

8th February 2016

Our ref: GE15030/GR03/160208



David Evans
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North Ash Road
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Longfield
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DA3 8HQ

Dear David,

RE: Land off Winchester Road, Boorley Green

Further to the joint instruction received from Bovis, Bloor and Linden, we write to present the findings of the additional geochemical testing of soil and water samples undertaken on the site off Winchester Road, Boorley Green.

Background

The site has been the subject of previous phases of assessment and investigation, as reported by Geo-Environmental (ref. GE9523/GIR/JT/OCT13). The ground conditions encountered within exploratory holes varied across the site, with predominantly clay soils present from shallow depth beneath the majority of the site. Localised areas of Made Ground were identified and were focussed around a man-made bund located alongside the former driving range in the Phase 1 development area of the north-western portion of the overall site and associated with restored land in the vicinity of a former gravel pit located in the south-eastern portion of the site.

The naturally occurring soils in the vicinity of the former gravel pit comprised clay, sand and gravel of the River Terrace Deposits overlying clay and sand of the Wittering Formation.

The previous phase of investigation and assessment identified that the Made Ground forming the bund alongside the former driving range was unsuitable for retention or use in gardens and thus as part of the Phase 1 earthworks strategy, this bund is to be excavated and the materials screened prior to re-use on site as general fill beneath roads or other areas where no pollutant linkages would arise.

With regards to the contamination in the south-eastern portion of the site, the previous phase of investigation identified a single location where concentrations of various PAH compounds exceeded their site specific assessment criteria for the protection of human health. The most sensitive end use, i.e. private gardens with plant uptake, was assumed for this area of the site.

In addition to identifying localised areas of soil contamination, the previous investigation included sampling and analysis of water samples recovered from monitoring wells installed in boreholes across the site. This identified marginally elevated concentrations of Total Petroleum Hydrocarbons (TPH) in water and recommendations were presented for undertaking additional sampling and monitoring to further assess the groundwater quality beneath the site. No evidence of gross contamination or TPH impact in soils was identified and thus the recommendation was limited to water analysis and assessment thereof.

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Scope of Supplementary Contamination Assessment

The supplementary contamination assessment included the following:

- Excavation of a series of pits to 1m bgl at locations in the vicinity of WS375 (GE9523) where PAH contamination was identified.
- Laboratory analysis of soil samples for speciated PAHs.
- Sampling and analysis of soil samples from trial pits across the wider site for Waste Acceptance Criteria testing to identify likely waste type(s) if surplus spoil was to be removed from site. It should be noted that the development strategy includes the retention and re-use of site won soils wherever possible and off-site disposal only where on site retention is physically or chemically not feasible.
- Three site visits at monthly intervals to recover water samples from wells located across the site and from two surface water sampling points at the upstream and downstream boundary points on the adjacent watercourse.
- Analysis of recovered water samples for laboratory analysis for detailed TPH speciation (TPH CWG suite).
- Provision of an updated contamination assessment with recommendations for further action, where necessary.
- Provision of a standalone Remediation Method Statement setting out the remedial strategy and methodology to mitigate risks to human health, controlled waters and the wider environment if the updated contamination assessment identified a requirement for remedial action.

Supplementary investigation in the south-eastern portion of the site

The initial proposal for the investigation of the south-eastern portion of the site required revision once on-site as the actual land ownership boundaries differed from those which were understood at the outset. As such, no further soil sampling was undertaken to the south of WS375 as Geo-Environmental's site representative was advised that the land was outside of the development. As such, the additional soil sampling was focussed on the field to the north of WS375. Trial pitting in this field was restricted by the presence of overhead electricity transmission lines, a sub-surface gas main and several oil pipelines.

The Masterplan reviewed as part of this assessment indicated that the land to the north and east of WS375 was likely to comprise open space and the land to the west of WS375 was likely to comprise residential development.

A total of ten additional trial pits were excavated in the field to the north and east of WS375, i.e. where Made Ground had been identified during the previous investigation. Further sampling and testing to the west of WS375 was compromised by land access issues.

Soil samples were collected and placed into amber jars and cool boxes on site for transit to the office, where they were stored under chilled conditions (<4°C) prior to final transportation in cool boxes to the laboratory by their in-house courier. Samples were stored in temperature controlled conditions from sampling until receipt at the laboratory from which time sample preparation and storage was determined by testing requirements and in line with laboratory's protocols.

Following completion of the testing and review of the analytical report, a quantitative risk assessment has been undertaken by comparing the results of the laboratory chemical testing of shallow soils against Site Specific Assessment Criteria (SSAC) generated using the Contaminated Land Exposure Assessment (CLEA) model v1.06 published by the Environment Agency, or against the Category 4 Screening Levels (C4SLs) published by DEFRA. Although the C4SLs were released for Part 2A use, the associated policy companion document for the C4SLs indicated that they may also be used for planning. Although the C4SLs represent a marginally higher risk level than

the SSACs (low risk rather than minimal risk) it is considered that the risk levels remain very low. Therefore, the final C4SLs are considered to be suitable to assess soils under the planning regime.

The exploratory holes were located to provide additional coverage in the vicinity of WS375 where reported concentrations of specific PAH compounds exceeded their respective SSAC. Given that the exceedances were identified in a sample from 0.5m bgl, that the depth of Made Ground was generally limited and in the absence of any organoleptic evidence of impacted soils at depth, analysis was undertaken on soil samples collected from shallow depth from these exploratory holes.

The results from the testing undertaken as part of this most recent phase of investigation were assessed alongside the results from the previous phase of investigation as it was considered that these were representative of an averaging area. As such, the results were assessed on a statistical basis as described below.

The assumptions made as part of the CLEA v1.06 calculations for a residential end use with plant uptake are presented in Table 1. Copies of the CLEA calculations are enclosed.

	Assumptions			Comments
Land Use	Residential with home grown produce			Commensurate with the most sensitive end use in this portion of the site.
Receptor	Female (res)			A conservative assumption using the most sensitive possible receptor.
Receptor Age	1 to 6			Critical receptor age from birth to age 6.
Building	Detached House			A conservative assumption of the private residence use proposed.
Soil Type	Sandy clay loam	pH 7.00	SOM 1.00%	Based on the values used for the previous assessment ref. GE9523.
Exposure Pathways	Oral	Direct soil & dust ingestion; consumption of home grown produce; soil attached to home grown produce		Default setting for land use.
	Dermal	Indoor & outdoor		Default setting for land use.
	Inhalation	Indoor & outdoor dust & vapour		Default setting for land use.
Occupancy	days/year	hours/day (indoors)	hour/day (outdoors)	Default settings for the critical receptor.
	180 - 365	19 - 23	1	

Table 1 Assumptions for SSAC Calculation (CLEA v1.06 Software) – Private Gardens

Statistical analysis of the samples within the dataset was undertaken in accordance with guidance contained in the CIEH/CL:AIRE report 'Comparing Soil Contamination Data with a Critical Concentration' (May 2008). If the contamination status of the soils is considered in a planning context, the null hypothesis tested by the analysis is whether the true mean concentration is equal to or greater than the critical concentration for a given determinant, with the critical concentration being the relevant SSAC or GAC (the soil screening value) for that determinant in the context of the intended end use of the site. If the analysis shows that the true mean concentration is less than the critical concentration the null hypothesis can be rejected. The guidance recommends that for the null hypothesis to be rejected the analysis should show that there is a 95% (or higher) likelihood that the true mean concentration is below the critical concentration. Where this is the case the site is considered to be acceptable for the planned end use without any necessary remedial measures.

The statistical analyses identified that outliers were present for benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(123-cd)pyrene and dibenzo(ah)anthracene, all of which related to the sample from WS375 at 0.5m bgl and are summarised in Table 2. Inclusion of these outliers demonstrated that the null hypothesis could not be rejected. Following removal of the statistical outlier concentrations, the confidence limit of 95% was exceeded for all determinants and the null hypothesis rejected.

Determinant	SSAC (mg/kg)	Outlier concentration (mg/kg)
Benzo(a)anthracene	2.99	18.8
Chrysene	5.99	19.0
Benzo(b)fluoranthene	5.94	16.7
Benzo(k)fluoranthene	8.49	16.0
Benzo(a)pyrene	0.82	18.9
Indeno(123-cd)pyrene	3.18	14.1
Dibenzo(ah)anthracene	0.76	3.4

Table 2 Summary of outlier concentrations from WS375 at 0.5m bgl

On this basis it was considered that the assessment had demonstrated the sample from WS375 at 0.5m bgl should be considered as a potential source of harm to human health and that this was of limited extent, i.e. the samples analysed from the surrounding area were considered uncontaminated and did not pose a risk of harm to human health.

The soil contamination source, i.e. sample from WS375 at 0.5m bgl, was within the depth zone where end users could potentially come into contact with the soil during routine gardening activities. As such, it was considered that a plausible pollutant linkage had been identified. Therefore, further consideration was given to likely exposure scenarios and in particular to the likely end uses as identified from the masterplan.

Benzo(a)pyrene was used as a key risk driver in assessing the impact at WS375. The reported concentration exceeded the respective SSAC by a substantial margin (18.9mg/kg compared to 0.82mg/kg) and this, when considered in a pollutant linkage scenario, was considered to represent a potentially unacceptable risk of harm. The reported concentration was also assessed against the Category 4 Screening Level (C4SL), i.e. the concentration above which contamination could be considered to arise in a statutory context. Here again, the reported concentration (18.9mg/kg) was markedly in excess of the C4SL (2.4mg/kg). Therefore, considering the reported benzo(a)pyrene concentration in a residential garden type end use indicated that some form of risk mitigation or remedial action would be required.

Given the development strategy to retain and re-use site won soils wherever possible within the development, it was considered that a cover system solution might be feasible. A simple soil cover system was modelled in accordance with the BRE Report 'Cover systems for land regeneration' (BRE 2004). This model considered two possible screening scenarios, i.e. using the SSAC and the C4SL for private garden end use. In both cases, whilst a cover system layer thickness was derived, the viability check indicated that a simple cover system may not be sufficient. As such, alternatives would be to consider the development layout such that the form of development could break the pollutant linkage, e.g. by permanent hard cover or a change in end use, excavation and removal of the impacted soil from the site and replacement with uncontaminated subsoil and Topsoil, or the construction of an engineered cover system including a capillary break layer (CBL) and physical 'no dig' barrier (e.g. crushed concrete between two geotextile separator membranes) and placement of uncontaminated subsoil and Topsoil. In the case of the latter option, the minimum thickness of the CBL should be 150mm, with a minimum 300mm thick layers of subsoil and Topsoil. This option would only be feasible if the development levels in this area of the site could be raised by a minimum of 0.75m. Assuming that development levels could not be raised by at least 0.75m in this portion of the site, it is considered that localised excavation and removal of impacted soils from

gardens and replacement with certified clean/suitable subsoil and Topsoil would be the simplest remedial technique. It is considered that the remedial strategy for gardens in the vicinity of WS375 should assume a minimum radius of 10m from WS375 and a requirement for verification testing once specific plot layouts have been determined in this area of the site.

The masterplan also indicated that the land to the north of WS375 could comprise open space. In this context, benzo(a)pyrene was used as a risk driver albeit compared against the C4SL for public open space in proximity to residential areas (POS_{resi}). Here again the reported concentration (18.9mg/kg) exceeded the POS_{resi} concentration (4.9mg/kg) indicating that the impacted soil could be considered a hazard to human health. Whilst the impact was detected in the sample at 0.5m bgl, the impacted soil layer sampled was present from 0.3m bgl and thus within a shallow soil mixing zone where bioturbation could bring contaminated materials to the surface. As such, it was considered possible that end users of open space could be exposed directly through contact or through mechanisms such as inhalation of tracked back dust. Therefore, some form of risk mitigation or remedial action would be required.

The BRE cover system was applied in the context of open space and indicated that a simple soil cover system thickness of at least 465mm would be required to be protective of human health in an open space scenario. The viability check also indicated that a simple cover system was suitable. Therefore, remedial options for the protection of human health in an open space setting are considered to comprise excavation and removal of impacted soils, or placement of a simple soil cover system no less than 465mm in thickness and should comprise suitable Topsoil and subsoil. A minimum Topsoil thickness of 150mm is likely to apply.

Waste Acceptance Criteria (WAC) testing

The results of the WAC tests undertaken on six soil samples recovered from across the site indicated the samples tested complied with the criteria for Inert Waste. Whilst WAC testing was not undertaken on the sample from WS375 at 0.5m bgl. The sum of the reported PAH compound concentrations exceeded the threshold for Inert Waste and thus, if these soils were excavated, it is anticipated that they would comprise Hazardous Waste.

It is recommended that a materials management and handling plan is developed for the construction works on this site.

Other materials disposed of from site as part of the demolition or remediation process may require disposal separately. All materials containing dangerous substances e.g. tar or bitumen, asbestos, mercury, hydrocarbons and PCBs are likely to be classified as Hazardous Waste and therefore susceptible to the relevant legislative controls.

Groundwater

Groundwater sampling and analysis was undertaken as part of the previous phase of investigation and identified elevated concentrations of TPH in all of the water samples. Table 3 summarises the reported TPH concentrations from the previous investigation.



Borehole	Depth	Reported concentration (µg/l)
WS295	1.00	269
WS365	2.75	130
BH201	3.90	243
BH203	2.00	158
BH204	3.00	182
BH210	3.75	2106
BH207	3.75	1047

Table 3 Summary of TPH concentrations in groundwater from 03/10/2013

The three rounds of sampling and analyses undertaken as part of this supplementary investigation have detected concentrations of TPH compounds but markedly lower than those from 2013. In addition, on two of the three sampling rounds, the highest concentrations were detected within the watercourse which flows along the northern and eastern site boundaries. The analytical results are summarised in Table 4.

Date	Total TPH (C5-40aliphatic and aromatic) concentration at sampling point (µg/l)					
	US	DS	201	203	209	202
25/11/2015	6.1	26.0	<5.0	6.8	5.7	13.9
11/01/2016	34.6	40.0	38.3	10.1	20.0	Lost
15/01/2016	14.2	12.6	17.7	17.1	15.9	Lost

Table 4 Summary of Total C5-40 aliphatic and aromatic TPH concentrations in water samples

The analytical results are considered not to indicate the presence of gross contamination of either groundwater or surface water but may reflect background, or natural occurrence and variation. Thus further action or remedial intervention is not considered to be necessary. Moreover, it is anticipated that whilst further numerical risk modelling could be undertaken, current remedial techniques would be ineffective at reducing the concentrations detected in the supplementary investigation.

Conclusions

Remedial action is required to protect end users from contaminants identified within Made Ground soils in two areas of the site.

In the Phase 1 development area, this relates to the man-made bund located alongside the former driving range. These soils are unsuitable for use in gardens and soft landscaping but could, following possible screening or treatment, be suitable for use as general fill in areas of permanent hard cover. This would accord with the general strategy of retaining and re-using site won soils wherever possible.

The second area of soil contamination that requires remedial action relates to PAH impacted soils at WS375 which is located in the south-eastern corner of the site. The masterplan layout in this portion on the site indicates that WS375 is located close to, or on the boundary between public open space and residential development. The final remedial strategy will depend on the development layout and end use of the area in the immediate vicinity of WS375. If this comprised permanent hard cover then this would break potential pollutant linkages and negate any requirement for further action. However, if the end use is either gardens or open space soft landscaping then some form of remedial action, e.g. excavation and removal, or a cover system would be considered suitable solutions. The strategy would need to be reviewed once the development layout in this area of the site has been determined.

Whilst WAC testing has indicated that the natural soils present across the site would be likely to comprise inert waste if they had to be removed from site, it is anticipated that the PAH impacted soils at WS375 could comprise hazardous waste if they were to be excavated and disposed of from site.

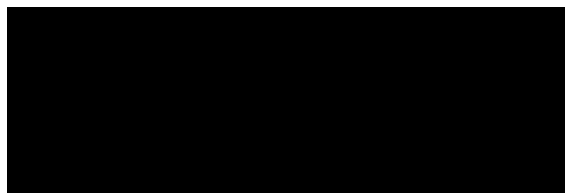
No further action is considered to be warranted to assess or protect controlled waters, i.e. groundwater or surface water.

Closure

We trust we have interpreted your instructions correctly and provided sufficient information for your current requirements. Should you have any queries please do not hesitate to contact us.

Yours sincerely

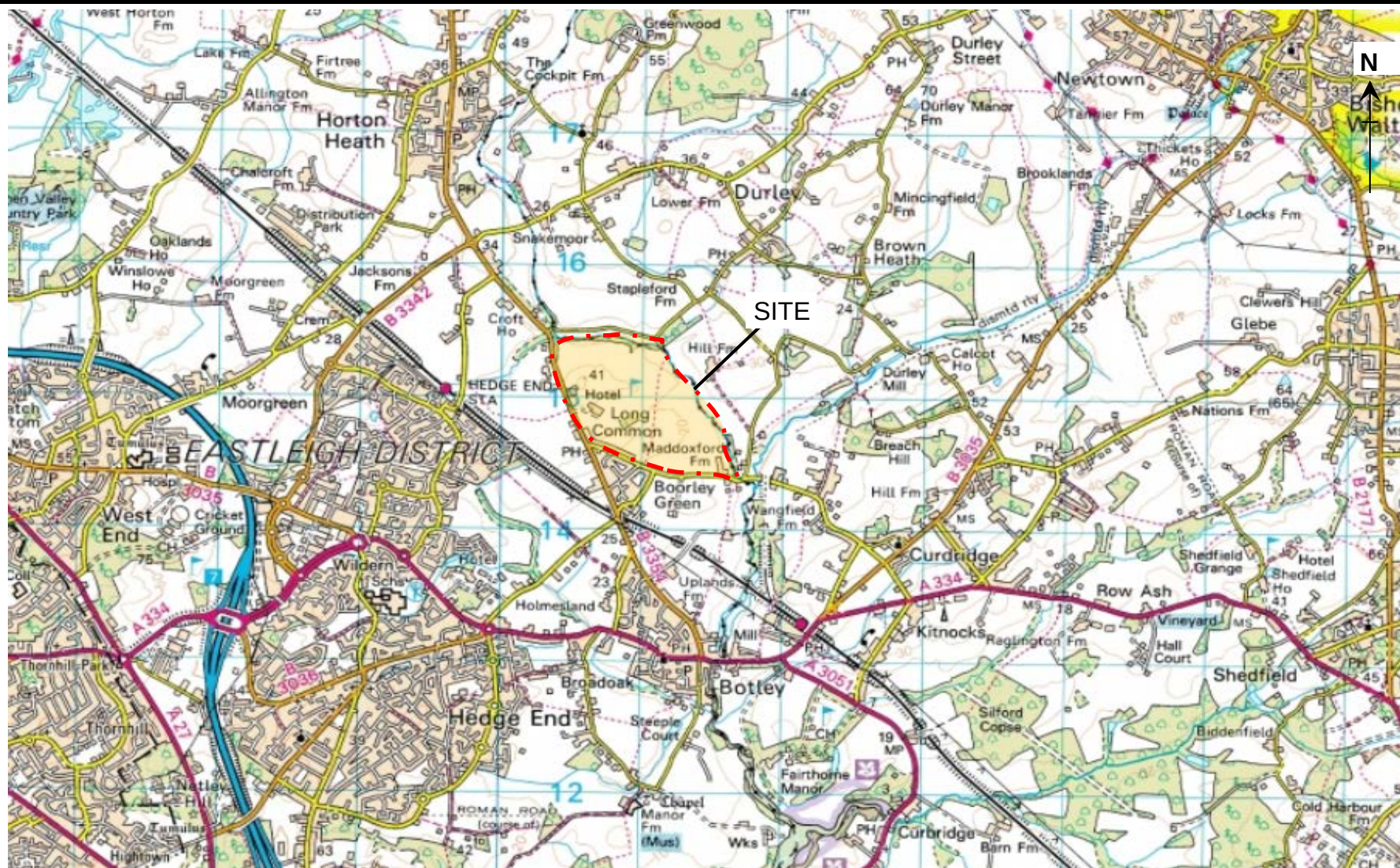
For and on Behalf of Geo-Environmental



GAVIN ROBERTS CGeol, BEng (Hons), MSc, FGS
Technical Director



Enc Figure 1 – Site Location Plan
 Figure 2 – Made Ground Bund in Phase 1 Development
 Figure 3 – Exploratory Hole Location Plan around WS375
 Figure 4 – Water Sampling Location Plan
 Geochemical laboratory analytical results (15-04765-01; 16-05217-01; and 16-05305-01)
 Statistical Assessment Summary for PAH compounds
 BRE Cover system output



Project:	Land off Winchester Road, Boorley Green SO32 2UA			Title	Site Location Plan	
Client:	Linden-Bloor-Bovis			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net	 Geo-Environmental	
Ref No:	GR	Revision:	0			
Drawn:	GR	Date:	04/11/2015			
Figure:	1	Scale:	Not To Scale			





 Made Ground in driving range bund. unsuitable for use in gardens and residential soft landscaping

Project:	Land off Winchester Road, Boorley Green SO32 2UA			Title	Made Ground Bund in Phase 1 Development		
Client:	Linden-Bloor-Bovis			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net		 Geo-Environmental	
Ref No:	GR	Revision:	0				
Drawn:	GR	Date:	01/02/2016				
Figure:	2	Scale:	Not To Scale				



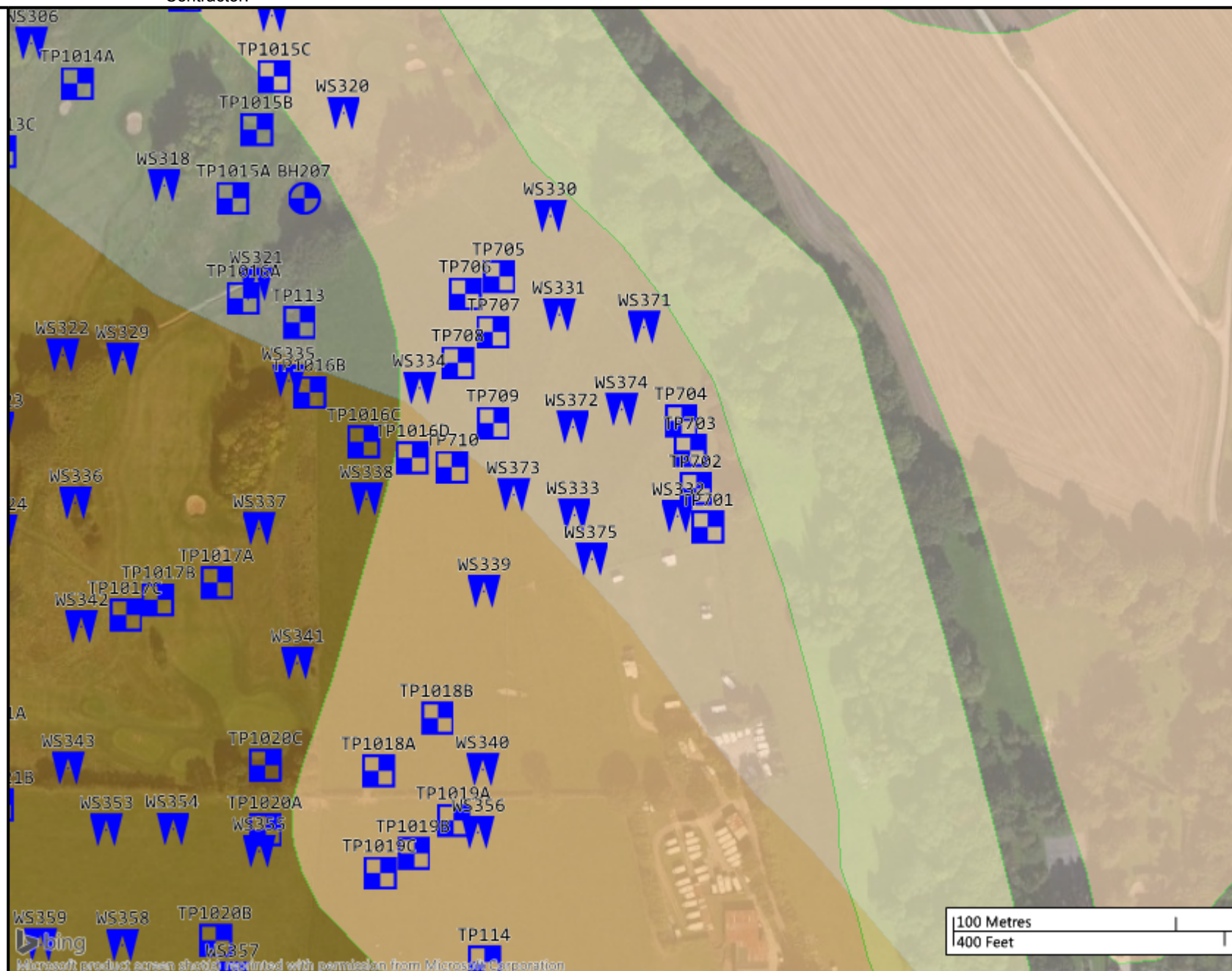
Project Id: GE15030A
Project Title: Boorley Green - Combined
Location: Boorley Green, Hampshire
Client:

Title: Site Plan
Scale: 1:2500
Engineer: GR
Contractor:

FIGURE 3 Exploratory Hole Location Plan around WS375

Legend Key

- Locations By Type - Empty
- ⊙ Locations By Type - CP
- ⊞ Locations By Type - TP
- ▼ Locations By Type - WS





Project:	Land off Winchester Road, Boorley Green SO32 2UA			Title	Water Sampling Location Plan	
Client:	Linden-Bloor-Bovis			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net	 Geo-Environmental	
Ref No:	GR	Revision:	0			
Drawn:	GR	Date:	01/02/2016			
Figure:	4	Scale:	Not To Scale			



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THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 15-04765

Issue: 1

Date of Issue: 03/12/2015

Contact: Gavin Roberts

Customer Details: GESL
Unit 7
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West Sussex BN6 9GL

Quotation No: Q14-00021

Order No: 212

Customer Reference: GE15030

Date Received: 26/11/2015

Date Approved: 03/12/2015

Details: Boorley Green

Approved by:



John Wilson, Operations Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

Sample Summary

Report No.: 15-04765

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
46350	US1	25/11/2015	26/11/2015		
46351	DS1	25/11/2015	26/11/2015		
46352	BH201	25/11/2015	26/11/2015		
46353	BH203	25/11/2015	26/11/2015		
46354	BH209	25/11/2015	26/11/2015		
46355	TP516 0.30	20/11/2015	26/11/2015	Silty loam	
46356	TP621 0.50	20/11/2015	26/11/2015	Silty loam + Chalk	
46357	TP801 0.30	20/11/2015	26/11/2015	Silty loam	
46358	TP802 0.30	20/11/2015	26/11/2015	Silty loam	
46359	TP803 0.30	20/11/2015	26/11/2015	Silty loam	
46360	TP804 0.30	20/11/2015	26/11/2015	Silty loam	
46361	TP701 0.30	20/11/2015	26/11/2015	Silty loam	
46362	TP701 0.50	20/11/2015	26/11/2015	Sandy silty loam	
46363	TP701 1.00	20/11/2015	26/11/2015	Sandy loam	
46364	TP702 0.30	20/11/2015	26/11/2015	Silty loam	
46365	TP703 0.30	20/11/2015	26/11/2015	Silty loam	
46366	TP703 0.250	20/11/2015	26/11/2015	Silty loam	
46367	TP703 1.00	20/11/2015	26/11/2015	Silty clayey loam	
46368	TP704 0.30	20/11/2015	26/11/2015	Silty loam	
46369	TP705 0.30	20/11/2015	26/11/2015	Silty loam	
46370	TP706 0.30	20/11/2015	26/11/2015	Silty loam	
46371	TP707 0.30	20/11/2015	26/11/2015	Silty loam	
46372	TP708 0.30	20/11/2015	26/11/2015	Silty loam	
46373	TP709 0.30	20/11/2015	26/11/2015	Silty loam	
46374	TP710 0.30	20/11/2015	26/11/2015	Silty loam	
46375	BH202 0.30	25/11/2015	26/11/2015		
46376	ST702 0.50	20/11/2015	26/11/2015		
46377	ST702 1.00	20/11/2015	26/11/2015		
46378	ST704 0.50	20/11/2015	26/11/2015		
46379	ST704 1.00	20/11/2015	26/11/2015		
46380	ST705 0.50	20/11/2015	26/11/2015		
46381	ST705 1.00	20/11/2015	26/11/2015		
46382	ST706 0.50	20/11/2015	26/11/2015		
46383	ST706 1.00	20/11/2015	26/11/2015		
46384	ST707 0.50	20/11/2015	26/11/2015		
46385	ST707 1.00	20/11/2015	26/11/2015		
46386	ST708 0.50	20/11/2015	26/11/2015		
46387	ST708 1.00	20/11/2015	26/11/2015		
46388	ST709 0.50	20/11/2015	26/11/2015		
46389	ST709 1.00	20/11/2015	26/11/2015		
46390	ST710 0.50	20/11/2015	26/11/2015		
46391	ST710 1.00	20/11/2015	26/11/2015		
46392	TP514 0.30	20/11/2015	26/11/2015		
46393	TP515 0.30	20/11/2015	26/11/2015		
46394	TP517 0.30	20/11/2015	26/11/2015		
46395	TP518 0.30	20/11/2015	26/11/2015		
46396	TP519 0.30	20/11/2015	26/11/2015		
46397	TP621 0.30	20/11/2015	26/11/2015		

Results Summary

Report No.: 15-04765

ELAB Reference	46355	46356	46357	46358	46359	46360
Customer Reference						
Sample ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	TP516	TP621	TP801	TP802	TP803	TP804
Sample Depth (m)	0.30	0.50	0.30	0.30	0.30	0.30
Sampling Date	20/11/2015	20/11/2015	20/11/2015	20/11/2015	20/11/2015	20/11/2015

Determinand	Codes	Units	LOD						
Miscellaneous									
Acid Neutralisation Capacity	N	mol/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Loss On Ignition (450°C)	M	%	0.01	1.46	^ 1.32	1.75	2.63	4.75	3.53
pH	M	pH units	0.1	7.8	^ 7.9	8.0	6.6	6.5	6.9
Total Organic Carbon	N	%	0.01	0.33	0.34	0.56	0.88	1.6	0.99
Polyaromatic hydrocarbons									
Total PAH (Including Coronene)	N	mg/kg	2	< 2	< 2	< 2	< 2	< 2	< 2
Naphthalene GCMS	N	mg/kg	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Acenaphthylene GCMS	N	mg/kg	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Acenaphthene GCMS	N	mg/kg	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Fluorene GCMS	N	mg/kg	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Phenanthrene GCMS	N	mg/kg	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Anthracene GCMS	N	mg/kg	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Fluoranthene GCMS	N	mg/kg	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Pyrene GCMS	N	mg/kg	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Benzo(a)anthracene GCMS	N	mg/kg	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Chrysene GCMS	N	mg/kg	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Benzo (b) fluoranthene GCMS	N	mg/kg	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Benzo(k)fluoranthene GCMS	N	mg/kg	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Benzo (a) pyrene GCMS	N	mg/kg	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Indeno (1,2,3-cd) pyrene GCMS	N	mg/kg	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Dibenzo(a,h)anthracene GCMS	N	mg/kg	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Benzo(g,h,i)perylene GCMS	N	mg/kg	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Total PAH(16) GCMS	N	mg/kg	0.04	n/t	n/t	n/t	n/t	n/t	n/t
BTEX									
Total BTEX	M	mg/kg	0.01	< 0.01	^ < 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Petroleum Hydrocarbons									
Mineral Oil	U	mg/kg	5	< 5	< 5	< 5	< 5	< 5	< 5
PCB (ICES 7 congeners)									
PCB (Total of 7 Congeners)	M	mg/kg	0.03	< 0.03	^ < 0.03	< 0.03	< 0.03	< 0.03	< 0.03

Results Summary

Report No.: 15-04765

ELAB Reference	46361	46362	46363	46364	46365	46366
Customer Reference						
Sample ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	TP701	TP701	TP701	TP702	TP703	TP703
Sample Depth (m)	0.30	0.50	1.00	0.30	0.30	0.250
Sampling Date	20/11/2015	20/11/2015	20/11/2015	20/11/2015	20/11/2015	20/11/2015

Determinand	Codes	Units	LOD						
Miscellaneous									
Acid Neutralisation Capacity	N	mol/kg	0.1	n/t	n/t	n/t	n/t	n/t	n/t
Loss On Ignition (450°C)	M	%	0.01	n/t	n/t	n/t	n/t	n/t	n/t
pH	M	pH units	0.1	n/t	n/t	n/t	n/t	n/t	n/t
Total Organic Carbon	N	%	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Polyaromatic hydrocarbons									
Total PAH (Including Coronene)	N	mg/kg	2	n/t	n/t	n/t	n/t	n/t	n/t
Naphthalene GCMS	N	mg/kg	0.01	0.01	0.04	0.02	< 0.01	< 0.01	< 0.01
Acenaphthylene GCMS	N	mg/kg	0.01	< 0.01	0.07	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene GCMS	N	mg/kg	0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene GCMS	N	mg/kg	0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene GCMS	N	mg/kg	0.01	0.04	0.44	< 0.01	0.02	< 0.01	< 0.01
Anthracene GCMS	N	mg/kg	0.01	0.01	0.15	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene GCMS	N	mg/kg	0.01	0.15	1.86	< 0.01	0.03	0.01	< 0.01
Pyrene GCMS	N	mg/kg	0.01	0.15	1.78	< 0.01	0.03	0.01	< 0.01
Benzo(a)anthracene GCMS	N	mg/kg	0.01	0.08	0.91	< 0.01	0.01	< 0.01	< 0.01
Chrysene GCMS	N	mg/kg	0.01	0.13	1.04	< 0.01	0.02	< 0.01	< 0.01
Benzo (b) fluoranthene GCMS	N	mg/kg	0.01	0.10	0.60	< 0.01	0.02	< 0.01	< 0.01
Benzo(k)fluoranthene GCMS	N	mg/kg	0.01	0.16	1.15	< 0.01	0.02	0.01	< 0.01
Benzo (a) pyrene GCMS	N	mg/kg	0.01	0.14	1.20	< 0.01	0.02	< 0.01	< 0.01
Indeno (1,2,3-cd) pyrene GCMS	N	mg/kg	0.01	0.06	0.63	< 0.01	< 0.01	< 0.01	< 0.01
Dibenzo(a,h)anthracene GCMS	N	mg/kg	0.01	0.02	0.20	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(g,h,i)perylene GCMS	N	mg/kg	0.01	0.09	0.88	< 0.01	0.01	< 0.01	< 0.01
Total PAH(16) GCMS	N	mg/kg	0.04	1.16	11.0	< 0.04	0.22	0.09	< 0.04
BTEX									
Total BTEX	M	mg/kg	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Total Petroleum Hydrocarbons									
Mineral Oil	U	mg/kg	5	n/t	n/t	n/t	n/t	n/t	n/t
PCB (ICES 7 congeners)									
PCB (Total of 7 Congeners)	M	mg/kg	0.03	n/t	n/t	n/t	n/t	n/t	n/t



Results Summary

Report No.: 15-04765

ELAB Reference	46367	46368	46369	46370	46371	46372
Customer Reference						
Sample ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	TP703	TP704	TP705	TP706	TP707	TP708
Sample Depth (m)	1.00	0.30	0.30	0.30	0.30	0.30
Sampling Date	20/11/2015	20/11/2015	20/11/2015	20/11/2015	20/11/2015	20/11/2015

Determinand	Codes	Units	LOD						
Miscellaneous									
Acid Neutralisation Capacity	N	mol/kg	0.1	n/t	n/t	n/t	n/t	n/t	n/t
Loss On Ignition (450°C)	M	%	0.01	n/t	n/t	n/t	n/t	n/t	n/t
pH	M	pH units	0.1	n/t	n/t	n/t	n/t	n/t	n/t
Total Organic Carbon	N	%	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Polyaromatic hydrocarbons									
Total PAH (Including Coronene)	N	mg/kg	2	n/t	n/t	n/t	n/t	n/t	n/t
Naphthalene GCMS	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene GCMS	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene GCMS	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene GCMS	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene GCMS	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	0.02	0.01	< 0.01
Anthracene GCMS	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene GCMS	N	mg/kg	0.01	< 0.01	< 0.01	0.02	0.04	0.02	0.02
Pyrene GCMS	N	mg/kg	0.01	< 0.01	< 0.01	0.02	0.03	0.02	0.02
Benzo(a)anthracene GCMS	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01
Chrysene GCMS	N	mg/kg	0.01	< 0.01	< 0.01	0.01	0.02	0.02	0.01
Benzo (b) fluoranthene GCMS	N	mg/kg	0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	0.01
Benzo(k)fluoranthene GCMS	N	mg/kg	0.01	< 0.01	< 0.01	0.01	0.02	0.01	0.01
Benzo (a) pyrene GCMS	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01
Indeno (1,2,3-cd) pyrene GCMS	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenzo(a,h)anthracene GCMS	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(g,h,i)perylene GCMS	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH(16) GCMS	N	mg/kg	0.04	< 0.04	< 0.04	0.13	0.18	0.13	0.11
BTEX									
Total BTEX	M	mg/kg	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Total Petroleum Hydrocarbons									
Mineral Oil	U	mg/kg	5	n/t	n/t	n/t	n/t	n/t	n/t
PCB (ICES 7 congeners)									
PCB (Total of 7 Congeners)	M	mg/kg	0.03	n/t	n/t	n/t	n/t	n/t	n/t



Results Summary

Report No.: 15-04765

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ELAB Reference	46373	46374
Customer Reference		
Sample ID		
Sample Type	SOIL	SOIL
Sample Location	TP709	TP710
Sample Depth (m)	0.30	0.30
Sampling Date	20/11/2015	20/11/2015

Determinand	Codes	Units	LOD		
Miscellaneous					
Acid Neutralisation Capacity	N	mol/kg	0.1	n/t	n/t
Loss On Ignition (450°C)	M	%	0.01	n/t	n/t
pH	M	pH units	0.1	n/t	n/t
Total Organic Carbon	N	%	0.01	n/t	n/t
Polyaromatic hydrocarbons					
Total PAH (Including Coronene)	N	mg/kg	2	n/t	n/t
Naphthalene GCMS	N	mg/kg	0.01	< 0.01	< 0.01
Acenaphthylene GCMS	N	mg/kg	0.01	< 0.01	< 0.01
Acenaphthene GCMS	N	mg/kg	0.01	< 0.01	< 0.01
Fluorene GCMS	N	mg/kg	0.01	< 0.01	< 0.01
Phenanthrene GCMS	N	mg/kg	0.01	< 0.01	< 0.01
Anthracene GCMS	N	mg/kg	0.01	< 0.01	< 0.01
Fluoranthene GCMS	N	mg/kg	0.01	< 0.01	< 0.01
Pyrene GCMS	N	mg/kg	0.01	< 0.01	< 0.01
Benzo(a)anthracene GCMS	N	mg/kg	0.01	< 0.01	< 0.01
Chrysene GCMS	N	mg/kg	0.01	< 0.01	< 0.01
Benzo (b) fluoranthene GCMS	N	mg/kg	0.01	< 0.01	< 0.01
Benzo(k)fluoranthene GCMS	N	mg/kg	0.01	< 0.01	< 0.01
Benzo (a) pyrene GCMS	N	mg/kg	0.01	< 0.01	< 0.01
Indeno (1,2,3-cd) pyrene GCMS	N	mg/kg	0.01	< 0.01	< 0.01
Dibenzo(a,h)anthracene GCMS	N	mg/kg	0.01	< 0.01	< 0.01
Benzo(g,h,i)perylene GCMS	N	mg/kg	0.01	< 0.01	< 0.01
Total PAH(16) GCMS	N	mg/kg	0.04	< 0.04	< 0.04
BTEX					
Total BTEX	M	mg/kg	0.01	n/t	n/t
Total Petroleum Hydrocarbons					
Mineral Oil	U	mg/kg	5	n/t	n/t
PCB (ICES 7 congeners)					
PCB (Total of 7 Congeners)	M	mg/kg	0.03	n/t	n/t

Results Summary

Report No.: 15-04765

ELAB Reference				46350	46351	46352	46353	46354	46375
Customer Reference									
Sample ID									
Sample Type				WATER	WATER	WATER	WATER	WATER	WATER
Sample Location				US1	DS1	BH201	BH203	BH209	BH202
Sample Depth (m)									
Sampling Date				25/11/2015	25/11/2015	25/11/2015	25/11/2015	25/11/2015	25/11/2015
Determinand	Codes	Units	LOD						
BTEX									
Benzene	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Toluene	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Ethylbenzene	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Xylenes	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
MTBE	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
TPH CWG									
>C5-C6 Aliphatic	N	ug/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C6-C8 Aliphatic	N	ug/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C8-C10 Aliphatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C10-C12 Aliphatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aliphatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C16-C21 Aliphatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	6.6
>C21-C35 Aliphatic	N	ug/l	5	6.1	16.8	< 5.0	6.8	5.7	7.2
>C35-C40 Aliphatic	N	ug/l	5	< 5.0	9.2	< 5.0	< 5.0	< 5.0	< 5.0
Total (>C5-C40) Aliphatic	N	ug/l	5	6.1	26.0	< 5.0	6.8	5.7	13.9
>C5-C7 Aromatic	N	ug/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C7-C8 Aromatic	N	ug/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C8-C10 Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C10-C12 Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C16-C21 Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C21-C35 Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C35-C40 Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total (>C5-C40) Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total (>C5-C40) Ali/Aro	N	ug/l	5	6.1	26.0	< 5.0	6.8	5.7	13.9

Results Summary

Report No.: 15-04765

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WAC Analysis

Elab Ref:	46360					Landfill Waste Acceptance Criteria Limits		
Sample Date:	20/11/2015					Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	TP804							
Depth:	0.3							
Site:	Boorley Green							
Determinand		Code	Units					
Total Organic Carbon		N	%		0.99	3	5	6
Loss on Ignition		M	%		3.5	--	--	10
Total BTEX		M	mg/kg		< 0.01	6	--	--
Total PCBs (7 congeners)		M	mg/kg		< 0.03	1	--	--
TPH Total WAC		M	mg/kg		< 5	500	--	--
Total (of 17) PAHs		N	mg/kg		< 2	100	--	--
pH		M			6.9	--	>6	--
Acid Neutralisation Capacity		N	mol/kg		< 0.1	--	To evaluate	To evaluate

Eluate Analysis

			2:1	8:1	10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
			mg/l	mg/l	mg/kg			
Arsenic		N	< 0.005	< 0.005	< 0.05	0.5	2	25
Barium		N	0.010	< 0.005	< 0.05	20	100	300
Cadmium		N	< 0.001	< 0.001	< 0.01	0.04	1	5
Chromium		N	< 0.005	< 0.005	< 0.05	0.5	10	70
Copper		N	0.006	< 0.005	< 0.05	2	50	100
Mercury		N	< 0.005	< 0.005	< 0.01	0.01	0.2	2
Molybdenum		N	< 0.005	< 0.005	< 0.05	0.5	10	30
Nickel		N	0.001	< 0.001	< 0.05	0.4	10	40
Lead		N	0.001	< 0.001	< 0.05	0.5	10	50
Antimony		N	< 0.005	< 0.005	< 0.05	0.06	0.7	5
Selenium		N	< 0.005	< 0.005	< 0.05	0.1	0.5	7
Zinc		N	0.009	< 0.005	< 0.05	4	50	200
Chloride		N	5.000	< 5	< 50	800	15000	25000
Fluoride		N	< 1	< 1	< 10	10	150	500
Sulphate		N	8.000	5.000	52.80	1000	20000	50000
Total Dissolved Solids		N	170.000	120.000	1260.00	4000	60000	100000
Phenol Index		N	< 0.01	< 0.01	< 0.10	1	-	-
Dissolved Organic Carbon		N	34.500	24.500	256.00	500	800	1000

Leach Test Information

Eluent Volume (ml)		N	200	1390				
pH		N	8.4	7.9				
Conductivity (uS/cm)		N	313	107				
Temperature (°C)		N	17	18				

Solid Information

Dry mass of test portion (g)			177					
Moisture (%)			21.4					

Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ELAB cannot be held responsible for any discrepancies with current legislation

Results Summary

Report No.: 15-04765

WAC Analysis

Elab Ref:	46359					Landfill Waste Acceptance Criteria Limits		
Sample Date:	20/11/2015					Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	TP803							
Depth:	0.3							
Site:	Boorley Green							
Determinand		Code	Units					
Total Organic Carbon		N	%		1.60	3	5	6
Loss on Ignition		M	%		4.8	--	--	10
Total BTEX		M	mg/kg		< 0.01	6	--	--
Total PCBs (7 congeners)		M	mg/kg		< 0.03	1	--	--
TPH Total WAC		M	mg/kg		< 5	500	--	--
Total (of 17) PAHs		N	mg/kg		< 2	100	--	--
pH		M			6.5	--	>6	--
Acid Neutralisation Capacity		N	mol/kg		< 0.1	--	To evaluate	To evaluate
Eluate Analysis			2:1	8:1	10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
			mg/l	mg/l	mg/kg			
Arsenic		N	< 0.005	< 0.005	< 0.05	0.5	2	25
Barium		N	< 0.005	< 0.005	< 0.05	20	100	300
Cadmium		N	< 0.001	< 0.001	< 0.01	0.04	1	5
Chromium		N	< 0.005	< 0.005	< 0.05	0.5	10	70
Copper		N	0.008	< 0.005	< 0.05	2	50	100
Mercury		N	< 0.005	< 0.005	< 0.01	0.01	0.2	2
Molybdenum		N	< 0.005	< 0.005	< 0.05	0.5	10	30
Nickel		N	0.002	< 0.001	< 0.05	0.4	10	40
Lead		N	0.003	0.001	< 0.05	0.5	10	50
Antimony		N	< 0.005	< 0.005	< 0.05	0.06	0.7	5
Selenium		N	< 0.005	< 0.005	< 0.05	0.1	0.5	7
Zinc		N	0.011	0.010	0.10	4	50	200
Chloride		N	6.000	< 5	< 50	800	15000	25000
Fluoride		N	< 1	< 1	< 10	10	150	500
Sulphate		N	7.000	5.000	52.40	1000	20000	50000
Total Dissolved Solids		N	< 100	< 100	1000.00	4000	60000	100000
Phenol Index		N	< 0.01	< 0.01	< 0.10	1	-	-
Dissolved Organic Carbon		N	32.900	22.900	238.00	500	800	1000
Leach Test Information								
Eluent Volume (ml)		N	160	1380				
pH		N	7.2	7.4				
Conductivity (uS/cm)		N	66	51				
Temperature (°C)		N	17	18				
Solid Information								
Dry mass of test portion (g)			176					
Moisture (%)			20.8					

Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ELAB cannot be held responsible for any discrepancies with current legislation

Results Summary

Report No.: 15-04765

WAC Analysis

Elab Ref:	46358					Landfill Waste Acceptance Criteria Limits		
Sample Date:	20/11/2015					Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	TP802							
Depth:	0.3							
Site:	Boorley Green							
Determinand		Code	Units					
Total Organic Carbon		N	%		0.88	3	5	6
Loss on Ignition		M	%		2.6	--	--	10
Total BTEX		M	mg/kg		< 0.01	6	--	--
Total PCBs (7 congeners)		M	mg/kg		< 0.03	1	--	--
TPH Total WAC		M	mg/kg		< 5	500	--	--
Total (of 17) PAHs		N	mg/kg		< 2	100	--	--
pH		M			6.6	--	>6	--
Acid Neutralisation Capacity		N	mol/kg		< 0.1	--	To evaluate	To evaluate
Eluate Analysis			2:1	8:1	10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
			mg/l	mg/l	mg/kg			
Arsenic		N	< 0.005	< 0.005	< 0.05	0.5	2	25
Barium		N	< 0.005	< 0.005	< 0.05	20	100	300
Cadmium		N	< 0.001	< 0.001	< 0.01	0.04	1	5
Chromium		N	< 0.005	< 0.005	< 0.05	0.5	10	70
Copper		N	0.011	< 0.005	< 0.05	2	50	100
Mercury		N	< 0.005	< 0.005	< 0.01	0.01	0.2	2
Molybdenum		N	< 0.005	< 0.005	< 0.05	0.5	10	30
Nickel		N	0.002	< 0.001	< 0.05	0.4	10	40
Lead		N	0.001	< 0.001	< 0.05	0.5	10	50
Antimony		N	< 0.005	< 0.005	< 0.05	0.06	0.7	5
Selenium		N	< 0.005	< 0.005	< 0.05	0.1	0.5	7
Zinc		N	0.011	0.005	0.06	4	50	200
Chloride		N	7.000	< 5	< 50	800	15000	25000
Fluoride		N	< 1	< 1	< 10	10	150	500
Sulphate		N	8.000	5.000	52.20	1000	20000	50000
Total Dissolved Solids		N	< 100	< 100	1000.00	4000	60000	100000
Phenol Index		N	< 0.01	< 0.01	< 0.10	1	-	-
Dissolved Organic Carbon		N	26.600	21.100	216.00	500	800	1000
Leach Test Information								
Eluent Volume (ml)		N	160	1380				
pH		N	7.2	7.5				
Conductivity (uS/cm)		N	75	49				
Temperature (°C)		N	17	18				
Solid Information								
Dry mass of test portion (g)			176					
Moisture (%)			21.2					

Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ELAB cannot be held responsible for any discrepancies with current legislation

Results Summary

Report No.: 15-04765

WAC Analysis

Elab Ref:	46357					Landfill Waste Acceptance Criteria Limits		
Sample Date:	20/11/2015					Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	TP801							
Depth:	0.3							
Site:	Boorley Green							
Determinand		Code	Units					
Total Organic Carbon		N	%		0.56	3	5	6
Loss on Ignition		M	%		1.8	--	--	10
Total BTEX		M	mg/kg		< 0.01	6	--	--
Total PCBs (7 congeners)		M	mg/kg		< 0.03	1	--	--
TPH Total WAC		M	mg/kg		< 5	500	--	--
Total (of 17) PAHs		N	mg/kg		< 2	100	--	--
pH		M			8.0	--	>6	--
Acid Neutralisation Capacity		N	mol/kg		< 0.1	--	To evaluate	To evaluate

Eluate Analysis

			2:1	8:1	10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
			mg/l	mg/l	mg/kg			
Arsenic		N	< 0.005	< 0.005	< 0.05	0.5	2	25
Barium		N	< 0.005	< 0.005	< 0.05	20	100	300
Cadmium		N	< 0.001	< 0.001	< 0.01	0.04	1	5
Chromium		N	< 0.005	< 0.005	< 0.05	0.5	10	70
Copper		N	< 0.005	< 0.005	< 0.05	2	50	100
Mercury		N	< 0.005	< 0.005	< 0.01	0.01	0.2	2
Molybdenum		N	< 0.005	< 0.005	< 0.05	0.5	10	30
Nickel		N	< 0.001	< 0.001	< 0.05	0.4	10	40
Lead		N	< 0.001	< 0.001	< 0.05	0.5	10	50
Antimony		N	< 0.005	< 0.005	< 0.05	0.06	0.7	5
Selenium		N	< 0.005	< 0.005	< 0.05	0.1	0.5	7
Zinc		N	0.007	< 0.005	< 0.05	4	50	200
Chloride		N	< 5	< 5	< 50	800	15000	25000
Fluoride		N	< 1	< 1	< 10	10	150	500
Sulphate		N	5.000	5.000	47.40	1000	20000	50000
Total Dissolved Solids		N	< 100	< 100	1000.00	4000	60000	100000
Phenol Index		N	< 0.01	< 0.01	< 0.10	1	-	-
Dissolved Organic Carbon		N	19.800	21.100	209.00	500	800	1000

Leach Test Information

Eluent Volume (ml)		N	235	1390				
pH		N	8.3	8.1				
Conductivity (uS/cm)		N	219	174				
Temperature (°C)		N	17	18				

Solid Information

Dry mass of test portion (g)			177					
Moisture (%)			16.5					

Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ELAB cannot be held responsible for any discrepancies with current legislation

Results Summary

Report No.: 15-04765

WAC Analysis

Elab Ref:	46356					Landfill Waste Acceptance Criteria Limits		
Sample Date:	20/11/2015					Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	TP621							
Depth:	0.5							
Site:	Boorley Green							
Determinand		Code	Units					
Total Organic Carbon		N	%		0.34	3	5	6
Loss on Ignition		M	%		1.3	--	--	10
Total BTEX		M	mg/kg		< 0.01	6	--	--
Total PCBs (7 congeners)		M	mg/kg		< 0.03	1	--	--
TPH Total WAC		M	mg/kg		< 5	500	--	--
Total (of 17) PAHs		N	mg/kg		< 2	100	--	--
pH		M			7.9	--	>6	--
Acid Neutralisation Capacity		N	mol/kg		< 0.1	--	To evaluate	To evaluate

Eluate Analysis

			2:1	8:1	10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
			mg/l	mg/l	mg/kg			
Arsenic		N	< 0.005	< 0.005	< 0.05	0.5	2	25
Barium		N	0.020	0.012	0.13	20	100	300
Cadmium		N	< 0.001	< 0.001	< 0.01	0.04	1	5
Chromium		N	< 0.005	< 0.005	< 0.05	0.5	10	70
Copper		N	< 0.005	< 0.005	< 0.05	2	50	100
Mercury		N	< 0.005	< 0.005	< 0.01	0.01	0.2	2
Molybdenum		N	< 0.005	< 0.005	< 0.05	0.5	10	30
Nickel		N	< 0.001	< 0.001	< 0.05	0.4	10	40
Lead		N	< 0.001	< 0.001	< 0.05	0.5	10	50
Antimony		N	< 0.005	< 0.005	< 0.05	0.06	0.7	5
Selenium		N	< 0.005	< 0.005	< 0.05	0.1	0.5	7
Zinc		N	0.011	< 0.005	< 0.05	4	50	200
Chloride		N	17.000	< 5	< 50	800	15000	25000
Fluoride		N	< 1	< 1	< 10	10	150	500
Sulphate		N	9.000	4.000	49.30	1000	20000	50000
Total Dissolved Solids		N	140.000	120.000	1230.00	4000	60000	100000
Phenol Index		N	< 0.01	< 0.01	< 0.10	1	-	-
Dissolved Organic Carbon		N	16.800	16.600	167.00	500	800	1000

Leach Test Information

Eluent Volume (ml)		N	245	1380				
pH		N	8.4	8.2				
Conductivity (uS/cm)		N	287	189				
Temperature (°C)		N	17	18				

Solid Information

Dry mass of test portion (g)			175					
Moisture (%)			19.9					

Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ELAB cannot be held responsible for any discrepancies with current legislation

Results Summary

Report No.: 15-04765

2683

WAC Analysis

Elab Ref:	46355					Landfill Waste Acceptance Criteria Limits		
Sample Date:	20/11/2015					Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	TP516							
Depth:	0.3							
Site:	Boorley Green							
Determinand		Code	Units					
Total Organic Carbon		N	%		0.33	3	5	6
Loss on Ignition		M	%		1.5	--	--	10
Total BTEX		M	mg/kg		< 0.01	6	--	--
Total PCBs (7 congeners)		M	mg/kg		< 0.03	1	--	--
TPH Total WAC		M	mg/kg		< 5	500	--	--
Total (of 17) PAHs		N	mg/kg		< 2	100	--	--
pH		M			7.8	--	>6	--
Acid Neutralisation Capacity		N	mol/kg		< 0.1	--	To evaluate	To evaluate

Eluate Analysis

			2:1	8:1	10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
			mg/l	mg/l	mg/kg			
Arsenic		N	< 0.005	< 0.005	< 0.05	0.5	2	25
Barium		N	< 0.005	< 0.005	< 0.05	20	100	300
Cadmium		N	< 0.001	< 0.001	< 0.01	0.04	1	5
Chromium		N	< 0.005	< 0.005	< 0.05	0.5	10	70
Copper		N	< 0.005	< 0.005	< 0.05	2	50	100
Mercury		N	< 0.005	< 0.005	< 0.01	0.01	0.2	2
Molybdenum		N	< 0.005	< 0.005	< 0.05	0.5	10	30
Nickel		N	0.001	< 0.001	< 0.05	0.4	10	40
Lead		N	< 0.001	< 0.001	< 0.05	0.5	10	50
Antimony		N	< 0.005	< 0.005	< 0.05	0.06	0.7	5
Selenium		N	< 0.005	< 0.005	< 0.05	0.1	0.5	7
Zinc		N	< 0.005	< 0.005	< 0.05	4	50	200
Chloride		N	6.000	< 5	< 50	800	15000	25000
Fluoride		N	< 1	< 1	< 10	10	150	500
Sulphate		N	4.000	4.000	37.30	1000	20000	50000
Total Dissolved Solids		N	120.000	120.000	1200.00	4000	60000	100000
Phenol Index		N	< 0.01	< 0.01	< 0.10	1	-	-
Dissolved Organic Carbon		N	13.500	16.900	165.00	500	800	1000

Leach Test Information

Eluent Volume (ml)		N	240	1420				
pH		N	8.4	8.2				
Conductivity (uS/cm)		N	210	173				
Temperature (°C)		N	17	18				

Solid Information

Dry mass of test portion (g)			180					
Moisture (%)			19.3					

Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ELAB cannot be held responsible for any discrepancies with current legislation

Method Summary

Report No.: 15-04765

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Anions in 2:1 WAC	N		03/12/2015		
DOC in 2:1 WAC	N		03/12/2015		
PAH (GC-MS)	M	As submitted sample	27/11/2015		GC-MS
TOT PAH (GC-FID)	N	As submitted sample	01/12/2015		GC-FID
pH	M	Air dried sample	01/12/2015	113	Electromeric
Total Petroleum Hydrocarbons in solids	U	As submitted sample	27/11/2015	117	GC-FID
PCB (ICES 7 congeners)	M	Air dried sample	30/11/2015	120	GC-MS
Loss on ignition at 450 deg C	M	Air dried sample	01/12/2015	129	Gravimetry
BTEX in solids	M	As submitted sample	01/12/2015	181A	GC-MS
Total organic carbon/Total sulphur	N	Air dried sample	02/12/2015	210	IR
Acid neutralisation capacity	N	Air dried sample	01/12/2015	737	
Water					
Aliphatic/Aromatic hydrocarbons in water	N		03/12/2015		GC-FID
Aromatic hydrocarbons in water	N		03/12/2015		GC-FID
BTEX in waters	U		01/12/2015	200A	GC-MS
Aliphatic hydrocarbons in water	N		01/12/2015	215	GC-FID
Aromatic hydrocarbons in water	N		01/12/2015	215	GC-FID
Low range Aliphatic hydrocarbons water	N		01/12/2015	215	GC-MS
Low range Aromatic hydrocarbons water	N		01/12/2015	215	GC-MS

Leachate

Tests marked N are not UKAS accredited

Report Information

Report No.: 15-04765

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"

Soil sample results are expressed on an air dried basis

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

PCB congener results may include any coeluting PCBs

Uncertainty of measurement for the determinands tested are available upon request

Deviation Codes

-
- | | |
|---|--|
| a | No date of sampling supplied |
| b | No time of sampling supplied (Waters Only) |
| c | Sample not received in appropriate containers |
| d | Sample not received in cooled condition |
| e | The container has been incorrectly filled |
| f | Sample age exceeds stability time (sampling to receipt) |
| g | Sample age exceeds stability time (sampling to analysis) |

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage



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THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 16-05217

Issue: 1

Date of Issue: 18/01/2016

Contact: Cesar Azevedo

Customer Details: GESL
Unit 7
Danworth Farm
Hurstpierpoint
West Sussex BN6 9GL

Quotation No: Q14-00021

Order No: 318

Customer Reference: GE15030

Date Received: 11/01/2016

Date Approved: 18/01/2016

Details: Boorley Green

Approved by:



John Wilson, Operations Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)



Sample Summary

Report No.: 16-05217

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
50237	US1	11/01/2016	11/01/2016		
50238	DS1	11/01/2016	11/01/2016		
50239	BH201	11/01/2016	11/01/2016		
50240	BH203	11/01/2016	11/01/2016		
50241	BH209	11/01/2016	11/01/2016		

Results Summary

Report No.: 16-05217

ELAB Reference				50237	50238	50239	50240	50241
Customer Reference								
Sample ID								
Sample Type				WATER	WATER	WATER	WATER	WATER
Sample Location				US1	DS1	BH201	BH203	BH209
Sample Depth (m)								
Sampling Date				11/01/2016	11/01/2016	11/01/2016	11/01/2016	11/01/2016
Determinand	Codes	Units	LOD					
BTEX								
Benzene	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Toluene	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Ethylbenzene	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Xylenes	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
MTBE	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
TPH CWG								
>C5-C6 Aliphatic	N	ug/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C6-C8 Aliphatic	N	ug/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C8-C10 Aliphatic	N	ug/l	5	15.0	< 5.0	< 5.0	< 5.0	< 5.0
>C10-C12 Aliphatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aliphatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C16-C21 Aliphatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	10.1	< 5.0
>C21-C35 Aliphatic	N	ug/l	5	19.6	19.5	14.9	< 5.0	20.0
>C35-C40 Aliphatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total (>C5-C40) Aliphatic	N	ug/l	5	34.6	19.5	14.9	10.1	20.0
>C5-C7 Aromatic	N	ug/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C7-C8 Aromatic	N	ug/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C8-C10 Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C10-C12 Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C16-C21 Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C21-C35 Aromatic	N	ug/l	5	< 5.0	20.5	23.4	< 5.0	< 5.0
>C35-C40 Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total (>C5-C40) Aromatic	N	ug/l	5	< 5.0	20.5	23.4	< 5.0	< 5.0
Total (>C5-C40) Ali/Aro	N	ug/l	5	34.6	40.0	38.3	10.1	20.0

Method Summary

Report No.: 16-05217

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Water					
Aliphatic/Aromatic hydrocarbons in water	N		18/01/2016		GC-FID
Aromatic hydrocarbons in water	N		18/01/2016		GC-FID
BTEX in waters	U		14/01/2016	200A	GC-MS
Aliphatic hydrocarbons in water	N		15/01/2016	215	GC-FID
Aromatic hydrocarbons in water	N		15/01/2016	215	GC-FID
Low range Aliphatic hydrocarbons water	N		14/01/2016	215	GC-MS
Low range Aromatic hydrocarbons water	N		14/01/2016	215	GC-MS

Tests marked N are not UKAS accredited

Report Information

Report No.: 16-05217

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
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*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"

Soil sample results are expressed on an air dried basis

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The results relate only to the items tested

PCB congener results may include any coeluting PCBs

Uncertainty of measurement for the determinands tested are available upon request

Deviation Codes

-
- | | |
|---|--|
| a | No date of sampling supplied |
| b | No time of sampling supplied (Waters Only) |
| c | Sample not received in appropriate containers |
| d | Sample not received in cooled condition |
| e | The container has been incorrectly filled |
| f | Sample age exceeds stability time (sampling to receipt) |
| g | Sample age exceeds stability time (sampling to analysis) |

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage



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THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 16-05305

Issue: 1

Date of Issue: 21/01/2016

Contact: Cesar Azevedo

Customer Details: GESL
Unit 7
Danworth Farm
Hurstpierpoint
West Sussex BN6 9GL

Quotation No: Q14-00021

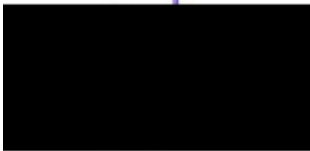
Order No: 351

Customer Reference: GE15030

Date Received: 18/01/2016

Date Approved: 21/01/2016

Details: Boorley Green

Approved by: 

John Wilson, Operations Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)



Sample Summary

Report No.: 16-05305

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
50801	US1	15/01/2016	18/01/2016		
50802	DS1	15/01/2016	18/01/2016		
50803	BH201	15/01/2016	18/01/2016		
50804	BH203	15/01/2016	18/01/2016		
50805	BH209	15/01/2016	18/01/2016		

Results Summary

Report No.: 16-05305

ELAB Reference				50801	50802	50803	50804	50805
Customer Reference								
Sample ID								
Sample Type				WATER	WATER	WATER	WATER	WATER
Sample Location				US1	DS1	BH201	BH203	BH209
Sample Depth (m)								
Sampling Date				15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016
Determinand	Codes	Units	LOD					
BTEX								
Benzene	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Toluene	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Ethylbenzene	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Xylenes	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
MTBE	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
TPH CWG								
>C5-C6 Aliphatic	N	ug/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C6-C8 Aliphatic	N	ug/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C8-C10 Aliphatic	N	ug/l	5	7.4	5.7	10.2	8.9	8.0
>C10-C12 Aliphatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aliphatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C16-C21 Aliphatic	N	ug/l	5	6.8	7.0	7.5	8.2	7.9
>C21-C35 Aliphatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C35-C40 Aliphatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total (>C5-C40) Aliphatic	N	ug/l	5	14.2	12.6	17.7	17.1	15.9
>C5-C7 Aromatic	N	ug/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C7-C8 Aromatic	N	ug/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C8-C10 Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C10-C12 Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C16-C21 Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C21-C35 Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C35-C40 Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total (>C5-C40) Aromatic	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total (>C5-C40) Ali/Aro	N	ug/l	5	14.2	12.6	17.7	17.1	15.9

Method Summary

Report No.: 16-05305

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Water					
Aliphatic/Aromatic hydrocarbons in water	N		21/01/2016		GC-FID
Aromatic hydrocarbons in water	N		21/01/2016		GC-FID
BTEX in waters	U		20/01/2016	200A	GC-MS
Aliphatic hydrocarbons in water	N		20/01/2016	215	GC-FID
Aromatic hydrocarbons in water	N		20/01/2016	215	GC-FID
Low range Aliphatic hydrocarbons water	N		20/01/2016	215	GC-MS
Low range Aromatic hydrocarbons water	N		20/01/2016	215	GC-MS

Tests marked N are not UKAS accredited

Report Information

Report No.: 16-05305

Key

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S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"

Soil sample results are expressed on an air dried basis

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

PCB congener results may include any coeluting PCBs

Uncertainty of measurement for the determinands tested are available upon request

Deviation Codes

-
- | | |
|---|--|
| a | No date of sampling supplied |
| b | No time of sampling supplied (Waters Only) |
| c | Sample not received in appropriate containers |
| d | Sample not received in cooled condition |
| e | The container has been incorrectly filled |
| f | Sample age exceeds stability time (sampling to receipt) |
| g | Sample age exceeds stability time (sampling to analysis) |

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage

Client/field ref: Bior Bovis Linden Project ref: GE15030 Site ref: Boorley Green Data description: PAH in soils around WS375 (GE9523) Contaminant(s): PAHs Test scenario: Planning Date: 8 February 2016		Naphthalene**	Acenaphthylene**	Acenaphthene**	Fluorene**	Phenanthrene**	Anthracene**	Fluoranthene*	Pyrene**	Benz(a)anthracene**	Chrysene**	Benzo(b)fluoranthene**	Benzo(k)fluoranthene**	Benzo(a)pyrene**	Indeno(123-cd)pyrene**	Dibenz(a,h)anthracene**	Benzo(ghi)perylene**
Critical concentration, C _c		1.5	169	207	164	92	2250	257	563	2.99	5.99	5.94	8.49	0.82	3.18	0.76	43.8
Notes																	
Full dataset size		18	18	18	18	18	18	18	18	17	17	17	17	17	17	17	18
Outliers present?		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	Yes
Number of outliers temporarily excluded																0	
Number removed by filter		3	1	1	1	5	2	8	8	4	7	5	8	3	2	2	3
Sample size, n		15	17	17	17	13	16	10	10	13	10	12	9	14	15	15	15
Sample mean, $\bar{x}$		0.28851759	0.14209524	0.30013648	0.22800439	1.74949849	0.53939361	3.57666158	2.95781184	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.93992523
Standard deviation, s		0.92377464	0.37971841	1.03133913	0.7339309	6.12762894	1.95757444	11.1522831	9.19530843	0	7.3142E-18	7.2474E-18	7.3598E-18	0	7.1824E-18	7.1824E-18	3.4466656
Number of non-detects		14	16	16	16	12	15	9	9	13	10	12	9	14	15	15	14
Set non-detect values to:		Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit
Distribution		Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Single value	Non-normal	Non-normal	Non-normal	Single value	Non-normal	Non-normal	Non-normal
Statistical approach		Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev
Test scenario:		Planning: is true mean lower than critical concentration ($\mu < C_c$)					Evidence level required:		95%		Use Normal distribution to test for outliers						
t statistic, t ₀ (or k ₀)		-5.079216319	-1833.513895	-826.348331	-920.0447001	-53.10419644	-4596.424141	-71.85927338	-192.599184	N/A	-2.56813E+18	-2.81528E+18	-3.44031E+18	N/A	-1.68779E+18	-3.82853E+17	-48.16143345
Upper confidence limit (on true mean concentration, μ)		1.32819164	0.54352909	1.39045612	1.00390754	9.15744065	2.6726109	18.949023	15.6326698	0.05	0.05	0.05	0.05	0.05	0.05	0.05	4.81901938
Evidence level		96%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Base decision on:		evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level
Result		$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$
Select dataset		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐

Calculations based on mixed zone (M)	600	mm
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[illegible]

Summary		
	Target Guideline Value 1	Target Guideline Value 2
Number of contaminants	17	17
Number of contaminants with no thickness calculation	16	16
Breakdown - Number for which no TV specified	16	16
Breakdown - Number for which no soil specified	16	16
Breakdown - Number for which no cover specified	16	16
Breakdown - Number for which cover > TV	0	0
Number of contaminants with thickness calculation	1	1
Breakdown - Number for which no cover required	0	0
Breakdown - Number for which cover required	1	1

Overall thickness of cover required	600	465
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Design Chart

