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Sent by email to: [REDACTED]

Paul Slingo
Technical Director
Gleeson Developments Ltd
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Fleet
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Our ref: BRD2484-OR3-A

2nd July 2018

Dear Paul

**UPDATED GAS RISK ASSESSMENT REPORT
LAND AT BURDELL ROAD, YAPTON**

Contract Details

BRD Environmental Limited (BRD) has been commissioned by Gleeson Developments Limited to undertake further monitoring and an updated gas risk assessment at their residential development site in Yapton, hereafter referred to as the site.

Background

BRD has previously undertaken a Geo-Environmental Desk Study and Site Investigation at the site in 2015. This comprised the forwarding of 5No. windowless sample boreholes (4No. with monitoring installations), 9No. trial pits with 2No. soakage tests and 3No. TRL dynamic cone penetrometer tests.

The investigation proved a cover of Topsoil and Made Ground Topsoil to a maximum depth of 0.40m below ground level. This was underlain by superficial Aeolian Deposits comprised of clay or silty soils to a maximum depth of 4.95m below ground level. The bedrock of the Upper Chalk Formation was encountered within four of the boreholes to their termination depths of between 5.40m and 5.45m. The borehole logs from the previous investigation are enclosed with this letter report.

Although the soils on site were proven to be uncontaminated, the desk study identified an off-site infilled brick pit to the north which presents a potential risk to the site via the migration of landfill gasses onto the site. To assess the risk, the previous site investigation completed 3No. gas monitoring visits in order to make an initial assessment.

Although no gas risk was identified by the initial monitoring, it was recommended that an additional six gas monitoring visits were undertaken at the site in order to comply with the current CIRIA C665 guidance and confirm this lack of gas risk.

However, these additional visits were not undertaken at the time and the additional works were only instructed in 2017/2018. In the period between the original monitoring and the start of the recent monitoring, the original boreholes had been destroyed by the on-site ploughing in the intervening years.

There it was necessary to replace the monitoring wells. Four new window sample boreholes were therefore installed in January 2018. The new borehole locations were close to the original four with monitoring installations and the strata encountered was similar to that found in the original investigation from 2015. The new borehole logs and exploratory point plan are enclosed with this letter report.

Scope of Works

The agreed scope of works for the completion of the gas risk assessment was:

- Geo-Environmental Technician to undertake an additional 6No. combined gas, vapour and groundwater monitoring visits. For gas, the determination of oxygen, carbon dioxide, methane, hydrogen sulphide and carbon monoxide concentrations, together with atmospheric pressure and flow rates, using portable equipment. For vapours, determination of the concentration of volatile organic compounds by photo ionisation detector. For groundwater, the determination of groundwater levels.
- Provision of a gas risk assessment report to include all monitoring results and a gas risk assessment in line with CIRIA C665.

In order to monitor the groundwater levels over the winter period the monitoring visits were spaced out over several months.

Site Setting

The site is located at the land south of Burndell Road, Yapton, Arundel, West Sussex, BN18 0HP and is approximately centred on national grid reference 498310E, 102840N.

The site currently comprises an overgrown agricultural field that is roughly square in shape, relatively flat and covers an area of approximately 3.86 hectares.

Fieldworks

The additional works have comprised of a total of six gas monitoring visits undertaken on the 24th January, 22nd February, 22nd March, 18th May, 13th June and 29th June 2018.

Gas Risk Assessment

For completeness, the results from all 9No. monitoring visits undertaken on the site have been reported on in the table below.

RESULTS SUMMARY			
Parameter	Minimum	Maximum	Comments
Methane	0.0%	0.1%	No significant concentrations recorded. The maximum concentration of methane recorded is within the tolerance limit of the gas detector employed.
Carbon Dioxide	0.6%	5.0%	Marginally elevated concentrations of carbon dioxide have been recorded in borehole WS01A.
Oxygen	9.1%	20.4%	The oxygen levels were typically depleted as carbon dioxide concentrations increased.
Hydrogen Sulphide	0 ppm	1 ppm	No significant concentrations recorded.
Carbon Monoxide	0 ppm	24 ppm	No significant concentrations recorded.
PID	0.0 ppm	14.3 ppm	Background concentrations recorded.
Atmospheric pressure	1007mB	1028mB	All monitoring visits were undertaken when the atmospheric pressure was above 1000mB. The third monitoring visit of the original boreholes and visits 2, 3 and 6 of the new boreholes followed a falling atmospheric pressure trend.
Groundwater levels	0.37m	2.90m	The shallowest groundwater levels were always recorded in the south western corner of the site (WS02 / WS02A) and the deepest groundwater levels were always recorded in the north eastern and north western corners (WS04 and WS05A). Over the nine monitoring visits a seasonal change is noticeable. During the winter months the groundwater levels are high and during the summer months the groundwater levels are much lower.

RESULTS SUMMARY

Parameter	Minimum	Maximum	Comments
Flow rate	0.0 l/hr	0.2/hr	A maximum and minimum flow rate of 6.1 and -9.3l/hr have been recorded in WS02A. However, these values are only associated with shallow groundwater levels and are solely the effect of a partial vacuum within the sealed section of the monitoring pipe. Such values are not at all representative and should not be considered. The highest flow rate from a borehole well not affected by shallow groundwater is 0.2l/hr.

GAS GENERATION POTENTIAL OF SOURCE

GAS SOURCE	GENERATION POTENTIAL	COMMENTS
Infilled brick pit to the north	Low	The brick pit is likely to have been infilled with unknown materials during the late 1930's to enable development of residential housing in that area. Given the time elapsed since the anticipated filling of the pit, any decomposable matter is highly unlikely to still be decomposing and producing landfill gases. In addition, the brick pit is located some 150m from the developable area of the site. It is considered that the generation potential is low.
Carbonate Deposits (e.g. Chalk, Limestone)	Low	CIRIA 152 provides a risk ranking of gas sources with natural soils with a low organic content deemed to pose the lowest risk in terms of gas generation. CIRIA 152 placed the presence of carbonate deposits (e.g. Chalk) relatively high in terms of gas generation risk order. However, Wilson and Card argued that such soils should be reclassified as low gas generation potential on the basis that thousands of homes have been built on such soils without any protection measures and without any recorded build-up of Carbon Dioxide within these homes. This reclassification has been accepted by other authors.

Sensitivity of development	High (Residential with gardens)	
	Idealised	Actual
Monitoring period	6 months	2 years and 7 months
Total number of visits	9 visits	9 visits
Number of visits during falling pressure trends	At least 2 visits	4 visits
Comment	Nine gas visits have been completed in total over a range of atmospheric conditions, which is considered sufficient for a characterisation of the gas regime at the site and fully complies with CIRIA C665.	

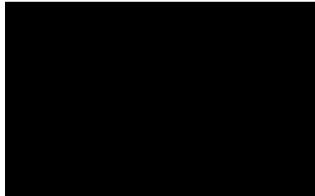
GAS REGIME CHARACTERISATION			
Radon protection measures required?	No.	Vapour protection measures required?	No.
	Characteristic Gas Concentration (fraction)	Characteristic Gas Flow Rate (l/hr)	Gas Screening Value (l/hr)
Methane	0.001	0.2	0.0002
Carbon Dioxide	0.05	0.2	0.01
Methodology	Situation A - All development types except low rise housing with gardens.		Situation B - Low rise housing with gardens - NHBC 'Traffic Lights'.
Gas Regime	Characteristic situation 1 - Very low risk.		Green.
Gas Protection Measures	Some elevated carbon dioxide concentrations have been recorded in WS02A but not at levels that raise any concerns. These concentrations more likely to be derived from the underlying carbonate rocks than from the infilled brick pit in any case. Of more importance is that there is no accompanying flow with this elevated carbon dioxide. Negligible gas regime identified and gas protection measures are not considered necessary.		

Conclusion

Based on the gas monitoring visits undertaken, it is considered that the site falls into both the CS1 and the NHBC Green traffic light classification and therefore no gas protection measures are considered necessary at this site.

This letter report should be forwarded to the planning department of the Local Authority, the organisation undertaking the Building Control function and warranty providers to confirm that the assessment completed is satisfactory.

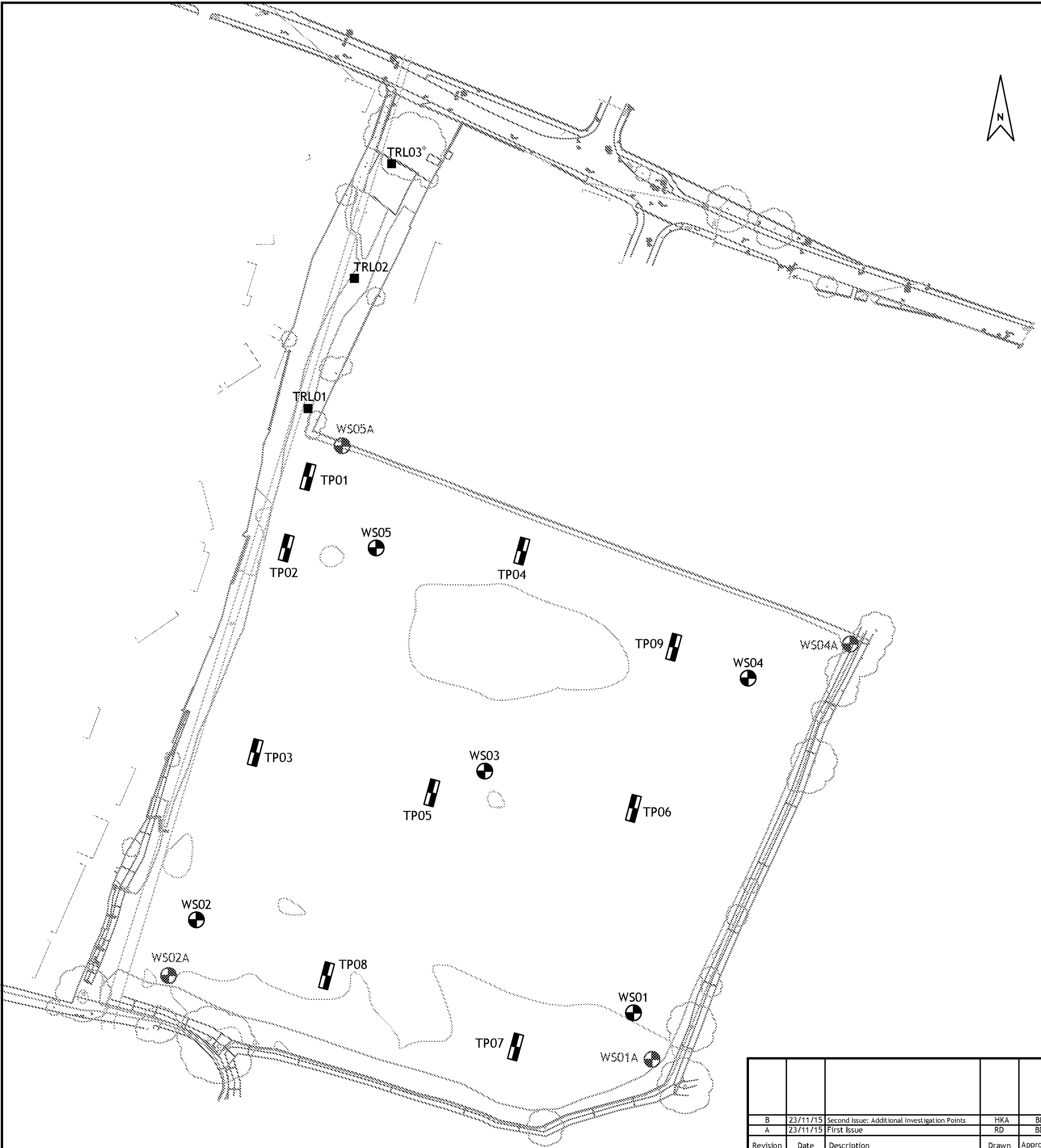
Yours sincerely



James Brockwell
Principal Consultant
BRD Environmental Ltd

Enc. Exploratory Point Plan - Ref. BRD2484-OD1-B
Original 2015 Borehole Logs - Ref. WS01-WS05.
Current 2018 Borehole Logs - Ref. WS01A, WS02A, WS04A and WS05A.
Complete set of Gas Monitoring Records - 9 x A4 pages.

The information and advice contained within this report is provided by BRD Environmental Limited (BRD) for sole use and reliance by its Client in performance of BRD's duties under its contract with the Client. Any advice, opinions or recommendations within this report should be read and relied upon only in the context of the report as a whole. The advice within the reports is based upon the information made available to BRD within the financial and timeframe constraints imposed. BRD relied on accuracy of the information contained in the third party documents consulted and is in no circumstances responsible for the accuracy of such information or data supplied. The report is based on UK standards, codes and common practice current at time of writing. When considering this report regard should be given to the terms and conditions of BRD's contract with the Client under which the report was prepared. The copyright of this report is held by BRD. Should the Client wish to release this report to a Third Party for that party's reliance, BRD may agree to such release provided that: (i) BRD's written agreement to such release is obtained (ii) By release of the report, BRD assumes no duties, liabilities or obligations to the Third Party and that the Third Party does not acquire any rights whatsoever against BRD (iii) BRD accepts no responsibility for any loss incurred by the Client through the Client's release of the report to the Third Party. Following final issue of this report, BRD has no further obligation to advise the Client on any matters such as changes in legislation or codes of practice that may affect the advice contained within the report.



- Key:
- WS Additional BRD Windowless Sample Borehole with Monitoring Installation.
 - WS BRD Windowless Sample Borehole (2015)
 - TP BRD Trial Pit (2015)
 - TRL BRD TRL Test (2015)
 - Site Boundary

Notes:

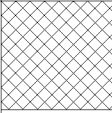
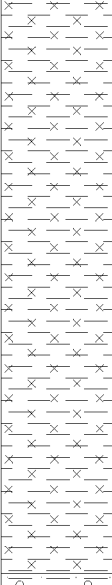
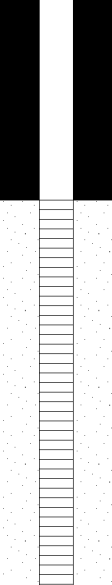
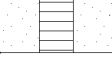
Reproduced from Digital Terrain Surveys LLP, 'Site Survey', drawing ref. DTS220414-7Q1, dated April 2014.

All exploratory holes positioned by recreational GPS.

All boundaries are approximate.

B	23/11/15	Second Issue: Additional Investigation Points	HKA	BD
A	23/11/15	First Issue	RD	BD
Revision	Date	Description	Drawn	Approved
Drawing title				
EXPLORATORY POINT PLAN				
Project title				
LAND SOUTH OF BURNDILL ROAD, YAPTON				
Client				
GLEESON DEVELOPMENTS				
Scale		Original drg. size/colour	Date	
1:1250		A3 / C	05/02/2018	
Drawn		Checked	Approved	
HKA		AN	BD	
Drawing Number				Rev
BRD2484-OD1				B
 BRD Environmental Ltd 01295 272244 info@brduk.com www.brduk.com				

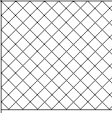
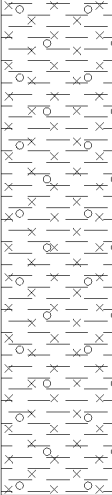
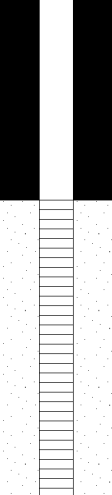
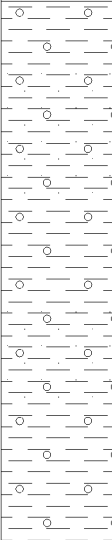
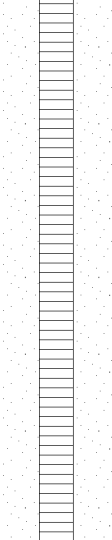
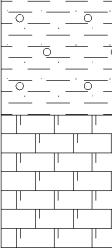
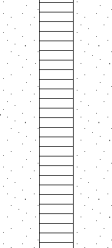
PROBEHOLE RECORD

Client: Gleeson Developments Project Title: Land South of Burndell Road, Yapton Project No: BRD2484 Logged By: J McDermott Date Commenced: 05/11/2015 Date Completed: 05/11/2015 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS01		
						Sheet 1 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
0.20	J1			MADE GROUND / TOPSOIL: Crop stubble over soft to firm, brown, gravelly, silty clay. Gravel of fine to coarse, subangular to rounded flint and occasional clinker.			MGTS	
0.30	PEN	2.25 kg/cm²		Firm, yellow brown, gravelly, very silty CLAY. Gravel of fine to coarse, subangular to rounded flint and cobbles of flint.	0.35			
0.60	PEN	1.75 kg/cm²					AEOLIAN DEPOSITS	
0.70	J2							
0.80	PEN	2.25 kg/cm²						
1.00	SPT	5 N		1.00 m: SPT: 2,1/1,1,1,2.	1.0			
				1.30 m: Becoming very sandy.				
1.60	PEN	1.50 kg/cm²						
1.70	D2							
2.00	SPT	11 N		1.90 m: Light brown in colour. 2.00 m: SPT: 3,2/2,3,3,3.	2.0			
				Firm, light orange / yellow brown, sandy, gravelly CLAY. Gravel of fine to coarse, angular to rounded flint, siltstone and chalk.	2.20			
2.70	D3			2.55 m: Becoming slightly moist.				
3.00	SPT	13 N		3.00 m: SPT: 2,2/2,3,4,4.	3.0			
				Firm, yellow brown, gravelly, sandy CLAY. Gravel of fine to coarse, angular to rounded flint.	3.15			
3.50	PEN	2.75 kg/cm²					CH	
3.60	D4							
3.70	PEN	2.25 kg/cm²		3.65 m: Slightly moist with some chalk gravel.	3.85			
3.90	PEN	2.50 kg/cm²		Firm, light brown / cream brown, sandy, gravelly CLAY. Gravel of fine to coarse, angular to rounded flint and chalk.	4.0			
4.00	SPT	50 *		4.00 m: SPT: 8,10/12,13,16, 9 for 50mm.	4.30			
				CHALK recovered as: Firm, becoming stiff, moist, gravelly clay. Gravel of fine to coarse, angular to rounded flint and	4.50			
General Remarks: Borehole terminated at 5.40 m bgl.					Surface Elevation Level:		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

PROBEHOLE RECORD

Client: Gleeson Developments Project Title: Land South of Burndell Road, Yapton Project No: BRD2484 Logged By: J McDermott Date Commenced: 05/11/2015 Date Completed: 05/11/2015 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS01		
						Sheet 2 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
4.50	PEN	1.25 kg/cm²		chalk.			CHALK	
4.75	PEN	2.50 kg/cm²		Continued from 4.30 m: CHALK recovered as: Firm, becoming stiff, moist, gravelly clay. Gravel of fine to coarse, angular to rounded flint and chalk.				
4.80	D5							
4.95	PEN	4.25 kg/cm²			5.0			
5.00	SPT	50 *		5.00 m: SPT: 9,10/10,12,14,14 for 70mm. 5.00 m: No recovery in SPT.	5.40			
					6.0			
					7.0			
					8.0			
					9.0			
General Remarks: Borehole terminated at 5.40 m bgl.					Surface Elevation Level:		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

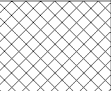
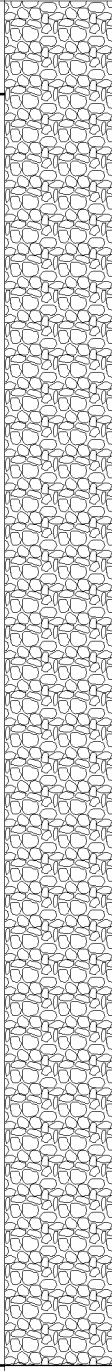
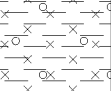
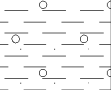
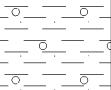
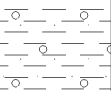
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Client: Gleeson Developments Project Title: Land South of Burndell Road, Yapton Project No: BRD2484 Logged By: J McDermott Date Commenced: 05/11/2015 Date Completed: 05/11/2015 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS02		
						Sheet 1 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
0.20	J1			MADE GROUND / TOPSOIL: Crop stubble over soft to firm, brown, gravelly, silty clay. Gravel of fine to coarse, subangular to rounded flint and occasional clinker.	0.35		MGTS	
0.35	PEN	2.25 kg/cm²		Soft to firm, orange / yellow brown, gravelly, silty CLAY. Gravel of fine to coarse, subangular to rounded flint.				
0.50	D1	1.00 kg/cm²					AEOLIAN DEPOSITS	
0.50	PEN	1.00 kg/cm²		0.60 m: Firm with less gravel.				
0.70	PEN	3.50 kg/cm²						
0.80	J2							
0.90	PEN	4.75 kg/cm²						
1.00	SPT	9 N		1.00 m: SPT: 1,2/2,2,2,3.				
1.50	PEN	3.25 kg/cm²						
1.70	D2			1.65 m: Abundant flint gravel and shattered cobbles.				
2.00	SPT	5 N		Soft to firm, light brown / cream, brown, moist, sandy, gravelly CLAY. Gravel of fine to coarse, subangular to rounded flint and chalk. 2.00 m: SPT: 1,1/1,1,1,2.				
2.60	D3							
2.70	PEN	1.00 kg/cm²						
2.90	PEN	2.75 kg/cm²		2.85 - 3.15 m: Light brown, sandy, silty CLAY.	3.0		AEOLIAN DEPOSITS	
3.00	SPT	12 N		3.00 m: SPT: 2,3/3,3,3,3.				
3.70	PEN	2.00 kg/cm²		3.15 m: Much chalk gravel and some siltstone with occasional flint.			CHALK	
3.80	D4							
3.95	PEN	2.50 kg/cm²						
4.00	SPT	50 *		4.00 m: SPT: 6,9/12,13,15, 10 for 65mm.				
				CHALK recovered as: Firm, white, moist, silty, gravelly clay. Gravel of fine to coarse, angular to rounded flint and chalk.	4.05			
					4.50			
General Remarks: Borehole terminated at 5.37 m bgl.					Surface Elevation Level:		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

PROBEHOLE RECORD

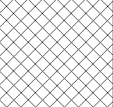
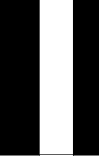
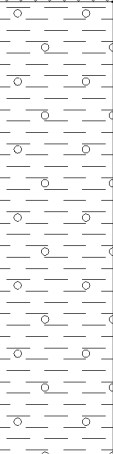
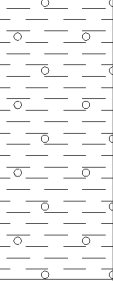
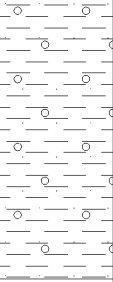
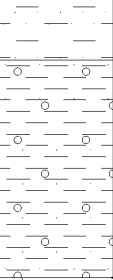
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PROBEHOLE RECORD

Client: Gleeson Developments Project Title: Land South of Burndell Road, Yapton Project No: BRD2484 Logged By: J McDermott Date Commenced: 05/11/2015 Date Completed: 05/11/2015 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS03		
						Sheet 1 of 1		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
0.20	J1			MADE GROUND / TOPSOIL: Crop stubble over soft to firm, brown, gravelly, silty clay. Gravel of fine to coarse, subangular to rounded flint and occasional clinker.	0.30		MG/TS	
0.35	PEN	1.75 kg/cm²		Firm, orange / yellow brown, gravelly, silty CLAY. Gravel of fine to coarse, subangular to rounded flint.				
0.60	PEN	2.25 kg/cm²						
0.80	D1							
0.90	J2	2.50 kg/cm²			1.0			
0.90	PEN	6 N		1.00 m: SPT: 1,1/1,1,2,2.				
1.00	SPT							
1.50	PEN	2.25 kg/cm²			1.60			
1.80	D2			Soft to firm, orange brown, gravelly, very sandy CLAY / very clayey SAND. Gravel of fine to coarse, angular to rounded flint.				
2.00	SPT	4 N		2.00 m: SPT: 1,1/0,1,1,2. 2.05 m: Orange SAND. 2.25 m: Orange brown, silty / clayey SAND.	2.0			
					2.52			
2.70	D3			Firm becoming stiff, light brown / cream-brown, moist, sandy, gravelly CLAY. Abundant gravel of fine to coarse, subangular to rounded flint and chalk.				
3.00	SPT	15 N		3.00 m: SPT: 2,1/2,3,4,6.	3.0			
								
3.85	D4				4.0			
4.00	SPT	50 *		4.00 m: SPT: 3,6/12,16,18, 4 for 15mm.				
					4.39			
General Remarks: Borehole terminated at 4.39 m bgl.					Surface Elevation Level:		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

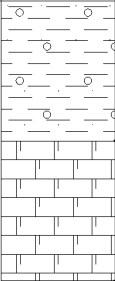
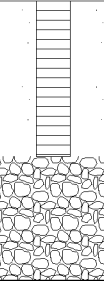
PROBEHOLE RECORD

Client: Gleeson Developments				Borehole No.	
Project Title: Land South of Burndell Road, Yapton				WS04	
Project No: BRD2484					
Logged By: J McDermott					
Date Commenced: 05/11/2015					
Date Completed: 05/11/2015					
Method Used: Windowless Percussive Sampling Rig				Sheet 1 of 2	

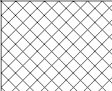
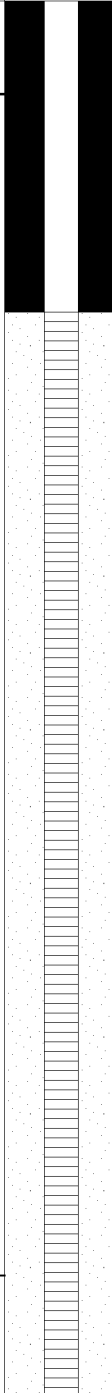
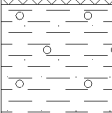
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill		
Depth	Type & No	Value								
0.20	J1			MADE GROUND / TOPSOIL: Crop stubble over soft to firm, brown, gravelly, silty clay. Gravel of fine to coarse, subangular to rounded flint and occasional clinker.	0.35		MG/TS			
0.30	PEN	1.25 kg/cm²		Firm, orange / yellow brown, slightly gravelly CLAY. Gravel of fine to coarse, subangular to rounded flint.						
0.60	PEN	2.00 kg/cm²		1.00 m: SPT: 1,1/1,1,2,2. 1.20 - 1.35 m: Much flint gravel. 1.50 m: Becoming very sandy.	1.0					
0.70	J2									
0.80	D1									
0.85	PEN	3.25 kg/cm²								
1.00	SPT	6 N								
1.60	PEN	1.25 kg/cm²		2.00 m: SPT: 1,0/1,1,1,2.	2.0					
1.70	D2									
1.85	PEN	1.00 kg/cm²								
2.00	SPT	5 N								
2.80	D3		Firm, light brown / cream, brown, moist, sandy, gravelly CLAY. Gravel of fine to coarse, subangular to rounded flint and chalk.	2.70						
3.00	SPT	13 N					3.00 m: SPT: 3,4/3,3,3,4.	3.0		
			Loose to medium dense, moist, orange brown, slightly clayey SAND.	3.60						
3.85	D4		Firm, light brown / cream, brown, moist, sandy, gravelly CLAY. Gravel of fine to coarse, subangular to rounded flint and chalk.	3.80						
4.00	SPT	? N					4.00 m: Saturated, very gravelly and sandy. 4.00 m: SPT: 6,6/5,5,7,?.	4.0		
				4.50						

General Remarks: Borehole terminated at 5.40 m bgl.	Surface Elevation Level:	 BRD Telephone: 01295 272244 Email: info@brduk.com
	All dimensions in metres Log Scale 1:25	

PROBEHOLE RECORD

Client: Gleeson Developments Project Title: Land South of Burndell Road, Yapton Project No: BRD2484 Logged By: J McDermott Date Commenced: 05/11/2015 Date Completed: 05/11/2015 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS04		
						Sheet 2 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
5.00	D5 SPT	50 *		Continued from 3.80 m: Firm, light brown / cream, brown, moist, sandy, gravelly CLAY. Gravel of fine to coarse, subangular to rounded flint and chalk.	4.95		AD	
5.00			CHALK recovered as: Dense, white, silty / clayey gravel of chalk and flint. 5.00 m: SPT: 5,5/10,12,14, 14 for 70mm. 5.00 - 5.40 m: No recovery in SPT.	5.40	CHALK			
					6.0			
					7.0			
					8.0			
					9.0			
General Remarks: Borehole terminated at 5.40 m bgl.					Surface Elevation Level:		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

PROBEHOLE RECORD

Client: Gleeson Developments Project Title: Land South of Burndell Road, Yapton Project No: BRD2484 Logged By: J McDermott Date Commenced: 05/11/2015 Date Completed: 05/11/2015 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS05		
						Sheet 1 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
0.20	J1			MADE GROUND / TOPSOIL: Crop stubble over soft to firm, brown, gravelly, silty clay. Gravel of fine to coarse, subangular to rounded flint and occasional clinker.	0.30		MG/TS	
				Firm, orange brown, gravelly, sandy CLAY. Gravel of fine to coarse, subangular to rounded flint.				
0.70	D1							
0.80	J2	1.25						
0.80	PEN	kg/cm²						
1.00	SPT	8 N		0.95 m: Orange brown in colour. 1.00 m: SPT: 1,1/2,2,2,2.	1.0			
1.50	PEN	1.75		1.45 m: Very sandy.				
1.70	PEN	1.25						
1.80	D2	kg/cm²						
2.00	SPT	5 N		2.00 m: SPT: 1,1/1,1,1,2.	2.0			
2.60	D3							
2.70	PEN	0.50		2.70 m: Light orange brown in colour with chalk gravel.				
2.85	PEN	0.50		2.80 m: Clayey SAND.				
3.00	SPT	11 N		Firm, cream / light brown, sandy, gravelly CLAY. Gravel of fine to coarse, angular to rounded chalk and flint. 3.00 m: No recovery in SPT. 3.00 m: SPT: 2,2/2,3,2,4.	3.0 3.00			
3.70	D4							
4.00	D5	50 *		4.00 m: SPT: 8,5/9,11,14, 16 for 70mm.	4.0			
4.00	SPT			CHALK recovered as: Firm, white / cream, moist, silty, gravelly clay. Gravel of fine to coarse, angular to rounded flint and chalk.	4.10		CHALK	
					4.50			
General Remarks: Borehole terminated at 5.45 m bgl.					Surface Elevation Level:		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

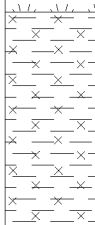
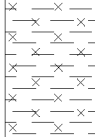
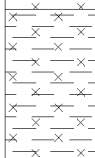
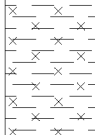
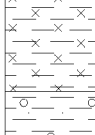
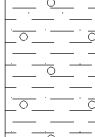
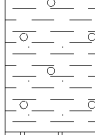
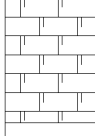
PROBEHOLE RECORD

Client: Gleeson Developments Project Title: Land South of Burndell Road, Yapton Project No: BRD2484 Logged By: J McDermott Date Commenced: 05/11/2015 Date Completed: 05/11/2015 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS05		
						Sheet 2 of 2		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
4.70	D6			Continued from 4.10 m: CHALK recovered as: Firm, white / cream, moist, silty, gravelly clay. Gravel of fine to coarse, angular to rounded flint and chalk. 4.75 m: Slightly grey in colour (flint).	5.0	CHALK		
5.00	SPT	50 *		5.00 m: SPT: 4,9/11,12,13, 14	5.45			
					6.0			
					7.0			
					8.0			
					9.0			
General Remarks: Borehole terminated at 5.45 m bgl.					Surface Elevation Level:		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

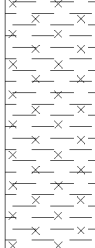
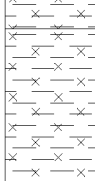
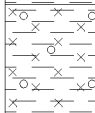
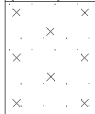
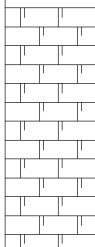
PROBEHOLE RECORD

Client: Gleeson Developments Project Title: Land South of Burndell Road, Yapton Project No: BRD2484 Logged By: A Neyt Date Commenced: 19/01/2018 Date Completed: 19/01/2018 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS01A		
						Sheet 1 of 1		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
				TOPSOIL: Crop stubble over soft, brown, silty clay with rootlets.	0.30		TS	
				Soft to firm, brown, very silty CLAY with occasional organic matter.			AEOLIAN DEPOSITS	
				1.00 - 2.00 m: 75% recovery.	1.0			
				Firm, orangish brown, silty CLAY with occasional dark iron oxide staining.	1.25			
				Firm, greyish brown mottled orangish brown, silty, slightly gravelly CLAY. Gravel of fine to medium, subangular flint.	1.60		RAISED MARINE DEPOSITS	
				Medium dense, brownish grey mottled light grey, clayey, very gravelly SAND. Gravel of fine to coarse, angular to subangular flint.	2.0			
				Firm to stiff, slightly greenish grey SILT.	2.25			
				2.65 - 2.95 m: Greenish grey mottled orangish brown. With fine to coarse gravel of subangular flint and subrounded chalk.	2.55			
				Firm, wet, brown mottled orangish brown, sandy, gravelly, clayey SILT. Gravel of fine to medium, subangular flint and subrounded chalk.	3.0			
					3.60			
					4.0			
General Remarks: Borehole terminated at 4.00m bgl for installation of a monitoring well.						Surface Elevation Level:		
						All dimensions in metres Log Scale 1:25		
						Telephone: 01295 272244 Email: info@brduk.com		

PROBEHOLE RECORD

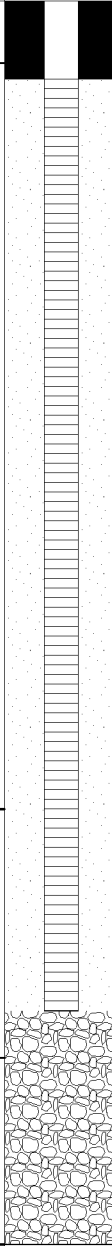
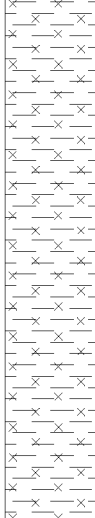
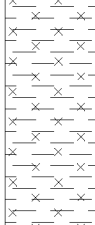
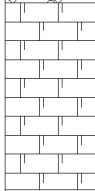
Client: Gleeson Developments Project Title: Land South of Burndell Road, Yapton Project No: BRD2484 Logged By: A Neyt Date Commenced: 19/01/2018 Date Completed: 19/01/2018 Method Used: Windowless Percussive Sampling Rig				Borehole No. WS02A				
				Sheet 1 of 1				
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
				TOPSOIL: Grass over soft, brown, silty clay with rootlets.	0.25		TS	
				Firm, brown mottled orange brown, very silty CLAY with occasional dark iron oxide staining.			AEOLIAN DEPOSITS	
				1.00 - 2.00 m: 75% recovery.	1.0			
				Firm, greyish brown mottled orangish brown, turning to light grey mottled orange, silty CLAY with rare, fine, subrounded chalk gravel.	1.40		RAISED MARINE DEPOSITS	
				1.90 - 2.10 m: Gravel of medium to coarse, angular flint.	2.0			
				Soft, wet, grey mottled orange, sandy, silty, gravelly CLAY with very sandy lenses. Gravel of fine to coarse, subrounded chalk. Gravel content increases with depth.	2.60			
				3.00 - 4.00 m: 60% recovery.	3.0			
			Structureless CHALK: Recovered as firm, wet, white mottled light orangish grey, sandy, gravelly SILT. Gravel of fine to coarse, subrounded chalk and subangular flint. Chalk gravel fragments with black specks. (CIRIA Grade Dm).	3.60		WCS		
				4.0 4.00				
General Remarks: Borehole terminated at 4.00m bgl for installation of a monitoring well.					Surface Elevation Level:		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			

PROBEHOLE RECORD

Client: Gleeson Developments Project Title: Land South of Burndell Road, Yapton Project No: BRD2484 Logged By: A Neyt Date Commenced: 19/01/2018 Date Completed: 19/01/2018 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS04A		
						Sheet 1 of 1		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
				TOPSOIL: Grass and crop stubble over soft, brown, silty clay with rootlets. 0.00 – 1.00 m: 85% recovery.	0.20		TS	
				Soft to firm, brown, very silty CLAY with occasional organic matter.	1.0		AEOLIAN DEPOSITS	
				Firm, orangish brown, silty CLAY with occasional dark iron oxide staining.	1.10			AEOLIAN DEPOSITS
				Firm, greyish brown mottled orangish brown, silty, slightly gravelly CLAY. Gravel of fine to medium, subangular flint.	1.60		AEOLIAN DEPOSITS	
				2.00 - 3.00 m: 70% recovery.	2.0			RAISED MARINE DEPOSITS
				Loose, saturated, brown, very silty, medium SAND with rare, fine, subangular to subrounded flint gravel.	2.60		RAISED MARINE DEPOSITS	
				3.00 - 4.00 m: 85% recovery.	3.0			RAISED MARINE DEPOSITS
			Structureless CHALK: Recovered as firm, wet, white mottled light orangish grey, sandy, gravelly SILT. Gravel of fine to coarse, subrounded chalk and subangular flint. Chalk gravel fragments with black specks. (CIRIA Grade Dm).	3.20		WCS		
				4.0 4.00			WCS	

General Remarks: Borehole terminated at 4.00m bgl for installation of a monitoring well.	Surface Elevation Level:	
	All dimensions in metres Log Scale 1:25	
		Telephone: 01295 272244 Email: info@brduk.com

PROBEHOLE RECORD

Client: Gleeson Developments Project Title: Land South of Burndell Road, Yapton Project No: BRD2484 Logged By: A Neyt Date Commenced: 19/01/2018 Date Completed: 19/01/2018 Method Used: Windowless Percussive Sampling Rig						Borehole No. WS05A		
						Sheet 1 of 1		
Samples & Tests			Water	Description of Strata	Depth / (Level)	Legend	Geology	Installation /Backfill
Depth	Type & No	Value						
				TOPSOIL: Grass and crop stubble over soft, brown, silty clay with rootlets.	0.20		TS	
				Firm, orangish brown to light grey mottled orangish brown, very silty CLAY with rare, fine to medium, subangular to subrounded flint gravel.	1.0		AEOLIAN DEPOSITS	
				2.00 - 3.00 m: 80% recovery.	2.0			
				Firm, light brownish grey mottled orange, very silty, slightly gravelly CLAY. Gravel of fine to medium, subangular flint and chalk.	2.60		RMD	
				Structureless CHALK: Recovered as soft, white, sandy, gravelly SILT. Gravel of fine to coarse, subrounded chalk and subangular flint. Chalk gravel fragments with black specks. (CIRIA Grade Dm).	3.40		WCS	
					4.0 4.00			
General Remarks: Borehole terminated at 4.00m bgl for installation of a monitoring well. Borehole collapsed to 3.25m bgl prior to installation due to groundwater.					Surface Elevation Level:		 Telephone: 01295 272244 Email: info@brduk.com	
					All dimensions in metres Log Scale 1:25			



Gas Monitoring Record

Project Name: Land South of Burndell Road, Yapton

Client: Gleeson Developments

Project No: BRD2484

Date:	27/11/2015	Ground conditions:	Very wet	Recorded by:	HKA
Time at start:	11:55 AM	Weather conditions:	Light to heavy rain	Pressure trend:	Steady
Time at finish:	12:25 PM	Air temperature (°C):	13	Monitor serial no:	G501688

The gas monitoring equipment is a Geotech GA5000 portable analyser. As per manufacturers recommendations this is factory calibrated every six months and in addition BRD undertake calibration checks against bottled standard gases on at least a monthly basis. Gas monitor pump is run for three minutes unless otherwise stated and the steady readings are an average reading taken over this pump run time. Vapour monitoring equipment is miniRAE lite PGM-7350 Photo Ionisation Detector (PID) with 10.6 eV lamp calibrated for isobutylene. PID calibration check is performed on site against ambient air and also against a 100ppm isobutylene standard gas. Barometric pressure trend and ambient air temperature is recorded from weather websites at the nearest reported weather station.

CH₄ = Methane CO₂ = Carbon Dioxide O₂ = Oxygen H₂S = Hydrogen Sulphide CO = Carbon Monoxide NR = Not Recorded PID = Photo Ionisation Detector

GWL = Groundwater level measured from ground surface and top of standpipe. Base = Base of standpipe measured from ground surface.

Monitoring point				Gas Concentration								Pressure	Flow rate	Vapour	Comments
Borehole	GWL Ground (m)	GWL Pipe (m)	Base Ground (m)	Steady			Peak		Minimum	Peak		Baro - metric (mb)	Steady (l/hr)	PID (ppm)	
				CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)				
WS01	2.40	2.40	4.92	0.0	3.2	11.9	0.0	3.2	11.9	0	0	1010	0.1	0.6	
WS02	1.64	1.64	4.92	0.0	2.2	15.3	0.0	2.2	15.3	0	0	1010	0.0	1.7	
WS04	2.87	2.87	4.50	0.0	0.6	15.9	0.0	0.6	15.9	0	0	1011	0.0	1.0	
WS05	2.73	2.73	4.91	0.0	2.9	14.4	0.0	2.9	14.4	0	0	1011	0.0	1.3	



Gas Monitoring Record

Project Name: Land South of Burndell Road, Yapton

Client: Gleeson Developments

Project No: BRD2484

Date:	03/12/2015	Ground conditions:	Damp	Recorded by:	HKA
Time at start:	12:04 PM	Weather conditions:	Cloudy	Pressure trend:	Steady
Time at finish:	12:26 PM	Air temperature (°C):	13	Monitor serial no:	G501688

The gas monitoring equipment is a Geotech GA5000 portable analyser. As per manufacturers recommendations this is factory calibrated every six months and in addition BRD undertake calibration checks against bottled standard gases on at least a monthly basis. Gas monitor pump is run for three minutes unless otherwise stated and the steady readings are an average reading taken over this pump run time. Vapour monitoring equipment is miniRAE lite PGM-7350 Photo Ionisation Detector (PID) with 10.6 eV lamp calibrated for isobutylene. PID calibration check is performed on site against ambient air and also against a 100ppm isobutylene standard gas. Barometric pressure trend and ambient air temperature is recorded from weather websites at the nearest reported weather station.

CH₄ = Methane CO₂ = Carbon Dioxide O₂ = Oxygen H₂S = Hydrogen Sulphide CO = Carbon Monoxide NR = Not Recorded PID = Photo Ionisation Detector

GWL = Groundwater level measured from ground surface and top of standpipe. Base = Base of standpipe measured from ground surface.

Monitoring point				Gas Concentration								Pressure	Flow rate	Vapour	Comments
Borehole	GWL Ground (m)	GWL Pipe (m)	Base Ground (m)	Steady			Peak		Minimum	Peak		Baro - metric (mb)	Steady (l/hr)	PID (ppm)	
				CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)				
WS01	2.37	2.37	4.92	0.0	3.9	9.1	0.1	3.9	9.1	0	0	1021	0.0	N/A	
WS02	1.90	1.90	4.92	0.0	2.2	17.3	0.0	2.2	17.3	0	0	1021	0.0	N/A	
WS04	2.90	2.90	4.50	0.0	0.8	17.0	0.1	0.8	17.0	0	0	1021	0.0	N/A	
WS05	2.84	2.84	4.91	0.0	3.1	14.5	0.0	3.1	14.5	0	0	1021	0.0	N/A	



Gas Monitoring Record

Project Name: Land South of Burndell Road, Yapton

Client: Gleeson Developments

Project No: BRD2484

Date:	10/12/2015	Ground conditions:	Wet	Recorded by:	HKA
Time at start:	11:25 AM	Weather conditions:	Overcast	Pressure trend:	Falling
Time at finish:	11:50 AM	Air temperature (°C):	12	Monitor serial no:	G501315

The gas monitoring equipment is a Geotech GA5000 portable analyser. As per manufacturers recommendations this is factory calibrated every six months and in addition BRD undertake calibration checks against bottled standard gases on at least a monthly basis. Gas monitor pump is run for three minutes unless otherwise stated and the steady readings are an average reading taken over this pump run time. Vapour monitoring equipment is miniRAE lite PGM-7350 Photo Ionisation Detector (PID) with 10.6 eV lamp calibrated for isobutylene. PID calibration check is performed on site against ambient air and also against a 100ppm isobutylene standard gas. Barometric pressure trend and ambient air temperature is recorded from weather websites at the nearest reported weather station.

CH₄ = Methane CO₂ = Carbon Dioxide O₂ = Oxygen H₂S = Hydrogen Sulphide CO = Carbon Monoxide NR = Not Recorded PID = Photo Ionisation Detector

GWL = Groundwater level measured from ground surface and top of standpipe. Base = Base of standpipe measured from ground surface.

Monitoring point				Gas Concentration								Pressure	Flow rate	Vapour	Comments
Borehole	GWL Ground (m)	GWL Pipe (m)	Base Ground (m)	Steady			Peak		Minimum	Peak		Baro - metric (mb)	Steady (l/hr)	PID (ppm)	
				CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)				
WS01	2.32	2.32	4.92	0.0	3.3	10.3	0.0	3.3	10.3	1	0	1027	0.0	0.0	
WS02	1.84	1.84	4.92	0.0	2.0	18.0	0.0	2.0	18.0	0	0	1027	0.0	0.0	
WS04	2.84	2.84	4.50	0.0	0.8	17.4	0.0	0.8	17.4	0	0	1028	0.0	0.0	
WS05	2.81	2.81	4.91	0.1	3.1	13.8	0.1	3.1	13.8	1	0	1028	0.0	0.0	



Gas Monitoring Record

Project Name: Burndell Road, Yapton

Client: Gleeson Developments

Project No: BRD2484

Date:	24/01/2018	Ground conditions:	Wet	Recorded by:	NK
Time at start:	11:08	Weather conditions:	Raining	Pressure trend:	Steady
Time at finish:	11:45	Air Temperature (°C):	11	Monitor serial no:	G501315

The gas monitoring equipment is a Geotech GA5000 portable analyser. As per manufacturers recommendations this is factory calibrated every six months and in addition BRD undertake calibration checks against bottled standard gases on at least a monthly basis. Gas monitor pump is run for three minutes unless otherwise stated and the steady readings are an average reading taken over this pump run time. Vapour monitoring equipment is miniRAE lite PGM-7350 Photo Ionisation Detector (PID) with 10.6 eV lamp calibrated for isobutylene. PID calibration check is performed on site against ambient air and also against a 100ppm isobutylene standard gas. Barometric pressure trend and ambient air temperature is recorded from weather websites at the nearest reported weather station.

CH₄ = Methane CO₂ = Carbon Dioxide O₂ = Oxygen H₂S = Hydrogen Sulphide CO = Carbon Monoxide NR = Not Recorded PID = Photo Ionisation Detector

GWL = Groundwater level measured from ground surface and top of standpipe.

Base = Base of standpipe measured from ground surface.

Monitoring point				Gas Concentration								Pressure	Flow rate	Vapour	Comments
Borehole	GWL Ground (m)	GWL Pipe (m)	Base Ground (m)	Steady			Peak		Minimum	Peak		Baro - metric (mb)	Steady (l/hr)	PID (ppm)	
				CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)				
WS01A	1.26	1.14	3.92	0.0	2.4	14.0	0.0	2.4	14.0	24	0	1008	0.0	6.9	Gas data affected by shallow groundwater
WS02A	0.37	0.25	3.72	0.0	0.7	20.4	0.0	0.8	19.9	14	0	1007	0.2	3.2	
WS04A	1.55	1.40	3.60	0.0	0.7	19.2	0.1	0.7	19.2	19	0	1008	0.0	6.8	
WS05A	1.44	1.33	3.25	0.1	0.7	18.1	0.1	0.9	17.5	17	0	1008	0.0	5.1	



Gas Monitoring Record

Project Name: Burndell Road, Yapton

Client: Gleeson Developments

Project No: BRD2484

Date:	22/02/2018	Ground conditions:	Damp	Recorded by:	NK
Time at start:	11:25	Weather conditions:	Cloudy	Pressure trend:	Falling
Time at finish:	12:02	Air Temperature (°C):	6	Monitor serial no:	G501688

The gas monitoring equipment is a Geotech GA5000 portable analyser. As per manufacturers recommendations this is factory calibrated every six months and in addition BRD undertake calibration checks against bottled standard gases on at least a monthly basis. Gas monitor pump is run for three minutes unless otherwise stated and the steady readings are an average reading taken over this pump run time. Vapour monitoring equipment is miniRAE lite PGM-7350 Photo Ionisation Detector (PID) with 10.6 eV lamp calibrated for isobutylene. PID calibration check is performed on site against ambient air and also against a 100ppm isobutylene standard gas. Barometric pressure trend and ambient air temperature is recorded from weather websites at the nearest reported weather station.

CH₄ = Methane CO₂ = Carbon Dioxide O₂ = Oxygen H₂S = Hydrogen Sulphide CO = Carbon Monoxide NR = Not Recorded PID = Photo Ionisation Detector

GWL = Groundwater level measured from ground surface and top of standpipe.

Base = Base of standpipe measured from ground surface.

Monitoring point				Gas Concentration								Pressure	Flow rate	Vapour	Comments
Borehole	GWL Ground (m)	GWL Pipe (m)	Base Ground (m)	Steady			Peak		Minimum	Peak		Baro - metric (mb)	Steady (l/hr)	PID (ppm)	
				CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)				
WS01A	1.43	1.30	3.90	0.0	3.3	14.5	0.0	3.4	14.4	1	0	1026	0.0	2.8	Gas data affected by shallow groundwater
WS02A	0.79	0.67	3.58	0.0	1.5	15.8	0.0	1.5	15.8	3	0	1026	-9.3	0.7	
WS04A	1.84	1.69	3.56	0.0	1.9	13.2	0.0	1.9	13.2	1	0	1026	-0.1	3.8	
WS05A	1.90	1.78	3.24	0.0	1.1	18.9	0.0	1.6	18.1	1	0	1026	0.0	1.5	



Gas Monitoring Record

Project Name: Burndell Road, Yapton

Client: Gleeson Developments

Project No: BRD2484

Date:	22/03/2018	Ground conditions:	Dry	Recorded by:	NK
Time at start:	12:28	Weather conditions:	Cloudy	Pressure trend:	Falling
Time at finish:	13:03	Air Temperature (°C):	9	Monitor serial no:	G501688

The gas monitoring equipment is a Geotech GA5000 portable analyser. As per manufacturers recommendations this is factory calibrated every six months and in addition BRD undertake calibration checks against bottled standard gases on at least a monthly basis. Gas monitor pump is run for three minutes unless otherwise stated and the steady readings are an average reading taken over this pump run time. Vapour monitoring equipment is miniRAE lite PGM-7350 Photo Ionisation Detector (PID) with 10.6 eV lamp calibrated for isobutylene. PID calibration check is performed on site against ambient air and also against a 100ppm isobutylene standard gas. Barometric pressure trend and ambient air temperature is recorded from weather websites at the nearest reported weather station.

CH₄ = Methane CO₂ = Carbon Dioxide O₂ = Oxygen H₂S = Hydrogen Sulphide CO = Carbon Monoxide NR = Not Recorded PID = Photo Ionisation Detector

GWL = Groundwater level measured from ground surface and top of standpipe.

Base = Base of standpipe measured from ground surface.

Monitoring point				Gas Concentration								Pressure	Flow rate	Vapour	Comments
Borehole	GWL Ground (m)	GWL Pipe (m)	Base Ground (m)	Steady			Peak		Minimum	Peak		Baro - metric (mb)	Steady (l/hr)	PID (ppm)	
				CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)				
WS01A	1.40	1.28	3.90	0.0	3.0	16.8	0.0	3.0	16.8	1	0	1023	0.0	4.3	
WS02A	0.79	0.57	3.57	0.0	1.5	17.6	0.0	1.5	17.6	2	0	1023	6.1	2.1	
WS04A	1.85	1.70	3.54	0.0	2.2	12.0	0.0	2.3	11.9	1	0	1023	-0.1	3.5	
WS05A	1.91	1.80	3.24	0.0	1.2	18.9	0.0	1.6	18.3	1	0	1023	0.0	2.3	



Gas Monitoring Record

Project Name: Burndell Road, Yapton

Client: Gleeson Developments

Project No: BRD2484

Date:	18/05/2018	Ground conditions:	Dry	Recorded by:	NK
Time at start:	10:33	Weather conditions:	Sunny	Pressure trend:	Steady
Time at finish:	11:11	Air Temperature (°C):	11	Monitor serial no:	G501688

The gas monitoring equipment is a Geotech GA5000 portable analyser. As per manufacturers recommendations this is factory calibrated every six months and in addition BRD undertake calibration checks against bottled standard gases on at least a monthly basis. Gas monitor pump is run for three minutes unless otherwise stated and the steady readings are an average reading taken over this pump run time. Vapour monitoring equipment is miniRAE lite PGM-7350 Photo Ionisation Detector (PID) with 10.6 eV lamp calibrated for isobutylene. PID calibration check is performed on site against ambient air and also against a 100ppm isobutylene standard gas. Barometric pressure trend and ambient air temperature is recorded from weather websites at the nearest reported weather station.

CH₄ = Methane CO₂ = Carbon Dioxide O₂ = Oxygen H₂S = Hydrogen Sulphide CO = Carbon Monoxide NR = Not Recorded PID = Photo Ionisation Detector

GWL = Groundwater level measured from ground surface and top of standpipe.

Base = Base of standpipe measured from ground surface.

Monitoring point				Gas Concentration								Pressure	Flow rate	Vapour	Comments
Borehole	GWL Ground (m)	GWL Pipe (m)	Base Ground (m)	Steady			Peak		Minimum	Peak		Baro - metric (mb)	Steady (l/hr)	PID (ppm)	
				CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)				
WS01A	1.65	1.52	3.88	0.0	3.7	16.3	0.0	3.7	16.3	0	0	1028	-0.1	4.9	
WS02A	1.51	1.39	3.57	0.0	2.4	17.9	0.0	2.4	17.9	0	0	1028	0.0	4.4	
WS04A	2.25	2.11	3.46	0.0	2.9	16.5	0.0	3.0	16.5	0	0	1028	0.0	4.7	
WS05A	2.39	2.27	3.24	0.0	2.9	17.6	0.1	3.8	16.6	0	0	1028	0.0	5.5	



Gas Monitoring Record

Project Name: Burndell Road, Yapton

Client: Gleeson Developments

Project No: BRD2484

Date:	13/06/2018	Ground conditions:	Dry	Recorded by:	NK
Time at start:	12:05	Weather conditions:	Sunny	Pressure trend:	Steady
Time at finish:	13:02	Air Temperature (°C):	18	Monitor serial no:	G501688

The gas monitoring equipment is a Geotech GA5000 portable analyser. As per manufacturers recommendations this is factory calibrated every six months and in addition BRD undertake calibration checks against bottled standard gases on at least a monthly basis. Gas monitor pump is run for three minutes unless otherwise stated and the steady readings are an average reading taken over this pump run time. Vapour monitoring equipment is miniRAE lite PGM-7350 Photo Ionisation Detector (PID) with 10.6 eV lamp calibrated for isobutylene. PID calibration check is performed on site against ambient air and also against a 100ppm isobutylene standard gas. Barometric pressure trend and ambient air temperature is recorded from weather websites at the nearest reported weather station.

CH₄ = Methane CO₂ = Carbon Dioxide O₂ = Oxygen H₂S = Hydrogen Sulphide CO = Carbon Monoxide NR = Not Recorded PID = Photo Ionisation Detector

GWL = Groundwater level measured from ground surface and top of standpipe.

Base = Base of standpipe measured from ground surface.

Monitoring point				Gas Concentration								Pressure	Flow rate	Vapour	Comments
Borehole	GWL Ground (m)	GWL Pipe (m)	Base Ground (m)	Steady			Peak		Minimum	Peak		Baro - metric (mb)	Steady (l/hr)	PID (ppm)	
				CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)				
WS01A	1.83	1.70	3.89	0.0	4.8	14.5	0.0	4.9	14.5	1	1	1023	0.0	14.1	
WS02A	1.73	1.60	3.57	0.0	2.0	17.8	0.0	2.0	17.8	1	1	1023	0.0	10.8	
WS04A	2.42	2.28	3.49	0.0	2.8	10.2	0.0	2.8	10.2	0	1	1023	-0.1	12.0	
WS05A	2.56	2.44	3.24	0.0	3.7	16.8	0.0	4.8	15.6	0	0	1023	-0.1	8.9	



Gas Monitoring Record

Project Name: Burndell Road, Yapton

Client: Gleeson Developments

Project No: BRD2484

Date:	29/06/2018	Ground conditions:	Dry	Recorded by:	NK
Time at start:	11:26	Weather conditions:	Sunny	Pressure trend:	Falling
Time at finish:	12:09	Air Temperature (°C):	22	Monitor serial no:	G501688

The gas monitoring equipment is a Geotech GA5000 portable analyser. As per manufacturers recommendations this is factory calibrated every six months and in addition BRD undertake calibration checks against bottled standard gases on at least a monthly basis. Gas monitor pump is run for three minutes unless otherwise stated and the steady readings are an average reading taken over this pump run time. Vapour monitoring equipment is miniRAE lite PGM-7350 Photo Ionisation Detector (PID) with 10.6 eV lamp calibrated for isobutylene. PID calibration check is performed on site against ambient air and also against a 100ppm isobutylene standard gas. Barometric pressure trend and ambient air temperature is recorded from weather websites at the nearest reported weather station.

CH₄ = Methane CO₂ = Carbon Dioxide O₂ = Oxygen H₂S = Hydrogen Sulphide CO = Carbon Monoxide NR = Not Recorded PID = Photo Ionisation Detector

GWL = Groundwater level measured from ground surface and top of standpipe.

Base = Base of standpipe measured from ground surface.

Monitoring point				Gas Concentration								Pressure	Flow rate	Vapour	Comments
Borehole	GWL Ground (m)	GWL Pipe (m)	Base Ground (m)	Steady			Peak		Minimum	Peak		Baro - metric (mb)	Steady (l/hr)	PID (ppm)	
				CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)				
WS01A	2.15	2.03	3.87	0.1	5.0	15.3	0.2	5.0	15.2	0	1	1023	0.0	14.3	
WS02A	2.14	2.03	3.56	0.1	2.3	18.4	0.1	2.4	18.2	1	0	1023	0.0	9.1	
WS04A	2.74	2.60	3.47	0.1	3.6	12.7	0.1	3.6	12.7	0	1	1022	0.0	5.1	
WS05A	2.88	2.76	3.23	0.1	3.3	18.3	0.1	4.3	17.8	0	0	1021	0.0	9.7	