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GORTON LANE

PHASE 4 VALIDATION REPORT

Curtins Ref: **067694-CUR-00-XX-RP-GE-00007**
Revision: P02
Issue Date: 12 March 2024

Client Name: EQUANS

Client Address: The Lighthouse, The Quays, Salford Quays, Manchester, M50 3BF

Site Address: Gorton Lane Sites, Manchester, M12 5WF

Rev	Description	Issued by	Checked	Date
P01	Issue	LW	JL	20 December 2023
P02	Update following additional topsoil placement and return validation visit to undertake HP22A trial pit.	LW	MH	12 March 2024

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Author	Signature	Date
Lucy Woods BSc (Hons) MSc Graduate Geo-Environmental Engineer		20 December 2023

Reviewed	Signature	Date
Jonathan Lord BSc (Hons) MSc Senior Geo-Environmental Engineer		20 December 2023

Authorised	Signature	Date
Niall Farnworth BSc (Hons) MCIWEM Principal Geo-Envrionmental Engineer		20 December 2023

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EXECUTIVE SUMMARY

Curtins were instructed by EQUANS (the Client) to produce a Verification Report following completion of remediation activities at a site known as Gorton Lane, Manchester, with development proposals for 18 houses, and 4 No. apartment blocks, along with associated car-parking space, private gardens, and soft landscaping. The site is located off Gorton Lane, approximately centred on National Grid Reference 387260, 396950. Development Plans can be referred to within *Appendix A*.

EQUANS were the Main Contractor on site, and Kelly Contracting Ltd undertook the groundworks activities. Curtins carried out a number of site visits during construction of clean capping.

This Verification Report has been compiled to provide a descriptive and factual record of the remedial works undertaken by EQUANS, and the subsequent verification of these works by Curtins. It is envisaged that this document will be used to support the discharging of planning condition number 5c of planning permission 129876/FO/2021 in line with the measures agreed with the Local Planning Authority (LPA).

Site assessment works previously determined that remedial measures were required to be incorporated into the development as follows:

- Removal of Naphthalene Hotspots;
- Handpicking and Removal of ACMs;
- Engineered Capping; and,
- Installation of Contaminant Resistant Water Pipes.

To address the elevated risks, the requirements for the proposed clean soil layer / planting medium capping works were detailed in the Curtins Remediation Strategy issued in February 2020, together with health and safety management during construction, asbestos management, measures for dealing with unexpected contamination appropriately through the use of a strategy for handling potentially contaminated soils and contaminative incidents on site. Remediation works have now been completed, with details and records of the works undertaken at the site collated herein from information provided by EQUANS and obtained by Curtins through site inspection visits on 15/09/2023, 03/10/2023, 16/11/2023,23/11/2023 and 11/03/2024.

Through independent verification and consideration of the available evidence Curtins can confirm the following:

- Photographic evidence has been provided of the removal of the Naphthalene-impacted soils, with waste consignment tickets obtained.
- The clean and inert growing medium of >600mm of topsoil / subsoil (minimum 150mm topsoil) with an underlying geotextile layer has been installed and forms an effective barrier between end users and contaminated soils in the rear gardens of Plots 1 – 12 and Plots 104 – 109, verified through visual inspection by Curtins with associated photographic records obtained;
- The clean and inert growing medium of >450mm of topsoil / subsoil (minimum of 150mm topsoil) with an underlying geotextile layer has been installed and forms an effective barrier between end users and contaminated soils in the front gardens of Plots 1 – 12 and Plots 104 – 109.
    - The Remediation Strategy issued to discharge relevant pre-commencement contaminated land planning conditions determined that a minimum of 300mm capping layer, including minimum 150mm topsoil must be included in all front gardens.
    - Following initial review of the first issue of this Verification Report (P01) by the Environmental Health Officer at Manchester City Council, it was advised that a minimum capping layer thickness of 450mm should be installed in all front gardens.
    - One area (HP22, in the front landscaping of Plot 6), identified 400mm capping, including 160mm topsoil and 240mm subsoil. All other tested gardens recorded a capping thickness ≥450mm, including minimum 150mm topsoil.
    - Further remedial work comprising the addition of 50mm topsoil across the front gardens in this area was undertaken, and confirmed through an additional trial pit (HP22A) by a Curtins engineer on 11 March 2024, and reported in a revised Verification Report (P02).

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- The clean and inert growing medium of >300mm of topsoil / subsoil (minimum of 150mm topsoil) with an underlying geotextile layer along with in public soft landscaping areas, verified through visual inspection by Curtins with associated photographic records obtained; and,
- Imported topsoil source testing and on-site testing has been undertaken in accordance with the Curtins Remediation Strategy. Results have been screened against suitable screening criteria and no exceedances have been found.
- Evidence in the form of photographs and certificates of compliance from the Water Industry Approved Plumbers Scheme (WIAPS) has been provided verifying that new 25mm barrier piping was installed.
- Evidence has been provided to demonstrate asbestos impacted soils have been removed from the site with relevant waste consignment ticket provided, with no further asbestos identified.

Additionally, EQUANS have confirmed that there was no unexpected contamination encountered during groundworks.

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1 INTRODUCTION

This Verification Report has been prepared by Curtins for EQUANS (the Client) to provide a descriptive and factual record of the works undertaken as evidence that the requirements of the agreed upon Remediation Strategy have been met at the site located off Gorton Lane, Manchester, M12 5WF, approximately centred on NGR 387260, 396950. It is understood the Residential development will include 18 houses, and 4 No. apartment blocks, along with associated car-parking space, private gardens, and soft landscaping. The landscape architect plans are included within *Appendix A* of this report.

The site is centred on NGR 387260, 396950 in West Gorton and comprises two plots of land which are separated by Wenlock Way / Gorton Lane:

- Site 1 (north of Wenlock Way/Gorton Lane)
- Site 2 (to the south of Wenlock Way/Gorton Lane)

The two sites are within residential areas, with Site 1 bounded by residential and commercial properties along with three roadways. Site 2 is bounded by residential properties and four different roadways.



Figure 1 – Site 1 and Site 2 Location Plan taken from Google Maps

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It is intended that this report is submitted to allow the discharge of Planning Condition 5c, associated with Application Ref. 129876/FO/2021.

Planning Condition 4c reads:

> *"The development shall be carried out in accordance with the previously agreed Remediation Strategy, and that a Completion/Verification Report shall be submitted to and approved in writing by Manchester City Council."*

Details and records of remedial works undertaken at the site have been collated herein from information provided by EQUANS and obtained by Curtins through site visits.

1.1 Requirements of the Verification Report

This verification report is to account for the following;

- A descriptive and factual record of the remedial works (removal of unacceptable materials, provision of engineered capping layer comprising a clean soil layer and geotextile separation layer and installation of appropriate water piping) undertaken by the contractor and their appointed sub-contractors;
- Verification of all remedial works:
    - Photographic record of ground works activities;
    - Evidence of removal of Naphthalene Hotspots;
    - Evidence of following the Asbestos Management Plan;
    - Records of any other significant visual or olfactory evidence of contamination encountered during site clearance and excavations;
    - Waste consignment notes for contaminated materials removed from site;
    - Imported soil quality certificates, including soil chemical analysis;
    - Provision of a minimum 600mm (Rear Gardens), 450mm (Front Gardens) and 300mm (public soft landscaping areas) clean capping comprising a minimum of 150mm topsoil over resultant depth of subsoil, underlain by a demarcation membrane; and,
    - Installation of appropriate contaminant resistant water piping.

1.2 References

The Verification Report has been prepared with reference to the following reports:

- Reference 1: Curtins (2020) Gorton Lane Remediation Strategy (Ref. 067694-CUR-00-XX-RP-GE-001).
- Reference 2: Curtins (2018) Phase 2 Site Investigation for Gorton Lane, Manchester (Ref. 068244-CUR-00-XX-RP-GE-001-V02).
- Reference 3: Curtins (2018) Phase 1 Preliminary Risk Assessment, Gorton Lane Sites (Ref. 067694-CUR-00-XX-RP-GE-001-V02).

1.3 Project Background

A Phase 1 Preliminary Site Assessment Desktop Study (Ref. 3) was undertaken on the site by Curtins in 2018. A Ground Investigation was subsequently undertaken on site by Curtins in 2020 with an associated Phase 2 Ground Investigation Report issued, (Ref. 2).

The above works concluded the following pollutant linkages (outlined in Table 1) were considered to present a potential risk to human health and would require specific remedial measures to enable to safe redevelopment of the site for its proposed end-use.

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Table 1 – Potential Pollutant Linkages

PPL	Source	Pathway	Receptor	Risk
1	**Made Ground** soils centred around TP11, CP1 and CP2 with elevated Naphthalene (Semi-Volatile)	**Residential Site End-Users**	Inhalation, ingestion, and dermal contact with PAHs including Naphthalene contaminants in soil within TP11, CP1 and CP2 and soil-derived dust from on-site Made Ground.	**Moderate Risk** Elevated concentrations of Naphthalene have been further investigated with no additional exceedances of Naphthalene detected. It is recommended that the hotspots (TP11, CP1 and CP2) are removed via a 2m x 2m square of the locations during the redevelopment of the site due to the vapour risk posed to site-end users.
2	Asbestos fibres within soil samples and ACMs. **Amosite and Chrysotile** loose fibres of 0.89% identified within WS6, **Chrysotile** fibres of 0.073% in TP10.	**Residential Site End-Users** **Construction and Maintenance Workers** **Adjacent Residents**	Inhalation of asbestos fibres in soil-derived dust from on-site Made Ground.	**Moderate / Low Risk** Engineered capping and geotextile membrane to serve as a physical barrier between original site soils and site surface in areas of soft landscaping. The building footprint and areas of hard standing will break the source-pathway-receptor linkage across the remainder of the site. Asbestos Management Plan required during construction.
3	**Made Ground** soils containing elevated concentrations of heavy metals, PAHs and TPHs.	**Residential Site End-Users**	Inhalation, ingestion, and dermal contact with PAH, TPH, Arsenic and Lead contaminants in soil and soil-derived dust from on-site Made Ground.	**Moderate Risk** Engineered capping and geotextile membrane to serve as a physical barrier between original site soils and site surface in areas of soft landscaping. The building footprint and areas of hardstanding will break the source-pathway-receptor linkage across the remainder of the site.
4	**Made Ground** soils containing elevated concentrations of PAHs and TPHs.	**Water Pipes**	Contact with PAH and TPH contaminants in soil from on-site Made Ground.	**Moderate Risk** Installation of contaminant resistant water piping on site to break the source-pathway-receptor linkage across the site is required.

To address the elevated risks the proposed remediation works were detailed in the Curtins Remediation Strategy (Ref.1), together with health and safety management during construction, asbestos management, and measures for dealing with unexpected contamination appropriately through a 'Strategy for Handling Potentially Contaminated Soils and Contaminative Incidents on Site'.

For further background details the previous reports referenced above should be consulted. It is assumed that the Client is in receipt of these reports and that they have also been submitted to and accepted by Manchester City Council to discharge relevant planning conditions.

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1.3.1 Updated Verification Report (P02)

The Remediation Strategy issued to discharge relevant pre-commencement contaminated land planning conditions determined that a minimum of 300mm capping layer, including minimum 150mm topsoil must be included in all front gardens. Following initial review of the first issue of this Verification Report (P01) by the Environmental Health Officer at Manchester City Council, it was advised that a minimum capping layer thickness of 450mm should be installed in all front gardens. One area (HP22, in the front landscaping of Plot 6), identified 400mm capping, including 160mm topsoil and 240mm subsoil. All other tested gardens recorded a capping thickness ≥450mm, including minimum 150mm topsoil. Further remedial work comprising the addition of 50mm topsoil across the front gardens in this area was undertaken, and confirmed through an additional trial pit (HP22A) by a Curtins engineer on 11 March 2024, and reported in a revised Verification Report (P02).

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2 REMEDIAL WORKS UNDERTAKEN

In this document the term 'remediation' is used to define specific works required to address the potential issues arising from asbestos fibres, and contaminated soils, with due account taken for the proposed end-user.

In order to address the risk from elevated concentrations of volatile and non-volatile contamination in soils including asbestos containing materials the following remedial measures were outlined to be required.

- **Remedial Action 1:** Removal of Naphthalene Hotspots.
- **Remedial Action 2:** Asbestos Management, Including Handpicking and Removal of ACMs.
- **Remedial Action 3:** Engineered Capping.
- **Remedial Action 4:** Installation of Contaminant Resistant Water Supply Pipes.

Measures were also provided for dealing appropriately with unexpected contamination encountered on site, through the use of a Strategy for Handling Potentially Contaminated Soils and Contaminative Incidents on Site.

EQUANS are the Principal Contractor on site, with Kennys Contractors Ltd. employed as the groundworks contractor. Required remedial works have been undertaken as part of the soft landscaping implementation as detailed below.

2.1 Remedial Action 1 - Removal of Naphthalene Hotspots

Remedial Action 1 required the removal of Naphthalene Hotspots identified during the Curtins Phase 2 Site Investigation (Ref. 2).

During the Curtins Phase 2 Site Investigation, Naphthalene was recorded above 'Residential' thresholds in CP1 (Site 1), TP11 and CP2 (Site 2). During delineation works, fourteen further samples were taken, all of which recorded Naphthalene below the Generic Assessment Criteria.

Potential Pollutant Linkage 1 identified at the site relates to the inhalation of Naphthalene in Made Ground soils within TP11, CP1 and CP2 and soil-derived dust on site to the site end-users (residential). It was determined that remedial measures were required for the Naphthalene-impacted soils.

Material centred around TP11, CP1 and CP2 was to be excavated (approximately 2.00m x 2.00m) to 1.50m depth and the material removed from the site to a suitably licensed facility. The excavation of the Naphthalene-impacted soils was to be supervised and validated by a qualified engineer.

2.1.1 Validation of the Removal of Naphthalene Hotspots

EQUANS have provided photographic evidence (*Appendix B*) of the removal of the Naphthalene-impacted soils, showing that a 2.00m x 2.00m area, up to a depth of 2.00m in the area of TP11, CP1 and CP2 has been removed, with relevant waste consignment tickets obtained (*Appendix H*).

The removal of the Naphthalene-impacted material was supervised by Kelly Contracting Civil Engineers. Curtins did not have a site presence during these works.

2.2 Remedial Action 2 – Asbestos Management Plan During Construction, Including Handpicking and Removal of Asbestos Containing Materials (ACMs)

Remedial Action 2 required an asbestos management plan to be put in place during construction, along with a recommendation for removal and handpicking of Asbestos Containing Materials (ACMs) identified during the Curtins Phase 2 Site Investigation (Ref. 2).

Potential Pollutant Linkage 2 identified at the site relates to the inhalation of asbestos fibres in soil-derived dust from on-site Made Ground. It was determined that remedial measures were required due to the presence of ACMs.

2.2.1 Asbestos Management, Unexpected Contamination & Contaminative Incidents

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Curtins were not present on-site during groundworks activities. The following details have been provided by EQUANS and sub-contractors Kelly Contractors Ltd.

EQUANS state that their Site Management team receive regular Asbestos Awareness training as part of Company policy and procedure. Due to asbestos being noted in the Curtins Phase 2 Report (Ref. 2), the Site Management team also received specific 'Asbestos in Soils' training. EQUANs state that all operatives who attended site during the groundworks phase were also made aware of the potential asbestos impacted soils as part of the Site Induction, with specific instructions as to what operatives must do should they discover any suspected asbestos. Kelly Contractors groundworks supervisor and staff also received asbestos awareness training. EQUANS' Asbestos Management Process and Plan along with Kelly Contractors Risk Assessment are provided in *Appendix G*.

As part of earthworks, an approximate total of 15.7 tonnes of hazardous construction materials containing asbestos was removed from the site on 09/04/2021, with relevant hazardous waste consignment tickets provided (*Appendix H*). Further ACM (<0.001%) impacted soils were removed from the site on 25/03/2022, with relevant hazardous waste consignment tickets and photographs depicting the removal of the soils evidenced within *Appendix B* and *Appendix H*.

It has been confirmed by EQUANS that no further asbestos or suspected asbestos containing materials were encountered during the groundworks phase, and that handpicking of ACMs was not deemed necessary.

It was also confirmed by EQUANS that, other than the asbestos impacted soils and Naphthalene hotspots, no further unexpected contamination was encountered (*Appendix F*).

2.3 Remedial Action 3 - Engineered Capping

Remedial Action 3 required the installation of engineered capping due to the exceedances of arsenic, lead, PAHs and TPHs in soil identified in the Curtins Phase 2 Site Investigation (Ref. 2).

Hardstanding areas are considered sufficient to break the potential contaminant linkage and therefore no specific remediation measures were required. However, a risk remained in landscaped areas (private gardens and soft landscaping) of exposure to contaminated Made Ground. The proposed minimum depth of cover varied between 600mm (private rear gardens),450mm (private front gardens), and 300mm (general landscaping and public open space). A demarcation layer was proposed beneath the capping layer.

Verification of the installed engineered capping measures to soft landscaped areas was undertaken to ensure remediation has been undertaken as specified and demonstrate the effectiveness of the remediation. Figures 1 and 2 show the location of hand excavated inspection pits undertaken as part of the verification process. It was undertaken in general accordance with the verification and validation plan set out in Curtins Remediation Strategy (Ref. 1).

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Figure 2 – Map showing the different areas of engineered landscaping on Site 1 (North).



Figure 3 – Map showing the different areas of engineered landscaping on Site 2 (South).

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2.3.1 Validation of Imported Soil Quality

Topsoil and subsoil were understood to have been imported from a single source, known as *'Crown Farm'*.

Source chemical analysis testing was undertaken by the supplier, and laboratory testing certificates have been provided to Curtins for review and are enclosed in *Appendix C* (Tim O'Hare Associates, Report Ref. TOHA/22/7546/SS). The topsoil sample was described as a dark brown, slightly moist, friable, very slightly calcareous loamy sand with a single grain structure. The soil samples are shown to be largely compliant with BS3882:2015 specification for topsoil multipurpose grade with the exception of a high sand content. The soil was therefore considered to be suitable for import. Source testing results for subsoil were not required in accordance with Curtins Remediation Strategy. It is assumed that the imported material to be from a greenfield source.

Imported topsoil inspected on-site comprised soft, black / dark brown, very sandy, slightly gravelly clay and subsoil comprised loose, reddish brown, clayey, slightly gravelly sand.

Curtins Remediation Strategy states that 1 sample per 250m^3 of greenfield topsoil/subsoil is required per source (minimum of 3 samples), and 1 sample per 100m^3 of re-used/site won soils is required per source (minimum of 8 samples). Approximately 285.7m^3 of topsoil and 872.1m^3 of subsoil has been imported to site, with Curtins obtaining eight soil samples detailed below:

- 15th September 2023:
  - Topsoil Samples: Plot 104 (back), Plot 105 (front), Plots 8 (back), Plot 5 (back); and,
  - Subsoil Samples: Plot 108 (back), Plots 2 + 3 (front).
- 16th November 2023:
  - Subsoil Samples: HP29 and HP32.

The above samples have been analysed for a contamination suite in accordance with the Curtins Remediation Strategy. No exceedances were recorded above the "maximum permissible concentrations" and no asbestos containing materials or fibres were identified.

Testing was undertaken by Envirolab, a UKAS and MCERTs accredited laboratory, and schedule for the suite of analytes described in *Table 2.*

Table 2 – Environmental Chemical Analysis Suite

Suite Ref.	Analyte	LOD
Soils Suite A	Asbestos Screen, pH and Soil Organic Matter (SOM)	-
	Arsenic, Chromium, Chromium VI, Copper, Lead, Selenium, Zinc, Nickel	1 - 5 mg/kg
	Boron (water soluble)	1 mg/kg
	Cadmium	0.5 mg/kg
	Mercury	0.17 mg/kg
	Cyanide (total)	1 mg/kg
	Phenols (screen)	0.2 mg/kg
	PAHs (USEPA 16)	0.01 – 0.08 mg/kg
	TPH (Aro/Ali Split)	0.01 to 1 mg/kg

Copies of the environmental chemistry testing certificates are presented in *Appendix C.* The screening criteria for which soil chemical testing results were assessed against, Curtins GACs: *Residential with Gardens End-Use with SOM of 2.5%,* are presented in *Appendix D*.

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No visual contaminants were evident on sampling and inspection, and each of the soil samples did not record any chemical concentrations which exceeded the nominated screening criteria. The imported topsoil is therefore deemed 'suitable for use'.

2.3.2 Validation of Engineered Capping Layer

On the 15th September 2023, 3rd October 2023, 16th November 2023,23rd November 2023 and 11th March 2024, Curtins visited site to carry out independent inspections of depth and quality of imported topsoil and confirm the presence of a geotextile layer at the base.

The geotextile layer used in construction of the soft landscaping areas is Wrekin Fastrack Orange Standard Grade Woven Geotextile. The specification guide is included in *Appendix E*.

With reference to Figures 1 and 2, trial holes were undertaken in the areas detailed in Table 3, confirming the required thickness of topsoil and subsoil underlain by an orange geotextile membrane.

Table 3 – Recorded Capping Thickness

Location		Date	Thickness			Geotextile membrane?	Pass / Fail	Notes
Hand Pit	Plot		Topsoil	Subsoil	Total			
HP01	Plot 104 (Rear)	15/09/2023	300mm	380mm	680mm	Yes	Pass	
HP02	Plot 105 (Rear)	15/09/2023	270mm	420mm	690mm	Yes	Pass	
HP03	Plot 106 (Rear)	15/09/2023	240mm	460mm	700mm	Yes	Pass	
HP04	Plot 107 (Rear)	15/09/2023	180mm	490mm	670mm	Yes	Pass	
HP05	Plot 108 (Rear)	15/09/2023	150mm	450mm	600mm	Yes	Pass	
HP06	Plot 109 (Rear)	15/09/2023	160mm	440mm	600mm	Yes	Pass	
HP07	Plot 105 (Front)	15/09/2023	200mm	270mm	470mm	Yes	Pass	
HP08	Plot 109 (Front)	15/09/2023	170mm	300mm	470mm	Yes	Pass	
HP09	Plot 1 (Rear)	15/09/2023	160mm	520mm	680mm	Yes	Pass	
HP10	Plot 2 (Rear)	03/10/2023	350mm	400mm	750mm	Yes	Pass	
HP11	Plot 3 (Rear)	03/10/2023	150mm	560mm	710mm	Yes	Pass	
HP12	Plot 4 (Rear)	03/10/2023	490mm	170mm	660mm	Yes	Pass	

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Location		Date	Thickness			Geotextile membrane?	Pass / Fail	Notes
Hand Pit	Plot		Topsoil	Subsoil	Total			
HP13	Plot 5 (Rear)	03/10/2023	330mm	310mm	640mm	Yes	Pass	
HP14	Plot 6 (Rear)	03/10/2023	310mm	310mm	620mm	Yes	Pass	
HP15	Plot 7 (Rear)	15/09/2023	290mm	360mm	650mm	Yes	Pass	
HP16	Plot 8 (Rear)	15/09/2023	180mm	420mm	600mm	Yes	Pass	
HP17	Plot 9 (Rear)	15/09/2023	170mm	440mm	610mm	Yes	Pass	
HP18	Plot 10 (Rear)	03/10/2023	200mm	410mm	610mm	Yes	Pass	
HP19	Plot 11 (Rear)	03/10/2023	190mm	410mm	600mm	Yes	Pass	
HP20	Plot 12 (Rear)	03/10/2023	410mm	250mm	660mm	Yes	Pass	
HP21	Plot 2 & 3 (Front)	15/09/2023	200mm	300mm	500mm	Yes	Pass	
HP22	Plot 6 (Front)	15/09/2023	160mm	240mm	400mm	Yes	Fail*	HP22 originally failed to meet the 450mm minimum requirements for capping. Additional topsoil was added and the depth to geotextile membrane confirmed during an additional site visit by Curtins on 11th March 2024 (HP22A).
HP22A	Plot 6 (Front)	11/03/2024	240mm	260mm	500mm	Yes	Pass	
HP23	Plot 8 (Front)	15/09/2023	210mm	250mm	460mm	Yes	Pass	
HP24	Plot 12 (Front)	03/10/2023	150mm	400mm	550mm	Yes	Pass	
HP25	-	16/11/2023	210mm	240mm	450mm	Yes	Pass	
HP26	-	16/11/2023	200mm	220mm	420mm	Yes	Pass	
HP27	-	16/11/2023	180mm	320mm	500mm	Yes	Pass	
HP28	-	16/11/2023	200mm	280mm	480mm	Yes	Pass	
HP29	-	16/11/2023	200mm	260mm	460mm	Yes	Pass	
HP30	-	16/11/2023	150mm	150mm	300mm	Yes	Pass	

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Location		Date	Thickness			Geotextile membrane?	Pass / Fail	Notes
Hand Pit	Plot		Topsoil	Subsoil	Total			
HP31	-	16/11/2023	200mm	270mm	470mm	Yes	Pass	
HP32	-	16/11/2023	200mm	300mm	500mm	Yes	Pass	
HP33	-	16/11/2023	190mm	360mm	550mm	Yes	Pass	
HP34	-	16/11/2023	150mm	250mm	400mm	Yes	Pass	
HP35	-	16/11/2023	210mm	280mm	490mm	Yes	Pass	
HP36	-	16/11/2023	300mm	300mm	600mm	Yes	Pass	
HP37	-	16/11/2023	200mm	200mm	400mm	Yes	Pass	
HP38	-	16/11/2023	220mm	420mm	640mm	Yes	Pass	
HP39	-	16/11/2023	160mm	240mm	400mm	Yes	Pass	
HP40	-	16/11/2023	170mm	230mm	400mm	Yes	Pass	
HP41	-	16/11/2023	150mm	280mm	430mm	Yes	Pass	
HP42	-	16/11/2023	150mm	270mm	420mm	Yes	Pass	
HP43	-	16/11/2023	150mm	190mm	340mm	Yes	Pass	
HP44	-	23/11/2023	230mm	170mm	400mm	Yes	Pass	
HP45	-	23/11/2023	200mm	200mm	400mm	Yes	Pass	
HP46	-	23/11/2023	230mm	200mm	430mm	Yes	Pass	
HP47	-	23/11/2023	200mm	240mm	440mm	Yes	Pass	

The locations are shown in Curtins Drawing Ref. 067694-CUR-00-XX-DR-GE-80001-P04 and 067694-CUR-00-XX-DR-GE-80002-P04 presented in *Appendix A* and a photographic log of each verified area is presented in *Appendix B.*

Kenny Contracting and Curtins records demonstrate an orange geotextile membrane has been used beneath all proposed soft landscaped areas at formation with subsoil and topsoil placed above, breaking PPL 3 in these areas.

Correspondence from EQUANS, dated 12th March 2024 confirms that the engineered capping layer has been installed to Plot 6 to a level of 450mm minimum, in line with all other front gardens, see *Appendix F*.

2.4 Remedial Action 4 - Installation of Contaminant Resistant Water Supply Pipes

Remedial Action 4 required the installation of contaminant resistant water supply pipes, as requested by Manchester City Council, due to the elevated concentrations of heavy metals, PAHs and heavy fraction TPHs identified in the Curtins Phase 2 Site Investigation (Ref. 2).

Curtins were not present on-site during groundworks activities and were only instructed to attend site during the engineered capping validation phase. The groundworks have been carried out by Kelly Contracting Ltd and the following details have been provided by EQUANS.

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In correspondence with EQUANS, dated 18th September 2023, it was confirmed that new 25mm barrier pipe was installed, and evidence in the form of photographs (*Appendix B*) and certificates of compliance (*Appendix G*) from the Water Industry Approved Plumbers Scheme (WIAPS) verifying that new 25mm barrier piping was installed.

2.4.1 Validation of Contaminant Resistant Water Supply Pipes

Photographs taken during groundworks have been provided by EQUANS and are appended within the photographic log in *Appendix B.*

Certificates of Compliance for the installation of contaminant resistant water supply pipes have been provided by EQUANS and are appended within *Appendix G*.

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3 CONCLUSION

Considering the available evidence, Curtins can confirm the following:

- The engineered capping layer is present in front and rear gardens along with public soft landscaping areas within Site 1 (North) Site 2 (South) and forms an effective barrier between end users and contaminated soils, verified through a visual inspection by Curtins with associated photographic records obtained;
- Imported topsoil source testing and on-site testing has been undertaken in accordance with the Remediation Strategy. Results have been assessed against the maximum permissible concentrations and no exceedances have been found. Therefore, the soil may be considered clean and suitable for use in the development.

Additionally, EQUANS have confirmed and provided evidence for:

- Where any contaminated soils (Naphthalene hotspots) or asbestos containing materials / fibres were identified, these were removed from the site,
- The water supply piping installed fits the agreed upon specification with United Utilities. and,
- No further unexpected contamination or contaminative incidents other than those described in Section 2 were identified during construction.

In the soft landscaping areas, the Potential Pollutant Linkages, identified in Section 1.3, no longer present an unacceptable risk to site users and visitors, and the site may be considered suitable for use.

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4 REFERENCES

1. Curtins (2020) Gorton Lane Remediation Strategy (Ref. 067694-CUR-00-XX-RP-GE-001).
2. Curtins (2018) Phase 2 Site Investigation for Gorton Lane, Manchester (Ref. 068244-CUR-00-XX-RP-GE-001-V02).
3. Curtins (2018) Phase 1 Preliminary Risk Assessment, Gorton Lane Sites (Ref. 067694-CUR-00-XX-RP-GE-001-V02).

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5 APPENDICES

Appendix A – Drawings

Appendix B – Photographic Records

Appendix C – Imported Soil Analysis

Appendix D – Generic Assessment Criteria

Appendix E – Geotextile Specification

Appendix F – E-mail Correspondence

Appendix G – Certificates

Appendix H – Waste Consignment Tickets

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Appendix A - Drawings

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REVISION	DATE	DESCRIPTION
C01	31.01.22	PRELIMINARY ISSUE
C02	18.02.22	CONSTRUCTION ISSUE

KEY

- SITE BOUNDARY
- PAVING TO PRIVATE EXTERNAL AREAS
- RESIDENTS PARKING COURT
- PRIVATE GARDEN
- NEW TREES
- EXISTING TREES RETAINED
- 1:12 PROPOSED GRADIENTS
- SLOT DRAIN CHANNEL SHOWN INDICATIVELY **TO DRAINAGE ENGINEERS DESIGN AND DETAIL**
- 215MM WIDE GRAVEL MARGIN WITH FLUSH PIN KERBS

PROPOSED SITE LEVELS INDICATED IN RED

EXISTING SITE LEVELS INDICATED IN BLUE

REFER TO LANDSCAPE ARCHITECTS DRAWINGS FOR HARD AND SOFT LANDSCAPE SPECIFICATION AND DETAIL

CONSTRUCTION ISSUE

OMIArchitects

31Blackfriars Road, Salford, Manchester, M3 7AQ
+44(0)161 832 3242 / info@omiarchitects.com / www.omiarchitects.com

PROJECT	GORTON LANE, GORTON				
DRAWING	SITE 01 - SITE LAYOUT GROUND FLOOR PLAN				
DATE	JAN 22'	DRAWN BY	TB	SCALE	1:200 @A1
JOB NO.	1405	DWG.NO.	8790-OMI-XX-00-PL-L1040 C02		

REVISION	DATE	DESCRIPTION
C01	30.10.20	PRELIMINARY ISSUE
C02	25.11.20	GROUND JUNCTION KEY ADDED
C03	04.01.21	SITE LEVELS AMENDED/ADDED AS CLOUDED
C04	19.01.21	PLOT NUMBERS ADDED

KEY

SITE BOUNDARY

NEW TREES

EXISTING TREES

PROPOSED SITE LEVELS INDICATED IN RED

EXISTING SITE LEVELS INDICATED IN RED BLUE

REFER TO DETAIL A2010

REFER TO DETAIL A2011

REFER TO DETAIL A2080

REFER TO DETAIL A2081

REFER TO DETAIL A2100

REFER TO DETAIL A2101

REFER TO DETAIL A2102

REFER TO DETAIL A2103

REFER TO DETAIL A2104

REFER TO DETAIL A2105

REFER TO DETAIL A2106

REFER TO DETAIL A2150

CONSTRUCTION ISSUE

OMIArchitects

31Blackfriars Road, Salford, Manchester, M3 7AQ
+44(0)161 832 3242 / info@omiarchitects.com / www.omiarchitects.com

PROJECT	GORTON LANE, MANCHESTER				
DRAWING	SITE 02 - SITE LAYOUT GF PLAN				
DATE	DEC 19	DRAWN BY	RA	SCALE	1:200 @ A1
JOB NO.	1405	DWG.NO.	8790-OMI-XX-00-PL-A-L1030 C04		



HAND EXCAVATED TRIAL HOLE

PASSED

INCOMPLETE

FAILED

Curtins

Merchant Exchange
17-19 Whitworth Street West
Manchester
M1 5WG
t: 0161 234 8509
e: manchester@curtins.com
w: www.curtins.com

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Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status:
INFORMATION

Project:
GORTON LANE MANCHESTER

Drg Title:
GARDEN PLOT VALIDATION - 'SITE 1'

Scale:	Size:	First Issue:	Drawn:	Checked:
NTS	A3	12/03/2024	LW	RBJ

Drg No: **067694-CUR-00-XX-DR-GE-80001**

Rev: **P04**

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HAND EXCAVATED TRIAL HOLE

PASSED

INCOMPLETE

FAILED

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17-19 Whitworth Street West
Manchester
M1 5WG
t: 0161 234 8509
e: manchester@curtins.com
w: www.curtins.com

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Status: INFORMATION

Project: GORTON LANE MANCHESTER

Drg Title: GARDEN PLOT VALIDATION - 'SITE 2'

Scale:	Size:	First Issue:	Drawn:	Checked:
NTS	A3	19/09/2023	LW	RBJ

Drg No: 067694-CUR-00-XX-DR-GE-80002

Rev: P04

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Appendix B – Photographic Records & Inspection Sheets

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Photographic Record: Naphthalene Removal – Photos Provided by EQUANS

Project: Gorton Lane, Site 1 – CP1.
Sheet: 1



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Photographic Record: Naphthalene Removal – Photos Provided by EQUANS

Project: Gorton Lane, Site 2 – CP2
Sheet: 1





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Photographic Record: Naphthalene Removal – Photos Provided by EQUANS

Project: Gorton Lane, Site 2 – TP11.
Sheet: 1





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Photographic Record: Barrier Pipe Installation – Photos Provided by EQUANS

Project: Gorton Lane, South.
Sheet: 1









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Photographic Record: Barrier Pipe Installation - – Photos Provided by EQUANS

Project: Gorton Lane, South.
Sheet: 2





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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, South, 'Site 2'.
Sheet: 1

Plot: 104 (Rear)
Hole: HP01









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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, South, 'Site 2'.
Sheet: 2

Plot: 105 (Rear)
Hole: HP02









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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, South, 'Site 2'.
Sheet: 3

Plot: 106 (Rear)
Hole: HP03









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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, South, 'Site 2'.
Sheet: 4

Plot: 107 (Rear)
Hole: HP04









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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, South, 'Site 2'.
Sheet: 5

Plot: 108 (Rear)
Hole: HP05









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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, South, 'Site 2'.
Sheet: 6

Plot: 109 (Rear)
Hole: HP06









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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, South, 'Site 2'.
Sheet: 7

Plot: 105 (Front)
Hole: HP07









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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, South, 'Site 2'.
Sheet: 8

Plot: 109 (Front)
Hole: HP08









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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, North, 'Site 1'.
Sheet: 9

Plot: Plot 1 (Rear)
Hole: HP09









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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, North, 'Site 1'.
Sheet: 10

Plot: Plot 2 (Rear)
Hole: HP10









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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, North, 'Site 1'.
Sheet: 11

Plot: Plot 3 (Rear)
Hole: HP11









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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, North, 'Site 1'.
Sheet: 12

Plot: Plot 4 (Rear)
Hole: HP12









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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, North, 'Site 1'.
Sheet: 13

Plot: Plot 5 (Rear)
Hole: HP13







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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, North, 'Site 1'.
Sheet: 14

Plot: Plot 6 (Rear)
Hole: HP14









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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, North, 'Site 1'.
Sheet: 15

Plot: Plot 7 (Rear)
Hole: HP15









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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, North, 'Site 1'.
Sheet: 16

Plot: Plot 8 (Rear)
Hole: HP16



(Photograph taken on 03.10.23)



(Photograph taken on 03.10.23)



(Photograph taken on 15.09.23)

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Project: Gorton Lane, North, 'Site 1'.
Sheet: 17

Plot: Plot 12 (Rear)
Hole: HP17







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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, North, 'Site 1'.
Sheet: 18

Plot: Plot 11 (Rear)
Hole: HP18







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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, North, 'Site 1'.
Sheet: 19

Plot: Plot 10 (Rear)
Hole: HP19









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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, North, 'Site 1'.
Sheet: 20

Plot: Plot 9 (Rear)
Hole: HP20









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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, North, 'Site 1'.
Sheet: 21

Plot: Plot 2 + 3 (Shared Front)
Hole: HP21









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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, North, 'Site 1'.
Sheet: 22

Plot: Plot 6 (Front)
Hole: HP22









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Photographic Record: Capping Layer Depth Validation

Project: Gorton Lane, North, 'Site 1'.
Sheet: 23

Plot: Plot 8 (Front)
Hole: HP23







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