

Our Ref: 0088/4925/P/RL  
Your Ref: Victoria Road, Barnetby

Date: 23 Dec. 21

Mr S Winton  
Framework Architects,  
3 Marine Studios  
Burton Lane End  
Burton Waters  
Lincoln  
LN1 2UA



Humberside Materials Laboratory Ltd  
Atherton Way, Brigg  
North Lincs DN20 8AR  
Tel & fax 01652 652753  
Email [info@humbersidematerialslab.co.uk](mailto:info@humbersidematerialslab.co.uk)

Dear Mr Winton,

**RE: Convenience store development, Victoria Rd, Barnetby – recent remediation works**

This letter report presents the findings of recent remediation works at the above site to remove potential petroleum-impacted soils. These soils were chased out by mechanical excavation under the supervision of an HML geo-environmental engineer and suitable samples of the excavation formation were tested for petroleum contaminants. The results suggest that sufficient contamination was removed and the remaining *in situ* soils are adequately free of petroleum contamination.

This letter report should be read in conjunction with the previous Humberside Materials Laboratory (HML) reports:

- Phase 1 (desk study) report (HML ref.: 0088/4925/P/P1), dated April 2019
- Phase 2 (ground investigation) report (HML ref.: 0088/4925/P/P2), dated October 2019
- Method Statement (Phase 3) remediation strategy (HML ref.: 0088/4925/P/P3), dated November 2019

The recent remediation works took place around the location of former Trial Pit 2 (TP2), where a petroleum odour was noted during previous HML investigation works in 2019. This odour was recorded within the layer of sands and gravels revealed between depths of 1.30m and 1.75m.

Previous contamination testing of the an odorous sand and gravel sample from TP2 (1.3m to 1.65m depth) saw concentrations of petroleum hydrocarbons of up to 2539mg/kg (in the aliphatic C16 to C35 carbon banding range). The detected hydrocarbons were indicative of diesel or oil range organics. However, virtually no petroleum hydrocarbons were detected in a sample of the underlying clay (from 1.80m to 2.10m depth) suggesting there is insignificant migration of contamination into and through the clay.

The detected petroleum hydrocarbon concentrations in the odorous sands and gravels were below the GAC for a commercial development. Therefore, the concentrations should not pose a significant risk to human health. Nevertheless, they were malodorous, and it was decided to

remove petroleum-impacted stained and malodorous soil materials as part of the remediation proposals.

Recent site remediation works took place on 16<sup>th</sup> November 2021. A large, tracked excavator – operated by Brianplant – using a wide bladed bucket, progressively removed soils in the vicinity of TP2 under the supervision of an HML engineer.

The remediation excavation revealed the general, typical succession of sub-strata (in descending order)

- **MADE GROUND:** Dark greyish brown very sandy fine to coarse GRAVEL of stone, blast furnace slag, concrete, brick and tile – to a depth of 0.85m below original ground level (BOGL)
- **GLACIOLACUSTRINE DEPOSITS:** Light orangish brown silty fine to medium SAND and fine to medium chalk and flint GRAVEL – to a depth of 1.60m BOGL
- **KIMMERIDGE CLAY FORMATION:** Firm to stiff brown CLAY with occasional gravels – to a depth of (at least) 1.75m BOGL

A line of dark stained, malodorous soil was noted at a depth of about 1.2m BOGL, as shown below (in enclosed photos). This possibly marked the position of a former trench and could be the main source of localised petroleum contamination. The line of staining was chased out. It was found to be about 5m in total length and about 1.6m in maximum depth.

Around the line of dark stained soils, there was grey staining in the base of the band of sands and gravels. The grey staining was about 0.2m in thickness, typically being between depths of about 1.4m and 1.6m BOGL. The grey-stained sands and gravels were also malodorous.

The grey-stained, malodorous sands and gravels were chased out down to the clay. The clay showed no indication of staining or odour. The grey-stained, malodourous soils were found to extend laterally to an area about 6m by 7m in plan, as shown later (in enclosed plan). They became progressively less odorous and lighter-coloured away from the line of dark stained soils.

The base of the remediation excavation contained some trace of groundwater. There were occasional puddles. However, the water in the puddles appeared to be clear with no sheen or indication of contamination, as shown later (in enclosed photos).

The removed soils were piled up to one side on some low permeability hardstanding awaiting removal off site. Site transfer notes will be kept by the contractor to prove the removed soils have been taken off site to a suitable landfill or soil treatment facility.

Soil samples were taken from the sides (north, west and south) of the remediation excavation near the base of the sands and gravels (at 1.5m to 1.6m depth BOGL). These soils were subjected to tests for fractionated total petroleum hydrocarbons (TPH) the results of which are enclosed.

The detected concentrations of petroleum hydrocarbons are well below the generic assessment criteria (GAC) for a commercial development. Accordingly, it is concluded that the remaining soils are acceptably free of petroleum contamination and should not pose any significant risk to human health.

No further chasing out of petroleum impacted soils should be required unless unforeseen contamination is encountered in which case works should be immediately halted and the contamination reported to the local planning authority.

We hope the above is self-explanatory. However, if you would like any further information, please contact the laboratory.

Yours Sincerely

Richard Lester MEng MSc

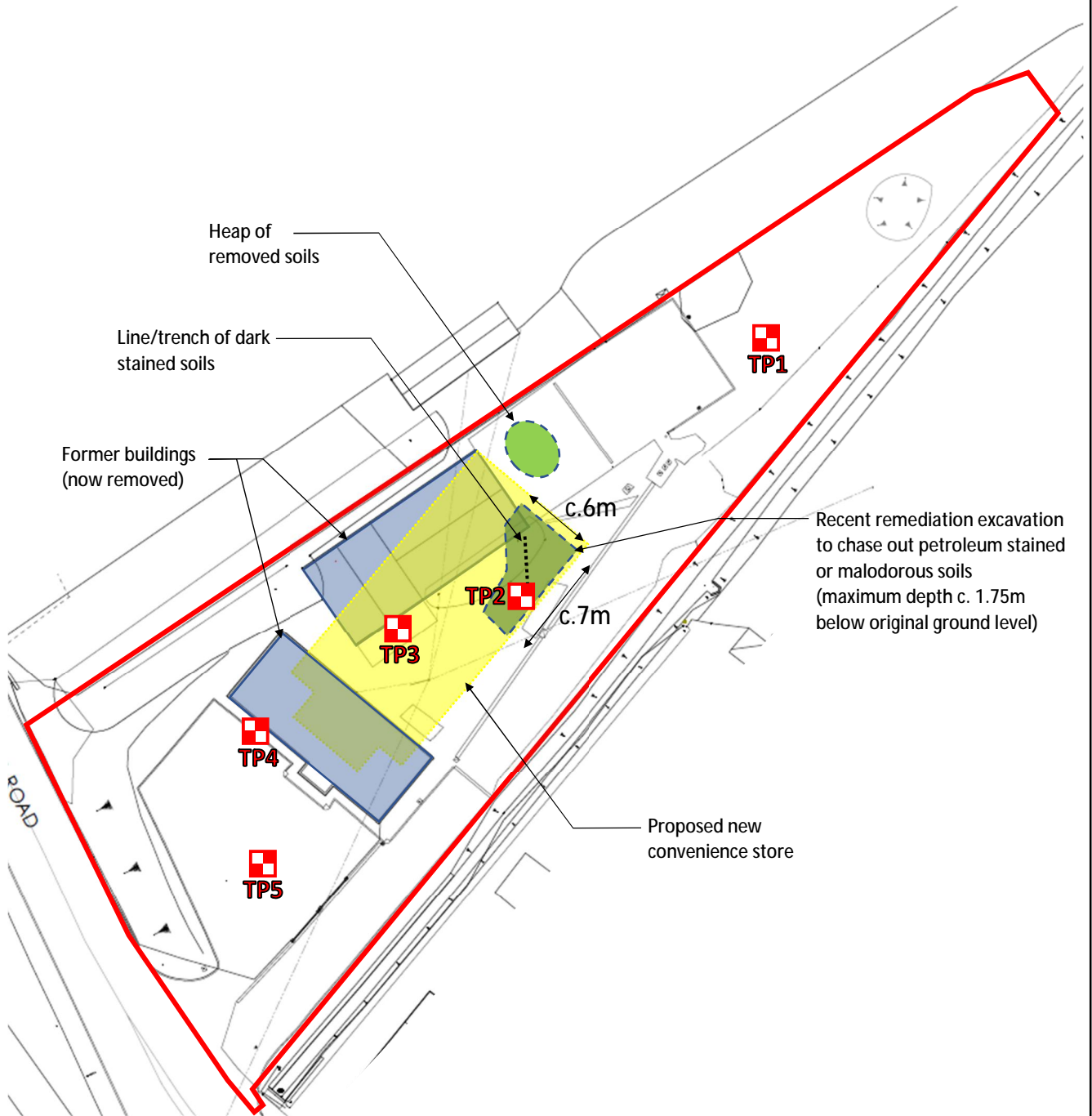
*Senior Geo-Environmental Engineer*

Enclosures:

1. Remediation excavation location plan
2. Site location plan
3. Photos of the site works
4. Results of contamination testing on samples from the remediation excavation

**Notes:**

- 1. Do not scale
- 2. Locations of all features are approximate only



**HUMBERSIDE MATERIALS LABORATORY LIMITED**

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*Drawing Title:* Remediation works plan

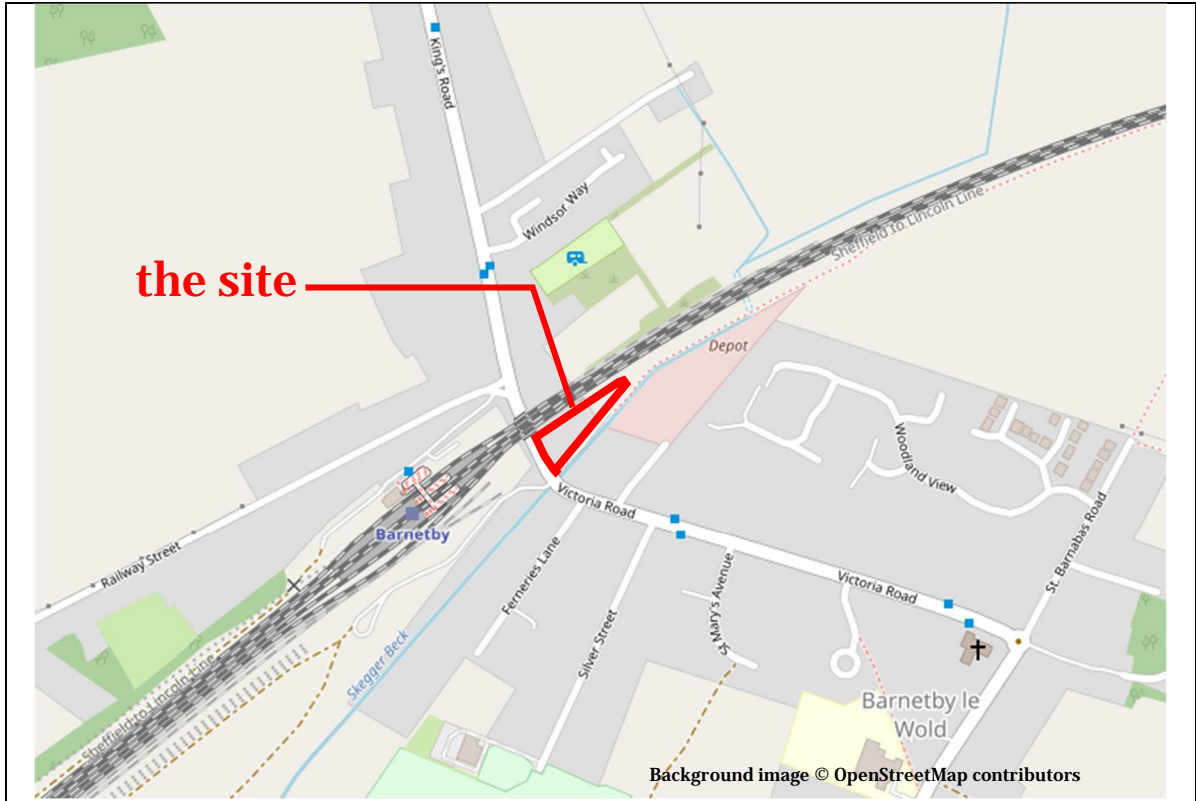
*Drawing No.:* 0088-4925-P4-01    *Revision:* -

*Site:* Land off Victoria Road, Barnetby

*Client:* Lincolnshire Coop (c/o York Sills / Framework Architects)

*Project No.:* 0088/4925/P

*Date:* 23/12/2021



*Site location plan*

*Date copied: 23 Dec 2021*

*Source: openstreetmap.org*



*Aerial photograph: 1*

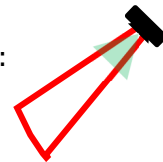
*Date copied: 23 Dec 2021*

*Source: Google Maps*



**3D Photo:** 1    **Date copied:** 23 Dec 2021  
**Photo direction:** Southwest  
**Description:** Google Earth 3D view of the site

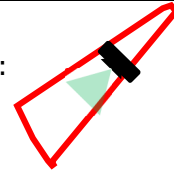
Camera  
position:





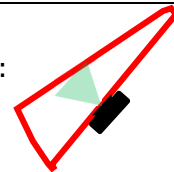
**Site photo: 1**    **Date:** 16 November 2021  
**Photo direction:** Southwest  
**Description:** Partly completed remediation excavation showing staining at the base

Camera position:



**Site photo: 2**    **Date:** 16 November 2021  
**Photo direction:** Northwest  
**Description:** Partly completed remediation excavation showing staining at the base

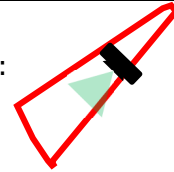
Camera position:





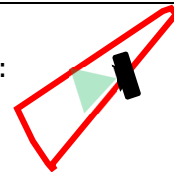
**Site photo: 3**    **Date:** 16 November 2021  
**Photo direction:** Southwest  
**Description:** East part of the site and west side of completed remediation excavation

Camera position:



**Site photo: 4**    **Date:** 16 November 2021  
**Photo direction:** West  
**Description:** the completed remediation excavation

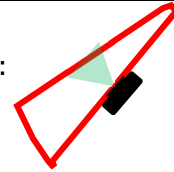
Camera position:





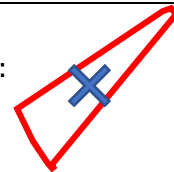
**Site photo: 5**    **Date:** 16 November 2021  
**Photo direction:** Northwest  
**Description:** The north part of the completed remediation excavation

Camera position:



**Site photo: 6**    **Date:** 16 November 2021  
**Photo direction:** -  
**Description:** Clear water in puddles at the base of the completed excavation

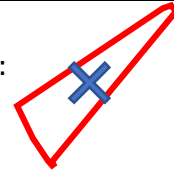
Camera position:





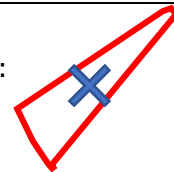
**Site photo: 7**    **Date:** 16 November 2021  
**Photo direction:** -  
**Description:** Clear water in puddle at the base of the completed excavation

Camera position:



**Site photo: 8**    **Date:** 16 November 2021  
**Photo direction:** -  
**Description:** Clear water in puddles at the base of the completed excavation

Camera position:



## ANALYTICAL TEST REPORT

**Contract no:** 102850

**Contract name:** Victoria Road, Barnetby

**Client reference:** 0088/4925

**Clients name:** Humberside Materials Laboratory

**Clients address:** Atherton Way  
Brigg  
North Lincolnshire  
DN20 8AR

**Samples received:** 18 November 2021

**Analysis started:** 18 November 2021

**Analysis completed:** 24 November 2021

**Report issued:** 24 November 2021

**Key**

- U UKAS accredited test
- M MCERTS & UKAS accredited test
- \$ Test carried out by an approved subcontractor
- I/S Insufficient sample to carry out test
- N/S Sample not suitable for testing

**Approved by:**



Rachael Burton  
Reporting Team Lead

# Chemtech Environmental Limited

## SOILS

Lab number			102850-1	102850-2	102850-3
Sample id			S/61418	S/61419	S/61420
Depth (m)			TP101-South	TP101-West	TP101-North
Date sampled			1.50-1.60	1.50-1.60	1.50-1.60
			16/11/2021	16/11/2021	16/11/2021
Test	Method	Units			
<b>TPH</b>					
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	<1	<1	<1
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	<1	<1	<1
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	<1	<1	<1
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	<1	<1	<1
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	<1	<1	<1
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE068	mg/kg	<4	<4	<4
EPH Aliphatic (>C12-C16)	CE068	mg/kg	99	<4	6
EPH Aliphatic (>C16-C35)	CE068	mg/kg	199	24	21
EPH Aliphatic (>C35-C44)	CE068	mg/kg	<10	<10	<10

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## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE068	EPH Aromatic (>EC10-EC12)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC12-EC16)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC16-EC21)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC21-EC35)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC35-EC44)	Solvent extraction, GC-FID	As received		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE068	EPH Aliphatic (>C10-C12)	Solvent extraction, GC-FID	As received		6	mg/kg
CE068	EPH Aliphatic (>C12-C16)	Solvent extraction, GC-FID	As received		6	mg/kg
CE068	EPH Aliphatic (>C16-C35)	Solvent extraction, GC-FID	As received		15	mg/kg
CE068	EPH Aliphatic (>C35-C44)	Solvent extraction, GC-FID	As received		10	mg/kg

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## Additional Information

### Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

For soils and solids, analytical results are inclusive of stones, where applicable.