

ASBESTOS GROUND CONTAMINATION INVESTIGATION SOUTH QUAY THE BARRY WATERFRONT CONSORTIUM AGC-17633-12-198 JANUARY 2013



AN ICOM GROUP COMPANY

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Authors

Linford Shacklady Simon Edwards

Issued by

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Approved by

Simon Edwards

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East Mill, Bridgefoot, Belper, Derbyshire DE56 2UA 01773 829988 Churchgate Court, 3 Church Road, Whitchurch, Cardiff CF14 2DX 02920 610309 ☑ 1 Leonard Place, Westerham Road, Keston BR2 6HQ 01689 889980



TABLE OF CONTENTS

SECTION 1	INTRODUCTION	4
SECTION 2	METHODOLOGY AND ANALYTICAL TECHNIQUES	4
SECTION 3	OBSERVATIONS AND RESULTS	6
SECTION 4	CONCLUSION AND RECOMMENDATIONS	8
		••
 Drawing 3 	04-001 Site Investigation Locations	
	y Hole Records	
 Photograp 		
Thorograp		
APPENDIX 4		•••
 Vintec Cer 	rtificates of Analysis (Bulk ACM)	
APPENDIX 5		
	icate of Analysis (Soils)	

SECTION 1 INTRODUCTION

- 1.1 Merebrook Consulting Ltd (Merebrook) was commissioned by the Barry Waterfront Consortium (The Consortium) to undertake an investigation to assess the presence of asbestos at a site known as South Quay, Barry Quays (National Grid Reference 311700,167100).
- 1.2 The investigation followed the reporting of a widespread area of asbestos contamination in an adjacent parcel of land at Barry Quays known as West Pond.
- 1.3 The aim of the investigation was to provide information on the ground conditions with respect to the presence of asbestos and to give a preliminary appraisal of any remedial response.
- 1.4 The investigation positions were set out on an approximate 50m grid to give representative coverage of the site. In addition, a site walkover was conducted to identify any suspected items of asbestos on the ground surface.
- 1.5 The specific objectives of the current investigation were to:
 - *i.* Assess sub-surface ground conditions present at the site with respect to the presence or absence of suspect ACMs;
 - *ii.* Take samples of any identified suspected ACMs for laboratory analysis to confirm or refute the surveyor's suspicions; and
 - *iii.* Take samples of soils for laboratory analysis to determine asbestos content.
- 1.6 This report has been prepared for The Consortium for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties making reference to the report should consult Merebrook as to the extent to which the findings may be appropriate for their use.

SECTION 2 METHODOLOGY AND ANALYTICAL TECHNIQUES

- 2.1 A site walkover was undertaken to identify any surface asbestos contamination at the site. The walkover was undertaken on 20 November 2012 by Linford Shacklady of Merebrook. The walkover was not intended to be an exhaustive survey but it revealed that asbestos containing artefacts were apparent in several locations on the surface of the site. During the walkover thirteen samples of suspect ACMs from the surface were taken for laboratory confirmation of asbestos content. Materials sampled were assigned unique sample number e.g. S/Job Number/##. Samples were analysed for the presence of asbestos by Vintec Laboratories Limited. Analysis was by polarised light and dispersion staining as described by the Health and Safety Executive in HSG 248.
- 2.2 A total of 47 trial pits were selected to give general coverage of the site on an approximate 50m grid. A JCB backhoe excavator fitted with a 600mm bucket and driver were provided by Lynch Plant Hire for excavation of trial pits.

- 2.3 Trial pits were advanced slowly at each marked location and arisings were inspected for the presence of suspected ACMs. The location of the trial pits is shown on drawing 304-001 provided in Appendix 1.
- 2.4 The investigation was conducted between 13 and 20 November 2012 by Linford Shacklady. Logging of soils in exploratory holes was undertaken. Excavation logs with detailed strata descriptions showing the depth and location of suspect ACMs are contained in Appendix 2. A photographic record was made of all trial holes and any suspected bulk asbestos findings and is provided in Appendix 3.
- 2.5 Dependent upon the depth of made ground, a minimum of one and a maximum of three representative soil samples of made ground was taken from each trial pit. The depth and location of each sample was recorded. Soil samples were submitted to IOM Laboratories (IOM) in Edinburgh for qualitative and quantitative analysis of soil/loose aggregate samples for mass determination of asbestos.
- 2.6 Soils were initially analysed qualitatively by IOM for asbestos by polarised light and dispersion staining as described by the Health and Safety Executive in HSG 248. If asbestos was detected qualitatively, a quantitative analysis was then carried out using the IOM documented in-house method based on HSE Contract Research Report No. 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248.
- 2.7 Where suspected bulk ACMs were observed in arisings from the trial pits, a representative sample was collected for laboratory analysis. Materials sampled were assigned unique sample number e.g. S/Job Number/##. Samples were analysed for the presence of asbestos by Vintec Laboratories Limited. Analysis was by polarised light and dispersion staining as described by the Health and Safety Executive in HSG 248.
- 2.8 Three stockpiles of demolition material were identified on the site (Stockpiles A, B and C). Using a JCB backhoe excavator, the stockpiles were inspected for suspect asbestos containing materials. A total of four samples of suspect ACM were taken for laboratory confirmation of asbestos content. In addition, three samples of 'fines' from stockpile B and six samples of 'fines' from stockpile C were submitted to IOM Laboratories (IOM) in Edinburgh for qualitative and quantitative analysis of soil/loose aggregate samples for mass determination of asbestos using the method as described in Section 2.6. Stockpile A comprised oversize material not suitable for laboratory analysis.



SECTION 3 OBSERVATIONS AND RESULTS

3.1 Of the thirteen samples taken from the surface during the site walkover, ten tested positive for asbestos content. The results are summarised in Table 1 below and the results are provided in Appendix 4.

Sample	ACM	Typical Asbestos Content ¹	Туре		
Number					
S/17633/05	Gasket	variable – usually 90%	Chrysotile (white)		
S/17633/06	Gasket	no asbesto	s detected		
S/17633/07	Gasket	variable – usually 90%	Chrysotile (white)		
S/17633/08	Floor Tile with Adhesive	7-25%	Chrysotile (white)		
S/17633/09	Floor Tile with Adhesive	7-25%	Chrysotile (white)		
S/17633/10	Gasket	variable – usually 90%	Chrysotile (white)		
S/17633/11	Cement	10-15%	Chrysotile (white)		
S/17633/12	Gasket	variable – usually 90%	Chrysotile (white)		
S/17633/17	Cement	10-15%	Chrysotile (white)		
S/17633/18	Cloth	no asbesto	s detected		
S/17633/19	Gasket	variable – usually 90%	Chrysotile (white)		
S/17633/20	Rope Gasket	approaching 100%	Chrysotile (white)		
S/17633/21	Insulation Tape	no asbestos detected			

Table 1: Suspected Asbestos Containing Materials Sampled During Walkover

1 – from HSG264

3.2 Out of the total of 47 trial pits excavated, four were found to contain visible bulk ACMs. All four samples of suspected ACM taken for analysis tested positive for asbestos. The certificate of analysis is provided in Appendix 4. Table 2 below summarises the products found to contain asbestos, their location and typical asbestos content for those types of materials:

Table 2: Suspected Asbestos Containing Materials Sampled During Investigation

Sample Number	ACM	Typical Asbestos Content ¹	Туре	Location
S/17633/01	Gasket	variable – usually 90%	Chrysotile (white)	SQMTP02
S/17633/02	Gasket	variable – usually 90%	Chrysotile (white)	SQMTP15
S/17633/03	Cement	10-15%	Chrysotile (white)	SQMTP30

Sample Number	ACM	Typical Asbestos Content ¹	Туре	Location
S/17633/04	Cement and Lagging	Cement: 10-15% Lagging: varies 6-85%	Cement: Chrysotile (white) Lagging: Amosite (brown) and Crocidolite (blue)	SQMTP37

1 – from HSG264

3.3 Of the four samples taken from the demolition stockpiles, none tested positive for asbestos content. The results are summarised in Table 3 below and the results are provided in Appendix 4.

	- · · · · · ·	
Table 3: Suspected Asbes	tos Containing Materials	Sampled in Stockniles
Table 0. Ouspected Asbes	tos oontaining Matchais	

Sample Number	ACM	Typical Asbestos Content ¹	Туре
S/17633/13	Bitumen Debris	no asbesto	s detected
S/17633/14	Bitumen Debris	no asbesto	s detected
S/17633/15	Bitumen Debris	no asbesto	s detected
S/17633/16	Bitumen Debris	no asbesto	s detected

1 – from HSG264

- 3.4 No asbestos was detected in the samples of fines taken from the stockpiles for laboratory analysis.
- 3.5 Out of the ninety-eight soil samples taken for laboratory analysis of asbestos content, 12 samples tested positive for asbestos comprising rope, free fibres, loose and bound insulation. Of these, the asbestos content in the soil sample ranged from 0.005 to 0.057%. The certificate of analysis is provided in Appendix 5 and a summary of the samples that tested positive for asbestos is given in Table 4 below:

Table 4: Summary of Qualitative and Quantitative Asbestos in Soil Results

Trial Pit ID and Depth	ACM Type Detected	PLM Result	Total % Asbestos in Sample
SQMTP04 0.05m	Free Fibres	Amosite	0.006
SQMTP06 0.20m	Free Fibres	Amosite	0.006
SQMTP10 0.80m	Free Fibres	Chrysotile	0.008
SQMTP13 0.30m	Loose Insulation	Amosite	0.024
SQMTP27 0.10m	Free Fibres	Chrysotile	0.005

Trial Pit ID and Depth	ACM Type Detected	PLM Result	Total % Asbestos in Sample
SQMTP27 0.60m	Free Fibres	Amosite & Chrysotile	0.005
SQMTP27 1.80m	Free Fibres	Amosite & Chrysotile	0.008
SQMTP28 1.10m	Free Fibres	Chrysotile	0.005
SQMTP33 0.25m	Bound Insulation	Chrysotile	0.052
SQMTP35 0.40m	Free Fibres	Amosite	0.006
SQMTP38 0.35m	Rope	Chrysotile	0.057
SQMTP43 0.10m	Free Fibres	Amosite	0.007

SECTION 4 CONCLUSION AND RECOMMENDATIONS

- 4.1 The investigation revealed the presence of asbestos containing materials across the site and distributed asbestos fibres in soils.
- 4.2 Any remedial action to reduce the risks associated with the asbestos contamination will depend upon the development proposals for the site, however the following points are made:
- 4.2.1 Bulk items of known or suspected ACMs on the site can be removed by hand picking. The nature of the items and duration of the picking will determine whether removal needs to be conducted by a licensed contractor following a statutory notification period; by non-licenced operatives following a statutory notification period; or by non-licenced operatives without a statutory notification period. One isolated clump of lagging was found during trial pitting, however, unless further quantities of lagging or similarly friable material are found, it is considered that any removal could be undertaken as notifiable non-licensed work.
- 4.2.2 No guidelines for safe threshold concentration for asbestos content in soils are currently available. The risk, through fibre inhalation, from soils containing asbestos is affected by a number of factors, primarily:
 - *i.* Whether the asbestos is present as loose fibres or in bound material;
 - *ii.* The physical properties of the soils loose dry soils having a greater potential for fibre release when disturbed;
 - iii. The level of disturbance of the soil.
- 4.2.3 As detailed in ICRCL Guidance Note 64/85: Asbestos on Contaminated Sites (October 1990), laboratory studies have shown concentrations of asbestos fibres in soils as low as 0.001% can give rise to measurable concentrations in air if disturbed. These studies were conducted on dry material in a chamber which was vigorously agitated. However, under field conditions, the concentration of asbestos in soils when disturbed which may give rise to airborne concentrations approaching the control limit of 0.1 fibres cm⁻³ during boundary or personnel monitoring is likely to be orders of magnitude higher. The intrinsic moisture content of many soils



considerably reduces the likelihood of fibres becoming airborne. Furthermore, any fibres which may become airborne are quickly dispersed by air currents in an outdoor environment. Under prolonged dry conditions, or where soils are more dry and granular, damping down procedures to minimize dust generation will also prevent fibres becoming airborne.

4.3 Once development plans are in place, an appropriate asbestos management strategy for the site can be advised under separate cover.

APPENDIX 1

Drawing 304-001 Site Investigation Locations



APPENDIX 2

Exploratory Hole Records

mere	brook	Merebrook Tel: 01773 Fax: 01773	829988	Limited		Plant: JCB backhoo	e, breaker, 600mm t	oothed buck	_{et} Trialpit No SQMTP01
	BROUP COMPANY	email: cons	ulting@me	rebrook.	.co.uk	Co-ords: 31144	6E - 167173N		Sheet 1 of 1
Project				Projec	ct No.	Dimensions (m)			Date
Barry C				17633			2.50		13/11/2012
Locatio	n: South	Quay				Depth (m) 2.00			Scale 1:25
Client:		imon Special Pro	jects Wa	les					Logged By LGS
Samp Depth (m)	les & In Situ Te Type F	sting Depth in Results (thick)	metres ness) Leg	gend		Stratum I	Description		
0.30	D	(0.54)	0.11	N c li	MADE GROUND: coarse angular co imestone cobbles	black tarmacadam grey brown slightly silty ncrete, brick, clinker, rar . Occasional black ashy	e slag. Whole bricks	el is medium s and	to
1.00	D	(0.35)	1.00		MADE GROUND:				
			1.10		ight brown slightly	light grey gravel of medi I brick y clayey gravelly SAND. nded flint and siltstone			lint,
		(0.90)							-
						Trialpit Comp	lete at 2.00 m		-
									- 3 - - - - -
									- 4 - 4
									-
Remarks	Hole position accuracy). No	ed with Garmin Etrex Vi o groundwater encounte	sta hand hele red.	d GPS (+	IP	/N - in-situ hand vane P - in-situ pocket penetrr ID - in-situ photoionizatio		J - amber g V - amber g	sturbed sample (tub) lass jar (250ml) glass jar (60ml) turbed sample

nere	bro	ook ¹²	Merebrook Co Tel: 01773 82	onsultir	ng Limit	ted	Plant: JCB backhoe	, breaker, 600mm t		
1	CONSI	ulting	Fax: 01773 8 email: consul	29393	arahra	nok co uk	Co-ords: 311572	2E - 167182N		SQMTP02
A starn			email: consul	ungæn						Sheet 1 of 1
Project		e				ject No.	Dimensions (m):			Date
Barry C		South Quay			176	33	 Depth (m)	2.50		13/11/2012 Scale
							2.70 0			1:25
Client:	F	Persimmon S	pecial Proje	ects W	ales					Logged By LGS
Samp Depth (m)	les & In Type	Situ Testing Results	Depth in m (thicknes		_egend		Stratum D	escription		
				0.10		MADE GROUND S/17633/01 (: concrete slab GASKET DEBRIS			
0.30	D		(0.50)	0.60		MADE GROUND coarse angular b	: black slightly ashy sandy rick, concrete, clinker, slag			-
1.00	D		(0.70)			made GROUND medium to coars inclusions.	: reworked light brown slig e angular to subrounded fli	ntiy ciayey graveliy nt. Occasional bla	sand. Grave ck ashy	9 IS - - - -
1.60	D		(0.50)	1.30		MADE GROUND cobbles, rare bric	: reworked grey mottled or k fragments and black ash	ange brown sandy ly inclusions.	clay. Siltstor	ne
				1.80	****	Soft grev CLAY.	Slight petroleum odour at	top of strata.		-
						con groy c2				-
			(0.90)							
				2.70						
							Thaipit Comple	ale al 2.70 m		-
										-
										-
										-
remarks	: Hole accur	positioned with G racy). No groundv	armin Etrex Vista vater encountered	a hand h d.	ield GPS	1	VN - in-situ hand vane PP - in-situ pocket penetro PID - in-situ photoionization		J - amber gl V - amber g	sturbed sample (tub ass jar (250ml) lass jar (60ml) urbed sample

nere	brook	Merebrook Consu Tel: 01773 829988	Iting Limit 3	ted	Plant: JCB backhoe, breaker, 600mn	
	consulting	Fax: 01773 82939 email: consulting@	3	ok.co.uk	Co-ords: 311546E - 167173N	SQMTP03
Project			Proj	ject No.	Dimensions (m):	Sheet 1 of 1 Date
Barry Q Locatio	uays n: South Qua	ay	176	33	2.50	13/11/2012 Scale 1:25
Client:	Persimmo	n Special Projects	Wales			Logged By
	es & In Situ Testing Type Resul		Legend		Stratum Description	
0.20 0.80	Type Resul	ts (thickness) (0.50) (0.40) (0.40) (1.60) 2.50		MADE GROUN angular siltston inclusions. MADE GROUN medium to coar	ID: pinkish grey sandy silty gravel. Gravel is f e/mudstone, concrete, clinker. Frequent blace ID: reworked light brown slightly clayey grave rse angular to subrounded flint. Occasional b ck staining with petroleum odour and water in Trialpit Complete at 2.50 m	ine to coarse k ashy ly sand. Gravel is lack ashy
?emarks:	Hole positioned w accuracy). Ground	ith Garmin Etrex Vista hand dwater encountered.	d held GPS	5 (+/- 4m	IVN - in-situ hand vane IPP - in-situ pocket penetrometer PID - in-situ photoionization detector	D - small disturbed sample (tub J - amber glass jar (250ml) V - amber glass jar (60ml) B - bulk disturbed sample

moro	brook	Merebrook Consult	ing Limited	Plant: JCB backhoe	e, breaker, 600mm toothed b	
thele	consulting	Tel: 01773 829988 Fax: 01773 829393	8	Co-ords: 31159	75 107150N	SQMTP04
widom a	SROUP SOMPANY	email: consulting@	merebrook.co.uk	CO-OFOS: 31159	7E - 167159N	Sheet 1 of 1
Project			Project No.	Dimensions (m)	:	Date
Barry Q			17633		2.50	13/11/2012
Location	n: South Quay			Depth (m) 1.40		Scale 1:25
Client:		Special Projects V	Vales			Logged By LGS
	es & In Situ Testing Type Results	Depth in metres (thickness)	Legend	Stratum I	Description	
	Type Results D D	(0.65) (0.65)	Dark brown silt brick, rare cond CONCRETE sl MADE GROUN coarse angular MADE GROUN siltstone/mudst Light orangey I boulders. Grav odour. Rapid v	y slightly gravelly TOPSOIL rete, glass, plastic. Rootlets ab with rebar. ID: black slightly ashy sandy brick, concrete, clinker, sla ID: reworked orange gravell one, rare brick and concrete prown mottled grey firm grav	Gravel is medium angular s. y silty gravel. Gravel is mediu g. y clay. Gravel is coarse ang s. relly CLAY. Siltstone/mudstor e/mudstone. Slight petroleu h light brown free product boulder obstruction at 1.4m	ular -
						- 4 - - - - - - - - - - - - - - - - - -
Remarks:	Hole positioned with G accuracy). Groundwat	armin Etrex Vista hand er encountered.	held GPS (+/- 4m	IVN - in-situ hand vane IPP - in-situ pocket penetrr PID - in-situ photoionizatio	n detector J - amb V - amb	II disturbed sample (tub) er glass jar (250ml) ver glass jar (60ml) disturbed sample

mere		Merebrook Consul Tel: 01773 829988	}	ed	Plant: JCB backhoe, breaker, 600mm	toothed bucket Trialpit No
widom	GROUP COMPANY	Fax: 01773 82939 email: consulting@	merebro	ok.co.uk	Co-ords: 311596E - 167123N	Sheet 1 of 1
Project			Proj	ect No.	Dimensions (m):	Date
Barry C			1763		2.50	13/11/2012
Locatio	on: South Qua	ау	I		Depth (m) 1.50	Scale 1:25
Client:		on Special Projects	Wales			Logged By
Samp Depth (m)	les & In Situ Testing Type Resul		Legend	001/00575	Stratum Description	
0.20		0.15	****	CONCRETE sla MADE GROUN concrete, clinke	io with rebar. D: light brown clayey gravel. Gravel is mediu r, siltstone. Siltstone cobbles. Black ashy inc	m to coarse angular usions.
0.30	D	0.35		Brown slightly s	andy gravelly cobbly CLAY. Gravel is angular I water ingress at 0.8m bgl with oily sheen on	coarse -
		1.50			Trialpit Complete at 1.50 m	
						-2
						- 3
						- 4 - - - - - -
Remarks	: Hole positioned w accuracy). Ground	ith Garmin Etrex Vista hand	I held GPS		IVN - in-situ hand vane IPP - in-situ pocket penetrometer PID - in-situ photoionization detector	D - small disturbed sample (tub) J - amber glass jar (250ml) V - amber glass jar (60ml) B - bulk disturbed sample

nereb	NOOK	Merebrook Consult Tel: 01773 829988 Fax: 01773 829393		ed	Plant: JCB backhoe, bre	eaker, 600mm toothed	bucket Trialpit No
Midom GRO		email: consulting@	merebroo	k.co.uk	Co-ords: 311546E -	167123N	Sheet 1 of 1
Project Na			Proje	ect No.	Dimensions (m):		Date
Barry Qua			1763			2.50	13/11/2012
Location:	South Quay		·		Depth (m) 1.70		Scale 1:25
Client:	Persimmon Sp	ecial Projects V	Vales				Logged By
	& In Situ Testing /pe Results	Depth in metres (thickness)	Legend		Stratum Desc	cription	
0.20		(0.35) 0.35 (1.35) 1.70		Light brown gra	ID: turf over black slightly ashy s rse angular brick, concrete, clink avelly CLAY. Gravel is medium t gress at 1.0m bgl.	to coarde angular muds	-
							- - - - - - - - - - - - - - - - - - -
emarks: 1	Hole positioned with Ga	rmin Etrex Vista hand	held GPS	(+/- 4m			-
e	accuracy). Groundwater	encountered.			IVN - in-situ hand vane IPP - in-situ pocket penetromete PID - in-situ photoionization det	er J - aml tector V - am	all disturbed sample (tub ber glass jar (250ml) iber glass jar (60ml) Ik disturbed sample

moro	brook	Merebrook Consult	ting Limite	ed	Plant: JCB backhoe	e, breaker, 600mm tooth	ed buck	_{et} Trialpit No
mele	consulting	Tel: 01773 829988 Fax: 01773 829393	3					SQMTP07
Mildom a	BROUP COMPANY	email: consulting@	merebroo	ok.co.uk	CO-OFOS: 31149	6E - 167123N		Sheet 1 of 1
Project			-		Dimensions (m):			Date
Barry Q	-		1763	33		2.50		13/11/2012
Locatio	n: South Quay				Depth (m) 1.50			Scale 1:25
Client:	Persimmon	Special Projects \	Nales					Logged By LGS
-	Type Results	Depth in metres (thickness)	Legend		Stratum [Description		
				CONCRETE slab	with rebar.			-
0.35	D	0.20 (0.70) 0.90		fine to coarse ang petrochemical odo	reddish brown stiff grave ular to subrounded clinke ur. Rapid water ingress	r, brick, flint, slag. Stro	ng	
		(0.60)		Dark grey siltsone, petrochemical odo	/mudstone cobbly GRAV ur. Pit walls collapsing.	EL with black staining.	Strong	-1
		1.50			Trialpit Compl	ete at 1.50 m		-2
								- 4
Remarks:	Hole positioned with accuracy). Groundwa	Garmin Etrex Vista hand ater encountered. Pit sid	held GPS es unstable	e. IP	N - in-situ hand vane P - in-situ pocket penetro D - in-situ photoionization	n detector J - V -	amber g amber g	sturbed sample (tub) lass jar (250ml) lass jar (60ml) turbed sample

nerebrook	Merebrook Consulting L Tel: 01773 829988	imited	Plant: JCB backhoe, breaker, 600mm to	
consulting	Fax: 01773 829393 email: consulting@mere	ebrook co.uk	Co-ords: 311455E - 167086N	SQMTP08
Project Name	-	Project No.	Dimonoiono (m):	Sheet 1 of 1 Date
Barry Quays		7633	Dimensions (m): 2.50	13/11/2012
Location: South Quay			Depth (m)	Scale
			1.20 °	1:25
Client: Persimmon S	pecial Projects Wale	es		Logged By
Samples & In Situ Testing epth (m) Type Results	Depth in metres (thickness)	end	Stratum Description	
0.30 D		MADE GROUN coarse angular Slow water ing	ab with rebar. ID: reddish brown coarse siltstone gravel interber rse angular gravel of concrete, rare brick, Siltstor ID: black slightly ashy sandy silty gravel. Gravel brick, concrete, clinker, slag. Strong petrochemin ress at 0.7m bgl. NE/MUDSTONE cobbles and boulders. Trialpit Complete at 1.20 m	ne
emarks: Hole positioned with Ga accuracy). Groundwate	armin Etrex Vista hand held er encountered.	GPS (+/- 4m	IPP - in-situ pocket penetrometer	D - small disturbed sample (tub J - amber glass jar (250ml) V - amber glass jar (60ml)

mere		Merebrook Consul Tel: 01773 829988 Fax: 01773 82938	3		_	e, breaker, 600mm too	othed buck	_{et} Trialpit No SQMTP09
	DR" POORPAN	email: consulting@			- JIUS: 31144	6E - 167123N		Sheet 1 of 1
Project Barry Q			Project 1 17633	lo. Dir	mensions (m):			Date 13/11/2012
	n: South Quay		17000		epth (m) 2.00	2.50		Scale 1:25
Client:	Persimmon S	Special Projects	Wales					Logged By LGS
Sampl Depth (m)	es & In Situ Testing Type Results	Depth in metres (thickness)	Legend	·	Stratum [Description		
0.40		0.25 (0.45) (0.70) (0.60) 2.00	MAI ang MAI is fir inclu	lar siltstone, conc E GROUND: dark e to coarse angula sions. Timber frag	brown silty clayey g rete, rare brick, clink grey black slightly s ar clinker, rare brick gments at 1.2m bgl.	andy gravelly cobbly and siltstone. Black a	clay. Grav Ishy	-
Remarks	Hole positioned with G accuracy). Groundwat	armin Etrex Vista hand er encountered.	 held GPS (+/- 4	IPP - ir	n-situ hand vane n-situ pocket penetro n-situ photoionization	n detector	l - amber g / - amber g	sturbed sample (tub) lass jar (250ml) glass jar (60ml) turbed sample

THEFE	A Property of the second	O LA	Merebrook Consult	ing Limit	ted	Plant: JCB backhoo	e, breaker, 600mm tooth	ed buck	_{et} Trialpit No
	consult	ling	Tel: 01773 829988 Fax: 01773 829393	}					SQMTP10
widom	DIRITUP COM	PAN'	email: consulting@	merebro	ook.co.uk	Co-ords: 31152	3E - 167191N		Sheet 1 of 1
Project	Name			-	ject No.	Dimensions (m)	:		Date
Barry C	-			176	33	_	2.50		14/11/2012
Locatio	n: So	outh Quay				Depth (m) 2.20			Scale 1:25
Client:	Pe	ersimmon Sp	ecial Projects \	Vales					Logged By LGS
		itu Testing Results	Depth in metres (thickness)	Legend		Stratum I	Description		
Depth (m)	Туре	Results	(uniokitess)	*****	MADE GROUND:	black tarmacadam			
0.20	D		0.15	<u></u>	MADE GROUND:	fine to coarse angular lin	nestone clinker		
			0.40	~~~~		coarse brick rubble, con	crete and siltstone cobbl		
			(0.30)					100	-
			0.70						
0.80	D				angular brick, occ	dark grey black ashy sa asional slag, coal, flint, c	ndy gravel. Gravel is fine oncrete, clinker.	e to mec	dium -
			(0.40)						-
			1.10		De delie harrow av				['
				222	angular siltstone	ottled grey gravelly CLAN and limestone. Limeston	e cobbles. Rapid water	ingress	-
					at 2.2m bgl.				
									-
			(1.10)	235					-
				물물을					-
									-
									- 2
			2.20	2.52					
						Trialpit Comp	lete at 2.20 m		-
									ľ
									-
									-
									-
									- 3
									-
									-
									t i i i i i i i i i i i i i i i i i i i
									-
									-
									- 4
									-
									-
									ŀ
									-
									-
Bomorka	• Liai	politioned with O	min Etrov Vista ha	hold OD	2/1/ 4m		I		-
Remarks	 Hole po accurac 	ositioned with Gar cy). Groundwater	min Etrex Vista hand encountered.	neld GPS	IF	/N - in-situ hand vane PP - in-situ pocket penetra ID - in-situ photoionizatio	n detector J - V -	amber g amber g	isturbed sample (tub) Jlass jar (250ml) glass jar (60ml) turbed sample

mere	hro	nok ^{1/2}	Merebrook Con	sulting Lim	ited	Plant: JCB backho	e, breaker, 600mm tootheo	d buck	_{et} Trialpit No
incic.	CONSU		Tel: 01773 8299 Fax: 01773 829	393		Co-ords: 31154	6E - 167202N		SQMTP11
widom)		DATPANY:	email: consultin						Sheet 1 of 1
Project		9			oject No.	Dimensions (m)	:		Date
Barry Q	-			176	633		2.50		14/11/2012
Locatio	on: 5	South Quay				Depth (m) 2.00			Scale 1:25
Client:		Persimmon Sp							Logged By LGS
Sampl Depth (m)	les & In Type	Situ Testing Results	Depth in metr (thickness)	es Legend		Stratum	Description		
			0.		MADE GROUNE): black tarmacadam			-
			0.	12	MADE GROUNE): fine to coarse angular li	nestone clinker		-
0.30	D		0.3	30	MADE GROUNE): dark grey brown frequer	ntly black ashy sandy grave	el. Gra	avel is
			(0.40)		fine to coarse an	igular clinker, brick, concre	ete and limestone.		-
0.60	D								-
			0.	70	MADE GROUNE): orange brown reworked	sand with occasional brick	fragm	ients.
			(0.40)						-
									- 1
			1.	10	Grey brown sand	d silty cobbly GRAVEL. G	ravel is medum to coarse a	angula	r
					siltstone/mudsto	ne.			-
				(5 3				-
			(0.90)	1 K - 2 K					-
									-
									-
			2.	0					
			2.			Trialpit Comp	lete at 2.00 m		
									-
									-
									-
									-
									-
									-
									- 3
									-
									-
									-
									-
									F
									-
									- 4
									- 4
									-
									-
									-
									F
									-
									-
									F
Remarks	: Hole accur	positioned with Ga acy). No groundwa	urmin Etrex Vista h ater encountered.	and held GP	1	VN - in-situ hand vane PP - in-situ pocket penetr PID - in-situ photoionizatio	n detector J - an V - an	nber g nber g	sturbed sample (tub) lass jar (250ml) lass jar (60ml) turbed sample

nere	bro	JOK	Merebrook (Tel: 01773 8 Fax: 01773 8	29988	ng Limit	ed	Plant: JCB backhoe, b	preaker, 600mm toothec	Houcket Trialpit No
Midom			email: consu	Iting@r	nerebro	ok.co.uk	Co-ords: 311496E	- 167173N	Sheet 1 of
Project					Proj	ect No.	Dimensions (m):		Date
Barry C	Juays	3			176	33		2.50	14/11/2012
_ocatio	n:	South Quay					Depth (m) 2.20		Scale 1:25
Client:		Persimmon Sp	oecial Proj	ects V	/ales				Logged By
Sampl pth (m)	les & l Type	n Situ Testing Results	Depth in r (thickne	netres ess)	Legend		Stratum De	scription	
0.20	D		(0.65)			Turf over brow angular to sub	vn silty sandy gravelly TOPSOIL brounded flint, brick, clinker. Bla	Gravel is fine to medi ack ashy inclusions.	um
0.60	D		(0.35)	0.65			iltstone/limestone gravelly COB		
			(1.00)	1.00		Light orange b	prown occasionally mottled grey	very sandy soft CLAY.	
				2.00		Grey very san at 2.2m bgl.	dy CLAY. Some black staining	with strong petrochemic	cal odour
				2.20			Trialpit Complete	at 2.20 m	
emarks	: Hole acci	e positioned with Ga uracy). No groundwa	rmin Etrex Vis ater encounter	ta hand ł ed.	neld GPS	S (+/- 4m	IVN - in-situ hand vane IPP - in-situ pocket penetrom PID - in-situ photoionization d	eter J - an	nall disturbed sample (tu nber glass jar (250ml) nber glass jar (60ml)

mere	broc	ok Me	erebrook Consu I: 01773 829988	ting Limit	ed	Plant: JCB backhoe	e, breaker, 600mm t	toothed buck	
	consultin	9 Fa	a: 01773 82938 x: 01773 82939 nail: consulting@	3	ok.co.uk	Co-ords: 31146	8E - 167143N		SQMTP13
	STREET SOMPA	M							Sheet 1 of 1 Date
Project Barry Q				176	ect No.	Dimensions (m):			14/11/2012
Location		th Quay		170	33	Depth (m)	2.50		Scale 1:25
Client:	Pers	simmon Spe	cial Projects	Wales					Logged By LGS
	es & In Situ Type	Testing Results	Depth in metres (thickness)	Legend		Stratum E	Description		
0.30	D		(1.00) 1.00 1.20		Reddish brown angular siltstone	D: turf over black slightly as se angular brick, concrete, mottled grey gravelly CLAY and limestone. Limestone avelly SAND. Strong petroo p/mudstone.	clinker, slag. 7. Gravel is mediun e cobbles.	n to coarse	e
			(1.00) 2.20				– – – – – – – – – – – – – – – – – – –		-2
									- 3
									- 4
									- - - - - - - -
Remarks:	Hole posi accuracy	itioned with Garmi). No groundwater	n Etrex Vista hand encountered.	d held GPS		IVN - in-situ hand vane IPP - in-situ pocket penetrc PID - in-situ photoionizatioi		J - amber g V - amber g	sturbed sample (tub) lass jar (250ml) glass jar (60ml) turbed sample

nere	ebr	ook	Merebrook Cons Tel: 01773 8299	88	ed	Plant: JCB backhoe, breaker, 600m	
		sulting	Fax: 01773 829 email: consulting	393	ok.co.uk	Co-ords: 311518E - 167143N	SQMTP14
Project				-	ject No.	Dimonsions (m):	Sheet 1 of 1 Date
Barry C				176		Dimensions (m):	14/11/0010
-	-	South Quay				Depth (m) 2.00	Scale 1:25
Client:		Persimmon S	Special Project	s Wales			Logged By LGS
		In Situ Testing Results	Depth in metre (thickness)	es Legend		Stratum Description	
0.20 0.90	D	Results Image: Image of the second	(thickness) 0.1 (0.90) 1.0 (0.75) 2.0		MADE GROUI medium to coa	In TOPSOIL. Rootlets. ND: dark grey/black slightly ashy sandy silty garse angular brick, concrete, clinker, slag. ND: grey mottled pinkish grey clayey gravel. 0 one/siltstone. Limestone cobbles. Rapid wat sandy cobbly CLAY. Siltstone cobbles. Trialpit Complete at 2.00 m	- - - - - - - - - - - - - - - - - - -
emarks	S: Hol acc	le positioned with 0 suracy). Groundwat	Garmin Etrex Vista ha ter encountered.	and held GPS	S (+/- 4m	IVN - in-situ hand vane IPP - in-situ pocket penetrometer PID - in-situ photoionization detector	D - small disturbed sample (tub J - amber glass jar (250ml) V - amber glass jar (60ml) B - bulk disturbed sample

moro	brook	Merebrook Consult	ing Limite	ed	Plant: JCB backhoe	e, breaker, 600mm to	othed buck	_{et} Trialpit No
mele	consulting	Tel: 01773 829988 Fax: 01773 829393	}					SQMTP15
All idams	ONP SOMPARY	email: consulting@	merebroo	ok.co.uk	Co-ords: 31164	6E - 167123N		Sheet 1 of 1
Project				ect No.	Dimensions (m):	1		Date
Barry Q			1763	33		2.50		14/11/2012
Location	n: South Quay				Depth (m) 1.30			Scale 1:25
Client:		Special Projects V	Vales					Logged By LGS
	Type Results	Depth in metres (thickness)	Legend		Stratum I	Description		
0.30	D	(0.50) 0.50 (0.60)		Water drain at 0.2 S/17633/02 G Black medium to 0				-
		1.10		0				-1
		1.20 1.30	0.0.0		tone/limestone COBBLES			
								-2
								- 3
Remarks:	Hole positioned with G accuracy). Groundwate	armin Etrex Vista hand er encountered.	held GPS	IF	/N - in-situ hand vane 안 - in-situ pocket penetro ID - in-situ photoionizatio	ometer n detector	J - amber g V - amber g	sturbed sample (tub) lass jar (250ml) Jlass jar (60ml) turbed sample

mere	brook	Merebrook Consul Tel: 01773 829988	ting Limit	ed	Plant: JCB backhoe, breaker, 600mn	toothed buck	
	consulting	Fax: 01773 829393 email: consulting@	3	ok co uk	Co-ords: 311646E - 167158N		SQMTP16
	OP OMPARY	eman. consulting@					Sheet 1 of 1
Project Barry Q			176	j ect No. 33	Dimensions (m):		Date 14/11/2012
	n: South Quay				Depth (m) 2.10		Scale 1:25
Client:	Persimmon S	pecial Projects	Wales				Logged By LGS
	es & In Situ Testing Type Results	Depth in metres (thickness)	Legend		Stratum Description		
0.40		0.25 (1.15) (0.50) (0.50) 1.90 2.10		angular brick, co): black ashy sandy silty gravel. Gravel is m ncrete, clinker, flint. dium SAND. Petrochemical odour. Rapid v		- - - - - 1 - - - - - - - - - - - - - -
Remarks	Hole positioned with G accuracy). Groundwate	armin Etrex Vista hanc er encountered.	I held GPS		VN - in-situ hand vane PP - in-situ pocket penetrometer PID - in-situ photoionization detector	J - amber g V - amber g	isturbed sample (tub) glass jar (250ml) glass jar (60ml) turbed sample

nere	br	ook	Merebrook (Tel: 01773 8	Consultir	ng Limit	ed	Plant: JCB backhoe,	breaker, 600mm to	
	cons	sulting	Fax: 01773 8 email: consu	329393	arabra		Co-ords: 311646	E - 167208N	SQMTP1
			email: consu	liting@r				2 10/2001	Sheet 1 of
Project					-	ect No.	Dimensions (m):		Date 14/11/2012
Barry C		South Quay			176	33	Depth (m)	2.50	Scale
	<i>/</i> //.	South Quay					2.00 0		1:25
Client:		Persimmon	Special Proj	ects W	ales				Logged By
Samp epth (m)	les & I Type	n Situ Testing Results	Depth in r (thickne	netres ess)	egend		Stratum D	escription	
1 ()				0.10	****		: black tarmacadam		
0.25	D		(0.30)			MADE GROUND angular clinker, r	: grey slightly sandy gravel are brick and concrete. Tir	. Gravel is medium nber sleepers.	to coarse
				0.40	*****		: dark grey/black slightly as	hy sandy silty grave	A Gravel is
				X	****	medium to coars cobbles.	e angular brick, concrete, c	linker, slag, flint. Lir	mestone
	_		(0.55)	X	****	0000100.			
0.75	D			8	****				
				0.95	****	Grev mottled vell	ow brown sandy gravelly c	obbly CLAY. Grave	l is coarse to
				1.4-1		cobble size angu	lar siltstone/limestone.		
				* 1	33				
			(1.05)	4.4.					
				1.1.4					
				1.4.1					
				1.06	100				
				2.00			Trialpit Comple	te at 2.00 m	
			1						
mortes									
emarks	S: Hole acci	e positioned with uracy). No ground	Garmin Etrex Visi	ta hand h ed.	eld GPS	1	VN - in-situ hand vane PP - in-situ pocket penetror		D - small disturbed sample (tu J - amber glass jar (250ml)

mere	brook	Merebrook Consul Tel: 01773 829988		ed	Plant: JCB backhoe	, breaker, 600mm toot	thed bucke	Trialpit No
	consulting	Fax: 01773 82939 email: consulting@	3	ok.co.uk	Co-ords: 31162	2E - 167187N		Sheet 1 of 1
Project			Proi	ect No.	Dimensions (m):			Date
Barry Q			176			2.50		14/11/2012
	n: South Quay				Depth (m) 2.30	2.00		Scale 1:25
Client:	Persimmon	Special Projects	Wales					Logged By LGS
Sampl Depth (m)	Type Results	Depth in metres (thickness)	Legend		Stratum E	Description	I	
0.20	D	0.18 (0.62) (0.30) (0.30) (1.10 (1.20)		clinker, rare bric	D: black ashy gravelly sand	estone cobbles and bo	oulders.	igular
		2.30			Trialpit Compl	ete at 2.30 m		-3
Remarks	Hole positioned with accuracy). Groundwa	Garmin Etrex Vista hand ater encountered.	I held GPS		IVN - in-situ hand vane IPP - in-situ pocket penetro PID - in-situ photoionizatior	n detector J	- amber g - amber g	sturbed sample (tub) lass jar (250ml) lass jar (60ml) urbed sample

mere	brook	Merebrook Consul Tel: 01773 829988	ting Limi	ted	Plant: JCB backhoe	e, breaker, 600mm tootl	hed buck	
	consulting	Fax: 01773 82939 email: consulting@	3	ook.co.uk	Co-ords: 31166	6E - 167193N		SQMTP19 Sheet 1 of 1
Project		0 -		ject No.	Dimonoiono (m)			Date
Barry Q			176	-	Dimensions (m):	2.50		14/11/2012
-	n: South Quay				Depth (m)	2.30		Scale 1:25
Client:	Persimmon	Special Projects	Wales		_			Logged By LGS
	Type Results	Depth in metres (thickness)	Legend		Stratum [Description		
0.00	2	0.10		MADE GROUND	: dark grey black ashy sa			
0.30	D	(0.30)		medium angular l	orange brown sandy silty brick and clinker. Black a	shy inclusions.		
0.70	D	(0.45)		MADE GROUND and boulders. Gr	: dark grey brown ashy sa ravel is fine to coarse ang	ndy silty gravel with lim ular clinker and flint.	iestone c	obbles - - -
		1.00		Orange brown cla 1.7-1.8m bgl.	ayey SAND. Black stainin	g and strong hydrocarb	oon odoui	rat 1
		(1.20)						-
		(1.20)						-
		2.20			– – – – – – – – – – – – – – – – – – –			-2
								-
								- 3
								-
								-
								- 4
								-
Remarks:	Hole positioned with accuracy). No ground	Garmin Etrex Vista hanc dwater encountered.	I held GP	IF	VN - in-situ hand vane PP - in-situ pocket penetro PD - in-situ photoionization	n detector V	- amber g - amber g	sturbed sample (tub) lass jar (250ml) glass jar (60ml) turbed sample

mere	bro		Aerebrook Cons	sulting Limit	ed	Plant: JCB backhoe	, breaker, 600mm t	toothed buck	
unore e	cons	ulting	el: 01773 8299 ax: 01773 8293	393	ok oo uk	Co-ords: 311696	6E - 167173N		SQMTP20
Midom		OMPANY.	email: consulting						Sheet 1 of 1
Project				-	ect No.	Dimensions (m):			Date
Barry C				176	33		2.50		14/11/2012
Locatio	n: a	South Quay				Depth (m) 2.20			Scale 1:25
Client:		Persimmon Spe							Logged By LGS
Samp Depth (m)	l es & Ir Type	Situ Testing Results	Depth in metre (thickness)	es Legend			Description		
0.10	D		(0.90)	0		ND: turf over black ashy sand flint, clinker, slag. Slow wate	ly gravel. Gravel is r ingress at 0.6m b	fine to mediu	JM - - - - - - - - -
			(1.30)						2
			2.2	20		Trialpit Comple	ete at 2.20 m		
									- 3
									-
									- - - - -
Remarks	: Hole accu	positioned with Garr racy). Groundwater e	I nin Etrex Vista ha encountered.	nd held GPS	S (+/- 4m	IVN - in-situ hand vane IPP - in-situ pocket penetro PID - in-situ photoionization	meter n detector	J - amber g V - amber g	sturbed sample (tub) lass jar (250ml) lass jar (60ml) turbed sample

mere	brook	Merebrook Consult Tel: 01773 829988	ing Limit	ed	Plant: JCB backhoe	e, breaker, 600mm too	othed buck	
1.	consulting	Fax: 01773 829393 email: consulting@		ok.co.uk	Co-ords: 31172	2E - 167206N		SQMTP21
	APROP COMPANY				.			Sheet 1 of 1 Date
Project Barry Q			176	ect No. 33	Dimensions (m):	2.50		15/11/2012
	n: South Quay				Depth (m) 2.00			Scale 1:25
Client:	Persimmon S	pecial Projects V	Vales					Logged By LGS
	Es & In Situ Testing	Depth in metres (thickness)	Legend		Stratum [Description		
Depth (m) 0.40 1.00	Type Results D D I I I I I I I I I I I I I I I I I	(IIICKRIESS) 0.15 0.30 (0.90) 1.20 (0.80) 2.00		MADE GROUND MADE GROUND angular brick, cor concrete cobbles	: black tarmacadam : grey limestone clinker ar : grey brown ashy sandy g crete, clinker, rare slag.	nd concrete cobbles. gravel. Gravel is fine Whole bricks, limesto	to coarse ne and	
Remarks:	Hole positioned with G accuracy). No groundw	armin Etrex Vista hand vater encountered.	held GPS	IF	/N - in-situ hand vane PP - in-situ pocket penetro ID - in-situ photoionizatio	n detector	J - amber g V - amber g	sturbed sample (tub) lass jar (250ml) glass jar (60ml) turbed sample

mere	brook	Merebrook Consulti Tel: 01773 829988	ng Limit	ed	Plant: JCB backhoe	e, breaker, 600mm to	othed buck	_{et} Trialpit No
100	consulting	Fax: 01773 829988 Fax: 01773 829393 email: consulting@r		ok.co.uk	Co-ords: 31177	1E - 167199N		SQMTP22
	LOSP SOMPANY	email. consulting@r						Sheet 1 of 1
Project Barry Q			176	ect No.	Dimensions (m):			Date 15/11/2012
	n: South Quay		170		Depth (m) 2.00	2.50		Scale 1:25
Client:	Persimmon S	Special Projects W	Vales		2.00			Logged By
	es & In Situ Testing	Depth in metres (thickness)	Legend			Description		
Depth (m)	Type Results	(thickness)		MADE GROUND): black tarmacadam	Description		
		0.15	*****	MADE GROUND): grey limestone clinker ar	nd concrete cobbles.		
0.40	D	(0.90)		MADE GROUNE angular brick, co concrete cobbles): grey brown ashy sandy (ncrete, clinker, rare slag. S.	gravel. Gravel is fine Whole bricks, limesto	to coarse one and	
1.00	D	1.20		MADE GROUNE 1.9m bgl.): Reworked greenish grey	r sandy CLAY. Buried	concrete p	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1
		(0.80)				ete at 2.00 m		
								- 3
								-4
Remarks	Hole positioned with (accuracy). No ground	Garmin Etrex Vista hand H water encountered.	held GPS		VN - in-situ hand vane PP - in-situ pocket penetro PD - in-situ photoionizatio	n detector	J - amber g V - amber g	isturbed sample (tub) Ilass jar (250ml) glass jar (60ml) turbed sample

nere	brook	Merebrook Consulti Tel: 01773 829988	ng Limit	ed	Plant: JCB backhoe, breaker, 600mm	
	consulting	Fax: 01773 829393 email: consulting@n	norobro	ok co uk	Co-ords: 311824E - 167195N	SQMTP2
	DRINP COMPANY	email: consulting@n				Sheet 1 of
Project Barry Q			Proj	ect No.	Dimensions (m):	Date 15/11/2012
-	n: South Quay		170	33	2.50	Scale
Locatio						1:25
Client:		Special Projects W	/ales			LGS
	es & In Situ TestingTypeResults	Depth in metres (thickness)	Legend		Stratum Description	
		8	****	MADE GROUND	: black tarmacadam	
		0.20	*****	MADE GROUND	: light brown sandy coarse clinker gravel.	
0.40	D	0.32		MADE GROUND	: black ashy sandy gravel. Gravel is fine to	coarse angular
0.40		(0.28)		brick, concrete, c obstruction at 0.6	linker. Concrete cobbles and boulders. La im bgl.	rge concrete
0.60	D	0.60	~~~~			
						-
						-
						-
						-
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lemarks	Hole positioned with accuracy). No ground	Garmin Etrex Vista hand h dwater encountered.	neld GPS	1	/N - in-situ hand vane PP - in-situ pocket penetrometer ID - in-situ photoionization detector	D - small disturbed sample (tul J - amber glass jar (250ml) V - amber glass jar (60ml)

nere	br	JON	Merebrook (Tel: 01773 8 Fax: 01773 8	329988	ıg Limit	ed	Plant: JCB backhoe,	breaker, 600mm tooth	ned bucket Trialpit No
widom :			email: consu	ulting@m	nerebro	ok.co.uk	Co-ords: 311796	E - 167173N	Sheet 1 of 1
Project					Proj	ect No.	Dimensions (m):		Date
Barry Q							- 、 /-	2.50	15/11/2012
ocatio	n:	South Quay					Depth (m) 2.00		Scale 1:25
lient:		Persimmon Sp	ecial Proj	ects W	ales				Logged By
	es & I Type	n Situ Testing Results	Depth in r (thickne	metres ess)	.egend		Stratum D	escription	
0.10	D		(1.00)	1.00		Reddish brow			andy silty er,
emarks:	Hol acc	e positioned with Ga uracy). No groundwa	rmin Etrex Visiter encountere	ta hand he	eld GPS	S (+/- 4m	IVN - in-situ hand vane IPP - in-situ pocket penetror PID - in-situ photoionization	neter J - detector V -	- small disturbed sample (tu amber glass jar (250ml) - amber glass jar (60ml) - bulk disturbed sample

mere	brook	Merebrook Consul Tel: 01773 829988	ting Limit	ed	Plant: JCB backhoe	e, breaker, 600mm toothe	ed buck	
100	consulting	Fax: 01773 829393 email: consulting@	3	ok.co.uk	Co-ords: 31174	6E - 167173N		SQMTP25 Sheet 1 of 1
Project				ect No.	Dimensions (m):			Date
Barry G			176			2.50		15/11/2012
-	n: South Quay				Depth (m) 2.70	2.30		Scale 1:25
Client:	Persimmon	Special Projects	Nales					Logged By LGS
Sampl Depth (m)	Type Results	Depth in metres (thickness)	Legend		Stratum [Description		
0.30	D	0.20		angular clinker, r	 b: turf over pinkish grey silt are brick. Black ashy inclu black ashy sandy gravel. black, coal, slag. 	usions.		
0.60	D	(1.30)						
1.50	D	1.50 (1.20)		angular siltstone	lightly clayey sandy GRAV /limestone with occasional iical odour. Water ingress	angular to subrounded f	flint.	-2
		2.70			Trialpit Compl	ete at 2.70 m		
								- 4 - 4 4
Remarks	Hole positioned with accuracy). Groundwa	Garmin Etrex Vista hand ater encountered.	held GPS		VN - in-situ hand vane PP - in-situ pocket penetro PID - in-situ photoionization	n detector J - a	amber g amber g	sturbed sample (tub) lass jar (250ml) lass jar (60ml) turbed sample

HoleBASE 3.1 (Bid 426.48) Standard Trialpit Log v2 dated 27th Nov 03

If efforts are served and a consulting metropole could generation of	more	brook	Merebrook Consul	ting Limit	ed Plant: JCB backhoe, breaker, 600mm toothed	_{bucket} Trialpit No
International control United bit Stratum Stret 1 of Display Display Display <thdisplay< th=""> Display <thdisplay< th=""></thdisplay<></thdisplay<>	TIEle	consulting	Tel: 01773 829988 Fax: 01773 82939	} 3		SQMTP26
Bainy Quays 17633 Desktor (v), to the construction (v), the construction (email: consulting@	merebro	ok.co.uk CO-OIOS. 311696E - 16/123N	Sheet 1 of 1
Decision: South Quay Depth (m) South Quay South Quay Client: Persintmon Special Projects Wales 1.50 Image: Construction of the Constructin of the Construction of the Cons				-		
Income series in survival projection survival series in the series of t	-	-		176		
Circlett: Persisting Loget Loget Semples Alstive Testing Optiminity Stratum Description 0.20 D Image: Alstive Testing MADE (CRCUND: und were drug represent spillet) (spill spillet) (spillet) (spill	Locatio	n: South Qu	Jay		000	1:25
Depth (m) Type Results (indicates) (undicates)				Wales		Logged By
0.20 D 0.60 D 1.00				Legend	· ·	
accuracy). Groundwater encountered. IVN - In-situ hand vane D - small disturbed sample (IPP - in-situ pocket penetrometer J - amber glass jar (250ml)			(0.50)		rare brick, coal, slag. Limestone cobbles and boulders. Dark grey cobbly (siltstone/mudstone) CLAY. Rapid water ingress at bgl.	
accuracy). Groundwater encountered. IVN - In-situ hand vane D - small disturbed sample (IPP - in-situ pocket penetrometer J - amber glass jar (250ml)						-2
B - bulk disturbed sample	Remarks	Hole positioned accuracy). Grou	with Garmin Etrex Vista hand ndwater encountered.	held GPS	IVN - In-situ hand vaneD - smIPP - in-situ pocket penetrometerJ - amPID - in-situ photoionization detectorV - am	ber glass jar (250ml) ber glass jar (60ml)

mare	brook	Merebrook Consul Tel: 01773 829988	ting Limite	Plant: JCB backhoe,	breaker, 600mm toothed buck	
the le	opinsulting	Fax: 01773 829393	3	On and a		SQMTP27
	MATTER SDAFFAIR	email: consulting@			E - 167123N	Sheet 1 of 1
Project				t No. Dimensions (m):		Date
Barry C			1763		2.50	15/11/2012
Locatio	on: South Quay	1		Depth (m) 2.50 8		Scale 1:25
Client:		Special Projects	Wales			Logged By LGS
Samp Depth (m)	Ies & In Situ TestingTypeResults	Depth in metres (thickness)	Legend	Stratum De	escription	
0.10	D D D	(2.50)		MADE GROUND: dark grey brown/black san ingular brick, concrete, pottery, glass, timber netal. Whole bricks.	dy gravel. Gravel is fine to co r, clinker, slag, coal,	arse
		2.50		Trialpit Complete	e at 2.50 m	
						- - - 3 -
						- - - - - -
						- 4
						ŀ
						-
Remarks	Hole positioned with accuracy). Groundw	Garmin Etrex Vista hand ater encountered.	I held GPS	/- 4m IVN - in-situ hand vane IPP - in-situ pocket penetrom PID - in-situ photoionization o	detector J - amber g V - amber g	isturbed sample (tub) Ilass jar (250ml) Jlass jar (60ml) turbed sample

mere	brook	Merebrook Consul	ting Limit	d Plant: JCB backhoe, breaker, 600m	m toothed buck	_{∉t} Trialpit No
in cic	consulting	Tel: 01773 829988 Fax: 01773 829399	3	k co.uk Co-ords: 311796E - 167073N		SQMTP28
	EON PEONPANY	email: consulting@				Sheet 1 of 1
Project			-	ct No. Dimensions (m):		Date 15/11/2012
Barry Q	n: South Qu	av	176	Depth (m)	60	Scale
		,		2.00 °		1:25
Client:		on Special Projects	Wales			Logged By LGS
Sampl Depth (m)	es & In Situ Testin Type Resu		Legend	Stratum Description		
0.20	D	(1.80)		MADE GROUND: dark grey black ashy sandy gravel. Grav angular clinker, slag, coal, rare brick. Angular limestone co	rel is fine to coa	arse
1.70	D	1.80 2.00		Grey SILTSTONE. Trialpit Complete at 2.00 m		
						-3
						- 4
Remarks	Hole positioned v accuracy). No gro	with Garmin Etrex Vista hancoundwater encountered.	I held GPS	(+/- 4m IVN - in-situ hand vane IPP - in-situ pocket penetrometer PID - in-situ photoionization detector	J - amber V - amber	listurbed sample (tub) glass jar (250ml) glass jar (60ml) sturbed sample

widom		Southing	Tel: 01773 829988 Fax: 01773 829393 email: consulting@	3	ok.co.uk	Co-ords: 311796E - 167123N	SQMTP2 Sheet 1 of 1
Project				Proj	ject No.	Dimensions (m):	Date
Barry Q				176	33	2.	50 15/11/2012
_ocatio	on:	South Quay				Depth (m) 2.00	Scale 1:25
Client:		Persimmon S	Special Projects V	Wales			Logged By
Sampl pth (m)	les & I Type	n Situ Testing Results	Depth in metres (thickness)	Legend		Stratum Description	
0.25	D		(0.90)		gravel. Gravel	D: turf over dark grey brown mottled black is fine to coarse angular brick, concrete, cli . Limestone cobbles at 0.7m bgl.	silty clayey sandy nker. Black - - - - - - -
).75	D		0.90 (1.10)		Blueish grey co water ingress fi	bbly CLAY. Cobbles are siltstone and lime Is pit at 1.7m bgl.	stone. Rapid
			2.00			Trialpit Complete at 2.00 m	
							-
							-
							-
emarks	: Hol	e positioned with G	armin Etrex Vista hand	held GPS	S (+/- 4m		
	acc	uracy). Groundwat	er encountered.			IVN - in-situ hand vane IPP - in-situ pocket penetrometer PID - in-situ photoionization detector	D - small disturbed sample (tul J - amber glass jar (250ml) V - amber glass jar (60ml) B - bulk disturbed sample

		sulting .	Tel: 01773 829988 Fax: 01773 829393 email: consulting@	merebro	ok.co.uk	Co-ords: 311829E - 167122N	SQMTP3 Sheet 1 of ⁻
Project				Proj	ect No.	Dimensions (m):	Date
Barry Q				176	33	2.50	15/11/2012
_ocatio	n:	South Quay				Depth (m) 2.00	Scale 1:25
Client:			pecial Projects V	Vales			Logged By
Sampl pth (m)	es & I Type	In Situ Testing Results	Depth in metres (thickness)	Legend		Stratum Description	
0.30	D				fine to coarse a wall foundation	D: Turf over dark grey brown silty sandy ashy grav ngular brick, flint, concrete, clinker, wood, metal. at end of pit. Becoming wet and odourous at 1.8 rress at 2.0m bgl. Pit sides unstable.	Brick
).70	D		(2.00)		S/17633/03	3 CEMENT DEBRIS	-
			2.00	~~~~~		Trialpit Complete at 2.00 m	
							-
emarks	: Hol acc	e positioned with Ga uracy). Groundwate	armin Etrex Vista hand r encountered.	held GPS	S (+/- 4m	IPP - in-situ pocket penetrometerJPID - in-situ photoionization detectorV	- small disturbed sample (tul - amber glass jar (250ml) - amber glass jar (60ml) - bulk disturbed sample

mere	brook	Merebrook Consul Tel: 01773 829988	ting Limit	ed	Plant: JCB backhoe	e, breaker, 600mm toothed		
	consulting	Fax: 01773 82939 email: consulting@	3	ok co uk	Co-ords: 31184	6E - 167073N	SQMTP31	
	DOMP COMPANY	ernali. consulting@					Sheet 1 of 1	I
Project Barry C			176	ect No.	Dimensions (m):		Date 16/11/2012	
-	n: South Quay		170	33	Depth (m)	2.50	Scale	
					1.50		1:25	
Client:	Persimmon	Special Projects	Wales				Logged By	
	les & In Situ Testing	Depth in metres (thickness)	Legend		Stratum D	Description		
Depth (m)	Type Results		84 - T-2	CONCRETE sla				
		0.25					-	
0.30	D	0.20		MADE GROUN fragments. Wat	D: Grey fine to coarse angu ter ingress at 1.2m bgl.	Iar limestone clinker. Rar	e brick	
							-	
							-	
0.80	D	(1.25)						
		(1.20)						1
							-	
							-	
		1.50		2				
		1.50	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		Trialpit Compl	ete at 1.50 m		
							-	
							-	
							-2	2
							-	
							-	
							-	
							-	
							-	
							-:	3
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							-	
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							- 4	4
							-	
							-	
							-	
							-	
Remarks	Hole positioned with accuracy). Groundwa	Garmin Etrex Vista hanc ter encountered.	I held GPS		IVN - in-situ hand vane IPP - in-situ pocket penetro PID - in-situ photoionizatior	n detector J - ar	mall disturbed sample (tub) nber glass jar (250ml) mber glass jar (60ml) ulk disturbed sample)

HoleBASE 3.1 (Bid 426.48) Standard Trialpit Log v2 dated 27th Nov 03

merel	orook	Merebrook Consul Tel: 01773 829988	ing Limited	Plant: JCB backhoe, breaker, 600mm toothed	
	consulting	Fax: 01773 829393 email: consulting@	3	Co-ords: 311846E - 167173N	SQMTP32
	ROUP COMPANY	email. consulting@			Sheet 1 of 1 Date
Project N Barry Qu			Project No. 17633	Dimensions (m):	16/11/2012
-	n: South Qua	V	17000	2.50	Scale
		,			1:25
Client:	Persimmor	n Special Projects V	Wales		Logged By LGS
	s & In Situ Testing Type Results	Depth in metres (thickness)	Legend	Stratum Description	
0.40	D	(0.80) (0.50) (0.60) 1.90	CONCRI CONCRI	ROUND: dark brown silty gravelly clay. Gravel is coarse and concrete. Rootlets. Black ashy inclusions. TE slab. rown SAND. Trialpit Complete at 1.90 m	gular
iemarks:	accuracy). No grou	h Garmin Etrex Vista hand ndwater encountered.	וופוע מדס (+/- 4m	IPP - in-situ pocket penetrometer J - ar PID - in-situ photoionization detector V - ar	nall disturbed sample (tub) nber glass jar (250ml) nber glass jar (60ml) ılk disturbed sample

more	hroat	Merebrook Consult	ing Limit	ted	Plant: JCB backhoe	e, breaker, 600mm to	othed buck	_{et} Trialpit No
THEIE	consulting	Tel: 01773 829988 Fax: 01773 829393	}					SQMTP33
widom	GROUP COMPANY	email: consulting@	merebro	ok.co.uk	Co-ords: 31189	6E - 167173N		Sheet 1 of 1
Project			-	ject No.	Dimensions (m):			Date
Barry C	-		176	33		2.50		16/11/2012
Locatio	n: South Quay				Depth (m) 0.70			Scale 1:25
Client:	Persimmon	Special Projects V	Vales					Logged By LGS
Sampl Depth (m)	es & In Situ Testing Type Results	Depth in metres (thickness)	Legend		Stratum [Description		
0.25	D	0.20 0.32 0.50 0.70 0.75		MADE GROUN angular brick, co CONCRETE sla	ιb. D: black ashy gravel of fine d concrete.	to medium angular s		e
								-2
								-3 - - - - - -
								- 4 - 4 - - - - - - - - - - - - - - - -
Remarks	Hole positioned with accuracy). No ground	Garmin Etrex Vista hand Iwater encountered.	held GPS		IVN - in-situ hand vane IPP - in-situ pocket penetrc PID - in-situ photoionizatio	ometer n detector	J - amber g V - amber g	sturbed sample (tub) lass jar (250ml) glass jar (60ml) turbed sample

mere	bro	ook	Merebrook C Tel: 01773 8	Consultii 29988	ng Limit	ed	Plant: JCB backhoe	e, breaker, 600mm too	thed buck	_{et} Trialpit N SQMTP	
- 74		ulting	Fax: 01773 8 email: consu	329393	nerebro	ok.co.uk	Co-ords: 31194	6E - 167173N		Sheet 1 o	
Project				0 -		ject No.	Dimensions (m):			Date	<u>, , , , , , , , , , , , , , , , , , , </u>
Barry C					176			2.50		16/11/20 ⁻	12
-	-	South Quay			1.1.0		Depth (m)	2.00		Scale 1:25	
Client:	F	Persimmon S	pecial Proje	ects W	lales					Logged E LGS	Зу
Samp Depth (m)	les & Ir Type	Situ Testing Results	Depth in n (thickne	netres ess)	Legend		Stratum I	Description			
	,,			X	****	MADE GROUND	: black tarmacadam				-
				0.15	~~~~	MADE GROUND	: buff sandy gravel of med	lium limestone clinker.			
0.40	D		(0.30)	0.35		MADE GROUND rare brick.	: black ashy sandy gravel	of fine to medium clin	ker, slag, o	coal,	-
				0.65		MADE GROUND	: pinkish brown sandy cla	yey gravel with black a	shy inclus	ions.	_
0.90	D					Gravel is medium	n to coarse angular concre	ete, clinker, brick.			-
			(0.65)								- 1
				1.30							
			(0.40)	1.00		CONCRETE slab	obstruction.				ŀ
4 70	6		(0.40)	1 70							-
1.70	D			1.70 -			Trialpit Comp	ete at 1.70 m			-
											-2
											-
											-
											-
											-
											-3
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											-
											- 4
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											ŀ
											-
Remarks	Hole accu	positioned with G racy). No groundw	armin Etrex Vist vater encountere	ta hand h ed.	neld GPS	1	VN - in-situ hand vane PP - in-situ pocket penetro VD - in-situ photoionizatio	n detector J	- amber g ' - amber g	sturbed sample (lass jar (250ml) glass jar (60ml) turbed sample	(tub)

mere	brook	Merebrook Consulti Tel: 01773 829988 Fax: 01773 829393	-	-	lant: JCB backhoe		oothed buck	_{et} Trialpit No SQMTP35
widom	DIP NIP COMPANY	email: consulting@			Co-ords: 31199	6E - 167170N		Sheet 1 of 1
Project			Project No	. C) imensions (m):			Date
Barry Q	luays		17633			2.50		16/11/2012
Locatio	n: South Quay				Depth (m) 0.50			Scale 1:25
Client:		Special Projects V	Vales					Logged By LGS
Sampl Depth (m)	type Results	Depth in metres (thickness)	Legend		Stratum [Description		
0.40	D	0.15	MADE	GROUND: bu GROUND: bl int, concrete.	ack tarmacadam iff sandy gravel of mec ack ashy sandy gravel Redundant cable at 0 Trialpit Compl	. Gravel is fine to co .5m bgl. End at 0.5		r
								- 3
								- 4
Remarks	Hole positioned with C accuracy). No ground	armin Etrex Vista hand water encountered.	held GPS (+/- 4m	IPP	- in-situ hand vane - in-situ pocket penetro - in-situ photoionizatio		J - amber g V - amber g	sturbed sample (tub) lass jar (250ml) glass jar (60ml) turbed sample

mere	brook	Merebrook Consulti Tel: 01773 829988 Fax: 01773 829393	-	ed	Plant: JCB backhoe	e, breaker, 600mm too	othed buck	_{et} Trialpit No SQMTP36
Law Mary	CONSULTING	email: consulting@r		ok.co.uk	Co-ords: 31194	6E - 167123N		Sheet 1 of 1
Project			Proj	ect No.	Dimensions (m):			Date
Barry C			176			2.50		19/11/2012
Locatio	n: South Quay				Depth (m) 2.00			Scale 1:25
Client:	Persimmon \$	Special Projects V	Vales					Logged By LGS
Sampl Depth (m)	Type Results	Depth in metres (thickness)	Legend		Stratum [Description		
			~~~~~	MADE GROUND:	: black tarmacadam			
		0.20	~~~~	CONCRETE slab				
				MADE GROUND:	: buff sandy gravel of mec	lium limestone clinker.		-
0.45	D	0.42		MADE GROUND: brick, concrete, cl	: black ashy sandy gravel. inker, slag. Limestone co	. Gravel is fine to coa	rse angula	r
		0.65	*****	MADE GROUND:	dark grey brown clayey	sandy gravel. Gravel i	is fine to co	Darse
0.80	D	(0.45)		angular brick, cor	ncrete, clinker, slag. Lime	stone cobbles.		-
								- 1
		1.10	~~~~	MADE GROUND:	grey brown clayey sand re brick. Black asy inclus	gravel. Gravel is fine	to coarse	
				Large diameter co	oncrete pipe at 1.1m bgl b	pisects east edge of pi	it.	-
								-
		(0.90)						-
								-
1.80	D							-
		2.00				ata at 2 00 m		
					maipit Comp	ele al 2.00 m		-
								-
								F
								-
								F
								-
								-3
								-
								-
								-
								-
								-
								-
								-4
								-
								-
								-
								-
								-
								F
								-
Bemarka	• Hole positioned with (	Garmin Etrex Vista hand	held CPC	S ( 1/- 4m		I		-
Terrainas	accuracy). No ground	water encountered.		IF	/N - in-situ hand vane PP - in-situ pocket penetro ID - in-situ photoionization	n detector J	l - amber g / - amber g	sturbed sample (tub) lass jar (250ml) glass jar (60ml) turbed sample

mere	brook	Arebrook Consult	ing Limite	ed	Plant: JCB backhoe	e, breaker, 600mm toothe	u buchet	pit No
in circ	consulting	el: 01773 829988 ax: 01773 829393	}		<b>Co-ords:</b> 31189	6E - 167123N		TP37
	LOSP SDATAPP	email: consulting@				02 - 107 12510		t 1 of 1
Project			-	ect No.	Dimensions (m):	1		ate
Barry Q			1763	33	_	2.50		1/2012
Locatio	n: South Quay				<b>Depth (m)</b> 1.80			<b>cale</b> :25
Client:	Persimmon Spo	-	Vales					<b>jed By</b> GS
Sampl Depth (m)	type Results	Depth in metres (thickness)	Legend		Stratum [	Description		
		0.12			D: black tarmacadam			
0.20	D	0.12 (1.68) 1.80		brick, clinker, co Conrete pipe fra bgl.	I clayey sandy gravel. Gra ncrete, flint, metal and timl gment with black odorous CEMENT DEBRIS WITH I CEMENT DEBRIS WITH I	per. Limestone cobbles. sludge (petrochemical) at LAGGING		-1
								-3
Remarks	: Hole positioned with Garr accuracy). No groundwat	nin Etrex Vista hand er encountered.	held GPS		IVN - in-situ hand vane IPP - in-situ pocket penetro PID - in-situ photoionizatio	n detector J - a	mall disturbed sa mber glass jar (2 mber glass jar (6 ulk disturbed san	50ml) 0ml)

HoleBASE 3.1 (Bid 426.48) Standard Trialpit Log v2 dated 27th Nov 03

more	hron	Me Me	erebrook Consul	ting Limi	ted	Plant: JCB backhoe	e, breaker, 600mm t	oothed buck	_{et} Trialpit No
thele	consulting	Te Fa	el: 01773 829988 x: 01773 82939	8 3					SQMTP38
widom	SITESUP COMPAN	en	nail: consulting@	merebro	ook.co.uk	<b>Co-ords:</b> 31189	6E - 167073N		Sheet 1 of 1
Project					ject No.	Dimensions (m):	1		Date
Barry Q		h 0		176	33		2.50		19/11/2012
Locatio	n: Sout	n Quay				<b>Depth (m)</b> 1.50			<b>Scale</b> 1:25
Client:		-	cial Projects	Wales	-				Logged By LGS
	es & In Situ Type	Testing Results	Depth in metres (thickness)	Legend		Stratum I	Description		
	71			1919 1917 - 2	CONCRETE sla	ab with rebar.			-
			0.15		MADE GROUN	D: grey brown sandy grave	l of medium angular	clinker.	
0.35	D		0.30		MADE GROUN angular brick, cu Limestone cobb	D: darg grey brown black s oncrete, clinker, rare slag. I lles.	andy gravel. Gravel Black ashy inclusion	l is fine to co s.	arse
0.70	D		(0.80)						-
			1.10						- 1
					Dark grey SILTS	STONE.			F
			(0.40)						
			1.50	******		Trialpit Comp	ete at 1.50 m		
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									- 3
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									- 4
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									ĺ
									F
Remarks	Hole positi accuracy).	oned with Garmi No groundwater	in Etrex Vista hand r encountered.	। I held GP		IVN - in-situ hand vane IPP - in-situ pocket penetrc PID - in-situ photoionizatio		J - amber g V - amber g	isturbed sample (tub) lass jar (250ml) glass jar (60ml) turbed sample

mere	brook	Merebrook Consul	ting Limit	ed	Plant: JCB backhoe	, breaker, 600mm to	othed buck	
THEIE	consulting	Fel: 01773 829988 Fax: 01773 829393	3			6E - 167034N		SQMTP39
	SRIDUP CICIA/PANY	email: consulting@						Sheet 1 of 1
Project			-	ect No.	Dimensions (m):			Date
Barry Q	uays n: South Quay		176	33		2.50		19/11/2012 Scale
Location					<b>Depth (m)</b> 1.50			1:25
Client:	Persimmon Sp		Nales					Logged By LGS
	Type Results	Depth in metres (thickness)	Legend		Stratum D	escription		
0.10	D	0.20 (1.30) 1.50			r brick, limestone, flint. clayey silty GRAVEL (marl). one. Trialpit Comple		arse angula	-1
								-3
Remarks:	Hole positioned with Gard accuracy). No groundwat	min Etrex Vista hand er encountered.	held GPS		IVN - in-situ hand vane IPP - in-situ pocket penetro PID - in-situ photoionizatior	meter detector	J - amber g V - amber g	sturbed sample (tub) lass jar (250ml) lass jar (60ml) turbed sample

marah	NOON N	lerebrook Consult	ing Limit	ed	Plant: JCB backhoe	e, breaker, 600mm toot	hed buck	_{et} Trialpit No
	onsulting F	el: 01773 829988 ax: 01773 829393	}					SQMTP40
Midom GRO	A	mail: consulting@	merebro	ok.co.uk	<b>Co-ords:</b> 31194	6E - 167073N		Sheet 1 of 1
Project Na			-	ect No.	Dimensions (m):	:		Date
Barry Qua			176	33		2.50		19/11/2012
Location:	South Quay				<b>Depth (m)</b> 0.50			<b>Scale</b> 1:25
Client:	Persimmon Spe	-	Vales					Logged By LGS
Samples Depth (m) Ty	& In Situ Testing pe Results	Depth in metres (thickness)	Legend		Stratum [	Description		
	)			MADE GROUN geotextile mem	D: pinkish grey fine to medi prane. Rootlets.	um angular limestone	gravel ove	er -
		0.20		Grey SILSTON	E cobbles and boulders.			
		0.50	******					
					Trialpit Compl	lete at 0.50 m		-
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								F
Remarks: + a	l Hole positioned with Garn accuracy). No groundwate	I nin Etrex Vista hand er encountered.	held GPS		IVN - in-situ hand vane IPP - in-situ pocket penetrc PID - in-situ photoionizatio	n detector J	- amber g - amber g	sturbed sample (tub) lass jar (250ml) glass jar (60ml) turbed sample

more	brook	Merebrook Consult	ing Limite	Plant: JCB backho	e, breaker, 600mm toothed I	_{pucket} Trialpit No
THEIE	consulting	Tel: 01773 829988 Fax: 01773 829393	}			SQMTP41
AV idam	LONG CONTAIN	email: consulting@	merebroo	.uk <b>Co-oras:</b> 3120	48E - 167067N	Sheet 1 of 1
Project			Proje	No. Dimensions (m)	:	Date
Barry Q			1763		2.50	19/11/2012
Locatio	n: South Quay			2.20 Contraction 2.20 Contraction 2.20 Contraction Con		<b>Scale</b> 1:25
Client:		Special Projects V	Vales			Logged By LGS
Sampl Depth (m)	es & In Situ Testing Type Results	Depth in metres (thickness)	Legend	Stratum	Description	
0.30 0.60 1.60	D D	(2.20)		DE GROUND: dark grey brown ashy o to coarse angular brick (with whole br ker. Black ashy inclusions.	layey sandy silty gravel. Gra icks), concrete, timber, meta	vel is  , -1 -1 -2
				Triapit Com	plete at 2.20 m	- 3
						-4-4
Remarks	Hole positioned with accuracy). No ground	Garmin Etrex Vista hand dwater encountered.	held GPS	m IVN - in-situ hand vane IPP - in-situ pocket penet PID - in-situ photoionizati	rometer J - amb on detector V - am	all disturbed sample (tub) ber glass jar (250ml) ber glass jar (60ml) k disturbed sample

more	hrad	Merebrook Consu	Iting Limit	ed	Plant: JCB backhoe	, breaker, 600mm to	oothed buck	_{et} Trialpit No
mele	consulting	Tel: 01773 82998 Fax: 01773 82939	3 13					SQMTP42
AV ROT	MADER COMPANY	email: consulting@	merebro	ok.co.uk	<b>Co-ords:</b> 312046	6E - 167085N		Sheet 1 of 1
Project	Name		-	ect No.	Dimensions (m):			Date
Barry C			176	33	,	2.50		19/11/2012
Locatio	on: South (	Quay			<b>Depth (m)</b> 2.20			<b>Scale</b> 1:25
Client:		mon Special Projects						Logged By LGS
Samp Depth (m)	les & In Situ Tes	esults Depth in metres (thickness)	Legend			Description		
0.20	D	(2.50)		MADE GROUN fine to coarse a clinker. Black a	D: dark grey brown ashy cla Ingular brick (with whole bric ashy inclusions.	iyey sandy silty grav ks), concrete, timbe	rel. Gravel i	S
		2.50			Trialpit Comple	ele at 2.20 m		-3
Remarks	: Hole positione accuracy). No	d with Garmin Etrex Vista han groundwater encountered.	d held GPS	; (+/- 4m	IVN - in-situ hand vane IPP - in-situ pocket penetro PID - in-situ photoionizatior		J - amber g	sturbed sample (tub) lass jar (250ml) glass jar (60ml)

mere	brook	Merebrook Consult Tel: 01773 829988	ing Limit	ed	Plant: JCB backhoe,	, breaker, 600mm t	oothed buck	et Trialpit No
11010	consulting	Fax: 01773 829393 email: consulting@	3	ok co uk	<b>Co-ords:</b> 311996	6E - 167073N		SQMTP43
	OT STATE OMPANY	email. consulting@						Sheet 1 of 1 Date
Project Barry Q			176	ect No.	Dimensions (m):	0.50		19/11/2012
	n: South Quay		170	35	<b>Depth (m)</b>	2.50		Scale 1:25
Client:	Persimmon S	pecial Projects V	Vales					Logged By LGS
	Type Results	Depth in metres (thickness)	Legend		Stratum D	escription		
0.10 0.50 0.90	D D	(1.20) 1.20 1.30		fine to coarse a clinker. Black a	D: dark grey brown ashy cla ngular brick (with whole brick shy inclusions. D: brick base obstruction Trialpit Comple	ks), concrete, timb	vel. Gravel i	3
								- 2 - 2 
								-3
								- 4 - - - - - - - - - - - - - - - - - -
Remarks:	Hole positioned with Ga accuracy). No groundw	armin Etrex Vista hand ater encountered.	held GPS		IVN - in-situ hand vane IPP - in-situ pocket penetroi PID - in-situ photoionization		J - amber g V - amber g	sturbed sample (tub) lass jar (250ml) glass jar (60ml) turbed sample

more	hre	DOK N	Merebrook Consul	ting Limit	ed	Plant: JCB backho	e, breaker, 600mm	toothed buck	_{et} Trialpit No
There	cons	utting	Tel: 01773 829988 Fax: 01773 829393	3					SQMTP44
All stars		DMPARE.	email: consulting@	merebro	ok.co.uk	<b>CO-OIUS:</b> 31199	96E - 167123N		Sheet 1 of 1
Project				-	ect No.	Dimensions (m)	:		Date
Barry C				176	33	_	2.50		19/11/2012
Locatio	on: S	South Quay				<b>Depth (m)</b> 2.50			<b>Scale</b> 1:25
Client:		Persimmon Sp	ecial Projects	Nales					Logged By LGS
Samp Depth (m)	les & In Type	Situ Testing Results	Depth in metres (thickness)	Legend		Stratum	Description		
0.20	D		(1.85)		inclusions. Root	D: turf over dark grey brow lar flint, rare brick, clinker, lets. D: yellow brown reworked			- 1 1 1 1 1 1 1 1 1 1 1 
			(0.65) 2.50			Trialpit Comp	liete at 2.50 m		
Remarks	Hole accu	positioned with Garr racy). No groundwat	min Etrex Vista hand er encountered.	held GPS		VN - in-situ hand vane IPP - in-situ pocket penetr PID - in-situ photoionizatic		J - amber g V - amber g	sturbed sample (tub) lass jar (250ml) glass jar (60ml) turbed sample

nere	brook	Tel	rebrook Consulti : 01773 829988 x: 01773 829393	ng Limite	ed	Plant: JCB backhoe		toothed buck	" Trialpit No SQMTP4	
	LONG CONTAIN		ail: consulting@r	nerebroo	ok.co.uk	<b>Co-ords:</b> 31204	6E - 167123N		Sheet 1 of	
Project				Proj	ect No.	Dimensions (m):			Date	
Barry C	-			1763	33	_	2.50		19/11/2012	2
Locatio	n: South	Quay				<b>Depth (m)</b> 2.50			<b>Scale</b> 1:25	
Client:		-	ial Projects W	Vales					Logged By LGS	y
Samp Depth (m)	les & In Situ Te Type	esting Results	Depth in metres (thickness)	Legend		Stratum [	Description			
			0.45		MADE GROUND	black tarmacadam				-
0.30	D		0.15		MADE GROUND angular coal, clin	dark grey black ashy sar ker, slag, brick, concrete.	ndy gravel. Gravel i	is fine to coar	se	-
			0.40		MADE GROUND	limestone cobbles and b	oulders			ł
0.80	D		0.60		MADE GROUND gravel. Gravel is	redddish brown mottled fine to coarse angular clir	grey bl;ack ashy sli nker, coal, flint, rare	ghtly clayey s ∍ brick.	andy	-
1.80	D		(2.00)							1 - - - - -
			2.60			Trialpit Compl	— — — — — — — — — — — — — — — — — — —			- 2
										-
										-
										-
										-
										-
										-
										-
Remarks	Hole position accuracy). N	ned with Garmir lo groundwater	n Etrex Vista hand h encountered.	held GPS	IF	/N - in-situ hand vane /P - in-situ pocket penetro ID - in-situ photoionization		J - amber g V - amber g	sturbed sample (tu lass jar (250ml) lass jar (60ml) urbed sample	רן מו

merebroo	Merebrook Consulti Tel: 01773 829988		Plant: JCB backhoe, breaker, 600	Dmm toothed bucket Trialpit No
consulting	email: consulting@	merebrook.co.uk	Co-ords: 312080E - 167048N	Sheet 1 of 1
Project Name		Project No.	Dimensions (m):	Date
Barry Quays		17633		2.50 19/11/2012
Location: Sout	h Quay		Depth (m)         2.70         2.70	<b>Scale</b> 1:25
	immon Special Projects V	Vales		Logged By LGS
Samples & In SituDepth (m)Type	TestingDepth in metresResults(thickness)	Legend	Stratum Description	
0.25 D	(0.80)	MADE GROUN to medium ang	ID: turf over dark grey black ashy sandy g ular coal, rare slag and brick, clinker, met	ravel. Gravel is fine al. - - - - -
	0.80	MADE GROUN clay. Gravel is i bgl.	ID: orange brown mottled yellow brown re coarse angular limestone/siltstone. Wate	worked gravelly sandy r ingress at 2.7 m - 1 - - - - - - - - - - - - - - - - - -
	2.70		Trialpit Complete at 2.70 m	-2
				-3
				- 4
Remarks: Hole positi accuracy).	oned with Garmin Etrex Vista hand Groundwater encountered.	held GPS (+/- 4m	IVN - in-situ hand vane IPP - in-situ pocket penetrometer PID - in-situ photoionization detector	D - small disturbed sample (tub) J - amber glass jar (250ml) V - amber glass jar (60ml) B - bulk disturbed sample

nere	hr	nok	Merebrook Consu	Iting Limi	ted	Plant: JCB backhoe, breaker, 600m	
i loi o	cons	sulting	Tel: 01773 82998 Fax: 01773 82939	3		<b>Co-ords:</b> 312046E - 167033N	SQMTP47
dam			email: consulting@				Sheet 1 of 1
Project					ject No.	Dimensions (m):	Date
Barry Q	-	s South Quay		176	33	2.5	
Localio	<b>11.</b> •	South Quay				<b>Depth (m)</b> 1.20	<b>Scale</b> 1:25
Client:			pecial Projects				LGS
Sampl epth (m)	es & li Type	n Situ Testing Results	Depth in metres (thickness)	Legend		Stratum Description	
0.10	D		(0.60) 0.60		larger metal pir	D: black ashy sangy gravel. Gravel is fine to ck, coal. Redundant metal pipe at 0.10m bg be bisects pit at 0.3m bgl. gravelly CLAY. Gravel is medium to coarse	-
			(0.60)				- - - -
			1.20			Trialpit Complete at 1.20 m	-
							- - - - - - - - - - - - - - - - - - -
							-
							-
							-
							-
							-
							-
							-
							-
morke	• 11-1				S ( ) / 4~		
FINALKS	. Hole accu	e positioned with Gauracy). No groundw	armin Etrex Vista han vater encountered.	u nelā GPS	5 (+/- 4m	IVN - in-situ hand vane IPP - in-situ pocket penetrometer PID - in-situ photoionization detector	D - small disturbed sample (tub J - amber glass jar (250ml) V - amber glass jar (60ml) B - bulk disturbed sample

**APPENDIX 3** 

Photographs

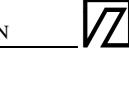




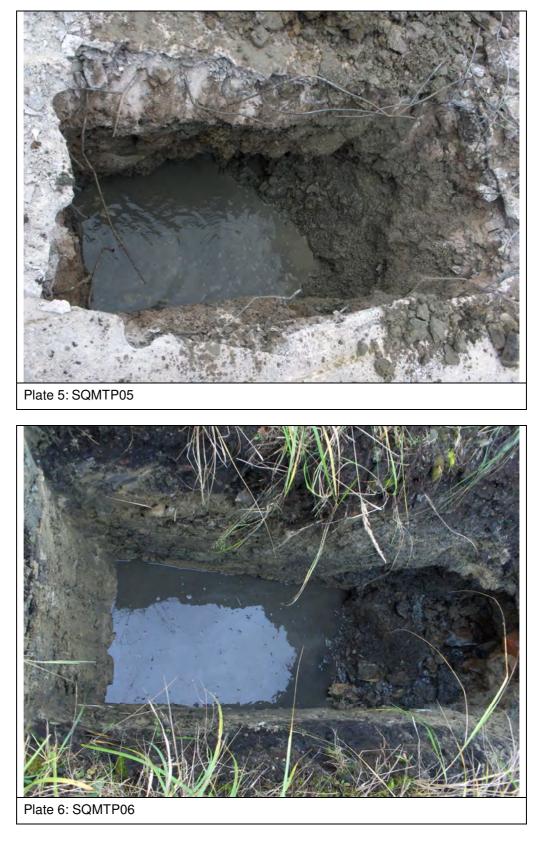
Plate 2: SQMTP02

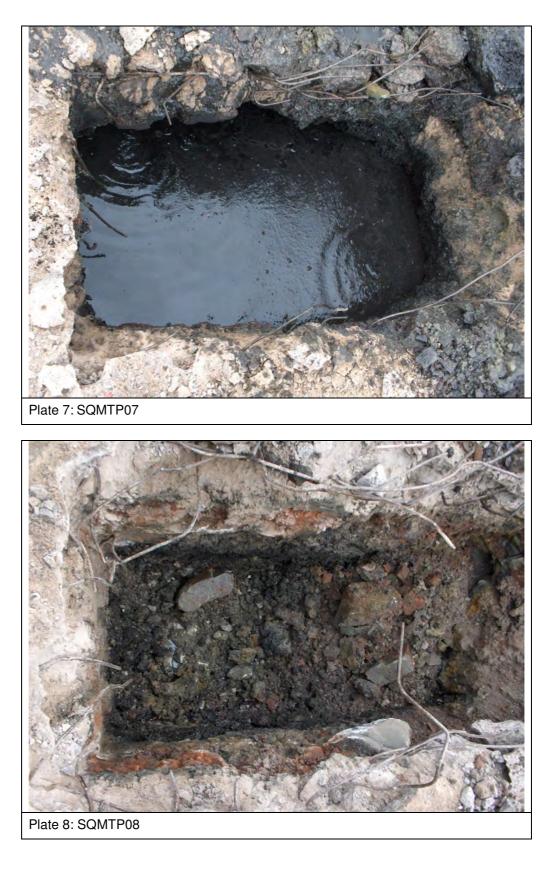
W Alm



Plate 4: SQMTP04

VZ

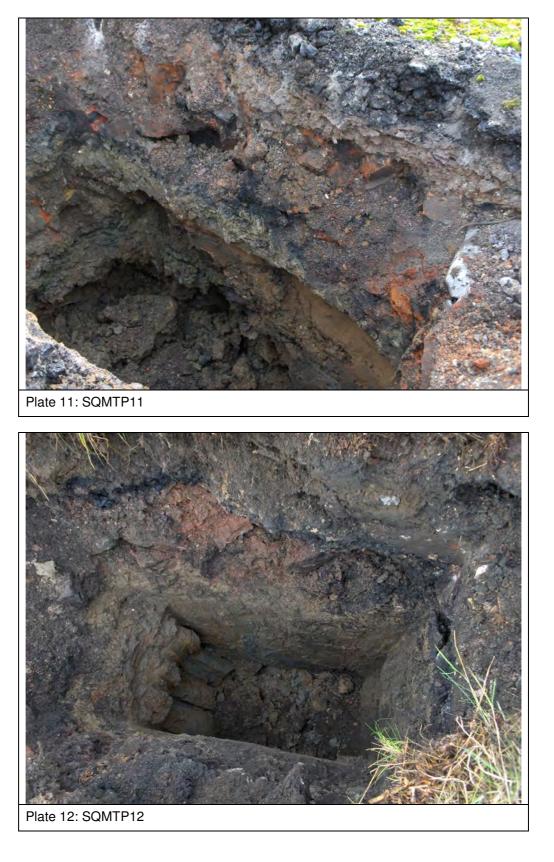




 $\square$ 



 $\nabla$ 



 $V\!Z$ 







Plate 16: SQMTP16

 $V\!Z$ 

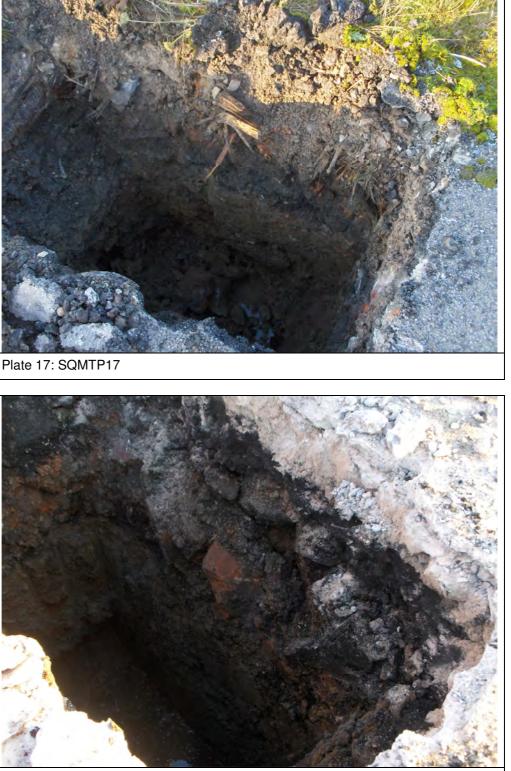
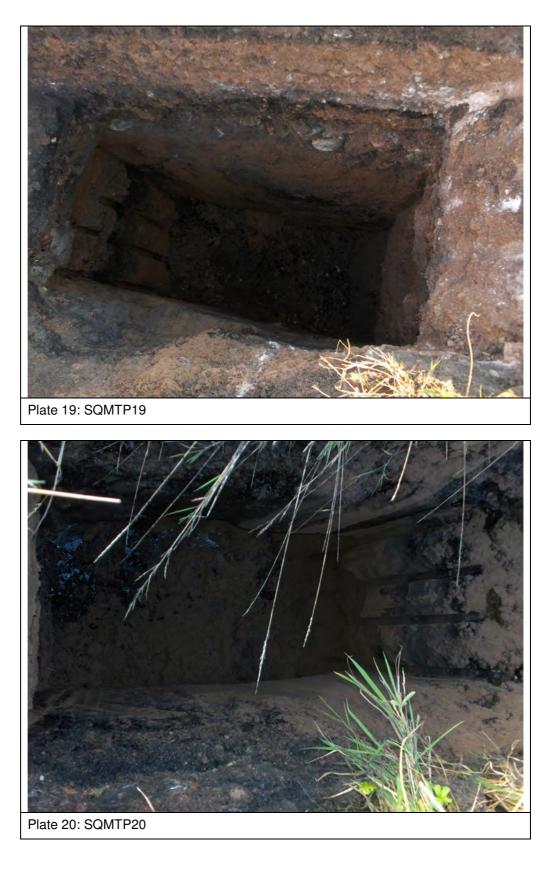


Plate 18: SQMTP18

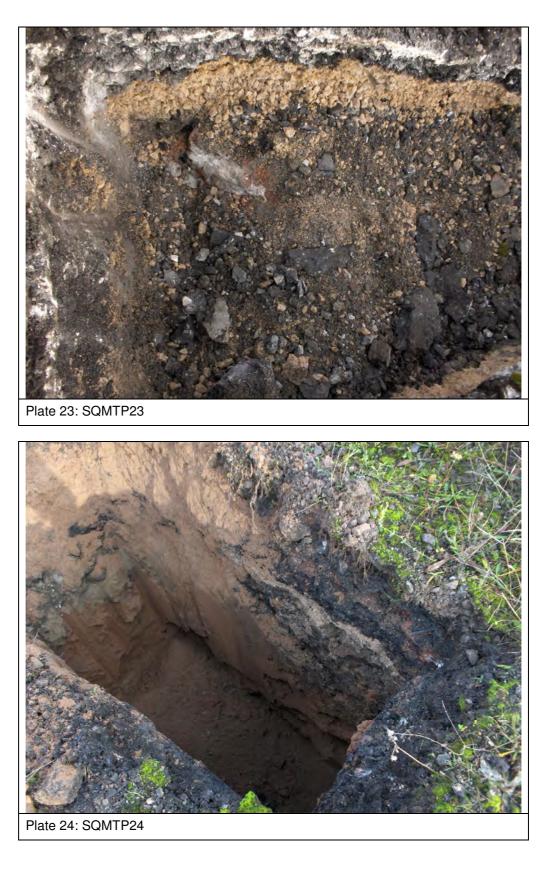
 $V\!Z$ 



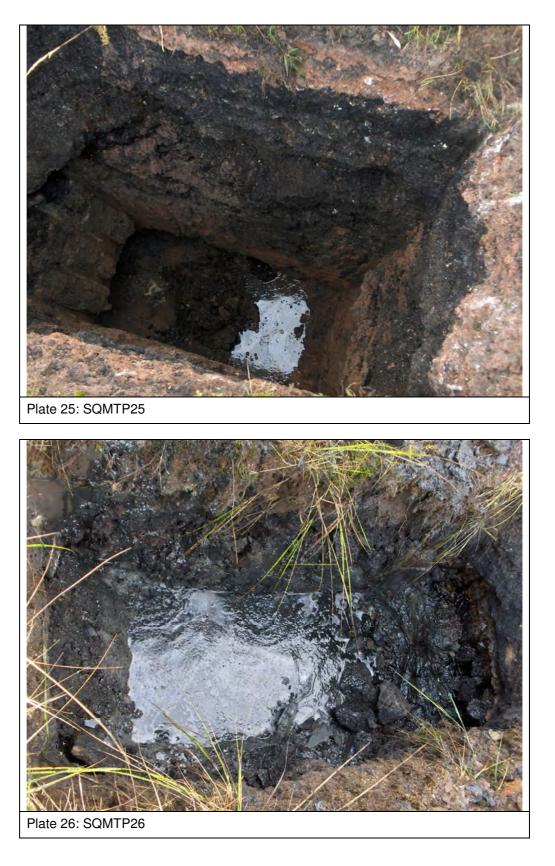
VZ





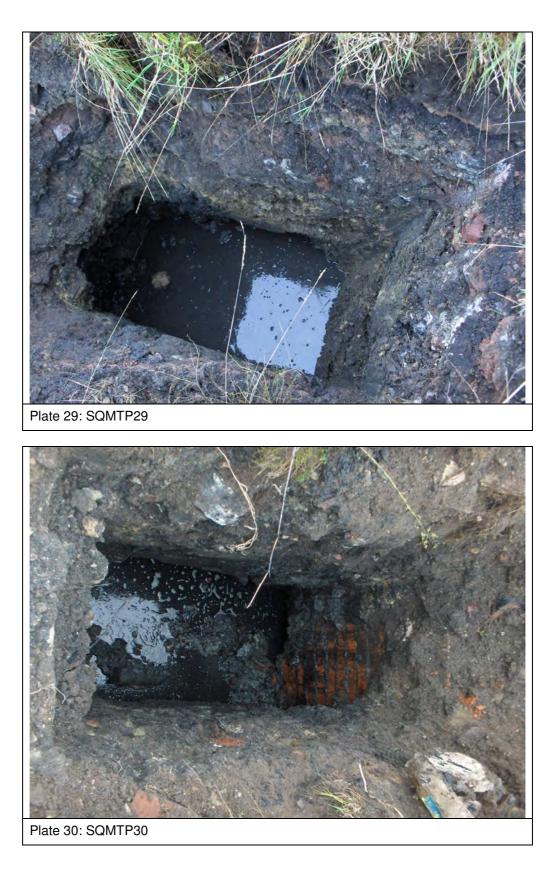


 $\nabla$ 

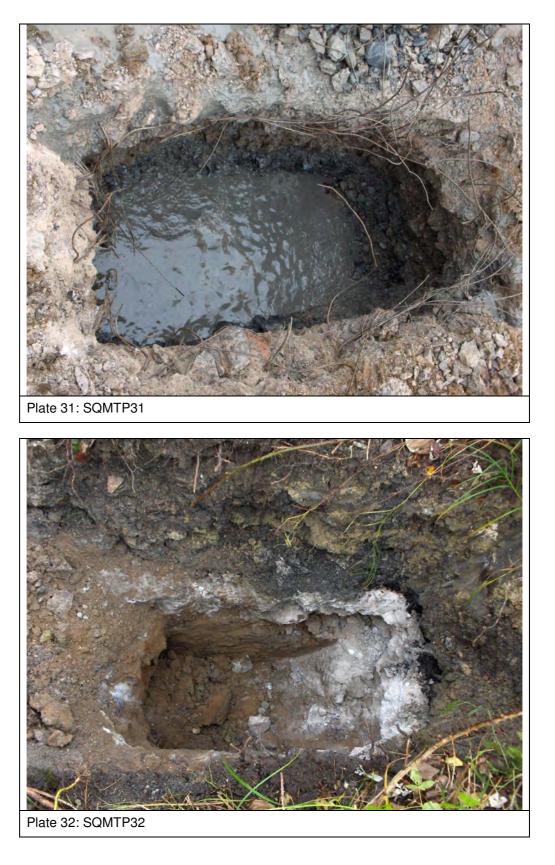


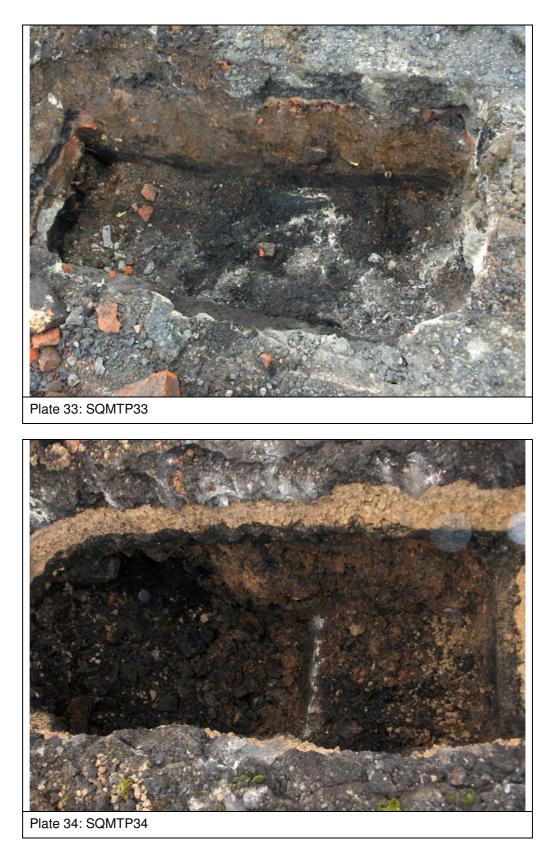


 $\mathbb{Z}$ 



 $\mathbb{Z}$ 





 $V\!Z$ 



 $\nabla$ 



Plate 38: SQMTP38







Plate 42: SQMTP42



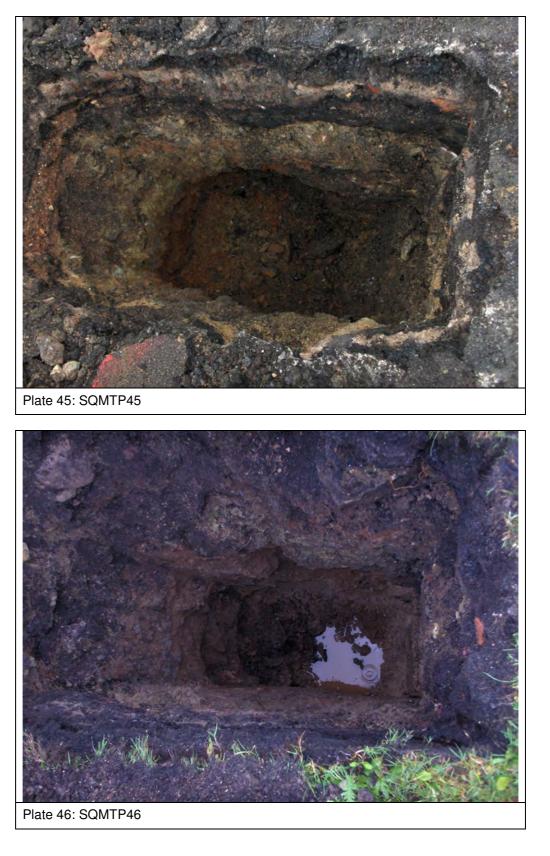






Plate 47: SQMTP47







Plate 49: Stockpile B





Result: Chrysotile



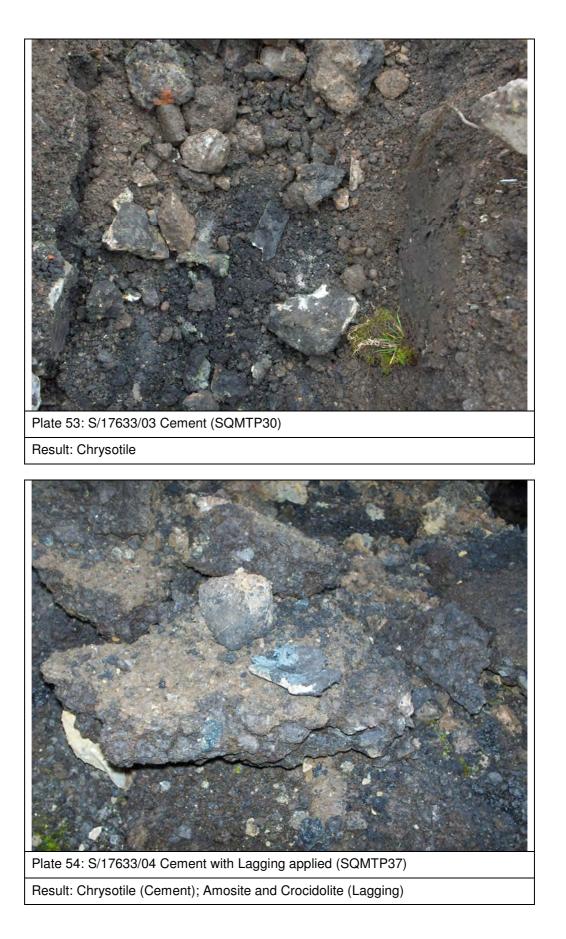
























Plate 67: S/17633/17 Cement Flash Guards in Fuse Box

Result: Chrysotile

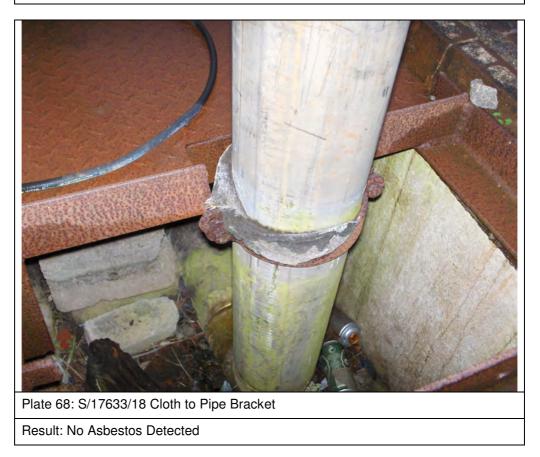
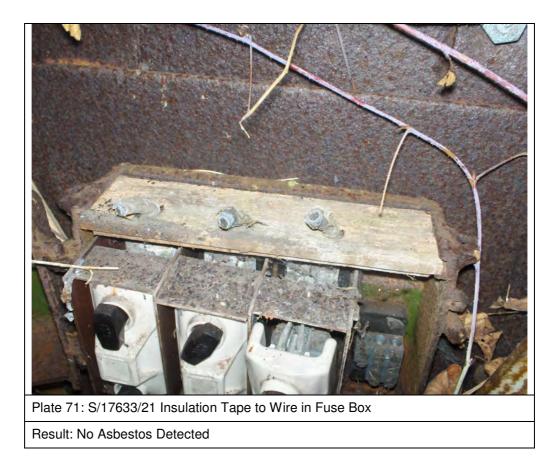




Plate 69: S/17633/19 Gasket in base of Duct Result: Chrysotile



VZ



APPENDIX 4

Vintec Certificates of Analysis (Bulk ACM)



Merebrook Consulting 1st Floor 1 Leonard Place BR2 6HQ



Vintec Laboratories Ltd. Building Research Establishment Bucknalls Lane Garston Watford WD25 9XX

> t: 01923 661 144 f: 01923 661 115 e: info@vinteclabs.com

# TEST REPORT

Analytical Report Number	: J002014	Sample received on	: 22nd November 2012
Sample submitted by	: Merebrook Consulting	Analysis completed by	: 23rd November 2012
Analysis requested	: Asbestos Identification.	Report issued on	: 23rd November 2012
Client reference	: Project 17633f - Barry Quay	rs : South Quay	

Any sample location or detail provided with each sample appears with the results of analysis.

Analysed By:

Ben Pillay (Bulk Analyst)

For & on behalf of Vintec Laboratories Ltd.

Authorised By:

James Brotherton (Deputy Quality Manager)

For & on behalf of Vintec Laboratories Ltd.

The analysis of samples submitted for asbestos identification is undertaken using polarised light microscopy in conjunction with dispersion staining techniques in accordance with our documented in house method and HSG 248. Asbestos is defined in the Control of Asbestos Regulations 2012 as any of the following naturally occurring fibrous silicate minerals : Crocidolite, Amosite, Chrysotile, Actinolite, Anthophyllite and Tremolite. Most commonly found are the following: CROCIDOLITE (Blue Asbestos), AMOSITE (Brown Asbestos) and CHRYSOTILE (White Asbestos). Those contemplating any form of work involving asbestos should refer to the Approved Code of Practice published by the Health & Safety Executive. VEM stores samples for six months following date of reporting unless instructed otherwise. VEM offers no guarantee of the accuracy of reported sample locations as supplied with sample by clients. Sampling conducted by clients falls outside the scope of VEM's bulk sampling accreditation.

In certain types of sample where very small quantities of asbestos may be present we advise on the possibility of unidentified and unreported asbestos being present in trace quantity, however small. We advise this principally in relation to textured paint samples, sometimes referred to by the trade name 'artex', thermoplastic floor tiles or linoleum, and bitumen based samples including roofing felts, acoustic pads etc. This uncertainty arises from the fact that analysis is normally based on the treatment and examination of a small proportion of the supplied sample, which leaves open the possibility that small traces may remain unreported. Where only one or two fibres have been identified within a sample, this will be reported as 'trace asbestos identified'. The above results relate only to the items submitted for testing. This report should not be reproduced except in full, without the written approval of the laboratory.

Analytical Report Number: J002014Client: Merebrook ConsultingClient Reference: Project 17633f - Barry Quays : South Quay

Vintec Reference	Sample Description	Asbestos Content	Comments
BS001679	S-17633-01 - Gasket	Chrysotile	
BS001680	S-17633/02 - Gasket	Chrysotile	
BS001681	S-17633/03 - Cement	Chrysotile	
BS001682	S-17633/04 - Cement with Lagging adhered	Amo + Chrys + Croc	a - Chrysotile identified in material described as Cement b - Amosite and Crocidolite identified in the Lagging
BS001683	S-17633/05 - Gasket	Chrysotile	
BS001684	S-17633/06 - Gasket	No Asbestos Detected	
BS001685	S-17633/07 - Gasket	Chrysotile	
BS001686	S-17633/08 - Floor Tile with Adhesive	Chrysotile	Present in Floor Tile only
BS001687	S-17633/09 - Floor Tile with Adhesive	Chrysotile	Present in Tile & Bitumen
BS001688	S-17633/10 - Gasket	Chrysotile	
BS001689	S-17633/11 - Cement	Chrysotile	
BS001690	S-17633/12 - Gasket	Chrysotile	
BS001691	S-17633/13 - Bitumen Debris	No Asbestos Detected	
BS001692	S-17633/14 - Bitumen Debris	No Asbestos Detected	
BS001693	S-17633/15 - Bitumen Debris	No Asbestos Detected	
BS001694	S-17633/16 - Bitumen Debris	No Asbestos Detected	
BS001695	S-17633/17 - Cement Flash Guard	Chrysotile	
BS001696	S-17633/18 - Cloth	No Asbestos Detected	
BS001697	S-17633/19 - Gasket	Chrysotile	
BS001698	S-17633/20 - Rope Gasket	Chrysotile	
BS001699	S-17633/21 - Insulation Tape	No Asbestos Detected	



APPENDIX 5

IOM Certificate of Analysis (Soils)

#### WORKING FOR A HEALTHY FUTURE



# CERTIFICATE OF ANALYSIS

ANALYSIS REQUESTED BY:

Merebrook Consulting Suite 2b East Mill Bridgefoot Belper Derbyshire DE56 2UA 
 CONTRACT NO:
 31730

 PROJECT NO:
 610

 DATE OF ISSUE:
 28.11.12

DATE SAMPLES RECEIVED: 21.11.12

DATE SAMPLES ANALYSED: 21-28.11.12

SAMPLE DESCRIPTION: Seventy soil/loose aggregate samples each weighing approximately 0.6-1.3kg.

ANALYSIS REQUESTED: Qualitative and quantitative analysis of soil/loose aggregate samples for mass determination of asbestos.

#### **METHODS:**

**Qualitative -** The samples were analysed qualitatively for asbestos by polarised light and dispersion staining as described by the Health and Safety Executive in HSG 248.

**Quantitative -** The analysis was carried out using our documented in-house method based on HSE Contract Research Report No. 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies *et al*, 1996) and HSG 248. Our method includes initial examination of the entire sample, detailed analysis of a representative sub-sample and quantification by hand picking/weighing and/or fibre counting/sizing as appropriate.

### **RESULTS:**

**Initial Screening** 

Asbestos was detected in ten of the seventy soil samples by stereo-binocular and polarised light microscopy.

A summary of the qualitative and quantitative results are given in Tables 1 & 2 respectively.

Page 1 of 4

# RESEARCH CONSULTING SERVICES

Multi-disciplinary specialists in Occupational and Environmental Health and Hygiene

IOM CONSULTING LIMITED, Research Avenue North, Riccarton, Edinburgh, EH14 4AP, United Kingdom Telephone: +44 (0)131 449 8000, Facsimile: +44 (0)131 449 8084, Email: iom@iom-world.org REGISTERED IN SCOTLAND NO. SC205670. IOM CONSULTING LIMITED IS A WHOLLY OWNED SUBSIDIARY OF THE INSTITUTE OF OCCUPATIONAL MEDICINE. A REGISTERED SCOTTISH CHARITY

www.iom-world.org



CONTRACT NO:	31730
PROJECT NO:	610
DATE OF ISSUE:	28.11.12

### RESULTS: (cont.)

### Table 1: Qualitative Results

IOM sample number	Client sample number	ACM type detected	PLM result
S19352	SQMTP01 0.30m	-	No Asbestos Detected
S19353	SQMTP01 1.00m		No Asbestos Detected
S19354	SQMTP01 1.00m		No Asbestos Detected
the second se		-	No Asbestos Detected
S19355	SQMTP02 1.00m		
S19356	SQMTP02 1.60m	-	No Asbestos Detected
S19357	SQMTP03 0.20m	-	No Asbestos Detected
S19358	SQMTP03 0.80m	-	No Asbestos Detected
S19359	SQMTP04 0.05m	Free Fibres	Amosite
S19360	SQMTP04 0.55m	-	No Asbestos Detected
S19361	SQMTP05 0.30m		No Asbestos Detected
S19362	SQMTP06 0.20m	Free Fibres	Amosite
S19363	SQMTP07 0.35m	-	No Asbestos Detected
S19364	SQMTP08 0.30m	H.I	No Asbestos Detected
S19421	SQMTP08 1.00m	-	No Asbestos Detected
S19365	SQMTP09 0.40m	-	No Asbestos Detected
S19366	SQMTP09 1.00m		No Asbestos Detected
S19367	SQMTP10 0.20m		No Asbestos Detected
S19368	SQMTP10 0.80m	Free Fibres	Chrysotile
S19369	SQMTP11 0.30m	-	No Asbestos Detected
S19370	SQMTP11 0.60m		No Asbestos Detected
S19371	SQMTP12 0.20m	-	No Asbestos Detected
S19372	SQMTP12 0.60m	-	No Asbestos Detected
S19373	SQMTP13 0.30m	Loose Insulation	Amosite
S19374	SQMTP13 0.70m	-	No Asbestos Detected
S19375	SQMTP14 0.20m	17 17 18 18 19 19 19 19 19 19 19 19 19 19 19 19 19	No Asbestos Detected
S19376	SQMTP14 0.90m		No Asbestos Detected
S19377	SQMTP15 0.30m		No Asbestos Detected
S19378	SQMTP15 0.80m	-	No Asbestos Detected
the second s	SQMTP16 0.40m	-	No Asbestos Detected
S19379		-	No Asbestos Detected
S19380	SQMTP16 1.00m	-	
S19381	SQMTP17 0.25m	-	No Asbestos Detected
S19382	SQMTP17 0.75m	-	No Asbestos Detected
S19383	SQMTP18 0.20m	-	No Asbestos Detected
S19384	SQMTP18 0.70m		No Asbestos Detected
S19385	SQMTP19 0.30m	-	No Asbestos Detected
S19386	SQMTP19 0.70m	-	No Asbestos Detected
S19387	SQMTP20 0.10m		No Asbestos Detected
S19388	SQMTP20 0.60m	-	No Asbestos Detected
S19389	SQMTP21 0.40m	-	No Asbestos Detected
S19390	SQMTP21 1.00m	-	No Asbestos Detected
S19391	SQMTP22 0.40m	4	No Asbestos Detected
S19392	SQMTP22 1.00m	H	No Asbestos Detected
S19393	SQMTP23 0.40m	-	No Asbestos Detected
S19394	SQMTP23 0.60m		No Asbestos Detected
S19395	SQMTP24 0.10m	-	No Asbestos Detected

Our detection limit for this method is 0.001%.

CONTRACT NO:	31730
PROJECT NO:	610
DATE OF ISSUE:	28.11.12

### **RESULTS: (cont.)**

# Table 1: Qualitative Results

IOM sample	Client sample	ACM type detected	PLM result
number	number	A Contract of the second second	
S19396	SQMTP24 0.50m	-	No Asbestos Detected
S19397	SQMTP25 0.30m	-	No Asbestos Detected
S19398	SQMTP25 0.60m	-	No Asbestos Detected
S19399	SQMTP25 1.50m	-	No Asbestos Detected
S19400	SQMTP26 0.20m	-	No Asbestos Detected
S19401	SQMTP26 0.60m	-	No Asbestos Detected
S19402	SQMTP27 0.10m	Free Fibres	Chrysotile
S19403	SQMTP27 0.60m	Free Fibres	Amosite & Chrysotile
S19404	SQMTP27 1.80m	Free Fibres	Amosite & Chrysotile
S19405	SQMTP28 0.20m		No Asbestos Detected
S19406	SQMTP28 1.10m	Free Fibres	Chrysotile
S19407	SQMTP28 1.70m	-	No Asbestos Detected
S19408	SQMTP29 0.25m		No Asbestos Detected
S19409	SQMTP29 0.75m	-	No Asbestos Detected
S19410	SQMTP30 0.30m	-	No Asbestos Detected
S19411	SQMTP30 0.70m	-	No Asbestos Detected
S19412	SQMTP31 0.30m		No Asbestos Detected
S19413	SQMTP31 0.80m	-	No Asbestos Detected
S19414	SQMTP32 0.40m		No Asbestos Detected
S19415	SQMTP33 0.25m	Bound Insulation	Chrysotile
S19416	SQMTP33 0.60m	-	No Asbestos Detected
S19417	SQMTP34 0.40m	-	No Asbestos Detected
S19418	SQMTP34 0.90m	-	No Asbestos Detected
S19419	SQMTP34 1.70m	-	No Asbestos Detected
S19420	SQMTP35 0.40m	Free Fibres	Amosite

Our detection limit for this method is 0.001%.

## Table 2: Quantitative Analysis Results

Client Sample Number	Sample weight (g)	% Asbestos by hand picking/weighing	% Asbestos by fibre counting/sizing	Total % Asbestos in Sample
SQMTP04 0.05m	921	0.006		0.006
SQMTP06 0.20m	881	0.006	-	0.006
SQMTP10 0.80m	859	0.008	1	0.008
SQMTP13 0.30m	682	0.024		0.024
SQMTP27 0.10m	888	0.005		0.005
SQMTP27 0.60m	791	0.005	-	0.005
SQMTP27 1.80m	1165	0.008		0.008
SQMTP28 1.10m	825	0.005	-	0.005
SQMTP33 0.25m	1050	0.052	-	0.052
SQMTP35 0.40m	1035	0.006	-	0.006

- not applicable

The detection limit for this method is around 0.0001% with a limit of quantification of 0.001%.

 CONTRACT NO:
 31730

 PROJECT NO:
 610

 DATE OF ISSUE:
 28.11.12

#### COMMENTS:

IOM Consulting cannot accept responsibility for samples that have been incorrectly collected or despatched by external clients.

Any opinions and interpretations expressed herein are outwith the scope of our UKAS accreditation.

steve Clark

Authorised by: ..... S Clark Mineralogy Section Manager

Page 4 of 4

#### WORKING FOR A HEALTHY FUTURE



## CERTIFICATE OF ANALYSIS

ANALYSIS REQUESTED BY:

Merebrook Consulting Suite 2b East Mill Bridgefoot Belper Derbyshire DE56 2UA 
 CONTRACT NO:
 31741

 PROJECT NO:
 610

 DATE OF ISSUE:
 29.11.12

DATE SAMPLES RECEIVED: 22.11.12

DATE SAMPLES ANALYSED: 29.11.12

SAMPLE DESCRIPTION: Thirty seven soil/loose aggregate samples each weighing approximately 0.6-1.1kg.

ANALYSIS REQUESTED: Qualitative and quantitative analysis of soil/loose aggregate samples for mass determination of asbestos.

#### METHODS:

**Qualitative -** The samples were analysed qualitatively for asbestos by polarised light and dispersion staining as described by the Health and Safety Executive in HSG 248.

**Quantitative** - The analysis was carried out using our documented in-house method based on HSE Contract Research Report No. 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies *et al*, 1996) and HSG 248. Our method includes initial examination of the entire sample, detailed analysis of a representative sub-sample and quantification by hand picking/weighing and/or fibre counting/sizing as appropriate.

#### **RESULTS:**

**Initial Screening** 

Asbestos was detected in two of the thirty seven soil samples by stereo-binocular and polarised light microscopy.

A summary of the qualitative and quantitative results are given in Tables 1 & 2 respectively.

Page 1 of 3

# RESEARCH CONSULTING SERVICES

Multi-disciplinary specialists in Occupational and Environmental Health and Hygiene

IOM CONSULTING LIMITED, Research Avenue North, Riccarton, Edinburgh, EH14 4AP, United Kingdom Telephone: +44 (0)131 449 8000, Facsimile: +44 (0)131 449 8084, Email: iom@iom-world.org REGISTERED IN SCOTLAND NO. SC205670, IOM CONSULTING LIMITED IS A WHOLLY OWNED SUBSIDIARY OF THE INSTITUTE OF OCCUPATIONAL MEDICINE, A REGISTERED SCOTTISH CHARITY





CONTRACT NO:	31741
PROJECT NO:	610
DATE OF ISSUE:	29.11.12

## **RESULTS: (cont.)**

### Table 1: Qualitative Results

IOM sample number	Client sample number	ACM type detected	PLM result
S19422	SQMTP36 0.45m	-	No Asbestos Detected
S19423	SQMTP36 0.80m	-	No Asbestos Detected
S19424	SQMTP36 1.80m	-	No Asbestos Detected
S19425	SQMTP37 0.20m	-	No Asbestos Detected
S19426	SQMTP37 0.75m	-	No Asbestos Detected
S19427	SQMTP38 0.35m	Rope	Chrysotile
S19428	SQMTP38 0.70m		No Asbestos Detected
S19429	SQMTP39 0.10m	-	No Asbestos Detected
S19430	SQMTP40 0.10m	-	No Asbestos Detected
S19431	SQMTP41 0.30m	-	No Asbestos Detected
S19432	SQMTP41 0.60m	-	No Asbestos Detected
S19433	SQMTP41 1.60m	-	No Asbestos Detected
S19434	SQMTP42 0.20m	-	No Asbestos Detected
S19435	SQMTP42 1.00m	-	No Asbestos Detected
S19436	SQMTP42 1.90m	-	No Asbestos Detected
S19437	SQMTP43 0.10m	Free Fibres	Amosite
S19438	SQMTP43 0.50m	-	No Asbestos Detected
S19439	SQMTP43 0.90m	-	No Asbestos Detected
S19440	SQMTP44 0.20m	-	No Asbestos Detected
S19441	SQMTP44 0.60m	-	No Asbestos Detected
S19442	SQMTP44 1.50m	-	No Asbestos Detected
S19443	SQMTP45 0.30m	-	No Asbestos Detected
S19444	SQMTP45 0.80m	-	No Asbestos Detected
S19445	SQMTP45 1.80m	-	No Asbestos Detected
S19446	SQMTP46 0.25m	¥	No Asbestos Detected
S19447	SQMTP46 0.75m	-	No Asbestos Detected
S19448	SQMTP47 0.10m	-	No Asbestos Detected
S19449	SQMTP47 0.55m	-	No Asbestos Detected
S19450	Stockpile B Fines R1	-	No Asbestos Detected
S19451	Stockpile B Fines R2	-	No Asbestos Detected
S19452	Stockpile B Fines R3		No Asbestos Detected
S19453	Stockpile C Fines R1	-	No Asbestos Detected
S19454	Stockpile C Fines R2	-	No Asbestos Detected
S19455	Stockpile C Fines R3	-	No Asbestos Detected
S19456	Stockpile C Fines R4	-	No Asbestos Detected
S19457	Stockpile C Fines R5	-	No Asbestos Detected
S19458	Stockpile C Fines R6	-	No Asbestos Detected

Our detection limit for this method is 0.001%.

Page 2 of 3

CONTRACT NO:	31741
PROJECT NO:	610
DATE OF ISSUE:	29.11.12

### **RESULTS:** (cont.)

### Table 2: Quantitative Analysis Results

Client Sample Number	Sample weight (g)	% Asbestos by hand picking/weighing	% Asbestos by fibre counting/sizing	Total % Asbestos in Sample
SQMTP38 0.35m	1143	0.057	-	0.057
SQMTP43 0.10m	750	0.007	-	0.007

not applicable

The detection limit for this method is around 0.0001% with a limit of quantification of 0.001%.

### COMMENTS:

IOM Consulting cannot accept responsibility for samples that have been incorrectly collected or despatched by external clients.

Any opinions and interpretations expressed herein are outwith the scope of our UKAS accreditation.

Stave Clark

Authorised by:

S Clark Mineralogy Section Manager

Page 3 of 3



#### Merebrook Consulting Ltd

East Mill, Bridgefoot, Belper, Derbyshire, DE56 2UA tel +44 (0)1773 829 988 fax +44 (0)1773 829 393 email consulting@merebrook.co.uk www.merebrook.co.uk