-	-	-	-	-	-	-	318	<2	93100	41	20780
09-B00061-S0012	MW3	UNKNOWN	-	-	-	-	-	-	-	-	-	-	234	<2	70800	51	13890
09-B00061-S0013	SW1	UNKNOWN	4	<10	<10	See attached	<10	<10	<10	<10	<10	<10	354	<2	119300	40	13690

Notes : METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL.

NDP = NO DETERMINATION POSSIBLE

Checked By : Caoimhe McLoughlin

Printed at 14:43 on 20/01/2009

* SUBCONTRACTED TO OTHER LABORATORY / ** SAMPLES ANALYSED AT THE CHESTER LABORATORY

☐ Interim
☑ Validated

ALcontrol Laboratories Ireland

Table Of Results

Ref Number: 09-B00061/01
Client: SLR Consulting Ltd.
Date of Receipt: 08/01/2009
(of first sample)

Sample Type: WATER
Location: MILVERTON EIS
Client Contact: Peter Glanville
Client Ref: SO1.0059.0021

	Detection Method	ICP MS	ICP OES	ICP OES	IR	KONE	KONE	KONE	KONE	KONE	SPECTRO	TITRATION				
	Method Detection Limit	<1ug/l	<0.2mg/l	<0.2mg/l	<2mg/l	<1mg/l	<3mg/l	<0.03mg/l	<0.3mg/l	<0.05mg/l	<0.2mg/l	<1mg/l				
UKAS Accredited [Testing Laboratory] No. 1291		✓			✓	✓	✓	✓	✓	✓	✓	✓				
ALcontrol Reference	Sample Identity	Other ID	Dissolved Manganese Low Level	Dissolved Potassium	Dissolved Sodium	Total Organic Carbon	Chloride	Sulphate	ortho Phosphate as PO4	Nitrate as NO3	Nitrite as NO2	Ammoniacal Nitrogen as N	Total Alkalinity as CaCO3				
			ug/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l				
09-B00061-S0010	MW1	UNKNOWN	11	3.9	61.9	4	30	54	0.04	38.4	0.27	<0.2	270				
09-B00061-S0011	MW2	UNKNOWN	13	10.8	42.6	3	94	79	0.07	21.8	0.36	0.2	250				
09-B00061-S0012	MW3	UNKNOWN	19	8.8	19.5	3	29	18	1.18	16.9	0.23	<0.2	230				
09-B00061-S0013	SW1	UNKNOWN	1	2.7	21.9	-	50	62	0.07	45.3	0.11	<0.2	300				

Notes : METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL.

NDP = NO DETERMINATION POSSIBLE

Checked By : Caoimhe McLoughlin

Printed at 14:43 on 20/01/2009

* SUBCONTRACTED TO OTHER LABORATORY / ** SAMPLES ANALYSED AT THE CHESTER LABORATORY

Geochem Analytical Services

Diesel Range Organics/Mineral Oil
by
G.C.

Client Name SLR Consulting Ltd.
Client Ref SO1.0059.0021
Sample Matrix Water

Job Number B00061
Date Extracted/Prepared 13.01.09
Date Analysed 14.01.09

Separatory Funnel Ext No
Soxtec Extraction No
Column Extraction No

Sample number	Sample Identity	Depth	Diesel Range Hydrocarbons (µg/litre)	Mineral Oil (µg/litre)	Interpretation
013	SW1	-	< 10	< 10	No Identification Possible

Checked by Magda Dziedzic

APPENDIX

1. Results are expressed as mg/kg dry weight (dried at 30°C) on all soil analyses except for the following: NRA Leach tests, flash point, and ammoniacal N_2 by the BRE method, VOC, PRO, Cyanide, Acid Soluble Sulphide,TPH by IR, OFGs and SEM.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. A sub sample of all samples received will be retained free of charge for one month for soils and one month for waters (sample size permitting), but may then be discarded unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, an asbestos screen is done in-house on soils and if no fibres are found will be reported as NFD – no fibres detected. If fibres are detected, then identification and quantification is carried out by ALcontrol Technichem or Alcontrol Shutlers in the UK. If a sample is suspected of containing asbestos, then drying and crushing will be suspended on that sample until the asbestos results are known. If asbestos is present, then no analysis requiring dry sample are undertaken.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample – similarly, if a headspace is present in the volatile sample.

8. NDP – No Determination Possible due to insufficient/unsuitable sample.

9. Metals in water are performed on a filtered sample, and therefore represent dissolved metals – total metals must be requested separately.

10. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

Last updated February 2005

21st February 2011

By Hand

Water Services Department,
Fingal County Council,
PO Box 174,
County Hall,
Swords, Fingal,
Co. Dublin.

Our Ref: 110105.501.0180.00018.L01.R01.DL Cover Letter

Dear Sir/Madam,

RE: ROADSTONE WOOD LTD – MILVERTON QUARRY, SKERRIES, CO. DUBLIN; APPLICATION FOR DISCHARGE LICENCE.

Please find enclosed an application for a licence to discharge effluent from the existing quarry at Milverton, Skerries, Co. Dublin, to a small tributary of the Mill Stream which discharges into the sea at Skerries. The effluent to be discharged under the licence consists of treated surface water runoff from within the quarry site.

There is currently no extraction of rock being undertaken at the site as quarrying operations have temporarily ceased due to the current economic downturn. Roadstone Wood has applied to the EPA for a waste licence for the site to recover inert soil materials.

The following documentation accompanies this discharge licence application;

i) Completed application form and Drawings D01 and D02 – Appendix A;
ii) Cheque for fee of €381;
iii) Newspaper, containing public notice – Appendix B; and
iv) Hydrological Assessment Report (Including water quality results for discharge and receiving waters, Q value results for receiving waters, description of water management system and mitigation measures, and monitoring programme) – Appendix C.

The discharge outlet to the stream comprises a rectangular stone culvert which measures c. 0.33m x 0.46m at the discharge point.

Yours sincerely
SLR Consulting Ireland

Peter Glanville
Associate

cc. Roadstone Wood Ltd. (Mr. Ronan Griffin and Mr. Shane Geraghty)
Enc. One copy of the application details, cheque for €381, newspaper notice and plans in triplicate

SLR Consulting Ireland, 7 Dundrum Business Park, Windy Arbour, Dublin 14, Ireland
T : +353 1 296 4667 F : +353 1 296 4676 www.slrconsulting.com

Appendix A -

Discharge licence application form and
Drawings D01 and D02;

Fingal County Council Comhairle Contae Fhine Gall
P.O. Box 174 County Hall, Swords, Fingal, County Dublin.

Water Services Department
Tel. 01 890 5900
Fax: (01)8906229
Email: waterservices@fingalcoco.ie

LOCAL GOVERNMENT (WATER POLLUTION) ACTS 1977 & 1990

APPLICATION FOR LICENCE

to discharge trade or sewage effluent to WATERS

I hereby make application for a licence, under Section 4 of the Local Government (Water Pollution) Act, 1977 as amended, to discharge **TRADE** ~~and/or **SEWAGE**~~ effluent in accordance with the plans and other particulars attached.

Signed: Peter Glanville (SLR Consulting Ireland)

Date: 9th February 2011

Before completing the application form please read the following notes:-

1. The licence application form should be accompanied by the plans, **in triplicate** indicating the locations referred to in paragraph 4 of the application form.

2. Plans, **in triplicate** indicating the premises, drainage systems and any works, apparatus or plant from which the effluent is to be discharged must accompany this application form. Point of discharge should be shown on 1-2500 O.S. map. Details of size and construction of outlet must be given.

3. "Trade effluent" and "Sewage effluent" are defined in Section 1 of the Local Government (Water Pollution) act, 1977, as amended.

4. Under the heading of the characteristics of trade effluent, complete for all applicable characteristics giving concentration ranges where available. Concentration to be expressed in mg/l where applicable. The list is meant to be indicative only - such other physical, chemical or other characteristics as are pertinent to the effluent in question should be specified.

5. A licence is required for discharge of domestic sewage from a septic tank only where the discharge is to surface waters and, in any other case, where the discharge exceeds $5m^3$ in 24 hours. (See article 4 of Local Government (Water Pollution Regulations, 1978).

6. Public Notice Requirements - **PLEASE SEE ATTACHED NOTE.**

7. Please ensure, before returning this form, that Parts 1 to 11 inclusive overleaf are fully completed including signature at foot of Page 3.

8. **FEE:** ARTICLE 7 of the Local Government (Water Pollution) Regulations 1992 provides as follows:

   1. A fee shall be paid to a local authority by an applicant in respect of a licence application under Section 4 of the Principal Act and to a sanitary authority in respect of a licence application under Section 16 of the Act.

   2. The amount of the fee payable under this article is hereby specified to be €381.

IT SHOULD BE NOTED THAT AN APPLICATION CANNOT BE CONSIDERED UNTIL THE CORRECT FEE IS PAID.

LOCAL GOVERNMENT (WATER POLLUTION) ACTS 1977 & 1990

PUBLIC NOTICE OF INTENTION TO APPLY FOR A LICENCE TO DISCHARGE TO WATERS

Public notice of intention to apply for a licence must be given in a newspaper circulating in the area in which the discharge is proposed. The page of the newspaper carrying the advertisement should accompany the application. The application must be made within 14 days of the date of newspaper advertisement. The Notice must contain as a heading the words **"Discharge of Effluent to Waters"** and shall:

(a) state the name of the applicant and the name of the local authority to which application is being made.

(b) give a general description of the effluent.

(c) in the case of trade effluent, state the nature of the trade or industry.

(d) state the name and location of the premises from which the effluent is to be discharged.

(e) indicate the waters to which the effluent is to be discharged.

COMHAIRLE CONTAE HINE GALL
FINGAL COUNTY COUNCIL

1. Name of Applicant: ROADSTONE WOOD LTD.

   Tel. No.: 01 4041307

   Address: FORTUNESTOWN TALLAGHT

   DUBLIN 24.

2. Name and address of the premises from which the effluent is to be discharged:

   MILVERTON QUARRY, MILVERTON,

   SKERRIES, CO. DUBLIN

3. If trade effluent, description of activity giving rise to the discharge:

   SURFACE WATER AND GROUNDWATER FROM QUARRY

4. (i) Location of point of discharge (include National Grid Reference if possible)

   ING 324839 E, 259328 N (SEE DRAWING D02)

   (ii) Description of waters to which discharge is to be made:

   TRIBUTARY OF THE MILL STREAM

5. Details of provision made for sampling and measuring flow of the effluent:

   MAN HOLE FOR SAMPLING

6. Particulars of any other discharge from the premises in question:

   NONE

7. Details of any special arrangements to prevent accidental discharges:

   DISCHARGE IS PUMPED FROM QUARRY VOID SUMP.

8. **General**

   (a)Date of commencement of discharge

   HISTORICAL

   (b) **Sewerage Effluent**

   No. of persons served N/A

   Anticipated dry weather flow N/A

   (c) **Trade Effluent**

   Volume of effluent to be discharged;

   (i) Normal per day: 118.8 m^3 (ii) Maximum in any one day 1,296 m^3/day

   (iii) Maximum rate per hour 54 m^3/hr.

   (iv) Period or periods of the day in which the discharge is to take place:

   INTERMITTENT - PUMP CONTROL IS AUTOMATED

   (v) Seasonal, or other variations (including any arising from plant malfunction), in volumes of effluent to be discharged: N/A.

(d) Particulars of effluent treatment:

PROPOSED SILT / SETTLEMENT PONDS.

PROPOSED HYDROCARBON INTERCEPTOR

(e) Contract Water Charges Account No. N/A

Characteristics of Trade Effluent

Characteristic	Prior to Treatment	As Discharged
Temperature ^0C		AMBIENT TEMP.
pH		< 9 *
Colour (degrees hazen)		
B.O.D.		< 25 mg/L *
C.O.D.S.		< 100 mg/L *
Suspended Solids		< 35 mg/L *
Settleable Solids (mg/l)		
Dissolved solids		
Ammonia (as N)		
Nitrates (as N)		< 50 mg/L *
Phosphorus (as P)		
Sulphates (as SO_4)		
Chlorides (as Cl)		
Phenols (as C_6H_5OH)		
Detergents (as Laurylsulphate)		
Oils, grease and fats		
Metals - Specify each		

* RECOMMENDED EFFLUENT LIMIT VALUES (ELV's) FOR TREATED DISCHARGE FROM A QUARRY (EPA, 2009).

Characteristic	Prior to Treatment	As Discharged
Organohalogen compounds (Specify)		
Organophosphorus compounds (Specify)		
Organotin compounds (Specify)		
Mineral Oils or Hydrocarbons of petroleum origin		< 1 mg/L TPH.
Other toxic substances (specify)		

Other relevant characteristics

10. Signature of Applicant (or his Agent)

Peter Clanville (SLR Consulting Ireland).

FOR OFFICE USE ONLY:

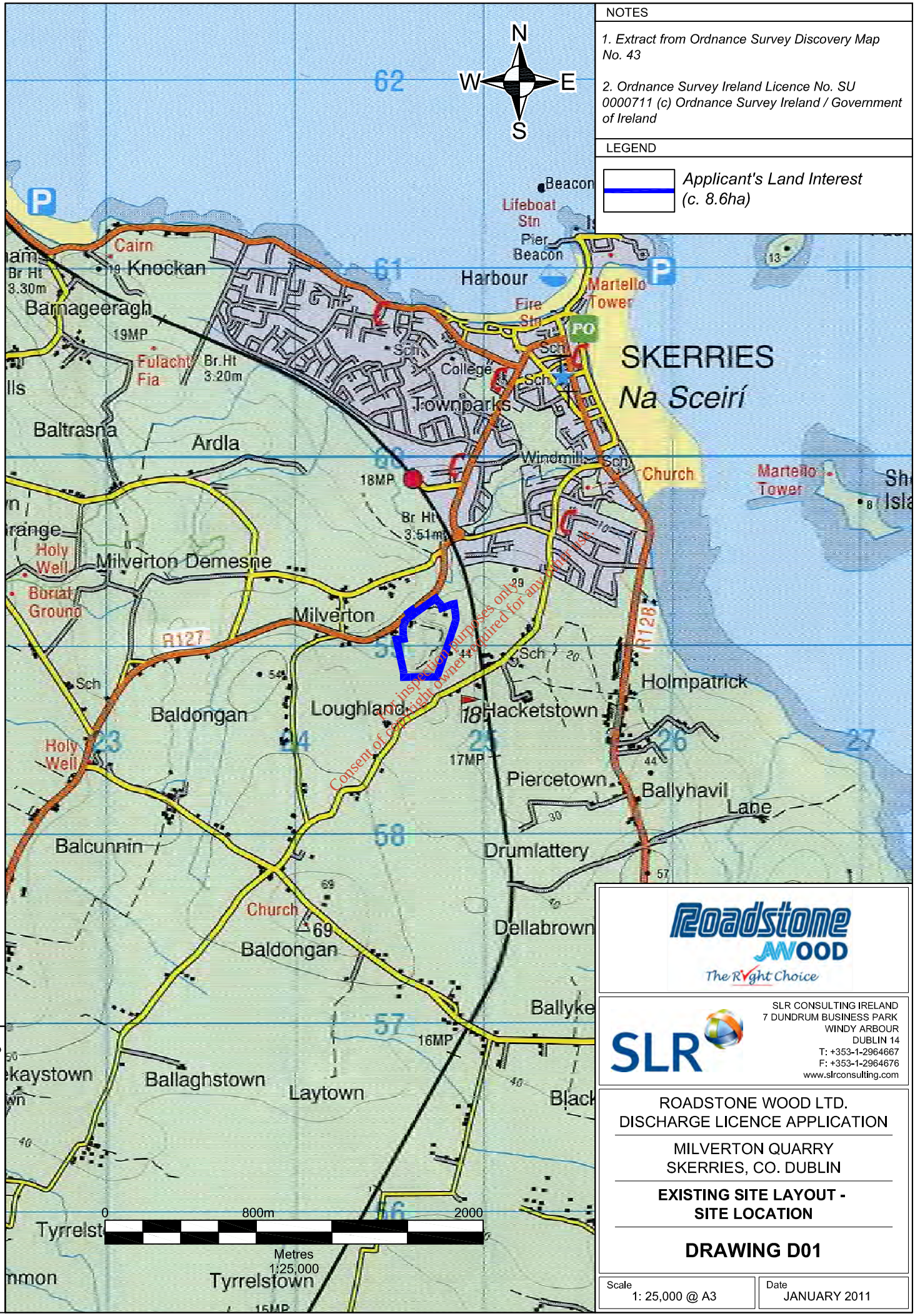
Application Type:

Reference No.

Amount received:

Receipt No.

Date:



NOTES

1. Extract from Ordnance Survey Discovery Map No. 43

2. Ordnance Survey Ireland Licence No. SU 0000711 (c) Ordnance Survey Ireland / Government of Ireland

LEGEND

Applicant's Land Interest (c. 8.6ha)

Roadstone Wood
The Right Choice

SLR CONSULTING IRELAND
7 DUNDRUM BUSINESS PARK
WINDY ARBOUR
DUBLIN 14
T: +353-1-2964667
F: +353-1-2964676
www.slrconsulting.com

ROADSTONE WOOD LTD.
DISCHARGE LICENCE APPLICATION

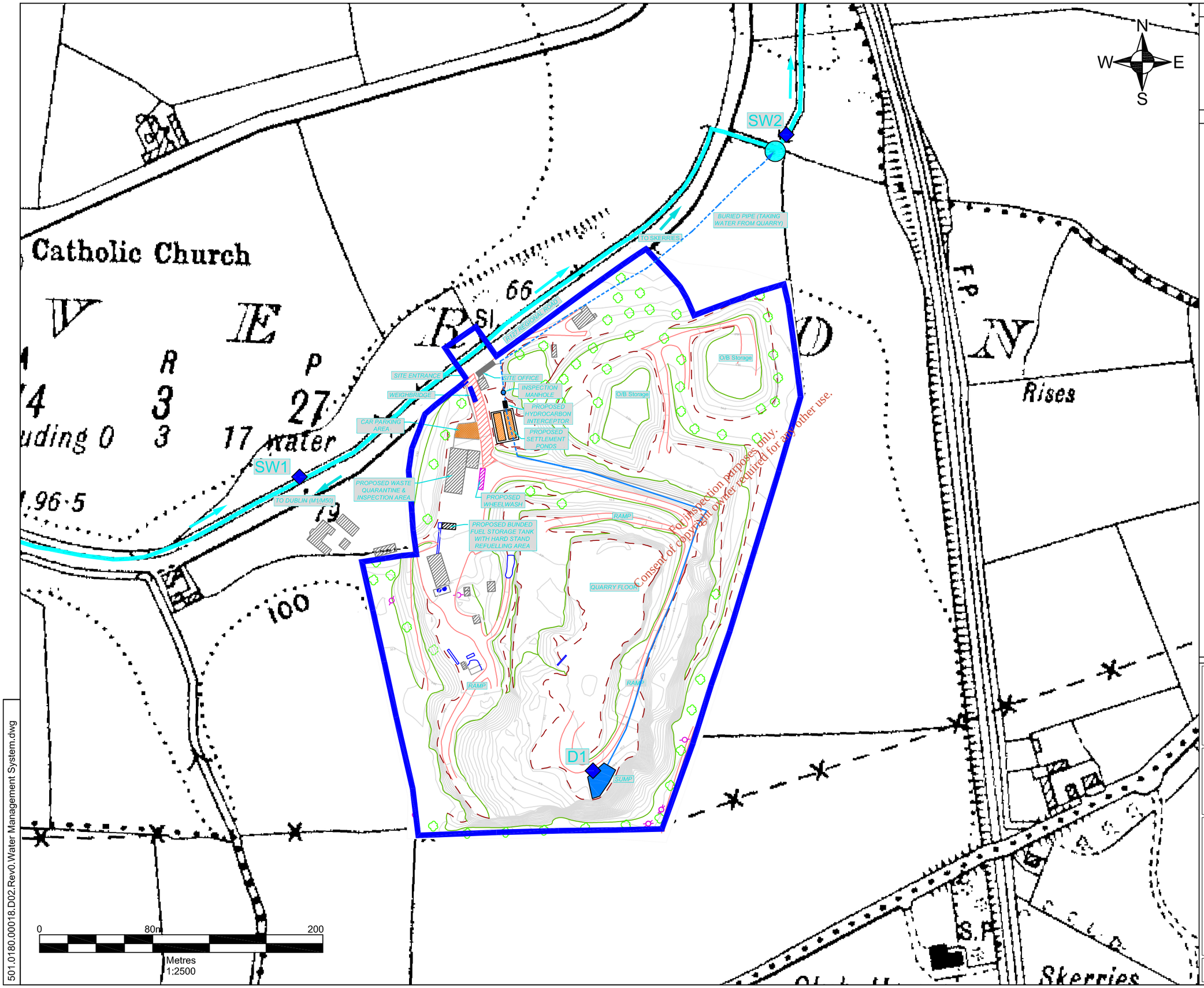
MILVERTON QUARRY
SKERRIES, CO. DUBLIN

EXISTING SITE LAYOUT - SITE LOCATION

DRAWING D01

Scale	Date
1: 25,000 @ A3	JANUARY 2011

501.0180.00018.D01.Rev0.Site Location.dwg



NOTES

1. Based on OSi 25inch Dublin Sheet Nos. 5 & 5a

2. Ordnance Survey of Ireland Licence No. SU 0000711 (c) Ordnance Survey of Ireland & Government of Ireland

LEGEND

- Applicant's Land Interest (c. 8.6ha)
- Discharge Point to Stream
- Discharge Pipe Overground (Existing)
- Buried Discharge Pipe (Existing)
- Building
- Internal Paved Road
- Water Sampling Location

Roadstone Wood
The Right Choice

SLR CONSULTING IRELAND
7 DUNDRUM BUSINESS PARK
WINDY ARBOUR
DUBLIN 14
T: +353-1-2964667
F: +353-1-2964676
www.slrconsulting.com

ROADSTONE WOOD LTD.
DISCHARGE LICENCE APPLICATION

MILVERTON QUARRY
SKERRIES, CO. DUBLIN

EXISTING SITE LAYOUT - WATER MANAGEMENT SYSTEM

DRAWING D02

Scale	Date
1: 2,500 @ A3	JANUARY 2011

501.0180.00018.D02.Rev0.Water Management System.dwg

Appendix B -

Newspaper containing public notice

classified

70 Articles for Sale

TOTALLY HEAVY SOLID PINE BEDS brand new super strong rock solid bases, have to be seen to be believed. Life time guarantee, good deep comfortablemattress included. Everything brand new, can deliver. €89. Tel 086-8208303

240 Situations Vacant

CELTIC PLASTERERS Plastering, Painting, tiling, renovation. Tel 085-1120414

250 Special Notices

ANN SUMMERS REQUIRES party organizers immediately, excellent commission rates and promotionprospects. Call Caroline for more information. Party bookings also being taken. Ph 086-8817693

25F Special Services

DOG TRAINING AND KENNELLING Residential Training in obedience and behavioral problems ie. Pulling on lead, house training, agression, recall, chewing, jumping up etc. Also personal protection training. Over 20 years experience, having trained in the UK, USA and Germany. Qualified master Dog Trainer, Veterinarian and Dog Shelter recommended. References available. Trained security dogs for sale. Watch our dogs in action at www.topdog-training.comTel: 087-0514467

210 Planning Acts

FINGAL COUNTY COUNCIL Planning permission sought for attic conversion and construction of small roof dormer to side and velux rooflightto rear at 43 Sandford Wood, Swords, Co Dublin for Mr.and Mrs.Peter & Niamh Brogan. This planning application maybe inspected or purchased at a fee not exceeding a reasonable cost of making a copy at the offices of the planning authority during its public opening hours and a submission or observation may be made to the authority in writing on payment of the prescribed fee (20 euro) within the period of 5 weeks beginning on the date of receipt by the authorityof this application.

FINGAL COUNTY COUNCIL: Permission is being sought for the demolition of existing 2-storey return to rear and the construction of a new 2-storey extension to gable end & rear, connecting into existing services, at existing 2-storey semi-detached dwelling at 'Liseux', Corballis, Donabate, Co.Dublin. Signed: Mr Dermot Whyms & Ms Aileen Kirstein. This Application may be inspected, or purchased at a fee, not exceeding the reasonable cost of making a copy, during the public opening hours of 9.30-15.30, Mon-Fri, at the offices of the Planning Authority at Fingal County Council, Main Street, Swords, Fingal, Co. Dublin. A submission or observation in relation to the application may be made to the Authorityin writing on payment of the prescribed fee (€20.00) within the period of 5 weeks beginning on the date of receipt by Fingal County Council of the Application.

family notices

5 Acknowledgements

THOMPSON Sean, late of 57 Craolbhn Park, Balbriggan, 20th January 2011. Seans wife kay and his sons and daughters, sons in law, daughters in law, grandchildren, greatgrandchildren. We would like to thank Gormanston Wood Nursing Home, doctors, nurses and staff. A very special thanks to the priests of the parish who officiated at Seans Funeral Mass. McNally Funeral Directors, Jimmy Reilly and staff of the Mielstone Inn. A special thank you to all those who sent Mass Cards, floral tributes and also a special thanks to all who called to Tony and Bernos Home. As it would be impossible to thank everyone individually we hope this acknowledgement will be accepted by all as a token of our appreciation. A Mass will be offered for your intentions. Seans Months Mind Mass will be offered in St. Peters and Paul Church on Sunday 20th February at 12 O'Clock.

10 Anniversaries

MAHON (13th Anniversary) In loving memory of Patrick, late of Doolagh, Stamullen, who died 16th February 1998. R.I.P.
For those who think of him today,
A little prayer to Jesus say.
Never forgotten by your wife Betty, family and grandchildren.

10 Anniversaries

FAGAN Paddy 20th Anniversary. In loving memory of Paddy late of Damastown, Naul who died on 18th February 1991. R.I.P.
It was a sudden parting,
Too bitter to forget,
Those who loved you dearly,
Are the ones who can't forget,
Your life was one of kindly deeds
A helping hand for others needs
Sincere and true in heart and mind,
Beautiful memories left behind.
Two tired eyes are sleeping,
Two willing hands are still,
The one who worked so hard for us,
Is resting at God's will.
Always remembered by your loving wife Christina, son John, Carol, brother, sisters, brothers-in-law, sisters-in-law, families and friends.

MOYNIHAN (6th Anniversary) In loving memory of Michael (Dyres) Carrickgoram, Ballieboro, Co.Cavan and late of Garristown, Co. Dublin whose anniversary occurs on the 17th of February.
Your name is often spoken,
We talk about you still,
You have not been forgotten,
And you never will.
Always loved by your Mam and all the family.

10 Anniversaries

O'HARA (1st Anniversary) Joan, late of Glassmore Park, Swords. In loving memory of my adored Mam also remembering my dear dad Brendan, and beloved brother Andrew. You are all together now, safe in the hands of God.
I was not there to help you,
You may have called my name,
It may not have made a difference,
But it hurts me all the same,
I travel to your graveside,
And picture your face so clear,
In silence I stand in sorrow,
For the Mam I loved so dear,
The flowers I place upon it will wither and decay.
But the love I buried with you will never fade away,
Meet me in my dreams Mam,
Talk to me once more,
Ease this everlasting pain that never goes away,
I know you walk beside me,
And when my life is through,
I pray that God will take my hand,
And lead me straight to you.
Sadly missed by your heartbroken daughter Deirdre and son-in-law Matt. xxx
Nan
Play her favourite music Lord,
And when you see her smile,
Tell her that I love her,
And miss her all the time,
I know your my guardian Angel now,
The brightest star in the sky,
I will never forget you Nan,
You will always be in my heart.
Love you always Nan, your grandson Simon. xxx.
Joan
A sister is a special gift,
One you think will stay,
You never think the time will come when she is called away.
So wrap your arms around her Lord,
don't leave her on her own,
For this is her 1st Anniversary and her 1st away from home.
You're always by our side, miss you lots, from sisters Mary, Christina, Patricia and brother Sean and families. xxxx.

15 Birthday Remembrance

HEGARTY Birthday Remembrance for Joy whose birthday occurs on 18th February, late of 72 Clonard Street, Balbriggan.
Time and years slip gently by,
But love and memories never die.
In our hearts you will always stay,
Loved and remembered everyday.
Happy Birthday, your loving family. xxx

LYNCH Birthday Remembrance of Patrick, Late of Tobergregan, Garristown whose Birthday occurs on the 18th February
May the winds of love blow gently,
And whisper for you to hear
Happy Birthday Daddy.
How we wish you were still here.
No more tomorrows for us to share.
But yesterday memories will always be there.
Sadly missed by his Loving Family.
GRANDAD
You looked after us when we were small.
Now look down on us as we grow tall.
Always Remembered by Amanda and Trevor.

NOTICE TO ADVERTISERS

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DISCHARGE OF EFFLUENT TO WATERS

Notice is hereby given that Roadstone Wood Ltd. has applied to Fingal County Council for a Licence to discharge effluent from its quarry at Milverton, Skerries, County Dublin, to a tributary of the Mill Stream which flows into the sea at Skerries. The effluent to be discharged under the licence comprises treated surface water runoff arising within the quarry.

Appendix C -

Hydrological Assessment Report

global environmental solutions

Discharge Licence Application
Milverton, Skerries, Co. Dublin.

Hydrological Assessment (including Site Water Management System).

Roadstone Wood
The Right Choice

February 2011
SLR Ref: 501.0180.00018. Rev01

SLR Consulting Ireland, 7 Dundrum Business Park, Windy Arbour, Dublin 14, Ireland
T +353 1 296 4667 F +353 1 296 4676 W www.slrconsulting.com

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TABLES

APPENDICES

1.0 INTRODUCTION

This report has been prepared to accompany a discharge licence application to be submitted to Fingal Co. Council by Roadstone Wood Ltd. for its existing quarry site at Milverton, Skerries, Co. Dublin. The quarry was previously registered with Fingal Co. Co. under Section 261 of the Planning and Development Act in 2005 (Q/05/003).

The existing development at Milverton consists of:

- A quarry (temporarily closed due to the current economic downturn); and
- associated ancillary activities including fuel storage and refuelling areas, a workshop, site offices, canteen and washrooms, and weighbridge.

The purpose of this report is to provide a document for the local authority to assist it in its appraisal of the hydrological impact of the discharge. It provides a description of the existing hydrological environment, and the potential impact of the site activities on the existing environment. Mitigation measures are proposed to reduce/eliminate any potential adverse environmental impact.

An Environmental Management System (EMS) has been developed for the site by Roadstone Wood Ltd. and has been in place at the site since 2001.

Roadstone Wood has submitted a Waste Licence Application, together with a supporting Environmental Impact Statement, to the Environmental Protection Agency providing for future importation of inert soil and stone to restore the quarry void.

2.0 HYDROLOGICAL ASSESSMENT

The location of the site at Milverton is shown in the Discharge Licence Application Drawing D01. The site currently discharges water from the quarry void, comprising a combination surface water runoff and some groundwater, to a tributary of the Mill Stream which flows into the sea at Skerries. No process water is discharged from the site to the stream.

2.1 Existing Environment

There is one hydrological feature in the vicinity of the application site, specifically the Mill Stream which flows to the northeast of the site, see Licence Application Drawings D01 and D02. The floor of the quarry void is at c. -12m below mean sea level.

The site does not lie in any ecological designated areas and there are no designated sites in the Mill Stream catchment in which the site is located.

2.1.1 Surface Water Flows

Receiving Waters

There is currently no continuous flow monitoring in the Mill Stream into which water from the quarry discharges. There was a former gauge station (no. 08014) on the stream at Skerries, however this is no longer in use.

A summary flow report for the Mill Stream at the discharge point was generated using the EPA hydro tool for flow estimation in ungauged catchments, a copy of which is included in Appendix 1, which sets out the parameters on which the estimated flow duration curve is estimated. The flow report indicates that the 50%ile flow in the stream is estimated to be

0.062m^3/sec while the 95%ile flow is estimated to be 0.028m^3/sec based on a catchment area of 8.2km^2, see Appendix 1. The flow duration percentiles for the Mill Stream at the site are shown in Table 1 below.

Table 1 -
Estimated Flow Duration Percentiles for the Mill Stream at Skerries (EPA 2010)

Flows equalled or exceeded for the given percentage of time (m^3/s)										
5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%
0.318	0.23	0.159	0.113	0.069	0.062	0.045	0.032	0.05	0.032	0.028

The estimated flow duration curve and percentiles presented in Table 1 above indicate that the flow in the Mill Stream is relatively flashy, largely as a consequence of the predominance of low permeability soils and subsoils in the catchment, see Appendix 1.

The EPA river Dry Weather Flow (DWF) data (May 2007) indicates that the 95%ile flow at the former gauge station (08014) at Skerries was estimated to be 0.007m^3/sec and the DWF was 0.0015m^3/sec. The 95%ile flow derived is less than that estimated using the EPA flow estimation tool for ungauged catchments, see Table 1 above.

Existing Discharge

There is an existing discharge from the quarry void to the stream, see Drawing D02 of the discharge licence application. The discharge point is at ING 324839E 259328N.

2.1.2 Surface Water Quality

Receiving Waters

Two water samples were taken from the tributary of the Mill Stream to which the water is discharged. One sample was taken upstream from the site (SW1) and one downstream from the site (SW2), at a point which is also downstream of the discharge point, see Discharge Licence Application Drawing D02. There was no discharge from the quarry when the stream samples were taken. The water quality results are included in Appendix 2.

The sample results indicate that the water in the stream is generally of good quality with some suspended solids, see Appendix 2. The slightly elevated chloride in the stream is likely to be associated with the coastal location of the catchment and the elevated nitrates most likely reflect runoff from agricultural lands in the catchment. The elevated Phosphorus levels in the stream most likely reflect human activities in the catchment.

Site Discharge

A water sample (sample no. D1) was taken from the quarry sump on the 26th November 2010 for chemical analysis is taken to be characteristic of the water likely to be discharged from the quarry floor. No water was being discharged from the quarry to the stream on the day of the site visit. The sample was analysed at ALcontrol laboratories and the results are presented in Appendix 2.

The water quality test results indicate that the water to be discharged from the quarry void is of good quality with slightly elevated chloride (associated with the coastal location) and elevated nitrates (reflecting runoff from agricultural lands immediately up-gradient of the quarry). The low phosphorus levels, below the laboratory detection level, in the sample

indicate no human impacts on the water quality in the quarry void. There were no hydrocarbons recorded in the sample.

2.2 Existing Water Management System

The existing water management system at the site directs the surface water runoff from the former aggregate processing area to the quarry void, from where it is pumped to the stream discharge along with surface water runoff and groundwater from the void itself.

2.2.1 Quarry Void

The surface water runoff and any groundwater in the quarry void falls to the low point on the quarry floor. The water is discharged from an excavated sump on the southern edge of the quarry floor, see Discharge Licence Application Drawing D02.

There is a submersible electric pump on the quarry floor at the sump which is activated automatically by float switches, depending on the level of water in the sump.

Currently the clean discharged water from the quarry void sump is pumped up to the site entrance where it flows under gravity to the discharge point. The pump in the quarry sump is a Flyght submersible 20KW, and the lift height from the quarry floor to the site entrance is approximately 32m. The existing discharge is fully automated based on a float switch arrangement at the quarry sump.

Based on the pump capacity and the lift height from the quarry sump, the discharge rate is c. 15l/s or 54m^3/hr. Based on average annual rainfall conditions in the area round the site, it is estimated that the average daily discharge from the quarry will be c. 118.8m^3/day.

During a storm event, assuming the pump is running for 24hr. period the maximum discharge will be 1,296m^3/day. The maximum discharge rate from the quarry will be 15l/s.

2.2.2 Infrastructure Drainage

Surface water runoff from the former aggregate processing area in the north western part of the site is directed to the quarry void from where it is discharged to the stream.

2.2.3 Site Water Requirements

There is a mains water supply to the site office, workshops and washroom facilities. Water collected in the quarry sump is used for dust suppression when required.

2.2.4 Fuel / Chemical Storage

There is no fuel or chemical storage at the site.

2.3 Assessment of Impacts

2.3.1 Direct Impacts

Impact on Quantity

The existing discharge has the potential to impact directly on the quantity of water in the tributary of the Mill Stream as an additional volume of water is being added from the quarry discharge.

Based on an annual average discharge of c. 0.0013m^3/sec from the quarry, then this is just c. 2% of the estimated 50%ile flow in the stream. It is not therefore considered that the discharge will have a significant adverse impact on the flow in the stream.

Impact on Quality

The potential exists for deterioration in water quality in the stream from suspended solids or hydrocarbon contamination in the discharge. This could potentially arise from accidental leaks or spillages in the quarry void and have an adverse impact on the water quality in the stream. Mitigation measures are required, see Section 2.4 below, to ensure the water discharged from the quarry will not result in any adverse impact on water quality in the stream particularly in terms of suspended solids and hydrocarbons.

Based on the available water quality results for the water discharged from the quarry and the existing surface water in the stream, the water discharged from the quarry has the potential to improve the water quality in the stream, particularly in terms of its phosphorus loading. This is a potentially minor positive impact on the water quality in the stream.

2.4 Mitigation Measures

A number of mitigation measures are proposed as part of the upgrade of the water management system at the site in order to minimise and reduce the risk of any potential adverse impacts on the water quality in the stream.

2.4.1 Water Management System: Operational Phase

The mitigation measures to be implemented at the site as part of the upgrade of the water management system are shown in Table 2 below.

Table 2 -
Water Management System Operational Phase Mitigation Measures

No.	Mitigation Measure
1	A silt lagoon will be constructed to treat all water discharged from the quarry to remove fines and any suspended solids
2	A hydrocarbon interceptor will be installed to treat all water discharged from the site
3	All chemicals and petroleum-based products are to be stored in secure containers under cover in the workshops
4	All fuels/oils will stored in bunded tanks to 110% of tank capacity
5	Refuelling area will be restricted to hard standing areas
6	Vehicle repairs will only be undertaken on the hard stand refuelling area or under cover in the shed.
7	An emergency response spill kit shall be kept on site

With the implementation of these measures the discharge from the quarry does not pose a significant adverse impact to surface water quality of the stream being discharged to

.

2.4.2 Monitoring

The following water monitoring programme, see Table 3, will be implemented at the discharge point for treated discharge water from the quarry void as a precautionary measure.

Certified monitoring results will be submitted to Fingal Co. Council on an annual basis as part of the annual environmental audit for the site, as set out in the site Environmental Management Plan.

Table 3 -
Monitoring Programme and Emission Limits for Discharge from the Quarry

Parameter	**Proposed Monitoring Frequency**	**Emission Standard[1]**
Temperature (°C)	Quarterly	
Biological Oxygen Demand (BOD)	Quarterly	≤ 25mg/l
Chemical Oxygen Demand (COD)	Quarterly	
pH (pH units)	Quarterly	7-9
Total Suspended Solids (TSS)	Quarterly	≤ 35mg/l
Nitrates (as N)	Quarterly	
Ammonia (as N)	Quarterly	
Phosphorus (as P)	Quarterly	
Sulphates as (SO_4)	Quarterly	
Total Petrol Hydrocarbons (TPH) oils and greases	Quarterly	
Visual Check of Discharge	Monthly[1]	

[1] Emission Standard and Frequency as per the Quarry Environmental Management System (1st September 2008)

3.0 CLOSURE

This report has been prepared by SLR Environmental Consulting (Ireland) Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of Roadstone Wood Ltd. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

APPENDICES

Appendix 1 -
EPA Estimation of Flow Duration Curve for the Ungauged Catchment

Environmental Protection Agency

Estimation of Flow Duration Curve for Ungauged Catchment

River Name	(08_483)
XY Location	324877,259573 (ING)

River Segment Map

Disclaimer
The source hydrometric data used to estimate the flow duration curve ordinates for ungauged catchments was obtained from (1) water level data and (2) the rating curve(s) generated for each hydrometric station. The Environmental Protection Agency and the Office of Public Works used these data, respectively, to calculate daily mean flows. The daily mean flows were then used by the Environmental Protection Agency to prepare flow duration curves for each station. Neither body accepts any liability for the subsequent handling of the data.

Disclaimer

The source of hydrometric data used to estimate the flow duration curve ordinates for ungauged catchments was obtained from (1) water level data and (2) the rating curve(s) generated for each hydrometric station. The Environmental Protection Agency and the Office of Public Works used these data, respectively, to calculate daily mean flows. The daily mean flows were then used by the Environmental Protection Agency to prepare flow duration curves for each station. Neither body accepts any liability for the subsequent handling of the data.

The user should familiarise himself/herself with the catchment being studied and confirm that the ungauged site is in a natural catchment where flows conditions are suitable for the use of the model.

It is strongly recommended that the user examine the catchment descriptors contained in the report produced and confirm that the percentages of the various constituent elements are comparable to a natural catchment.

If the flow in a catchment is not entirely natural, the estimation of flows using the model in these catchments could be affected due to:

- existence of local conduit karst within the catchment;
- the selected location itself is on local conduit karst;
- regulation of the river flow on the river channel (e.g. power station, sluice gates etc)
- impacts of abstractions upstream of the selected location or the impact of the discharge associated with the abstraction into the same/different catchment;
- estimates of flow being sought at locations effected by storage effects at, or near, lake outfalls;
- lack of similar catchments with observed flows, ie where catchment descriptors lie outside the range of available gauging station catchments (e.g. the catchment area is under 5 km²);
- any other special circumstances that may affect river flows.

Expert judgement will be required to ensure that the estimate of flow is not unduly affected by any of these influences.

Please note that the model does not provide estimates of flood peaks and, specifically, should not be used for that purpose.

The EPA has also prepared estimates of DWF and long term 95 percentile flows which are also presented on the EPA web site. These data are presented at http://www.epa.ie/whatwedo/monitoring/water/hydrometrics/data/

The data produced by the model for specific stations should be compared to the data contained in this file of DWF and long term 95percentile flows.

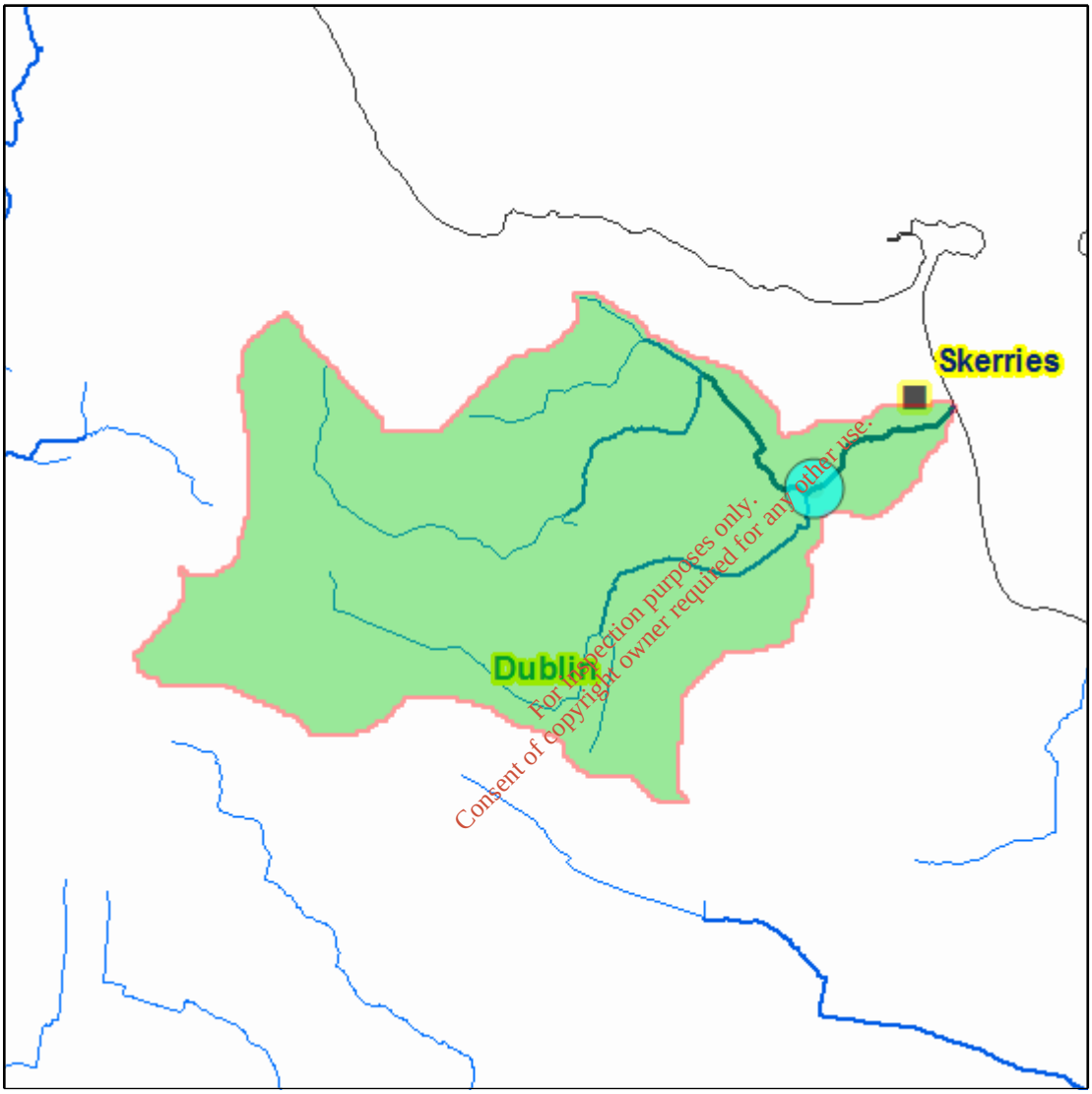
Disclaimer
The source hydrometric data used to estimate the flow duration curve ordinates for ungauged catchments was obtained from (1) water level data and (2) the rating curve(s) generated for each hydrometric station. The Environmental Protection Agency and the Office of Public Works used these data, respectively, to calculate daily mean flows. The daily mean flows were then used by the Environmental Protection Agency to prepare flow duration curves for each station. Neither body accepts any liability for the subsequent handling of the data.

Environmental Protection Agency

Estimation of Flow Duration Curve for Ungauged Catchment

River Name	(08_483)
XY Location	324877,259573 (ING)

Nested Catchment Map



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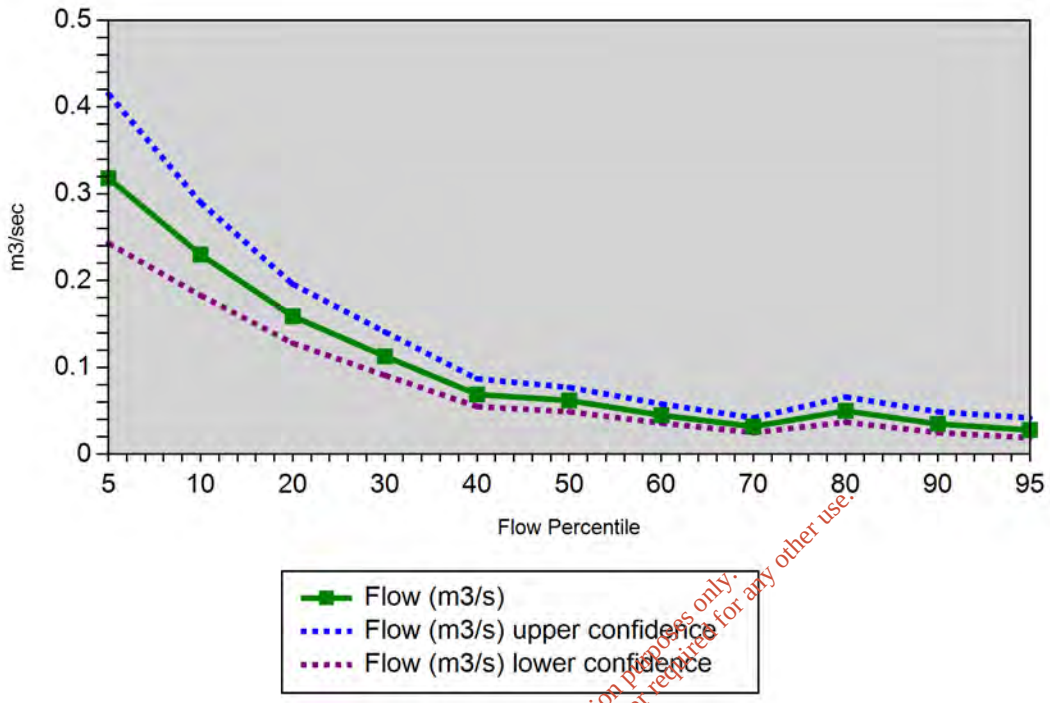
Environmental Protection Agency

Estimation of Flow Duration Curve for Ungauged Catchment

Flow Duration Curve (Flow in m3/sec)



%ile	flow(m3/sec)	upper 95% confidence limit m3/sec	lower 95% confidence limit m3/sec
5	0.318	0.415	0.243
10	0.23	0.29	0.183
20	0.159	0.196	0.128
30	0.113	0.141	0.091
40	0.069	0.087	0.055
50	0.062	0.077	0.049
60	0.045	0.058	0.036
70	0.032	0.042	0.025
80	0.05	0.066	0.037
90	0.035	0.049	0.025
95	0.028	0.042	0.019

Environmental Protection Agency

Estimation of Flow Duration Curve for Ungauged Catchment

Catchment Descriptors		
General		
Descriptor	**Unit**	**Value**
Area	sq km	8.2
Average Annual Rainfall (61-90)	mm/yr	700
Stream Length	km	13.9
Drainage Density	Channel length (km)/catchment area (sqkm)	1.7
Slope	Percent Slope	3.6
FARL	Index (range 0:1)	1

Soil	
Code	**% of Catchment**
Poorly Drained	22.9
Well Drained	67.2
Alluvmin	4.9
Peat	0
Water	0
Made	5

Disclaimer
The source hydrometric data used to estimate the flow duration curve ordinates for ungauged catchments was obtained from (1) water level data and (2) the rating curve(s) generated for each hydrometric station. The Environmental Protection Agency and the Office of Public Works used these data, respectively, to calculate daily mean flows. The daily mean flows were then used by the Environmental Protection Agency to prepare flow duration curves for each station. Neither body accepts any liability for the subsequent handling of the data.

Environmental Protection Agency

Estimation of Flow Duration Curve for Ungauged Catchment

Subsoil Permeability		
Code	**Explanation**	**% of Catchment**
H	High	9.3
M	Moderate	0
L	Low	69
ML	Moderate/Low	0
NA	No Subsoil/Bare Rock	21.6

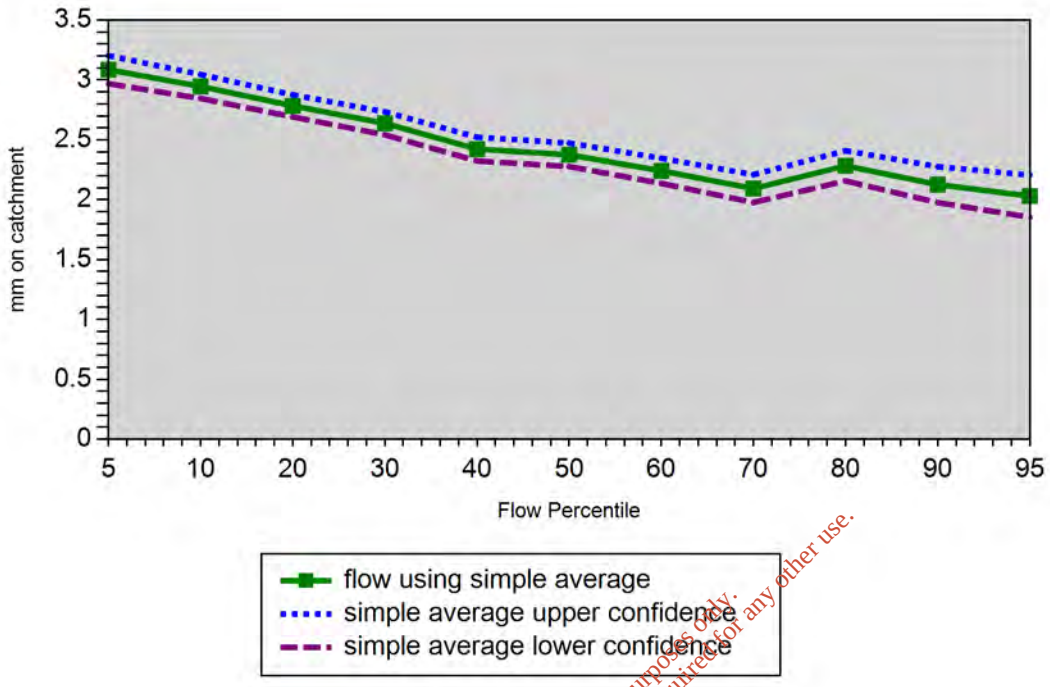
Aquifer		
Code	**Explanation**	**% of Catchment**
LG_RG	LG:Locally important sand-gravel aquifer RG: Regionally important sand-gravel aquifer	0
LL	Locally important aquifer which is moderately productive only in local zones	0.8
LM_RF	LM: Locally important aquifer which is generally moderately productive RF: Regionally important fissured bedrock aquifer	17.9
PU_PL	PU: Poor aquifer which is generally unproductive PL: Poor aquifer which is generally unproductive except for local zones	42.6
RKC_RK	Regionally important karstified aquifer dominated by conduit flow	0
RKD_LK	Regionally important karstified aquifer dominated by diffuse flow	38.7

Stations in Pooling group			
%ile Flow	**Station 1**	**Station 2**	**Station 3**
5	08011	10022	14014
10	08011	14014	10022
20	08011	14014	10022
30	08011	14014	10022
40	08011	09037	08012
50	10022	11001	08011
60	10022	11001	08011
70	10022	11001	08011
80	09027	13001	25001
90	09027	13001	25001
95	09027	13001	25001

Estimation of Flow Duration Curve for Ungauged Catchment

Environmental Protection Agency

Flow Duration Curve (mm on catchment)



Log Flow (mm on catchment)			
%ile	mm	upper 95% confidence limit	lower 95% confidence limit
5	3.086	3.203	2.969
10	2.946	3.046	2.846
20	2.784	2.876	2.692
30	2.638	2.734	2.542
40	2.423	2.522	2.324
50	2.375	2.473	2.277
60	2.241	2.346	2.136
70	2.093	2.209	1.977
80	2.283	2.409	2.157
90	2.126	2.276	1.976
95	2.03	2.206	1.854

Appendix 2 -
Water Quality Results for the Quarry Void and the Stream (November 2010)

ALcontrol Laboratories

Unit 18A
Rosemount Business Park
Ballycoolin
Dublin 11
Tel : (0035) 3188 29893

SLR Consulting Ireland
CSA House
Unit 7
Dundrum Business Park
Windy Harbour
Dublin
Dublin14

Attention: Peter Glanville

CERTIFICATE OF ANALYSIS

Date:	07 December 2010
Customer:	D_SLRCON_DUB
Sample Delivery Group (SDG):	101126-59
Your Reference:	501.0180.00018
Location:	Milverton
Report No:	106949

We received 3 samples on Friday November 26, 2010 and 3 of these samples were scheduled for analysis which was completed on Tuesday December 07, 2010. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

Iain Swinton

Business Director - Land, UK & Ireland

UKAS TESTING
1291

CERTIFICATE OF ANALYSIS

SDG:	101126-59	**Location:**	Milverton	**Order Number:**	
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	106949
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
2484902	D1			26/11/2010
2484917	SW1			26/11/2010
2484924	SW2			26/11/2010

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	101126-59	**Location:**	Milverton	**Order Number:**	
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	106949
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

Test Schedule

LIQUID

Results Legend

X — Test

N — No Determination Possible

Lab Sample No(s)			2484902	2484917	2484924
Customer Sample Reference			D1	SW1	SW2
AGS Reference					
Depth (m)					
Container			1l glass bottle (D) / H2SO4 (Dublin) / PLAS BOT (D)	1l glass bottle (D) / H2SO4 (Dublin) / PLAS BOT (D)	1l glass bottle (D) / H2SO4 (Dublin) / PLAS BOT (D)
Ammonium Low	All	NDPs: 0 Tests: 3		X	X	X
Anions by Kone (w)	All	NDPs: 0 Tests: 3		X	X	X
BOD True Total	All	NDPs: 0 Tests: 3		X	X	X
COD Unfiltered	All	NDPs: 0 Tests: 3		X	X	X
Colour Test	All	NDPs: 0 Tests: 3		X	X	X
Total Dissolved Solids (Grav)	All	NDPs: 0 Tests: 3		X	X	X
Total Metals by ICP-MS	All	NDPs: 0 Tests: 3		X	X	X
Total Suspended Solids	All	NDPs: 0 Tests: 3		X	X	X
TPH by IR Oils and Greases	All	NDPs: 0 Tests: 3	X	X	X	

CERTIFICATE OF ANALYSIS

SDG:	101126-59	**Location:**	Milverton	**Order Number:**	
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	106949
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	D1	SW1	SW2			
			Depth (m)	.	.	.			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	26/11/2010	26/11/2010	26/11/2010			
			Date Received	26/11/2010	26/11/2010	26/11/2010			
			SDG Ref	101126-59	101126-59	101126-59			
			Lab Sample No.(s)	2484902	2484917	2484924			
			AGS Reference						
Dissolved solids, Total (gravimetric)	<40 mg/l	TM021		338 #	463 #	453 #			
Suspended solids, Total	<2 mg/l	TM022		<2 #	8 #	7.5 #			
BOD, unfiltered	<1 mg/l	TM045		1.43 #	1.15 #	1.11 #			
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.122	0.496	0.156			
COD, unfiltered	<7 mg/l	TM107		<7 #	11.6 #	9.54 #			
Sulphate	<3 mg/l	TM184		53.7 #	60.9 #	62 #			
Chloride	<2 mg/l	TM184		37 #	37.5 #	37.6 #			
Nitrate as NO3	<0.3 mg/l	TM184		25.2 #	30.5 #	30.7 #			
Phosphorus (tot.unfilt)	<20 µg/l	TM191		<20 #	99.1 #	195 #			
TPH / Oil & Greases	<1 mg/l	TM235		<1 #	<1 #	<1 #			
Apparent Colour	<1 mg/l Pt/Co	TM261		<1	7	6.3			
True Colour	<1 mg/l Pt/Co	TM261		<1	4.32	3.65			

CERTIFICATE OF ANALYSIS

SDG:	101126-59	**Location:**	Milverton	**Order Number:**	
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	106949
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10-7

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM021	Method 2540C, AWWA/APHA, 20th Ed., 1999	Determination of total dissolved solids in waters by gravimetry.		
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters		
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS		
TM235	The Determination of Hydrocarbon Oils in Waters by Solvent Extraction, Infra red Absorption and Gravimetry 1983, HMSO, London	Determination of Total Petroleum Hydrocarbons (TPH) in Waters By Infra-Red Spectroscopy		
TM261	Colour and Turbidity of Waters, Methods for the Examination of Waters and Associated Materials, HMSO, 1981, ISBN 0 11 7519553.	Determination of True and Apparent Colour by Spectrophotometry		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	101126-59	**Location:**	Milverton	**Order Number:**	
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	106949
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	2484902	2484917	2484924
Customer Sample Ref.	D1	SW1	SW2
AGS Ref.			
Depth			
Type	LIQUID	LIQUID	LIQUID
Ammonium Low	07-Dec-2010	29-Nov-2010	07-Dec-2010
Anions by Kone (w)	29-Nov-2010	29-Nov-2010	29-Nov-2010
BOD True Total	02-Dec-2010	02-Dec-2010	02-Dec-2010
COD Unfiltered	27-Nov-2010	27-Nov-2010	27-Nov-2010
Colour Test	03-Dec-2010	03-Dec-2010	03-Dec-2010
Total Dissolved Solids (Grav)	01-Dec-2010	01-Dec-2010	01-Dec-2010
Total Metals by ICP-MS	29-Nov-2010	29-Nov-2010	29-Nov-2010
Total Suspended Solids	29-Nov-2010	29-Nov-2010	29-Nov-2010
TPH by IR Oils and Greases	07-Dec-2010	07-Dec-2010	07-Dec-2010

SDG:	101126-59	**Location:**	Milverton	**Order Number:**	
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	106949
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

12. Results relate only to the items tested

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not
accredited.

19. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

20. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

23. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials -whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute themajor part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

24. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C4 -C10 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DCM	SOXTHERM	IATROSCAN
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE/ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE/ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE/ACETONE	END OVER END	GC-FID
PCB TOT / PCB CON	D&C	HEXANE/ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE/ACETONE	MICROWAVE TM218.	GC-MS
C8-C40 (C8-C40) EZ FLASH	WET	HEXANE/ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RARD GC	WET	HEXANE/ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM/ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH-MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC-MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC-MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC-MS
PHENOLS-MS	DCM	SOLID PHASE EXTRACTION	GC-MS
TPH by INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -
Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in MDHS 100.

The identification of asbestos containing materials falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Received 9/5/11.

Comhairle Contae Fhine Gall Fingal County Council

Environment Business and Enterprise Department
Fingal County Council
County Hall
Main Street
Swords
Co Dublin

Tel No 8905961

Fax No 8905758

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P.O. Box 174,
County Hall,
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An Roinn Seirbhísí Comshaoil
Bosca 174,
Áras an Chontae,
Sord,
Fine Gall,
Contae Átha Cliath

Telephone
01 890 6280
Facsimile
01 890 6243
Email
envserv@ fingalcoco.ie
www.fingalcoco.ie

Roadstone Wood Ltd
Fortunestown
Tallaght
Dublin 24

4th May 2011

Ref No. in Register WPW/F/074

Enclosed please find Licence permit Ref No WPW/F/074. If you have any queries please contact Jim Kavanagh at 8905963 or email jim.kavanagh@fingalcoco.ie

Yours faithfully

JIM KAVANAGH
Pollution Officer

Enc

COMHAIRLE CONTAE FHINE GALL

FINGAL COUNTY COUNCIL

LICENCE TO DISCHARGE TRADE EFFLUENT TO WATERS

To: Roadstone Wood Ltd.,
Fortunestown,
Tallaght,
Dublin 24.

Ref. Number in Register: **WPW/F/074**

Fingal County Council (hereinafter referred to as "the Council") in exercise of the powers conferred on it by the Local Government (Water Pollution) Acts 1977 and 1990, hereby grants a Licence, Reference Number WPW/F/074 to Roadstone Wood Ltd., (hereinafter referred to as "Licensee") to discharge trade effluent to waters from their premises at Milverton Quarry, Milverton, Skerries, Co. Dublin subject to the following conditions:-

1. The temperature of the treated effluent shall not exceed **25 degrees Centigrade**, or **ambient temperature** if it exceeds **25 degrees Centigrade.**

2. The **pH** of the treated effluent shall lie in the range **6.0 to 9.0.**

3. Over any 24 hour period, the mean concentration of **biochemical oxygen demand (B.O.D.)** in the effluent shall not exceed **10** mg/litre 0_2 and the maximum concentration of **B.O.D.** shall not exceed **15** mg/litre 0_2. The total quantity of biochemical oxygen demand discharged in this period shall not exceed 12.96 **Kgs.**

4. Over any 24 hour period, the mean concentration of **chemical oxygen demand (C.O.D.)** in the effluent shall not exceed **35** mg/litre and the maximum concentration of **C.O.D.** shall not exceed **50** mg/litre. The total quantity of chemical oxygen demand discharged in this period shall not exceed **45.36 Kgs.**

5. Over any 24 hour period, the mean concentration of suspended solids in the effluent shall not exceed **20** mg/litre and the maximum concentration of **suspended solids** shall not exceed **30** mg/litre. The total quantity of suspended solids discharged in this period shall not exceed **25.92 Kgs.**

6. The concentration of **Ammonium (as N)** in the effluent shall not exceed **1 mg/l as N.**
   The total quantity of Ammonium discharged per day shall not exceed **1.30 Kg as N.**

7. The concentration of **Nitrate** in the effluent shall not exceed **10 mg/l as N.** The total quantity of Nitrate discharged per day shall not exceed **12.96 Kg as N.**

8. The concentration of **Phosphates (as PO_4-P)** in the effluent shall not exceed **1 mg/l as P.**
   The total quantity of **Phosphates** discharged per day shall not exceed **1.3 Kg as P.**

9. The concentration of **Total Petroleum Hydrocarbons (TPH's)** in the effluent shall not exceed **5 mg/l.**
The total quantity of **TPH** discharged per day shall not exceed **6.48 Kg.**

10. Over any 24 period, the maximum volume of effluent discharged shall not exceed **1,296 cubic metres.**

11. Other wastewaters (including firewater, accidental spillages etc.) arising on the site shall not be discharged to waters without prior authorisation of Fingal County Council.

12. The effluent discharged shall be of the same nature and composition as described and conditioned in this licence. The effluent shall contain no other substances in such a concentration, nor to be discharged in such a manner as to be harmful or detrimental to public health or to domestic, commercial, industrial agricultural or recreational uses of the receiving waters.

13. All storage tanks for fuel and or chemicals shall be surrounded by a bund capable of retaining 110% of the volume of the largest single tank within the bunded area. The intake and outlet for the tanks shall be positioned inside the bund. Provision shall be made to remove and dispose of the rainwater so as to ensure the specified volume is always available within the bund. The bund shall be constructed and maintained by the Licensee to specifications agreed with Fingal County Council.

14. The Licensee shall keep records, in such form as required, of volume, rate of discharge, nature and composition of the trade effluent discharged and these shall be available at all reasonable times for inspection by duly authorised persons as defined in Section 28(9) of the Local Government (Water Pollution) Acts 1977 & 1990. Copies of such records shall be sent to the Council on demand.

15. A record or log-book of cleaning, maintenance and performance of each settling tank shall be kept and made available for inspection at all times by duly authorised persons as defined in Section 28(9) of the Local Government (Water Pollution) Acts 1977 & 1990.

16. The Licensee shall display in a prominent position a notice to the effect that in the event of an accidental discharge, spillage or deposit of any polluting matter which enters or is likely to enter any waters or a sewer, the person responsible shall notify the Council as soon as practicable after the occurrence and the and that failure to do so is an offence under Section 14, Local Government (Water Pollution) Acts 1977 & 1990.

17. A fee of €205.00 per sample collected by the Fingal County Council representative for compliance monitoring is payable to Fingal County Council, this charge covers the cost of sample collection and chemical analysis and is payable on demand.

The Licensee shall monitor the discharge of treated effluent to ensure compliance with the conditions of this licence. Representative samples of the **treated final effluent and the upstream and downstream receiving waters** shall be taken by the Licensee and tested for the chemical and physical characteristics conditioned in this licence using standard methods. The frequency of sampling shall be as necessary but shall not be less than **12 times per year (monthly).**

The costs of all such tests shall be borne by the Licensee.

18. The applicant shall permit authorised persons as defined in Section 28(9) of the Local Government (Water Pollution) Acts 1977 & 1990 as Amended, to inspect, examine and test, at all reasonable times, any works and apparatus installed in connection with the trade effluent and to take samples of the trade effluent.

19. The Licensee shall submit monitoring results to Fingal County Council on a quarterly basis.

20. Failure to comply with any of these conditions will result in prosecution under section 16(9) of the Local Government (Water Pollution) Acts 1977 & 1990. A conviction could result in substantial fines (up to €5,000) and/or imprisonment.

21. The Licensee shall notify Fingal County Council on receipt of the EPA Waste Management Act licence. This licence issued under the Water Pollution Act will then be revoked by Fingal County Council.

Authorised Officer

Dated this 29th day of April 2011

Environmental Protection Agency

Estimation of Flow Duration Curve for Ungauged Catchment

River Name	(08_483)
XY Location	324877,259573 (ING)

River Segment Map

Disclaimer
The source hydrometric data used to estimate the flow duration curve ordinates for ungauged catchments was obtained from (1) water level data and (2) the rating curve(s) generated for each hydrometric station. The Environmental Protection Agency and the Office of Public Works used these data, respectively, to calculate daily mean flows. The daily mean flows were then used by the Environmental Protection Agency to prepare flow duration curves for each station. Neither body accepts any liability for the subsequent handling of the data.

Disclaimer

The source of hydrometric data used to estimate the flow duration curve ordinates for ungauged catchments was obtained from (1) water level data and (2) the rating curve(s) generated for each hydrometric station. The Environmental Protection Agency and the Office of Public Works used these data, respectively, to calculate daily mean flows. The daily mean flows were then used by the Environmental Protection Agency to prepare flow duration curves for each station. Neither body accepts any liability for the subsequent handling of the data.

The user should familiarise himself/herself with the catchment being studied and confirm that the ungauged site is in a natural catchment where flows conditions are suitable for the use of the model.

It is strongly recommended that the user examine the catchment descriptors contained in the report produced and confirm that the percentages of the various constituent elements are comparable to a natural catchment.

If the flow in a catchment is not entirely natural, the estimation of flows using the model in these catchments could be affected due to:

- existence of local conduit karst within the catchment;
- the selected location itself is on local conduit karst;
- regulation of the river flow on the river channel (e.g. power station, sluice gates etc)
- impacts of abstractions upstream of the selected location or the impact of the discharge associated with the abstraction into the same/different catchment;
- estimates of flow being sought at locations effected by storage effects at, or near, lake outfalls;
- lack of similar catchments with observed flows, ie where catchment descriptors lie outside the range of available gauging station catchments (e.g. the catchment area is under 5 km²);
- any other special circumstances that may affect river flows.

Expert judgement will be required to ensure that the estimate of flow is not unduly affected by any of these influences.

Please note that the model does not provide estimates of flood peaks and, specifically, should not be used for that purpose.

The EPA has also prepared estimates of DWF and long term 95 percentile flows which are also presented on the EPA web site. These data are presented at http://www.epa.ie/whatwedo/monitoring/water/hydrometrics/data/

The data produced by the model for specific stations should be compared to the data contained in this file of DWF and long term 95percentile flows.

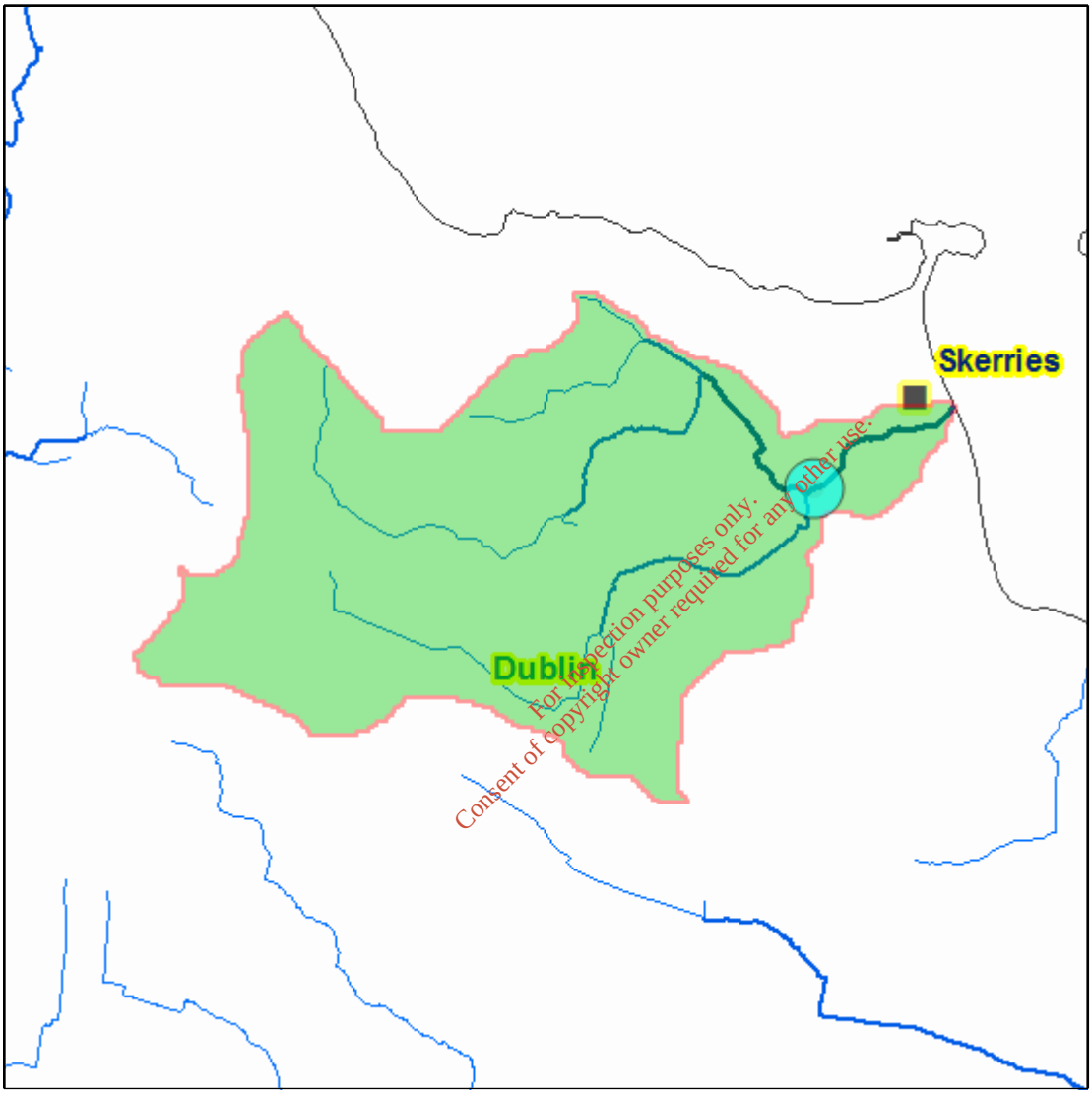
Disclaimer
The source hydrometric data used to estimate the flow duration curve ordinates for ungauged catchments was obtained from (1) water level data and (2) the rating curve(s) generated for each hydrometric station. The Environmental Protection Agency and the Office of Public Works used these data, respectively, to calculate daily mean flows. The daily mean flows were then used by the Environmental Protection Agency to prepare flow duration curves for each station. Neither body accepts any liability for the subsequent handling of the data.

Environmental Protection Agency

Estimation of Flow Duration Curve for Ungauged Catchment

River Name	(08_483)
XY Location	324877,259573 (ING)

Nested Catchment Map

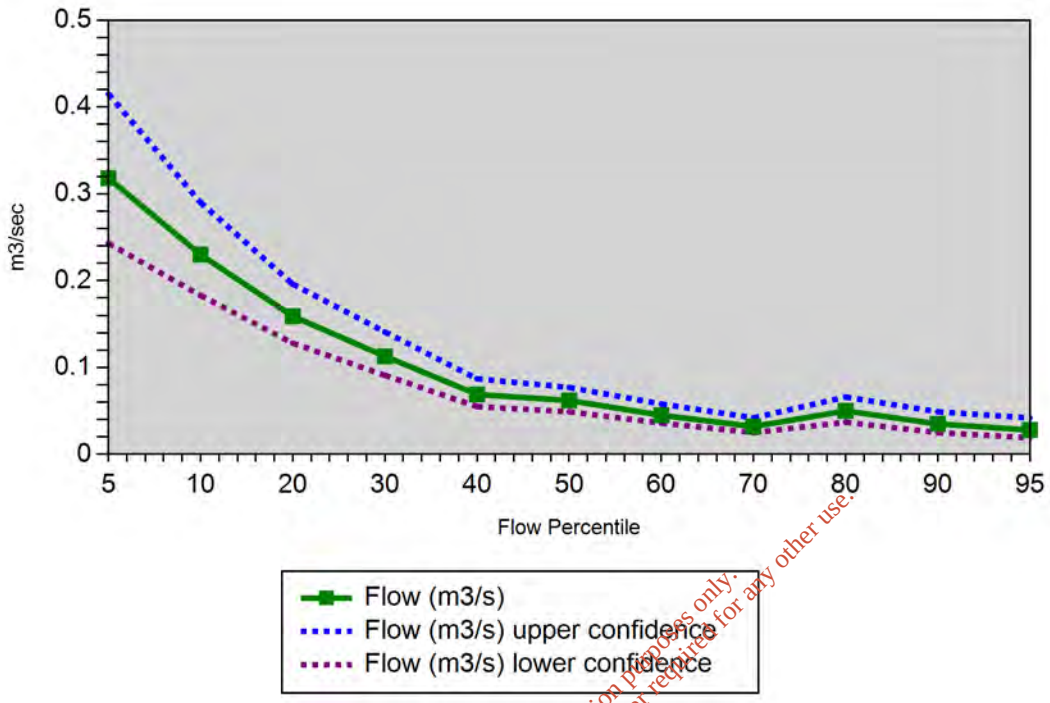


Disclaimer
The source hydrometric data used to estimate the flow duration curve ordinates for ungauged catchments was obtained from (1) water level data and (2) the rating curve(s) generated for each hydrometric station. The Environmental Protection Agency and the Office of Public Works used these data, respectively, to calculate daily mean flows. The daily mean flows were then used by the Environmental Protection Agency to prepare flow duration curves for each station. Neither body accepts any liability for the subsequent handling of the data.

Environmental Protection Agency

Estimation of Flow Duration Curve for Ungauged Catchment

Flow Duration Curve (Flow in m3/sec)



%ile	flow(m3/sec)	upper 95% confidence limit m3/sec	lower 95% confidence limit m3/sec
5	0.318	0.415	0.243
10	0.23	0.29	0.183
20	0.159	0.196	0.128
30	0.113	0.141	0.091
40	0.069	0.087	0.055
50	0.062	0.077	0.049
60	0.045	0.058	0.036
70	0.032	0.042	0.025
80	0.05	0.066	0.037
90	0.035	0.049	0.025
95	0.028	0.042	0.019

Environmental Protection Agency

Estimation of Flow Duration Curve for Ungauged Catchment

Catchment Descriptors		
General		
Descriptor	**Unit**	**Value**
Area	sq km	8.2
Average Annual Rainfall (61-90)	mm/yr	700
Stream Length	km	13.9
Drainage Density	Channel length (km)/catchment area (sqkm)	1.7
Slope	Percent Slope	3.6
FARL	Index (range 0:1)	1

Soil	
Code	**% of Catchment**
Poorly Drained	22.9
Well Drained	67.2
Alluvmin	4.9
Peat	0
Water	0
Made	5

Disclaimer
The source hydrometric data used to estimate the flow duration curve ordinates for ungauged catchments was obtained from (1) water level data and (2) the rating curve(s) generated for each hydrometric station. The Environmental Protection Agency and the Office of Public Works used these data, respectively, to calculate daily mean flows. The daily mean flows were then used by the Environmental Protection Agency to prepare flow duration curves for each station. Neither body accepts any liability for the subsequent handling of the data.

Environmental Protection Agency

Estimation of Flow Duration Curve for Ungauged Catchment

Subsoil Permeability		
Code	**Explanation**	**% of Catchment**
H	High	9.3
M	Moderate	0
L	Low	69
ML	Moderate/Low	0
NA	No Subsoil/Bare Rock	21.6

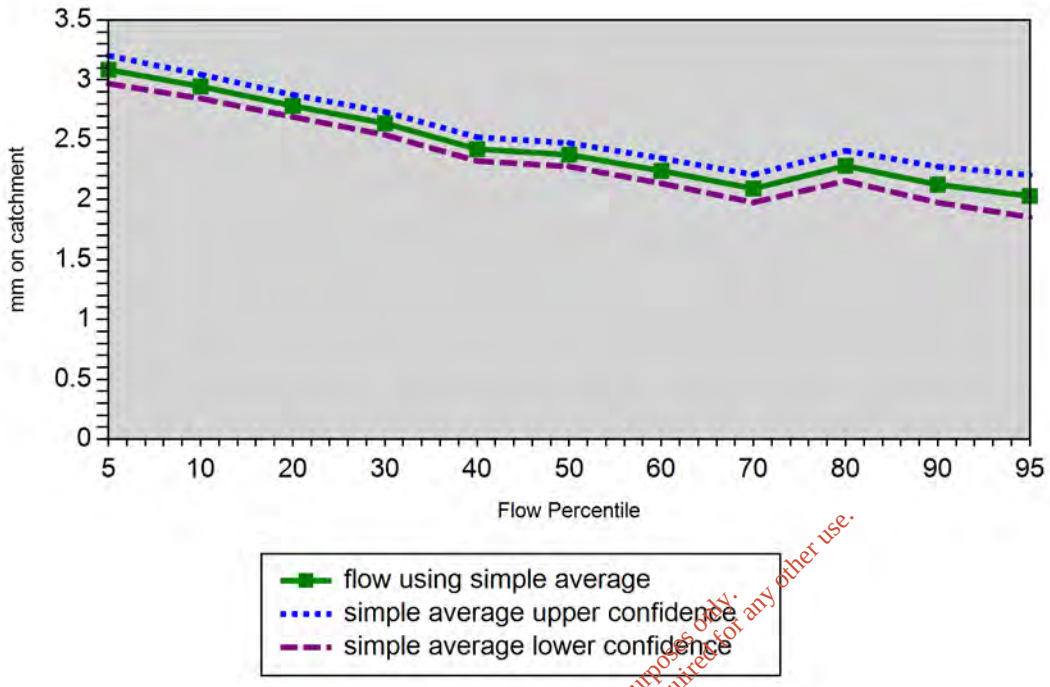
Aquifer		
Code	**Explanation**	**% of Catchment**
LG_RG	LG:Locally important sand-gravel aquifer RG: Regionally important sand-gravel aquifer	0
LL	Locally important aquifer which is moderately productive only in local zones	0.8
LM_RF	LM: Locally important aquifer which is generally moderately productive RF: Regionally important fissured bedrock aquifer	17.9
PU_PL	PU: Poor aquifer which is generally unproductive PL: Poor aquifer which is generally unproductive except for local zones	42.6
RKC_RK	Regionally important karstified aquifer dominated by conduit flow	0
RKD_LK	Regionally important karstified aquifer dominated by diffuse flow	38.7

Stations in Pooling group			
%ile Flow	**Station 1**	**Station 2**	**Station 3**
5	08011	10022	14014
10	08011	14014	10022
20	08011	14014	10022
30	08011	14014	10022
40	08011	09037	08012
50	10022	11001	08011
60	10022	11001	08011
70	10022	11001	08011
80	09027	13001	25001
90	09027	13001	25001
95	09027	13001	25001

Estimation of Flow Duration Curve for Ungauged Catchment

Environmental Protection Agency

Flow Duration Curve (mm on catchment)



Log Flow (mm on catchment)			
%ile	mm	upper 95% confidence limit	lower 95% confidence limit
5	3.086	3.203	2.969
10	2.946	3.046	2.846
20	2.784	2.876	2.692
30	2.638	2.734	2.542
40	2.423	2.522	2.324
50	2.375	2.473	2.277
60	2.241	2.346	2.136
70	2.093	2.209	1.977
80	2.283	2.409	2.157
90	2.126	2.276	1.976
95	2.03	2.206	1.854

ALcontrol Laboratories

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Tel : (0035) 3188 29893

SLR Consulting Ireland
CSA House
Unit 7
Dundrum Business Park
Windy Harbour
Dublin
Dublin14

Attention: Peter Glanville

CERTIFICATE OF ANALYSIS

Date:	07 December 2010
Customer:	D_SLRCON_DUB
Sample Delivery Group (SDG):	101126-59
Your Reference:	501.0180.00018
Location:	Milverton
Report No:	106949

We received 3 samples on Friday November 26, 2010 and 3 of these samples were scheduled for analysis which was completed on Tuesday December 07, 2010. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

Iain Swinton

Business Director - Land, UK & Ireland

UKAS TESTING
1291

CERTIFICATE OF ANALYSIS

SDG:	101126-59	**Location:**	Milverton	**Order Number:**	
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	106949
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
2484902	D1			26/11/2010
2484917	SW1			26/11/2010
2484924	SW2			26/11/2010

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	101126-59	**Location:**	Milverton	**Order Number:**	
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	106949
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

Test Schedule

LIQUID

Results Legend

X — Test

N — No Determination Possible

Lab Sample No(s)			2484902	2484917	2484924
Customer Sample Reference			D1	SW1	SW2
AGS Reference					
Depth (m)					
Container			1l glass bottle (D) / H2SO4 (Dublin) / PLAS BOT (D)	1l glass bottle (D) / H2SO4 (Dublin) / PLAS BOT (D)	1l glass bottle (D) / H2SO4 (Dublin) / PLAS BOT (D)
Ammonium Low	All	NDPs: 0 Tests: 3		X	X	X
Anions by Kone (w)	All	NDPs: 0 Tests: 3		X	X	X
BOD True Total	All	NDPs: 0 Tests: 3		X	X	X
COD Unfiltered	All	NDPs: 0 Tests: 3		X	X	X
Colour Test	All	NDPs: 0 Tests: 3		X	X	X
Total Dissolved Solids (Grav)	All	NDPs: 0 Tests: 3		X	X	X
Total Metals by ICP-MS	All	NDPs: 0 Tests: 3		X	X	X
Total Suspended Solids	All	NDPs: 0 Tests: 3		X	X	X
TPH by IR Oils and Greases	All	NDPs: 0 Tests: 3	X	X	X	

CERTIFICATE OF ANALYSIS

SDG:	101126-59	**Location:**	Milverton	**Order Number:**	
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	106949
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	D1	SW1	SW2			
			Depth (m)	.	.	.			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	26/11/2010	26/11/2010	26/11/2010			
			Date Received	26/11/2010	26/11/2010	26/11/2010			
			SDG Ref	101126-59	101126-59	101126-59			
			Lab Sample No.(s)	2484902	2484917	2484924			
			AGS Reference						
Dissolved solids, Total (gravimetric)	<40 mg/l	TM021		338 #	463 #	453 #			
Suspended solids, Total	<2 mg/l	TM022		<2 #	8 #	7.5 #			
BOD, unfiltered	<1 mg/l	TM045		1.43 #	1.15 #	1.11 #			
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.122	0.496	0.156			
COD, unfiltered	<7 mg/l	TM107		<7 #	11.6 #	9.54 #			
Sulphate	<3 mg/l	TM184		53.7 #	60.9 #	62 #			
Chloride	<2 mg/l	TM184		37 #	37.5 #	37.6 #			
Nitrate as NO3	<0.3 mg/l	TM184		25.2 #	30.5 #	30.7 #			
Phosphorus (tot.unfilt)	<20 µg/l	TM191		<20 #	99.1 #	195 #			
TPH / Oil & Greases	<1 mg/l	TM235		<1 #	<1 #	<1 #			
Apparent Colour	<1 mg/l Pt/Co	TM261		<1	7	6.3			
True Colour	<1 mg/l Pt/Co	TM261		<1	4.32	3.65			

CERTIFICATE OF ANALYSIS

SDG:	101126-59	**Location:**	Milverton	**Order Number:**	
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	106949
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10-7

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM021	Method 2540C, AWWA/APHA, 20th Ed., 1999	Determination of total dissolved solids in waters by gravimetry.		
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters		
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS		
TM235	The Determination of Hydrocarbon Oils in Waters by Solvent Extraction, Infra red Absorption and Gravimetry 1983, HMSO, London	Determination of Total Petroleum Hydrocarbons (TPH) in Waters By Infra-Red Spectroscopy		
TM261	Colour and Turbidity of Waters, Methods for the Examination of Waters and Associated Materials, HMSO, 1981, ISBN 0 11 7519553.	Determination of True and Apparent Colour by Spectrophotometry		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	101126-59	**Location:**	Milverton	**Order Number:**	
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	106949
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	2484902	2484917	2484924
Customer Sample Ref.	D1	SW1	SW2
AGS Ref.			
Depth			
Type	LIQUID	LIQUID	LIQUID
Ammonium Low	07-Dec-2010	29-Nov-2010	07-Dec-2010
Anions by Kone (w)	29-Nov-2010	29-Nov-2010	29-Nov-2010
BOD True Total	02-Dec-2010	02-Dec-2010	02-Dec-2010
COD Unfiltered	27-Nov-2010	27-Nov-2010	27-Nov-2010
Colour Test	03-Dec-2010	03-Dec-2010	03-Dec-2010
Total Dissolved Solids (Grav)	01-Dec-2010	01-Dec-2010	01-Dec-2010
Total Metals by ICP-MS	29-Nov-2010	29-Nov-2010	29-Nov-2010
Total Suspended Solids	29-Nov-2010	29-Nov-2010	29-Nov-2010
TPH by IR Oils and Greases	07-Dec-2010	07-Dec-2010	07-Dec-2010

SDG:	101126-59	**Location:**	Milverton	**Order Number:**	
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	106949
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

12. Results relate only to the items tested

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not
accredited.

19. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

20. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

23. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials -whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute themajor part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

24. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C4 -C10 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DCM	SOXTHERM	IATROSCAN
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE/ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE/ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE/ACETONE	END OVER END	GC-FID
PCB TOT / PCB CON	D&C	HEXANE/ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE/ACETONE	MICROWAVE TM218.	GC-MS
C8-C40 (C8-C40) EZ FLASH	WET	HEXANE/ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RARD GC	WET	HEXANE/ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM/ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH-MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC-MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC-MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC-MS
PHENOLS-MS	DCM	SOLID PHASE EXTRACTION	GC-MS
TPH by INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -
Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in MDHS 100.

The identification of asbestos containing materials falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

ALcontrol Laboratories

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SLR Consulting Ireland
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Windy Harbour
Dublin
Dublin14

Attention: Peter Glanville

CERTIFICATE OF ANALYSIS

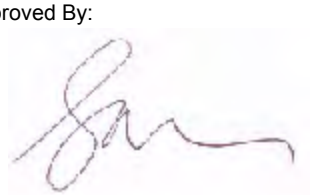
Date:	05 June 2014
Customer:	D_SLRCON_DUB
Sample Delivery Group (SDG):	140529-21
Your Reference:	501.0180.00018
Location:	Milverton
Report No:	272471

We received 5 samples on Wednesday May 28, 2014 and 5 of these samples were scheduled for analysis which was completed on Thursday June 05, 2014. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:



Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	140529-21	**Location:**	Milverton	**Order Number:**	2382
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	272471
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
9355274	BH01		0.00 - 0.00	28/05/2014
9355275	BH03		0.00 - 0.00	28/05/2014
9355277	SW01		0.00 - 0.00	28/05/2014
9355278	SW02		0.00 - 0.00	28/05/2014
9355279	SW03		0.00 - 0.00	28/05/2014

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	140529-21	**Location:**	Milverton	**Order Number:**	2382
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	272471
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

LIQUID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)	9355274	9355275	9355277	9355278	9355279
Customer Sample Reference	BH01	BH03	SW01	SW02	SW03
AGS Reference					
Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00

Container	1plastic (ALE221)	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	1plastic (ALE221)	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	1l Glass bottle (ALE	1plastic (ALE221)	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	Vial (ALE297)	1l Glass bottle (ALE	1plastic (ALE221)	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	Vial (ALE297)	1l Glass bottle (ALE	1plastic (ALE221)	H2SO4 (ALE244)	HNO3 Filtered (ALE	NaOH (ALE245)	Vial (ALE297)
Alkalinity as CaCO3	All	NDPs: 0 Tests: 5	X				X				X					X						X				
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 5		X				X				X					X						X			
Anions by Kone (w)	All	NDPs: 0 Tests: 5	X				X				X					X						X				
BOD True Total	All	NDPs: 0 Tests: 3									X					X						X				
COD Unfiltered	All	NDPs: 0 Tests: 3									X					X						X				
Colour Test	All	NDPs: 0 Tests: 3									X					X						X				
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 5		X				X				X					X						X			
EPH (DRO) (C10-C40) Aqueous (W)	All	NDPs: 0 Tests: 3								X						X						X				
GRO by GC-FID (W)	All	NDPs: 0 Tests: 3												X						X						X
Metals by iCap-OES Dissolved (W)	All	NDPs: 0 Tests: 5		X				X				X					X						X			
Metals by iCap-OES Unfiltered (W)	All	NDPs: 0 Tests: 5	X				X				X					X						X				
Mineral Oil C10-40 Aqueous (W)	All	NDPs: 0 Tests: 3								X						X						X				
Nitrite by Kone (w)	All	NDPs: 0 Tests: 5			X			X				X					X						X			
Sulphide	All	NDPs: 0 Tests: 5	X				X				X					X						X				
Suspended Solids	All	NDPs: 0 Tests: 3									X					X						X				

CERTIFICATE OF ANALYSIS

SDG:	140529-21	**Location:**	Milverton	**Order Number:**	2382
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	272471
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

LIQUID

Results Legend

X **Test**

N **No Determination Possible**

Lab Sample No(s)			9355274	9355275	9355277	9355278	9355279
Customer Sample Reference			BH01	BH03	SW01	SW02	SW03
AGS Reference							
Depth (m)			0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Container			1plastic (ALE221)	1plastic (ALE221)	1l Glass bottle (ALE	1l Glass bottle (ALE	1l Glass bottle (ALE
			H2SO4 (ALE244)	H2SO4 (ALE244)	1plastic (ALE221)	1plastic (ALE221)	1plastic (ALE221)
			HNO3 Filtered (ALE	HNO3 Filtered (ALE	H2SO4 (ALE244)	H2SO4 (ALE244)	H2SO4 (ALE244)
			NaOH (ALE245)	NaOH (ALE245)	HNO3 Filtered (ALE	HNO3 Filtered (ALE	HNO3 Filtered (ALE
			1plastic (ALE221)	H2SO4 (ALE244)	NaOH (ALE245)	NaOH (ALE297)	NaOH (ALE245)
			H2SO4 (ALE244)	HNO3 Filtered (ALE	Vial (ALE297)	Vial (ALE297)	Vial (ALE297)
			HNO3 Filtered (ALE	NaOH (ALE245)	1plastic (ALE221)	HNO3 Filtered (ALE	
			NaOH (ALE245)	1l Glass bottle (ALE	H2SO4 (ALE244)	NaOH (ALE297)	
			1l Glass bottle (ALE	1plastic (ALE221)	HNO3 Filtered (ALE	Vial (ALE297)	
			1plastic (ALE221)	H2SO4 (ALE244)	NaOH (ALE245)	1l Glass bottle (ALE	
			H2SO4 (ALE244)	HNO3 Filtered (ALE	Vial (ALE297)	1plastic (ALE221)	
			HNO3 Filtered (ALE	NaOH (ALE245)	1l Glass bottle (ALE	H2SO4 (ALE244)	
			NaOH (ALE245)	Vial (ALE297)	1plastic (ALE221)	HNO3 Filtered (ALE	
			Vial (ALE297)	1l Glass bottle (ALE	H2SO4 (ALE244)	NaOH (ALE245)	
			1l Glass bottle (ALE	1plastic (ALE221)	HNO3 Filtered (ALE	Vial (ALE297)	
			1plastic (ALE221)	H2SO4 (ALE244)	NaOH (ALE297)		
			H2SO4 (ALE244)	HNO3 Filtered (ALE	1l Glass bottle (ALE		
			HNO3 Filtered (ALE	NaOH (ALE245)	1plastic (ALE221)		
			NaOH (ALE245)	Vial (ALE297)	H2SO4 (ALE244)		
			Vial (ALE297)	1l Glass bottle (ALE	HNO3 Filtered (ALE		
			1l Glass bottle (ALE	1plastic (ALE221)	NaOH (ALE245)		
			1plastic (ALE221)	H2SO4 (ALE244)	Vial (ALE297)		
			H2SO4 (ALE244)	HNO3 Filtered (ALE			
			HNO3 Filtered (ALE	NaOH (ALE245)			
			NaOH (ALE245)	Vial (ALE297)			
			Vial (ALE297)				
Total Dissolved Solids	All	NDPs: 0 Tests: 3		X		X	X
Total Metals by ICP-MS	All	NDPs: 0 Tests: 3		X		X	X
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 5	X	X	X	X	X

CERTIFICATE OF ANALYSIS

SDG:	140529-21	**Location:**	Milverton	**Order Number:**	2382
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	272471
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH01	BH03	SW01	SW02	SW03
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	28/05/2014	28/05/2014	28/05/2014	28/05/2014	28/05/2014
			Sample Time	.	.	.	.	.
			Date Received	28/05/2014	28/05/2014	28/05/2014	28/05/2014	28/05/2014
			SDG Ref	140529-21	140529-21	140529-21	140529-21	140529-21
			Lab Sample No.(s)	9355274	9355275	9355277	9355278	9355279
			AGS Reference					
Suspended solids, Total	<2 mg/l	TM022				9 #	6 #	2 #
Alkalinity, Total as CaCO3	<2 mg/l	TM043		640 #	230 #	295 #	380 #	160 #
BOD, unfiltered	<1 mg/l	TM045				<1 #	<1 #	2.19 #
Organic Carbon, Total	<3 mg/l	TM090		<3 #	<3 #	3.81 #	3.95 #	4.1 #
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		<0.2 #	<0.2 #	<0.2 #	<0.2 #	<0.2 #
Sulphide	<0.01 mg/l	TM101		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
COD, unfiltered	<7 mg/l	TM107				<7 #	<7 #	<7 #
Dissolved solids, Total (meter)	<5 mg/l	TM123				517 #	513 #	357 #
Aluminium (diss.filt)	<2.9 µg/l	TM152		2450 #	1030 #	14.5 #	8.34 #	<2.9 #
Manganese (diss.filt)	<0.04 µg/l	TM152		884 #	1970 #	34 #	17.5 #	84.4 #
EPH Range >C10 - C40 (aq)	<46 µg/l	TM172				<46 #	<46 #	<46 #
Mineral oil >C10 C40 (aq)	<10 µg/l	TM172				<10	<10	<10
Nitrite as NO2	<0.05 mg/l	TM184		<0.05 #	<0.05 #	0.089 #	0.091 #	0.124 #
Sulphate	<2 mg/l	TM184		20.3 #	54.3 #	49.8 #	50.3 #	50 #
Chloride	<2 mg/l	TM184		24.6 #	62.4 #	41.4 #	42.2 #	42.3 #
Phosphate (ortho) as PO4	<0.05 mg/l	TM184		0.078 #	0.051 #	0.214 #	0.209 #	<0.05 #
Nitrate as NO3	<0.3 mg/l	TM184		0.317 #	14.5 #	24.1 #	24.9 #	10.4 #
Phosphorus (tot.unfilt)	<20 µg/l	TM191				127 #	114 #	26.1 #
Calcium (diss.filt)	<0.012 mg/l	TM228		265 #	930 #	138 #	132 #	65.2 #
Sodium (diss.filt)	<0.076 mg/l	TM228		16 #	34.7 #	20.6 #	19.4 #	23.3 #
Magnesium (diss.filt)	<0.036 mg/l	TM228		14.9 #	18.7 #	13.8 #	13 #	12.2 #
Potassium (diss.filt)	<1 mg/l	TM228		2.61 #	8.95 #	1.88 #	2.12 #	6.85 #
Iron (diss.filt)	<0.019 mg/l	TM228		2.21 #	1.77 #	0.0717 #	0.0581 #	<0.019 #
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM228		815	1840	360	318	180
Apparent Colour	<1 mg/l Pt/Co	TM261				14.6	13.9	13.5
True Colour	<1 mg/l Pt/Co	TM261				11.9	11.9	3.93

CERTIFICATE OF ANALYSIS

SDG:	140529-21	**Location:**	Milverton	**Order Number:**	2382
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	272471
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

GRO by GC-FID (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	SW01	SW02	SW03			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	28/05/2014	28/05/2014	28/05/2014			
			Sample Time	.	.	.			
			Date Received	28/05/2014	28/05/2014	28/05/2014			
			SDG Ref	140529-21	140529-21	140529-21			
			Lab Sample No.(s)	9355277	9355278	9355279			
			AGS Reference						
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #			
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #			
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #			
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #			
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #			
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #			
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #			
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11			
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28			

CERTIFICATE OF ANALYSIS

SDG:	140529-21	**Location:**	Milverton	**Order Number:**	2382
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	272471
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters		
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples		
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids		
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser		
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit		
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM172	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	EPH in Waters		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS		
TM228	US EPA Method 6010B	Determination of Major Cations in Water by iCap 6500 Duo ICP-OES		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM261	Colour and Turbidity of Waters, Methods for the Examination of Waters and Associated Materials, HMSO, 1981, ISBN 0 11 7519553.	Determination of True and Apparent Colour by Spectrophotometry		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	140529-21	**Location:**	Milverton	**Order Number:**	2382
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	272471
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	9355274	9355275	9355277	9355278	9355279
Customer Sample Ref.	BH01	BH03	SW01	SW02	SW03
AGS Ref.					
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Alkalinity as CaCO3	01-Jun-2014	30-May-2014	01-Jun-2014	30-May-2014	30-May-2014
Ammoniacal Nitrogen	30-May-2014	30-May-2014	30-May-2014	30-May-2014	30-May-2014
Anions by Kone (w)	30-May-2014	02-Jun-2014	30-May-2014	30-May-2014	30-May-2014
BOD True Total			03-Jun-2014	03-Jun-2014	03-Jun-2014
COD Unfiltered			01-Jun-2014	01-Jun-2014	01-Jun-2014
Colour Test			03-Jun-2014	03-Jun-2014	03-Jun-2014
Dissolved Metals by ICP-MS	04-Jun-2014	05-Jun-2014	04-Jun-2014	04-Jun-2014	03-Jun-2014
EPH (DRO) (C10-C40) Aqueous (W)			05-Jun-2014	05-Jun-2014	05-Jun-2014
GRO by GC-FID (W)			05-Jun-2014	05-Jun-2014	05-Jun-2014
Metals by iCap-OES Dissolved (W)	03-Jun-2014	03-Jun-2014	03-Jun-2014	03-Jun-2014	02-Jun-2014
Metals by iCap-OES Unfiltered (W)	04-Jun-2014	04-Jun-2014	04-Jun-2014	04-Jun-2014	04-Jun-2014
Mineral Oil C10-40 Aqueous (W)			05-Jun-2014	05-Jun-2014	05-Jun-2014
Nitrite by Kone (w)	30-May-2014	30-May-2014	30-May-2014	30-May-2014	30-May-2014
Sulphide	02-Jun-2014	02-Jun-2014	02-Jun-2014	02-Jun-2014	02-Jun-2014
Suspended Solids			30-May-2014	30-May-2014	30-May-2014
Total Dissolved Solids			30-May-2014	30-May-2014	30-May-2014
Total Metals by ICP-MS			04-Jun-2014	04-Jun-2014	04-Jun-2014
Total Organic and Inorganic Carbon	03-Jun-2014	03-Jun-2014	03-Jun-2014	03-Jun-2014	03-Jun-2014

CERTIFICATE OF ANALYSIS

SDG:	140529-21	**Location:**	Milverton	**Order Number:**	2382
Job:	D_SLRCON_DUB-52	**Customer:**	SLR Consulting Ireland	**Report Number:**	272471
Client Reference:	501.0180.00018	**Attention:**	Peter Glanville	**Superseded Report:**	

Appendix
General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
6	Sampled on date not provided
*	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -
Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

WATER SAMPLING PROTOCOL & FIELD RECORD SHEET

(Adapted from the Landfill Manual: Landfill Monitoring, Environmental Protection Agency, 1995)

Sampling Protocol For: Groundwater, Surface Water and Leachate.	
Compiled By: Peter Glanville (SLR Consulting)	
Protocol No. 01	Version: 0
Issue date: 11th February 2011	Supersedes Version – 0 (Jan. 2003)
Reasons for update – SLR Ireland	

1 Background (to be completed)

Sampling: Surface Water Purpose of sample: Groundwater Sampling	
Location: Milverton Quarry, Skerries, North Co. Dublin.	Date: 28/05/2014
Client: Roadstone Ltd.	Protocol form completed by: PG (SLR)
Sampling Regime: GW and SW monitoring for EIS update	
Persons on site: (Client/Engineers/Contractors/Sub Consultants/ Others) Peter Glanville (SLR)	
Weather Conditions: Dry and very sunny.	

2 Site Responsibilities (to be completed)

Supervision of sampling on Site	
Name: Peter Glanville	Company: SLR Consulting

3 Locations Sampled (to be completed)

No.	Location ID	Date/Time
1	BH01	28/05/2014 12:00
2	BH03	14/04/2014 13:40
3	SW01	28/05/2014 14:05
4	SW02	28/05/2014 14:25
5	SW03	28/05/2014 11:30
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

4 *Materials (to be completed)*

Instrumentation and Equipment: (Equipment used to obtain a valid and representative sample of the medium being investigated, including equipment used to measure field parameters)	
Pump/Bailer: Waterra disposable bailer, individual bailers for both boreholes	
Sample Bailers: Waterra disposable	Dip metre: Electronic Dip meter
Equipment decontamination: New bailer used in each borehole	
Sample containers used (ALcontrol): SW: 1L Glass green, 1L plastic, Vol. Vial, 125 ml Sodium hydroxide, 125 ml Sulphuric Acid, 125 ml Nitric Acid GW: 1L plastic, Vol. Vial, 125 ml Sodium hydroxide, 125 ml Sulphuric Acid, 125 ml Nitric Acid	
Field record sheets: PG Field note book	Chain of custody documentation: PG Laboratory: Alcontrol UK
Ancillary Items: (maps/drawings/stationary/PPE etc.) • PPE; • Sterile gloves; • Site layout map (WL EIS 2009) • Field note book; • Camera; • Waterra Bailers; • GPS (hand held); and • YSI 556 Multiprobe meter.	

5 Methods (to be completed)

Sampling Procedure: (Stepwise procedure for sampling) Follow SLR Standard Operating Procedure (SOP no. 1101) for the monitoring and sampling of groundwaters. (Surface water monitoring completed in accordance with Environment Agency, (2003) Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water. BS 5930:1999. Code of Practice for Site Investigations).
Procedure for labelling of samples: • Site name – Milverton RL • Date – 28/05/2014 • Sample/Location ID - see Section 3 above for Location ID
Sample Storage: (method) Samples delivered to Aramex depot in Ballyboughal for Alcontrol (15:30). Samples stored in cooler boxes with ice packs.
Sample collection and delivery to lab: (time frame) Alcontrol: Delivery to depot in Ballyboughal by PG at 15:30 same day for overnight delivery to Alcontrol UK
Procedure for field parameter measurement: Probes were placed in purged groundwater for readings or in surface water. Probe was left in water for sufficient time to allow parameter readings to stabilise before readings were noted Equipment used for measurement if field parameters: SLR Dublin YSI professional Plus multi-meter

6 Sample Plan (to be completed)

Sample details:

For number and date of samples see Section 3.

Location of surface water samples:

Location ID	GR (ING)	Location ID	GR (ING)
BH01	See site map		
BH03	See site map		
SW01	See site map		
SW02	See site map		
SW03	See site map		

Frequency of sampling:

Once off

Quantity Sample Obtained.

See Sample container volumes in Section 4 above

Sample volume:	
Sample container type and no.:	See Section 4 above.
Sample preservatives used (if any)	See Section 4 above

7 Comments

Notes:

1. The SLR SOP sampling protocol for this round of groundwater sampling was followed where possible.
2. No recharge in the GW wells after bailing. Assumed that recharge will occur through piezo, although recharge will be slow.
3. The purged water started clear and then turned silty (light brown) as water was drawn into the well through the screened section. Sample taken is of groundwater water drawn into the well from the formation.
4. No access to GW02. RL have closed off access to the top bench where this borehole is located for security – to prevent third parties entering the quarry void.

7 *Records (to be completed at end of sampling round)*

QA Records: The following records are required to demonstrate sampling protocol has been adhered to.	
Record of:	**Completed**
Date and time of sampling	✓
Name of sampling personnel	✓
Weather conditions	✓
Amount of sample obtained	✓
Location sample points	✓
Sample preservatives used	✓
Results of field parameters	✓ (see field record sheets)
Compilation of appropriate forms (i.e. site record, sampling sheet, chain of custody form)	✓
Deviations from protocol	✓
Sampling difficulties	✓ (BH02 not sampled)

Groundwater Sampling Field Record Sheet

BH01	**SLR Consulting Ireland, Unit 7, Dundrum Business Park, Windy Arbour, Dublin 14.**	SLR

RECORD OF GROUNDWATER SAMPLING

Site Location: Milverton, Co. Dublin	SLR Job No.: 501.0180.0089
Date/Time:	28th May 2014
Borehole ID. BH01	
Borehole Location: Milverton Quarry	
Staff:	Sub Consultant:
PG (SLR)	None

WELL DETAILS

Elevation of steel casing cover (mOD)	0.99
Groundwater level from top of casing (m)	4.28 m
Depth of well from ground level (m)	22 m
Standpipe diameter (mm)	50mm
Well Volume (l)	108 l

Well Development	Volume removed/purged 60 (l)

WELL PURGING

Purge volume	DO mg/l	pH	pH mV	Temp °C	C µs/cm	DO %	SPC µs/cm
60 l	2.46	7.9	-62.8	11.8	389.6	22.8	520.8

Notes: Purged with Waterra Disposable bailer

Visual inspection: Clear and then very silty brown as ingress through piezo.

Odour: None

Colour: Clear then light brown

Sheen: none

No recharge of purged water. Well purged almost dry and sample taken

Groundwater Sampling Field Record Sheet

BH02	**SLR Consulting Ireland, Unit 7, Dundrum Business Park, Windy Arbour, Dublin 14.**	SLR

RECORD OF GROUNDWATER SAMPLING

Site Location: Milverton, Co. Dublin	SLR Job No.: 501.0180.0089
Date/Time:	28th May 2014
Borehole ID. BH02	
Borehole Location: Milverton Quarry	
Staff:	Sub Consultant:
PG (SLR)	None

WELL DETAILS

Elevation of steel casing cover (mOD)	No details
Groundwater level from top of casing (m)	No details
Depth of well from ground level (m)	No details
Standpipe diameter (mm)	No details
Well Volume (l)	No details

Well Development	

WELL PURGING

Purge volume	DO mg/l	pH	Temp °C	EC µs/cm	DO %

Notes:

No access to well. Not purged or sampled

Groundwater Sampling Field Record Sheet

BH03	**SLR Consulting Ireland, Unit 7, Dundrum Business Park, Windy Arbour, Dublin 14.**	SLR

RECORD OF GROUNDWATER SAMPLING

Site Location: Milverton, Co. Dublin	SLR Job No.: 501.0180.0089
Date/Time:	28th May 2014
Borehole ID. BH03	
Borehole Location: Milverton Quarry	
Staff:	Sub Consultant:
PG (SLR)	None

WELL DETAILS

Elevation of steel casing cover (mOD)	1.078
Groundwater level from top of casing (m)	13.04 m
Depth of well from ground level (m)	23 m
Standpipe diameter (mm)	50mm
Well Volume (l)	63.8 l

Well Development	Volume removed/purged 54 (l)

WELL PURGING

Purge volume	DO mg/l	pH	pH mV	Temp °C	C µs/cm	DO %	SPC µs/cm
54 L	2.29	7.49	-35.3	12.6	715	21.6	937

Notes: Purged with Waterra Disposable bailer

Visual inspection: Clear and then very silty brown as ingress through piezo.

Odour: None

Colour: Clear then light brown

Sheen: none

No recharge of purged water. Well purged almost dry and sample taken