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Prospect House 1 Highpoint Business Village Henwood Ashford Kent TN24 8DH Tel: (01233) 502255 Fax: (01233) 643250

Head Office: Suite 1 Laval House

Great West Quarter Great West Road Brentford Middx TW8 0GL Tel: 020 8232 1888

Also at:

Prospect House 24 Prospect Road Ossett West Yorkshire WF5 8AE Tel: (01924) 269785

Suite 10 Swan Park Business Centre 1 Swan Park Kettlebrooke Road Tamworth Staffordshire B77 1AG Tel: (01827) 307691

Web site: www.knapphicks.co.uk

Directors: Geoff Davies (Managing) IEng, AMICE

Paul Nicholls IEng, AMIStructE, AMICE

Pamela Armstrong (Finance) CGMA, ACMA, MAAT, MCMI

Principal Technical Directors: Darren Cook BEng (Hons), CEng, MIStructE Steve Hazell IEng, AMIStructE, AMICE John Moss IEng, AMIStructE

Technical Directors: Darry! Bedwell ACIOB David Chrystal BEng (Hons), MSc, CEng, MIStructE Richard Moore BSc, MSc, FGS, CGeol Nick Sparrowhawk BSc (Hons), CEng, MICE, ACILA Phillip Taylor-Wright BSc (Hons) Surveying; Grad BEng; Dip CII; ICIOB

Technical Consultant: David Cherrett CEng, MIStructE

Associates: A Bird Grad ICE;HND GJ Jenkins ICIOB

Knapp Hicks & Partners Ltd Incorporated in England No. 2886020

Registered office: Laval House, Great West Quarter Great West Road Brentford TW8 0GL

### **KNAPP HICKS & PARTNERS LTD**

CONSULTING STRUCTURAL, CIVIL & GEOTECHNICAL ENGINEERS

27686/L/012A/G/RJM

20th January 2020

Mr R Graham RPS 260 Park Avenue, Aztec West, Almondsbury, Bristol, BS32 4SY

Dear Richard,

#### TRIAL PIT & MONITORING INFORMATION TOVIL QUARRY, FARLEIGH HILL, MAIDSTONE

Following our telecon on Wednesday, please find the following information attached with this letter which relates to recent supplementary investigations and monitoring at the above site:

- Trial Pit and Monitoring Well Location Plan
- Trial Pit Logs
- Trial Pit Photographs
- Gas Monitoring Borehole Logs- Tovil Quarry
- Groundwater Monitoring Wells Borehole Logs Tovil Quarry
- Groundwater Monitoring Results
- Ground Gas Monitoring Results Tovil Quarry
- Ground Gas Monitoring Information Adjacent KCC landfill site
- Laboratory Testing Soil Samples- including WAC suite
- Laboratory Testing Asbestos Quantification
- Laboratory Testing Groundwater Samples (Note: Another round of groundwater sampling & testing will be carried out soon)

The results are encouraging.

In summary, our main observations are as follows:

#### Ground Gas

We have 3 sets of readings, 2 at low barometric pressure.

Some fairly low levels of methane have been recorded in the new monitoring wells to P J Burkes side of the gas barrier (maximum 3.1%) and a preliminary assessment of the gas risk indicates that NHBC Amber 1 levels of protection may be appropriate (vented floors and gas membrane – not unexpected for this type of site).

Subject to the results of further monitoring we think that it may be possible to zone the site in due course such that the northern narrower area of the site (referred to as Area E), which largely consists of an inert mix of quarry waste materials (hassock), could qualify for a lesser regime of gas protection measures.

#### Contamination & Leachates (WAC test results)

36No. samples were taken from the localised stockpiles of site-won material on site and from 40 trial pits spread across the areas which still need to be reduced to achieve an overall pre-development site level at approximately 750mm below proposed final site level.





This has achieved a quantity of testing similar to what was previously recommended by RPS.

The results have generally indicated negligible to very low levels of contaminants and the WAC testing has only detected the following in a proportion of the samples:

- sulphate levels exceeding the upper level for inert waste but not at a level to require SR cement
- Antimony levels close to the upper level for inert waste

#### Asbestos in soils

All samples submitted for chemical testing were screened for asbestos and, where asbestos was detected, a quantification analysis was carried out.

Of 12 samples submitted for asbestos quantification, 7 had levels <0.001% w/w while the other samples had asbestos present at between 0.002% and 0.007% w/w

Although levels are low it would be good practice to put affected materials into the deeper areas of filling. An asbestos aware person might also be advisable during significant points in earthworks.

The cut / fill exercise requires 700mm import of material in soft areas anyway to reach finished level so the materials management plan could require there to be 450mm sub soil and 150mm topsoil over all soft areas (fine tuning finished levels could ensure only 600mm imported make up is required).

#### Groundwater Testing

One round of sampling and laboratory testing has been carried out from 4 boreholes located at representative locations around the site perimeter, and a further round of sampling is proposed in the next week, to include re-measurement of groundwater levels in existing monitoring wells.

Results of the first round of testing has indicated reasonable water quality within the site when compared against Drinking Water Standards, and in comparison to the water quality within the adjacent landfill (High ammonia).

#### Review of Progress with Environment Agency

RPS Consulting Engineers have been appointed to arrange an appropriate waste recovery permit. At present it is undecided as to whether the CLAIRE Code of Practice or a Bespoke Rules Option will be applied for.

RPS submitted a request in December for a Pre-Application Meeting with the Environment Agency, and it is hoped that a date for this will be agreed in the coming weeks.

As discussed, RPS will explain to the EA that a local registered housing provider is interested in purchasing the site and so everyone IS hopeful the sign off process can progress expeditiously.

RPS will also explain to EA that piled foundations are expected on all / most of the site. (Southern Testing carried out deeper boreholes with insitu testing that will assist with pile design).

#### Environmental Health Officer (Duncan Haynes)

KHP and Ian Thompson will meet the EHO (next week if possible) to run through all the information we now have and agree a way forward.

We will explore whether the Gas Monitoring Planning Condition can be cleared.

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#### Other matters

KHP have ground information that will help a purchaser understand what if anything is required to ensure stability of the level difference on the left as you enter the site.

NY will share this package of information with the potential purchaser / his contractor.

We trust that all of the above and the various attachments are clear but please do not hesitate to contact us if you have any queries.

Yours sincerely For and on behalf of Knapp Hicks & Partners Limited

RICHARD MOORE Technical Director

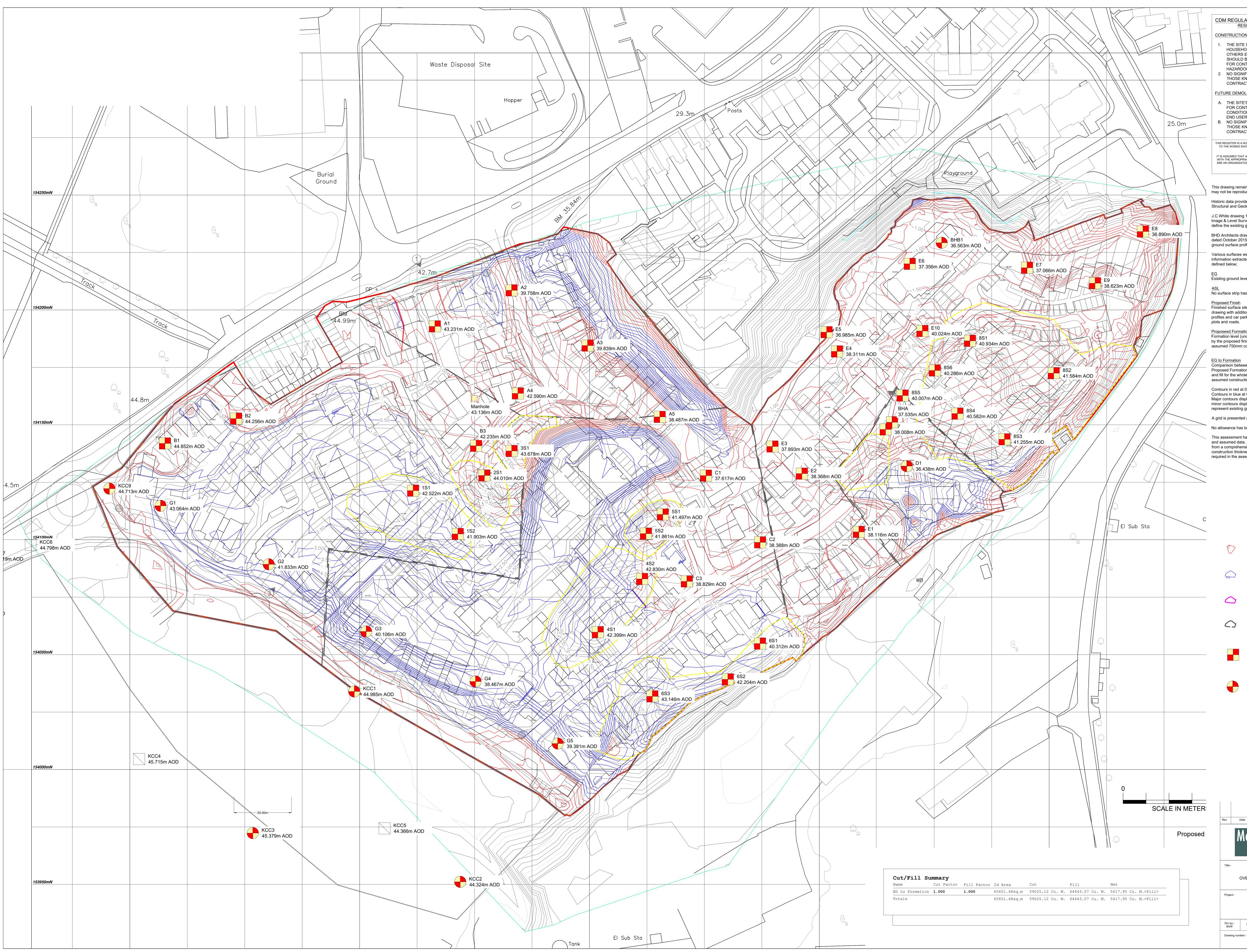
#### **Attachments**

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#### **Attachments**

Trial Pit and Monitoring Well Location Plan



CDM REGULATIONS 2015 RESIDUAL HAZARDS RESIDUAL HAZARDS IDENTIFIED CONSTRUCTION

#### 1. THE SITE IS BELIEVED TO BE A FORMER HOUSEHOLD REFUSE TIP. CONTRACTORS AND OTHERS ENGAGED TO WORK ON THE SITE SHOULD BE MADE AWARE OF THE POTENTIAL

FOR CONTAMINATED GROUND CONDITIONS AND HAZARDOUS SUBSTANCES. 2. NO SIGNIFICANT OTHER HAZARDS BEYOND THOSE KNOWN TO AN EXPERIENCED CONTRACTOR.

## FUTURE DEMOLITION

- A. THE SITE'S ORIGINAL USE AND ITS POTENTIAL FOR CONTAMINATED OR HAZARDOUS GROUND CONDITIONS SHOULD BE HIGHLIGHED TO THE END USER.
- B. NO SIGNIFICANT OTHER HAZARDS BEYOND THOSE KNOWN TO AN EXPERIENCED CONTRACTOR.

THIS REGISTER IS A NON-EXHAUSTIVE LIST OF RESIDUAL HAZARDS RELATING TO THE WORKS SHOWN ON THIS DRAWING THAT HAVE BEEN IDENTIFIED DURING THE DESIGN STAGE. IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A CONTRACTOR WITH THE APPROPRIATE SKILLS, KNOWLEDGE & EXPERIENCE, AND IF THEY ARE AN ORGANISATION, THE ORGANISATIONAL CAPABILITY NECESSARY TO FULFILL THE ROLE.

This drawing remains the property of Morgan Thacker Ltd and may not be reproduced without its express permission. Historic data provided by Knapp Hicks Consulting Civil, Structural and Geotechnical Engineers.

J.C.White drawing 17/00/093-02 titled 'Orthographic Aerial Image & Level Survey', dated April 2019 has been used to define the existing ground level surface profile.

BHD Architects drawing 2989-PD001-Rev E titled 'Site Plan', dated October 2015 has been used to define the proposed ground surface profile.

Various surfaces were developed from the survey and design information extracted from the above drawings, these are defined below;

 $\frac{2}{2}$  Existing ground level defined by the J.C.White survey data.

No surface strip has been allowed for.

Proposed Finish Finished surface site profile as defined by the BDH Architects drawing with additional points introduced to define the road profiles and car parks & garden levels interpolated between plots and roads.

Proposesd Formation Formation level (underside) of the permanent works defined by the proposed finished surface level reduced by an assumed 750mm construction thickness.

<u>EG to Formation</u> Comparison between EG (existing ground level) and Proposed Formation surfaces delivering total volume of cut and fill for the whole site re-grade operation based on assumed construction thickness.

Contours in red at 0.50m intervals represent areas of cut. Contours in blue at 0.50m intervals represent areas of fill. Major contours displayed in light grey at 1.00m intervals and minor contours displayed in dark grey at 0.20m intervals represent existing ground level.

A grid is presented at 25.00m intervals.

No allowance has been made for bulking or compaction. This assessment has been produced based on preliminary and assumed data. A more detailed volumetric assessment from a comprehensive set of proposed levels and construction thickness will be required if greater confidence is required in the assessment conclusion.

> CONTOUR REPRESENTING DEPTH OF CUT CONTOUR REPRESENTING DEPTH OF FILL  $\bigtriangleup$ STOCKPILE LIMIT  $\bigcirc$ PHASE BOUNDARY

TRIAL PIT

BOREHOLE

# Date Description ISOPACH CONTOURS OVERLAID ON EXISTING CONTOURS PLUS DEC 19 TRIAL HOLES P.J.BURKE FARLEIGH HILL TOVIL

Scale:-1:500 @ A0

13th January 2020

MTL-127-09

Sheet numbe

Revision:

1 of 1

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#### **Attachments**

Trial Pit Logs

Project Name:     Tovil     Project No.     Co-ords: -     Dimensions       Location:     Maidstone     Dimensions (m):     State		(					Tri	ial Pit Lo	g	Trialp A
Name:     Tovil     27686     Level:     18/1       Location:     Maidstone     Dimensions (m): Depth 1.50     S     1       Client:     P J Burke     Depth 1.50     Depth 1.50     Location       as of box     Samples and in Situ Testing Depth     Depth (m)     Legend (m)     Stratum Description       as of box     Samples and in Situ Testing Depth     Depth (m)     Legend (m)     Made Ground comprising- Ash and Clay Matrix with ran gravel of brick, tile and chert. 0.6-0.7m band of Quarry Waste comprising-creamy yellow silly fine sandy GRAVEL. Gravel is fine to coarse subangular to subrounded (Ragstone & Hassock).		VI .				_			0	Sheet
Location: Maidstone       Dimensions (m): Depth 1.50       Stratum Description         Samples and In Situ Testing Depth 1.50       Depth 1.50       Legend Stratum Description         0.00 - 1.50       ES       Image: Stratum Description         0.00 - 1.50       ES       Image: Stratum Description         1.10       Image: Stratum Description       Grave I is fine to coarse subangular to subrounded (Ragstone & Hassock).	Project Name:	Tovil								Da
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0.00 - 1.50       ES         Made Ground comprising- Ash and Clay Matrix with ran gravel of brick, tile and chert. 0.6-0.7m band of Quarry Waste comprising-creamy yellow silty fine sandy GRAVEL. Gravel is fine to coarse subangular to subrounded (Ragstone & Hassock).         1.10       Grey fine to coarse SiLT.	т <b>е</b> е	Sample	es and In	Situ Testing	Depth	Level		Strate		
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	(				Trial Pit Log					
Projec	t Tovil			Projec	t No.		Co-ords: -	-	Sheet 1 Date	
Name	: 1041			27686	;		Level:		18/12/20	
Locati	on: Maidstor	ne					Dimensions (m):	-1	Scale 1:25	
Client:	P J Burk	e					Depth 1.50		Logge	
50	Sample	s and Ir	Situ Testing	Depth	Level				dv	<u> </u>
Water Strike	Depth	Туре	Results	(m)	Level (m)	Legend	Stratum Description	l		
	0.00 - 1.50	ES		1.30			Made Ground comprising- Ash and Cla to coarse gravel of brick and rare concr Grey fine to coarse SILT. End of pit at 1.50 m	y Matrix, ete.	with fine	1 2 3
Remarks:       1. Rare fine roots noted near surface <0.25m.										I S

Project Name:     Tovil     Sheet 10 27686     Co-ords: Lovel:     Sheet 10 1812201       Location:     Maidstone     Dimensions (m):     Samples and in Situ Testing (m)     Depth 3.00     Stratum Description       38 g     Samples and in Situ Testing (Dopoth     Depth (m)     Logand     Stratum Description       0.00 - 3.00     ES     0.00 - 3.00     ES     Control to thick, mediate commente, day pipe, and wre. Cobbles of brick, mediate commente, day pipe, and wre. Cobbles of brick need at Store							Tr	ial Pit Log	Trialpit A3	
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Didation:       modulation:       126         Client:       P J Burke       Depth       3.00       126         3.00       Stratum Description       126       126         3.00       Stratum Description       126       126         3.00       ES       0.00-3.00       ES       0.00-3.00       ES       Concrete books not at 14 million (Very large books not at 14 million) (Very large books not at 14 million (Very large books not at 14 million) (Very large books not at 14 million (Very large books not at 14 million) (Very large books not at 14 million (Very large books not at 14 million) (Very large books not at 14 million (Very large books not at 14 million (Very large books not at 14 million) (Very large books not at 14 million (Very large books not at 14 million) (Very large books not at 14 million (Very large books not at 14 million) (Very large books					2/000				-	_
Stanle       3.00         Samples and in Situ Testing       Depth       Level       Legend       Stratum Description         0.00 - 3.00       ES       0.00 - 3.00       ES       Concrete block noted at Ambig Very large builder of those ratable concrete, clary pipe, and were. Coobles of brick match concrete, clary pipe, and were concrete clary pipe.	Location:	Maidstor	10					(m):	1:25	5
Bit Depth         Type         Results         (m)         Legand         Stratum Description           0.00 - 3.00         ES          Made Ground comprising: Ash and Ground somprising: Ash and Ground somprising: Ash and Ground somprising: Ash and Ground somersise, day pripe, and wree. Cobles of brick motels.         Concrete black model at Analy (Very large Source), day pripe, and wree. Cobles of brick motels.           0.00 - 3.00         ES             Concrete black model at Analy (Very large Source), day pripe, and wree. Cobles of brick motels.           Concrete black model at Analy (Very large Source), day pripe, and wree. Cobles of brick motels.            Image: Source Bard Source Ba	Client:	P J Burk	e					3.00	Logge	ed 2
0.00 - 3.00 ES Made Ground comprising - An Hard Clay Marix. Concrete block mode at 1-4mbg/ (Very large boulder old froor elab). Pockets of brick, metals concrete, day pipe, and wire. Cobbles of brick metals.	e e	Sample	es and li	n Situ Testing	Depth	Level	Lanan			
Concrete block noted at 3 - 4mgb bouter old for stably Peckton of brick, metals concretes, day pipe, and wire. Cobbles of brick noted.	Stril			Results	(m)	(m)	Legend			
			ES		3.00			Concrete block noted at 1.4mbgl (Very large I floor slab). Pockets of brick, metals concrete and wire. Cobbles of brick noted.	houlder old	1

	(					Tri	al Pit Log	Trialpit <b>A4</b> Sheet 1	Ļ
Projec		4		Projec			Co-ords: -	Date	•
Name:				27686			Level: Dimensions	18/12/2 Scale	
Locatio	on: Maidstor	10					(m):	1:25	i
Client:	P J Burk	e					Depth 1.50	Logge	d
59	Sample	s and In	Situ Testing	Depth	Level				
Water Strike	Depth	Туре	Results	(m)	(m)	Legend			
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				1.50			End of pit at 1.50 m		3
Remark Stability		e fine roo	ts noted near surfa	ace <0.25m	n. 2. No	groundv	vater were encountered.	AG	5 – I S

	4					Tri	ial Pit Log	Trialpit A5	
							al Fil LUY	A3 Sheet 1	
Project	t Tovil			Projec			Co-ords: -	Date	
Name:				27686			Level: Dimensions	18/12/2	
Locatio	on: Maidstor	ne					(m):	Scale 1:25	
Client:	P J Burk	e					Depth 2.00	Logge	
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Water Strike	Depth	Туре	Results	(m)	(m)	Legend	d Stratum Description		
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Remark Stability		e fine roo	ots noted near sur	ace <0.25m	n. 2. No	groundv	vater were encountered.	AG	L S

	/1			1	_	_		Trialpit	No
	H)					Tr	ial Pit Log	B1	
-								Sheet 1	
Projec Name	t Tovil			Projec 27686			Co-ords: - Levei:	Date 18/12/2	
Locati				1.1000			Dimensions	Scale	
Locau							(m):	1:25	j
Client	P J Burk	æ					2.00	Logge	ed 2
P 9	Sample	es and In	Situ Testing	Depth	Level				
Water Strike	Depth	Туре	Results	(m)	(m)	Legend			
	0.00 - 2.00	ES		2.00			Made Ground comprising Clay Matrix, with fine of gravel of brick, plastic, wood, metal and rare cor Ashy brick cobble layer 1.3-1.4m.	lo coarse hcrete.	1 2 3 4
Remar Stabilit		re fine roo	ts noted near surface	<0.25m	n. 2. No	ground	water were encountered.	AG	J S

	$(\mathbf{H})$					Tri	al Pit Log	Trialpit	
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							(m): Depth	1:25 Logge	
Client:	P J Burk	(e					2.30		2
Water Strike		1 1	itu Testing	Depth	Level	Legend	Stratum Description		
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Remark		e fine roots	s noted near surf	ace <0.25m	n. 2. No	groundv	vater were encountered.	AG	5 1 5

	H					Tr	ial Pit Log	Trialpit B3	3
				Projec	4 No		Co-ords: -	Sheet 1	
Project Name:	Tovil			27686			Level:	Date 18/12/20	
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Client:	P J Burk	e					1.50	Logge	30 2
<b>F</b>	Sample	es and In	Situ Testing	Depth	Level	Legend	Checkum Description		
Water Strike	Depth	Туре	Results	(m)	(m)	Legend			
	0.00 - 1.50	ES		0.60			Made Ground comprising Ash and Clay Matrix, to coarse gravel of brick, plastics, rare wood a concrete. Orange brown clay with rare gravel of brick End of pit at 1.50 m	with fine nd rare	
Remark		e fine roo	ts noted near surfa	ace <0.25m	i. 2. No	groundv	vater were encountered.	AG	ŋ

	(-					Tri	al Pit Log	Trialpit Pile 1	
	NI I							Sheet 1	
Projec Name:	t Tovil			Projec 27686			Co-ords: - Level:	Date 18/12/2	
Locatio	on: Maidstor	ne					Dimensions	Scale	
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Client:	P J Burk	e					2.30	Logge	ю 7
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Remark Stability		e fine roc	its noted near surfa	ce <0.25m	. 2. No	groundw	ater were encountered.	AG	S

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							ial Pit Log	Pile 1	
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Name				27686			Level:	18/12/20	
Locati	on: Maidsto	ne		11.			Dimensions (m):	Scale	
Client	: PJBurk	A					Depth	1:25 Logge	
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	0.00 - 2.20	ES		2.20			Brown well graded mix of Quarry Waste compris creamy yellow sity fine sandy GRAVEL. Gravel coarse subangular to subrounded (Ragstone & Hassock). Rare gravel of plastic, wire, brick, con and rare wood	is fine to	1 2 3
Remarl		e fine roc	ots noted near surfac	e <0.25m	1. 2. No	groundv	vater were encountered.	AG	
Stabilit	y:								<u> </u>

Froject     Trial Pit Log     Froject No.       27686     Level:     18       Location:     Maidstone     Depth       Client:     P J Burke     2.50       38     Samples and In Situ Testing     Depth       Depth     Type     Results       0.00 - 2.50     ES     Image: Control of the second of the sec
Name:     Iovii     27686     Level:     18       Location:     Maidstone     Dimensions (m):     Depth 2.50     Level     Level       Samples and In Situ Testing     Depth     Level     Level     Level       0.00 - 2.50     ES     Converted and the structure of t
Location: Maidstone Client: P J Burke Samples and In Situ Testing Depth Depth Type Results O.00 - 2.50 ES  O.00 - 2.50 ES  Depth Dep
Client:       P J Burke       Depth         39       Samples and In Situ Testing       Depth         Depth       Type       Results         0.00 - 2.50       ES         0.00 - 2.50
Samples and In Situ Testing       Depth       Level (m)       Legend       Stratum Description         Image: Second Strate St
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0.00 - 2.50 ES Brown well graded mix of Quarry Waste comprising- creamy yellow sitty fine sandy GRAVEL. Gravel is fine coarse subangular to subrounded (Ragston & Hassock). Rare gravel of plastic, wire, brick, concrete and rare wood
creamy yellow sitly fine sandy GRAVEL. Graval is fine coarse suborounded (Ragistione & Hassock). Rare gravel of plastic, wire, brick, concrete and rare wood

	11							Trialpit	No
	6					Tri	al Pit Log	Pile	
Projec	st			Projec	t No.		Co-ords: -	Sheet 1 Date	
Name	Tovil			27686			Level:	18/12/2	
Locati	on: Maidstor	ne					Dimensions (m):	Scale	
Client:	P J Burk			_			Depth	1:25 Logge	
<u> </u>			<u> </u>	-			1.50	) Il	2
Water Strike			Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description		
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	0.00 - 1.50	ES		1.50			End of pit at 1.50 m	el is fine to	1 2 3
Remarks: 1. Rare fine roots noted near surface <0.25m. 2. No groundwater were encountered. Stability:									

Project     Trial Pit Log     Trial Pit Log       Project     row     row     row     row       Location:     Matistone     row     row     row       Location:     Matistone     row     row     row       Description:     P J Burke     Description     Row       Time T     P Statum Description     Row     Row       Time T     Row     Row     Row     Row       T     Row     Row     Row     Row     Row       T     Row     Row     Row <th><u> </u></th> <th>1/1</th> <th></th> <th></th> <th></th> <th>_</th> <th></th> <th></th> <th>Tricks</th> <th>No</th>	<u> </u>	1/1				_			Tricks	No
Project         Tovil         Project No.         Co-ords: -         Beet         Brits         Des           Coattor:         Maidstone         Depth         Depth         Statum Description         Scattor         200         Scattor         Sc		(-					Tri	ial Pit Log		
Name: invite invite interviewer encountered.          Name:       invite       1272803       Location:       Maidetone       Statum									Sheet 1	of 1
Location: Maldelone Dimensions Di										
Clant:       P J Burko       125         Bage       Samples and th Situ Testing       Depth       2,00       Statum Description         Bage       Dopth       Type       Results       0(m)       Lovel       Caravy Meals comprising-creamy yealwarking the sandy       0         Bage       0.00 - 2.00       ES       Image: Statum Description         Bage       0.00 - 2.00       ES       Image: Statum Description       Image: Statum Description       Image: Statum Description       Image: Statum Description         Bage       0.00 - 2.00       ES       Image: Statum Description       Image: Statum Description       Image: Statum Description         Image: Statum Description       1.35       Image: Statum Description       Image: Statum Description       Image: Statum Description       Image: Statum Description         Image: Statum Description       1.35       Image: Statum Description         Image: Statum Description       1.35       Image: Statum Description       Image	-				27686	j				
Client: P J Burke  Semples and ho Situ Testing Depth Type Results  Depth Com Level L	Locati	on: Maidstor	ne							
Samples and in Situ Testing       Depth       Level (m)       Lagend       Statum Description         000-200       ES       One-200       ES       Classes       Classes       Classes       Classes       Classes       Classes       Classes       Statum Description       Image: Classes	Client	: PJBurk	e					Depth	Logge	
Bitsc         Depth         Type         Results         (m)         Legend         Stratum Description           0.00-2.00         E3				City Trating	1		-	2.00	He	/
0.00 - 2.00       ES       Cuarry Wate comprising-creamy yellow calls fine sandy GRAVEL. Crevel is fine locate automptiant to subrounded (Nagstom & Hassock).         1.35       1.35         1.60       Diack ashy fill offit plastic. A mediat guideat with rag noded within the state.         2.00       Black ashy fill offit plastic. A mediat guideat with rag noded within the state.         2.00       Black ashy fill offit plastic. A mediat guideat with rag noded within the state.         2.00       Black ashy fill offit plastic. A mediat guideat with rag noded within the state.         2.00       Black ashy fill offit plastic. A mediat guideat with rag noded within the state.         2.00       Black ashy fill offit plastic. A mediat guideat with rag noded within the state.         2.00       Black ashy fill offit plastic. A mediat guideat with rag node of plast 2.00 minute of plast 2.00	Nater Strike		T		Depth (m)		Legend	stratum Description		
AGS				his noted near surface	1.60			GRAVEL. Gravel is fine to coarse subangular to subrounded (Ragstone & Hassock). Black ashy fill with plastic. A metals gasket with noted within this strata. Quarry Waste comprising-creamy yellow silty fin GRAVEL. Gravel is fine to coarse subangular to subrounded (Ragstone & Hassock), with rare br and plastic. End of pit at 2.00 m	rag ne sandy	3
	Stabilit						9.00101		AG	I S

	(-					Tri	al Pit Log	Trialpit C2	
Denie				Projec	t No		Co-ords: -	Sheet 1	_
Projec Name	: Tovil			27686			Level:	Date 18/12/20	
Locati	on: Maidstor	ne					Dimensions (m):	Scale	
Client	P J Burk	•					Depth	1:25 Logge	
-			Situ Testing			7 - I	1.60	Ċ	2
Water Strike	Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description		
				1.60			Quarry Waste comprising-creamy yellow silty i GRAVEL. Gravel is fine to coarse subangular subrounded (Ragstone & Hassock).	Ane sandy to	1 - 2 - 3 - 5 -
Remar Stabilit		e fine root	ts noted near surf	ace <0.25m	1. 2. No	groundv	vater were encountered.	AG	

	$(\mathbf{H})$					Tri	al Pit Log	Trialpi C:	3
Projec	t Tovil			Projec	t No.		Co-ords: -	Sheet 1 Dat	
Name:	TOVI			27686	; 		Level:	18/12/2	2019
Locatio	on: Maidstor	ne					Dimensions (m):	Sca 1:2	
Client:	P J Burk	e					Depth 2.00	Logg	
50	Sample	s and in S	Situ Testing	Depth	Level	1		- 49	/
Water Strike	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description		
	0.00 - 1.20	ES		1.00			Quarry Waste comprising-creamy yellow si GRAVEL. Gravel is fine to coarse subangul subrounded (Ragstone & Hassock), with ra and plastic.	ar to	1
				1.20			Quarry Waste comprising-creamy yellow sil GRAVEL. Gravel is fine to coarse subangul subrounded (Ragstone & Hassock).	iy fine sandy ar to	
				2.00			End of pit af 2.00 m		3
Remark	s: 1. Rare	a fine roots	s noted near surfa	ace <0.25m	1. 2. No	groundw	rater were encountered.		4
Stability						areanan		AG	I IS

Project     Trial Pit Log     Pile 4       Project     Tovil     2788
Project Name:     Tovil     Project No. 27886     Co-ords: - Level:     Dimensions (n): Depth     Scale 125       Client:     P J Burke     Depth     Type     Results     Results       Base     0.00 - 3.70     ES     Brown gravely CLAV. Fire to coarse gravel of plastic, glass, rag, clay pipe and brids.
Name:     10011     27886     Level:     18/12/20       .ocation:     Meidstone     Dimensions (m); Depth     Called 13/10     Statum Description       3     3     Stratum Description     12/20       3     Depth     Type     Results     Image: mail of the test of test
Location:     Meidestone     Dimensions (m):     Depth     125       Client:     P J Burke     Depth     3.70     Counce       as egy     Depth     Type     Results     Meidestone     Depth       0.00 - 3.70     ES     ES     Depth     Level (m)     Level (m)
Client:       P J Burke       Depth       3.70       1.25         Image: second control of plastic second c
Samples and In Situ Testing     Depth     Level (m)     Level (m)     Legend     Stratum Description       0.00 - 3.70     ES     Image: Samples and In Situ Testing     Depth (m)     Image: Samples and In Situ Testing     Depth (m)     Image: Samples and In Situ Testing       0.00 - 3.70     ES     Image: Samples and In Situ Testing     Depth (m)     Image: Samples and In Situ Testing     Depth (m)     Image: Samples and In Situ Testing
Begin         Type         Results         (m)         (m)         Legend         Stratum Description           0.00 - 3.70         ES         Image: Stratum Description         Image: Stratum Description         Image: Stratum Description         Image: Stratum Description           0.00 - 3.70         ES         Image: Stratum Description         Image: Stratum Description         Image: Stratum Description         Image: Stratum Description           Image: Stratum Description         ES         Image: Stratum Description         Image: Stratum Description         Image: Stratum Description           Image: Stratum Description         ES         Image: Stratum Description         Image: Stratum Description         Image: Stratum Description           Image: Stratum Description         ES         Image: Stratum Description         Image: Stratum Description         Image: Stratum Description           Image: Stratum Description         ES         Image: Stratum Description         Image: Stratum Description         Image: Stratum Description         Image: Stratum Description           Image: Stratum Description         Image: Stratum Description         Image: Stratum Description         Image: Stratum Description         Image: Stratum Description           Image: Stratum Description         Image: Stratum Description         Image: Stratum Description         Image: Stratum Description         Image: Stratum Descripti
0.00 - 3.70 ES Brown gravely CLAY. Fine to coarse gravel of plastic, glass, rig, clay pipe and brick.
glass, rig, clay pipe and brick.

	(4					Tri	al Pit Lo	a	Trialpit Pile 4	
								9	Sheet 1	
Projec	t Tovil			Projec	t No.		Co-ords: -		Date	
Name	: 1041			27686			Level:		18/12/2	
Locati	on: Maidstor	1e					Dimensions (m):		Scale 1:25	
Client:	P J Burk	e					Depth 3.00		Logge	d
50	Sample	es and In S	Situ Testing	Depth	Level				01	
Water Strike	Depth	Туре	Results	(m)	(m)	Legend	Stratun	n Description		
	0.00 - 3.00	ES		3.00				e to coarse gravel of p prick.	lastic,	1 1 3 4
Remarl Stability		e fine roots	s noted near surface	<0.25m	. 2. No :	groundw	ater were encountered.		AG	S

									Trialpit	
						I r	al Pit Lo	g	Pile 5	
Projec	t Tovil			Projec	t No.		Co-ords: -		Sheet 1 Date	
Name	: 1048			27686	;		Level:		18/12/20	
Locati	on: Maidstor	ie					Dimensions (m):		Scale 1:25	
Client	P J Burk	e					Depth 3.20		Logge	
29	Sample	s and l	n Situ Testing	Depth	Level				CHI	
Water Strike	Depth	Туре	Results	(m)	(m)	Legend		n Description		
20	0.00 - 3.20	ES	Results	3.20			Brown gravelly CLAY. Fir glass, rag, clay pipe and End o	le to coarse gravel of p brick.	lastic,	2
Remar	ks: 1. Rare	e fine ro	oots noted near surface	e <0.25m	n. 2. No	groundv	vater were encountered.			5
Stabilit	y:								AG	S

						<b>.</b>		Trialpi	
						Ir	ial Pit Log	Pile 5	
Projec	t Tovil			Projec	t No.		Co-ords: -	Sheet 1 Dat	
Name	: 1048			27686	;		Level:	18/12/2	2019
Locati	on: Maidstor	ne					Dimensions (m):	Sca 1:2	
Client:	P J Burk	e					Depth 3.80	Logg	ed
20	Sample	s and	n Situ Testing	Depth	Level				
Water Strike	Depth	Туре	Results	(m)	(m)	Legenc	Stratum Description		
	0.00 - 3.80	ES		3.80			Brown gravelly CLAY. Fine to coarse grave glass, rag, clay pipe and brick.	l of plastic,	2
Remarl	no. I. Man	- IIIIB ((	iota noted near sufface	∽v.∠om	1. Z. NO	groundv	vater were encountered.		D
Stabilit	y:							AC	iS

	1					Ir	al Pit Log	Pile 6	
Desian				Projec	t No		Co-ords: -	Sheet 1	_
Projec Name:	t Tovil			27686			Level:	Date 18/12/2	
Locatio	on: Maidstor	ne					Dimensions	Scale	e
Client:	P J Burk	•					(m): Depth	1:25 Logge	
			Situ Testing			1	2.10	<u>d</u> D	2
Water Strike	Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description		
				1.20			glass, rag, clay pipe and brick. Quarry Waste comprising-creamy yellow silty fi GRAVEL. Gravel is fine to coarse subangular to subrounded (Ragstone & Hassock).	ne sandy )	1
lemari	ks: 1. Rar	e fine roo	ots noted near surf	ace <0.10m	n. 2. No	groundy	vater were encountered.	AG	5

	$(\mathbf{H})$					Tri	al Pit Log	Trialpit Pile 6 Sheet 1	<b>S</b> 2
Projec Name:	t Tovil			Projec			Co-ords: -	Date	
-				27686	j		Level: Dimensions	18/12/20 Scale	_
Locatio							(m):	1:25	
Client:							Depth 2.50	Logge	d
Water Strike		<u> </u>	Situ Testing	Depth	Level	Legend	Stratum Description		
Str X	Depth 0.00 - 0.40	Type ES	Results	(m)	(m)			lastic	
	0.00 - 0.40	ES		2.50			Brown gravelly CLAY. Fine to coarse gravel of p glass, rag, clay pipe and brick. Quarry Waste comprising-creamy yellow slity fil GRAVEL. Gravel is fine to coarse subangular to subrounded (Ragstone & Hassock).	ne sandv	2
									4
Remarl Stability		e fine root	s noted near surfac	e <0.10n	n. 2. No	groundv	vater were encountered.	AG	ı S

	(					Tr	ial Pit Log		Trialpit Pile 6	<b>S</b> 3
Projec	t Tovil			Projec	t No.		Co-ords: -		Sheet 1 Date	
Name	: FOVII			27686			Level:		18/12/20	
Locati	on: Maidstor	e					Dimensions (m):		Scale 1:25	
Client:	P J Burk	Ð					Depth 2.70		Logge	d
- 0	Sample	s and Ir	Situ Testing	Death	Laural	ľ	2.70		CLL	2
Water Strike	Depth	Туре	Results	Depth (m)	Level (m)	Legend	Stratum Descript	ion		
	0.00 - 1.70	ES		1.70			Brown gravelly CLAY. Fine to coarse glass, rag, clay pipe and brick.	gravel of p	lastic,	1 2 3
Remar Stabilit		e fine roo	ots noted near surface	<0.10m	n. 2. No	ground	water were encountered.		AG	5 – S

	(4					Tri	ial Pit Log	Trialpit D1	
							_	Sheet 1	
Projec Name	t Tovil			Projec 27686			Co-ords: - Level:	Date	
Locati				27000			Dimensions	18/12/20 Scale	
Locau							(m):	1:25	
Client	: P J Burk	е					Depth 1.50	Logge	d
re e	Sample	s and In	Situ Testing	Depth	Level	Legend	d Stratum Description		
Water Strike	Depth	Туре	Results	(m)	(m)	Legen			
	0.00 - 1.50	ES		1.50			Brown sandy gravelly CLAY. Sand is fine to co Gravel is fine to coarse sub-angular to subrour gravel of Hassock and rare brick.	arse. Ided	1 2 3
Remar Stabilit		e fine roo	ts noted near surfa	ice <0.10m	n. 2. No	ground	water were encountered.	AG	

Project Tovil Project No. Co-ords: - Dat 27686 Level: 12/12/2		(					Tri	al Pit Log	Trialpit E1 Sheet 1	1
Name:       10/11       27686       Level:       12/12/2         Location:       Maidstone       Dimensions (m):       Dimensions (m):       1.20         Client:       P J Burke       Depth       Depth       1.20         age of the second of the s	Project	t Tout			Projec	t No.		Co-ords: -	Date	-
Client:       P J Burke       (m): Depth 1.50       12 Depth 1.50         38 30 50 50 50 50 50 50 50 50 50 50 50 50 50	Name:				27686	;			12/12/2	2
Client:       P J Burke       Depth       Depth       Log            bg 5/2 / 5 / 5 / 5 / 5 / 5 / 5 / 5 / 5 / 5	Locatio	on: Maidstor	ne						Scal	
Samples and In Situ Testing       Depth       Level (m)       Level (m)       Legend       Stratum Description         0.00 - 1.20       ES       0.00 - 1.20       ES       Brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse sub-angular to subrounded gravel of Hassock and rare brick.         1.20       Image: Comparison of the second o	Client	D. I. Durle						Depth		
By E     Depth     Type     Results     Legend     Stratum Description       0.00 - 1.20     ES     ES     Image: Stratum Description     Brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse sub-angular to subrounded gravel of Hassock and rare brick.       1.20     Image: Stratum Description     Image: Stratum Description					-	-		1.50	- di	1
0.00 - 1.20       ES         Brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse sub-angular to subrounded gravel of Hassock and rare brick.         1.20       Quarry Waste comprising-creamy yellow silty fine sandy GRAVEL. Gravel is fine to coarse subangular to subrounded (Ragstone & Hassock).	ater		1 1		Depth	Level	Legend	Stratum Description		
1.20       Quarry Waste comprising-creamy yellow silty fine sandy GRAVEL. Gravel is fine to coarse subangular to subrounded (Ragstone & Hassock).	รีซี			Results	(in)	(11)	665335555			
								gravel of Hassock and rare brick. Quarry Waste comprising-creamy yellow sility fi GRAVEL. Gravel is fine to coarse subangular t subrounded (Ragstone & Hassock).	ine sandy	

	(					Tri	al Pit Log	Triatpit E2 Sheet 1	
Project	t Tovil			Projec			Co-ords: -	Date	
Name:				27686			Level: Dimensions	18/12/20 Scale	
Locatio	on: Maidstor	10					(m):	1:25	
Client:	P J Burk	e					Depth 1.50	Logge	d
Water Strike	Sample Depth	s and In Type	Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description		
							Quarry Waste comprising-creamy yellow slity fi GRAVEL. Gravel is fine to coarse subangular to subrounded (Ragstone & Hassock).	ne sandy 0	- Bronner - Anner
				1.50					1
				1.50			End of pit at 1.50 m		2
									3 3 4
									5
Remark Stability		e fine roo	ots noted near surfa	ce <0.10m	n. 2. No	groundv	vater were encountered.	AG	J S

	(-					Tri	al Pit Log	Trialpit E3 Sheet 1	i
Project	Tovil			Projec			Co-ords: -	Date	)
Name:				27686			Level: Dimensions	18/12/20 Scale	
Location	: Maidstor	10					(m):	1:25	
Client:	P J Burk	e					Depth 1.70	Logge	d
Water Strike			itu Testing	Depth	Level	Legend	Stratum Description		
Str	Depth	Туре	Results	(m)	(m)	111111111			
				1.70			Quarry Waste comprising-creamy yellow silty fi GRAVEL. Gravel is fine to coarse subangular to subrounded (Ragstone & Hassock).		2 3 4
Remarks Stability:	: 1, Ran	e fine roots	noted near surf	ace <0.10m	n. 2. No	groundv	vater were encountered.	AG	n

	(					Tr	ial Pit Log	Trialpit <b>E4</b> Sheet 1	
Projec	t Tovil			Projec			Co-ords: -	Date	)
Name				27686			Level: Dimensions	18/12/20 Scale	
Locati	on: Maidston	10					(m):	1:25	
Client	P J Burk	e					Depth 2.00	Logge	d
<u>ه</u> ه	Sample	s and Ir	n Situ Testing	Depth	Level	Leser		01	
Water Strike	Depth	Туре	Results	(m)	(m)	Legend			
	0.00 - 2.00	ES		2.00			Brown sandy gravelly CLAY. Sand is fine to coa Gravel is fine to coarse sub-engular to subrour gravel of Hassock and rare glass, brick and pla End of pit at 2.00 m	ded	1
Remari Stabilit		e fine roo	ots noted near surface	ə <0.10m	n. 2. No	groundv	water were encountered.	AG	s S

Project Nom: Tovil Project No. 27688 Co-ords: - Determines 191/220 Location: Maidstone Comments Market P J Burke Testing (n) Lovel 1.50 Logen (n) Logen (		(					Tri	al Pit Log	Trialpit <b>E5</b>	
Name: 100 1978 27696 Location: Misistone 000000000000000000000000000000000000	Projec	it			Projec	t No.		Co-ords: -		
Location:       mailstone       (n):       125         Citent:       P J Burke       Doph       1.50       1.50         8 g       Samples and in Situ Testing       Depth       1.50       1.50         9 000-0.70       ES       Depth       Correspondences sub-angular to asconucled gravel of Heseock and rare glass, brick and paster.         9 000-0.70       ES       0.70       0.70       Correspondences sub-angular to asconucled gravel of Heseock and rare glass, brick and paster.         0 000-0.70       ES       0.70       0.70       Correspondences sub-angular to asconucled gravel of Heseock and rare glass, brick and paster.         0 000-0.70       ES       0.70       Correspondences sub-angular to asconucled gravel of Heseock and rare glass, brick and paster.         0.70       GRAVEL, Gravel Is fine to correspondence to asconucled (Ragstone & Heseock).       1.50         0.70       ES       1.50       Correspondence of Heseock and rare glass, brick and paster.         0.70       ES       1.50       Correspondence of Heseock).       Correspondence of Heseock and rare glass, brick and paster.         1.50       1.50       1.50       Correspondence of Heseock).       Correspondence of Heseock).	Name				27686					
Client: P J Burke  Semples and In Situ Testing Depth 1.50  Depth 1.50  Stratum Description  0.00 - 0.70 ES  0.00 - 0.70 ES  0.70  0.	Locati	on: Maidstor	ne							
Base         Samples and in Situ Testing         Depth         Level (m)         Level (m)         Level (m)         Level (m)         Stratum Description           0.00-0.70         ES         0.00-0.70         ES         Orange brown sandy gawelly CLAY. Sand is fine to coarse sub-angular to	Client:	P J Burk	e					Depth		
Best         Type         Resulta         (m)         Legend         Stratum Description           0.00-0.70         ES         0.00-0.70         ES         Orange brown sandy gravely CLX? Scalis file to osphere to sub-enquire to esphere of Hesseck and are glass, brick and plast.         Orange brown sandy gravely CLX? Scalis file to osphere of Hesseck and are glass, brick and plast.           0.70         ES         0.70         0.70         Orange brown sandy gravely CLX? Scalis file to osphere of Hesseck and are glass, brick and plast.           1.50         0.70         1.50         0.70         Destription         Destription	50	Sample	s and In	Situ Testing	Depth	Lovel	1	1 · · · · · · · · · · · · · · · · · · ·		2
0.00 - 0.70       ES         0.00 - 0.70       ES         0.70       County Gravely CHAssock and rare glass, brick and place.         0.70       County Waste comprising-creamy yealow ality fine sandy GRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to course subergular to schrounded (Registore & Hassock), CRAVEL, Gravel is fine to totocourse, Hassock), CRAVEL, GRAVEL, GRAVEL, GRAVEL, G	Strike		1 1		(m)	(m)	Legend	Stratum Description		
Permerkey 1 Perce first meter meter and perce and there are the termination of the second sec	<u>S</u>			Results	0.70			Orange brown sandy gravelly CLAY. Sand is fin coarse. Gravel is fine to coarse sub-angular to subrounded gravel of Hassock and rare glass, t plastic. Quarry Waste comprising-creamy yellow silty fir GRAVEL. Gravel is fine to coarse subangular to subrounded (Ragstone & Hassock).	prick and	1
Remarks: 1. Rare fine roots noted near surface <0.10m. 2. No groundwater were encountered.	Remar		e fine roo	ots noted near surfa	lice <0.10m	1. 2. No	groundy	vater were encountered.	AG	₅ J S

# X		Projec 27686			Co-ords: - Level: Dimensions (m): Depth 1.50 Stratum Description Brown well graded mix of Quarry Waste compris creamy yellow silty fine sandy GRAVEL. Gravel coarse subangular to subrounded (Ragstone & Hassock). Gravel of plastic, wire, brick, concrete and rare wood	1:2: Logg sing- Is fine to
Name: Location: Maidstone Client: P J Burke be to be	and In Situ Testing Type Results	Depth (m)	Level		Dimensions (m): Depth 1.50 Stratum Description Brown well graded mix of Quarry Waste compris creamy yellow silty fine sandy GRAVEL. Gravel coarse subangular to subrounded (Ragstone & Hassock). Gravel of plastic. wire, brick. concrete	Scal 1:25 Logg sing- Is fine to
Client: P J Burke	and In Situ Testing Type Results	(m)	Level (m)		(m): Depth 1.50 Stratum Description Brown well graded mix of Quarry Waste compris creamy yellow slity fine sandy GRAVEL. Gravel coarse subangular to subrounded (Ragstone & Hassock). Gravel of plastic. wire, brick. concrete	1:25 Logg sing- Is fine to
Samples Strike of Depth	and In Situ Testing Type Results	(m)	Level (m)	Legend	1.50 Stratum Description Brown well graded mix of Quarry Waste compris creamy yellow slity fine sandy GRAVEL. Gravel coarse subangular to subrounded (Ragstone & Hassock). Gravel of plastic. wire, brick. concrete	Logg sing- Is fine to
Strik Vate	Type Results	(m)	Level (m)	Legend	Stratum Description Brown well graded mix of Quarry Waste compris creamy yellow silty fine sandy GRAVEL. Gravel coarse subangular to subrounded (Ragstone & Hassock). Gravel of plastic. wire, brick. concrete	
Strik Vate	Type Results	(m)	(m)	Legend	Brown well graded mix of Quarry Waste compris creamy yellow slity fine sandy GRAVEL. Gravel coarse subangular to subrounded (Ragstone & Hassock). Gravel of plastic. wire. brick. concrete	
0.00 - 1.50		1.50			coarse subangular to subrounded (Ragstone & Hassock), Gravel of plastic, wire, brick, concrete	
				********	End of pit at 1.50 m	

Project Name: Tovil				al Pit Log	E7
Name: Tovil		Project No		Co-ords: -	Sheet 1 Dat
		27686		Level:	18/12/2
Location: Maids	dstone			Dimensions	Scal
				(m): Depth	1:2
Client: PJB	Burke			3.00	Logg
່ອ ອ Sam	mples and In Situ Testing	Depth Le	vel Legend	Charles Description	. 0,
Sam Strike Depth		(m) (r	n) Legend		
0.00 - 3.00		3.00		Brown well graded mix of Quarry Waste com creamy yellow slity fine sandy GRAVEL. Grav coarse subangular to subrounded (Ragstone Hassock). Gravel of plastic, wire, brick, concr and rare wood.	prising- rel is fine to & ete, rag

	(						ial Pit Log	Trialpit N E8 Sheet 1 o	
Project Name:	Tovil			Projec			Co-ords: ~ Level:	Date	
				27686	,		Dimensions	18/12/20 <sup>-</sup> Scale	_
ocatior.	n: Maidsto	ne					(m):	1:25	
Client:	P J Burl	ke 🛛					Depth 4.00	Logged	2
e e	Sampl	es and In S	Situ Testing	Depth	Level	Legend	I Stratum Description	- 019	_
Water Strike	Depth	Type	Results	(m)	(m)		Quarry Waste comprising-creamy yellow silty f GRAVEL. Gravel is fine to coarse subangular t subrounded (Ragstone & Hassock).	Ine sandy o	1
emarks				4.00			End of pit at 4.00 m		4

	$( \cdot )$					Tri	al Pit Log	Trialp E	9
Destau				Projec	t No	1	Co-ords: -	Sheet	
Projec Name:	t Tovil			27686			Level:	Da 18/12	
Locatio	on: Maidston	e					Dimensions	Sci	ale
-							(m): Depth	1:2	
Client:	P J Burke	9					3.00	Log	
Water Strike			Situ Testing	Depth	Level	Legend	Stratum Descriptio	n	
Str	Depth 0.00 - 1.00	Type ES	Results	(m)	(m)	00000000	Brown well graded mix of Quarry Was		
							creamy yellow silty fine sandy GRAVE coarse subangular to subrounded (Ra Hassock). Gravel of plastic, wire, brick and rare wood.	L. Gravel is fine to astone &	
				1.00		××××	Grey fine to coarse SILT.		
				1.10			Quarry Waste comprising-creamy yello GRAVEL. Gravel is fine to coarse suba	w silty fine sandy	1
				3.00			End of pit at 3.00 m		
Remark	ks: 1. Rare	e fine roots	s noted near surf	face <0.10m	n. 2. No	groundw	rater were encountered.	A	

	1/1							Trialpit	No
	(					Tri	al Pit Log	E10	
Projec	-t			Projec	t No.		Co-ords: -	Sheet 1 Date	
Name				27686			Level:	18/12/2019	
Locati	on: Maidstor	ie					Dimensions	Scale	
Client	: P J Burk						(m): Depth	1:25 Logge	
							3.50	- Ôl	2
Water Strike			n Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description		
≥ÿ	Depth 0.00 - 3.00	Type ES	Results	(11)	(117)		Brown sandy gravelly CLAY. Sand is fine to coa	rse	-
				3.00			Gravel is fine to coarse sub-angular to subround gravel of Hassock and rare glass, brick and plas Quarry Waste comprising-creamy yellow sitly fin GRAVEL Gravel is fine to coarse subangular to subrounded (Ragstone & Hassock).	ded stic.	1 4
									5 -
Remar Stabilit		e fine ro	ots noted near surfac	:e <0.10m	n. 2. No	ground	vater were encountered.	AG	I S

Remarks: 1. Rare fine roots noted near surface <0.10m. 2. No groundwater were encountered.	1	1/1							Trialpit	No
Project No.         Co-ords: -         Date           Jocation:         Maddatone         State         State           Cleartin:         P J Burke         Depth         Depth         State           Direction:         P J Burke         Directions         Depth         Logand           Big 201         Directions         Depth         Depth         Logand           Big 201         Directions         Depth         Depth         Logand           Big 201         Directions         Depth         Depth         Logand           Big 201         Samples and In Situ Testing         Depth         Income         Stratum Description           Big 201         Door - 5.00         BS         Brow sandy gravely CLAY. Sand is fine to cause.         Gravel a fine is cause. Stochaged is sub-right if alloin         Income gravely classes. Eacle angle is sub-right if alloin         Income gravely classes.         Income grave		1(1					Tri	al Pit Log	L	
Name:         Toval         27836         Level:         19/120019           Location:         Maidstone         Solar	Proied	st			Projec	t No.		Co-ords: -		
Clent:       P J Burke       Depth       3.0       125         Banples and in Situ Testing       Depth       1.00       Stratum Description         By B       Depth       Type       Results       0m)       Image: Clent Cleat Clea	Name	: Tovil								
Client:     P J Burke     Depth     Dogh       300     Samples and In Situ Testing     Depth     Love     Image: Client Situ Testing     Depth       0.00-3.00     ES     Client Situ Testing     Depth     Image: Client Situ Testing     Depth       0.00-3.00     ES     Client Situ Testing     Depth     Brown sandy gravity CLAY. Sind is fine to coarse sci-angular to autoconded gravel of Nessock and rare glass, brack and plastic.     Image: Client Situ Testing     Image: Client Situ Testing       0.00-3.00     ES     Image: Client Situ Testing     Image: Client Situ Testing     Image: Client Situ Testing     Image: Client Situ Testing       0.00-3.00     ES     Image: Client Situ Testing     Image: Client Situ Testing     Image: Client Situ Testing     Image: Client Situ Testing       0.00-3.00     ES     Image: Client Situ Testing     Image: Client Situ Testing     Image: Client Situ Testing     Image: Client Situ Testing       1     Image: Client Situ Testing       1     Image: Client Situ Testing       1     Image: Client Situ Testing     Image: Client Situ Testing     Image: Client Situ Testing	Locati	ion: Maidstor	e							
Remarke:       1. Rare fine roots noted near surface <0.10m.	Client	D D Dude				_				
Bit Depth       Type       Resulta       (m)       Legend       Stratum Description         0.00-3.00       BS       0.00-3.00       BS       Free standy gravely CLXV. Sand is fine to come serving and to access exercises, brick and plantic.       Image: standy gravely CLXV. Sand is fine to come serving and the second and energinant to access exerving and the second and th	Client			r			, I	3.00	Čļ	2
Remarks: 1. Rare fine roots noted near surface <0.10m. 2. No groundwater were encountered.	ike r		-		Depth	Level	Legend	Stratum Description		
Cravel is link to coarie eute-angular to autocurded gravel of Hessock and merglass, brick and pleate.	s y			Results	(m)	(m)	00000000			
Remarks: 1. Rare fine roots noted near surface <0.10m. 2. No groundwater were encountered.		0.00 - 3.00	ES		3.00			Gravel is fine to coarse sub-angular to subroun gravel of Hassock and rare glass, brick and pla	ded	3
AGS	Remar	ks: 1. Rare	e fine ro	ots noted near surface	<0.10m	. 2. No	groundw	ater were encountered.		-
					-vervill	140	Si Curiu M		AG	S

ion: Maidstone Dimensions (m): 1:25 t: PJBurke 3.50 CA	Location: Maidstone       Dimensions (m): Depth 3.50       Sca 1:2 Depth 3.50         Client: P J Burke       Depth 3.50       Logg 3.50         between the second	Projec Name:	t Tovil			Projec 27686			Co-ords: - Level:	Date 18/12/2
Image: Samples and In Situ Testing     Depth     Legend     Stratum Description       Depth     Type     Results     Image: Constraint of the strategies	Client:       P J Burke       Depth       12 Usig         B g / 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 /			e					Dimensions	Scal
Samples and In Situ Testing     Depth     Level (m)     Legend     Stratum Description       Depth     Type     Results     Results     Brown sandy gravelly CLAY. Sand is fine to coarse.	Bandles     Samples and In Situ Testing     Depth     Level (m)     Legend     Stratum Description       Depth     Type     Results     (m)     (m)     Brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse sub-angular to subrounded gravel of Hassock and rare glass, brick and plastic.								Depth	
Depth         Type         Results         Legend (m)         Legend (m)         Stratum Description           0.00 - 3.50         FS         Brown sandy gravelly CLAY. Sand is fine to coarse.         Stratum Description	By B         Depth         Type         Results         (m)         (m)         Legend         Stratum Description           0.00-3.50         ES         ES         Image: Stratum Description         Brown sandy gravely CLAY. Sand Is fine to coarse.         Gravel Is fine to coarse.         <	1			Nites <b>T</b> a atlana				3.50	
0.00 - 3.50 FS Brown sandy gravely CLAY. Sand is fine to coarse.	0.00 - 3.50 ES Brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse sub-anglate to subrounded gravel of Hassock and rare glass, brick and plastic.	/ater trike				Depth (m)	Level (m)	Legend	Stratum Description	
3.50 End of pit at 3.50 m			0.00 - 3.50	ES		3.50			Gravel is fine to coarse sub-angular to subr gravel of Hassock and rare glass, brick and	coarse. ounded   plastic.

Projec	t			Projec	t No.		Co-ords: -	Date	iof e
Name:	Tovil			27686			Level:	18/12/2	
Locatio	on: Maidstor	ne					Dimensions	Scal	
Olivert	D I D d						(m): Depth	1:25	
Client:							3.70	Logge	2
Water Strike		T T	Situ Testing	Depth	Level	Legend	Stratum Description		
Str St	Depth 0.00 - 3.70	Type ES	Results	(m)	(m)	00000000	Brown sandy gravelly CLAY. Sand is fine to		
				3.70			Gravel is fine to coarse sub-angular to subro gravel of Hassock and rare glass, brick and End of pit at 3.70 m	unded	

	(4					Tri	ial Pit Log	Trialpit Pile 8	
								Sheet 1	of 1
Projec Name	t Tovil			Projec			Co-ords: -	Date	
-				27686			Level: Dimensions	18/12/2 Scale	
Locati	on: Maidstor	1e					(m):	1:25	
Client:	P J Burk	e					Depth 4.00	Logge	ed 2
20	Sample	s and Ir	n Situ Testing	Depth	Level			00	
Water Strike	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description		
	0.00 - 4.00	ES		4.00			Brown sandy gravelly CLAY. Sand is fine to co Gravel is fine to coarse sub-angular to subrou gravel of Hassock and rare glass, brick and pl	nded	1 2 3 4
Remari Stabilit		= 1110 FO	DIS NOTED NEAL SUITACE		i. 2. No	groundv	vater were encountered.	AG	s S

	(4					Tri	al Pit Log	Trialpit Pile 8	
								Sheet 1	of 1
Projec Name	t Tovil			Project 27686			Co-ords: - Level:	Date	
Locati				27000			Dimensions	18/12/20 Scale	
Locali	on: waldstor	16					(m):	1:25	
Client	: P J Burk	е					Depth 4.00	Logge	2 2
P 9	Sample	s and In	Situ Testing	Depth	Level	Legend	Stratum Description	0.0	
Water Strike	Depth	Туре	Results	(m)	(m)	Legent			
	0.00 - 4.00	ES		4.00			Brown sandy gravelly CLAY. Sand is fine to co Gravel is fine to coarse sub-engular to subrour gravel of Hassock and rare glass, brick and pla the sub-englass of the sub-englass of the sub-englass sub-englass of the sub-englass of the sub-englass of the sub-englass rate of pli at 4.00 m	ded	1 2 3
Remar Stabilit		e fine roo	ts noted near surface	e <0.10m	n. 2. No	groundv	vater were encountered.	AG	J S

	(					Tr	ial Pit Log	Trialpit No <b>Pile 8 S5</b> Sheet 1 of	D2
Projec	t Tovil			Projec			Co-ords: -	Date	
Name				27686	i		Level: Dimensions	18/12/201	9
Locati	on: Maidsto	ne					(m):	Scale 1:25	
Client:	P J Burk	e					Depth 3.50	Logged	
59	Sample	es and In	Situ Testing	Depth	Level				
Water Strike	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description		
	0.00 - 3.50	ES		3.50			Brown sandy gravelly CLAY. Sand is fine Gravel is fine to coarse sub-angular to su gravel of Hassock and rare glass, brick at the second secon	brounded nd plastic.	1
Remari Stabilit		e fine root	ts noted near surf	face <0.10m	n. 2. No	ground	water were encountered.	AGS	5

	1/1							Trialpit	No
	1(1					Tri	al Pit Log	Pile 8	
Projec	4			Projec	t No.	_	Co-ords: -	Sheet 1 Date	
Name	Tovil			27686			Level:	18/12/2	
Locati	on: Maidstor	ne					Dimensions	Scale	э
	and and an international second second			_			(m): Depth	1:25	
Client	PJBurk	e					3.00	Logge	2
ह द	Sample	s and ir	a Situ Testing	Depth	Level	Legend	Stratum Description		
Water Strike	Depth	Туре	Results	(m)	(m)	Legend			
	0.00 - 3.00	ES		3.00			Brown sandy gravelly CLAY. Sand is fine to co Gravel is fine to coarse sub-angular to subrou gravel of Hassock and rare glass, brick and pl End of pit at 3.00 m	nded	1
Remar Stabilit		e fine ro	ots noted near surface	<0.10m	i. 2. No	groundv	vater were encountered.	AG	J S
						_			

27686/L/012A/G/RJM 20<sup>th</sup> January 2020

## **Attachments**

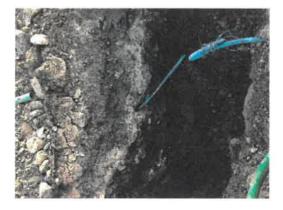
Trial Pit Photographs



A1 Location.



A1 Depth 1.50m.



A1 strata- Water supply pipe to the site cabin.



A2 Location.



A2 Depth 1.50m.



A2 Strata.



A3 Location.



A3 Depth 3.00m



Concrete block (old floor slab) noted at 1.40mbgl.



A3 collapsed.



A4 Location.



A4 Depth 1.50m.



A4 Strata.



A5 Location.



A5 Depth 2.00mbgl.



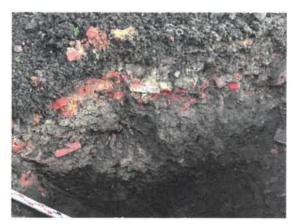
A5 Strata.



B1 Location.



B1 Depth 2.00m



B1 Strata.



B2 Location.



B2 Depth 2.30m



B2 Strata.



B2 Strata.



B3 Location.



B3 Depth 1.50m



B3 Strata.



Pile 1 S1 Location.



Pile 1 S1 Depth 2.30m.



Pile 1 S1 Arisings.



Pile 1 S2 Location.



Pile 1 S2 Depth 2.20m.



Pile 1 S2 Arisngs.



Pile 2 Location.



Pile 2 Depth 2.50m and Arisings.



Pile 3 Location.



Pile 3 Depth 1.50m.



Pile 3 Arisings.



C1 Location.



C1 Depth 2.00m.



Ashy layer 1.35mbgl.



C1 Strata.



C2 Location.



C2 Quarried Ragstone & Hassock (Natural no sample recovered)



Location of C3.



C3 Depth 2.00m.



C3 Strata.



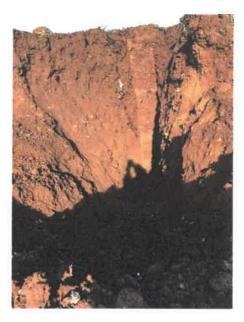
Pile 4 S1 Location.



Pile 4 S1 Depth 3.70m.



Pile 4 S1 Strata.



Pile 4 S2. Depth 3.00m.



Pile 4 S2 Arisings.



Pile 5 S1 Depth 3.20m.



Pile 5 S1 Strata.



Pile 5 S1 Collapsed side after excavation.



Pile 5 S2 Depth 3.80m.



Pile 5 S2 Strata.



Pile 5 S2 Collapse.



Pile 6 S1 Location.



Pile 6 S1 Depth 2.10m.



Pile 6 S1 Strata.



Pile 6 S2 Location.



Pile 6 S2 Depth 2.50m.



Pile 6 S2 Strata.



Pile 6 S3 Location.



Pile 6 Sample 3 Depth 2.70m.



Pile 6 S3 Strata.



D1 Depth 1.50m.



D1 Arisings.



E1 Location.



E1 Depth 1.50m.



E1 Strata.



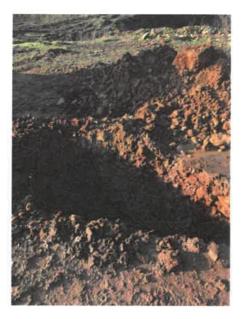
E1 Strata.



E2 Depth 1.50m.



E2 Strata.



E3 Location.



E3 Depth 1.70m.



E3 Strata.



E4 Depth 2.00m.



E4 Strata.



E4 Strata.



E5 Location and Depth 1.50m.



E5 Strata.



E5 Strata.



E6 Depth 1.50m.



E6 Strata.



E6 Strata.



E7 Location ad Depth 3.00m.



E7 Strata.



E7 Strata.



E8 Depth 4.00m.



E8



E9 Location and Depth 3.00m.



E9 Strata.



E9 Strata.



E10 Location.



E10 Strata and Depth 3.50m.



Pile 7 Location and Depth 3.00m.



Pile 7 Strata.



Pile 8 S1 Location



Pile 8 S1 Depth 3.50m.



Plle 8 S1 Strata.



Pile 8 S2 Depth 3.70m.



Pile 8 S2 Strata.



Pile 8 S3 Depth 4.00m.



Pile 8 S3 Strata.



Pile 8 S4 Depth 4.00m



Pile 8 S4 Strata.



Pile 8 S5 (D2) Depth 3.50m.



Pile 8 S5 (D2) Strata.



Pile 8 S5 (D2) Strata



Pile 8 S6 Depth 3.00m.



Pile 8 S6 Strata.



Pile 8 S6 Strata.

**Attachments** 

 Gas Monitoring Borehole Logs- Tovil Quarry (Refer to separate attachment for KCC Borehole Logs & Monitoring Results)

							_				Borehole N	No.
	1(1						R	ota	ry C	Core Log	G1	
rojec	t Name:	Tovil					oject No.		Co-ords:	-	Sheet 1 of Hole Typ	
ocatio		Maidstone				27	686				RC Scale	
									Level:		1:50 Logged E	2.4
lient:		P J Burke	T	r					Dates:	14/11/2019 - 14/11/2019		2 2
Well	Water Strikes	Depth (m)	Type /FI	TCR	Coring SCR	RQD	Depth (m)	Level (m)	Legend	Stratum Description		
							3.50			Made Ground recovered as- Yellowis SANDSTONE and LIMESTONE.	ed, gravel of sh brown sd, gravel of k.	1 2 3 4
9							<b>6 00</b>			gravel of brick, SANDSTONE and Li	IMESTONE.	
							6.00			End of borehole at 6.00 m		6 7 8 9
												10

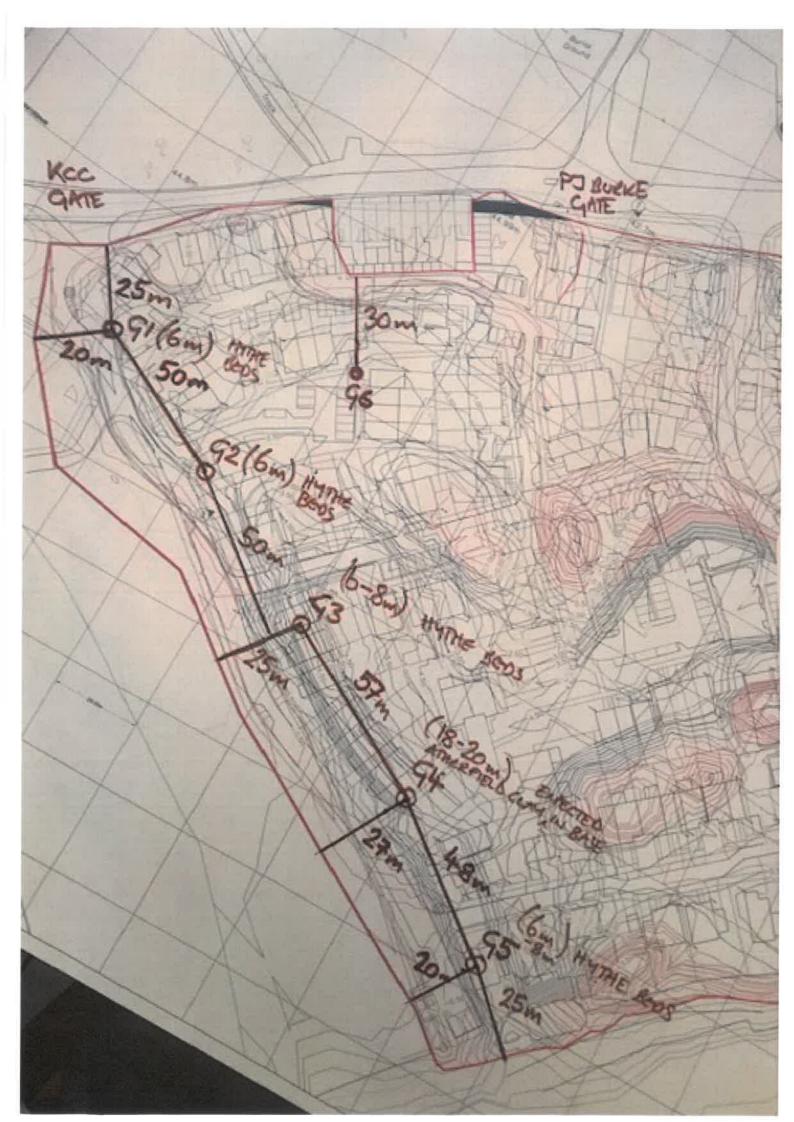
						R	ota	ry (	Core Log	Borehole M G2	
Project Name:	Tovil					oject No.		Co-ords:	_	Sheet 1 of Hole Typ	
Location:	Maidstone				27	686		Level:		RC Scale 1:50	
Client:	P J Burke							Dates:	15/11/2019 - 15/11/2019	Logged E	}y
Well Water Strikes	Depth (m)	Type / Fl	TCR	Coring	RQD	Depth (m)	Level (m)	Legend	Stratum Description		
Remarks						6.00			Made Ground recovered as- Yellowi sandy CLAY with fine to boulder size SANDSTONE and LIMESTONE.	ed, gravel of	2 2 3 4 5 6 7 7 8 8 9 9
1. Location was or groundwater v	were encoun	a prio itered.	4. Bor	eholes	immeno i were o	ang. 2. A open-hole	rotary dril	y well was led with air	installed to 6.00 mbgl. 3. No Root r mist flush.	AGS	

	(4						R	ota	rv (	Core Log	Borehole N G3	lo.
									'y `	coro Log	Sheet 1 of	1
Project	Name:	Tovil					oject No. 686		Co-ords:	: -	Hole Typ RC	
Location	า:	Maidston	Ð						Level:		Scale	
		D.I.D. da									1:50 Logged B	lv
Client:		P J Burke						1	Dates:	15/11/2019 - 15/11/2019	ão	
Well S	Vater Strikes	Depth (m)	Type / Fl	TCR	Coring SCR	RQD	Depth (m)	Level (m)	Legend			
Remarks 1. Locati	ion was	CAT scarr	med prio	r to wo	prks co	mmena	6.30 6.50	monitoring		Made Ground recovered as- Yellowis SANDSTONE and LIMESTONE.	ad, gravel of	1 2 3 4 5 6 7 8 9
or ground	dwater v	were encou	ntered.				_				AGS	

						R	ota	ry (	Core Log	Borehole G4	
	<b>T</b> 1			_	Pr	oject No.		1		Sheet 1 o Hole Typ	_
Project Name:	Tovil					686		Co-ords:	-	RC	
Location:	Maidstone							Level:		Scale 1:50	
Client:	P J Burke							Dates:	15/11/2019 - 15/11/2019	Logged I	By 2
Well Water Strikes	Depth (m)	Type / Fl	<u> </u>	Coring		Depth (m)	Level (m)	Legend	Stratum Description	_ U	T
OUIRGS	(11)	711	TCR	SCR	RQD	(11)	(11)		Made Ground recovered as- Yellowi sandy CLAY with fine to boulder size	sh brown	+
									SANDSTONE and LIMESTONE.	54, giuvei oi	
E I											
E											
81											
						8.00			Made Ground recovered as Yellowish		
									sandy CLAY with fine to boulder size SANDSTONE LIMESTONE and brick	d, gravel of k.	
temarks									Continued on next sheet		1

1(1				R	ota	ry C	Core Log	G4 Sheet 2 of 2	D.
Project Name:	Tovil			oject No.		Co-ords:	-	Hole Type	_
ocation:	Maidstone		27	686		Level:		RC Scale	
								1:50 Logged By	,
Client:	P J Burke	r				Dates:	15/11/2019 - 15/11/2019		k
Well Water Strikes	Depth Type (m) / FI	Cori TCR SC		Depth (m)	Level (m)	Legend	Stratum Description		
eemarks				13.00 14.00			Grey slightly sitty CLAY. End of borehole at 14.00 m	1	8 9

1(1						R	ota	ry C	Core Log	Borehole N G5	10.
1 11					Pro	oject No.		1		Sheet 1 of Hole Typ	
Project Name:	Tovil					686		Co-ords:	-	RC	
ocation:	Maidstone							Level:		Scale 1:50	
Client:	P J Burke		_					Dates:	20/11/2019 - 20/11/2019	Logged B	By
Water	Depth	Туре		Coring		Depth	Level	<u> </u>		CIP	
Well Strikes	(m)			SCR		(m)	(m)	Legend	Stratum Description		
						4.00			Made Ground recovered as-Yellowis SANDSTONE and LIMESTONE.	sh brown d, gravel of k.	1 2 3 4 5 6 7 8 9



**Attachments** 

 Groundwater Monitoring Wells – Borehole Logs – Tovil Quarry (Refer to separate Attachment for KCC Borehole Logs & Monitoring Results)

Wachine : K Flush : A Core Dia : N	<i>i</i> R	Tel: Of	Casing	Diameter 7mm to 2	· · · · · · · · · · · · · · · · · · ·	Groun	d Level (mOD 37.81	) Client P.J. BURKE.		
Method :R		ON	Locatio SE	n E Site Pi	LAN		)3/05/2006- )8/05/2006	Engineer Liverpool Environmental Engineer Consultants Limited.	ING	14753 Sheet
Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Lege	efer ba
							(4.00)	MADE GROUND (yellow brown frable sandy clayey fill with angular gravel to boulder sized sandstone and limestone fragments).		
					Rapid penetration - good returns of	33,81	4,00 4,00 (1.60)	MADE GROUND (firm yellow and orange brow sandy day fill with angular to gravel to boulder sandstone and limestone fragments).	n size	
					good returns of dust and subrounded chippings	32.31	5,50	MADE GROUND (yellow brown clayey sand fill with angular gravel to boulder sized sandstone and limestone fragments).		Noncontraction of the
	and the second se					29.31	(3.00) 	MADE GROUND (atternating slabs/boulders of strong light gray crystalline timestone and		
							(3.60)	moderalely strong orange brown eendstone).		
		er vero de l		P	2.0m Rapio eneiration - poor etums and loss of lush	25.81		MADE GROUND (yellow orange brown clayey sandy fill with angutar gravel to boulder sized sandstone fragments).		
				P re Si	5.0m Rapid enetration - good slums of dust and ubrounded hippings		- (8.00)			N N N N
						14.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.				NIX
narks						17.81	- 20,00			A
ater strike o obvious v escriptions	(1) at 27m isual or off based on i	. Waterstri actory evia tentative in	ke (2) at 3 dence of g iterpretati	35m. Stan ground co ion of dusl	ding level of 22.5m n ntamination. returns.	ecorded	15,05.08,	between 31 - 41m, backfilled around plain	Scale (approx)	Logged By

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G	EU-I				ERVICES		υ.	TOVIL QUARRY, MAIDSTONE.		Boreho Numbe
Machine : K Flush : A				Diamete 7mm to 2			Level (mOD) 37.81	Client P.J. BURKE.		Job Numbe 1475
Core Dia: N Wethod : R P		N	Locatio SE	n E SITE F	PLAN		/05/2006- /05/2006	Engineer LIVERPOOL ENVIRONMENTAL ENGINEERIN CONSULTANTS LIMITED.	G	Sheet 2/3 Legend R Inst
Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legèn	2/3
			And and the second seco					MADE GROUND (orange brown slightly clayey sandy fill with angular gravel to boulder sized sandstone and limestone fragmenta).		
					Water strike(1) at 27.00m. 27.0m Slow penetration good returns of dust and angular chipping	10.81		Interbedded moderately strong pale orange brow medium grained SANDSTONE and strong light grey crystalline LIMESTONE.		21
					Water strike(2) at 36.00m.	2,81		Moderately strong pale orange brown and orang brown variegated medium grained SANDSTONE		22 22
					38.0m Slow panetration poor returns of dust and chippings	-2.19	(5.00)   40.09			
temariks									Scale (approx)	Logged By
									1:10D	JF
									Figure No	). 53.A

Core Dia: N/A Method : RO PEI		SCR	Location SE RQD	n E SITE F Fj	PLAN Field Records 40.0m Slow penetration - drill bit jamming, mudstone residue on drill rods	Dates 00 02 Level (mOD) -3.19	<u>.</u>	Engineer LIVERPOOL ENVIRONMENTAL ENGINEE CONSULTANTS LIMITED. Description Weak blue grey silty day MUDSTONE. Complete at 41.00m	RING	Sł	1475 neat 3/3 Ins
Depth (m)	TCR	SCR	RQD	Fj	40 0m Sinw		(1.00) 41.00	Description Weak blue grey silty clay MUDSTONE.	Leger	Water	Ins
					40.0m Slow penetration - drill bit jamming, mudstone residue on drill rods	-3.19	41.00				
					on anin ious	-3.19	<u>.</u>	Complete at 41.00m	1		
			талинан			ייינעט אין					
marks						ณ์สมระบบรามี รางการค้าง 1999 -	_			Logge	ed (
									1:100 Figure No	JF	_

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		117 9634	4471 Fai	ERVICE:			Site TOVIL QUARRY MAIDSTONE,	Borel Numi B-
Flush :/ Core Dia:			j Diameta 27mm cas	ed to 18.30m	Ground	I Level (mOD) 38.53	Client P.J. BURKE.	Job Numb 147
Method ; F F	ROTARY PERCUSSION	Locatio	on BE SITE P	PLAN	Dates 01 10	9/05/2005- 0/05/2005	Engineer LIVERPOOL ENVIRONMENTAL ENGINEERING CONSULTANTS LIMITED.	Legend
Depth (m)	TCR SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) {Thickness}		Logend A
						,	MADE GROUND (yellow and orange brown sandy clay fill with gravel to boulder sized fragments of sandstone and limestone).	
ſ				Rapid penetration good returns of dust and subrounded chippings	32.53		MADE GROUND (orange brown sandy to very sandy clay fill with gravel to boulder sized angular tragments of sandstone and limestone).	
				14 n Cimu	29.53	(2,00)	MADE GROUND (orange brown very sandy day fill with gravel to boulder sized angular fragments of sandstone and limestone).	
			E E	11.0 Slow Denetration good returns of dust and angular chippinge	27.53	11.00 (2.00)	Ströng light grey crystalline LIMESTONE.	
					25.53 Instando <u>media and lung</u> , le see les en la sur		Interbedded strong light grey crystalline IMESTONE and moderately strong orange brown nectium grained SANDSTONE.	
nanks later strike ( o obvious vi escriptions l	(1) at 35m. Standing isual or olfactory evid based on tentative in a diameter signar	level of 22 lence of g	2.5m reco	nded 15.05.08. ntemination.	E			ogged V
	al diameter slotted w secure steel cover a			returns. on completion with g	ranular re:	sponse zone b	etween 32 - 42m, backfilled around plain Figure No.	JF

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Machine ;				Diameter	0117 9636807	Ground	Level (mOE	TOVIL QUARRY, MAIDSTONE.			<b>B-1</b>
Flush : / Core Dia:	NR		12	7mm case	d to 16.30m		38.53	P.J. BURKE.		N	ob Iumb 1479
Wethod : F F	ROTARY	ON	Locatio SE	n E SITE PL	AN	Dates 08 10	0/05/2006- 0/05/2008	Engineer Liverpool Environmental Engin Consultants Limited.	VEERING		147 heel 2/3
Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness		Lége	Water	íns
							(9.00)	Interbedded strong light grey crystalline LIMESTONE and moderately strong oral brown medium grained SANDSTONE,	nge	-	7.1
						16.53	22.00	interbedded moderately strong orange bi medium grained SANDSTONE and stron grey crystalfine LIMESTONE.	rown ng light		
				5 0	25.0 Slow enetration good eturns becoming lamp		(6.00) 				
						10,53	- 28.00	Moderately strong crange brown medium sANDSTONE,	grained		
						may lensers brown den met den met meens lensers	- - (8.00)				A A A A A A A A A A A A A A A A A A A
				35 35 per	ater strike(1) at .00m. o Slow netration poor ums of dust and ppinga, distone residue	2.53	36.00	Interbedded moderately strong orange brow		21	「白いい」の時間に見たいの
				on	dstone residue drili rods			medium grained SANDSTONE and blue gre clayey MUDSTONE.	ay sity	Land State State State 28	波波を見たい。
arks									Seelo.		
									1	Logge By	٥
									1:100	JF	

Bore Num B·		TOVIL QUARRY, MAIDSTONE.		· · · · · · · · · · · · · · · · · · ·	ERVICES		17 9634	Tel: 01		Machine : K
Job Num 147		P.J. BURKE.	Level (mOD) 38,53		d to 16.30m				IR	Plush : A Core Dia:
Shee 3/		Engineer LIVERPOOL ENVIRONMENTAL ENGINEERING CONSULTANTS LIMITED.	/05/2008- /05/2008	Dates 09 10	AN	n E SITE Pl	Location SE	ж	OTARY ERCUSSIC	<b>lethod</b> : R p
Water In	Legend	Description	Depth (m) (Thickness)	Level (mOD)	Field Records	FI	RQD	SCR	TCR	Depth (m)
		Interbedded modarately strong orange brown madium grained SANDSTONE and blue grey silly clayey MUDSTONE.	(8.00)							
gged	Scale Lo pprox) By			ายโลงมหประบบประมองปลายาภโลงมางร้างว่าเหง็ดของป่าแขนงนี้แระเกิงใจกายเร็งแขนงจี่แบบที่ arr กใ						narks
JF	1:100									
	igure No.	F								

27686/L/012A/G/RJM 20<sup>th</sup> January 2020

**Attachments** 

Groundwater Monitoring Results

## Ground Gas and Groundwater Monitoring Record Sheet

Job Details: Tovil Quarry

Client:PJ BurkeSite:Tovil Quarry

**Date:** 20/01/2020

Job No:27686Visit No:Water visit Jan 20Operator:RM

	Gas Concentrations									Flow Data			PID	Well & Water Data						
Monitoring Point	Methane (%v/v)		% LEL		Carbon Dioxide (% v/v)		Hydrogen Sulphide (ppmv)		Oxygen (%v/v)		Flow rate (l/hr)		Differential borehole pressure	Time for flow to equalise	PID %		Water Level (mbgl)	Depth of well (m)	Response Zone	Comments
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	(Pa)	(secs)		pipe)				
B1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	19.37	19.23	31.00		
вна	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	20.53	20.30	24.00		
BH TV S3	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	20.59	20.09	25.05		
BH S8	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	30m+	30m+	39.40		32.50mbgl in sept 2019 KCC data

## Meteorological and Site Information:

State of ground:	×	Dry		Moist	<b></b>	Wet	   	Snow	 Frozen
Wind:		Calm	х	Light		Moderate		Strong	
Cloud Cover:	 	None		Slight		Cloudy	Х	Overcast	
Precipitation:	×	None		Slight		Moderate		Heavy	



NM- Not monitored

27686/L/012A/G/RJM 20<sup>th</sup> January 2020

### **Attachments**

• Ground Gas Monitoring Results – Tovil Quarry

Job Details:Tovil QuarryClient:PJ BurkeSite:Tovil Quarry

Job No: 27686 Visit No: Initial

**Date:** 25/11/2019

Operator: CD

					Gas Cor	ncentrations						F	ow Data				Well & Wate	r Data
Monitoring Point	Methane	(%v/v)	%	LEL		Dioxide (% v/v)	, 0	n Sulphide omv)	Oxyger	ו (%v/v)	Flow ra	te (l/hr)	Differential borehole pressure	flow to equalise	Water Level (mbgl)	Depth of well (m)	Response Zone	Comments
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	(Pa)	(secs)				
G1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	Dry	6.82	Fill	1m upstand measured to top
G2	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	Dry	6.83	Fill	1m upstand measured to top
G3	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	Dry	7.00	Fill	1m upstand measured to top
G4	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	Dry	14.10	Fill	1m upstand measured to top
G5	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	Damp at Base	6.83	Fill	1m upstand measured to top

### Meteorological and Site Information:

State of ground:	 !	Dry		Moist	x	Wet		Snow		Frozen
Wind:	   	Calm	х	Light		Moderate		Strong		
Cloud Cover:	   	None		Slight		Cloudy		Overcast	x	
Precipitation:	   	None		Slight		Moderate	х	Heavy		

997

Barometric Pressure (mbar):

NM- Not monitored

Job Details:Tovil QuarryJob No:2Client:PJ BurkeVisit No:1 of 3Site:Tovil QuarryOperator:CDate:03/12/2019Visit No:1 of 3

					Gas Con	centrations						Fl	ow Data		PID			Well & Wate	r Data
Monitoring Point			LEL		Dioxide (% v/v)		n Sulphide omv)	Oxyger	(%v/v)	Flow ra	te (l/hr)	borehole pressure	Time for flow to equalise	PID %	Water Level (mbgl)	Depth of well (m)	Response Zone	Comments	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	(Pa)	(secs)					
G1	0.00	0.00	1.20	0.40	2.60	2.60	0.03	0.02	16.10	16.00	5.80	5.70	51	20	1.8	Dry	6.82	Fill	1m upstand measured to top
G2	0.00	0.00	0.00	0.00	4.30	4.30	0.02	0.02	8.80	8.00	5.80	5.70	51	15	1.0	Dry	6.83	Fill	1m upstand measured to top
G3	1.20	1.20	27.00	27.00	2.30	2.30	0.06	0.04	0.30	0.30	5.80	5.70	51	30	1.5	Dry	7.00	Fill	1m upstand measured to top
G4	0.00	0.00	0.00	0.00	3.60	3.60	0.02	0.01	8.50	8.00	5.80	5.70	51	20	1.0	Dry	14.10	Fill	1m upstand measured to top
G5	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	19.70	18.00	5.80	5.70	51	30	1.0	Damp at Base	6.83	Fill	1m upstand measured to top

27686

#### Meteorological and Site Information:

				í –			1	 l i i i i i i i i i i i i i i i i i i i
State of ground:		Dry	х	Moist	 Wet	i 	Snow	 Frozen
Wind:		Calm	х	Light	Moderate	1	Strong	
Cloud Cover:		None	х	Slight	Cloudy		Overcast	
Precipitation:	х	None		Slight	Moderate		Heavy	

NM- Not monitored

Barometric Pressure (mbar):

Job Details:	Tovil Quarry	Job No: 27686
Client:	PJ Burke	Visit No: 2 of 3
Site:	Tovil Quarry	Operator: CD
Date:	12/12/2019	

					Gas Con	centrations						Fl	ow Data		PID			Well & Wate	r Data
Monitoring Point			LEL		Dioxide (% v/v)		n Sulphide omv)	Oxyger	ı (%v/v)	Flow ra	te (l/hr)	Differential borehole pressure	Time for flow to equalise	PID %	Water Level (mbgl)	Depth of well (m)	Response Zone	Comments	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	(Pa)	(secs)					
G1	0.00	0.00	0.00	0.00	2.60	2.60	0.02	0.02	16.80	16.00	5.80	5.70	52	20	1.0	Dry	6.82	Fill	1m upstand measured to top
G2	1.20	1.20	28.60	25.00	4.30	4.30	0.06	0.04	6.50	6.50	5.10	5.00	51	20	1.0	Dry	6.83	Fill	1m upstand measured to top
G3	1.60	1.40	42.60	30.00	2.30	2.30	0.09	0.08	0.20	0.20	5.20	5.00	44	20	1.9	Dry	7.00	Fill	1m upstand measured to top
G4	1.30	1.00	13.20	10.00	3.60	3.60	0.05	0.04	0.50	0.50	5.80	5.70	53	20	1.3	Dry	14.10	Fill	1m upstand measured to top
G5	1.20	1.00	27.90	20.00	0.00	0.00	0.07	0.06	2.50	2.50	5.70	5.70	51	35	1.0	Damp at Base	6.83	Fill	1m upstand measured to top

### Meteorological and Site Information:

1	 1	 		1		l i i i i i i i i i i i i i i i i i i i		1
State of ground:	 Dry	 Moist	x	Wet	 	Snow		Frozen
Wind:	Calm	Light	х	Moderate		Strong		
Cloud Cover:	None	Slight		Cloudy		Overcast	х	
Precipitation:	None	Slight		Moderate	х	Heavy		

NM- Not monitored

Barometric Pressure (mbar):

Job Details:	Tovil Quarry	Job No: 27686
Client:	PJ Burke	Visit No: 3 of 3
Site:	Tovil Quarry	Operator: CD
Date:	10/01/2019	

					Gas Con	centrations						Fl	ow Data		PID			Well & Wate	r Data
Monitoring Point	Methane (%v/v) Peak Steady		%	LEL		Dioxide (% v/v)		n Sulphide omv)	Oxyger	n (%v/v)	Flow ra	te (l/hr)	Differential borehole pressure	Time for flow to equalise	PID %	Water Level (mbgl)	Depth of well (m)	Response Zone	Comments
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	(Pa)	(secs)					
G1	0.00	0.00	0.00	0.00	2.50	2.40	0.03	0.02	16.80	16.00	5.80	5.70	72	20	1.0	Dry	6.82	Fill	1m upstand measured to top
G2	1.20	1.20	22.00	20.00	4.30	4.30	0.05	0.04	6.50	6.50	5.00	4.80	60	20	1.0	Dry	6.83	Fill	1m upstand measured to top
G3	3.30	3.20	84.60	83.00	2.40	2.30	0.16	0.12	0.80	0.60	6.20	6.00	72	20	3.6	Dry	7.00	Fill	1m upstand measured to top
G4	1.30	1.00	13.20	10.00	3.60	3.60	0.05	0.04	20.00	17.00	5.60	5.40	55	20	1.3	Dry	14.10	Fill	1m upstand measured to top
G5	1.20	1.00	25.00	21.00	0.00	0.00	0.06	0.05	17.40	16.00	5.60	5.50	53	35	1.0	Damp at Base	6.83	Fill	1m upstand measured to top

### Meteorological and Site Information:

State of ground:	x	Dry	[	Moist	 Wet	( <b></b> -	Snow	Frozen
Wind:		Calm	х	Light	Moderate	i	Strong	
Cloud Cover:		None		Slight	Cloudy	x	Overcast	
Precipitation:	x	None		Slight	Moderate	   	Heavy	

NM- Not monitored

Barometric Pressure (mbar):

27686/L/012A/G/RJM 20<sup>th</sup> January 2020

Attachments

• Ground Gas Monitoring Information – Adjacent KCC landfill site

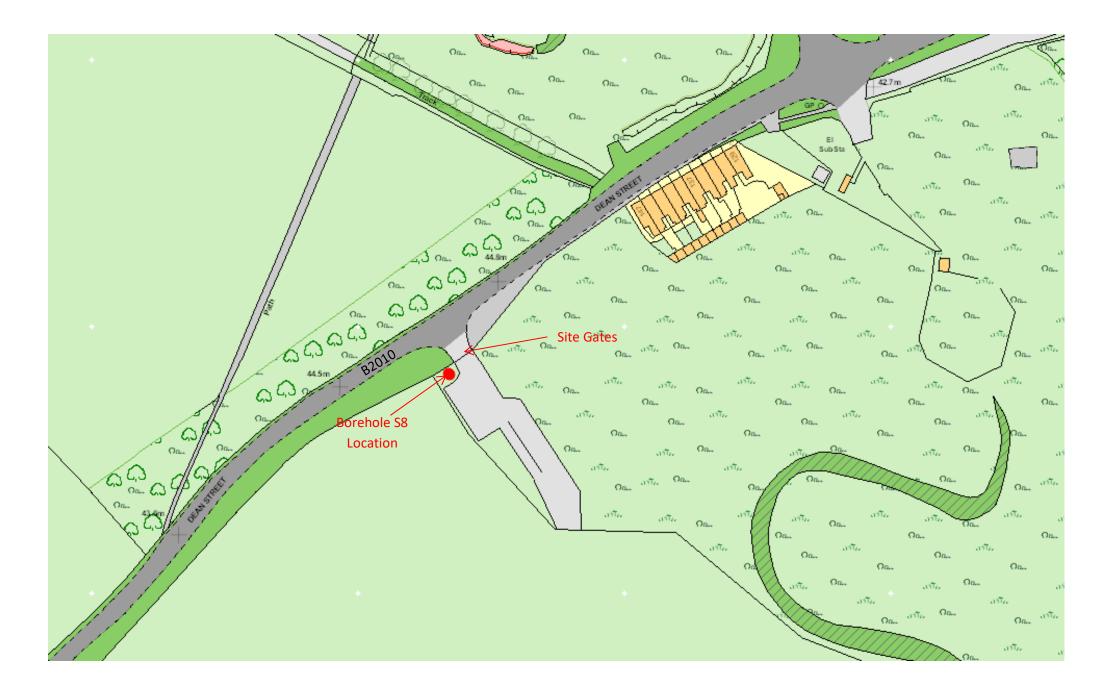
Southern Testing       St Consult       Start - End Date       Project ID:       Hole Type         www.southerntesting.co.uk tel01342 33310       www.stconsult.co.uk tel01604 500020       09/10/2017 - 10/10/2017       J13325       CP         Project Name:       Tovil Landfill       Remarks:       Co-ordinates:       Level:         Location:       Entrance to Tip, Dean Street       Drilled using DTHH with Air and Foam Mist. Logged by Drille method provides very poor sample recovery, from which to         Client:       Kent County Council       Project ID:       Hole Type         Well       Strikes       Depth (m bgl)       Type       Results       Egged       Depth (m bgl)       Stratum Description         (2.50)       (2.50)       (2.50)       Internet or Clark       Internet or Clark       Internet or Clark       Internet or Clark	Sheet 1 of
Project Name:     Iovit Landini     Remarks:       .ocation:     Entrance to Tip, Dean Street     Drilled using DTHH with Air and Foam Mist. Logged by Drille method provides very poor sample recovery, from which to       Client:     Kent County Council     Thickness (m)     Legend (m) bgl)     Depth (m bgl)     Stratum Description       Well     Water Strikes     Samples and Insitu Testing     5/2     Thickness (m)     Legend (m) bgl)     Stratum Description       Vell     Vater Strikes     Depth (m bgl)     Type     Results     Vell     Concrete over CLAY/ SAND with m	
Ocation:     Entrance to Tip, Dean Street     Drilled using DTHH with Air and Foam Mist. Logged by Drille method provides very poor sample recovery, from which to       Well     Water Strikes     Samples and Insitu Testing     Entrance to Tip, Dean Street     Drilled using DTHH with Air and Foam Mist. Logged by Drille method provides very poor sample recovery, from which to       Well     Water Strikes     Samples and Insitu Testing     Egend (m)     Depth (m bgl)     Stratum Description       Well     Mathematical Strikes     Depth (m bgl)     Type     Results     Egend (m)     Depth (m bgl)     Stratum Description	Logger:
Well     Samples and Insitu Testing     Second Strikes     Thickness     Depth     Depth     Stratum Description       Well     Vater     Samples and Insitu Testing     Strikes     Stratum Description       Vell     Vater     Stratum Description     Stratum Description	TJ r. The DTHH Drilli
Water     Samples and Insitu Testing     Egg of thickness (m)     Depth (m bgl)     Stratum Description       Well     Mater     Samples and Insitu Testing     Egg of thickness (m)     Depth (m bgl)     Depth (m bgl)     Stratum Description       Image: Strate in the	
Concrete over CLAY/ SAND with m MADE GROUND	
Concrete over CLAY/ SAND with m MADE GROUND	
(6.00)	NE with clay
8.50 Yellow grey SANDSTONE and LIMI HYTHE FORMATION	
Hole Details         Casing Details         Waterstrike (m bgl)         Standing/Chise	
anth (m hal) Dia (mm) Danto (mm) Data Depth Depth Depth Roca ta: Time (mine) From To Time	Remarks
6.50         131         6.50         131         09-10-2017         34.00         6.50         34.20         20	
41.50 101	

South	ern Te	esting	J ST (	Consult		Star	rt - En	d Date		Pro	ject ID	: н	ole Typ	e: BH	<b>S8</b>
www.southerntesting	g.co.uk tel:013	42 333100	www.stconsi	ılt.co.uk tel:0160450	0020 0	9/10/20	017 - í				13325		СР		2 of 5
Project Name:	Tovil La	andfill			Re	emarks:	: -	(	Co-o	rdinates	:		Level:	_	<b>ger:</b>
Location:	Entran	ice to Tip	o, Dean S	treet						and Foan sample r				ler. The DTHH 5 log.	Drilling
Client:	Kent C	ounty Co	ouncil											-	
Well Water Strikes			Insitu Testir Res	ults	(and thic	ckness (m)	egend	Depth (m bgl)			Stra	atum De	scriptior	n	
Weiling     Strikes       Image: Strikes     Image: Strikes	Depth (m bg	gl) Type	Res	ults a	(3.				H	Pllow gre YTHE FO	y SAND RMATIC	STONE )N	and LIN	MESTONE	11
						· · · · · · ·									
						<u></u>					Conti	nued on			<del>2</del> 0
Hole Detail Depth (m bgl) Dia		Casing Depth (m bgl)	Details Dia. (mm)	Date	Depth	/aterstrik	Depth		to:	Time (mins)	From	Star To	nding/Chi Time	iselling (m bgl) Remark	s
6.50 41.50	131 101	6.50	131	09-10-2017	Strike 34.00	Casing 6.50	Sealed	34.		20					

S	out	thern Testing ST Consult					Start -	te	Pro	ject ID:	н	lole Type:	BH S	<b>S</b> 8	
www.southerntesting.co.uk tel:01342 333100 www.stconsult.co.uk tel:01604 500020							0/201	7 - 10/10			L3325		СР	Sheet 3	of 5
Project Name: Tovil Landfill				Rema	arks		Со-о	rdinates:			Level:	Logge	er:		
Location: Entrance to Tip. Dean Street					Drilled	using [						by Driller. which to log	TJ The DTHH D	rillir	
ient:		Kent	County	Council					poor	sumple it	200 ver y,			∍.	
Well	Water Strikes			nd Insitu Testi	sults	Thicknes (m)	S Leger	d Depti (m bg			Strat	um De	scription		
						(14.00		21.0		trong frac YTHE FOR /eak SAN <u>YTHE FOR</u> 21m to 23m, ery weak YTHE FOR	RMATION DSTONE, RMATION No flush (W	N / LIME <u>N</u> /oids/ fr	ESTONE actures??)	STONE	-21 22 -23 24 25 26 27 28 27 28
								· · · · · · · · · · · · · · · · · · ·			Contin		next sheet.		-30
	ole Det			ing Details	Data	Depth D		Depth D		Time (mine)	Erom		nding/Chisellir		
epth (m 6.50 41.5(		Dia. (mm) 131 101	6.50	<sup>bgl)</sup> Dia. (mm) 131	Date 09-10-2017	Strike Ca		ealed RC	<b>se to:</b> 34.20	Time (mins) 20	From	То	Time	Remarks	

Southern Testing ST Consult						5	Start - E	nd Date	2	Pro	ject ID:	н	Hole Type:		<b>S8</b>		
www.southerntesting.co.uk tel:01342 333100 www.stconsult.co.uk tel:01604 500020 Project Name: Tovil Landfill								.7 - 10/10/2017 <b>Co-ordina</b>			.3325		CP Level:	Sheet Log	4 of 5 ger:		
						emai				1 -				1	ΓJ		
catio	n:	Entra	ance	to Tip	, Dean S	treet									by Driller. which to lo	The DTHH	Drillir
ient:		Kent	Cour	nty Co	ouncil					,			,,			0	
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Sample Point	Date	Source	Site	Sample Type	Balance (%)	Barometric Pres	sure (MECarbon Dioxide (%)	Carbon Mon	oxide (PPM) Hydrogen Sulfi	ide (PPM) Methane (%)	Ovuro
TV-3 at 2m	24/10/2016 08:51:00	Gas Analyser	Tovil Green	No Sample Type	79.1	1011	0.1	0	0	nue (FFIVI) IVIetnane (70)	Oxyger 20.8
TV-3 at 2m	21/11/2016 10:31:19	Gas Analyser	Tovil Green	No Sample Type	78.9	985	0	0	0	0	
TV-3 at 2m	28/11/2016 08:44:22	Gas Analyser	Tovil Green	No Sample Type	78.8	1024		0	0		21.1
TV-3 at 2m	16/01/2017 10:35:00	Gas Analyser	Tovil Green	No Sample Type	79.1		0.1	÷	-	0	21.1
TV-3 at 2m	20/02/2017 11:43:50	Gas Analyser	Tovil Green			1024	0.2	0	0	0	20.7
TV-3 at 2m	01/03/2017 12:04:10	-		No Sample Type	79.3	1014	0.4	0	0	0	20.3
		Gas Analyser	Tovil Green	No Sample Type	79.2	995	0.2	0	0	0	20.6
TV-3 at 2m	21/04/2017 08:28:59	Gas Analyser	Tovil Green	No Sample Type	78.1	1030	0.3	0	0	0	21.6
TV-3 at 2m	08/05/2017 08:18:47	Gas Analyser	Tovil Green	No Sample Type	78.1	1022	0.4	0	0	0	21.5
TV-3 at 2m	27/06/2017 08:37:29	Gas Analyser	Tovil Green	No Sample Type	78.7	1006	0.2	1	0	0	21.1
TV-3 at 2m	13/07/2017 09:18:20	Gas Analyser	Tovil Green	No Sample Type	79.6	1020	0.1	1	0	0	20.3
TV-3 at 2m	31/07/2017 08:24:32	Gas Analyser	Tovil Green	No Sample Type	80.3	1009	0.1	0	0	0	19.6
TV-3 at 2m	17/10/2017 09:13:57	Gas Analyser	Tovil Green	No Sample Type	78.4	1019	0.3	0	0	0.1	21.2
TV-3 at 2m	04/12/2017 09:36:49	Gas Analyser	Tovil Green	No Sample Type	79.3	1030	0.6	0	0	0.1	20
TV-3 at 2m	08/01/2018 09:41:07	Gas Analyser	Tovil Green	No Sample Type	78.9	1021	0.1	0	0	0.1	20.9
TV-3 at 2m	22/02/2018 08:56:58	Gas Analyser	Tovil Green	No Sample Type	78.1	1022	0.1	0	0	0.1	20.5
TV-3 at 2m	12/03/2018 08:28:46	Gas Analyser	Tovil Green	No Sample Type	79	983	0.1	0	0	0.1	20.8
TV-3 at 2m	05/04/2018 10:28:10	Gas Analyser	Tovil Green	No Sample Type	79.6	1012	0.1	õ	0	0	20.8
TV-3 at 2m	30/04/2018 09:11:01	Gas Analyser	Tovil Green	No Sample Type	78.3	999	1.8	0	0		
TV-3 at 2m	11/06/2018 09:50:06	Gas Analyser	Tovil Green	No Sample Type	78.9	1012		0	0	0.2	19.7
TV-3 at 2m	02/07/2018 09:32:01	Gas Analyser	Tovil Green				0.7	-	÷	0	20.4
TV-3 at 2m	24/08/2018 08:58:46			No Sample Type	79.1	1013	0.7	0	0	0	20.2
TV-3 at 2m		Gas Analyser	Tovil Green	No Sample Type	78.5	1012	0.6	1	1	0.1	20.8
	17/09/2018 09:29:53	Gas Analyser	Tovil Green	No Sample Type	78.9	1014	0.1	0	2	0.2	20.8
TV-3 at 2m	01/10/2018 11:11:56	Gas Analyser	Tovil Green	No Sample Type	78.6	1023	0.8	0	0	0	20.6
TV-3 at 2m	26/11/2018 09:30:01	Gas Analyser	Tovil Green	No Sample Type	78	1011	0.5	0	0	0.3	21.2
TV-3 at 2m	10/12/2018 10:15:19	Gas Analyser	Tovil Green	No Sample Type	78.4	1026	0.3	0	2	0	21.3
TV-3 at 2m	07/01/2019 09:31:05	Gas Analyser	Tovil Green	No Sample Type	78.6	1032	0.3	0	0	0.1	21
TV-3 at 2m	04/02/2019 10:15:17	Gas Analyser	Tovil Green	No Sample Type	77.5	1016	0.2	0	0	0.1	22.2
TV-3 at 2m	04/03/2019 09:00:56	Gas Analyser	Tovil Green	No Sample Type	77.3	992	0.4	0	0	0.1	22.2
TV-3 at 2m	01/04/2019 09:05:18	Gas Analyser	Tovil Green	No Sample Type	77.8	1021	0.1	0	0	0.1	22
TV-3 at 2m	02/05/2019 09:19:49	Gas Analyser	Tovil Green	No Sample Type	78.7	1013	0.5	1	0	0.1	20.7
TV-3 at 2m	17/06/2019 09:16:06	Gas Analyser	Tovil Green	No Sample Type	80.2	1017	0.5	1	0	0	19.3
TV-3 at 2m	08/07/2019 09:10:58	Gas Analyser	Tovil Green	No Sample Type	79.5	1020	0.6	1	0	õ	19.9
TV-3 at 2m	05/08/2019 10:36:30	Gas Analyser	Tovil Green	No Sample Type	79,3	1009	0.2	0	0	0	20.5
TV-3 at 2m	09/09/2019 11:21:54	Gas Analyser	Tovil Green	No Sample Type	78.1	1010	0.8	0	0	0.2	
TV-3 at 2m	07/10/2019 10:08:33	Gas Analyser	Tovil Green	No Sample Type	78	1015	0.5	0	0		20.9
TV-E5	24/10/2016 10:10:45	Gas Analyser	Tovil Green	No Sample Type	77.8	1010		0	-	0.1	21.4
TV-E5	21/11/2016 12:00:00	Gas Analyser	Tovil Green				14.7		0	0	7.5
TV-E5	28/11/2016 10:19:25			No Sample Type	76.6	983	13.4	0	0	0	10
		Gas Analyser	Tovil Green	No Sample Type	78.7	1025	9.5	0	0	0	11.8
TV-E5	16/01/2017 11:17:00	Gas Analyser	Tovil Green	No Sample Type	78.2	1024	10.4	0	0	0.2	11.2
TV-E5	20/02/2017 12:16:46	Gas Analyser	Tovil Green	No Sample Type	79.8	1013	13.6	0	0	0.1	6.5
TV-E5	01/03/2017 11:15:49	Gas Analyser	Tovil Green	No Sample Type	77.1	996	16.3	0	0	0.5	6.1
TV-E5	21/04/2017 09:53:50	Gas Analyser	Tovil Green	No Sample Type	79.6	1030	12.6	0	0	0.2	7.6
TV-E5	08/05/2017 09:39:30	Gas Analyser	Tovil Green	No Sample Type	77.4	1022	7.5	0	0	0	15.1
TV-E5	27/06/2017 09:40:44	Gas Analyser	Tovil Green	No Sample Type	77.8	1005	6.2	1	0	0	16
TV-E5	13/07/2017 10:25:39	Gas Analyser	Tovil Green	No Sample Type	78.5	1020	7.8	2	1	0	13.7
TV-E5	31/07/2017 09:56:00	Gas Analyser	Tovil Green	No Sample Type	79	1010	9.8	2	1	0	11.2
TV-E5	06/09/2017 09:31:50	Gas Analyser	Tovil Green	No Sample Type	79.5	1016	11.3	0	0	0	9.2
TV-E5	17/10/2017 10:18:23	Gas Analyser	Tovil Green	No Sample Type	78.7	1019	14.5	1	0	0.3	6.5
TV-E5	04/12/2017 09:28:00	Gas Analyser	Tovil Green	No Sample Type	78.6	1031	9	0	0	0.2	12,2
TV-E5	08/01/2018 10:57:33	Gas Analyser	Tovil Green	No Sample Type	78.2	1020	5.9	0	0	0.1	15.8
TV-E5	22/02/2018 09:45:52	Gas Analyser	Tovil Green	No Sample Type	77.1	1022	6.6	0	õ	0.1	
TV-E5	12/03/2018 10:23:05	Gas Analyser	Tovil Green	No Sample Type	80.3	982	16.4	0	0		16.2
TV-E5	05/04/2018 11:49:13	Gas Analyser	Tovil Green	No Sample Type	79.8	1014	2.4	1	0	0.7	2.6
TV-E5	30/04/2018 10:42:27	Gas Analyser	Tovil Green	No Sample Type	76.7	999	5.4	0	0	0	17.8
TV-E5	11/06/2018 11:31:06	Gas Analyser	Tovil Green	No Sample Type	79.1			0	0	0	17. <del>9</del>
TV-E5	04/02/2019 09:57:04	Gas Analyser	Tovil Green			1012	6.7	0	1	0	14.2
TV-E6				No Sample Type	82.4	1016	14.6	0	0	2.4	0.6
	24/10/2016 10:12:52	Gas Analyser	Tovil Green	No Sample Type	79.6	1010	0.5	0	0	0	19.9
TV-E6	21/11/2016 12:02:14	Gas Analyser	Tovil Green	No Sample Type	79.2	983	0.4	0	0	0.1	20.3
TV-E6	28/11/2016 10:21:58	Gas Analyser	Tovil Green	No Sample Type	78.6	1025	0	0	0	0	21.4
TV-E6	16/01/2017 11:19:00	Gas Analyser	Tovil Green	No Sample Type	80.3	1023	0.3	0	0	0	19.4
TV-E6	20/02/2017 09:05:20	Gas Analyser	Tovil Green	No Sample Type	78.9	1015	0	0	0	0	21.1
TV-E6	01/03/2017 11:13:36	Gas Analyser	Tovil Green	No Sample Type	78.9	996	0.3	0	0	0.3	20.5
TV-E6	21/04/2017 09:57:13	Gas Analyser	Tovil Green	No Sample Type	77.7	1028	0.6	1	0	0	21.7
TV-E6	08/05/2017 09:41:50	Gas Analyser	Tovil Green	No Sample Type	77.4	1021	0.2	0	0	0	22.4
TV-E6	27/06/2017 09:43:47	Gas Analyser	Tovil Green	No Sample Type	79	1003	0.7	1	0	0	20.3
TV-E6	13/07/2017 10:28:00	Gas Analyser	Tovil Green	No Sample Type	79.8	1019	0.6	2	1	0	19.6
TV-E6	31/07/2017 09:58:27	Gas Analyser	Tovil Green	No Sample Type	79.8	1009	0.7	1	2	0	19.5
TV-E6	06/09/2017 09:29:14	Gas Analyser	Tovil Green	No Sample Type	78.8	1015	0.6	0	0	0	20.6
TV-E6	04/12/2017 09:30:21	Gas Analyser	Tovil Green	No Sample Type	78.1	1030	0.2	0	0	0.1	20.8
TV-E6	08/01/2018 11:00:40	Gas Analyser	Tovil Green	No Sample Type	77.7	1017	0.3	0	0	0.2	
TV-E6	22/02/2018 09:48:06	Gas Analyser	Tovil Green	No Sample Type	78.4	1021	0.2	0	0		21.8
TV-E6	12/03/2018 10:25:27	Gas Analyser	Tovil Green	No Sample Type	78.5	982	0.2	0	0	0.1	21.3
TV-E6	05/04/2018 11:51:11	Gas Analyser	Tovil Green	No Sample Type	79.6	1013	0.1	1	0	0.1	21.2
TV-E6	11/06/2018 11:32:36	Gas Analyser	Tovil Green	No Sample Type	79.7		0.1	1	2	0	20.3
TV-E6	02/05/2019 09:14:03	Gas Analyser	Tovil Green			1012		0	1 A	0	20.3
	01,00/2010 03:14:03	Sus minipet	TOAL OLEGI	No Sample Type	78.6	1012	0.1	0	0	0	21.3

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# Kent County Council Waste Management

# **Tovil Closed Landfill Site, Maidstone**

# **Environmental Monitoring Summary**



Rev.0, July 2017

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## **1** Introduction

This Environmental Monitoring Summary (EMS) has been produced by KCC Waste Management (KCC WM) as part of the ongoing aftercare programme for the closed landfill site at Tovil, Maidstone.

A full Environmental Monitoring Report (EMR) was produced by Jacobs UK Ltd (Jacobs) on behalf of KCC WM in January 2008. The EMR presented mainly historical information comprising a description of the factual details from a study of the existing records and from geological memoirs, with borehole logs and previous reports included as appendices. Subsequent shorter Environmental Monitoring Summary (EMS) documents were produced by Jacobs to provide an update to the EMR, each detailing the results of the monitoring undertaken up to the date of their issue.

This EMS document reviews gas and water data from the date of the last EMS<sup>[2]</sup> issued in December 2012, until present in order to review the conceptual site model (CSM) and update the preliminary risk assessment (PRA). It also presents the findings of a walkover survey and conclusions and recommendations for the site. Detailed historical information is not included in the EMS document and hence it should be read with reference to the last full EMR<sup>[2]</sup>.

## 2 Walkover Survey

A walkover survey was conducted on 13<sup>th</sup> July 2017. Observations are shown on Figure 1 along with the location of the environmental monitoring points which are pre-fixed with the site identifier TV. The walkover was undertaken on a dry, sunny day with a slight breeze.

The site continues to be grazed by horses, although the grass across much of the site was long with the southern section being densely covered by teasels and thistles. Several wildflowers were found to be in bloom, with patches of ragwort also noted, as shown in Photo A. Despite the long grass, the undulating nature of the site was still apparent, with many large depressions present. These often appeared to follow the outline of the phases of tipping. An updated topographical survey is required in order to confirm this though.

As noted during previous walkover surveys, areas of distressed vegetation and bare ground were also apparent. These tended to be on ridges of higher ground, potentially associated with settlement within the different phases of tipping. An example of one of these areas is shown in Photo B.



At the time of the walkover, water was present in the two large ponds monitored as SW2 (Photo C) whilst SW1 and SW3 were dry.



Since the last report was issued, three new pedestrian gates have been installed; two on the southern boundary and one on the eastern, as shown in Photo D. These join up footpaths outside of the site, allowing pedestrians to avoid walking along the busy road.

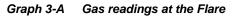
## 3 Landfill Gas Assessment

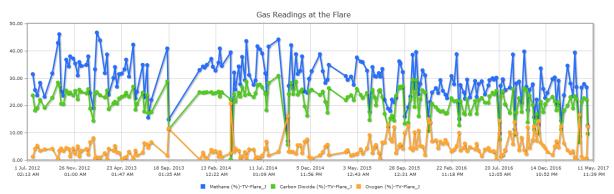
This gas assessment summarises the gas results since the previous environmental monitoring summary was issued in December 2012<sup>[1]</sup>.

Since the last EMS was issued an audit of the landfill gas extraction system has been carried out. This comprised an assessment of gas well condition, gas quality, well depth and suction/relative pressure coverage. It highlighted the presence of some faults which required further investigation. This investigation with subsequent repairs was undertaken in September and November 2014 respectively.

### 3.1 In-Waste

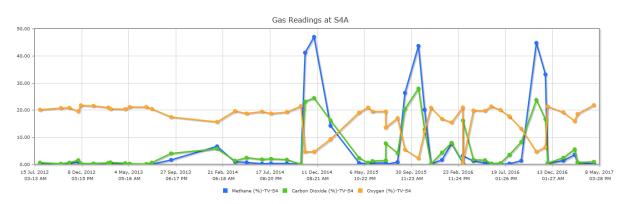
Gas monitoring from the three in waste boreholes (E2, S4A and S5A) as well as at the flare indicates that reasonable quality gas is still present within the site. Borehole E2 continues to record the best quality landfill gas with methane generally between 45% and 65%, carbon dioxide between 25% and 30% and very little oxygen. Results from S5A and the flare indicate a poorer quality landfill gas is present across the majority of the site, with methane typically between 20% and 35%, as shown in Graph 3-A.





Borehole S4A records a seasonal trend to its gas readings, as shown in Graph 3-B below, with peaks in methane towards the end of each year and none in the summer.

Graph 3-B Gas readings at borehole S4A



Flare counter readings continue to indicate that the operation of the flare is poor and generally only runs (and then only for up to 24 hours), once the monitoring officer has manually relit it on his weekly visits. An audit of the gas extraction system in July 2014 noted some faults that needed attention in order to establish suction across the system.

These were undertaken in November 2014. Gas balancing is undertaken on a quarterly basis. Since the audit and repairs in 2014, suction has been maintained across the site, although valves at wells D1 and A6 have recently been noted as faulty and require repair.

As recommended by the audit report in July 2014, now that the repairs have been made options to help the flare ignite on timer mode should be undertaken to help improve run times and make them more consistent.

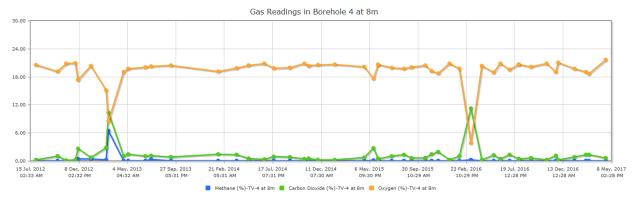
### 3.2 Perimeter

Since the last report in December 2012 boreholes 1 and A along the northern boundary of the site have been removed, as part of the excavation works to the adjacent quarry. The excavation works have meant that waste along the northern face of the landfill has been exposed. Care will need to be taken to ensure that this does not allow oxygen to be drawn into the site by the gas extraction system.

There has been little change to the gas regime within the perimeter boreholes within most continuing to show little if any evidence of landfill gas migration. Exceptions to this include:

- Boreholes E3 and E4 along the eastern boundary which continue to show evidence of landfill gas migration. Methane has recently been recorded up to 20% in E3 and 10% in E4.
- Isolated spike in methane in borehole 7 along the western boundary in February 2014 of 17.3%.
- Isolated spike in methane in borehole E5 along the northern boundary in January 2016 of 4.3%.

An improvement in the gas regime in borehole 4 has been noted recently. The 2m and 8m tips used to record isolated peaks in methane in March each year, but these were not recorded in 2014 or 2015. A peak in carbon dioxide was noted at these depths in March 2016 but with a maximum methane of 0.4%, as shown in Graph 3-C.





After recording methane in borehole E6 during 2014 and in September 2015, near natural atmospheric conditions have returned.

### 3.3 Surface Emissions Survey

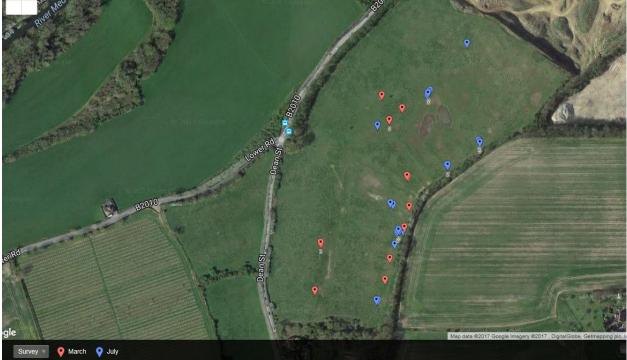
Surface emissions surveys were undertaken across the site on 27<sup>th</sup> March and 6<sup>th</sup> August 2015 and 13<sup>th</sup> July 2017 where, using a portable laser diode methane detector, the concentrations of methane gas being emitted from the site were recorded.

The majority of the readings from the March 2015 survey were within the acceptable threshold of 5ppm. There are however areas that are showing both elevated (138 readings between five and 100) and significant readings (seven readings above 100, of which two are above 1,000). These readings are largely within areas that have previously produced higher readings, namely at the boundary of the waste/quarry edge, where settlement of the waste has allowed a preferential pathway for surface emissions to develop.

The August 2015 survey recorded a maximum value of 30ppm. This was along the eastern boundary, by a crack and an area of bare ground, similar to that noted in the March 2015 survey.

Similar to the March 2015 survey, the July 2017 survey noted both elevated (90 readings between five and 100ppm) and significant readings (15 readings above 100ppm, of which three were above 1,000ppm). Comparison with the March 2017 shows the elevated readings along the eastern boundary and between gas extraction wells C7 and C6 to be persistent. Figure 3-A shows the location of readings over 50ppm from both the March 2015 and July 2017 surveys.





### 4 Water Assessment

Leachate is the liquid that results from the percolation of water and liquid waste through solid waste. Leachate has the potential to cause harm through the depletion of oxygen and production of hydrogen sulphide, methane and ammonia, all of which are toxic to most higher level organisms. Consequently aquatic life may be reduced or even totally eradicated

by components in leachate. There is also the potential for trace contaminants such as heavy metals to be present, which can pose a risk to groundwater as a resource.

Samples are recovered and tested in the field every two months with samples sent for laboratory testing on a seven month cycle. Since the last EMS<sup>[1]</sup> was issued in December 2012, five rounds of laboratory testing have been undertaken; April 2013, June 2014, January 2015, October 2015 and October 2016.

#### 4.1 Leachate Quality

Only three rounds of testing have been undertaken on samples from S4A; April 2013, June 2014 and January 2015 as the borehole is often noted as containing insufficient liquid to enable a sample to be taken. No samples have been recovered from S5A as this is consistently found to be dry. Where available leachate results have been compared with typical values for leachate from aged wastes set out in Waste Management Paper 26B (WMP26B)<sup>[3]</sup> and or the example completion criteria for leachate set out in Waste Management Paper 26A (WMP26A)<sup>[4]</sup>. It should be noted that these criteria have been used as a guide only in order to help assess the strength of the leachate and do not represent statutory limit values.

Leachate results continue to indicate that little water is being retained within the site and that which is retained is considered to be a very weak leachate. Recent testing has recorded the following for key landfill indicators.

Table 4-A Leach	ate Results S4A					
Determinand	Average since December 2012					
COD	240mg/l					
Ammoniacal Nitrogen	180mg/l					
BOD	14mg/l					
Electrical conductivity	3674µS/cm (including field readings)					
рН	6.97(including field readings)					

#### 4.2 **Groundwater Quality**

Where available, groundwater results have been compared against statutory freshwater environmental quality standards (EQS) as groundwater in the vicinity of the site is likely to be in continuity with the River Medway. Where these are not available UK Drinking Water Standards (DWS) have been used as a guide, although the site is not within a groundwater source protection zone.

Three groundwater boreholes are monitored at the site; S1, S2 and S3. Groundwater levels are very consistent, showing little seasonal influence. They indicate that flow is to the north, making borehole S2 up hydraulic gradient of the site and S1 and S3 down hydraulic gradient.

In-situ testing of dissolved oxygen, temperature, electrical conductivity and pH indicates a slight deterioration in groundwater quality in S3 compared with that at S1 and S2. This is most clearly shown by electrical conductivity values which since December 2012 have averaged 1289µS/cm at S2, 1463µS/cm at S1 and 2746µS/cm at S3, as shown below in Graph 4-A. pH remains near neutral for all locations, with S3 being slightly more alkaline than S1 and S2 and dissolved oxygen values are generally below 2mg/l at all three