



Validation Report

(Area A – B – Commercial Offices)

58-64 STATION ROAD
HAYLING ISLAND, HAMPSHIRE
PO11 0EL

For : Mr Nigel Slydell

Report Ref: 517 / R06

Dated 20th May 2016

Director : D I Grant BSc (Hons) PhD

Geotechnical & Geoenvironmental Consultants

*Dig-Geotech Limited Registered in England and Wales.
Company Number 5335508. VAT No 871 353 031*

Validation Report

(Area A – Proposed Domestic Houses)

58-64 STATION ROAD
HAYLING ISLAND, HAMPSHIRE
PO11 0EL

Report No 417 / R06. Rev 0

Rev 0	07 06 2016	Report issued

June 2016

Prepared for Mr Nigel Sydel

Filename: C:\Users\David\Documents\Consultancy\517 58-64 Station Rd, Hayling\Reports\Rep
No517_R06 StationRd Area B ValidationReport.doc

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1. INTRODUCTION.

Mr Nigel Sydell (as Keendale Ltd) is nearing completion of a development at 58-64 Station Road, Hayling Island, Hampshire.

The proposed development area is shown by Figure 1. The north-eastern part of the site has been developed as domestic housing. The south-western part of the site has become commercial offices. This Validation Report refers to the southwest, commercial part of the site only. The Validation Report for the north-eastern (residential) part of the site is issued under separate cover as Report No 517 / R05.

A Discovery Strategy & Remediation Statement for the commercial area of the site was prepared by Dig-Geotech Ltd in December 2014 (*Ref 1*). The works recommended in that Remediation Statement have now been completed and this report is the Validation Report for those works.

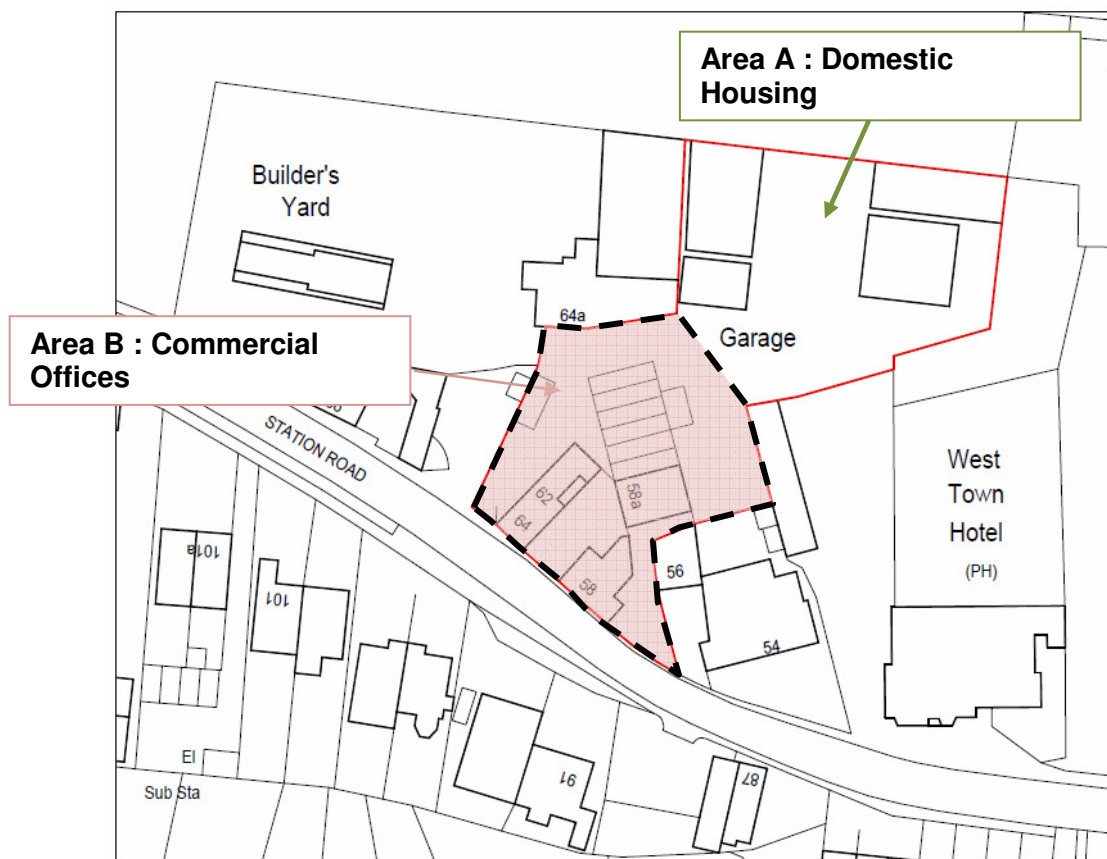


Figure 1 : Proposed Development Area

2. REMEDIATION WORKS

2.1 Summary of required works

The Discovery Strategy and Remediation Statement were included as Appendix D of the Ground Investigation Report (*Ref 1*).

The suggested works were :

- D1 Discovery Strategy
- D2 Protection of Services Runs
- D3 Installation of gases / radon membranes below buildings
- D4 Record Keeping & Reports.

2.2 D1 Discovery Strategy

Appendix A gives a Technical Note issued in July 2015. The Technical note discussed additional investigations that took place at the site due to concerns related to infrastructure for the former gas works. The Technical Note presented the findings of the additional investigations and detailed works carried out to remove potentially contaminated soils from below Office Building 1.

2.3 D2 Protection of services runs

Services trenches were to be over excavated by 50mm and all arisings disposed of offsite. New imported clean granular soils were used as bedding below services and as backfill above. This was to protect future maintenance workers.

2.3 D3 Installation of gases / radon membranes below buildings

A Visqueen (or similar) membrane was to be placed above the ventilated floor slabs. The appropriate grade of Visqueen was to be a minimum of a Visqueen Gas Barrier membrane if placed above a concrete floor with suitable protection. Installation was to be to manufactures' guidance.

The barrier was installed as required. Photographs of the works taking place are enclosed as **Appendix B**.

2.4 D4 Record keeping & reports

A Completion or Validation report was required i.e this report.

3. CONCLUSIONS

Remediation works for a development at 58-64 Station Road, Hayling Island has been observed & records inspected. The works have been carried out in an organised and appropriate manner. The works have been carried out in accordance with the submitted Remediation Statement (*Ref 1*).

Report prepared by



.....

07 June 2016

D I Grant BSc, PhD

Interim Update on Sampling & Remediation

This Technical Note gives an interim update on some further sampling and proposed remediation works for a development at 58-64 Station Road, Hayling Island.

1. BRIEF BACKGROUND

The site was a former garage that is being developed as both domestic housing and commercial offices. Part of the site had historic use as a gas works. To date reports for the site have considered the domestic and commercial areas separately as follows :

Report No 517 / R01	Report on Desk Study (Area A – Proposed Domestic Houses) 58-64 Station Road, Hailing Island
Report No 517 / R02	Report on Desk Study (Area B – Commercial Offices) 58-64 Station Road, Hailing Island.
Report No 517 / R03	Report on Ground Investigation (Area A – Proposed Domestic Houses) 58-64 Station Road, Hailing Island
Report No 517 / R04	Report on Ground Investigation (Area B – Commercial Offices) 58-64 Station Road, Hailing Island.

Table 1 : Previous Reports

The ground investigation showed the site as mostly clean, but raised some concerns about potential contamination below the proposed offices. Some water sampling and gases monitoring was recommended by Havant Borough Council (HBC) to complement the available test results.

2. WATER SAMPLING & GASES MONITORING**2.1 Gases :**

As part of the ground investigation, two water & gases monitoring standpipes had been installed. Figure 1 shows the locations. **WS1** was below the proposed domestic area and **WS5** was in the car parking area for the proposed new offices.

Annex A shows the results for the gases monitoring. Three sets of monitoring were carried out. CO₂ & CH₄ were both recorded as zero at WS1 i.e within the domestic area. Flow was also recorded as zero i.e below the detection limit of the instrument of 0.1 l/hr. Ventilated

Interim Update on Sampling & Remediation

sub floor voids and a gases resistant membrane were already proposed for the new houses and the protection is considered adequate.

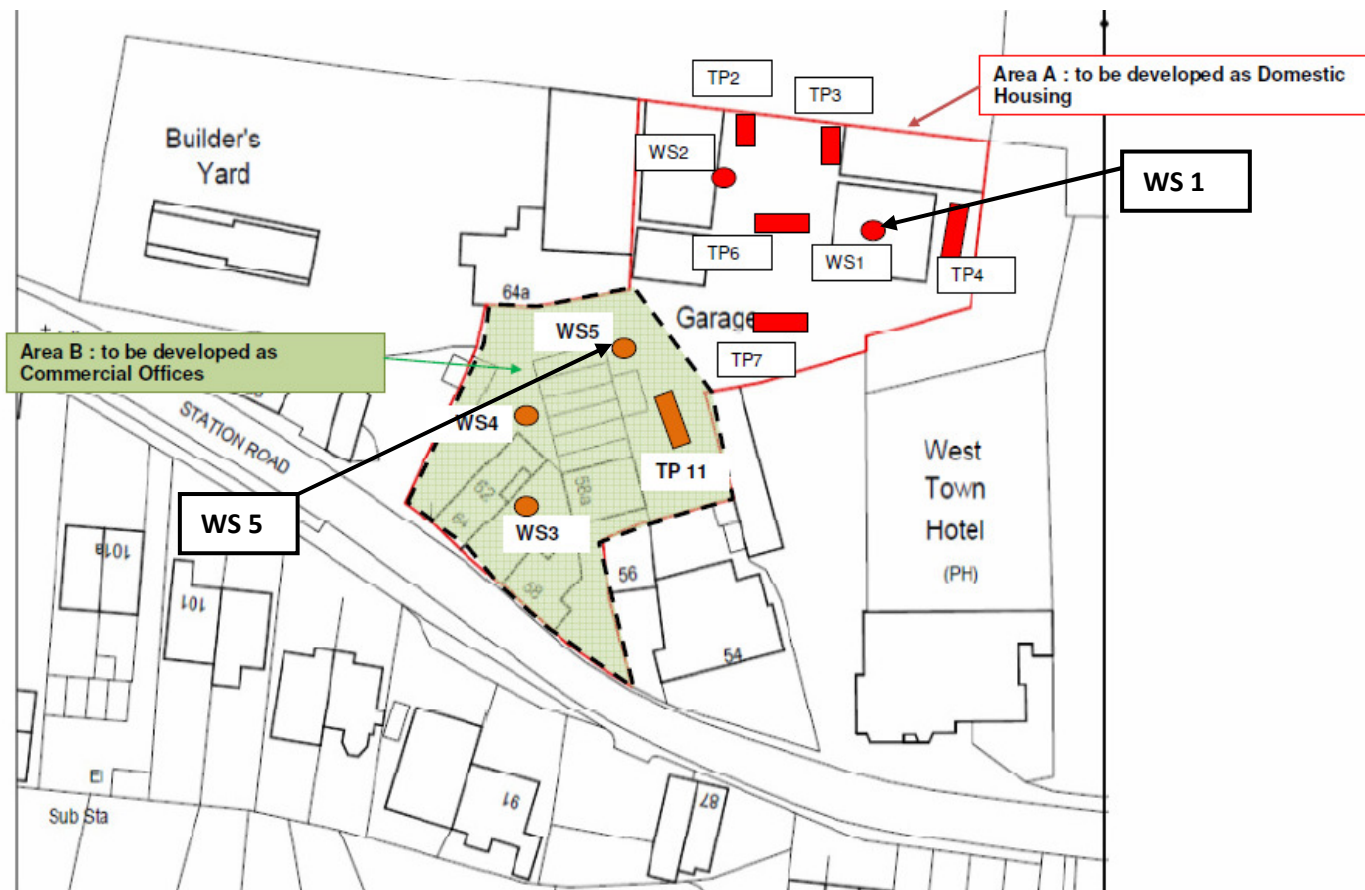


Figure 1 : Exploratory hole location plan

At WS5 (commercial area of the site), concentrations of up to 1.4% CO₂ and 2.5% CH₄ were recorded. The flow was again below the detection limit of the instrument i.e < 0.1l/hr. Gas screening values were hence 0.14 CO₂ and 0.25 CH₄. Ventilated sub floor voids and a gases resistant membrane were already proposed and the protection is considered adequate for the proposed offices building.

Interim Update on Sampling & Remediation

2.2 Groundwater:

Following the gases readings of 21/2/2015, water samples were taken from each of WS1 and WS5. The wells were purged for three volumes and then 2 x 1 litre water samples obtained. Sampling was via a disposable HDPE bailer into glass jars which were kept cool for transfer to the laboratory (QTS Environmental Ltd).

Annex B shows the results for the groundwater testing monitoring. The results for the domestic area at WS1 showed no concerns with all values relatively low. At WS5 some low to moderate raised concentrations of PAH's, TPH and BTEX were observed. The values were not particularly high and probably reflected the coal dust noted in made ground within that window sampler borehole.

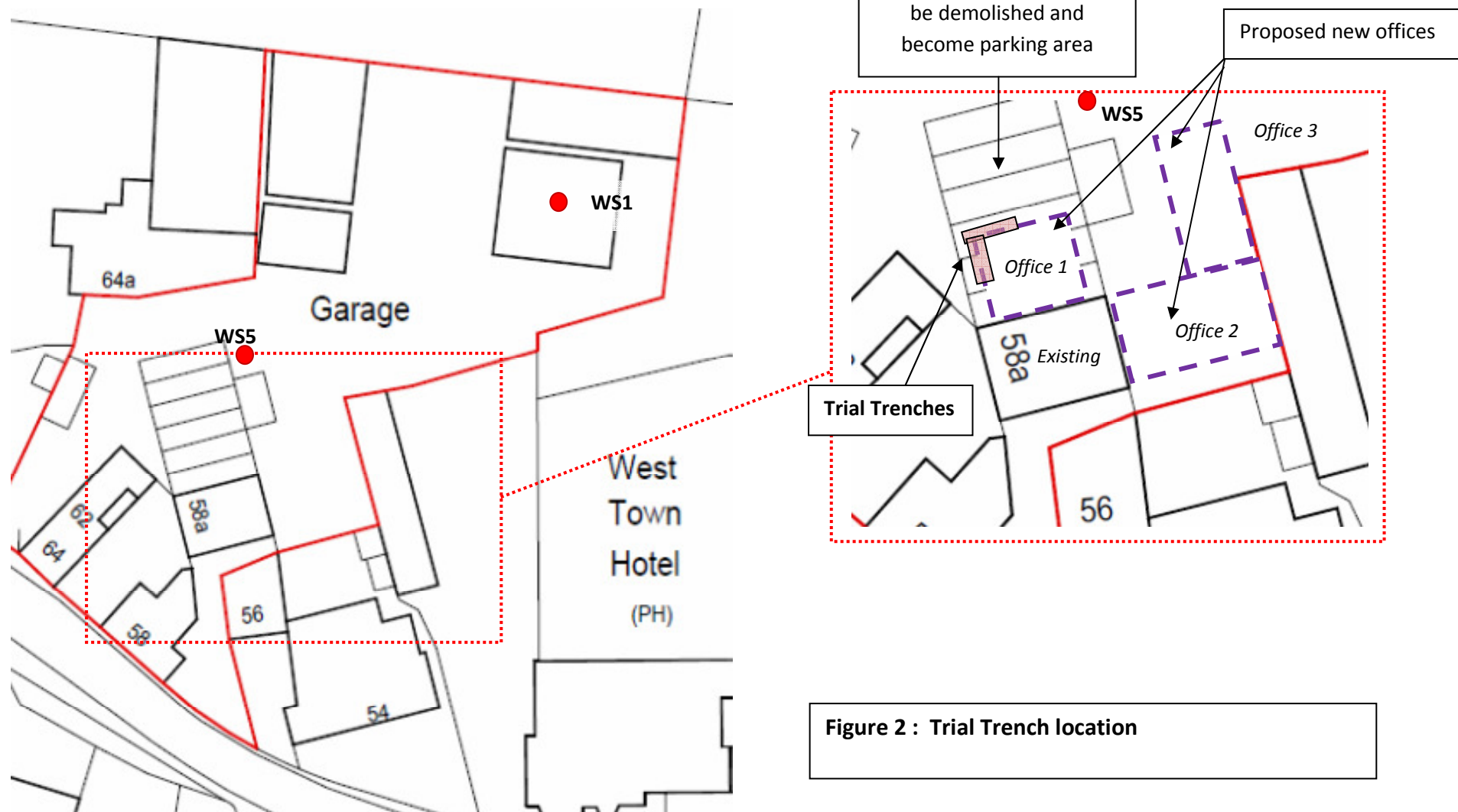
3. ADDITIONAL TRIAL TRENCHES – COMMERCIAL AREA

The above results were discussed with the HBC contaminated land officer in May 2015. David Grant for Dig-Geotech Ltd suggested that some further trial pits or trenches be undertaken in the commercial area as part of the Discovery Strategy previously detailed in the scheme remediation statement. Jonathan Driver for HBC considered that acceptable.

A small trial pit was excavated at the corner of the proposed new office building as shown by Figure 2. The trial pit revealed a concrete surface at shallow depth that appeared to be sloping to the south and east. Further excavation showed the concrete surface to be domed and to slope down to meet a curved metal wall of a possible tank feature. The surface of the concrete was clean and had no black or tar type staining. A small slot was cut through the domed concrete to reveal the soils below (see Figure 3). The concrete was only 50mm thick and revealed a clean natural soil below. There were no olfactory or visual indications of contamination below the concrete surface. The pit was extended to the south to see what was beyond the metal wall. The soil beyond was a natural soil that appeared clean. The soil inside of the tank feature i.e above the concrete and within the metal rim was a loose backfill of broken brick with some twigs and vegetation that may have possibly been from the old ditches at the north and east of the site.

The trench was excavated outside of the metal rim to see what was present. The soils were natural with no visual or olfactory indications of potential soil contamination. The extended trial trenches had effectively covered most of the north and west foundation position for the new office. They were hence extended a little deeper into natural soils and concreted to form the new foundation.

Interim Update on Sampling & Remediation



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Remediation

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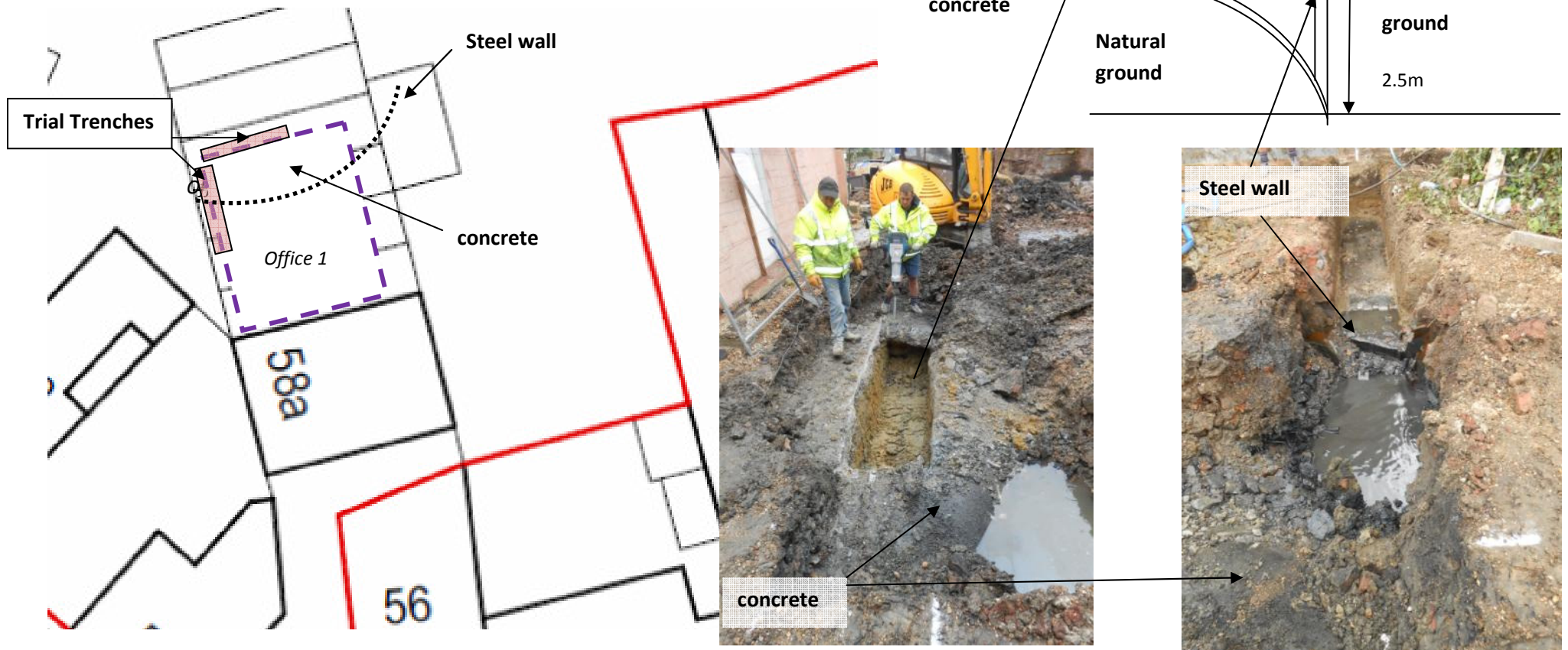


Figure 3 : Trial Trench findings

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Interim Update on Sampling & Remediation

Following discussion with the developer it was decided to further investigate and remove all material within the proposed office footprint that lay between the concrete surface and the metal rim of the former tank feature. Figure 4 shows the area of soils removed. **Annex C** shows photographs of the works taking place. There had been concerns that some gas works type waste may exist at the low corner where the metal rim and concrete met, in actuality no gas works type wastes were encountered. The annulus had been backfilled with a brick rubble with many old iron pipes, bicycle frames, rare timbers and near the surface some twigs and branches assumed to have been from maintenance of the nearby ditches. All the material, was removed to 1.5m³ rubble bags that were stored on a bunded area for off site disposal. The works were witnessed by David Grant from Dig-Geotech Ltd. Following the clearance the void are was backfilled with a crushed concrete.

The area has been left at ground level whilst other site works continued. The developer now wishes to proceed with the office building. We see no reason to not proceed. The building shall still have a gases proof membrane as originally proposed.



David Grant 15/07/2015

Figure 4 : Area of excavation

Technical Note 15/07/15

Interim Update on Sampling & Remediation

ANNEX A :

Gases Monitoring Results

Apparatus : Gas data GFM 430			
Site :	58 -64 Station Rd, Hayling Island	Job No :	517
GROUND GASES MONITORING			

		Date : 21/02/2015		Readings		
		Barometric pressure :	1010	mb	By :	DG
BH	O ₂ %	CO ₂ %	CH ₄ (Vol) %	H ₂ S ppm	FLOW l/hr	WATER depth , m
WS 1	20.5	0.0	0.0		0.0	0.80
WS 5	15.2	0.7	1.6		0.0	1.05
Gases screening values (vol x flow)						
WS 1		0	0		0.10	
WS 5		0.07	0.16		0.10	

		Date : 08/03/2015		Readings		
		Barometric pressure :	1020	mb	By :	DG
BH	O ₂ %	CO ₂ %	CH ₄ (Vol) %	H ₂ S ppm	FLOW l/hr	WATER depth , m
WS 1	20.7	0.0	0.0		0.0	0.75
WS 5	13.2	1.2	2.1		0.0	1.00
Gases screening values (vol x flow)						
WS 1		0	0		0.10	
WS 5		0.12	0.21		0.10	

Technical Note 15/07/15

Interim Update on Sampling &
Remediation

Apparatus : Gas data GFM 430

Site : 58 -64 Station Rd, Hayling Island

Job No : 517

GROUND GASES MONITORING

		Date : 13/03/2015		Readings		
		Barometric pressure :	1018	mb	By :	DG
BH	O ₂ %	CO ₂ %	CH ₄ (Vol) %	H ₂ S ppm	FLOW l/hr	WATER depth , m
WS 1	20.7	0.0	0.0		0.0	0.70
WS 5	12.1	1.4	2.5		0.0	0.95
Gases screening values (vol x flow)						
WS 1		0	0		0.10	
WS 5		0.14	0.25		0.10	

Technical Note 15/07/15

**Interim Update on Sampling &
Remediation**

ANNEX B :

Groundwater Test Results



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Dig-Geotech Limited
Southview
2 Easthams Road
Crewkerne
Somerset
TA18 7AQ

QTS Environmental Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 15-29068

Site Reference: 58 - 64 Station Road, Hayling Island

Project / Job Ref: 517

Order No: 517/DG/003

Sample Receipt Date: 24/02/2015

Sample Scheduled Date: 24/02/2015

Report Issue Number: 1

Reporting Date: 02/03/2015

Authorised by:

Russell Jarvis
Director

On behalf of QTS Environmental Ltd

Authorised by:

Kevin Old
Director

On behalf of QTS Environmental Ltd



QTS Environmental Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Water Analysis Certificate						
QTS Environmental Report No: 15-29068		Date Sampled	21/02/15	21/02/15		
Dig-Geotech Limited		Time Sampled	None Supplied	None Supplied		
Site Reference: 58 - 64 Station Road, Hayling Island		TP / BH No	WS1	WS5		
Project / Job Ref: 517		Additional Refs	1	3		
Order No: 517/DG/003		Depth (m)	None Supplied	None Supplied		
Reporting Date: 02/03/2015		QTSE Sample No	137568	137569		

Determinand	Unit	RL	Accreditation				
pH	pH Units	N/a	ISO17025	8.4	7.2		
Total Cyanide	ug/l	< 5	NONE	14	9000		
Sulphate as SO ₄	mg/l	< 1	ISO17025	98	28		
Sulphide	mg/l	< 0.1	NONE	< 0.1	< 0.1		
Total Organic Carbon (TOC)	mg/l	< 0.1	NONE	61.5	21.3		
Arsenic (dissolved)	ug/l	< 5	ISO17025	8	7		
Boron (dissolved)	ug/l	< 5	ISO17025	439	168		
Cadmium (dissolved)	ug/l	< 0.4	ISO17025	5.4	< 0.4		
Chromium (dissolved)	ug/l	< 5	ISO17025	6	< 5		
Copper (dissolved)	ug/l	< 5	ISO17025	62	< 5		
Lead (dissolved)	ug/l	< 5	ISO17025	83	< 5		
Mercury (dissolved)	ug/l	< 0.05	ISO17025	< 0.05	< 0.05		
Nickel (dissolved)	ug/l	< 5	ISO17025	92	9		
Selenium (dissolved)	ug/l	< 5	ISO17025	< 5	< 5		
Zinc (dissolved)	ug/l	< 2	ISO17025	767	< 2		
Total Phenols (monohydric)	ug/l	< 0.5	NONE	9.2	1260		

Subcontracted analysis ^(S)
Insufficient sample ^{I/S}
Unsuitable Sample ^{U/S}



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Water Analysis Certificate - Speciated PAH						
QTS Environmental Report No: 15-29068	Date Sampled	21/02/15	21/02/15			
Dig-Geotech Limited	Time Sampled	None Supplied	None Supplied			
Site Reference: 58 - 64 Station Road, Hayling Island	TP / BH No	WS1	WS5			
Project / Job Ref: 517	Additional Refs	1	3			
Order No: 517/DG/003	Depth (m)	None Supplied	None Supplied			
Reporting Date: 02/03/2015	QTSE Sample No	137568	137569			

Determinand	Unit	RL	Accreditation					
Naphthalene	ug/l	< 0.01	NONE	< 0.01	117.80			
Acenaphthylene	ug/l	< 0.01	NONE	< 0.01	31.46			
Acenaphthene	ug/l	< 0.01	NONE	< 0.01	38.76			
Fluorene	ug/l	< 0.01	NONE	< 0.01	29.90			
Phenanthrene	ug/l	< 0.01	NONE	< 0.01	28.42			
Anthracene	ug/l	< 0.01	NONE	< 0.01	12.62			
Fluoranthene	ug/l	< 0.01	NONE	< 0.01	7.86			
Pyrene	ug/l	< 0.01	NONE	< 0.01	4.92			
Benzo(a)anthracene	ug/l	< 0.01	NONE	< 0.01	0.64			
Chrysene	ug/l	< 0.01	NONE	< 0.01	< 0.01			
Benzo(b)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01			
Benzo(k)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01			
Benzo(a)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01			
Indeno(1,2,3-cd)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01			
Dibenz(a,h)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01			
Benzo(ghi)perylene	ug/l	< 0.01	NONE	< 0.01	< 0.01			
Total EPA-16 PAHs	ug/l	< 0.01	NONE	< 0.01	272.40			



QTS Environmental Ltd
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Water Analysis Certificate - TPH LQM Banded						
QTS Environmental Report No: 15-29068	Date Sampled	21/02/15	21/02/15			
Dig-Geotech Limited	Time Sampled	None Supplied	None Supplied			
Site Reference: 58 - 64 Station Road, Hayling Island	TP / BH No	WS1	WS5			
Project / Job Ref: 517	Additional Refs	1	3			
Order No: 517/DG/003	Depth (m)	None Supplied	None Supplied			
Reporting Date: 02/03/2015	QTSE Sample No	137568	137569			

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10	< 10			
Aliphatic >C6 - C8	ug/l	< 10	NONE	< 10	27			
Aliphatic >C8 - C10	ug/l	< 10	NONE	< 10	119			
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10	266			
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10	54			
Aliphatic >C16 - C35	ug/l	< 10	NONE	< 10	< 10			
Aliphatic >C35 - C44	ug/l	< 10	NONE	< 10	< 10			
Aliphatic (C5 - C44)	ug/l	< 70	NONE	< 70	466			
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10	348			
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10	763			
Aromatic >C8 - C10	ug/l	< 10	NONE	< 10	1350			
Aromatic >C10 - C12	ug/l	< 10	NONE	< 10	3130			
Aromatic >C12 - C16	ug/l	< 10	NONE	< 10	953			
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10	234			
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10	< 10			
Aromatic >C35 - C44	ug/l	< 10	NONE	< 10	< 10			
Aromatic (>C5 - C44)	ug/l	< 70	NONE	< 70	6780			
Total >C5 - C44	ug/l	< 140	NONE	< 140	7240			



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Water Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 15-29068	Date Sampled	21/02/15	21/02/15			
Dig-Geotech Limited	Time Sampled	None Supplied	None Supplied			
Site Reference: 58 - 64 Station Road, Hayling Island	TP / BH No	WS1	WS5			
Project / Job Ref: 517	Additional Refs	1	3			
Order No: 517/DG/003	Depth (m)	None Supplied	None Supplied			
Reporting Date: 02/03/2015	QTSE Sample No	137568	137569			

Determinand	Unit	RL	Accreditation					
Benzene	ug/l	< 1	ISO17025	< 1	348			
Toluene	ug/l	< 5	ISO17025	< 5	763			
Ethylbenzene	ug/l	< 5	ISO17025	< 5	277			
p & m-xylene	ug/l	< 10	ISO17025	< 10	764			
o-xylene	ug/l	< 5	ISO17025	< 5	308			
MTBE	ug/l	< 10	ISO17025	< 10	< 10			



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Water Analysis Certificate - Volatile Organic Compounds (VOC)

QTS Environmental Report No: 15-29068	Date Sampled	21/02/15	21/02/15			
Dig-Geotech Limited	Time Sampled	None Supplied	None Supplied			
Site Reference: 58 - 64 Station Road, Hayling Island	TP / BH No	WS1	WS5			
Project / Job Ref: 517	Additional Refs	1	3			
Order No: 517/DG/003	Depth (m)	None Supplied	None Supplied			
Reporting Date: 02/03/2015	QTSE Sample No	137568	137569			

Determinand	Unit	RL	Accreditation					
Dichlorodifluoromethane	ug/l	< 5	ISO17025	< 5	< 5			
Vinyl Chloride	ug/l	< 5	ISO17025	< 5	< 5			
Chloromethane	ug/l	< 5	ISO17025	< 5	< 5			
Chloroethane	ug/l	< 5	ISO17025	< 5	< 5			
Bromomethane	ug/l	< 5	ISO17025	< 5	< 5			
Trichlorofluoromethane	ug/l	< 5	ISO17025	< 5	< 5			
1,1-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5			
MTBE	ug/l	< 10	ISO17025	< 10	< 10			
trans-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5			
1,1-Dichloroethane	ug/l	< 5	ISO17025	< 5	< 5			
cis-1,2-Dichloroethene	ug/l	< 5	ISO17025	< 5	< 5			
2,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5			
Chloroform	ug/l	< 5	ISO17025	< 5	< 5			
Bromochloromethane	ug/l	< 10	ISO17025	< 10	< 10			
1,1,1-Trichloroethane	ug/l	< 5	ISO17025	< 5	< 5			
1,1-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5			
Carbon Tetrachloride	ug/l	< 5	ISO17025	< 5	< 5			
1,2-Dichloroethane	ug/l	< 10	ISO17025	< 10	27			
Benzene	ug/l	< 1	ISO17025	< 1	348			
1,2-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5			
Trichloroethene	ug/l	< 5	ISO17025	< 5	< 5			
Bromodichloromethane	ug/l	< 5	ISO17025	< 5	< 5			
Dibromomethane	ug/l	< 5	ISO17025	< 5	< 5			
TAME	ug/l	< 5	ISO17025	< 5	< 5			
cis-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5			
Toluene	ug/l	< 5	ISO17025	< 5	763			
trans-1,3-Dichloropropene	ug/l	< 5	ISO17025	< 5	< 5			
1,1,2-Trichloroethane	ug/l	< 10	ISO17025	< 10	< 10			
1,3-Dichloropropane	ug/l	< 5	ISO17025	< 5	< 5			
Tetrachloroethene	ug/l	< 5	ISO17025	< 5	< 5			
Dibromochloromethane	ug/l	< 5	ISO17025	< 5	< 5			
1,2-Dibromoethane	ug/l	< 5	ISO17025	< 5	< 5			
Chlorobenzene	ug/l	< 5	ISO17025	< 5	< 5			
1,1,1,2-Tetrachloroethane	ug/l	< 5	ISO17025	< 5	< 5			
Ethyl Benzene	ug/l	< 5	ISO17025	< 5	277			
m,p-Xylene	ug/l	< 10	ISO17025	< 10	764			
o-Xylene	ug/l	< 5	ISO17025	< 5	308			
Styrene	ug/l	< 5	ISO17025	< 5	< 5			
Bromoform	ug/l	< 10	ISO17025	< 10	< 10			
Isopropylbenzene	ug/l	< 5	ISO17025	< 5	14			
1,1,2,2-Tetrachloroethane	ug/l	< 10	ISO17025	< 10	< 10			
1,2,3-Trichloropropane	ug/l	< 5	ISO17025	< 5	< 5			
n-Propylbenzene	ug/l	< 5	ISO17025	< 5	< 5			
Bromobenzene	ug/l	< 5	ISO17025	< 5	< 5			
2-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5			
1,3,5-Trimethylbenzene	ug/l	< 5	ISO17025	< 5	134			
4-Chlorotoluene	ug/l	< 5	ISO17025	< 5	< 5			
tert-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5			
1,2,4-Trimethylbenzene	ug/l	< 5	ISO17025	< 5	188			
sec-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5			
p-Isopropyltoluene	ug/l	< 5	ISO17025	< 5	< 5			
1,3-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5			
1,4-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5			
n-Butylbenzene	ug/l	< 5	ISO17025	< 5	< 5			
1,2-Dichlorobenzene	ug/l	< 5	ISO17025	< 5	< 5			
1,2-Dibromo-3-chloropropane	ug/l	< 10	ISO17025	< 10	< 10			
Hexachlorobutadiene	ug/l	< 5	ISO17025	< 5	< 5			



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Soil Analysis Certificate - Methodology & Miscellaneous Information
QTS Environmental Report No: 15-29068
Dig-Geotech Limited
Site Reference: 58 - 64 Station Road, Hayling Island
Project / Job Ref: 517
Order No: 517/DG/003
Reporting Date: 02/03/2015

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detection	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

Technical Note 15/07/15

Interim Update on Sampling & Remediation

ANNEX A :

Photographs of soils removal at Office 1 :

4th June 2015



Above : pre removal works. Concrete is top of ormer trial trench / foundations

Below : bunded & lined area for storage of removed soils



Technical Note 15/07/15

Interim Update on Sampling &
Remediation



Steel rim



Technical Note 15/07/15

Interim Update on Sampling &
Remediation



Typical waste material : pipes& brick rubble



Technical Note 15/07/15

Interim Update on Sampling &
Remediation

12th July 2015



Backfilled with crushed concrete

References:

1. Dig-Geotech Ltd (2014). Report in Ground Investigation (Area B – Commercial Offices) 58-64 Station Road, Hayling Island, Hampshire PO11 0EL. Report No 517/R04. December 2014.

APPENDICES

Appendix A - Technical Note : 15/7/15. Interim Update on Sampling & Remediation

Appendix B - Gases membrane installation





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