

Oxford Road, Manchester

Remediation Verification Report

Carried out for:

Kier Construction - North and Scotland

Campsie House,
Buchanan Business Park,
Cumbernauld Road,
Stepps,
Glasgow,
G33 6HZ

November 2021

Report No NOR1093/004

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November 2021

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Table of Contents

1	INTRODUCTION	1
2	SITE SETTING	2
2.1	Site Description and History	2
2.2	Geology	2
2.3	Environmental Setting	2
3	SUMMARY OF PREVIOUS GROUND INVESTIGATION AND RISK ASSESSMENT	2
3.1	SOCOTEC Site Investigation August 2021	2
3.2	Summary of SOCOTEC August 2021 Human Health Risk Assessments	3
3.3	Summary of SOCOTEC August 2021 Controlled Waters Risk Assessments	4
3.4	Pre-Remediation Conceptual Site Model	5
4	OVERVIEW OF CONSTRUCTION WORKS UNDERTAKEN	5
5	SUMMARY OF REMEDIATION STRATEGY	6
6	REMEDIAL AND VERIFICATION WORKS UNDERTAKEN	7
6.1	UST Removal Works	7
7	SUMMARY OF WASTE REMOVED FROM SITE	9
8	VERIFICATION OF IMPORTED MATERIALS	10
9	POTABLE WATER PIPES	10
10	CONCLUSIONS AND RECOMMENDATIONS	10
	REFERENCES	12
 APPENDIX A FIGURES		
Figure 1	Site Location Plan	
Figure 2	Site Development Plan - ADP-00-00-DR-0902 D3 T 1	
Figure 3	Location of Contamination	
Figure 4	Location of Tank Removal Validation Pits	
 APPENDIX B COPIES OF REGULATORY CORRESPONDENCE		
APPENDIX C SITE VISIT PHOTOGRAPHS		
APPENDIX D UVF ONSITE TESTING RESULTS		
APPENDIX E VALIDATION SAMPLE LABORATORY RESULTS		
APPENDIX F HUMAN HEALTH GAC SCREENING SHEET		
APPENDIX G COPIES OF WASTE TRANSFER NOTES		
APPENDIX H COPIES OF IMPORTED RECYCLED 6F2 VERIFICATION INFORMATION		

1 INTRODUCTION

In August 2021 SOCOTEC UK Limited (SOCOTEC) was commissioned by Kier Construction (Kier) to prepare a Remediation Strategy for the above site following the discovery of an underground storage tank (UST) in the eastern part of the site during development works. The offer to carry out this work was contained in SOCOTEC proposal ref: QLO/EN-192960-001-SC v01 Rev00, dated 10th August 2021. This proposal was accepted by Kier via a signed appointment letter and receipt of a purchase order (Ref: PO 20346748), dated 11th August 2021.

SOCOTEC prepared a Remediation Strategy (see SOCOTEC report LO/NOR1093/003/SC, dated 10 September 2021) to cover the removal and validation of the UST and any associated contaminated soils and water. This report was submitted to Manchester City Council for approval. The Remediation Strategy was approved by MCC on 21 September 2021. A copy of the Regulatory correspondence is included in Appendix B.

Subsequent to issuing the Remediation Strategy, SOCOTEC provided a proposal to Kier undertake validation and verification of the tank area remediation. The offer to carry out these works was contained in SOCOTEC proposal QLO/EN-192960/003/DH Rev00, dated 7 September 2021. This proposal was accepted by Kier via a signed appointment letter and receipt of a purchase order (Ref: PO 20352805), dated 24 September 2021.

This Verification Report is intended to:

- Document the work undertaken by Kier to implement the Remediation Strategy for the UST removal as detailed in SOCOTEC report (LO/NOR1093/003/SC, September 2021); and
- Assist in discharging Planning Condition 10) a) relating to land contamination for the works as detailed in Manchester City Council Planning Application number 127104/FO/2020 dated 29th July 2020.

This Verification Report is based on information provided by Kier, the findings from two site visits undertaken by SOCOTEC during the course of the works and incorporates the results of soil validation sample analysis collected and undertaken by SOCOTEC.

2 SITE SETTING

2.1 Site Description and History

The subject site is located approximately 2km southeast of Manchester town centre immediately south of the University of Manchester campus (see Figure 1). The site, as considered for this report, is situated behind the existing building at 323 Oxford Road (see Figure 2).

Prior to the beginning of the development works, the site was surfaced by hardstanding concrete, and functioned as a yard for the former NatWest Bank at 323 Oxford Road. The site was bounded by metal fencing to the south and east, a brick walls to the north along Dover Street and the existing building (323 Oxford Road) to the west.

At the time of the remediation and verification works, the hardstanding concrete had been broken out and removed and the site levels had been lowered by approximately 1 m relative to the surrounding ground level. The UST was uncovered during these excavation works.

2.2 Geology

The BGS Geological Map Sheet No. 85 (Manchester) 1: 50,000 Solid & Drift published in 2011 indicates that the site sits on superficial deposits of Devensian Glacial Till underlain by sandstone of the Triassic Chester Formation.

2.3 Environmental Setting

The Glacial Till is considered by the Environment Agency to be a Secondary Undifferentiated Aquifer, whilst the Chester Formation is considered as a Principal Aquifer. It is important to consider them as potential pathways to more sensitive controlled waters receptors as well as receptors in their own right.

Corn Brook, an inland underground river which runs directly in to the Manchester Shipping Canal, is indicated to run roughly east to west approximately 197m north of the site. As this river is culverted, it is considered unlikely to be in hydraulic connectivity with the surrounding groundwater aquifers. Therefore, the nearest sensitive controlled waters receptor is the River Medlock approximately 850 m to the north of the site.

3 SUMMARY OF PREVIOUS GROUND INVESTIGATION AND RISK ASSESSMENT

3.1 SOCOTEC Site Investigation August 2021

SOCOTEC attended the site in August 2021 and excavated four trial pits, labelled as TP1 to TP4, to a maximum depth of 0.80 m below ground level (bgl) adjacent to and around the UST. TP1 and TP2 where

terminated due to the ingress of water. The aim of the investigation was to confirm the presence of any contamination related to the UST and to try to delineate the approximate extent of such contamination.

A total of five soils samples were collected from the trial pits one water sample was collected from the UST and one sediment sample was collected from the base of the UST. The water sample was retrieved via a disposable plastic bailer that was lowered by cord through an opening in the top of the buried tank. The sediment sample was retrieved from the base of the tank via the dual scoop grab bucket of the excavator, which deposited the collected sediments a safe distance from the opening in the top of the tank.

Black/grey staining was noted in the soils between depths of 0.3 m to 0.75 m bgl in TP1 and TP2. This was accompanied by a moderate to strong hydrocarbon odour described as diesel or kerosene like. No visual or olfactory evidence of chemical contamination was noted in TP3 and TP4 and no possible asbestos containing material (ACM) was noted in any of the materials excavated.

Details of the ground conditions encountered in the vicinity of the UST are summarised in Table 1 below.

Table 1: Summary of Ground Conditions in Vicinity of UST (SOCOTEC, August 2021)

Strata	Locations	Depth (m) to base below current ground level	Maximum Thickness (m)	Description
Cohesive Made Ground	TP1, TP2 & TP3	0.30	0.30	Brown sandy gravelly CLAY. Gravel of brick fragments, concrete fragments, ash and occasional asphalt.
Possible Reworked Glacial Till	TP1 & TP4	0.75 / 0.50	0.50	Brown mottled blue, grey and occasional black or brownish grey slightly gravelly sandy CLAY. Gravel of fine to coarse mixed lithologies including brick fragments, concrete fragments, asphalt, sandstone and mudstone.
Possible Glacial Till	TP2 & TP3	0.50 / 0.70	0.40	Brown mottled blue and grey slightly gravelly sandy CLAY. Gravel of fine to coarse mixed lithologies.
Pea Gravel	TP1	Seen at 0.75	Not known	Pea Gravel.

3.2 Summary of SOCOTEC August 2021 Human Health Risk Assessments

Laboratory results of the five in-situ soil samples collected during SOCOTEC's August 2021 site investigation were assessed against commercial end use Generic Assessment Criteria (GAC) in terms of the suitability of this material to remain in situ given the site's proposed end use as a post graduate research and teaching building (see SOCOTEC report ref: LO/NOR1093/001/SC Rev01).

No exceedances of the commercial GAC for heavy metals, Polycyclic Aromatic Hydrocarbons (PAHs), Petroleum Hydrocarbons (TPHs) or Polychlorinated Biphenyls (PCBs) were noted.

3.3 Summary of SOCOTEC August 2021 Controlled Waters Risk Assessments

SOCOTEC undertook a generic Controlled Waters risk assessment of tank water sample collected from the UST. The sample was screened against UK Drinking Water Standards, Environmental Quality Standards for Fresh Water and WHO Drinking water Standards.

The exceedances recorded are summarised in Table 2 below.

Table 2: Comparison of Tank Water Concentrations with UK DWS and Freshwater EQS and WHO DWS

Contaminants of Concern	Concentration (µg/l)	UKDWS (mg/l)	EQS Freshwater (µg/l)	WHO DWS (mg/l)
Arsenic (dissolved)	14.7	10	50	10
Cadmium (dissolved)	0.515	5	0.08	3
Chromium VI (dissolved)	<30	N/P	3.4	N/P
Nickel (dissolved)	5.81	20	4	70
Zinc (dissolved)	75.1	N/P	10.9	N/P
Free cyanide	<0.05	0.05	0.001	N/P
Phenol	0.34	N/P	0.0077	N/P
Aliphatics >C8->C10	2370	N/P	N/P	300
Aliphatics >C10-<C12	1640	N/P	N/P	300
Aromatics >EC5->EC7	3210	N/P	N/P	10
Aromatics >EC7->EC8	5920	N/P	N/P	700
Aromatics >EC8->EC10	7800	N/P	N/P	300
Aromatics >EC10->EC12	1090	N/P	N/P	90
Aromatics >EC12->EC16	91	N/P	N/P	90
Benzene	4370	1	10	10
Toluene	6940	N/P	74	700
Ethylbenzene	1070	N/P	N/P	300
Xylenes (o, m & p)	5670	N/P	30	500
Anthracene (aq)	0.186	N/P	0.1	N/P
Benzo(a)pyrene (aq)	0.0547	0.01	0.00017	0.7
Benzo(b)fluoranthene (aq)	0.197	0.1	0.00017	N/P
Benzo(g,h,i)perylene (aq)	0.191	0.1	0.00017	N/P
Benzo(k)fluoranthene (aq)	<0.01	0.1	0.00017	N/P
Fluoranthene (aq)	0.551	N/P	0.0063	N/P
Indeno(1,2,3-cd)pyrene (aq)	0.13	0.1	0.00017	N/P
Naphthalene (aq)	152	N/P	22.4	N/P

As shown in Table 2, tank water sample exceeded several UKDWS, EQS Freshwater and WHO DWS thresholds. Screening values for hexavalent chromium, free cyanide and benzo(k)fluoranthene are lower than the laboratory limit of detection hence why the concentrations have been highlighted as exceedances.

It was concluded that given:

1. the conservative nature of the published EQS for copper, nickel, and zinc;
2. the low permeability nature of the natural soils (Glacial Till) in the vicinity of the tank and their significant geographical extent surrounding the site; and
3. the nearest sensitive controlled waters receptor to the site being approximately 850 m away,

there was not considered to be a significant pathway to any underlying and/or neighbouring aquifers or surface water course.

3.4 Pre-Remediation Conceptual Site Model

A pre-remediation conceptual site model based on the findings of SOCOTECs ground investigation and risk assessments is presented in Table 3 below.

Table 3 Summary of Relevant Source Pathway Receptor Linkages

SOURCE		PATHWAY		ON-SITE RECEPTOR	OFF-SITE RECEPTOR
Hydrocarbon impacted soils below and around UST	→	Indoor and outdoor inhalation, dermal exposure, ingestion and inhalation of particulates / Leaching and migration within Primary Aquifers	→	Future site user / Maintenance worker (Female Adult)	Corn Brook / River Medlock
Other contaminants within remaining cohesive Made Ground	→	Permeation of water supply pipes	→	Future site user (Female Adult)	N/A
Vapours associated with VOCs	→	Migration and accumulation in building / confined spaces	→	Buildings	N/A

The identified pollutant linkages were to be managed and mitigated where necessary during the development through a series of measures as described in the Remediation Strategy.

4 OVERVIEW OF CONSTRUCTION WORKS UNDERTAKEN

As mentioned above, the works undertaken thus far have involved the re-profiling of the site to lower the site ground level including the breaking out and removal of all hardstanding concrete and the excavation and removal of the existing granular and cohesive Made Ground.

At the time of SOCOTEC preparing the Remediation Strategy, the hardstanding concrete, granular Made ground and most of the cohesive Made Ground had already been excavated and removed, prior to works stopping on encountering the UST and pending further investigation and production of the Remediation Strategy (September 2021).

5 SUMMARY OF REMEDIATION STRATEGY

The remediation requirements as detailed in the SOCOTEC Remediation Strategy are summarised below:

- 1) **UST** - A watching brief will be carried out during the removal of the UST, its contents and during the excavation of surrounding soils. The UST will require to be removed in the presence of an environmental scientist, who will direct the soil removal works from the base and sides of the tank excavation for visual inspection and sampling.

A watching brief should also be maintained by the environmental scientist during the breaking out and removal of any associated infrastructure, such as pipework or a concrete slab, which may be found following the removal of the UST. Where required by the environmental scientist, trial pits will be excavated into the underlying and surrounding soils to inspect for evidence of significant contamination.

If soils identified as significantly impacted by hydrocarbons by visual or olfactory means are encountered, these should be chased out until soils free from significant contamination are encountered. Soil samples representing the in-situ soils remaining after removal of the contaminated soil material will be obtained for laboratory analysis for validation purposes.

Assessment of the suitability of remaining in-situ soil material will initially be made through the use of rapid turnaround techniques such as Photoionisation Detector (PID) and / or UV fluorescence (UVF) screening to help guide the extent of any further chasing out, where boundaries are not immediately obvious based on visual inspections. Samples taken from the base and sidewalls of the excavation will be screened against Commercial Generic Assessment Criteria (GAC) to confirm that the remaining soils do not pose a risk to human health.

A general watching brief should be maintained throughout the earthworks for contaminated soils, groundwater and potential asbestos. Should any further significantly impacted soils, groundwater or free phase product be identified by visual or olfactory means it should be pumped out or excavated, chased out and segregated for off-site removal as waste.

- 2) **Groundwater** - Any contaminated groundwater encountered during the course of the tank removal works will need to be removed from the site and appropriately disposed of off-site.
- 3) **Imported Materials** - Prior to being imported to site, the materials should be approved by SOCOTEC through the review of soil source information and chemical contaminant testing results to confirm

suitability for use on site. Assessment of the chemical contaminants should be against Generic Assessment Criteria (GAC) for a residential with plant uptake end use.

All recycled aggregate imported to site for use as backfill, should be WRAP Quality Protocol compliant.

- 4) **Water Supply Pipes** - Water supply pipes suitable for Brownfield sites, i.e. barrier pipe, should be used for the provision of water supply to the site. The specification of water supply pipe should be reviewed and approved by the water supply company and evidence provided to SOCOTEC for inclusion in the Verification Report.
- 5) **Waste Management** - All soils and groundwater removed from within the vicinity of the UST as waste should be fully classified in accordance with Environment Agency WM3 guidance. Records of the quantities of soils removed from site as waste including Duty of Care records (Waste Transfer of Hazardous Waste Consignment Notes), waste carrier licences and disposal site permits, should be maintained by Kier and provided to SOCOTEC for inclusion in the Verification Report.

6 REMEDIATION AND VERIFICATION WORKS UNDERTAKEN

6.1 UST Removal Works

The remediation strategy recommended that the UST, its contents and surrounding soils showing any visible signs of contamination should be carefully excavated, segregated and disposed of at a suitably licensed off site waste facility and the surrounding soils validated as being suitable to remain in situ on site.

SOCOTEC attended site on the 7th, 8th and 13th October to undertake a watching brief during the pumping out, breaking out, excavation and removal from site of the UST and any associated contaminated soils and water and to verify the chasing out of all contaminated materials through the use of on site PID and UVF screening.

A brief summary and chronology of the remediation ground works that have been undertaken is presented below.

1. Initial excavation to fully uncover the UST (7th October 2021);
2. Pumping and removal from site of all liquid contained within the UST (7th October);
3. Breaking out, segregation and removal from site of the emptied steel tank (8th October);

4. Pumping and removal of remaining liquid left within excavation after UST removal, completed without presence of SOCOTEC (between 9th-12th October); and
5. Excavation and chasing out of the remaining contaminated soils (13th October).

A series of photographs taken during SOCOTEC's attendance on site showing the above are included in Appendix C.

The soils immediately surrounding the tank were generally described as a black, brown and grey CLAY, overlying apparent demolition rubble, including brick and concrete fragments, overlying black coarse granular Made Ground to approximately 1 m bgl. A frequent black/grey sheen was also noted as being present within these soils and water with an oily sheen noted in the base of the excavation once the tank has been removed.

The visual / olfactory contaminated soils were segregated into a stockpile prior to their removal from the site.

During these excavations concrete slabs, assumed to be the foundations for the tank, were discovered approximately 1 m bgl and within the surrounding layer of each sidewall. The slabs were broken out and segregated.

Visually clean clay was recorded beneath and behind the concrete slabs and following lateral expansion of the excavation to its final dimensions of approximately 4.30 m long by 2.15 m wide by 1.30 m deep. At this point, SOCOTEC remotely (using the excavator bucket) collected eight side wall and base samples and carried out rapid onsite testing with a PID and UVF to verify that the remaining in-situ clays were free from significant contamination by comparison to conservative commercial GAC.

A summary of the onsite testing can be seen in Tables 4 and 5 below. The results of the UVF testing can be found in Appendix D.

Table 4 Summary of Onsite Testing

Type	Quantity	Conservative Assessment Criteria	
Photoionization Detector (PID)	8	Poly Aromatic Hydrocarbons (PAHs)	3.5 mg/kg ¹
Ultraviolet Fluorescence (UVF)	8	Diesel Range Organics (DRO C10-C40)	9700 mg/kg ²
		Gasoline Range Organics (GRO)	27 mg/kg ³

1. Based on Dibenzo(a,h)anthracene
2. Based on TPH Aliphatic >EC10-C12
3. Based on benzene

Table 5 Photoionization Detector Results

Location within Excavation	Test Name	Result (ppm)
North Wall	SWN1	0.1
	SWN2	0.0
East Wall	SWE1	0.0
South Wall	SWS1	0.0
	SWS2	0.3
West Wall	SWW1	0.4

Base	B1	0.0
	B2	0.1

Further soil samples were then obtained from each side wall and the base of the excavation and sent for confirmatory off site laboratory analysis at ALS, Hawarden, Chester. The five soil samples were submitted for PAH and TPH including GRO and benzene, toluene, ethylbenzene and xylene (BTEX) analysis. The results have been screened against commercial end use human health GAC which confirm that the samples representative of the remaining in-situ soils are suitable for use from a human health point of view. The laboratory results and human health screening sheets are presented in Appendix E and Appendix F, respectively.

7 SUMMARY OF WASTE REMOVED FROM SITE

A summary of the waste materials removed from site is detailed in Table 6.

Table 6 Summary of the Wastes Removed from Site

Waste Description	Source	LoW Code	Receiving Facility	Waste Carrier (Carriers Licence No.)	Date of Movements	Total Weight
Oil / water	UST	13-05-07	Alder and Allan Ltd, Hardcourt Street, Manchester, M28 3GN	Adler and Allan Ltd (CBDU88644)	07/10/2021	6500 kg
Steel Tank	Oxford Street	23-01-03	J. O'Shea and Sons Ltd, Orchard Street, Pendleton, Salford	J. O'Shea and Sons Ltd (CBDU90839)	08/10/2021	2 tonnes
Contaminated water	UST	16-10-01	Alder and Allan Ltd, Hardcourt Street, Manchester, M28 3GN	Adler and Allan Ltd (CBDU88644)	12/10/2021	200 kg
Soils and stones containing hazardous substances (TPH)	Oxford Street	17-05-03	Maw Green Soil Landfill Site, Maw Green Road, Crewe	J. O'Shea and Sons Ltd (CBDU90839)	13/10/2021	18860 kg (1 load)
			Maw Green Soil Landfill Site, Maw Green Road, Crewe	J. O'Shea and Sons Ltd (CBDU90839)	13/10/2021	15820 kg (1 load)

Copies of the Waste Transfer notes and where applicable Hazardous Waste Consignment Notes for the above waste removals are contained in Appendix G.

The Environmental Permit references for the receiving waste management facilities are presented in Table 7 below.

Table 7 Waste Receiving Site Environmental Permits

Receiving Waste Management Facility	Environmental Permit Reference
Alder and Allan Ltd, Hardcourt Street, Manchester, M28 3GN	EPR/NP3234LD/V004
J. O'Shea and Sons Ltd, Orchard Street, Pendleton, Salford	EAWML50093
Maw Green Soil Landfill Site, Maw Green Road, Crewe	BS7722ID

8 VERIFICATION OF IMPORTED MATERIALS

Kier has used approximately 12m³ of imported recycled 6f2 material to backfill the tank excavation. Kier has provided copies of laboratory Particle Size Distribution (PSD), chemical analysis, copy of the B.J Crowther WRAP quality protocol and Producers' Compliance Checklist for the imported 6f2 material (see Appendix H). These confirm that the material complies with the grading requirements of a 6f2 and the levels of contamination are all below commercial GAC and no asbestos was detected.

9 POTABLE WATER PIPES

Kier has confirmed that the potable water supply pipe to the new building will be the existing pipe entering the former NatWest building basement at the front elevation. There is no new pipe to be laid in the ground. Therefore, the requirements of the Remediation Strategy in relation to the appropriate specification of new potable water pipes and approval by the water supply company are not relevant.

10 CONCLUSIONS AND RECOMMENDATIONS

The remediation works undertaken have the former UST along with 6700kg contaminated waters contained within it and 34680 kg contaminated soils from around it. These materials have been appropriately disposed of off site.

Visual inspections of the exposed remaining clay and samples from the sidewalls and base of the excavation did not identify any residual hydrocarbon contamination. Rapid onsite PID and UVF verification testing of these soils confirmed the chasing out of the contamination by comparison to conservative commercial GACs. The results of the off site laboratory analysis of the side wall and base validation samples confirm the UVF results and visual observations with the concentrations of residual hydrocarbon contamination in the sides and base of the remedial excavation being low and below commercial GACs.

It is considered that the area of hydrocarbon contamination resulting from the presence of the UST has been effectively remediated and the source of the contamination (the UST) has been removed.

Analysis of the imported recycled 6F2 material used to backfill the 4.3 m x 2.15 m x 1.3 m excavation indicates that the levels of chemical contaminants in these materials are all below the acceptability criteria (based on commercial end use GAC) and contain no asbestos. The materials are, therefore, chemically suitable for use from a human health point of view

It is recommended that this verification report is submitted to the Local Authority for approval.

REFERENCES

- BS 10175 : 2013 : Investigation of Potentially Contaminated Sites – Code of Practice. British Standards Institution.
- CLAIRE : 2013 : Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Main Report. SP1010. Contaminated Land: Applications in Real Environments, December 2013.
- DEFRA : 2014 : Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document , DEFRA, March 2014.
- EA : 2004 : Model Procedures for the Management of Land Contamination. CLR11; Environment Agency, Bristol.
- LQM : 2015 : The LQM/CIEH S4ULs for Human Health Risk Assessment, Land Quality Press, Nottingham. 2015. Publication Number S4UL3144

APPENDIX A

Figure 1 Site Location Plan

Figure 2 Site Development Plan – ADP-00-00-DR-0902 D3 T 1

Figure 3 Location of Contamination

Figure 4 Location of Tank Removal Validation Pits

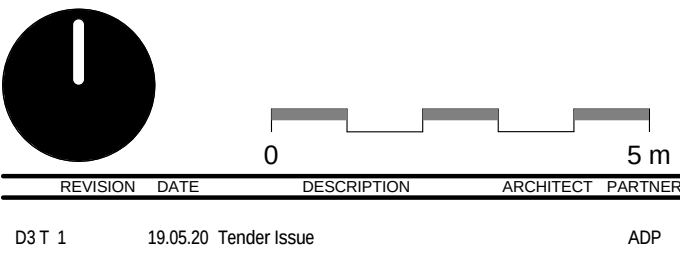
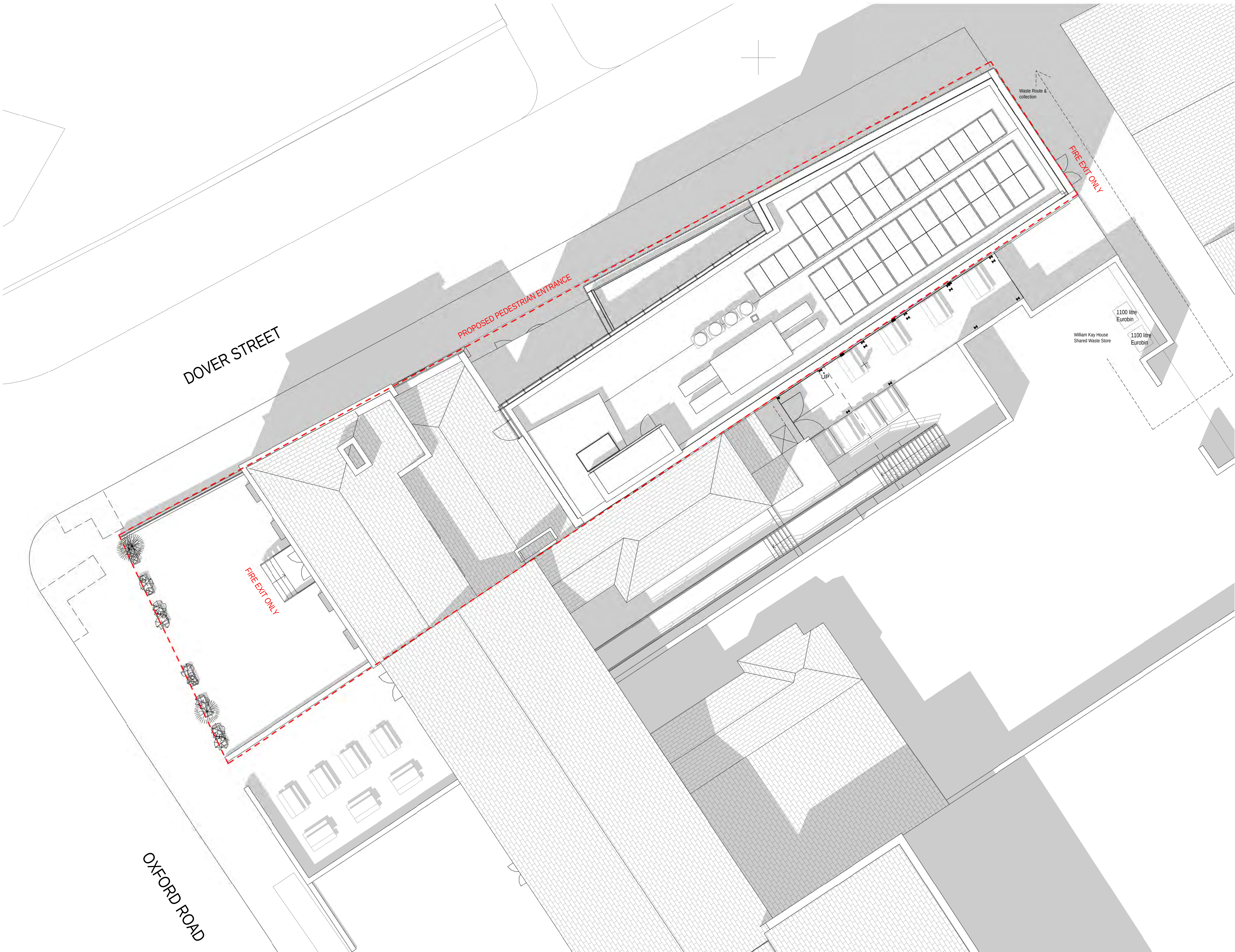
Site Location Plan



THE
SITE

Reproduced from the 2016 Ordnance Survey 1:50 000 scale Landranger map No 109 by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office, © Crown copyright, Environmental Services Group Limited. All rights reserved. Licence Number 100006060

Notes: Scale 1:50 000	Project Oxford Road, Manchester Project No. NOR1093 Carried out for Kier Construction - North and Scotland	Figure 1
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CHECK ALL DIMENSIONS AND VERIFY ON SITE. REPORT ANY ERRORS OR OMISSIONS

TENDER



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JOB TITLE:
UNIVERSITY OF MANCHESTER
CHRISTABEL PANKHURST INSTITUTE

DRAWING TITLE:
PROPOSED SITE

SCALE: 1 : 100		DRAWING SHEET SIZE: A1	
JOB CODE: UMNW	DRAWING NUMBER: ADP-00-00-DR- A-0902	REVISION: D3 T 1	



Legend to symbols:

-  Buried Tank
-  Assumed extent of leached contamination around tank
-  Site Boundary
-  Location of opening in tank used for sample retrieval

Approximate Site Sketch. Not to Scale.

Title
Location of Contamination

Project
Oxford Road, Manchester



SOCOTEC

Project No NOR1093	Figure No Figure 3
-----------------------	-----------------------



Legend to symbols:



Validation Pit Location
(SOCOTEC 2021)



Excavation following removal
of UST and surrounded
contaminated soils



Site Boundary

Approximate Site Sketch. Not to Scale.

Title
Tank Removal Validation
Pit Location Plan

Project
Oxford Road, Manchester



Project No
NOR1093

Figure No
Figure 4

APPENDIX B

Copies of Regulatory Correspondence

From: Laura Miller <laura.miller@manchester.gov.uk>
Sent: 21 September 2021 15:30
To: Daniel Stinton; Lisa Jones; Anthony Mitchell
Cc: David Fitzgibbon
Subject: RE: Natwest Oxford Road 127104/FO/2020

Hi Daniel,

I have read the two reports and agree with the proposals to remove and validate the removal of the tank and any impacted soils/water.

I am happy for these works to commence. On completion please provide the validation report for this phase of work (in advance of the final site completion report).

Kind Regards

Laura

Laura Miller (MRes, MA, BSc(Hons))

Please note that due to working compressed hours Wednesdays are a non-working day for me, I will respond to your email when I return to the office

Environmental Protection Section
Environmental Health
Neighbourhoods Directorate
Manchester City Council

Telephone: 0161 234 5004
email: laura.miller@manchester.gov.uk
website: www.manchester.gov.uk [manchester.gov.uk]

For the latest support and information about the coronavirus visit www.manchester.gov.uk/coronavirus [lnks.gd]

We are now on Twitter, for latest news and updates follow us [@EnvHealthMcr](https://twitter.com/EnvHealthMcr)

I♥MCR

Please consider the environment before printing an e-mail

From: Daniel Stinton <daniel.stinton@manchester.ac.uk>
Sent: 20 September 2021 16:45
To: Laura Miller <laura.miller@manchester.gov.uk>; Lisa Jones <lisa.jones3@manchester.gov.uk>; Anthony Mitchell <anthony.mitchell@manchester.gov.uk>

Cc: David Fitzgibbon <David@recomsolutions.co.uk>
Subject: RE: Natwest Oxford Road 127104/FO/2020

Hi All,

As a follow up to the below I just wanted to check if the documents are under review and if there is an expected date for comments to enable us to commence the works? Happy to have a discussion between us and the contractor if required.

Thanks
Dan

From: Daniel Stinton
Sent: 14 September 2021 08:28
To: Laura Miller <laura.miller@manchester.gov.uk>; Lisa Jones <lisa.jones3@manchester.gov.uk>; Anthony Mitchell <anthony.mitchell@manchester.gov.uk>
Cc: David Fitzgibbon <David@recomsolutions.co.uk>
Subject: RE: Natwest Oxford Road 127104/FO/2020

Hi All,

Further to my email yesterday, Kier subsequently provided the remediation strategy earlier than expected. Please find attached (and associated report with the results).

Please let me know if there is anything else required and if there is an expected period for review and confirmation?

Many Thanks
Dan

From: Daniel Stinton
Sent: 13 September 2021 09:39
To: Laura Miller <laura.miller@manchester.gov.uk>; Lisa Jones <lisa.jones3@manchester.gov.uk>; Anthony Mitchell <anthony.mitchell@manchester.gov.uk>
Cc: David Fitzgibbon <David@recomsolutions.co.uk>
Subject: RE: Natwest Oxford Road 127104/FO/2020

Hi all,

Just an advance notice that we're expecting to receive the remediation strategy from Kier on 17th Sept, which I will forward on for comment and (hopefully) approval.

Many Thanks
Dan

From: Laura Miller <laura.miller@manchester.gov.uk>
Sent: 27 August 2021 13:52
To: Daniel Stinton <daniel.stinton@manchester.ac.uk>; Lisa Jones <lisa.jones3@manchester.gov.uk>; Anthony Mitchell <anthony.mitchell@manchester.gov.uk>
Cc: David Fitzgibbon <David@recomsolutions.co.uk>
Subject: RE: Natwest Oxford Road 127104/FO/2020

Hi Daniel,

We will try and prioritise this, I am on leave until 2nd September, Lisa is back in on Tuesday.

I am sure Tony will be able to give approval for works to commence fairly swiftly once we have commented.

Kind Regards

Laura

Laura Miller (MRes, MA, BSc(Hons))

Please note that due to working compressed hours Wednesdays are a non-working day for me, I will respond to your email when I return to the office

Environmental Protection Section
Environmental Health
Neighbourhoods Directorate
Manchester City Council

Telephone: 0161 234 5004

email: laura.miller@manchester.gov.uk

website: www.manchester.gov.uk [eur03.safelinks.protection.outlook.com]

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I♥MCR

Please consider the environment before printing an e-mail

From: Daniel Stinton <daniel.stinton@manchester.ac.uk>

Sent: 26 August 2021 15:43

To: Laura Miller <laura.miller@manchester.gov.uk>; Lisa Jones <lisa.jones3@manchester.gov.uk>; Anthony Mitchell <anthony.mitchell@manchester.gov.uk>

Cc: David Fitzgibbon <David@recomsolutions.co.uk>

Subject: RE: Natwest Oxford Road 127104/FO/2020

Hi All,

Further to my email on Tuesday, Kier have provided the below and attached below to show the cordoned off area. As noted works will continue outside this area in parallel with the development of the remediation strategy.

I will let you know as soon as I can the proposed date for issue of the remediation strategy, but are there any indications as to how long the approval of this would usually take?

Thanks
Dan

From: Capstick, Dale <Dale.Capstick@kier.co.uk>

Sent: 26 August 2021 08:43

To: Daniel Stinton <daniel.stinton@manchester.ac.uk>

Cc: Bowker, Laura <Laura.Bowker@kier.co.uk>; Roberts, Thomas <Thomas.Roberts@kier.co.uk>; David Fitzgibbon <David@recomsolutions.co.uk>

Subject: RE: Natwest Oxford Road 127104/FO/2020

Hi Dan,

See attached image of area cordoned off, no works will be undertaken within 1m of this area.

Kind regards



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Dale Capstick
Site Manager

Kier Construction | Regional Building
North & Scotland

M: 07753458807

E: dale.capstick@kier.co.uk

Kier Construction | Regional Building
North & Scotland | North West
3rd Floor Optimum House, Clippers
Quay, Salford, M50 3XP

Kier Construction Limited | Registered in England No. 2099533
Registered office: 2nd Floor, Optimum House, Clippers Quay, Salford, M50 3XP

From: Daniel Stinton <daniel.stinton@manchester.ac.uk>

Sent: 24 August 2021 12:20

To: David Fitzgibbon <David@recomsolutions.co.uk>; Roberts, Thomas <Thomas.Roberts@kier.co.uk>; Bowker, Laura <Laura.Bowker@kier.co.uk>; Capstick, Dale <Dale.Capstick@kier.co.uk>

Subject: FW: Natwest Oxford Road 127104/FO/2020

[This email was sent from an external sender outside of the Kier Group, please treat this email, links and attachments with caution.]

All, please see below. Please can you confirm this can be complied with so that works can continue?

Thanks

Dan

From: Anthony Mitchell <anthony.mitchell@manchester.gov.uk>

Sent: 24 August 2021 11:51

To: Daniel Stinton <daniel.stinton@manchester.ac.uk>

Cc: Laura Miller <laura.miller@manchester.gov.uk>

Subject: FW: Natwest Oxford Road 127104/FO/2020

Dear Dan

Please see Laura's comments below.

Can you confirm that you will adhere to Laura's comments by return.

On the basis that you comply with this I can confirm that the LPA is content with the works continuing.

I hope this helps

Tony

Anthony Mitchell
Principal Planning Officer
City Centre Development Management
Planning, Building Control & Licensing
Growth & Development Directorate
Manchester City Council

Tel: 07852585166

From: Laura Miller <laura.miller@manchester.gov.uk>
Sent: 24 August 2021 11:03
To: Anthony Mitchell <anthony.mitchell@manchester.gov.uk>
Cc: Richard Knightley <richard.knightley@manchester.gov.uk>; Sharon McAndrew <sharon.mcandrew@manchester.gov.uk>; Lisa Jones <lisa.jones3@manchester.gov.uk>
Subject: RE: Natwest Oxford Road 127104/FO/2020

Hi Tony,

I can help you as we are a bit thin on the ground this week. This site is actually Lisa's ward now (she is off too).

I am happy with works continuing on site away from the tank whilst further investigations are undertaken. I would expect there to be a cordon on site around the tank to stop them working too close to it. Works cannot progress near the tank until we have seen and approved their addendum site investigation and updated remediation strategy.

Kind Regards

Laura

Laura Miller (MRes, MA, BSc(Hons))

Please note that due to working compressed hours Wednesdays are a non-working day for me, I will respond to your email when I return to the office

Environmental Protection Section
Environmental Health
Neighbourhoods Directorate
Manchester City Council

Telephone: 0161 234 5004
email: laura.miller@manchester.gov.uk
website: www.manchester.gov.uk [eur03.safelinks.protection.outlook.com]

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Please consider the environment before printing an e-mail

From: Anthony Mitchell <anthony.mitchell@manchester.gov.uk>
Sent: 24 August 2021 10:04
To: Laura Miller <laura.miller@manchester.gov.uk>
Subject: FW: Natwest Oxford Road 127104/FO/2020

Hi Laura

I have had out of office messages for both Sharon and Rick.

Could you help here please?

Thanks

Tony

From: Anthony Mitchell
Sent: 24 August 2021 10:02
To: Richard Knightley <richard.knightley@manchester.gov.uk>
Subject: FW: Natwest Oxford Road 127104/FO/2020

Hi Rick

Hope you are well.

I sent the email below to Sharon but got an out of office from her till 26th.

The development is on site and the pile rig is due to start tomorrow. But at the other end of the site they have discovered a fuel tank and are not sure it is contaminated yet. Are the contractors OK starting the piling well away from the tank? It is a uni project and I am under a bit of pressure.

Thanks

Tony

From: Anthony Mitchell
Sent: 23 August 2021 14:32
To: Sharon McAndrew <sharon.mcandrew@manchester.gov.uk>
Subject: FW: Natwest Oxford Road 127104/FO/2020

Hi Sharon

Please can you help / advise with this.

The condition states that work should stop at discovery. However, are you happy for the rest of the works to continue whilst they leave the area around and on the tank alone?

Thanks

Tony

From: Daniel Stinton <daniel.stinton@manchester.ac.uk>
Sent: 23 August 2021 12:00
To: Anthony Mitchell <anthony.mitchell@manchester.gov.uk>; Anthony Mitchell <anthony.mitchell@manchester.gov.uk>
Subject: RE: Natwest Oxford Road 127104/FO/2020

Hi Tony,
I've left a voicemail on the below as Kier have requested some confirmation they can continue works. They've requested by close-today so that piling (away from the contamination) can continue. Are you able to confirm please?
Thanks
Dan

From: Daniel Stinton
Sent: 20 August 2021 15:58
To: Anthony Mitchell <a.mitchell@manchester.gov.uk>; Anthony Mitchell <anthony.mitchell@manchester.gov.uk>
Cc: Roberts, Thomas <Thomas.Roberts@kier.co.uk>; David Fitzgibbon <David@recomsolutions.co.uk>
Subject: Natwest Oxford Road 127104/FO/2020

Hi Tony,
Further to our call earlier, to clarify Kier discovered an oil tank buried underground at the corner of the site. A specialist was called onsite to determine if this was contaminated or not and, whilst we haven't got the final report yet, it's pretty certain it is.

I just want to clarify the working in condition 10a. Could you clarify that we can continue works in other areas of the site away from the contaminated area whilst we develop a remediation strategy for submission?

Many Thanks
Dan

Daniel Stinton | Capital Projects Manager, Projects Group, Directorate of Estates and Facilities | Room G.003 Beyer Building | University of Manchester | Oxford Road | Manchester | M13 9PL | T: 0161 306 5574 | Mob: 07341 090670

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APPENDIX C

Site Photographs



Notes: Area of UST and opening in tank prior to remediation works (7 th October)	<table><tr><td>Project</td><td>Oxford Road, Manchester</td></tr><tr><td>Project No.</td><td>NOR1093</td></tr><tr><td>Carried out for</td><td>Kier Construction - North and Scotland</td></tr></table>	Project	Oxford Road, Manchester	Project No.	NOR1093	Carried out for	Kier Construction - North and Scotland	<table><tr><td>Plates</td></tr><tr><td>1 and 2</td></tr></table>	Plates	1 and 2
Project	Oxford Road, Manchester									
Project No.	NOR1093									
Carried out for	Kier Construction - North and Scotland									
Plates										
1 and 2										



Notes: Initial pumping of UST and uncovering of tank (7th October)	Project Oxford Road, Manchester Project No. NOR1093 Carried out for Kier Construction - North and Scotland	Plates 3 and 4
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Notes:	Project Oxford Road, Manchester	Plates 1 and 2
Final stages of pumping UST (7 th October)	Project No. NOR1093	
	Carried out for Kier Construction - North and Scotland	



Notes:	<table><tr><td>Project</td><td>Oxford Road, Manchester</td></tr><tr><td>Project No.</td><td>NOR1093</td></tr><tr><td>Carried out for</td><td>Kier Construction - North and Scotland</td></tr></table>	Project	Oxford Road, Manchester	Project No.	NOR1093	Carried out for	Kier Construction - North and Scotland	<table><tr><td>Plates</td><td>5 and 6</td></tr></table>	Plates	5 and 6
Project	Oxford Road, Manchester									
Project No.	NOR1093									
Carried out for	Kier Construction - North and Scotland									
Plates	5 and 6									
Breaking out of the UST (8 th October)										



Notes:	Project	Oxford Road, Manchester	Plates 7 and 8
Pit remaining following removal of UST (8 th October). Pit at start of chasing out works (13 th October)	Project No.	NOR1093	
	Carried out for	Kier Construction - North and Scotland	



Notes: Chasing out of residual contamination following removal of UST (13 th October)	<table><tr><td>Project</td><td>Oxford Road, Manchester</td></tr><tr><td>Project No.</td><td>NOR1093</td></tr><tr><td>Carried out for</td><td>Kier Construction - North and Scotland</td></tr></table>	Project	Oxford Road, Manchester	Project No.	NOR1093	Carried out for	Kier Construction - North and Scotland	<table><tr><td>Plates</td></tr><tr><td>9 and 10</td></tr></table>	Plates	9 and 10
Project	Oxford Road, Manchester									
Project No.	NOR1093									
Carried out for	Kier Construction - North and Scotland									
Plates										
9 and 10										



Notes: Water ingress showing oily sheen on surface during excavation (13th October)	Project Oxford Road, Manchester Project No. NOR1093 Carried out for Kier Construction - North and Scotland	Plates 11 and 12
--	---	--------------------------------



Notes:	Project	Oxford Road, Manchester	Plates
Chasing out of residual contamination and contaminated spoil (13 th October)	Project No.	NOR1093	13 and 14
	Carried out for	Kier Construction - North and Scotland	



Notes:	Project Oxford Road, Manchester	Plates
Contaminated spoil (13 th October)	Project No. NOR1093	15 and 16
	Carried out for Kier Construction - North and Scotland	



Notes: Final excavation following removal of UST and chasing out of contaminated soils (13 th October)	<table><tr><td>Project</td><td>Oxford Road, Manchester</td></tr><tr><td>Project No.</td><td>NOR1093</td></tr><tr><td>Carried out for</td><td>Kier Construction - North and Scotland</td></tr></table>	Project	Oxford Road, Manchester	Project No.	NOR1093	Carried out for	Kier Construction - North and Scotland	<table><tr><td>Plates</td></tr><tr><td>17</td></tr></table>	Plates	17
Project	Oxford Road, Manchester									
Project No.	NOR1093									
Carried out for	Kier Construction - North and Scotland									
Plates										
17										



Notes: Final excavation following removal of UST and chasing out of contaminated soils (13th October)	Project Oxford Road, Manchester Project No. NOR1093 Carried out for Kier Construction - North and Scotland	Plates 18
--	---	----------------------

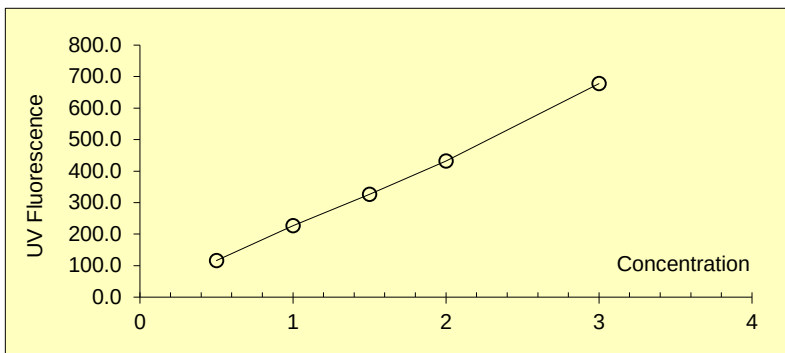
APPENDIX D

UVF Onsite Testing Results

On-Site Analysis Report

Extended Diesel Range Hydrocarbons (C10 - C40)

Standard Concentration	Fluorescence value
0	0.0
0.5	116.2
1	226.7
1.5	326.5
2	431.9
3	677.8
Calibration Std	
Units: ppm or mg/kg	



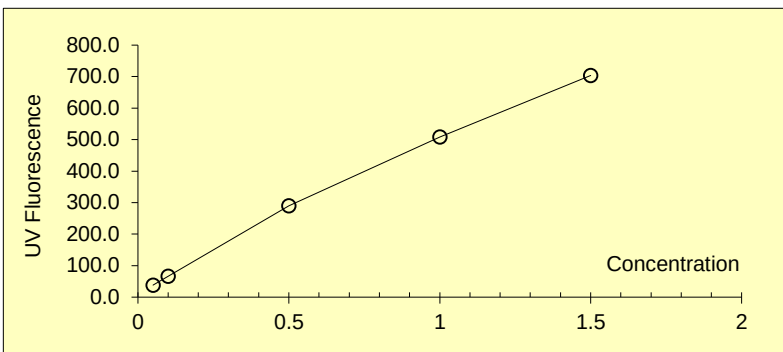
Curve Linearity
Calibrate and Download

HOLE_ID	SAMP_TYPE	SAMP_REF	SAMP_TOP	Soil weight (g)	Sample dilution factor	Extract DRO value ppm	DRO in sample (ppm)
SWS1	ES	1	0.65	10.02	31.93612774	0.988	31.55
SWS2	ES	1	0.65	10.37	59.78784957	0.623	37.25
SWN1	ES	1	0.65	10.53	115.8594492	0.595	68.94
SWN2	ES	1	0.65	10.16	120.0787402	1.69	202.93
SWE1	ES	1	0.65	10.2	41.17647059	0.52	21.41
SWW1	ES	1	0.65	10.28	40.85603113	0.714	29.17
B1	ES	1	0.65	10.09	120.9117939	2.279	275.56
B2	ES	1	0.65	10.23	119.257087	2.036	242.81
Check low standard				1	ppm	1.022	Check OK
Check high standard				3	ppm	2.839	Check OK

On-Site Analysis Report

Polynuclear Aromatic Hydrocarbons (USEPA16)

Standard Concentration	Fluorescence value
0	0.0
0.05	38.3
0.1	66.2
0.5	290.0
1	508.4
1.5	703.7
Calibration Std	
Units: ppm or mg/kg	



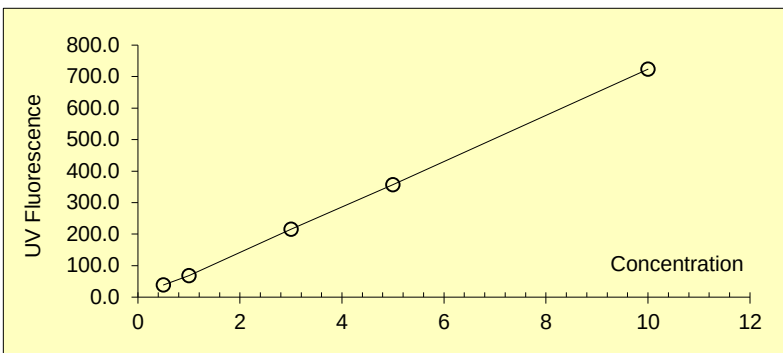
Curve Linearity
Calibrate and Download

HOLE_ID	SAMP_TYPE	SAMP_REF	SAMP_TOP	Soil weight (g)	Sample dilution factor	Extract PAH value ppm	PAH in sample (ppm)
	ES	1	0.65	10.02	1.996007984	0.099	0.20
SWS2	ES	1	0.65	10.37	1.928640309	0.1	0.19
SWN1	ES	1	0.65	10.53	1.899335233	0.241	0.46
SWN2	ES	1	0.65	10.16	1.968503937	0.222	0.44
SWE1	ES	1	0.65	10.2	1.960784314	0.088	0.17
SWW1	ES	1	0.65	10.28	1.945525292	0.105	0.20
B1	ES	1	0.65	10.09	1.982160555	0.282	0.56
B2	ES	1	0.65	10.23	1.955034213	0.211	0.41
Check low standard				0.05	ppm	0.051	
Check high standard				1.5	ppm	1.511	

On-Site Analysis Report

Gasoline Range Hydrocarbons (C6 - C10)

Standard Concentration	Fluorescence value
0	0.0
0.5	38.8
1	68.0
3	215.4
5	356.8
10	723.7
Calibration Std	
Units: ppm or mg/kg	



Curve Linearity
Calibrate and Download

HOLE_ID	SAMP_TYPE	SAMP_REF	SAMP_TOP	Soil weight (g)	Sample dilution factor	Extract DRO value ppm	DRO in sample (ppm)
SWS1	ES	1	0.65	10.02	1.996007984	1.284	2.56
SWS2	ES	1	0.65	10.37	1.928640309	1.286	2.48
SWN1	ES	1	0.65	10.53	1.899335233	2.097	3.98
SWN2	ES	1	0.65	10.16	1.968503937	3.39	6.67
SWE1	ES	1	0.65	10.2	1.960784314	0.325	<0.98
SWW1	ES	1	0.65	10.28	1.945525292	0.632	1.23
B1	ES	1	0.65	10.09	1.982160555	2.831	5.61
B2	ES	1	0.65	10.23	1.955034213	3.309	6.47
Check low standard				1	ppm	1.03	Check OK
Check high standard				10	ppm	9.69	Check OK

APPENDIX E

Validation Sample Laboratory Results



Unit 7-8 Hawarden Business Park

Manor Road (off Manor Lane)

Hawarden

Deeside

CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

Socotec
Geotechnical House
18 - 19 Drome Road
Deeside Industrial Park
Deeside
Flintshire
CH5 2NY

Attention: Chris Evans

CERTIFICATE OF ANALYSIS

Date of report Generation: 20 October 2021
Customer: Socotec
Sample Delivery Group (SDG): 211014-51
Your Reference: NUR1093
Location: Oxford Road, Manchester
Report No: 617978
Order Number: CN6389

We received 5 samples on Wednesday October 13, 2021 and 5 of these samples were scheduled for analysis which was completed on Wednesday October 20, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 211014-51
Client Ref.: NUR1093

Report Number: 617978
Location: Oxford Road, Manchester

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25145178	B1		1.30 - 1.40	13/10/2021
25145179	SWE1		0.70 - 0.80	13/10/2021
25145182	SWN1		0.60 - 0.70	13/10/2021
25145181	SWS1		0.70 - 0.80	13/10/2021
25145180	SWW1		0.80 - 0.90	13/10/2021

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 211014-51
Client Ref.: NUR1093

Report Number: 617978
Location: Oxford Road, Manchester

Superseded Report:

Results Legend



Test



No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Results Legend	Lab Sample No(s)		25145178	25145179	25145182	25145181	25145180
	Customer Sample Reference		B1	SWE1	SWN1	SWS1	SWM1
	AGS Reference						
	Depth (m)		1.30 - 1.40	0.70 - 0.80	0.60 - 0.70	0.70 - 0.80	0.80 - 0.90
	Container		250g Amber Jar (ALE210)	250g Amber Jar (ALE215)	250g Amber Jar (ALE210)	250g Amber Jar (ALE215)	250g Amber Jar (ALE215)
	Sample Type		S	S	S	S	S
EPH CWG GC (S)	All	NDPs: 0 Tests: 5	X	X	X	X	X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 5		X	X	X	X
PAH by GCMS	All	NDPs: 0 Tests: 5	X	X	X	X	X
Sample description	All	NDPs: 0 Tests: 5	X	X	X	X	X
TPH CWG GC (S)	All	NDPs: 0 Tests: 5	X	X	X	X	X
VOC MS (S)	All	NDPs: 0 Tests: 5		X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 211014-51
Client Ref.: NUR1093

Report Number: 617978
Location: Oxford Road, Manchester

Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
25145178	B1	1.30 - 1.40	Dark Brown	Silty Clay	Stones	None
25145179	SWE1	0.70 - 0.80	Dark Brown	Silty Clay	Stones	None
25145182	SWN1	0.60 - 0.70	Dark Brown	Silty Clay	Stones	None
25145181	SWS1	0.70 - 0.80	Dark Brown	Silty Clay	Stones	None
25145180	SWW1	0.80 - 0.90	Dark Brown	Silty Clay	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

SDG: 211014-51
Client Ref.: NUR1093

Report Number: 617978

Superseded Report:

Location: Oxford Road, Manchester

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 211014-51
Client Ref.: NUR1093Report Number: 617978
Location: Oxford Road, Manchester

Superseded Report:

TPH CWG (S)

Results Legend			Customer Sample Ref.	B1	SWE1	SWN1	SWS1	SWW1	
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.30 - 1.40	0.70 - 0.80	0.60 - 0.70	0.70 - 0.80	0.80 - 0.90	
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
aq	Aqueous / settled sample.			13/10/2021	13/10/2021	13/10/2021	13/10/2021	13/10/2021	
diss.fit	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.			13/10/2021	13/10/2021	13/10/2021	13/10/2021	13/10/2021	
*	Subcontracted - refer to subcontractor report for accreditation status.			211014-51	211014-51	211014-51	211014-51	211014-51	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			25145178	25145179	25145182	25145181	25145180	
(F)	Trigger breach confirmed								
1-4*\$@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
GRO Surrogate % recovery**	%	TM089		79.4	80	82.3	78.1	82.5	
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089		<10	<10	<10	30.2	<10	
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089		<10	<10	<10	56.8	<10	
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089		<10	<10	<10	56.8	<10	
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414		<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414		<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414		<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414		<1000 #	1050 #	<1000 #	<1000 #	<1000 #	
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414		<5000	<5000	<5000	<5000	<5000	
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414		<10000	<10000	<10000	<10000	<10000	
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089		<10	<10	<10	<10	<10	
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089		<10	<10	<10	<10	<10	
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089		<10	<10	<10	38.3	<10	
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414		<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414		<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414		<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414		1160 #	<1000 #	<1000 #	<1000 #	1170 #	
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414		<5000	<5000	<5000	<5000	<5000	
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414		<10000	<10000	<10000	<10000	<10000	
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089		<50	<50	<50	144	<50	
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089		<50	<50	<50	<50	<50	
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089		<20	<20	<20	144	<20	



CERTIFICATE OF ANALYSIS

Validated

SDG: 211014-51
Client Ref.: NUR1093

Report Number: 617978
Location: Oxford Road, Manchester

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 211014-51
Client Ref.: NUR1093

Report Number: 617978
Location: Oxford Road, Manchester

Superseded Report:

Test Completion Dates

Lab Sample No(s)	25145178	25145179	25145182	25145181	25145180
Customer Sample Ref.	B1	SWE1	SWN1	SWS1	SWW1
AGS Ref.					
Depth	1.30 - 1.40	0.70 - 0.80	0.60 - 0.70	0.70 - 0.80	0.80 - 0.90
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
EPH CWG GC (S)	19-Oct-2021	19-Oct-2021	19-Oct-2021	19-Oct-2021	19-Oct-2021
GRO by GC-FID (S)	20-Oct-2021	20-Oct-2021	20-Oct-2021	20-Oct-2021	20-Oct-2021
PAH by GCMS	19-Oct-2021	19-Oct-2021	19-Oct-2021	19-Oct-2021	19-Oct-2021
Sample description	14-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021
TPH CWG GC (S)	20-Oct-2021	20-Oct-2021	20-Oct-2021	20-Oct-2021	20-Oct-2021
VOC MS (S)	19-Oct-2021	19-Oct-2021	19-Oct-2021	19-Oct-2021	19-Oct-2021