



Ref: 3409/AE/02

27th September 2021

Tempus Design and Build Ltd.
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Leigh
Greater Manchester
WN7 1A7

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Bartle House
Oxford Court
Manchester
M2 3WQ

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GREENBROW ROAD, WYTHENSHAW – VERIFICATION REPORT

IGE Consulting Ltd. were instructed in September 2021 to undertake chemical testing of imported topsoil for a development on Greenbrow Road, Wythenshawe in order to discharge the following planning condition:

123330/FO/2019 – Condition 7:

7.1 In the event that ground contamination, groundwater contamination and/or ground gas are encountered on the site at any time before the development is occupied during the watching brief, then development shall cease and/or the development shall not be occupied until a report detailing what measures, if any, are required to remediate the land (the Remediation Strategy), is submitted to and approved in writing by the City Council as local planning authority and the development shall be carried out in accordance with the agreed Remediation Strategy. If no contamination is found, then a post-completion report shall be submitted to evidence this.

Summary

The Remedial Strategy undertaken by Groundtech Consulting (24 February 2020) stated the following:

- Elevated arsenic was encountered within the topsoil / made ground in TP03 at 0.1m bgl and asbestos has been detected within a sample of Made Ground topsoil taken from TP02 at 0.1m.
- As a by-product of the development which incorporated the entire footprint of the site being hardstanding the enabling works will include the removal of all Made Ground.
- A watching brief should remain in place during the groundworks for any previously unseen contaminated soils.

Waste Tickets

23 No. 8-wheel loads of made ground were exported from site, equating to approximately 460T of material. The waste removal tickets are attached in appendix 2.

Unexpected Contamination

The imported topsoil was visually inspected during sampling and no unexpected evidence of contamination was encountered; no deleterious anthropogenic materials were found and the material appeared to be a suitable growing medium.



IGE Consulting Ltd
Registered in England No 10780128



Imported Topsoil

Topsoil was imported from Eaton Hall and was assessed at source by Tim O'Hare Associates and found to be suitable for general landscaping purposes. The Tim O'Hare Associates Topsoil Analysis Report is attached in appendix 3.

In situ chemical testing of imported materials was undertaken on 13th September 2021. 3 No. samples were taken given an imported quantity of less than 200m³. Chemical testing at site was analysed by i2 Analytical and assessed by IGE Consulting. A wide range of contaminants were analysed and compared to GACs for a '*Residential with no plant uptake*' end use.

No concentrations were present in exceedance of their respective GACs.

Therefore, the topsoil was deemed suitable for use. The chemical testing results are attached in appendix 4.

If you have queries please do not hesitate to contact me,

Yours sincerely



Andrew Edwards
Director

Appendix 1 – Site Plan

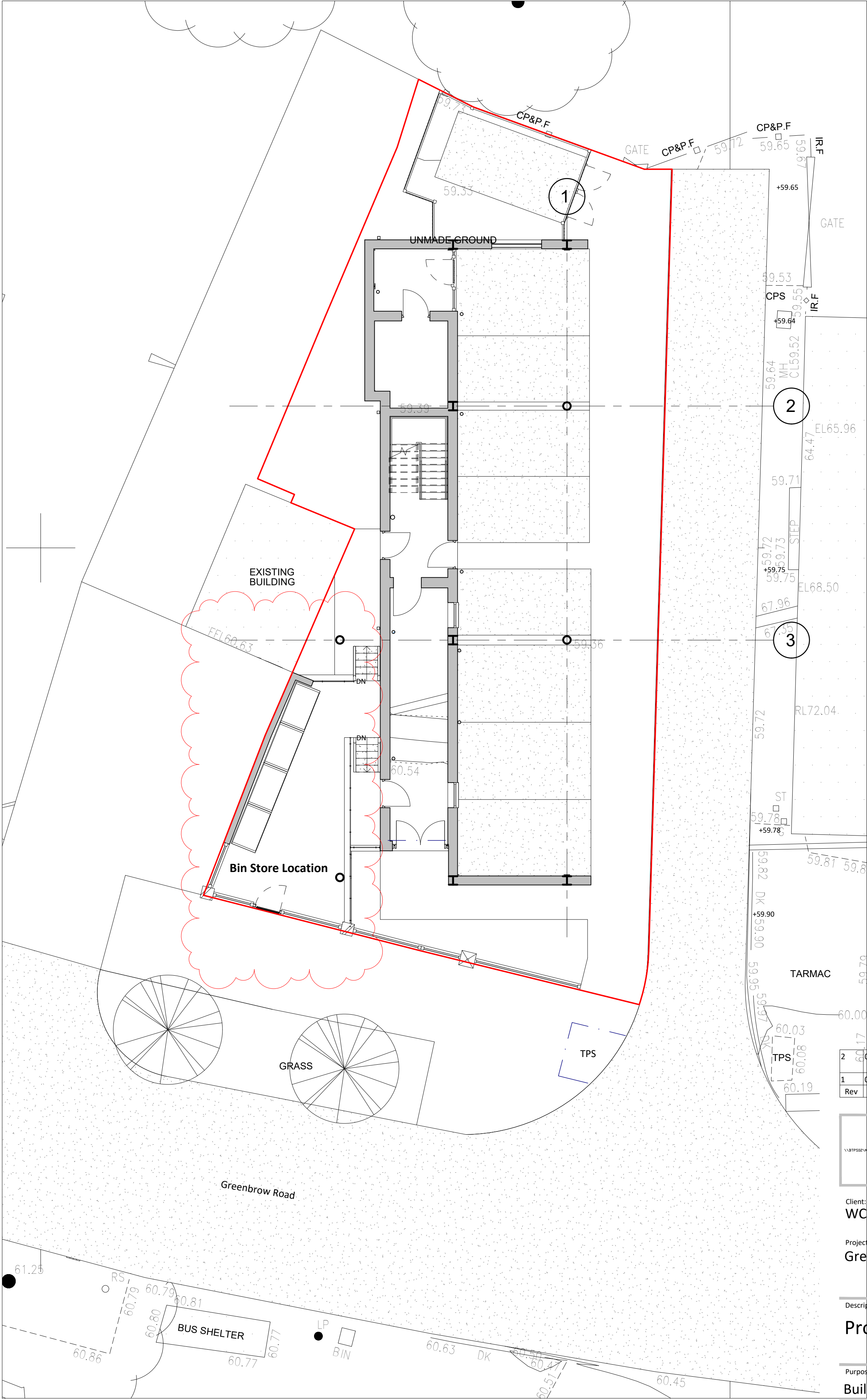
Appendix 2 – Waste Tickets

Appendix 3 – Topsoil Analysis Report

Appendix 4 – Chemical Testing Results + Generic Assessment Criteria

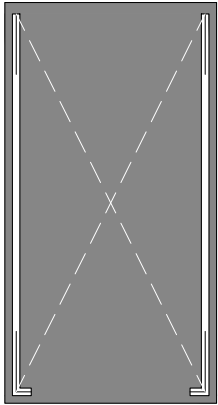
APPENDIX 1

DO NOT SCALE FROM THIS DRAWING
ALL DIMENSIONS MUST BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION



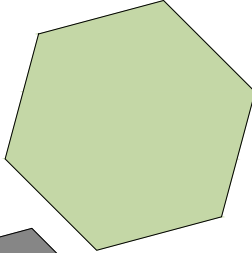
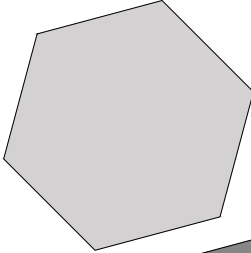
Key

2400 x 4800mm
parking space to flats

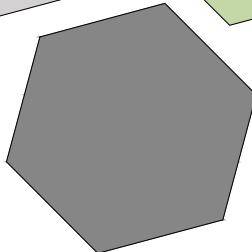


Pavement

Lawn



Tarmac



2	03.06.20	ED	Drawing revised to add note of location of bin store
1	07.01.20	ED	Drawing Issued for Tender
Rev	Date	Int	Description

Client:
WCHG

Project:
Greenbrow Road

Description:
Proposed Site Plan

Purpose of Issue:
Building Regulations

Drawn By:	Checked By:	Date:	Scale @ A2:
AP	ED	14.10.19	1 : 100
Job No:	Status Code:	Drawing No:	Rev:
3461	D2	203	2

File Identifier:
GW-BTP-00-SP-DR-A-3461_203.2

Elizabeth House, 486 Didsbury Road, Heaton Mersey, Stockport, SK4 3BS
t 0161 443 1221 e info@btparchitects.co.uk w www.btparchitects.co.uk

00 Proposed Site Plan
1 : 100

APPENDIX 2

W. LEESON & SON

SALE, CHESHIRE

NO: 96741

**EXCAVATION, DEMOLITION &
HAULAGE CONTRACTOR**

Suppliers of: CRUSHED HARDCORE, AGREGGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333

Email: wleesonandson@btconnect.com

Date: 23/7/20

Customer: Tempus

Site Address: Greenbrow Rd
Wythenshawe

Veh No: P064KVR Driver's Name: M. Miller

MATERIAL Much Gross:

REMOVED.

Tare:

No of Loads: Net:

DAYWORK Hours: Travel Time: Total:

Consignee's Signature: S. K. J.

Print Name: S. K. J.

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE

NO: 96122

**EXCAVATION, DEMOLITION &
HAULAGE CONTRACTOR**

Suppliers of: CRUSHED HARDCORE, AGREGGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333

Email: wleesonandson@btconnect.com

Date: 22/7/20

Customer: Tempus

Site Address: Greenbrow Rd

Veh No: P064KVR Driver's Name: DANNY

MATERIAL MUCK Gross:

OUT

Tare:

No of Loads: 1 x 8w Net:

DAYWORK Hours: Travel Time: Total:

Consignee's Signature: S. K. J.

Print Name: S. K. J.

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE

NO: 96126

**EXCAVATION, DEMOLITION &
HAULAGE CONTRACTOR**

Suppliers of: CRUSHED HARDCORE, AGREGGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333

Email: wleesonandson@btconnect.com

Date: 23/7/20

Customer: Tempus

Site Address: Greenbrow Rd

Veh No: P064KVR Driver's Name: DANNY

MATERIAL Much Gross:

HARDCORE OUT

Tare:

No of Loads: 1 x 8w Net:

DAYWORK Hours: Travel Time: Total:

Consignee's Signature: S. K. J.

Print Name: S. K. J.

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE

NO: 96737

**EXCAVATION, DEMOLITION &
HAULAGE CONTRACTOR**

Suppliers of: CRUSHED HARDCORE, AGREGGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333

Email: wleesonandson@btconnect.com

Date: 23/7/20

Customer: Tempus

Site Address: Greenbrow Rd

Veh No: P064KVR Driver's Name: DANNY

MATERIAL Much Gross:

REMOVED

Tare:

No of Loads: Net:

DAYWORK Hours: Travel Time: Total:

Consignee's Signature: S. K. J.

Print Name: S. K. J.

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE

NO: 95859

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333

Email: wleesonandson@btconnect.com

Date: 25/8/12

Customer: TEMPUST

Site Address: Green Road

WYTHENSHAM

Veh No: 062012 Driver's Name: AMEL

MATERIAL Muck Gross: 10 TPD

Tare: 1850

No of Loads: 1850 Net:

DAYWORK Hours: Travel Time: Total:

Consignee's Signature:

Print Name:

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE

NO: 95861

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333

Email: wleesonandson@btconnect.com

Date: 26/8/12

Customer: TEMPUST

Site Address: Green Road

WYTHENSHAM

Veh No: 062012 Driver's Name: AMEL

MATERIAL Muck Gross: 10 TPD

Tare: 1850

No of Loads: 1850 Net:

DAYWORK Hours: Travel Time: Total:

Consignee's Signature:

Print Name:

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE

NO: 96844

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333

Email: wleesonandson@btconnect.com

Date: 25/8/12

Customer: TEMPUST

Site Address: Green Road

WYTHENSHAM

Veh No: 062012 Driver's Name: AMEL

MATERIAL Muck Gross: 10 TPD

Tare: 1850

No of Loads: 1850 Net:

DAYWORK Hours: Travel Time: Total:

W. LEESON & SON

SALE, CHESHIRE

NO: 93358

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333

Email: wleesonandson@btconnect.com

Date: 26/8/12

Customer: TEMPUST

Site Address: Green Road

WYTHENSHAM

Veh No: 062012 Driver's Name: AMEL

MATERIAL Muck Gross: 10 TPD

Tare: 1850

No of Loads: 1850 Net:

DAYWORK Hours: Travel Time: Total:

Consignee's Signature:

Print Name:

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE

NO: 93360

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333

Email: wleesonandson@btconnect.com

Date: 26/8/12

Customer: TEMPUST

Site Address: Green Road

WYTHENSHAM

Veh No: 062012 Driver's Name: AMEL

MATERIAL Muck Gross: 10 TPD

Tare: 1850

No of Loads: 1850 Net:

DAYWORK Hours: Travel Time: Total:

Consignee's Signature:

Print Name:

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE

NO: 95863

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333

Email: wleesonandson@btconnect.com

Date: 26/8/12

Customer: TEMPUST

Site Address: Green Road

WYTHENSHAM

Veh No: 062012 Driver's Name: AMEL

MATERIAL Muck Gross: 10 TPD

Tare: 1850

No of Loads: 1850 Net:

DAYWORK Hours: Travel Time: Total:

Consignee's Signature:

Print Name:

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE

NO: 95865

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333

Email: wleesonandson@btconnect.com

Date: 27/8/12

Customer: TEMPUST

Site Address: Green Road

WYTHENSHAM

Veh No: 062012 Driver's Name: AMEL

MATERIAL Muck Gross: 10 TPD

Tare: 1850

No of Loads: 1850 Net:

DAYWORK Hours: Travel Time: Total:

Consignee's Signature:

Print Name:

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE

NO: 93389

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333
Email: wlesonandson@btconnect.com

Date: 4.9.20

Customer: TempusSite Address: GREENBROOKVeh No: WYTHENSHAW 11Driver's Name: M. MillerMATERIAL Muck Gross: RemovedTare: RemovedNo of Loads: Removed Net: RemovedDAYWORK Hours: Removed Travel Time: Removed Total: RemovedConsignee's Signature: [Signature]Print Name: Dean Lee

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE

NO: 93381

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333
Email: wlesonandson@btconnect.com

Date: 3.9.20

Customer: TempusSite Address: GREENBROOK RDVeh No: WYTHENSHAW 11Driver's Name: M. MillerMATERIAL Muck Gross: RemovedTare: RemovedNo of Loads: Removed Net: RemovedDAYWORK Hours: Removed Travel Time: Removed Total: RemovedConsignee's Signature: [Signature]Print Name: [Signature]

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE

NO: 93374

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333
Email: wlesonandson@btconnect.com

Date: 2.9.20

Customer: TempusSite Address: GREENBROOK RDVeh No: WYTHENSHAW 11Driver's Name: M. MillerMATERIAL Muck Gross: RemovedTare: RemovedNo of Loads: Removed Net: RemovedDAYWORK Hours: Removed Travel Time: Removed Total: Removed**W. LEESON & SON**

SALE, CHESHIRE

NO: 98613

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333
Email: wlesonandson@btconnect.com

Date: 4/9/20

Customer: TempusSite Address: GREENBROOK RDVeh No: WYTHENSHAW 11Driver's Name: C. C. REINAMATERIAL MUCK Gross: COLECELEATare: COLECELEANo of Loads: 8 X 7.14 Net: RemovedDAYWORK Hours: Removed Travel Time: Removed Total: RemovedConsignee's Signature: [Signature]Print Name: [Signature]

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE

NO: 98610

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333
Email: wlesonandson@btconnect.com

Date: 3/9/20

Customer: TempusSite Address: GREENBROOK RDVeh No: WYTHENSHAW 11Driver's Name: C. C. REINAMATERIAL MUCK Gross: COLECELEATare: COLECELEANo of Loads: 8 X 7.14 Net: RemovedDAYWORK Hours: Removed Travel Time: Removed Total: RemovedConsignee's Signature: [Signature]Print Name: [Signature]

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE

NO: 98602

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333
Email: wlesonandson@btconnect.com

Date: 2/9/20

Customer: TempusSite Address: GREENBROOK RDVeh No: WYTHENSHAW 11Driver's Name: C. C. REINAMATERIAL MUCK Gross: COLECELEATare: COLECELEANo of Loads: 8 X 7.14 Net: RemovedDAYWORK Hours: Removed Travel Time: Removed Total: Removed**W. LEESON & SON**

SALE, CHESHIRE

NO: 93384

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333
Email: wlesonandson@btconnect.com

Date: 3.9.20

Customer: TempusSite Address: GREENBROOK RDVeh No: WYTHENSHAW 11Driver's Name: M. MillerMATERIAL Muck Gross: RemovedTare: RemovedNo of Loads: Removed Net: RemovedDAYWORK Hours: Removed Travel Time: Removed Total: RemovedConsignee's Signature: [Signature]Print Name: [Signature]

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE

NO: 98608

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333
Email: wlesonandson@btconnect.com

Date: 3/9/20

Customer: TempusSite Address: GREENBROOK RDVeh No: WYTHENSHAW 11Driver's Name: C. C. REINAMATERIAL MUCK Gross: COLECELEATare: COLECELEANo of Loads: 8 X 7.14 Net: RemovedDAYWORK Hours: Removed Travel Time: Removed Total: RemovedConsignee's Signature: [Signature]Print Name: [Signature]

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE NO: 73936

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333
Email: wlesonandson@btconnect.com

Date: 14/10/20

Customer: Tempus

Site Address: Green Road RD

WYTHENSHAW

Veh No: 066WMP Driver's Name: MRLC

MATERIAL Muck Gross: 70 TIR

Tare: 1584

No of Loads: 1584 Net: 544 BIT WPT

DAYWORK Hours: Travel Time: Total:

Consignee's Signature: J.K.

Print Name: S. J. D. J.

Waste Carrier Registration No. CB/FP3199UF

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE NO: 35298

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333
Email: wlesonandson@btconnect.com

Date: 15.10.20

Customer: Tempus

Site Address: Green Road RD

WYTHENSHAW

Veh No: 066WMP Driver's Name: MRLC

MATERIAL Muck Gross: 05

Tare: 1280

No of Loads: 1280 Net:

DAYWORK Hours: Travel Time: Total:

Consignee's Signature: J.K.

Print Name: S. J. D. J.

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE NO: 35296

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333
Email: wlesonandson@btconnect.com

Date: 15.10.20

Customer: Tempus

Site Address: Green Road RD

WYTHENSHAW

Veh No: 066WMP Driver's Name: MRLC

MATERIAL Muck Gross: 05

Tare: 1280

No of Loads: 1280 Net:

DAYWORK Hours: Travel Time: Total:

Consignee's Signature: J.K.

Print Name: S. J. D. J.

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

W. LEESON & SON

SALE, CHESHIRE NO: 35299

EXCAVATION, DEMOLITION & HAULAGE CONTRACTOR

Suppliers of: CRUSHED HARDCORE, AGREGGATES, TOPSOIL, SAND Etc.

Tel: 0161 790 7888 Fax: 0161 799 6333
Email: wlesonandson@btconnect.com

Date: 15.10.20

Customer: Tempus

Site Address: Green Road RD

WYTHENSHAW

Veh No: 066WMP Driver's Name: MRLC

MATERIAL Muck Gross: 05

Tare: 1280

No of Loads: 1280 Net:

DAYWORK Hours: Travel Time: Total:

Consignee's Signature: J.K.

Print Name: S. J. D. J.

Customers ordering vehicles off the public road do so entirely on their own responsibility.

Waste Carrier Registration No. CB/DU100836

Subject to R.H.A./C.P.A. Conditions of carriage and hire.

APPENDIX 3



TIM O'HARE ASSOCIATES
SOIL & LANDSCAPE CONSULTANCY

Mr Michael Massey
Tarmac Topscape
Manchester Road
Congleton
Cheshire, CW12 2LU

27th July 2021
Our Ref: TOHA/21/7086/SS
Your Ref: PO00475212

Dear Sirs

Topsoil Analysis Report: Tarmac Topscape – Eaton Hall Topsoil

We have completed the analysis of the soil sample recently submitted, referenced *Eaton Hall Topsoil*, and have pleasure reporting our findings.

The purpose of the analysis was to determine the suitability of the sample for general landscape purposes (trees, shrubs, amenity grass). In addition, this sample has been assessed to determine its compliance with the requirements of the British Standard for Topsoil (*BS3882:2015 – Specification for Topsoil – Table 1, Multipurpose Topsoil*).

This report presents the results of analysis for the sample submitted to our office, and it should be considered 'indicative' of the topsoil source. The report and results should therefore not be used by third parties as a means of verification or validation testing or waste designation purposes, especially after the topsoil has left the Tarmac Topscape site.

SAMPLE EXAMINATION

The sample was described as a dark greyish brown (Munsell Colour 10YR 4/2), dry, friable, non-calcareous, SAND with a single grain structure*. The sample was virtually stone-free and contained a moderate proportion of organic fines and occasional woody fragments. No unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.

*This appraisal of soil structure was made from examination of a disturbed sample(s). Structure is a key soil characteristic that may only be accurately assessed by examination in an in-situ state.

Tim O'Hare Associates LLP
Howbery Park Wallingford Oxfordshire OX10 8BA
T:01491 822653 E:info@toha.co.uk
www.toha.co.uk

ANALYTICAL SCHEDULE

The sample was submitted to a UKAS and MCERTS accredited laboratory for a range of physical and chemical tests to confirm the composition and fertility of the soil, and the concentration of selected potential contaminants. The following parameters were determined:

- detailed particle size analysis (% 5 sands, silt, clay);
- stone content (2-20mm, 20-50mm, >50mm);
- pH and electrical conductivity values;
- exchangeable sodium percentage;
- major plant nutrients (N, P, K, Mg);
- organic matter content;
- C:N ratio;
- heavy metals (As, B, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn);
- total cyanide and total (mono) phenols;
- speciated PAHs (US EPA16 suite);
- aromatic and aliphatic TPH (C5-C35 banding);
- benzene, toluene, ethylbenzene, xylene (BTEX);
- asbestos screen.

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below.

RESULTS OF ANALYSIS

Detailed Particle Size Analysis and Stone Content

The sample fell into the *sand* texture class and the particle size distribution falls outside of the specified range indicated in *Figure 1* of *BS3882:2015*. However, further detailed particle size analysis revealed the sample to have a sufficiently narrow particle size distribution and a large proportion of sand falling into the *fine sand* (0.15-0.25mm) and *medium sand* (0.25-0.50mm) classes. This, along with the organic matter content of the soil, should offset the high sand content and provide a suitable growing medium for general landscape applications.

The stone content of the sample was low and, as such, stones should not restrict the use of the soil for general landscape purposes.

pH and Electrical Conductivity Values

The sample was strongly alkaline in reaction (pH 8.5). This pH value would be considered suitable for general landscape purposes providing species with a wide pH tolerance or those known to prefer alkaline soils are selected for planting, turfing and seeding.

The electrical conductivity (salinity) value (water extract) was moderate, which indicates that soluble salts should not be present at levels that would be harmful to plants.

The electrical conductivity value by CaSO₄ extract (*BS3882* requirement) fell below the maximum specified value (3300 µS/cm) given in *BS3882:2015 – Table 1*.

Organic Matter and Fertility Status

The sample was adequate to well supplied with organic matter and all major plant nutrients.

The C:N ratio of the sample was acceptable for general landscape purposes.

Potential Contaminants

With reference to *BS3882:2015 - Table 1: Notes 3 and 4*, there is a recommendation to confirm levels of potential contaminants in relation to the topsoil's proposed end use. This includes human health, environmental protection and metals considered toxic to plants. In the absence of site-specific assessment criteria, the concentrations that affect human health have been compared with the *residential with homegrown produce* land use in the Suitable For Use Levels (S4ULs) presented in *The LQM/CIEH S4ULs for Human*

Health Risk Assessment (2015) and the DEFRA SP1010: *Development of Category 4 Screening Levels (C4SLs) for Assessment of Land Affected by Contamination – Policy Companion Document* (2014).

Of the potential contaminants determined, none was found at levels that exceeded their guideline values.

Phytotoxic Contaminants

Of the phytotoxic (toxic to plants) contaminants determined (copper, nickel, zinc), none was found at levels that exceeded the maximum permissible levels specified in *BS3882:2015 – Table 1*.

CONCLUSION

The purpose of the analysis was to determine the suitability of the sample for general landscape purposes (trees, shrubs, amenity grass). In addition, this sample has been assessed to determine its compliance with the requirements of the British Standard for Topsoil (*BS3882:2015 – Specification for Topsoil – Table 1, Multipurpose Topsoil*).

From the soil examination and subsequent laboratory analysis, the sample was described as a strongly alkaline, non-saline, very slightly calcareous, sand with a single grain structure and low stone content. The sample contained sufficient reserves of organic matter and all major plant nutrients. Of the potential contaminants determined, none exceeded their respective guideline values.

To conclude, based on our findings, the topsoil represented by this sample would be considered suitable for general landscape purposes (trees, shrubs and amenity grass), provided the physical condition of the soil is satisfactory.

The topsoil was largely compliant with the requirements of the British Standard for Topsoil (*BS3882:2015 – Specification for Topsoil – Table 1, Multipurpose Topsoil*), with the exception of the elevated total sand content. On this occasion and in the context of the other results, these would be considered minor non-compliances.

RECOMMENDATIONS

Soil Handling Recommendations

It is important to maintain the physical condition of the soil and avoid structural damage during all phases of soil handling (e.g. stockpiling, resspreading, cultivating, planting, seeding or turfing). As a consequence, soil handling operations should be carried out when soil is reasonably dry and non-plastic (friable) in consistency.

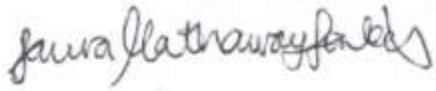
It is important to ensure that the soil is not unnecessarily compacted by trampling or trafficking by site machinery, and soil handling should be stopped during and after heavy rainfall and not continued until the soil is friable in consistency. If the soil is structurally damaged and compacted at any stage during the course of soiling or landscaping works, it should be cultivated appropriately to relieve the compaction and to restore the soil's structure prior to any planting, turfing or seeding.

Further details on soil handling are provided in Annex A of *BS3882:2015*.

Further guidance on the management, preparation and handling of soils is provided in the DEFRA publication *Construction code of practice for the sustainable use of soils on construction sites*, 2009.

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if we can be of further assistance.

Yours faithfully



Laura Hathaway-Jenkins
BSc MSc EngD MISOilSci CSci
Senior Associate

For & on behalf of Tim O'Hare Associates LLP



Client:	Tarmac Topscope
Project:	Topscope Topsoil (Eaton Hall)
Job:	Topsoil Analysis - BS3882:2015
Date:	27/07/2021
Job Ref No:	TOHA21/7086/SS

Sample Reference		Accreditation
Clay (<0.002mm)	%	UKAS
Silt (0.002-0.063mm)	%	UKAS
Very Fine Sand (0.05-0.15mm)	%	UKAS
Fine Sand (0.15-0.25mm)	%	UKAS
Medium Sand (0.25-0.50mm)	%	UKAS
Coarse Sand (0.50-1.0mm)	%	UKAS
Very Coarse Sand (1.0-2.0mm)	%	UKAS
Total Sand (0.063-2.0mm)	%	UKAS
Texture Class (UK Classification)	--	UKAS
Stones (2-20mm)	% DW	GLP
Stones (20-50mm)	% DW	GLP
Stones (>50mm)	% DW	GLP

Eaton Hall Topsoil

6
4
12
41
32
2
1
90
5
3
0
0

pH Value (1:2.5 water extract)	units	UKAS
Electrical Conductivity (1:2.5 water extract)	uS/cm	UKAS
Electrical Conductivity (1:2 CaSO ₄ extract)	uS/cm	UKAS
Exchangeable Sodium Percentage	%	UKAS
Organic Matter (LOI)	%	UKAS
Total Nitrogen (Dumas)	%	UKAS
C : N Ratio	ratio	UKAS
Extractable Phosphorus	mg/l	UKAS
Extractable Potassium	mg/l	UKAS
Extractable Magnesium	mg/l	UKAS

8.5
753
2807
6
5.6
0.25
13
42
962
112

Total Arsenic (As)	mg/kg	MCERTS
Total Cadmium (Cd)	mg/kg	MCERTS
Total Chromium (Cr)	mg/kg	MCERTS
Hexavalent Chromium (Cr VI)	mg/kg	MCERTS
Total Copper (Cu)	mg/kg	MCERTS
Total Lead (Pb)	mg/kg	MCERTS
Total Mercury (Hg)	mg/kg	MCERTS
Total Nickel (Ni)	mg/kg	MCERTS
Total Selenium (Se)	mg/kg	MCERTS
Total Zinc (Zn)	mg/kg	MCERTS
Water Soluble Boron (B)	mg/kg	MCERTS
Total Cyanide (CN)	mg/kg	MCERTS
Total (mono) Phenols	mg/kg	MCERTS

3.5
< 0.2
4
< 4.0
12
16
< 0.3
4
< 1.0
39
0.8
< 1.0
< 1.0

Naphthalene	mg/kg	MCERTS
Acenaphthylene	mg/kg	MCERTS
Acenaphthene	mg/kg	MCERTS
Fluorene	mg/kg	MCERTS
Phenanthrene	mg/kg	MCERTS
Anthracene	mg/kg	MCERTS
Fluoranthene	mg/kg	MCERTS
Pyrene	mg/kg	MCERTS
Benzo(a)anthracene	mg/kg	MCERTS
Chrysene	mg/kg	MCERTS
Benzo(b)fluoranthene	mg/kg	MCERTS
Benzo(k)fluoranthene	mg/kg	MCERTS
Benzo(a)pyrene	mg/kg	MCERTS
Indeno(1,2,3-cd)pyrene	mg/kg	MCERTS
Dibenzo(a,h)anthracene	mg/kg	MCERTS
Benzo(g,h,i)perylene	mg/kg	MCERTS
Total PAHs (sum USEPA16)	mg/kg	MCERTS

< 0.05
< 0.05
< 0.05
< 0.05
< 0.05
< 0.05
< 0.05
< 0.05
< 0.05
< 0.05
< 0.05
< 0.05
< 0.05
< 0.05
< 0.05
< 0.05
< 0.80

Aliphatic TPH >C5 - C6	mg/kg	MCERTS
Aliphatic TPH >C6 - C8	mg/kg	MCERTS
Aliphatic TPH >C8 - C10	mg/kg	MCERTS
Aliphatic TPH >C10 - C12	mg/kg	MCERTS
Aliphatic TPH >C12 - C16	mg/kg	MCERTS
Aliphatic TPH >C16 - C21	mg/kg	MCERTS
Aliphatic TPH >C21 - C35	mg/kg	MCERTS
Aliphatic TPH (C5 - C35)	mg/kg	MCERTS
Aromatic TPH >C5 - C7	mg/kg	MCERTS
Aromatic TPH >C7 - C8	mg/kg	MCERTS
Aromatic TPH >C8 - C10	mg/kg	MCERTS
Aromatic TPH >C10 - C12	mg/kg	MCERTS
Aromatic TPH >C12 - C16	mg/kg	MCERTS
Aromatic TPH >C16 - C21	mg/kg	MCERTS
Aromatic TPH >C21 - C35	mg/kg	MCERTS
Aromatic TPH (C5 - C35)	mg/kg	MCERTS

< 0.001
< 0.001
< 0.001
< 1.0
< 2.0
< 8.0
< 8.0
< 10
< 0.001
< 0.001
< 0.001
< 1.0
< 2.0
< 10
< 10
< 10

Benzene	mg/kg	MCERTS
Toluene	mg/kg	MCERTS
Ethylbenzene	mg/kg	MCERTS
o-xylene	mg/kg	MCERTS
p&m-xylene	mg/kg	MCERTS
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	MCERTS

< 0.001
< 0.001
< 0.001
< 0.001
< 0.001
< 0.001

Asbestos	ND/D	ISO 17025
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Not-detected

S = SAND

Visual Examination

The sample was described as a dark greyish brown (Munsell Colour 10YR 4/2), dry, friable, non-calcareous, SAND with a single grain structure. The sample was virtually stone-free and contained a moderate proportion of organic fines and occasional woody fragments. No unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.

Results of analysis should be read in conjunction with the report they were issued with

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Laura Hathaway-Jenkins

Laura Hathaway-Jenkins
BSc MSc EngD MSoilSci CSci
Senior Associate

APPENDIX 4

James Harley
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Analytical Report Number : 21-99369

Project / Site name:	Greenbrow Road Wythenshawe	Samples received on:	14/09/2021
Your job number:	3409	Samples instructed on/ Analysis started on:	14/09/2021
Your order number:		Analysis completed by:	23/09/2021
Report Issue Number:	1	Report issued on:	23/09/2021
Samples Analysed:	3 soil samples		

Signed: *A. Czerwińska*

Agnieszka Czerwińska
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 21-99369
Project / Site name: Greenbrow Road Wythenshawe

Lab Sample Number				2010730	2010731	2010732
Sample Reference				TS1	TS2	TS3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				14/09/2021	14/09/2021	14/09/2021
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	6.8	8.3	8.2
Total mass of sample received	kg	0.001	NONE	1.0	1.0	1.0

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
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General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.5	8.4	8.3
Total Cyanide	mg/kg	1	MCERTS	2.2	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	77	130	250
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.039	0.067	0.13
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	38.6	67.3	126
Organic Matter (automated)	%	0.1	MCERTS	2.7	3.1	3.4
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	2	NONE	280	180	230
Water Soluble Nitrate (2:1) as NO ₃ (leachate equivalent)	mg/l	5	NONE	140	90	110

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	4.7	5.1	6.8
Barium (aqua regia extractable)	mg/kg	1	MCERTS	42	46	66
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.31	0.32	0.45
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	1.0	1.0
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	8.6	8.5	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	15	15	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	26	27	41
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	7.7	7.2	12
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	9.9	9.9	15

Analytical Report Number: 21-99369
Project / Site name: Greenbrow Road Wythenshawe

Lab Sample Number				2010730	2010731	2010732
Sample Reference				TS1	TS2	TS3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				14/09/2021	14/09/2021	14/09/2021
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	50	56	64

Analytical Report Number: 21-99369
Project / Site name: Greenbrow Road Wythenshawe

Lab Sample Number	2010730	2010731	2010732
Sample Reference	TS1	TS2	TS3
Sample Number	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied
Date Sampled	14/09/2021	14/09/2021	14/09/2021
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	20
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	24
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	24

U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 21-99369
Project / Site name: Greenbrow Road Wythenshawe

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2010730	TS1	None Supplied	None Supplied	Brown loam and clay with gravel and vegetation.
2010731	TS2	None Supplied	None Supplied	Brown loam and clay with gravel and vegetation.
2010732	TS3	None Supplied	None Supplied	Brown loam and sand with gravel and vegetation.

Analytical Report Number : 21-99369

Project / Site name: Greenbrow Road Wythenshawe

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

Analytical Report Number : 21-99369

Project / Site name: Greenbrow Road Wythenshawe

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Water Soluble Nitrate (leachate equivalent)	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

**GACs for Residential Without Home-Grown Produce (mg/kg)
(only determinands for which GACs are defined are given)**

Asbestos, SOM and Inorganics	
Determinand	GAC
Cyanide (Free)	0.5 ⁽³⁾
Cyanide (Total)	0.5 ⁽³⁾

Metals and Semi-metals	
Determinand	GAC
Arsenic (inorganic)	40
Barium	1300 ⁽²⁾
Beryllium	1.7
Cadmium	85
Chromium	910
Chromium (Hexavalent)	6
Copper	7100
Lead	310 ⁽¹⁾
Mercury	1.2
Nickel	180
Selenium	430
Vanadium	1200
Zinc	40000
Water Soluble Boron	11000

Total Petroleum Hydrocarbons	
Determinand	GAC
Aliphatic TPH >C5-C6	78
Aliphatic TPH >C6-C8	230
Aliphatic TPH >C8-C10	65
Aliphatic TPH >C10-C12	330
Aliphatic TPH >C12-C16	2400
Aliphatic TPH >C16-C35	92000
Aliphatic TPH >C35-C44	92000
Aromatic TPH >C5-C7	690
Aromatic TPH >C7-C8	1800
Aromatic TPH >C8-C10	110
Aromatic TPH >C10-C12	590
Aromatic TPH >C12-C16	2300
Aromatic TPH >C16-C21	1900
Aromatic TPH >C21-C35	1900
Aromatic TPH >C35-C44	1900
Aliphatic & Aromatic TPH >C44-C70	1900

Volatile Organic Compounds	
Determinand	GAC
Vinyl Chloride	0.0010
Trichloromethane	2.1
1,1,1-Trichloroethane	18
Tetrachloromethane	0.056
1,2-Dichloroethane	0.013

Trichloroethene	0.036
Tetrachloroethene	0.40
Chlorobenzene	1.0
1,1,1,2-Tetrachloroethane	3.5
1,2-Dichlorobenzene	57
Hexachlorobutadiene	0.78
1,2,3-Trichlorobenzene	3.7
Phenol	690
2-Chlorophenol	150
1,3-Dichlorobenzene	1.1
1,4-Dichlorobenzene	150
2,4-Dichlorophenol	150
1,2,4-Trichlorobenzene	6.4
2,4,6-Trichlorophenol	150
2,4,5-Trichlorophenol	150
Hexachlorobenzene	5.7
Pentachlorophenol	29

Polynuclear Aromatic Hydrocarbons	
Determinand	GAC
Naphthalene	5.6
Acenaphthylene	4600
Acenaphthene	4700
Fluorene	3800
Phenanthrene	1500
Anthracene	35000
Fluoranthene	1600
Pyrene	3800
Benzo[a]anthracene	14
Chrysene	31
Benzo[b]fluoranthene	4.0
Benzo[k]fluoranthene	110
Benzo[a]pyrene (only)	3.2
Indeno(1,2,3-c,d)Pyrene	46
Dibenz(a,h)Anthracene	0.32
Benzo[g,h,i]perylene	360
Coal Tar (BaP as surrogate marker)	1.2

BTEX	
Determinand	GAC
Benzene	0.70
Toluene	1900
Ethylbenzene	190
o-xylene	210
m-xylene	190
p-xylene	180

*exceeds vapour saturation limit

LQM/CIEH S4ULs for Human Health Risk Assessment (3rd edition, 2015) used unless stated:

- 1) Category 4 Screening Levels (March 2014)
- 2) CL:AIRE Soil GAC for Human Health Assessment (January 2010)
- 3) Detection limit has been used as no GAC methodology currently exists
- 4) Used 2.5% SOM (average organic matter %) used for GACs as a conservative measure.