# **Document Amendment Record**

Client: Roadstone Provinces Ltd.

**Project:** Exploratory Site Investigation at Brownswood

Title: Factual Site Investigation Report

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# FACTUAL SITE INVESTIGATION REPORT AT BROWNSWOOD, CO. WEXFORD

June 2008





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Appendix B – Geotech Report (trial hole and borehole logs and sediment analysis)

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# 1 INTRODUCTION

Roadstone Provinces Ltd own and operate a quarry located approximately 3 km to the south of Enniscorthy, in the townland of Brownswood. The site comprises an old disused quarry and a new quarry ('Paul Murphy Quarry'). The site location is shown Figure 1 and a the quarry site is shown in detail in Appendix A.

TOBIN Consulting Engineers were retained by Roadstone Provinces Ltd to address allegations raised in relation to activities involving several locations (marked in Appendix A and photographic plate 1) around the old quarry.

TOBIN Consulting Engineers (Tobin) conducted a preliminary site investigation as detailed in the report 'Factual Report on Reconnaissance Site Investigation' (March 2008) to address allegations raised by a third party involving a number of locations around the 'old quarry' at Brownswood, Enniscorthy, County Wexford. A copy of this report was forwarded to Wexford County Council on 12<sup>th</sup> March 2008.

The main area of concern raised by the allegations is the area on the western side of the old quarry, marked as 'Area A'. The other areas are confined to small patches of ground in the vicinity of the garage, the rock breaker, the primary crusher, the lorry washing facility and the area by the western road side boundary to the front of the quarry.

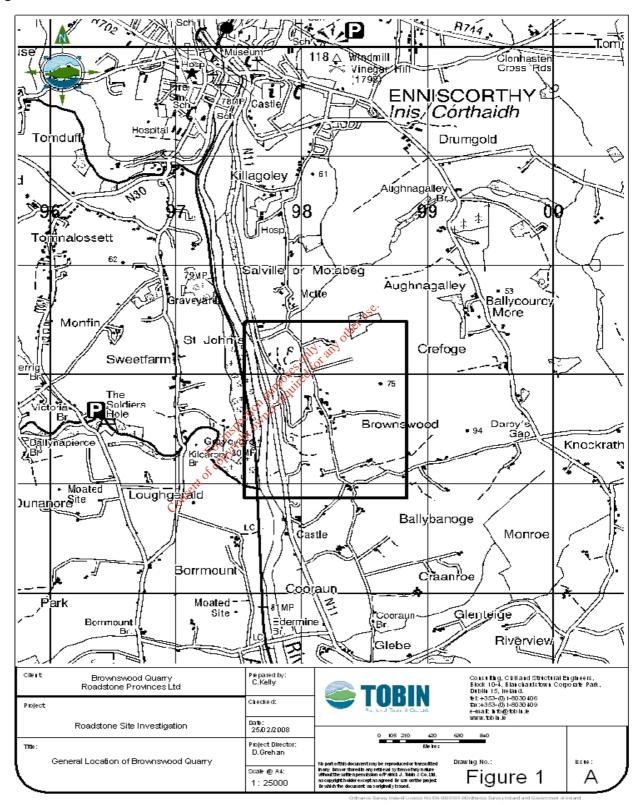
The main findings of the preliminary site investigation were that there was no visible evidence of contamination in the main area of concern (Area A) and that it comprised inert Construction and Demotion Waste (C&D). It was confirmed that elsewhere within the site minor, confined visible staining is located in the vicinity of the garage and the primary crusher. There is no visible contamination at the other sites.

Available historical water quality records for the water in the main sump of the old quarry for a limited set of parameters do not suggest any contamination. Copies of this data was included in the 'Factual Report on Reconnaissance Site Investigation' (March 2008) forwarded to Wexford County Council on 12<sup>th</sup> March 2008.

TOBIN Consulting Engineers (TOBIN) conducted an exploratory site investigation within an area of Roadstone Provinces Ltd. property at Brownswood, Co. Wexford. The site investigation area is located within an area previously quarried and in associated areas in the nearby vicinity. The areas under investigation are within the immediate surrounds of the 'Old Quarry'. Quarrying has not been undertaken within this area within the last 5 years, with previous quarry benches partially restored with soil strippings from within the site. Site investigations were necessitated by Roadstone Provinces Ltd. to determine the validity of accusations regarding the dumping/fly tipping of waste and oil spillages.



**Figure 1 General Site Location** 



# 2 METHODOLOGY

The aims of the exploratory site investigation were to investigate the identified areas using intrusive techniques (trial pits and boreholes) and water sampling. Trial pitting and shell & auger drilling were employed at Area A and trial pitting at all the other sites. The investigation was carried out in accordance with the following documents:

- IGI guidelines "Recommended Collection, Presentation and Interpretation of Geological and Hydrogeological Information for Quarry Developments";
- British Standards 5930 "Code of Practice for Site Investigation";
- British Standards 10175 "Investigation of potentially contaminated sites code of practice"; and,
- Land Quality Press, "Generic Assessment Criteria for Human Health Risk Assessment".

# 3 TOPOGRAPHIC, GEOLOGICAL AND HYDROGEOLOGICAL SETTING

The quarry is located on the western flanks of high ground bordering the eastern side of the Slaney on the eastern side of the river. A tributary of the Slaney flows approximately 250 m to the north of the site. Elevation ranges from approximately 10 m OD to approximately 75 m OD across the area of the site. The natural topographic gradient is approximately 0.1. The old quarry is located approximately 300 m east of the River Slaney.

The bedrock geology comprises the Ordovician Volcanics. The subsoils (Teagasc) are mapped as 'Rck' close to surface. Further east, the subsoil is mapped as Till (Lower Palaeozoic). Alluvium and a thin strip of gravel are mapped between the river and the quarry.

The bedrock aquifer is classified as a Regionally Important Fissured Aquifer (Rf). Groundwater is present within the quarry at approximately (-)22 mOD, which is an artificial level due to continued pumping. It is assumed that the Slaney is, in general the lowest discharge point, and that groundwater flows to the river from higher topographic areas to the east and west of the river. Within the vicinity of the quarry the water level in the sump is assumed to be the lowest discharge point. The regional gradient is assumed to be toward the Slaney and it is expected that there is a localised groundwater divide between the Slaney and the sump in the quarry.

# 4 EXPLORATORY SITE INVESTIGATION UNDERTAKEN

A reconnaissance site investigation was undertaken by Tobin at the site on 22<sup>nd</sup> February (Report 4644/01). A draft report was submitted to Wexford County Council on the 6<sup>th</sup> March 2008 at a meeting and a site walkover with staff from the Environmental Enforcement Section. A final report was issued on 25<sup>th</sup> March 2008 designating clearly the areas requiring investigation. The outcome of the



reconnaissance site investigation was to propose a site investigation in all the areas under allegations, shown in Appendix A. The intrusive site investigations were carried out by Geotech Specialists Limited (Appendix B). The resultant site investigations consisted of the following:

- 1. Ten trial pits with a long reach excavator;
- 2. Six Shell & Auger Boreholes;
- 3. Soil sampling of excavated material;
- 4. Logging of subsoil and photographic record; and,
- 5. Water sampling of the 'old quarry', the 'Paul Murphy quarry' and discharge from the wheel wash.

The site investigation areas are tabulated in Table 1, and shown Appendix A. Trial pitting and drilling of shell and auger boreholes was conducted on a grid basis within Area A. Trial pits were excavated at specific locations in the remaining sites highlighted during the reconnaissance site investigations and walkovers with staff from Roadstone and Wexford County Council.

Area	Location	Elevation	Reason for investigation
Area A	Northern part of old quarry	30mOD of	Alleged waste location
Area B	Garage	30mQD	Alleged oil spillages
Area C	Primary crusher	4mOD	Alleged oil spillages
Area D	Rock breaker	geothern 14mOD	Alleged oil spillages
Area E	Washing area	tight 24mOD	Alleged poor practice
Area F	Waste ground between	6-8mOD	Alleged waste location
	western boundary		
	main car park		

Table 1 Areas of intrusive site investigation

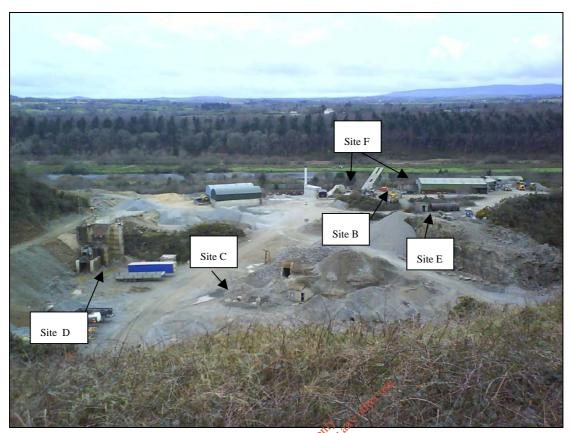


Plate 1. Overview of Areas B-F.

Area A is outside frame to the right hand side.

Photograph taken from road on northern eastern boundary.



# 5 RESULTS FROM EXPLORATORY INVESTIGATIONS

# 5.1 Area A

Material uncovered consisted predominantly of subsoil and broken rock with very occasional inert construction and demolition (C&D) material (<1%), which is concentrated within the uppermost 1-3 m. C&D material included concrete, macadam blacktop, metal and plastic. Material encountered is believed to have originated from the 'Paul Murphy' quarry, comprising 'strippings' (soil, subsoil, weathered and broken rock). Material uncovered is shown below in Plate No. 2. No odour or hydrocarbon staining was encountered within Area A. No domestic waste or tyres was encountered within this area. The logs for the trial pits and the auger holes are presented in Appendix B. The drilling of the shell & auger holes in this type of terrain is recognised as being difficult and several attempts at drilling ended in obstructions, generally within the upper 3 m. Two drill holes were successfully drilled to 10 m and one successful to 23 m. No water table was met in any of the boreholes. Plate 3 and 4 show views into Trial Pit 1 and Trial Pit 2.



Plate 2. Spoil from Trial Pit 1.



Plate 3. View into Trial Pit 1.



Plate 4. View into Trial Pit 2.

# 5.2 Area B

Trial Pit No. 3 was located next to the oil bund as can be seen in Plate 5, 6 and 7. Material uncovered consisted primarily of compacted hardcore, subsoil and broken rock. Odour and hydrocarbon staining was encountered in the uppermost 0.5m. The uppermost material is compacted hardcore, below which comprises broken rock and subsoil. There is no staining or odour from the material deeper in the trial pit. The deeper material recovered can be seen in Plate 7.



Plate 5. View of location of Trial Pit 3 and material recovered.



Plate 6. Another view of Trial Pit 3.



Plate 7. View of material recovered from Trial Pit 3.

# 5.3 Area C

Trial Pit No. 7 was located next to the dismantled primary crushing area, where oil staining was identified from the reconnaissance survey. Material uncovered consisted primarily of compacted hardcore, subsoil and broken rock. Views of the trial pit in Area C are given in Photographs 7, 8, and 9 below. Odour and hydrocarbon staining was encountered in the uppermost 1m. The uppermost material is compacted hardcore, below which comprises broken rock and subsoil. There is no staining or odour from the material deeper in the trial pit.



Plate 7. Trial Pit 7.



Plate 8. View of Trial Pit 7.



Plate 9. View of Trial Pit 7.

# 5.4 Area D

Two trial pits were excavated (Trial Pit No. 5 & 6) next to the dismantled rock breaker, shown in Plate 10. Material uncovered consisted primarily of broken rock. Standing water was present. There is no staining or odour from the excavated material or the trial pit.



Plate 10: Location of Trial Pit 6 next to dismantled rock breaker

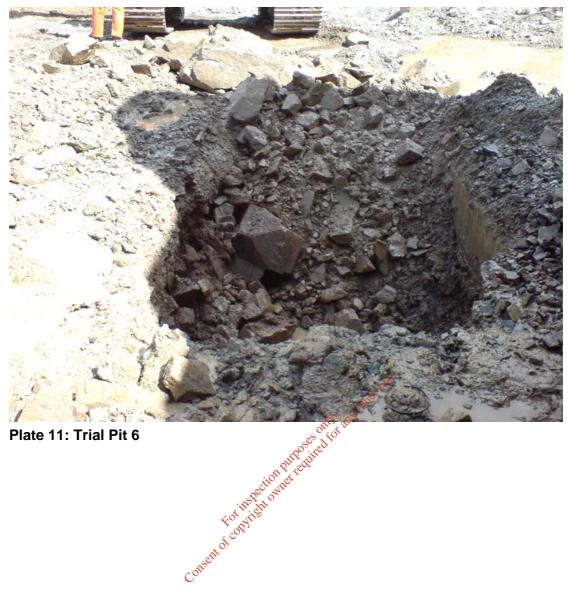


Plate 11: Trial Pit 6

# 5.5 Area E

Trial Pit No. 4 was located in an area designated for washing vehicles, shown in Plate 12. Material uncovered consisted primarily of broken rock. There is no staining or odour from the excavated material or the trial pit.



Plate 12: Location of Trial Pit 45

# 5.6 Area F

Trial Pits No. 8, 9 and 10 were located in an area to the front of the site, shown in Plates 13, 14 and 15. There is no staining or hydrocarbon odour from the excavated material or the trial pits, apart from a sulphur smell in Trial Pit No. 8 at approximately 1.2m bgl to 1.5 m bgl where a fibrous vegetative horizon is located. This area has bull rushes and a boggy saturated area located immediately longside.



Plate 13: Trial Pit 8

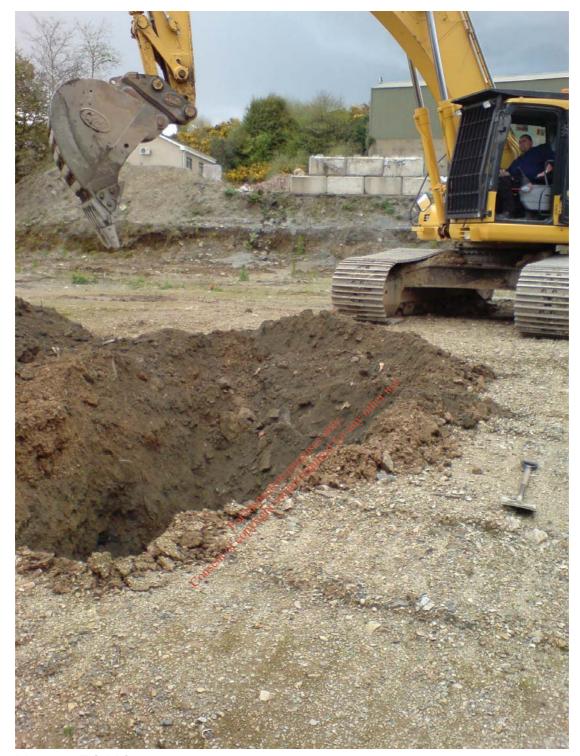


Plate 14: Trial Pit 9



Plate 15: Trial Pit 10

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# 5.7 Initial Conclusions

Trial pitting and Shell and Auger drilling was conducted within the areas identified as potentially containing waste material. No significant deposits of waste appear to underlie the area identified as Area A. The material uncovered largely comprised subsoil, and the depths were drilled to 10 m in two boreholes and 23 m in another. Isolated zones comprising waste oils appear to be located in Areas B and C.

# 5.8 Testing Schedule

Soil sampling has been undertaken within area A-F to establish the quality of the material. A total of 3 (no.) sediment samples were submitted to ALcontrol Geochem Laboratories, who are an ISO 17025 and UKAS accredited laboratory, for analysis of Polycyclic Aromatic Hydrocarbons (PAHs). The samples were taken from Trial Pits 1, 2 and 3. Sufficient parameters were included so that the samples could be analysed for the presence of oil contamination. The sample suite selected was based on physical observations made on-site.

There are no set standards or legislation for contaminated land or soil in Ireland. The accepted industry best practice is to apply international standards such as those used by the United Kingdom Environment Agency or the Dutch Ministry of Housing, Spatial Planning & Environment (VROM).

These Dutch Standards (2002) outline two values for selected contaminants, the Target Value and the Intervention value. The Target Value (TV) is the baseline concentration value below which compounds and/or elements are known or assumed not to effect the natural properties of the soil. The target value quoted in the Dutch Standards for PAHs is  $1,000\,\mu\text{g/kg}$  (1 mg/kg). The Intervention Value (IV) is the maximum tolerable concentration above which further investigation, assessment, or remediation is required. The intervention value quoted in the Dutch Standards for PAHs is  $40,000\,\mu\text{g/kg}$  (40 mg/kg).

Water sampling has also been undertaken of the quarry sump water at both the old quarry, the new quarry (Paul Murphy quarry) and the wheel wash. The samples were also submitted to ALcontrol Geochem Laboratories and analysed for a range of parameters including metals, diesel range organics and speciated PAHs.

# 6 RESULTS

# 6.1 Soil results

The soil results are given in Appendix B. The soil results support the visual inspections and initial conclusions, that there is no contamination except in localised zones around the old oil bund at the garage and in the immediate vicinity to the



primary crusher.

Area A: Two samples were taken from the two trial pits located in this area. The concentrations of total PAH are less than 1  $\mu$ g/kg and 1669  $\mu$ g/kg, which are very low concentrations and are well below the Dutch Intervention Values.

Area B: The results taken from Area B (Trial Pit 3) indicate hydrocarbon contamination at the surface. The sample taken from Area B supports the visual inspection that there is a localised zone of oil spillage and corresponds to the strong odour noted during the trial pitting. The results from Area B indicate that the total concentration of the sixteen speciated hydrocarbons are elevated (31,596  $\mu$ g/kg), indicate contamination and are just below the Dutch Intervention Value of 40,000  $\mu$ g/kg. The extent is limited to the area around the oil bund.

The water results in Section 6.2 indicate that PAH concentrations are very low, indicating the limited extent of the contamination.

# 6.2 Water results

The results are given in Appendix C. The key points and identified as follows:

- Concentrations of diesel range organics and for sixteen speciated PAHs are below 10 μg/litre.
- Biological Oxygen Demand concentration is less than 2 mg/l for all three samples.
- Nitrate concentrations are 24.9 mg/l and 28.3 mg/l in the Old Quarry and Paul Murphy quarry. Whilst these concentrations appear high, they correspond to the background concentrations evident across the groundwater body in which the site is located (South Eastern RBD characterisation report, 2003).
- Ortho-phosphate concentrations are below 0.03 mg/l.
- Concentrations of Iron, Potassium and pH are elevated in the sample taken at the wheel wash.
- Ammonia concentration for the sample taken from the Paul Murphy quarry is elevated.
- The sample taken from the exit point of the wheel wash contrast in a number of parameters with the samples taken from both the quarry sumps. They appear to be anomalous with those taken from quarry and do not reflect the water quality in the quarries.

In general, the water results do not indicate significant contamination that can be attributed to alleged waste practices at the Old Quarry. The water results from the sumps are regarded as being representative as the water in both sumps is kept at approximately -22mOD, by pumping, thus there is a relatively short residence time.



# 7 CONCLUSIONS

For each area the findings and actions required are described.

# 1. Area A:

Finding: It is concluded that area consists predominantly of subsoil strippings. The borehole and trial pit logs and the soils results and the water results suggest that the area is uncontaminated.

Action: It is concluded that Area does not require remediation. However, in accordance with the Section 55 Notice groundwater monitoring wells are to be placed in locations to allow long term groundwater quality monitoring to take place.

2. Areas B (immediately next to the old oil bund on the southern end of the garage):

Finding: an upper layer of made ground appears to be contaminated based on the visual inspection, the trial pit and the soil sample results.

Action: It is concluded that the area is remediated by digging out the contaminated ground and disposed of by a permitted contractor and replaced with inert material.

3. Area C (dismantled primary crusher)

Finding: an upper layer of made ground which appears to be contaminated based on the visual inspection and the trial pit.

Action: It is concluded that the area is remediated by digging out the contaminated ground and disposed of by a permitted contractor and replaced with inert material.

4. Area D (dismantled rock breaker)

Finding: It is concluded that this ground around the rock breaker does not appear to be contaminated.

Action: No further action is required.

5. Area E (lorry washing area across from the garage)

Finding: It is concluded that this ground does not appear to be contaminated.

Action: No further action is required.

6. Area F (to the front of the quarry along the main road boundary)

Finding: It is concluded that this ground does not appear to be contaminated.

Action: No further action is required.

# 8 RECOMMENDATIONS

Suitable remediation and disposal is recommended for Area B (around the old oil bund at the eastern end of the garage) and Area C (around the dismantled primary rock crusher).

Installation of three boreholes in the vicinity of the Old Quarry. The proposed



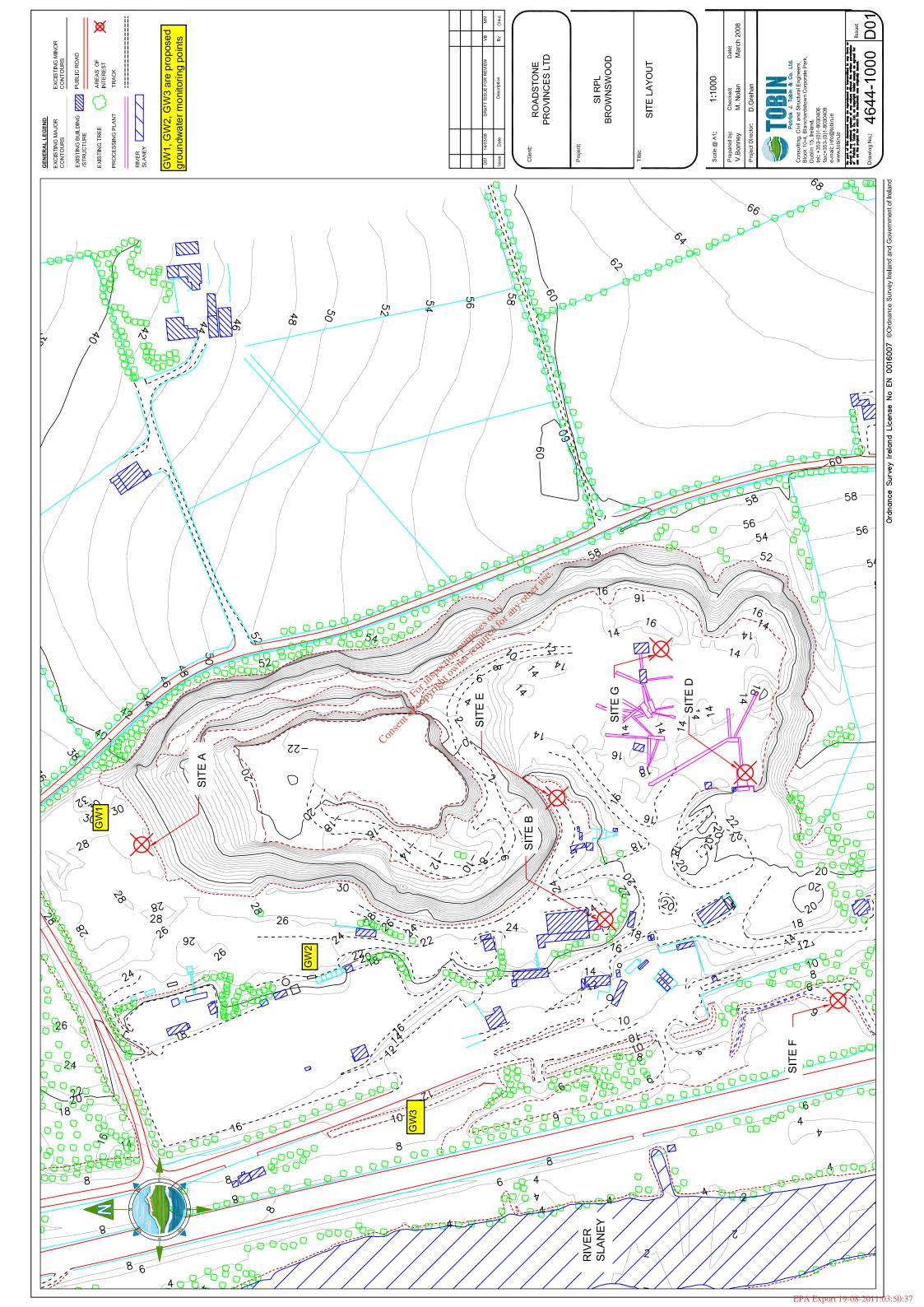
locations are shown in Appendix A. It is recommended that two are placed downgradient of the quarry, and one upgradient of the quarry.

It is proposed that a regular monitoring regime of the monitoring wells and the water in the sumps is put in place. The exact regime should be agreed with Wexford County Council.

On behalf of TOBIN Consulting Engineers

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# **Roadstone Brownswood Quarry**

# REPORT ON GROUND INVESTIGATION

Report No. KD8062

**Engineer: Tobin Consulting Engineers Client: Roadstone Provinces Limited** 

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Client: **Roadstone Provinces Limited** Saggart Co. Dublin

Engineer: **Tobin Consulting Engineers** Block 10 - 4 **Blanchardstown Corporate Park** Dublin 15



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	ENCLOSURES  A EXPLORATORY HOLE RECORDS  B GEOENVIRONMENTAL LABORATORY OF EST RESULTS  C PHOTOGRAPHS  D DRAWINGS  Consent of Congress of Co	



### 1 INTRODUCTION

During April 2008 Geotech Specialists Limited (GSL) were commissioned by Tobin Consulting Engineers (TCE), on behalf of Roadstone Provinces Limited (RPL), to carry out a ground investigation at the Roadstone Quarry facility at Brownswood, Co. Wexford. The investigation was required to obtain geotechnical and geoenvironmental information primarily on the nature of the existing overburden mound on the quarry site.

The scope of the investigation, which was specified by TCE, comprised cable percussion boreholes, trial pits, in situ testing and laboratory testing. The investigation was carried out in accordance with the contract specification and relevant standards (see References). The fieldwork was carried out between 28 April and 6 May 2008.

This report presents the factual records of the fieldwork and laboratory testing.

### 2 THE SITE AND GEOLOGY

### 2.1 The Site

and inspection purposes only any other inspection purposes only any other inspection purposes only any other inspection purposes only and other inspection purposes of the inspection purpose of the inspection purposes of the inspection purpose of the inspection purposes of the inspection purposes of the The Quarry site is located in the townland of Brownswood, 3km south of Enniscorthy town. The site is located 300m east of the River Slaney and approximately 150m east of the N11, National Primary Route. The aggregate guarry currently functions as a rock chipping and crushing plant as well as a Readymix Concrete and Blacktop production centre. The site is at National Grid reference S 978 373, see Site Location Plan in Enclosure D.

The quarry is bounded to the west by the N11 and to the east by a minor county road running parallel to the north/south trending N11. The main north and south boundaries of the quarry site have thick hedges and established tree lines. Agricultural pastureland and tillage land lie beyond the site to the east, south and west.

A large heaped overburden mound is located in the northeast corner of the quarry. Exploratory holes were located on the summit of this mound in the northeast of the site as well as at varying levels throughout the quarry towards the ground / base level of the quarry in the south west of the site.



### 2.2 **Published Geology**

The published geological map covering the site, GSI Sheet 19 (1995) shows bedrock to be Late Ordovician rhyolitic volcanics and grey and brown slates of the Campile Formation. The Campile formation forms part of the sequence of the local Duncannon Group, a group composed primarily of volcanic rock.

### 3 **FIELDWORK**

### 3.1 General

The fieldwork was carried out in general accordance with BS 5930 (1999) and Part 9 of BS 1377 (1990).

The exploratory hole locatio	ns were selecte	d and set out	by TCE. The exploratory hole locations
are shown on the Site Plan i	n Enclosure D.	and set out	
		outpostited	
3.2 Exploratory Holes	ectif	on Purposes of for the Switzer Legitied for the Switzer Legitied for the Switzer Legitied for the Switzer Legities and th	
	of inspire	5	
The exploratory holes are lis	ted in the followi	ng table.	
	asent or		
SUMMARY OF EXPLORATE	ORY HOLES		
TYPE	QUANTITY	MAXIMUM	PEMARKO
1115	QUANTITY	DEPTH (m)	REMARKS
Cable Percussion Boring	6	23.30	Dando 2000
Trial Pits	10	5.00	Machine Dug

The exploratory hole records are presented in Enclosure A and should be read in conjunction with the Key included therein. The records provide descriptions, in accordance with BS 5930 (1999), of the materials encountered and details of the samples taken, together with observations made during boring and pitting. Photographs of the trial pits are presented in Enclosure C.

On completion of the fieldwork all geotechnical samples were transported to the Dublin office of GSL for temporary retention. Geoenvironmental samples were transported from site directly to ALcontrol laboratories in Ballycoolin, Dublin 15.



# **4** LABORATORY TESTING

# 4.1 Geotechnical Testing

No Geotechnical testing was scheduled.

# 4.2 Geoenvironmental Testing

The testing was scheduled by TCE and was carried out by ALcontrol at their Dublin laboratory.

The results are presented in Enclosure B.

Prepared By	Claire O'Keeffe BSc (Hons)	
Reviewed By	John Lawler BSc (Hons)	
Approved for Issue By	A C Suckling BSc (Hons) CEng MICE	A. Sulling
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# **REFERENCES**

GSI Sheet 19 : 1995 : Geology of Carlow - Wexford. 1:100000 geological map (solid). Geological Survey of Ireland.

BS 1377 : 1990 : Methods of test for soils for civil engineering purposes. British Standards Institution.

BS 5930 : 1999 : Code of practice for site investigations. British Standards Institution.





# ENCLOSURE A THE TIPSE. EXPLORATORY HOLE RECORDS Scords For Hapetion Purple Reduced For Hapeting House Reduced For Hapeting

Key to Exploratory Hole Records

Borehole Logs

Trial Pit Logs

Key BH01, 02, 03, 03A, 04, 04A, 05, 06

TP01 to 10

# **Key to Exploratory Hole Records**

# **SAMPLES**

Undisturbed

Driven tube sample

TW Pushed thin wall tube sample nominally 100 mm diameter and full recovery unless otherwise stated

P

Pushed piston sample

Liner sample (from Windowless or similar sampler), full recovery unless otherwise stated

CBR **BLK** 

Block sample

CS

Core sample (from rotary core) taken for laboratory testing

AMAL

Amalgamated sample

Disturbed

 $\Box$ В Small sample Bulk sample

Other

W G Water sample Gas sample

ES

Environmental chemistry samples (in more than one container where appropriate) Soil sample

Water sample

Comments

Sample reference numbers are assigned to every sample taken. A sample reference of 'NR' indicates that attempt was

made to take a tube sample, however, there was no recovery.

Monitoring samples taken after completion of hole construction are not shown on the exploratory hole logs.

**TESTS** 

SPT S or SPT C

Standard Penetration Test, open shoe (S) or solid cone (C)

The Standard Penetration Test is defined in \$\$,\$77 : Part 9 (1990). The incremental blow counts are given in the Field Records column; each increment is 35 mm unless stated otherwise and any penetration under self weight in mm (SW) is noted. Where the full 300 mm test drive is achieved the total number of blows for the test drive is presented as N = \*\* in the Test column. Where the test drive blows reach 50 (either in total or for a single increment) the total blow

count beyond the seating drive is given (without the N = prefix).

HV PP in situ Vane shear strength, peak (p) and remoulded (r) Hand vane shear strength, peak (p) and remoulded (r) Pocket penetrometer test, converted to shear strength

KFH, KRH, KPI

Variable head permeab<mark>ility</mark> tests (KFH = falling head test, KRH = rising head test, KPI = packer test), permeability value

Test results provided in Field Records column

# **DRILLING RECORDS**

The mechanical indices (TCR/SCR/RQD & If) are defined in BS 5930 (1999)

**TCR** SCR Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, %

RQD

Fracture spacing, mm. Minimum, typical and maximum spacings are presented. The term

non-intact (NI) is used where the core is fragmented.

Flush returns, estimated percentage with colour where relevant, are given in the Records column

CRF

Core recovered (length in m) in the following run

**AZCL** 

Assessed zone of core loss Not recovered

**GROUNDWATER** 

Groundwater strike

 $\nabla$ 

Groundwater level after standing period

Notes: Roadstone Brownswood Quarry Project No. KD8062 Key Carried out for Roadstone Sheet 1 of 2

# **Key to Exploratory Hole Records**

# INSTALLATION

# Standpipe/ piezometer

Details of standpipe/piezometer installations are given on the Record. Legend column shows installed instrument depths including slotted pipe section or tip depth, response zone filter material type and layers of backfill.

SP SPIE PPIE EPIE The type of instrument installed is indicated by a code in the Legend column at the depth of the response zone: Standpipe

Standpipe piezometer Pneumatic piezometer Electronic piezometer

# Inclinometer or Slip Indicator

The installation of vertical profiling instruments is indicated on the Record. The base of tubing is shown in the Legend column.

ICE ICM SLIP

The type of instrument installed is indicated by a code in the Legend column at the base of the tubing: Biaxial inclinometer

Inclinometer tubing for use with probe Slip indicator

Slip indicate

Settlement Points or Pressure Cells The installation of single point instruments is indicated on the Record. The location of the measuring device is shown in the Legend column.

The type of instrument installed is indicated by a code in the Legend column: Electronic settlement cell/gauge
Magnetic extensometer settlement point
Electronic embedment pressure cell

Electronic embedment pressure Electronic push in pressure cell

EPCE /\
PPCE

**ESET** 

ETM

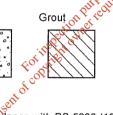
# INSTALLATION LEGENDS

A legend describing the installation is shown in the rightmost column. Legends additional to BS5930 are used to describe the backfill materials as indicated below.

Arisings Concrete Grout of Reference Sand Gravel Tarmac















# **NOTES**

3

5

6

Strata legends are in accordance with BS 5930 (1999).

Water level observations of discernible entries during the advancing of the exploratory hole are given at the foot of the log and in the Legend column. The term "none observed" is used where no discrete entries are identified although this does not necessarily indicate that the hole has not been advanced below groundwater level. Under certain conditions groundwater cannot be observed, for instance, drilling with water flush or overwater, or boring at a rate much faster than water can make its way into the borehole (ref BS5930 : 1999, Clause 47.2.7). In addition, where appropriate, water

levels in the hole at the time of recovering individual samples or carrying out in situ tests and at shift changes are given in the Records column.

Evidence of the occurrence of very coarse particles (cobbles and boulders) is presented on the logs, however, because of their size in relation to the exploratory hole these records may not be fully representative of their size and frequency in the ground mass.

The borehole logs present the results of Standard Penetration Tests recorded in the field without correction or interpretation. However, in certain ground conditions (eg high hydraulic head or where very coarse particles are present) some judgement may be necessary in considering whether the results are representative of in situ mass

The declination of bedding and joints is given with respect to the normal to the core axis. Thus in a vertical borehole this will be the dip.

The assessment of SCR, RQD and Fracture Spacing excludes artificial fractures

# REFERENCES

BS 1377: 1990: British Standard Methods of test for soils for civil engineering purposes. British Standards Institution

BS 5930: 1999: Code of Practice for site investigations. British Standards Institution

Updated February 2007

Notes:

Project Roadstone Brownswood Quarry

Project No. KD8062
Carried out for Roadstone

Key

Sheet 2 of 2

PA EXPOIT 19-08-2011:03:50:3

# **Borehole Log**

Drilled JE Logged CO'K Checked JL	Start 28/04/2008 End 28/04/2008	Equipment, Methods and Remarks Dando 2000 Cable Percussion 200mm diameter from 0.00m to 10.00m. Backfilled with arisings.			Ground Level - Coordinates - National Grid - Chainage					
Samples a	nd Tests				Strata					
Depth	Type & No	Records		Time Vater		Description		Depth, Level (Thickness)	Legend	Backfill/ Instruments
0.50	B 1				MADE GROUND: Brown GRAVEL. Sand is fine to is subangular to subrour coarse of various litholog limestone. Driller reports various lithologies include	o coarse. Gravel nded fine to gies including s cobbles of				
1.00     1.50	B 2									
2.00	B 4						- - - - -			
2.50	D 5						-			
3.00      3.50	B6					, U <sup>SE</sup>	3.00-3.50 m Subangular fine to coarse GRAVEL of various	(6.00)		
   4.00	В8				4	only any other	fithologies including asphalt.			
  4.50	D 9		ordinary to the control of the contr		For its petion purposes	ed to	-	who the state of t		
  5.00 	B 10				cor its petitowner		  	a proprieta de la constanta de		
5.50 	D 11			્દ્	of copy.		 - - -			
6.00     6.50	B 12		C	onser	MADE GROUND: Browr clayey sandy GRAVEL. S coarse. Gravel is subang subroundedfine to coars	n mottled orange ve Sand is fine to gular to		6.00		
0.30 7.00	B 14				lithologies including lime reports cobbles of variou including concrete.	estone. Driller	  	(1.80)		
   7.50	D 15						- - - - -	and deconformal and a second an		
  8.00	B 16				MADE GROUND: Firm to CLAY. Sand is fine to co subangular to subrounder of various lithologies inc	earse. Gravel is	y	7.80		
8.50	D 17				limestone.	iaanig	-	(2.20)		
9.00      9.50	B 18					-	-	(C.CV)		
  			28/04/2008 10.00 <b>Date</b> T	0800 dry				ezzedant dizigale andemikez		
Depth	Туре & No	Records	Casing W	/ater	EXPLORATORY HOLE	ENUS AT 10.00 m				
Groundwater Entrice No. Struck Po (m) None observed (se	st strike behav	riour	Depth seal	ed (m)	Depth Related Remarks * From to (m)			Chiselling Depths (m) 0.75 -0.80 7.10 -7.20	Time Tool 45 mins Chise 45 mins Chise	s used el
Notes: For explanati abbreviations see ke levels in metres. Stra in depth column.	y sheet. All der atum thickness	oths and reduced given in brackets	Project Project No.		Roadstone Brownswood Quar KD8062	ту		Borehole	BH01	Mary Marie
Scale 1:50	(c) E	SGL www.esgl.co.uk 3.24 25/06/2008 11:36:23	Carried out	for	Roadstone			s	heet 1 of 1	

# **Borehole Log**

Drilled JE Logged CO'K Checked JL	Start 28/04/2008 End 29/05/2008	Equipment, Methods Dando 2000 Cable Percussion 200 with arisings.		.00m	Depth from to Diameter Casing Depth 0.00m 10.00m 200mm 10.00m to 10.00m	Ground Level Coordinates National Grid Chainage	
Samples a					Strata		
			Date T	ime	Description	Depth, Level	Backfi
Depth	Type & No	Records		ater		(Thickness)	
					MADE GROUND: Brown clayey very sandy GRAVEL. Sand is fine to coarse. Gravel		
	_				is subangular to subrounded fine to	1	
0.50	B1				medium of various lithologies. Driller reports fill with stone / concrete.		
						(1.50)	
- 1.00	B2				-		
1.50	D3				MADE GROUND: Soft to firm brown sandy	1.50	
					gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine		
2.00	B4				to coarse of various lithologies.		
					Driller reports CLAY fill with stone / concrete.		
0.50					concrete.	-	
2.50	D5					1	
				1800		-	
3.00	В6		3.00		-	1	
2.50	0.7				For inspection but of redired for any other use.	-	
3.50	D7				ng.	3	
					inet.	-	
4.00	В8				14. 24. or		
					Oth of all.		
4.50	D9				See of to		
4.50					nur Puite		
					ion of rect		
5.00	B 10				zecht wife.		
					instit	(7.50)	
5.50	D 11				Ed Mile		
5.50	"				E COA.		
					at or		
- 6.00	B 12			, ali	_		
				٦		_	
6.50	D 13						
						_	
- 7.00	B 14				-		$\otimes$
7.50	D 15						
						1	
						1	
- 8.00	B 16				-	1	
						1	
8.50	D 17					-	
						]	
0.00	D 40					1,,,,	
- 9.00	B 18				MADE GROUND: Firm orange brown sandy	9.00	
					slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to		
9.50	D 19				subrounded fine to coarse of various	(1.00)	
			20/04/0222	1000	lithologies. Driller reports CLAY fill with stone / concrete.	-	
	<u> </u>		10.00	1800		_	
Depth	Type & No	Records	Date Ti Casing W	me ater	EXPLORATORY HOLE ENDS AT 10.00 m		
Proundwater Enti				*****	Depth Related Remarks *	Chiselling	
lo. Struck Po (m)	st strike behavi	our	Depth seale	d m)	From to (m)	Depths (m)	Time Tools used 45 mins Chisel
None observed (	see Key Shee	t)	,	•		2.65 -2.70 4.50 -4.55 8.65 -8.70	30 mins Chisel 30 mins Chisel
`	•					3.30 3.70	_5 Or noo!
				40-400-eee			
otes: For explanation	on of symbols ar	nd hs and reduced	Project		Roadstone Brownswood Quarry	Borehole	
breviations see ke vels in metres. Stra depth column.			Project No.		KD8062		BH02
,	(c) E	SGL www.esgl.co.uk 24 25/06/2008 10:58:13	Carried out fo	г	Roadstone	1	Sheet 1 of 1

Drilled JE Logged CO'K Checked JL	Start 29/04/2008 End 29/04/2008	Equipment, Methods a Dando 2000 Cable Percussion 200m arisings.		to 3.20m	. Backfilled with	Depth from to Diameter 0.00m 3.20m 200mm	Casing Depth 3.20m	Ground Level Coordinates National Grid Chainage		-
Samples ar	nd Tests				Strata			1		
Depth	Type & No	Records	Date Casing	Time Water		Description		Depth, Level (Thickness)	Legend	Backfill/
- - - - 0.50 - - - - 1.00	B 1				MADE GROUND: Dark g dark brown mottled grey slightly clayey very sandy is fine to coarse. Gravel i to subrounded fine to me lithologies. Driller reports concrete.	from 2.00m r GRAVEL. Sand s subangular dium of various		(Tilickness)		Instrument
- - - - - - - - - - - - - - - - - - -	D3						      	(3.20)		
	D5						- - - - -			
3,00	B6		29/04/2008 3.20	0800	EXPLODATORY LIGHT	ENDO AT A CO		3.20		
Groundwater Entrie		Records	Date	Time Water	EXPLORATORY HOLE  EXPLORATORY HOLE  Local instance of the control of control instance of the control i	and the tise.		Chiselling Depths (m)	ime Tools	
(m) None observed (se	of symbols and		Project	(m) 	3.20 Borehole term	inated due to obstruction.		1.75 -1.80 4	5 mins Chisel 0 mins Chisel	
abbreviations see key s evels in metres. Stratur n depth column. Scale 1:50		en in brackets  SL www.esgi.co.uk 125/06/2008 10:58:18	Project No. Carried out		KD8062 Roadstone			She	BH03 eet 1 of 1 Export 19-0	

Drilled JE Logged CO'K Checked JL	Start 29/05/2008 End 29/05/2008	Equipment, Methods a Dando 2000 Cable Percussion 200m arisings.		to 3.00m	Backfilled with Depth from to Diameter Casing Depth 0.00m 3.00m 200mm 3.00m	Ground Level Coordinates National Grid Chainage		-
Samples a	nd Tests				Strata			
Depth	Type & No	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend	Backfill/ nstrument
					Driller reports sandy gravelly CLAY fill.	-		
-					1.40 m Large boulder of concrete	(3.00)		
- - - -			29/05/2008 3.00		EXPLORATORY HOLE ENDS AT 3.00 m	3.00		
				Cons	EAPLORATORY HOLE ENDS AT 3.00 m			
Depth  Groundwater Entrie No. Struck Post (m)  None observed (se	t strike behavio		Date Casing Depth sea	Time Water aled (m)	Depth Related Remarks * From to (m) 3.00 Borehole terminated due to obstruction.□□	1.45 -1.50	Time Tools t 30 mins Chisel 60 mins Chisel	used
lotes: For explanation bbreviations see key evels in metres. Stratu a depth column. scale 1:50	of symbols and sheet. All depth im thickness giv (c) ES	s and reduced sen in brackets GL www.esgl.co.uk 4 2506/2008 10:58 23	Project Project No. Carried out	1	toadstone Brownswood Quarry D8062 oadstone		<b>BH03A</b> neet 1 of 1	

Drilled JE Logged CO'K Checked JL	Start 30/04/2008 End 30/04/2008	Equipment, Methods Dando 2000 Cable Percussion 200n with arisings.		n to 1.90m. Backfilled	Depth from to Diameter 0.00m 1.90m 200mm	Casing Depth 1.90m	Ground Level Coordinates National Grid Chainage		-
Samples a	nd Tests			Strata					
Depth	Type & No	Records	Date Tim Casing Wate		Description		Depth, Level (Thickness)	Legend	Backfill Instrumen
- 0.50	B1			MADE GROUND: Bro sandy GRAVEL. Sand Gravel is angular to su coarse of various litho reports fill with Asphal sub-base.	l is fine to coarse. Jbangular fine to Jogies. Driller		(1.90)		
1.00      1.50	B2		20/2/1000				(1.90)		
- - 			30/04/2008 086 1.90		DLE ENDS AT 1.90 m		1.90		
			Co	For its gotion there is	Sesonty, any other use.				
		-1-9-1	Date Time	_					
Depth Groundwater Entri No. Struck Pos (m) None observed (s	t strike behavio		Date Time Casing Water Depth sealed (m)	Depth Related Remarks * From to (m) 1.90 Borehole to	erminated due to obstruction.			Time Tool 60 mins Chise	s used
lotes; For explanation bbreviations see key vels in metres. Stratu depth column. cale 1:50	sheet. All depths um thickness giv	s and reduced en in brackets SL www.esgl.co.uk 2506/2008 10:58:28	Project Project No. Carried out for	Roadstone Brownswood C KD8062 Roadstone	Quarry		Sh	<b>BH04</b> neet 1 of 1 Export 19-	

Drilled JE Logged CO'K Checked JL	Start 30/04/2008 End 30/04/2008	Equipment, Methods at Dando 2000 Cable Percussion 200mr with arisings.			Depth from to Diameter Casing Depth 0.00m 10.00m 200mm 10.00m	Ground Level Coordinates National Grid Chainage	-
Samples a	nd Tests				Strata		
Depth	Type & No	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	
				Red	Driller reports stone / clay / cobbles / road sub-base.	(1.90)	
	B1				MADE GROUND: Firm becoming soft to firm  from 4.00m orange brown mottled cream slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded to subangular fine to medium of various lithologies. Driller reports	1.90	
3.00 - 3.00 3.50	B3				CLAY fill with cobbles.		
  4.00  	85				Early Copyright owner leading for any other tise.		
- 4.50 5.00	D6				getigh Right entite		
	D8		September 1		For high		
6.00 	B9			Cons	git or	(8.10)	
7.00	B 11				- - - - -		
- - - 7.50	D 12				- - - -		
8.00  	B 13				- -  - - - - -		
- 8.50 - - - - - - - 9.00	D 14 B 15						
9.00 - - - - 9.50	D 16						
Depth	Type & No	Records	30/04/2008 10.00 Date	Time	EXPLORATORY HOLE ENDS AT 10.00 m		
Groundwater Entri No. Struck Pos (m) None observed (s	ies st strike behavi	DUL	Casing Depth sea	Water aled (m)	Depth Related Remarks * From to (m)	Chiselling Depths (m) 1.10 -1.15 1.80 -1.85 7.70 -7.75	Time Tools used 45 mins Chisel 30 mins Chisel 30 mins Chisel
Notes: For explanatio abbreviations see key levels in metres, Strat in depth column.	/ sheet. All depth tum thickness gi	d ns and reduced ven in brackets GL www.esgl.co.uk 14 25/06/2008 10:58:33	Project Project No. Carried out		Roadstone Brownswood Quarry KD8062 Roadstone		3H04A
Scale 1:50	408.	A 23/00/2006 10:58:33				THE PROPERTY OF THE PROPERTY OF THE	heet 1 of 1 Export 19-08-2011:0

Drilled JE Logged CO'K Checked JL	Start 01/05/2008 End 01/05/2008	Equipment, Methods a Dando 2000 Cable Percussion 200m arisings		to 3.30m	Depth from to Diameter Casing Depth 0.00m 3.30m 200mm 3.20m	Ground Level Coordinates National Grid Chainage	- - - -
Samples a	nd Tests		<del></del>		Strata		
Depth	Type & No	Records	Date	Time Water	Description	Depth, Level	Legend Backfill/
          	B1		Casing	vale	MADE GROUND: Soft to firm brown very sandy very gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of various lithologies. Driller reports gravelly CLAY fill with cobbles.	(Thickness)	Instrument
1.50	D3		A COMMANDA AND A COMM		MADE GROUND: Brown very clayey sandy GRAVEL. Sand is fine to coarse. Gravel is subangular to subrounded fine to	1.50	
2.00 2.00 2.50	B 4				coarse of various lithologies. Driller reports gravelly CLAY fill with cobbles.		
3.00	В6		01/05/2008 3.30	0800	EXPLORATORY HOLE ENDS AT 3.30 m	3.30	
				Conti	EXPLORATORY HOLE ENDS AT 3.30 m  EXPLORATORY HOLE ENDS AT 3.30 m  The state of the		
no							
Depth  Groundwater Entrie  No. Struck Positing  (m)  None observed (se	t strike behavio			Time Water lled (m)	Depth Related Remarks * From to (m) 3.30 Borehole terminated due to obstruction.	1.20 -1.30	Time Tools used 50 mins Chisel 50 mins Chisel
Notes: For explanatior abbreviations see key evels in metres. Stratu in depth column. Scale 1:50	sheet. All depth um thickness giv	is and reduced	Project Project No. Carried out		toadstone Brownswood Quarry ID8062 toadstone	1	<b>3H05</b> leet 1 of 1

Logged CO'K	Start 01/05/2008 End 06/05/2008	Equipment, Methods a Dando 2000 Cable Percussion 200m arisings.		23,30	Depth from to Diameter Casing Depth 0.00m 23.30m 200mm 23.30m	Ground Level Coordinates National Grid Chainage	-
Samples and	d Tests		<del>*************************************</del>		Strata	1	
	Гуре & No	Records		Time Vater	Description	Depth, Level (Thickness)	Legend Backfill/
- - - - 0.50	B 1	and the second s			MADE GROUND: Soft to firm brown mottled grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of various lithologies. Driller reports gravelly CLAY fill with cobbles.		
1.00    1.50	B2		1.00				
2.00	B4		2.00				
2.50     3.00	D5				-	(5.00)	
3.50	D7				MADE GROUND: Soft to firm brown mottled grey and grange sandy grayelly CI AY		
4.00	B8		4.00		ses of the any off.		
4.50	D9				tion purpo direct		
5.00 5.00 5.00 5.00 5.00 5.00 5.00 5.00	B 10		5.00		MADE GROUND: Soft to firm brown mottled grey and grange sandy gravelly CLAY. Sand is time to coarse. Gravel is subangular to subrounded fine to coarse	5.00	
6.00	B 12		02/05/2008	1600 1800	of various lithologies. Driller reports gravelly CLAY fill with cobbles.		
- 6.50 7.00	B 13					(3.50)	
7.50	D 15						
8.00	B 16				-		
- - 8.50 - -	D 17				MADE GROUND: Firm becoming soft at 11.0m orange brown sandy becoming very sandy at 11.0m gravelly CLAY. Sand is fine to	8.50	
9.00	B 18				coarse. Gravel is subangular to subrounded fine to coarse of various lithologies. Driller reports gravelly CLAY fill with cobbles.		
-		Danaudo	Date Tii	me	Statute and the state of the st		
Groundwater Entries No. Struck Post st (m)  None observed (see			Casing Wa	ater	Stratum continues to 12.50 m  Depth Related Remarks * From to (m)	4 10 -4 15	Time Tools used 30 mins Chisel 30 mins Chisel 30 mins Chisel 30 mins Chisel
Notes: For explanation of abbreviations see key she levels in metres. Stratum in depth column. Scale 1:50	eet. All depth: thickness giv	s and reduced	Project Project No. Carried out for		Roadstone Brownswood Quarry KD8062 Roadstone	1	BH06 neet 1 of 3

Drilled JE Logged CO'K Checked JL	Start 01/05/2008 End 06/05/2008	Equipment, Methods Dando 2000 Cable Percussion 2000 arisings.			Depth from to Diameter Casing Depth 100m 23.30m 200mm 23.30m 200mm 23.30m	Ground Level Coordinates National Grid Chainage	
Samples a	ind Tests			***************************************	Strata		
Depth	Type & No	Records	Date Casing	Time Water	Description (Continued for Charles)	Depth, Level	Legend Back
10.00  10.50  	B 20 D 21 B 22				(Continued from Sheet 1)  MADE GROUND: Firm becoming soft at 11.0m orange brown sandy becoming very sandy at 11.0m gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of various lithologies. Driller reports gravelly CLAY fill with cobbles.	(Thickness)	Instrum
- - 11.50 - - - - - - 12.00	D 23						
12.50	D 25				MADE GROUND: Firm orange brown mottled grey from 13.50m very sandy gravelly	- - - - 12.50	
13.00	B 26				CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of various lithologies. Driller reports	-	
13.50 - - - 14.00	D 27				14. 14 dilet lise.	(2.50)	
14.50	D 29				gravelly CLAY fill with cobbles.  MADE GROUND: Soft to firm mottled black sandy gravely CLAY with some wood /		
- 15.00	B 30		00 44 9 1		tree remains. Sand is fine to coarse.	15.00	
15.50	D 31			Cons	Grave(as subangular to subrounded fine to coarse of various lithologies. Driller reports gravelly CLAY fill with cobbles.		
16.50	D 33			C		(3.50)	
- 17.00	B 34					- (S.SS) 	
17.50 - 18.00	D 35 B 36		18.00				
18.50	D 37				MADE GROUND: Firm orange brown very	- - - 18.50	
- 19.00	B 38		19.00		sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of various lithologies. Driller reports gravelly CLAY fill with cobbles.		
19.50	D 39						
Depth	Type & No	Records	Date Casing	Time Water	Stratum continues to 23.30 m		36 menungstra)
Groundwater Entri lo. Struck Pos (m) None observed (s	st strike behavlor	ır	Depth sea	aled (m)	Depth Related Remarks * From to (m)	11.10 -11.20 4	ime Tools used 5 mins Chisel 5 mins Chisel 0 mins Chisel 5 mins Chisel 5 mins Chisel 0 mins Chisel
otes: For explanation obreviations see key vels in metres. Strati depth column. cale 1:50	sheet. All depths um thickness give	and reduced en in brackets SL www.esgl.co.uk 25/06/2008 10:58:47	Project Project No. Carried out		Roadstone Brownswood Quarry (D8062 Roadstone	1	3H06 eet 2 of 3

Drilled JE Logged CO'K Checked JL	Start 01/05/2008 End 06/05/2008	Equipment, Methods and Dando 2000 Cable Percussion 200m arisings.		to 23.30i	n. Backfilled with	Depth from to 0.00m 23.30m	Diameter 200mm	Casing Depth 23,30m	Ground Level Coordinates National Grid		-
								halinggy, arrays, as provident with the state	Chainage		
Samples an			[ p.		Strata					-	-
	Type & No	Records	Date Casing	Time Water	(Conti	Description nued from Sheet 2)			Depth, Level (Thickness)	Legend	Backfill/ Instrument
_ 20.00	B 40		20.00		MADE GROUND: Firm ora	inge brown very				KXX	
- - 20,50	D 41				sandy gravelly CLAY. San coarse. Gravel is angular t fine to coarse of various lit Driller reports gravelly CLA	o subangular hologies.			offer collections and an article collection and an article collection and article collection article collection article collection and article collection articl		
-					cobbles.	VI III WIGI		-		XXX	
21.00	B 42		21.00						(4.80)		
21.50	D 43								and permit of the control of the con		
22.00	B 44		22.00					-			
22.50	D 45										
23.00	B 46		23.00 06/05/2008	1800							
		************	23.30		EXPLORATORY HOLE E	NDS AT 23.30 m		-	23.30	KXX	
						150	•	_			
						other		=			
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			Date	Time				_			
	Type & No	Records	Casing \	Nater							
Groundwater Entries No. Struck Post (m) None observed (see	strike behavio		Depth seal	led (m)	Depth Related Remarks * From to (m)				Chiselling Depths (m) Ti 20.60 -20.70 45 21.95 -22.00 45 23.20 -23.30 60	mins Chise	s used I
Intag: For explanation	of cymbols										
lotes: For explanation of bbreviations see key sl	or symbols and heet. All depths	s and reduced	Project		Roadstone Brownswood Quar	у			Borehole		
colo in martine and	o inickness div	en in brackets	Decided No.		CD8062			1		H06	
bbreviations see key slevels in metres. Stratun depth column.		GL www.esgl.co.uk 1 25/06/2008 10:58:51	Project No. Carried out i		Roadstone			į	استا	HUU	

Logged CH Checked CO'K	Start 28/04/2008 End 28/04/2008	Equipment, Methods Excavated pit using h arisings.	s and Remarks Comatsu PC340 LC. Backfilled with	Dimensions and Orientation  Width 1.50 m Length 5.00 m  D  C  210 (De	Ground Level Coordinates National Grid Chainage		
Samples a	nd Teefe		Strata			and the same of th	
Depth Depth	Type & No.	Date	<u> </u>	escription	Depth, Level	Legend	Backfill
0.40-0.70 0.40-0.70	B1 D2	Records	1 MADE GROUND: Blue grey sandy of fine to coarse. Gravel is subangular to fine to coarse of various lithologies incasphalt.  2 MADE GROUND: Firm brown yellow with many cobbles. Sand is fine to coasubrounded fine to coarse of various leading to coarse of various leading to coarse.	subrounded luding r sandy gravelly CLAY trse. Gravel is	(Thickness)		Instrume
1.10 1.20-1.30 1.20-1.30	ES 1 B 3 D 4		Cobbles are subrounded of various lith predominantly rhyolite and greywacke  3 MADE GROUND: Blue grey clayey soccasional plastic, wood and asphalt. coarse. Gravel is subrounded fine to cvarious lithologies.	sandy GRAVEL with Sand is fine to	(0.70) - - - 1.10		
				I li <sup>ge</sup> .	(0.80)		
2.20-2.30 2.20-2.30	B 5 D 6		4 MADE GROUND: Soft yellow brown Sand is fine to coarse. Gravel is subro coarse of various lithologies.		1.90		
			4 MADE GROUND: Soft yellow brown Sand is fine to coarse. Gravel is subro coarse of various lithologies.  Consent of convinting to integrate the convinting of the convinting o	3.00-5.00 m Many Cobbles. Cobbles are subangular to subrounded of various lithologies predominantly rhyolite and greywacke.	(3.10)		
4.70-5.00 4.70-5.00	B 7 D 8	Records	EXPLORATORY HOLE ENDS	AT 5.00 m			
roundwater Entrie	CARCELINGON VARIABLE CO.	Date					
roundwater Entrie o. Struck Post Stri (m) None observed (see	ke Behaviour		Depth Related Remarks * From to (m) 5.00 Pit terminated as instructed by cl	rent.	Shoring No Weather Cid	ne	
otes: For explanatic bbreviations see key vels in metres. Stra depth column. cale 1:25	y sheet. All dep tum thickness g	ths and reduced	Project Roadstone Brownswood Project No. KD8062 Carried out for Roadstone	od Quarry	3	<b>TP01</b> neet 1 of 1	

Logged CH Checked CO'K	Start 28/04/2008 End 28/04/2008	Equipment, Method Excavated pit using arisings.	s <b>and Remarks</b> Komatsu PC340 LC. Backfilled with	Dimensions and Orientation Width 1.50 m Length 3.50 m	B 150 (Deg)	Ground Level Coordinates National Grid Chainage		-
Samples a	nd Tests		Strata					
Depth	Type & No.	Date Records		Description		Depth, Level (Thickness)	Legend	Backfill/ Instrume
0.50-0.80 0.50-0.80	B 1 D 2		1 MADE GROUND: Asphalt over grasubangular to subrounded fine to colithologies.  2 MADE GROUND: Brown slightly gine to coarse. Gravel is subrounded of various lithologies.	arse of various	- - - - - -	(0.35) 0.35		
-				gotty gravely SAND.	- - - - - - - - - - -	(2.65)		
- 3.00-3.30 3.00-3.30 3.50-3.80	B 3 D 4 ES 1 B 5		3 MADE GROUND: Brown clayey sl Sand is fine to coarse. Gravel is sub coarse of various lithologies.  4 MADE GROUND: Brown clayey S is fine to coarse. Gravel is subround	AND AND GRAVEL. Sand	3.50 m Some asphalt, plastic and metal	3.00 (0.50) 3.50		
3.50-3.80	D 6		of various lithologies including asph	alt.	present.	(1.00)		
			EXPLORATORY HOLE EN	OS AT 4.50 m	-	4.50		
Denth	Type & No.	Records						
Depth  Groundwater Entrie  Jo. Struck Post Stri (m)  None observed (se	es ike Behaviour	Date	Depth Related Remarks * From to (m) 4.50 Pit terminated as instructed by	v client.		Stability God Shoring Nor Weather Clo	ne	
Notes: For explanations see ke evels in metres. Strandepth column.	y sheet. All dep atum thickness o	nd ths and reduced given in brackets ESGL www.esgl.co.uk AC	Project Roadstone Brownsw Project No. KD8062 Carried out for Roadstone	ood Quarry	ng nguyang pagaman di Adal Panda Servici Sabih Abri 2011 (1973) (1974) (1974)		<b>TP02</b> neet 1 of 1	

Logged CH Checked CO'K	Start 28/04/2008 End 28/04/2008	Equipment, Methods Excavated pit using K arisings.	and Remarks omatsu PC340 LC. Backfilled with	Dimensions and Orientation Width 1,50 m Length 3,50 m	A 280 (Deg)	Ground Level Coordinates National Grid Chainage	_	-
Samples a	nd Tests		Strata					
Depth	Type & No.	Date Records	I	Description		Depth, Level (Thickness)	Legend	Backfill/ Instrume
0.00 0.00 0.10-0.30 0.10-0.30	ES 3 ES 4 B 1 D 2		1 MADE GROUND: Grey Blue clayey fine to coarse. Gravel is subrounded of various lithologies. Hydrocarbon of the coarse some cobbles. Sand is fine to coarse subrounded fine to coarse of various Cobbles are subangular to subrounded lithologies.	ine to coarse dour noted.  andy gravelly CLAY with . Gravel is lithologies.	-	(0.40)		1
1.20-1.30 1.20-1.30	B3 D4				  - - -	(1.40)		
		•	EXPLORATORY HOLE END:	S AT 1.80 m	 	1.80		
- Po-th		Records	EXPLORATORY HOLE ENDS	poses of for the state of the s				
Depth  Groundwater Entrie  Jo. Struck Post Str (m)  1 0.35 Water s	ike Behaviour	Date	Depth Related Remarks * From to (m) 1.80 Pit terminated due to services.			Stability God Shoring Nor Weather Sur	ne	Type Committee C
lotes: For explanation bbreviations see ke wels in metres. Strate depth column.	ey sheet. All dep atum thickness o	nd ths and reduced given in brackets :SGL www.esgl.co.uk 24 25/06/2008 11:03:13	Project Roadstone Brownswo Project No. KD8062 Carried out for Roadstone	ood Quarry		Trial Pit	<b>TP03</b> eet 1 of 1	

Logged CH Checked CO'K	Start 28/04/2008 End 28/04/2008	Equipment, Method Excavated pit using with arisings.	s and Remarks Komoatsu PC 340 LC. Backfilled	Dimensions and Orientation  Width 1.50 m A  Length 3.50 m D  C	⇒ 300 (Deg)	Ground Level Coordinates National Grid Chainage		-
Samples a	nd Tests		Strata					
Depth	Type & No.	Date Records		Description		Depth, Level	Legend	Backfill/ Instrume
0.10-0.30 0.10-0.30	B 1 D 2	Records	1 MADE GROUND: Brown mottled GRAVEL with occasional cobbles. coarse. Gravel is subangular fine to various lithologies including asphal subangular to subrounded of variou. Strong Hydrocarbon odour noted.	Sand is fine to coarse of t. Cobbles are		(0.40)		instrume
0.50-0.80 0.50-0.80	B3 D4		2 MADE GROUND: Green grey ver fine to coarse. Gravel is subangular fine to coarse of various lithologies.	to subrounded	_	(0.50)		
-		*	EXPLORATORY HOLE EN	DS AT 0.90 m		0.90	XX	
			Consent of copyright own	Moses off, sun offer the				
					-  -			
					-			
Donth	Time ? N-	Records						
Depth roundwater Entries b. Struck Post Strik (m) lone observed (see	e Behaviour	Date	Depth Related Remarks * From to (m) 0.90 Pit terminated due to obstructi	on, possible bedrock.		Stability Good		
otes: For explanation breviations see key vels in metres. Strati depth column.		d is and reduced yen in brackets GL www.esgl.co.uk 4 250692008 11.03:19	Project Roadstone Brownsw Project No. KD8062	ood Quarry		Weather Cloud	<sup>*</sup> <b>P04</b>	

Logged CH Checked CO'K	Start 28/04/2008 End 28/04/2008	Equipment, Methods Excavated pit using K arisings	s <b>and Remarks</b> Komatsu PC340 LC. Backfilled with	Dimensions and Orientation  Width 1.50 m Length 3.50 m  D C 040 (Dec	Ground Level Coordinates National Grid Chainage	
Samples a	nd Tests		Strata			
Depth	Type & No.	Date		scription	Depth, Level	Legend Backfil
0.10-0.30 0.10-0.30	B 1 D 2	Records	Brown sandy clayey GRAVEL with mais fine to coarse. Gravel is subrounded coarse of various lithologies. Cobbles a subrounded of limestone and rhyolite.	fine to	(Thickness)	Instrum
***************************************					0.60	0 0 0
			EXPLORATORY HOLE ENDS A		- 0.60 	
			Consent of copyright owner tee	es of M. any offer tree.		
			Consent of copyright	- - - - - - - -		
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				- - - - -		
Depth  roundwater Entries  o. Struck Post Strik (m)  one observed (see	e Behaviour	Records Date	Depth Related Remarks * From to (m) 0.00 0.60 Pit terminated due to possible obstru	Stability Mode Shoring None Weather Cloud		
ites: For explanation breviations see key els in metres. Stratu depth column. ale 1:25		s and reduced ren in brackets GL vww.esgl.co.uk 1 25/06/2008 11:03:24	Project Roadstone Brownswood Project No. KD8062 Carried out for Roadstone	Quarry	Trial Pit	<b>P05</b> et 1 of 1

Logged CH Checked CO'K	Start 28/04/2008 End 28/04/2008	Equipment, Methods Excavated pit using k arisings.	s <b>and Remarks</b> Komatsu PL340 LC. Backfilled with	Dimensions and Orientation  Width 1.50 m Length 3.50 m  D C	280 (Deg)	Ground Level Coordinates National Grid Chainage			
Samples a	nd Tests		Strata				distriction of the second		
Depth	Type & No.	Date Records		escription		Depth, Level (Thickness)	Legend	Backfill/	
0.50-0.80 0.50-0.80	B1 D2	•	1 MADE GROUND: Firm brown yellow with some cobbles, plastics and gener and plastic wrapping). Sand is fine to c is subrounded fine to coarse of various cobbles are subangular to subrounded sandstone and siltstone. Strong hydronoted.  2 MADE GROUND: Compact grey grewith some cobbles. Sand is fine to coasubrounded fine to coarse of various lincluding asphalt. Cobbles are subang subrounded predominantly of sandstored.	al waste (rags sources of the control of the contro	- - - - - - -	(0.40) 0.40 (0.70)			
			EXPLORATORY HOLE ENDS.						
Depth	Type & No.	Records						+	
oundwater Entries  Struck Post Strik (m)  0.000 light inflor	s ce Behaviour	Date	Depth Related Remarks * From to (m) 1.10 Pit terminated due to obstruction, p	oossible bedrock.		Stability Poor  Shoring None Weather Sunny			
otes: For explanation obreviations see key yels in metres, Strati depth column. cale 1:25	sheet, All depth um thickness giv	s and reduced ven in brackets GL www.esgl.co.uk 125/06/2008 11:03:30	Project Roadstone Brownswood Project No. KD8062 Carried out for Roadstone	l Quarry		She	*P06 eet 1 of 1 Export 19-		

Logged CH Checked CO'K	Start 28/04/2008 End 28/04/2008	<b>Equipment, Methods</b> Excavated pit using h arisings.	s and Remarks Komatsu PC340 LC. Backfilled with	Dimensions and Orientation  Width 1.50 m  Length 3.50 m  D  C  B 180 (Deg	Ground Level Coordinates National Grid Chainage			
Samples a	nd Tests		Strata					
Depth	Type & No.	Date Records	Desc	ription	Depth, Level (Thickness)	Legend Backfill/		
_ - - - 0.50-0.80 _ 0.50-0.80	B 1 D 2		Brown grey sandy clayey GRAVEL with Sand is fine to coarse. Gravel is subroun subangular fine to coarse of various litho Cobbles are angular to subrounded of valithologies.	ded to	(11.00)			
			TOTAL MICROSOFT			ه ده ه		
		*	EXPLORATORY HOLE ENDS AT	1.00 m	1.00	0 .		
			For inspection purpose, to inspect the converted to the c	conty, any other use.				
Depth	Type & No.	Records Date						
Groundwater Entries No. Struck Post Strike (m) 1 0.00 Surface w	Behaviour		Depth Related Remarks * From to (m) 1.00 Pit terminated on instruction of client.		Stability Poor  Shoring None Weather Dry			
Notes: For explanation abbreviations see key levels in metres. Stratu in depth column. Scale 1:25	(c) ES	s and reduced sen in brackets GL www.esgl.co.uk 2506/2008 12:02:31	Project Roadstone Brownswood Q Project No. KD8062 Carried out for Roadstone	uarry	She	<b>P07</b> et 1 of 1 export 19-08-2011:03		

Logged CH Checked CO'K	Start 28/04/2008 End 28/04/2008	Equipment, Method Excavated pit using l arisings.	s and Remarks Komatsu PC340 LC. Backfilled with	Dimensions and Orientation  Width 1.50 m A B B B B B B B B B B B B B B B B B B	Ground Level Coordinates National Grid Chainage			
Samples a	nd Tests		Strata				Ominge gotter to the ag	
Depth	Type & No.	Date		cription	Depth, Level	Legend	Backfil	
0.30-0.50	B 1	Records	MADE GROUND: Asphalt over black is subangular to subrounded fine to coal lithologies.      Brown sandy clayey GRAVEL with occ	rse of various	(Thickness) - 0.20	° e o e	Instrum	
0.30-0.50	D 2		Sand is fine to coarse. Gravel is subang subrounded fine to coarse of various lith	ular to	(0.90)			
1.20-1.50 1.20-1.50	B 3 D 4		3 Uncompact fibrous grey slightly sandy some rootlets and roots up to 20cm. Sul noted.	SILT with ohurous odour	- - - 1.10	2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1	
			4 Grey green silty sandy GRAVEL. Sand	(0.40)	* * * * * * * * * * * * * * * * * * *			
			coarse. Gravel is subrounded fine to coavarious lithologies.	rise of -	- (1.00)			
2.20-2.50 2.20-2.50	B 5 D 6	*	EXPLORATORX FIGURE PNDS AT	got for the state of the state	2.50	0 0 0 X		
			explorators of the ends at the contribution of the ends at the end	- - - -				
				- - - -				
				- - - -				
				- - - -				
		Pacceda						
Depth	Type & No.	Records Date						
oundwater Entries . Struck Post Strike			Depth Related Remarks *	MAN STATE OF THE S	Stability Mode	rate/Poor		
(m) 1.10 Moderate			From to (m) 2.50 Pit terminated as instructed by client.					
tes: For explanation previations see key sels in metres. Stratu lepth column.	sheet. All depths m thickness give	and reduced	Project Roadstone Brownswood C Project No. KD8062 Carried out for Roadstone	Trial Pit <b>TP08</b>				

Logged CH Checked CO'K	Start 28/04/2008 End 28/04/2008	<b>Equipment, Methods</b> Excavated pit using K arisings.	and Remarks comatsu PC340 LC. Backfilled with	Dimensions and Orientation  Width 1.50 m A Length 3.50 m D C B 250 (Deg	Ground Level Coordinates National Grid Chalnage		-
Samples ar	nd Tests		Strata				
Depth	Type & No.	Date Records	De	scription	Depth, Level (Thickness)	Legend	Backfill/ Instrume
			Brown yellow sandy gravelly CLAY we cobbles. Sand is fine to coarse. Gravel fine to coarse of various lithologies. Co subangular to subrounded predominan      Blue grey sandy clayey GRAVEL with cobbles, tree roots and remains. Sand	is subrounded bbles are the substant of the su	(0.60)		
1.50-1.80 1.50-1.80	B 1 D 2		coarse. Gravel is subrounded fine to co various lithologies. Cobbles are subang subrounded predominantly of sandston	arse of ular to e	(1.90)		
			3 Uncompact grey green seriou birds coarse.	gired for any other use.			
2.50-2.80 2.50-2.80	B3 D4		3 Uncompact grey green sendy SILT. S coarse.	and is fine to	- 2.50 - - -	* * * * * * * * * * * * * * * * * * *	
					(2.00)	X X X X X X X X X X X X X X X X X X X	
-		*	EXPLORATORY HOLE ENDS A	T 4 50 m	4.50	* * *	
			EXPLOINTION THOSE ENDS A	700 III	-		
Depth	Type & No.	Records Date					
roundwater Entries o. Struck Post Stril (m) None observed (see	e Behaviour		Depth Related Remarks * From to (m) 4.50 Pit terminated as instructed by clie	Stability Very Shoring Non Weather Clou	ie		
lotes: For explanatio bbreviations see key evels in metres. Strat depth column. cale 1:25	sheet. All dept um thickness g	hs and reduced	Project Roadstone Brownswood Project No. KD8062 Carried out for Roadstone	l Quarry	1	<b>FP09</b> eet 1 of 1	

Logged CH Checked CO'K	Start 28/04/2008 End 28/04/2008	Equipment, Methods Excavated pit using K arisings.	and Remarks omatsu PC340 LC. Backfilled with	Dimensions and Orientation  Width 1.50 m Length 3.50 m  D  G  B  290 (De	Ground Level Coordinates National Grid Chainage	Coordinates National Grid				
Samples ar	nd Tests		Strata							
Depth	Type & No.	Date Records		scription	Depth, Level	Legend	Backfill			
0.50-0.80 0.50-0.80	B 1 D 2	NECOLUS .	2 MADE GROUND: Yellow brown sandy some cobbles. Sand is fine to coarse. Subrounded fine to corse of various liths including asphalt. Cobbles are subangus subrounded predominantly of sandstone and compared to the corse of various liths including asphalt. Cobbles are subangus subrounded predominantly of sandstone and compared to the correction of the compared to the correction of the corre	y clayey GRAVEL with iravel is logies lar to e.	(1.50) - (1.50) - (1.50) - (1.50) - (1.50) - (1.50) - (1.50) - (1.50) - (1.50) - (1.50)					
Depth -	Type & No.	Records				-				
roundwater Entries  b. Struck Post Strike (m)  lone observed (see l	Behaviour	Date	Depth Related Remarks * From to (m) 3.00 Pit terminated as instructed by clien	t,	Shoring None	Stability Good  Shoring None Weather Cloudy				
otes: For explanation breviations see key s vels in metres. Stratu depth column. cale 1:25	sheet. All depth m thickness giv	d as and reduced ven in brackets GL www.esgl.co.uk 4 25/06/2008 12:02:58	Project Roadstone Brownswood Project No. KD8062 Carried out for Roadstone	Quarry		<b>P10</b>				



# ENCLOSURE B GEOENVIRONMENTAL LABORATORY TEST RESULTS t Consent of confringer to the confringer to the confront to the confront to the confringer to the confront to the con

**ALcontrol Report** 

08-B02686/01



18a Rosemount Business Park, Ballycoolin, Dublin 11 Ireland

Tel: +353 (0) 1 8829893 Fax: +353 (0) 1 8829895

### **CERTIFICATE OF ANALYSIS**

Client:

Geotech Specialists Ltd

Carewswood Castlemartyr Co.Cork

Attention:

Ciaran Huges

Date:

26 May, 2008

Our Reference:

08-B02686/01

Your Reference:

KD8062

Location:

Brownswood

A total of 3 samples was received for analysis on Wednesday, 30 April 2008 and authorised on Monday, 26 May 2008. 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.

Caoinche McLoughlin

Signed

Lorenine Alt Namerry

Lorraine McNamara

Laboratory Technical Manager

Compiled By

Caoimhe McLoughlin

UKAS 1291

GROU

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

# **Alcontrol Laboratories Ireland**

Test Schedule

Ref Number: 08-B02686/01

Client: Geotech Specialists Ltd

Date of Receipt: 30/04/2008

Sample Type: SOIL

Location: Brownswood Client Contact: Ciaran Huges

Client Ref: KD8062

08-B02686-S0004-A01 08-B02686-S0005-A01 08-B02686-S0003-A01 UKAS Accredited [Testing Laboratory] No. 1291 ALcontrol Reference Notes: NUMERIC VALUES INDICATE ADDITIONAL SCHEDULING TP01 ES1 TP02 ES2 TP03 ES3 Sample Identity Detection Method 3.50M 0M Other ID Amber Jar Amber Jar Amber Jar ЬΙΛ GCMS Coronene GCMS (31) AGE HAG GCMS (bilos) ZMOO (TI) ISTOT HAY GRAVIMETRIC Natural Moisture Content

page2 / 7

### **ALcontrol Laboratories Ireland**

Test Schedule Summary

Ref Number: 08-B02686/01

Client: Geotech Specialists Ltd

Date of Receipt: 30/04/2008

Sample Type: SOIL

Location: Brownswood Client Contact: Ciaran Huges Client Ref: KD8062

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

SCHEDULE	METHOD	TEST NAME	TOTAL
Х	GCMS	Coronene	3
X	GCMS	PAH EPA (16)	3
X	GCMS	PAH Total (17) GCMS (Solid)	3
Χ	GRAVIMETRIC	Natural Moisture Content	3



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

Checked By:

Caoimhe McLoughlin

# **ALcontrol Laboratories Ireland**

Table Of Results

Ref Number: 08-B02686/01

✓ Validated Interim

Client: Geotech Specialists Ltd

Date of Receipt: 30/04/2008 (of first sample)

Sample Type: SOIL

Location: Brownswood

Client Contact: Ciaran Huges

Client Ref: KD8062

Notes:						The second secon						08-B02686-S0005	08-B02686-S0004	08-B02686-S0003	ne March	ALcontrol Reference	UKAS Accredite		
Notes: METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE	***************************************											TP03 ES3	TP02 ES2	TP01 ES1		Vfiinəbl əlqms2	UKAS Accredited [Testing Laboratory] No. 1291	Method Detection Limit	Detection Method
IMITS ARE NO												OM	3.50M	1,70M	\$150mm	Other ID	ry] No. 1291	on Limit	ethod
F ALWAYS												8634	<u>^</u>	28	ug/kg	Naphthalene	<	<1ug/kg	GCMS
ACHIEVAE												1438	<u>۸</u>	57	ug/kg	Acenaphthylene	<	<1ug/kg	GCMS
LE DUE TO												177	<u>۵</u>	75	ug/kg	Acenaphthene	<	<1ug/kg	GCMS
TO VARIOUS CIRCUMSTANCES BEYOND O												2774	<u>^</u>	35	ug/kg	Sept of the second of the seco	<	<1ug/kg	GCMS
CIRCUMST												4241	7.	1520	ug/kg	Phenanthrene Phenanthrene	<	<1ug/kg	GCMS
ANCES BE									€	5	ns Ti	32220 32220	6 461	<b>%</b> 20	ug/kg	ənəɔʁɪdtnA	<	<1ug/kg	GCMS
							~	er	ó	30		3377		48	ug/kg	Fluoranthene	<	<1ug/kg	GCMS
JR CONTROL.												3006	<u>^</u>	161	ug/kg	Pyrene	<	<1ug/kg	GCMS
•												998	<u>^</u>	479	ug/kg	eneosartins(s)ozned	\	<1ug/kg	GCMS
												1839	<u></u>	243	ug/kg	Сһтуѕепе	uac ecuna <	<1ug/kg	GCMS
NDP = N												1247	<u>^</u>	277	ug/kg	Benzo(b)+Benzo(k)	<	<1ug/kg	GCMS
<b>NDP</b> = NO DETERMINATION POSSIBLE												567	<u>^</u>	94	ug/kg	Benzo(a)pyrene	\	) <1ug/kg	GCMS
INATION F												304	<u>^</u>	<u>^</u>	ug/kg	Indeno(123cd)pyrene	<	) <1ug/kg	GCMS
OSSIBLE												312	<u>^</u>	<u>۸</u>	ug/kg	Dibenzo(ah)anthracene	<	) <1ug/kg	GCMS
												375	<u>^</u>	<u>^</u>	ug/kg	Benzo(ghi)perylene	<	<1ug/kg	GCMS

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

Checked By:

Caoimhe McLoughlin

ALC
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Laboratories
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Treland

Table Of Results

Ref Number: 08-B02686/01

Interim

Validated

Client: Geotech Specialists Ltd

Date of Receipt: 30/04/2008

(of first sample)

Sample Type: SOIL

Location: Brownswood Client Contact: Ciaran Huges

Client Ref: KD8062

Notes:														08-B02686-S0005	08-B02686-S0004	08-B02686-S0003		ALcontrol Reference	<i>f</i>	<b>UKAS Accredit</b>		
Notes: METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL.				AND AND ADDRESS.		The state of the s		The Control of the Co						TP03 ES3	TP02 ES2	TP01 ES1	And the second s	Sample Identity		UKAS Accredited [Testing Laboratory] No. 1291	Method Detection Limit	Detection Method
MITS ARE NO														OM	3.50M	1.70M		Ofher ID		y] No. 1291	on Limit	ethod
T ALWAYS							-							87	<u>^</u>	۵	ug/kg	Coronene			<1ug/kg	GCMS
ACHIEVAB														315112	<u>^</u>	1669	ug/kg	eHAq Aq∃ 81 lstoT	haraninarania di ca	<	<1ug/kg	GCMS
LE DUE TO														31596	<u>^</u>	1669	ug/kg	sHA9 T1 lstoT	economica and a		<1ug/kg	GCMS
VARIOUS						and the second								2.7	1.0	2.2	%	find to make the standard of t	вИ	A London Company	<0.1%	GRAVIMETRIC
CIRCUMST															\$	Dill	SQ Sog	the figure and the second seco		CONTRACTOR OF THE PROPERTY OF		ra de larc
ANCES BEY											- €	or.	nsr Vil	ecti on	OWY	jet				N Colonia de Colonia d	material from the second	
OND OUR									or,	en		ුල්	,				-			and the state of t		to concentrate.
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NDP = N																	perculation.	AND COMPANY CONTRACTOR AND AN AREA OF THE ANALYSIS AND ANALYSIS ANALYSIS AND ANALYSIS AND ANALYSIS AND ANALYSIS AND ANALYSIS AND ANALYS		A CONTRACTOR AND A CONT	With the Contract or contraction from the Contraction of Contracti	
NDP = NO DETERMINATION POSSIBLE																				maint forest occurrence and transmission describes the second sec		
INATION I																	***********		eretate como e sua	emants and publicate analysis and post-post-post-post-post-post-post-post-		
OSSIBLE	-																***************************************			series de la composition della	SET COST (100 SEA WARRING CONSTRUCT STATE	
The second section of the second seco	Acquite district																terzitzione	a staturantian turu meteon daga untuksi da	***************************************	THE CONTRACT OF THE CONTRACT O	Reaching to be bringed underlyinded grade (and a second	

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Consent of copyright our PENDIX

### **APPENDIX**

- 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<sub>2</sub> by the BRE method, VOC, PRO, Cyanide, Acid Soluble Sulphide, SVOC, DRO, PAH, PCB, TPH CWG, 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 NED no fibres detected. If fibres are detected, then identification and quantification is carried out by ALcontrol Technichem or Alcontrol Shutlers in the UK off 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



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PHOTOGRAPHS

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Trial Pits

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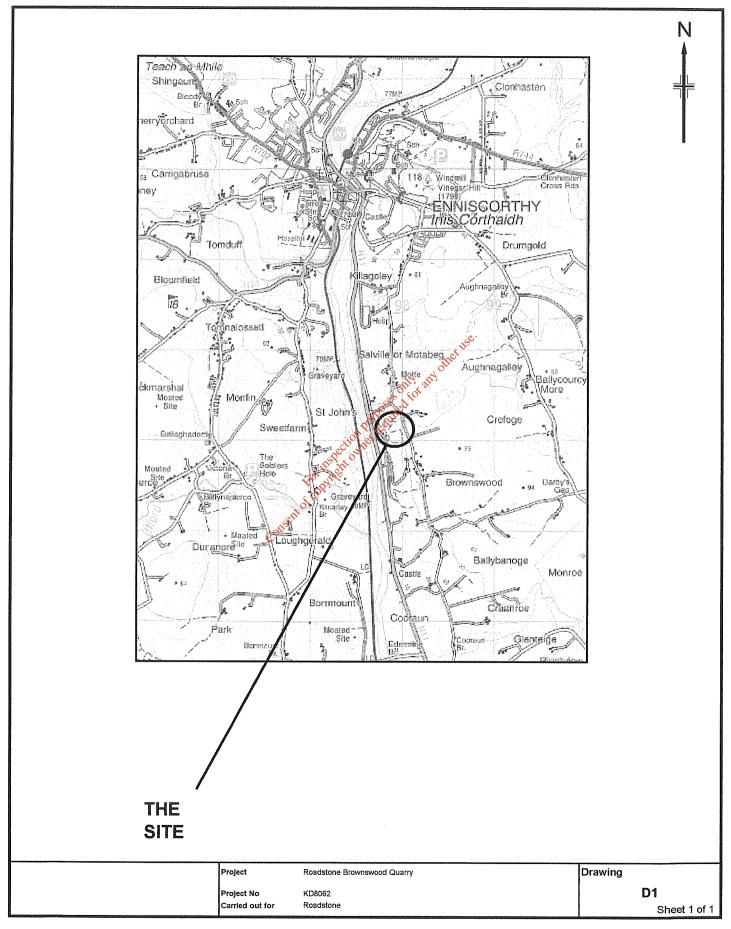
Site Location Plan
Exploratory Hole Location Plan

D1

D2

### Site Location Plan





### **Exploratory Hole Location Plan**



