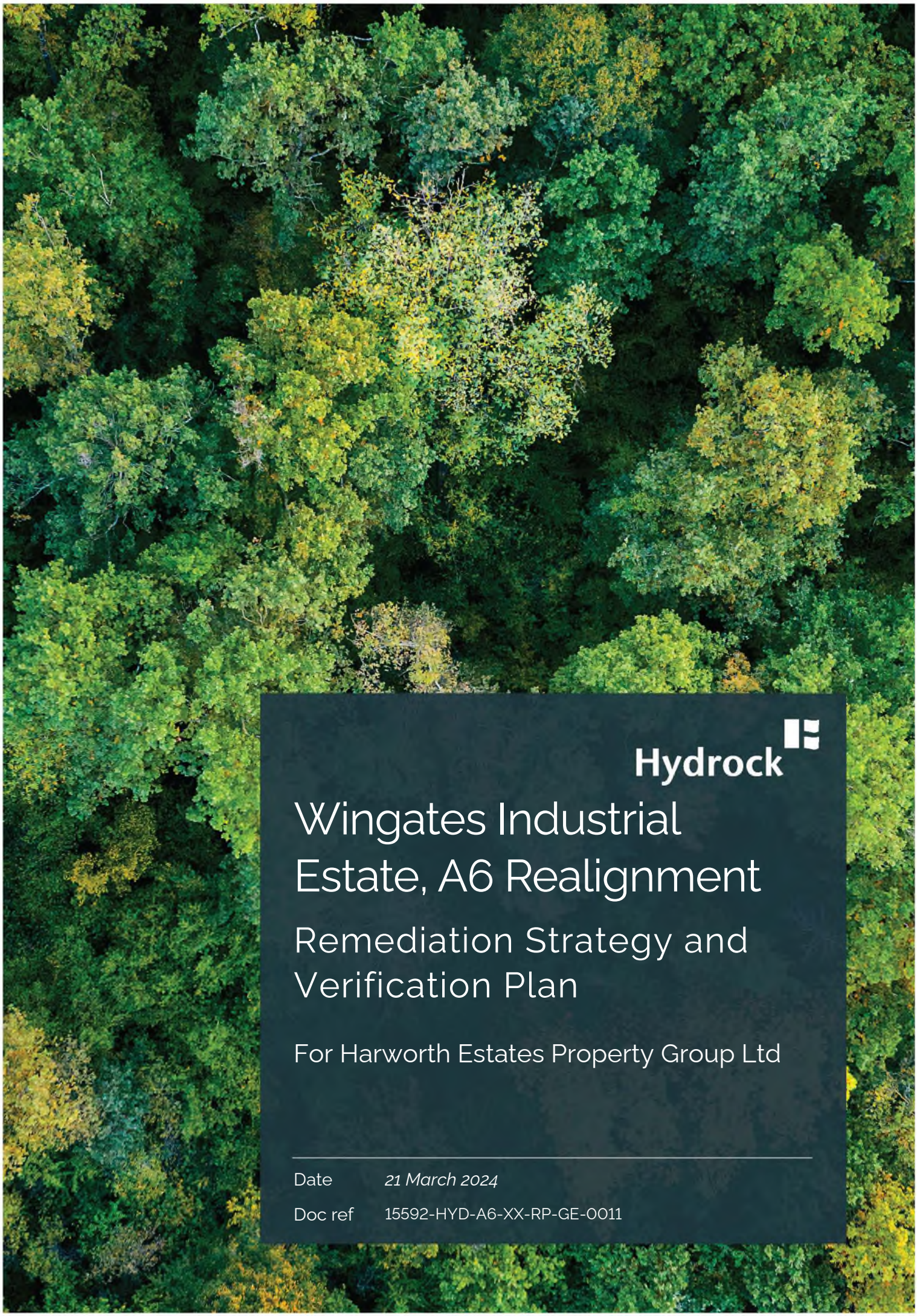

Hydrock

Wingates Industrial Estate, A6 Realignment

Remediation Strategy and Verification Plan

For Harworth Estates Property Group Ltd

Date	*21 March 2024*
Doc ref	15592-HYD-A6-XX-RP-GE-0011

Document control sheet

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P01	S2	21/03/2024	First Issue

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1. Introduction

1.1 Background and Terms of Reference

In March 2024, Hydrock Consultants Limited (Hydrock) was commissioned by Harworth Estates Property Group Ltd (the Client) to prepare a Remediation Strategy & Verification Plan (RSVP) for the enabling works associated with the A6 realignment at Wingates Industrial Estate. The site is located south of Chorley Road (A6) and west of Wimberry Hill Road, 1km north west of Westhoughton Railway Station (National Grid Reference 364453E, 407638N).

The A6 development site includes the northern section of the wider ownership boundary which currently includes undeveloped agricultural fields with gravel access tracks, small ponds with tree and hedge lined field boundaries.

The proposed development comprises highway upgrade and improvement work to the existing A6 Chorley Road to facilitate access to the proposed wider commercial development. An extract from the latest proposed masterplan, RPS Drawing SK211 Rev P06, is shown in Figure 1-1 for illustrative purposes. The wider development is to comprise a number of commercial units with associated access roads, external service areas, parking and areas of green space and landscaping and is part of a separate planning application.

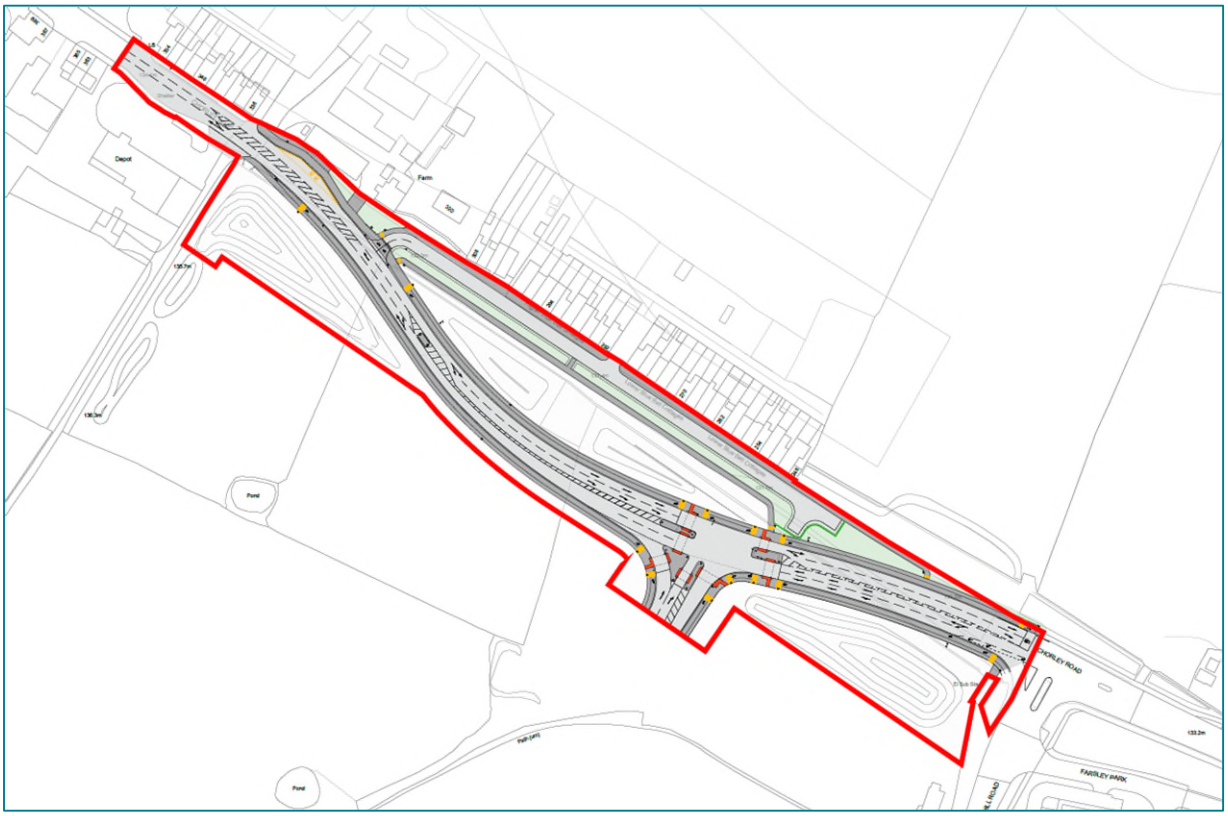

Figure 1-1: A6 Realignment Site Layout. Extract from RPS drawing SK211 P06.

As part of the proposed development, a new section of carriageway will be constructed to the south of the existing alignment together with a new traffic light operated junction and landscape bunds placed at selected locations adjacent to Chorley Road to provide screening. To form the new subgrade, cut and fill earthworks will be undertaken. It is understood that the new section of highway will be adopted by Bolton Council.

The current section of Chorley Road will be maintained as local access to the Lower Blue Bell Cottages on the northern side of the road.

This report has been completed in accordance with Hydrock's proposal referenced (15592-GNMA-FP-GE-0012-P1) and the Client's instructions to proceed via email.

1.2 Previous Reports

Hydrock have previously produced the following reports in relation to the proposed highway improvement works:

- Hydrock. July 2023. A6 Realignment, Wingates Industrial Estate, Bolton. Statement of Intent, Highway Improvements. Report reference 15592-HYD-XX-XX-RP-GE-0009-P01.
- Hydrock. August 2023. A6 Realignment, Wingates Industrial Estate, Bolton. Phase 1 Desk Study and PSSR. Report reference 15592-HYD-XX-XX-RP-GE-0010-P01.

This RSVP and the above referenced Desk Study Report are intended to be submitted in support of the relevant planning conditions relating to land contamination for the proposed development.

1.3 Objectives

The Hydrock works have been commissioned in order to provide a review of the ground conditions and contamination risk and complete a strategy with regards to material re-use and contamination mitigation, which is to be followed as part of the enabling earthworks and construction phase.

In addition, the report is designed to support a discharge of conditions application with reference to the below conditions associated with planning permission reference 16770/23, which was granted on 17th January 2024.

Condition 7 (in full)

The development hereby approved shall be carried out in full accordance with the following approved Preliminary Risk Assessment: Wingates Industrial Estate, dated 14th August 2023 (ref: 15592-HYD-XX-XX-RP-GE-0010-S2- P01) by Hydrock.

Prior to commencement and before any physical site investigation, a methodology shall be approved by the Local Planning Authority. This shall include an assessment to determine the nature and extent of any contamination affecting the site and the potential for off-site migration.

Provision of a comprehensive site investigation and risk assessment examining identified potential pollutant linkages in the Preliminary Risk Assessment should be presented and approved by the Local Planning Authority.

Where necessary a scheme of remediation to remove any unacceptable risk to human health, buildings and the environment shall be approved by the Local Planning Authority prior to implementation.

Any additional or unforeseen contamination encountered during development shall be notified to the Local Planning Authority as soon as practicably possible and a remedial scheme to deal with this approved by the Local Planning Authority.

Upon completion of any approved remediation schemes, and prior to occupation, a completion report demonstrating that the scheme has been appropriately implemented and the site is suitable for its intended end use shall be approved in writing by the Local Planning Authority.

The discharge of this planning condition will be given in writing by the Local Planning Authority on completion of the development and once all information specified within this condition and other requested information have been provided to the satisfaction of the Local Planning Authority and occupation/use of the development shall not commence until this time, unless otherwise agreed by the Local Planning Authority.

Condition 12 (in full)

No soil or soil forming materials shall be brought to the site until a testing methodology including testing schedules, sampling frequencies, allowable contaminant concentrations (as determined by appropriate risk assessment) and source material information has been submitted to and approved in writing by the Local Planning Authority. The approved testing methodology shall be implemented in full during the importation of soil or soil forming material.

Prior to the road being first used open for use by traffic a verification report including soil descriptions, laboratory certificates and photographs shall be submitted to and approved in writing by the Local Planning Authority.

The objective of this RSVP is to present details of the remedial objectives, undertake a remedial options appraisal; describe how the remediation of the site will be undertaken; and outline how the works will be validated. In addition, the strategy explains how the works will be permitted under the current regulatory regime.

The remedial works will ensure that upon completion, the site can be shown to be appropriate for its intended use and that it will not pose an unacceptable contamination risk to identified receptors. This document therefore includes the protective measures required during the enabling works and construction phases in preparing the site for a commercial end use.

This is a working document and it may need to be updated, in agreement with the relevant regulatory bodies, at any stage during development dependent on the conditions encountered. This version therefore constitutes 15592-HYD-A6-XX-RP-GE-0011-S2-P01. This document is subject to the approval of the regulators.

This strategy forms part of a series of documents produced for the site and provides an overview of the site development proposals and discusses remediation procedures.

This document does not cover geotechnical, landscaping, topsoiling or planting requirements for the development.

1.4 Scope

This report has been undertaken in general accordance with Land Contamination: Risk Management (LCRM) (Environment Agency, 2020). The scope of this Remediation Strategy comprises:

- a summary of background information and the conceptual model;
- a summary of the results of ground investigation and risk assessment undertaken at the site;
- remediation requirements to ensure the site is suitable for use; and
- methodology and verification requirement for remediation works.

1.5 Sources of Information

In preparing the remediation strategy the following documents were consulted and should be read in conjunction with it:

Historic Ground Conditions Reports

- RSK. August 2017. 'Wingates, Bolton: Preliminary Risk Assessment and Coal Risk Assessment', Ref: 322362-R1 (00);
- RSK. March 2018. 'Wingates, Bolton: Geo-environmental Assessment', Ref: 322362-R02 (01);
- RSK. September 2018. 'Wingates, Bolton: Supplementary Geo-environmental Site Assessment; Ref: 322362-R03 (00);

Hydrock Ground Conditions Reports

» Hydrock. October 2022. Wingates Industrial Estate, Bolton. Ground Investigation Report. Ref. 15592-HYD-XX-XX-RP-GE-0001-S2-P04.

Architectural Layout

» RPS. November 2023. 'Wingates, Bolton: Illustrative Masterplan New Access', Ref: NKD018161 SK211-P06.

Landscape Designs

» The Environmental Partnership. January 2024. 'Land West of Wingates, Westhoughton: Illustrative Landscape Masterplan, Ref: D9665.0018B.

» The Environmental Partnership. October 2023. 'Land West of Wingates, Westhoughton S73 and new application: Detailed Planting Plan for New Full Application (slot in) – Area 2, Ref: D9665.006B.

Civil Engineering Designs

» BED. November 2023. Wingates Bolton. S278 Agreement Works – General Arrangement Sheet 1. Reference 180009-BED-EX-00-DR-C-2801-P01

» BED. November 2023. Wingates Bolton. S278 Agreement Works – General Arrangement Sheet 2. Reference 180009-BED-EX-00-DR-C-2802-P01

» BED. November 2023. Wingates Bolton. S278 Agreement Works – General Arrangement Sheet 3. Reference 180009-BED-EX-00-DR-C-280-P01

It should be noted that the above are the latest versions at the time of writing and are subject to update and amendment. Works undertaken in accordance with this document should make reference to the latest versions of the above and any other associated documents and drawings.

1.6 Limitations

The report has been prepared by Hydrock on the basis of available information obtained during the study period. Although every reasonable effort has been made to gather all relevant information, all potential environmental constraints or liabilities associated with the site may not have been revealed.

The report has been prepared for the exclusive benefit of Harworth Estates Property Group Limited and those parties designated by them for the purpose of providing information on the remediation and validation works to be undertaken during the enabling works and construction phases of the development. The report contents should only be used in that context. Furthermore, new information, changed practices or new legislation may necessitate revised interpretation of the report after the date of its submission.

Hydrock has used reasonable skill, care and diligence in the design of the remediation of the site. The inherent variation of ground conditions allows only definition of the actual conditions at the locations and depths of trial pits and boreholes at the time of the investigation. At intermediate locations, conditions can only be inferred. Information provided by third parties has been used in good faith and is taken at face value. However, Hydrock cannot guarantee the accuracy or completeness of any information provided by others.

The work has been carried out in general accordance with recognised best practice as detailed in guidance documents such as in the 'Land Contamination: Risk Management' (LCRM, 2023), BS5930:2015+A1:2020 and BS10175: 2011+A2:2017.

2. Conceptual Site Model

2.1 Context

This section presents a summary of the conceptual model pertaining to the site which was initially conceived in the RSK Desk Study from August 2017 (Report Referenced 322362-R1 (00) and was then developed in the Hydrock Ground Investigation Report from February 2022 (Report Referenced: 15592-HYD-XX-XX-RP-GE-0001-S2-P04) and the Hydrock Phase 1 Desk Study and PSSR – A6 Realignment (report reference 15592-HYD-XX-XX-RP-GE-0010.

The above reports should be referred to for full details.

2.2 Site Location and Current Land Use

The site known as Wingates is located south of Chorley Road and west of Wimberry Hill Road, 1km north west of Westhoughton Railway Station (National Grid Reference 364453E, 407638N).

The site location is shown in red on RPS drawing NK018161-SK210 Revision P04 with an extract included in Figure 2-1 below for reference.

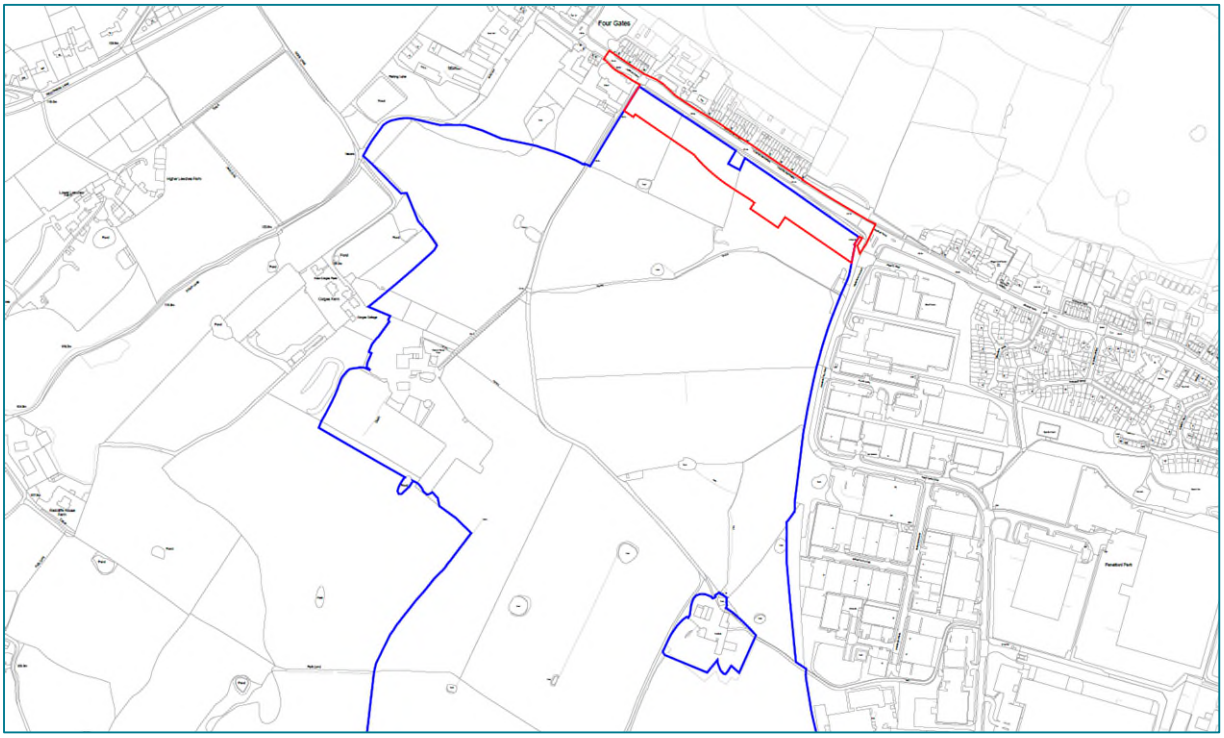

Figure 2-1: Site Location (extract from RPS drawing SK210 P04). Blue line indicates wider ownership boundary

The site is currently undeveloped agricultural fields.

Mature trees are present across the northern boundary and are sporadically present within field boundaries. Overhead cables are present along the northern boundary and crossing the centre of the site from north to south and present on the western boundary. An overhead electricity cable crosses the site in the eastern corner.

The eastern field rises from Chorley Road at approximately 131m AOD to a topographical higher level at 135m AOD in the approximate centre of the site. The western end of the site is at approximately 134m AOD.

2.3 Site History

The history of the site has been reviewed from historical OS maps at various scales (as presented in the Hydrock Phase 1 Study) to identify any previous land use on site or nearby that may pose a geo-environmental risk to the proposed scheme. Review of historical Ordnance Survey mapping indicates:

- Throughout the historical maps the site is shown to remain predominantly undeveloped.
- Chorley road is shown on 1849 mapping in much the same orientation as the present day.
- A well is labelled on the 1849 mapping in the west of the site. However, it is not shown on any subsequent mapping. The location is not clear on the mapping but may actually refer to a well on the other side of Chorley Road.
- Between 1849 and 1894 Albert Colliery and pit is shown 100m north of the site. Also recorded 750m to the north of the site between 1849 and 1929 is New Winnings Coal Pit. Between 1894 and 1929 various coal pits are labelled to the east and south of the site. In 1979 Wingates Industrial Estate is shown adjacent to the south east.
- Scot Lane Colliery is shown 50m west of the site which includes a mine shaft on 1892 mapping.
- Bluebell Farm and Bluebell cottages are present on the north side of Chorley Road, which includes 'smithy row' to the west of the site.

2.4 Scope of Previous Investigation

A number of phases of previous ground investigation has been undertaken at the site with the most recent being undertaken by Hydrock in 2021 and 2022 and reported in Hydrock report reference 15592-HYD-XX-XX-RP-GE-0001-S2-P04.

The ground investigation locations within and within close proximity of the A6 realignment boundary are shown on Hydrock drawing reference 15592-HYD-A6-XX-DR-GE-3001. These have been used to inform and update the conceptual site model and complete the geo-environmental risk assessment.

The ground investigation works for the A6 included the following:

- 5 rotary boreholes to 40m bgl;
- 4 cable percussion boreholes to 8.00 bgl;
- 14 trial pits to 3.40m bgl; and
- 5 window sample boreholes to 4.45m bgl.

The following sections provide a summary of the encountered ground conditions.

Further ground investigation is not proposed at the site, with the exception of additional WAC testing on the Landfill Material. However, additional ground investigation may choose to be undertaken by the Contractor prior to commencing works.

2.5 Geology and Physical Ground Conditions

2.5.1 Summary

The physical ground conditions as encountered by Hydrock in the 2021/2022 Ground Investigation are summarised in Table 2-1.

Table 2-1: Ground Conditions Encountered

Stratum	Depth to top (m bgl)	Depth to base (m bgl)	Thickness (m) (range)	Thickness (m) (average)
Topsoil	0.00	0.30 – 0.50	0.30 – 0.50	0.40
Glacial Till – Soft to firm sandy gravelly CLAY and SAND and GRAVEL	0.30 – 0.50	5.80 – 8.80	5.40 – 8.40	7.20
Pennine Lower Coal Measures – SANDSTONE and MUDSTONE with coal seams	5.80 – 8.80	>40.00	Not proven	Not proven

Detailed descriptions of the encountered ground conditions can be found in Section 5.1 of the Hydrock Ground Investigation Report (Referenced: 15592-HYD-XX-XX-RP-GE-0001-S2-P04).

2.5.2 *Landfill context and delineation*

There are three historic landfills present on the wider site as shown in Figure 2-2, which are recorded as operated by Mr J Langford and first accepted waste including inert, industrial, commercial and household from August 1994. However, only the northern landfill has the potential to influence the A6 realignment works. There are no records of when the landfills last accepted waste, however the environmental report (within the RSK desk study) notes them as inactive. The EA waste reference for the former landfills is 53419.

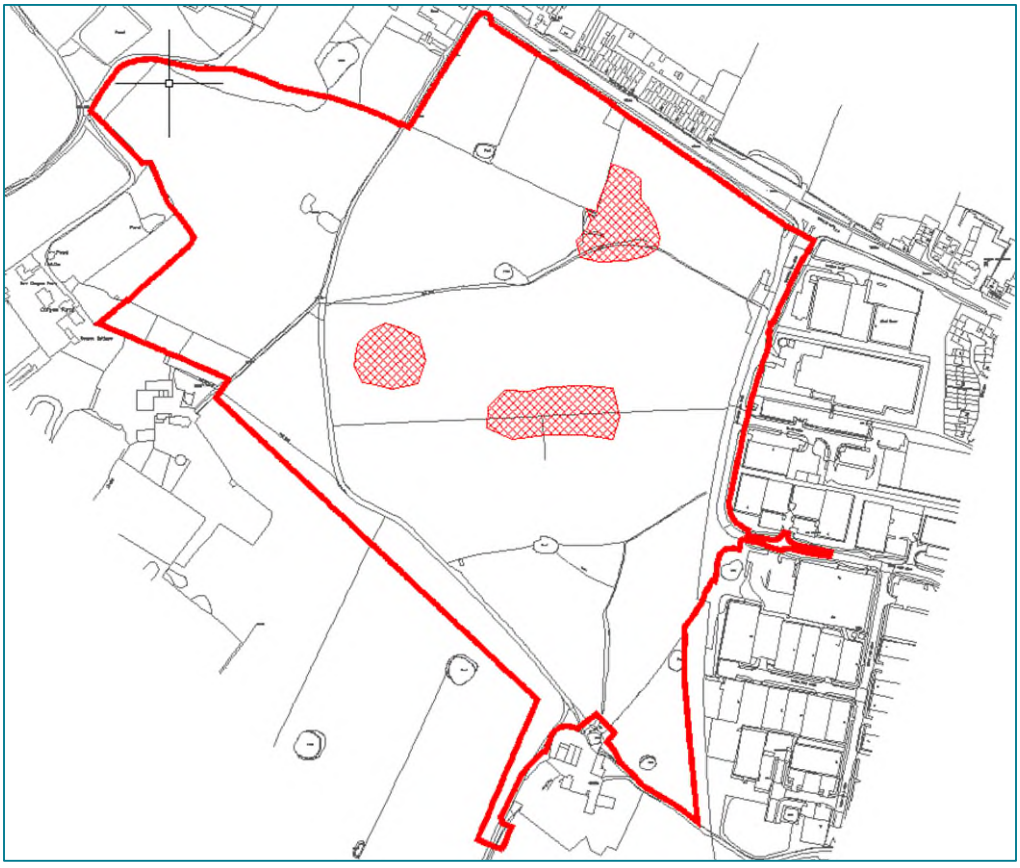

Figure 2-2: Location of EA recorded historic Landfill sites across the wider Phase 1 site

Based on the RSK and Hydrock investigations, the constituents and depth of landfill material encountered in the northern and the central west landfills differ from the central landfill. The northern and central west landfills were found to comprise primarily of sandy gravelly cobbly clay with many waste/manmade constituents such as metal, plastic, wood, and agricultural refuse to depths between 0.3m and >4.8mbgl. The central landfill was found to comprise primarily of demolition materials, generally described as sandy gravelly cobbly clay of brick, sandstone and ceramic to between 0.2m and 3.2m bgl.

Hydrock and RSK undertook Tier 2 Human health risk assessments, screened against a commercial end use scenario, for a total of 12 samples of the material contained within the landfills. None of the samples exceeded the GAC for the commercial end use scenario.

Following the delineation exercise, the approximate extent of the landfill areas has been updated to include both RSK and Hydrock data. This indicates a slight discrepancy with the EA designated area. Based on the site investigation to date, no landfill materials were recorded within the A6 development site.

However, as part of the enabling earthworks for the A6 diversion there is the potential to intercept a portion of the northern landfill during excavation and subgrade preparation based on the original EA boundary. The location of the northern landfill boundary, including the redefined boundary following investigation, is shown on Hydrock drawing 15592-HYD-A6-XX-DR-GE-3001.

This remediation strategy includes specific procedures and protocols required for dealing with the landfill material.

2.5.3 *Coal mining*

The site is in an area which could be affected by underground mining in six seams from shallow depth to 380m bgl.

The Cannel Coal Seam outcrops across the north of the wider site from west to east, which is approximately 30m south of the A6 development site. Beyond the Cannel Coal Seam, the older King Coal Seam sub crops offsite by approximately 50m north.

One mine entry (364407-005) is present in the west of the site, adjacent to the existing gravel access track. Two further mine entries (364407-002 and 36407-001) are recorded up to 20m from the site boundary. No mine entries are present within the A6 site boundary.

Hydrock have undertaken two coal mining investigations at the site in June and November 2021 in order to determine if the site had been subject to historical workings in shallow seams. The findings are summarised below.

June 2021 Hydrock Coal Mining Investigation

The June 2021 investigation concluded that potential abandoned mineworkings had been identified to underlie the site at shallow depth recorded at one location in RO01 (40m south of the A6 boundary) between 11.0 – 14.0m bgl. At this location broken ground and loss of flush was noted. It was interpreted that these possible workings are in the Cannel seam. There is evidence to suggest further possible workings within the deeper King seam at 29.0 – 29.5m bgl in RO01 and at 30.0 – 30.4m bgl in RO10 where soft ground was encountered.

Where underground mineworkings at shallow depth are present this poses an unacceptable risk to the proposed development due to the potential for collapse and upward migration of voids. A thickness of around 3.0m of broken ground was encountered in RO01 and 1.0m of soft ground in RO14, which suggests partial collapse may have occurred.

On this basis further investigation was proposed by Hydrock to target the Cannel Seam and delineate possible workings.

November 2021 Supplementary Hydrock Coal Mining Investigation

During the Hydrock investigation, no broken ground or loss of flush was encountered in any of the 17 additional rotary open holes drilled. In the majority of open holes both the upper unnamed seam and the Cannel seam were encountered, with both seams found to be intact which suggests that neither seam has been worked beneath the site.

Summary

No treatment or further mitigation measures are considered necessary in relation to the shallow coal seams beneath the site.

2.6 Hydrogeology and Groundwater

The Glacial Till is classed as a Secondary Undifferentiated Aquifer. The Pennine Lower Coal Measures Formation and Cannel Rock are classified as Secondary A aquifers.

There are no recorded groundwater abstractions wells within 900m of the site and the does not overlie a Groundwater Source Protection Zone.

Groundwater was recorded in the majority of the trial pits excavated within the boundary of the A6 realignment. The depths recorded ranged between 1.20m and 2.90m and included slow to fast inflows of water accompanied by side wall instability.

2.7 Hydrology

There are a number of ponds and drainage ditches present across the wider site. A drainage ditch transects from the eastern boundary to the south of the site. This drainage ditch is likely flowing in a south eastern direction towards Marsh Brook located offsite. A drainage ditch appears to offshoot south west from a pond in the south of the site and then likely culverts offsite. Surface water within this ditch appears to be flowing south west and will discharge into Borsdane Brook offsite.

There are two surface water abstractions within 1500m of the site boundary and both are used for spray irrigation at a golf course.

Surface water on site will runoff to the north towards Chorley Road.

In the permanent condition surface water will be discharged to the attenuation ponds in the south of the site.

2.8 Regulatory information and Consultation

There are two discharge consents within 250m of the site boundary. They include the discharge of final treated effluent. One consent at 79m south east is at a domestic property with no receiving water noted. The second consent is 124m west of the site at a domestic property with receiving water recorded as Cunningham brook, a tributary of Borsdane Brook.

There are four pollution incidents recorded within 250m of the site boundary. At 15m west of the site other pollutants run off, 81m west agricultural run-off, 122m south sewage from a wrong connection and 165m west agricultural run off all to the receiving water of Cunningham Brook. All incidents are recorded as Category 3 minor incidents and are not considered to have significantly impacted the subject site.

2.9 Radon

The previous desk study indicates that the site is in a Radon Affected Area where recorded radon levels in 1-3% of homes are above the action level but no radon protection measures are required for new buildings at this location in line with current guidance.

2.10 Unexploded ordnance (UXO)

The previous desk study indicates a very low risk and no further assessment is required with regard to UXO in relation to ground investigation. Further assessment may be considered prudent for construction activities.

3. Risk Assessment Review

3.1 Introduction

This section summarises the risk assessment findings as presented in the Hydrock ground investigation (Report Referenced: 15592-HYD-XX-XX-RP-GE-0001-S2-P04), and is subject to agreement with the regulators.

As the site area covered by the proposed A6 realignment is relatively small and given the relative simplicity of the ground model, the following section also considers test results from the wider to provide a representative assessment.

3.2 Human Health

3.2.1 Heavy metals, metalloids and PAHs

As part of the Hydrock Ground Investigation undertaken in May/June 2021, nine samples of Made Ground (landfill material) and 22 samples of the natural soils were tested for the presence of heavy metals, metalloids and PAHs. Samples were taken across the wider site with three tests of the natural soils taken within the A6 realignment.

The results were screened against the 'Commercial' CLEA land use scenario.

Whilst only a small section of the site may be impacted by landfill material, the chemical testing results found no elevated concentrations above the relevant generic assessment criteria (GACs) for metals, metalloids or PAHs within the Made Ground (landfill material) or natural soils.

3.2.2 Petroleum hydrocarbons (PHC)

Analysis of the Made Ground (landfill material) has not identified petroleum hydrocarbons in soils which exceed the GAC for TPH fractions.

3.2.3 Volatile organic compounds (VOC) - soils

Non-targeted analysis of VOC was undertaken of the Made Ground (landfill material). No VOC have been identified at concentrations in excess of the GAC for the indoor air pathway.

3.2.3.1 Semi-volatile organic compounds (SVOC) - soils

Non-targeted analysis of SVOC was undertaken of the Made Ground (landfill material). No SVOC have been identified at concentrations in excess of the GAC for the indoor air pathway.

3.2.4 Asbestos

A total of 31 soils samples were screened for asbestos (laboratory analysis). Asbestos was not detected in any of the samples.

In addition, no visual evidence of Asbestos Containing Materials (ACM) was identified in any of the exploratory hole locations.

3.3 Ground Gas

The computed GSV for carbon dioxide is CS2 and methane is CS1 conditions, with methane and carbon dioxide at concentrations 'typically' below 5% and 1% respectively. Although the computed GSV for carbon dioxide indicates CS2 conditions, the data suggests this is borderline CS1 due to consistently elevated carbon dioxide (5-10%) detected in only six boreholes.

No structures are proposed as part of the A6 realignment and further consideration of ground gas is not included in this report.

3.4 Controlled Waters

Hydrock believes the risk of pollution to controlled waters at the site is very low based on the following:

- historically the majority of the site has remained undeveloped (with the exception of the known landfill areas);
- the ground investigation has not identified a viable source of contamination, with Made Ground generally limited to the landfill areas;
- the tier 2 human health risk assessment for soils has identified that there are no chemicals of potential concern in the landfill material, topsoil or Glacial Till at concentrations above the GAC;
- the site is underlain by low permeability cohesive Glacial Till, which is expected to inhibit the downward migration of chemicals within soils;
- the proposed development will see the introduction of hardstanding across the majority of the site, reducing the infiltration of surface water; and
- there are no recorded groundwater abstractions wells within 900m of the site and the does not overlie a Groundwater Source Protection Zone.

On this basis, Hydrock believe that in this instance chemical analysis of groundwater was not warranted. Hydrock believes the risk to groundwater and surface water at the site is very low and no further consideration is required.

3.5 Water Pipelines

The site is previously undeveloped, with three areas of confined brownfield (landfills). However, the investigation has not detected organic contamination in exceedance of the threshold values and Hydrock believes standard pipework may be suitable for the site. However, confirmation should be sought from the water supply company at the earliest opportunity and a specific risk assessment (outside the scope of this report) will likely be required.

3.6 Summary

A source-pathway-receptor model has been development as part of the risk assessment undertaken as part of the ground investigation report (Section 7.8). Review of the assessment together with the findings of the desk study indicates that no mitigation measures are required as the identified receptors are not applicable to the proposed A6 realignment.

4. Remedial Strategy

Specific contamination remediation is not required as part of the realignment of the A6. However, a number of tasks will be required should unsuitable materials be encountered. Remediation will be undertaken such that the site is suitable for use as the proposed new A6 realignment and access to the wider logistics and distribution estate. The required standard of remediation will be achieved through a variety of techniques as outlined in the following sections.

The objectives of the remediation works are to:

- break the linkage between potentially encountered contaminants in the Made Ground and Landfill and future site users (including users of neighbouring properties);
- minimise off-site disposal requirement; and
- create a geotechnically suitable development subgrade.

The implementation of the remediation strategy will be in accordance with documented quality assurance procedures to be prepared by the Principal Contractor. These will include the following:

- *Detailed Remediation Method Statement (DRMS)* – This document sets out the requirements for gathering data to demonstrate the effectiveness of the remediation in terms of meeting the remediation objectives. Further details are provided in the following sections of this report.
- *Completion Report* – A validation report shall be provided by the Principal Contractor to include a complete record of the remediation activities undertaken at the site and the data collected as part of the verification plan to support compliance with remediation objectives and criteria. It shall also include descriptions of the works with associated 'as built' drawings and details of any unforeseen conditions encountered during the works and how they were dealt with.

In addition to the above, the Principal Contractor will be required to secure all necessary permits and licences to allow remediation to be undertaken and prepare appropriate health and safety risk assessments and method statements.

As soils are to be re-used on site it is recommended that a Materials Management Plan is completed in accordance with the Wate Framework Directive (WFD) and the 'CL: AIRE Definition of Waste Development Industry Code of Practice, 2nd Edition'. At this stage it is assumed that Hydrock will be writing and managing the MMP for the wider Phase 1 site, which includes the works associated with the A6 realignment.

4.1 Rolls and Responsibilities

The following table summarises the relevant parties and their anticipated rolls in relation to the enabling, remediation and earthworks associated with the A6 realignment.

Table 4-1: Role and Responsibilities

Role	Organisation	Contact	Details of Role
Client	Harworth	David Burkinshaw	Landowner, responsible for appointing appropriate people and specific responsibilities under CDM 2015
Environmental Health Officer	Bolton Council	Caroline Greenan	Review of submissions to discharge conditions
Clients Agent	Walker Sime	Jonathan Masters	Project Manager

Role	Organisation	Contact	Details of Role
Principal Designer	JPW Consulting	John Wynn	Responsibilities under CDM 2015 and Client' s CDM advisor
Landscape Architect	TEP	Narada Haralambous	Landscape designer
Civil Engineer	BED	Steve Sloan	Pavement designer to be novated to the Principal Contractor
Geotechnical and Geoenvironmental Consultant	Hydrock	Daniel Fry	Earthworks and remediation designer retained by the Client
Principal Contractor	TBC	TBC	Design and build contractor responsible for delivering the works
Principal Contractor's Geoenvironmental Consultant	TBC	TBC	Consultant employed by the Principal Contractor to validate the remediation and enabling works
Principal Contractor's Specialist Subcontractor	TBC	TBC	Specialist contractor employed by the Principal Contractor to design and carry out specialist activities where required (remediation / ground improvement)

4.2 Summary of Remediation Stages

Based upon the findings of the ground investigation and risk assessment, the following works will be undertaken to create a site which is suitable for its proposed end use.

The following remedial activities will be required to deliver the site Suitable for Use (SFU) for the defined commercial end use and can be separated into Enablement Phase and Construction Phase. It is understood that the appointed Principal Contractor will complete both the enablement phase and construction phase with regards to the A6 realignment.

The remediation works should aim to maximise the reuse of soils on site and minimise off-site disposal, whilst recognising the end goals of the various Specifications.

4.2.1 Pre-Enablement Phase (Client Responsibility)

- Task 1: Project setup and management including liaison with the Local Authority, Environment Agency and Health and Safety Executive, where necessary, with appropriate permits / licences / consents / approvals granted.
- Task 2: Appointment of an appropriate Principal Contractor.
- Task 3: Materials Management Plan (MMP) including QP declaration.
- Task 4: Completion of a United Utilities water pipework risk assessment and submission to United Utilities for approval.

4.2.2 Enablement Phase (Principal Contractor Responsibility)

- Task 5: Obtain all appropriate permits, licences and consents required in the execution of the works.

- Task 6; Specialist remediation / ground improvement design and appointments as required.
- Task 7: Pre-works compliance monitoring including noise, dust and asbestos air monitoring at site boundaries, before earthworks commence and during the earthworks in accordance with the CEMP.
- Task 8: Asbestos awareness training (minimum) by the Principal Contractor to all site staff.
- Task 9: Watching brief during enabling and remediation works.
- Task 10: Site strip including removing of topsoil and existing pavement layers and stockpile testing.
- Task 11: Decommissioning of redundant boreholes and wells where recorded.
- Task 12: Over-excavation of all Landfill Material to be excavated, tested and removed from site (where encountered).
- Task 13: Excavations to required subgrade / sub-formation level and stockpile testing.
- Task 14: Reuse, modification (where necessary) and placement of soils demonstrated as suitable for use (Materials management).
- Task 15: Off-site disposal of geotechnically or environmentally unsuitable material (in addition to Landfill Material).
- Task 16: Implementation of the Discovery Strategy during all phases of enabling works.

4.2.3 Construction Phase

The Construction Phase of works is anticipated to be undertaken by the Principal Contractor for the Enablement Phase. The Contractor shall undertake:

- Task 17: Importation of suitable materials in accordance with the design including pavement foundations and topsoil (where site won soils are not suitable).
- Task 18: Validation of the works, provision of a Contractors Completion Report and the discharge of Condition 7 and 12.

4.2.4 General Notes

Although asbestos was not identified visually during ground investigation or in soil samples during the ground investigation, all staff for all phases of work, should be made aware of the possible presence of asbestos within the Made Ground soils anywhere on the site, particularly the Landfill Material at any stage of the development.

The Contractors for each stage of works must manage the risks in accordance with their legal requirements and will need to prepare appropriate health and safety documentation and obtain appropriate approvals, licences, consents and permits prior to commencement. In addition, appropriate working methods, monitoring and reassurance testing will need to be undertaken during the works.

All works on site during any phase of work will require the use of suitable air, dust and noise monitoring, personal protective equipment (PPE) and respiratory protective equipment (RPE) as required by current guidance, practice guidance and legislation. Information is provided in Appendix C to assist. However, it should be noted that the guidance provided in Appendix C is considered to be the minimum standards to be met by the Contractors and it is the Contractors responsibility to ensure works are undertaken in line with the above. Please refer to Appendix C for additional information and general requirements.

All works need to be undertaken in accordance with the Remediation Strategy and Verification Plan (this document), the earthworks and pavement specification and a Materials Management Plan with a QP Declaration and all remediation works are to be overseen by suitably experienced site staff to

include a site watching brief by a suitably qualified Consultant employed by the Principal Contractor.

5. Remediation Strategy Implementation - Pre-Enablement Phase

The Client will arrange to undertake the following works.

5.1 Task 1: Project set-up

Prior to commencement of site activities, detailed planning of the project shall be undertaken including liaison with relevant stakeholders. This report, along with copies of previous environmental reports regarding the site, should be submitted to the Local Authority and the Environment Agency (where required) for comment.

This report is designed to be submitted as part of a discharge of conditions application for Condition 7 and Condition 12. Note the Principal Contractor will be responsible for providing the appropriate documentary evidence to enable the complete discharge of Condition 7 and 12.

The project is to be operated under the Construction, Design and Management (CDM) Regulations, (2015).

5.2 Task 2: Contractor appointment

Under the CDM regulations, the client should appoint a Principal Designer, who would provide the Pre-construction Information Report (PCIR) and appoint a Principal Contractor who must provide a site-specific Construction Phase Health and Safety Plan (CPHASP) prior to works commencing. It is understood that JPW consulting has been employed by the Client to fulfil this role.

The Principal Designer will review the CPHASP and notify the local office of the Health and Safety Executive (HSE) of the works prior to commencing (via form F10).

The Principal Contractor must manage the risks in accordance with the requirements outlined in this document and will need to prepare appropriate health and safety documentation and obtain appropriate approvals, licences, consents and permits prior to commencement.

It is the contractor's responsibility to decide, based on the information presented, whether the works required are notifiable and/or require the assistance of a 'Licensed Asbestos Removal Contractor' with respect to the Control of Asbestos Regulations (CAR) 2012 and the associated industry guidance, CAR-SOIL™ (Interpretation for Managing and Working with Asbestos in Soils and Construction and Demolition Materials – 2016).

The Principal Contractor will be responsible for implementing the MMP for the site.

The Contractors will need to have suitable experience working in a similar setting, with similar ground conditions and with the Contaminants of Concern present at the site.

5.3 Task 3 Materials Management Plan (MMP)

As the development works are planned to include excavation of material and its reuse on site including Made Ground, a Materials Management Plan (MMP) will be required in order to comply with waste regulations. Compliance with an MMP is evidence that the re-used materials are not a waste. At this stage Landfill Material will not be re-used on site.

It is proposed that Hydrock produce and manage the MMP through the design, construction and verification phase with input required from the Contractor throughout the works.

The MMP needs to be prepared in accordance with Version 2 (2011) of the CL:AIRE Definition of Waste Development Industry Code of Practice after which it must be checked by a Qualified Person and Declared via the CL:AIRE website. Only after CL:AIRE has confirmed acceptance of the Declared MMP can the works be implemented. Retrospective application of an MMP is not possible and working in the absence of an MMP may contravene waste regulation.

The MMP is a working document, it should be kept up to date as earthworks progress. It should also be amended in the light of ground conditions actually encountered and as development plans are refined.

The Contractors Completion Report, will comprise remediation, as-built and geotechnical information and will be needed to provide full validation records for the MMP update, based on the earthworks actually undertaken.

The following are required to be provided by the Contractor prior to Hydrock completing the MMP:

1. Name and address of the contractor undertaking the earthworks.
2. Name and address of the contractor undertaking any treatment works.
3. Detailed volumetric analysis including cut and fill drawings and material split (topsoil, subsoil, crushed concrete etc).
4. Volume of material to be disposed of off-site and details of waste haulier (if known).
5. Requirement for the importation of materials and the donor site detailed for all imported materials (if known). Excludes aggregates.
6. Details of contractual requirements with regards to
    a. Out of specification materials
    b. Excess materials
    c. Delays to programme
7. Details of the Contractor's proposed material tracking procedures
8. Predicted date for completion of the earthworks.

In order for Hydrock to provide suitable updates to the MMP, the Contractor will need to provide updates to the information initially submitted to Hydrock. This further information is likely to include:

1. Staged construction drawings.
2. Levels on cut and fill drawings – this may be a series of drawings.
3. Finished levels drawings for earthworks/development.
4. Updates to cut and fill volumes with mass balance calculations.
5. The source site and volumes of soils proposed to be imported.

It is assumed at this stage that the earthworks will be managed from a waste regulatory perspective under the materials management process described above.

5.4 Task 4: United Utilities Water Pipe Risk Assessment

Prior to the onset of the enabling works its recommended that a United Utilities Water Pipe Risk Assessment is undertaken using the available chemical data from the ground investigations. This forms part of the water pipe design currently being completed by others.

On completion of the risk assessment, it should be submitted to United Utilities for approval.

6. Remedial Strategy Implementation - Enablement Phase

The Principal Contractor will undertake the following works:

6.1 Task 5: Permits and Licences

The site-specific permits that will need to be obtained prior to starting on site (not limited to) include:

- Environmental Permit (Environment Agency) / Mobile Plant Permit- potentially required for the excavation, sorting and reuse of soils;
- Discharge Permit (Environment Agency) – potentially required for the discharge of surface water and pumped water from site during construction activities.

6.2 Task 6: Specialist Contractor/designer appointment

As part of the design and build contract the Principal Contractor shall appoint specialist organisations where required. As a minimum this shall include:

- A Geo-environmental consultant to validate the removal of Made Ground and Landfill Material (where encountered). Note where no Made Ground is recorded validation of the subgrade is still required to demonstrate that the site is suitable for use.

During the course of the works there maybe the requirement to implement additional design and validation in accordance with the Discovery Strategy in Appendix B.

6.3 Task 7: Noise, dust and asbestos air monitoring at site boundary

Asbestos fibres

Boundary and reassurance air quality monitoring for potential airborne asbestos fibres is required and as a minimum when the Landfill Materials (or any other Made Ground) are excavated. No sources of asbestos have been identified on the site which would warrant this monitoring during other earthworks or construction operations. Monitoring of the landfill excavations should occur at no less than once visit per week until it can be determined that the implemented asbestos specific control measures are suitable and sufficient.

Boundary air monitoring results during works shall be compared with acceptable maximum standards set by the HSE. For asbestos these air monitoring procedures and limits are given in HSG 248 entitled "Asbestos: The analysts' guide for sampling, analysis and clearance procedures" and CAR 2012. The limit used is governed by the levels stated in the above guidance documents and the accuracy of the testing used.

However, for asbestos Hydrock recommend using the most stringent limit set by the HSE. Asbestos air monitoring results are acceptable only if they fall below this limit and are as low as reasonably practical (<0.01f/ml).

Dust and Noise

Boundary noise and dust monitoring will be undertaken before site works commence to establish baseline conditions. This monitoring will continue during enablement and construction works to determine if during the works there is evidence of an increased risk of dust and noise pollution.

Boundary air and noise monitoring results during works shall be compared with acceptable maximum standards set by the HSE.

6.4 Task 8: Asbestos awareness

It is recommended that asbestos awareness training is provided to all site staff as a minimum. The potential for encountering asbestos should also be included in all Risk Assessments and Method Statements and the site induction to inform the relevant personnel about the procedures for encountering unexpected Asbestos Containing Material (ACM) at the site.

In addition, it is recommended that posters and handouts are displayed in site offices and welfare facilities to ensure ongoing awareness of asbestos, throughout the duration of the project.

6.5 Task 9: Watching brief during enabling works

The Principal Contractor must provide a suitably qualified and experienced geo-environmental / remediation engineer to oversee the excavation works on a full-time basis. In addition to this, Hydrock will provide a watching brief on behalf of the Client on a part-time basis.

To enable the discharge of planning conditions, the Contractor shall provide all the information detailed in this RSVP and any further information requested by Hydrock.

The Contractor shall inform Hydrock after each area is exposed so that they may attend and witness the excavation. The Contractor shall survey to Ordnance Survey Grid Reference and Ordnance Datum the base and sides of all excavations and shall provide a composite base of excavation drawings for reference during the works, and as built records.

During the earthworks the Contractor and their appointed geo-environmental consultant will undertake additional visual investigation, with any additional plausible source-pathway receptor linkages identified (hotspots of visual or olfactory evidence of contamination/visible ACM etc) to be added to the remedial requirements.

The Contractor shall provide adequate protection against collapse of the excavations and suitable groundwater control measures shall be put in place until the voids are backfilled to a suitable geotechnical specification.

The contractor shall ensure that where services cross the site boundary and are to remain, the risk of any future contamination entering or leaving the site area through these pathways is negligible. The Contractor shall state their methodology for ensuring this requirement.

All unsuitable material is to be stockpiled, tested and removed from site to a suitably licensed facility in accordance with Tasks 13 and 15.

6.6 Task 10: Site Strip

As part of the enabling works there is a requirement to complete a surface strip including removal of surface vegetation, topsoil and the existing pavement materials.

Reference should be made to BED site clearance drawings 180009-BED-EX-00-DR-C-2825 to 2827 for specific requirements relating to the removal of existing hard surfacing associated with the existing Chorley Road.

Stripped materials shall be suitably segregated, stockpiled and tested to determine acceptability for re-use.

Grass and surface vegetation shall be topped and removed prior to stripping topsoil.

6.6.1 Sampling and Testing Requirements

Following the site strip the material shall be tested for acceptability in accordance with Table 6-1.

Table 6-1: Chemical Testing Requirements for Material Generated as Part of the Site Strip

Material Type	Sampling Frequency*	Testing Requirements	Acceptability Limits
Topsoil	1/1000m^3	Chemical constituents	Table 8.1
Bituminous surface materials	1/250m^3	PAH	BaP <50mg/kg*
Existing aggregates	1/500m^3	Chemical constituents	Table 8.1
*all material types shall be subject to a minimum of 5 tests **material containing in excess of 50mg/kg of Benzo(a)pyrene may contain Coal Tar			

The use of Asphalt Waste Containing Coal Tar (AWCCT) is only permitted where it is re-used in accordance with the Environment Agency regulatory position statement 075.

For existing granular materials, particularly recycled aggregates the following is required:

- no visual contamination (oil staining, asphalt, etc.) as confirmed by the Contractors Geoenvironmental Consultant watching brief and verified by Hydrock;
- limited deleterious material (organics, wood, metal etc.) demonstrated by a value of <1% Class X where tested in accordance with SHW Clause 710 for constituent parts; and
- no visible asbestos containing material (ACM) as confirmed by the Contractors Geoenvironmental Consultant watching brief and verified by Hydrock.

Reference should also be made to the requirements of the earthworks specification where additional geotechnical testing and acceptability limits are stated.

6.6.2 Surface Protection and Water Management

Following the site strip, the exposed surface will be susceptible to damage from surface water and erosion from run-off.

The Principal Contractor shall be responsible for ensuring that both surface water and groundwater are suitably controlled so as to prevent deterioration and damage of the subgrade and silt pollution of watercourses and ditches is prevented.

The Contractor shall consider measures necessary to mitigate and prevent excess silt entering watercourses and this shall include a suitable continency strategy where required.

6.7 Task 11: Decommissioning of Redundant Boreholes and Wells

Full reference shall be made to the Environment Agency guidance 'Good Practice for Decommissioning Redundant Boreholes and Wells' 2012.

6.7.1 Exploratory Boreholes

A number of exploratory boreholes with monitoring wells have previously been installed at the site as part of various phases of ground investigation. The location of the boreholes is shown on Hydrock drawing reference 15592-HYD-A6-XX-DR-GE-3001, which also includes those installed with monitoring wells. Decommissioning of the boreholes is required and shall include removal of the headworks and pipework and backfilling with low permeability grout in order to limit the flow of groundwater up or down the borehole.

6.7.2 Possible Well

Whilst not visible at the surface or recorded as part of previous investigation, a possible well feature is marked on the 1849 historic map. The location of the possible well feature is shown on Hydrock drawing 15592-HYD-A6-XX-DR-GE-3001 at approximate grid reference E364357, N407734.

Where a well structure is encountered the following should be undertaken:

1. The area should be made safe if the ground is voided.
2. The centre of the well should be accurately surveyed and the diameter measured.
3. Investigation of the lining (if any) and nature of the backfill.
4. Treatment of the existing backfill (where required).
5. Design and installation of an impermeable plug and cap.
6. The Environment Agency and British Geological Survey should be notified of the location and methods of treatment.

Where a well is encountered, the Principal Contractor is responsible for designing and implementing such measures as to ensure transport of surface contaminants is mitigated and the ground is stable.

As built records of any treated or decommissioned wells should be included in the Contractors Completion Report.

6.8 Task 12: Landfill material to be excavated, sorted, stockpiled and tested

6.8.1 Context

Hydrock have previously produced a technical design note for proposed management and re-use of the Landfill Materials (ref. 15592-HYD-XX-XX-RP-GE-0003-S2-P01), which has been issued to the Environment Agency for review and comment. The outcome of the consultation with the Environment Agency was that the Landfill Materials cannot be re-used under the Definition of Waste Code of Practice (DoWCoP) and would otherwise require a Deposit for Recovery Permit. Given the anticipated volume of the Landfill Material, it is currently proposed to excavate and remove all associated material and dispose of off-site to a suitable waste facility.

6.8.2 Landfill Remediation Proposal

The works associated with the A6 realignment may intercept the northern landfill. The extent of the landfill material extracted from the Environment Agency mapping is shown on Hydrock drawing 15592-HYD-A6-XX-DR-GE-3001. A number of phases of investigation have been completed and the landfill areas have been further delineated. The anticipated extend of the northern landfill based on ground investigation is also included on the drawing.

The calculated landfill areas are approximate and require fully 'chasing out' in each direction, by the Contractor to either full extent or the edge of the works boundary.

A full topographic survey is required on completion of excavation.

Excavated materials shall be separated into different streams for recycling including metal, wood, tyres etc. However, all Made Ground materials excavated from within the landfill area shall be removed from site. **No Landfill Material is permitted to be re-used on site.**

Reference should be made to the Hydrock ground investigation report (reference 15592-XX-XX-RP-GE-0001) for a description of the Landfill Material and initial waste characterisation.

At the time of writing Hydrock are completing an additional phase of sampling and testing to further classify the waste. However, additional chemical and Waste Acceptance Testing will likely be required at the point of disposal and in accordance with the waste receiver's requirements.

Where landfill materials have been removed, the base of the excavation shall be sampled and tested to confirm that no residual contamination or Landfill Material is present. The testing protocol should comprise testing of the four sides and base as a minimum. Where the excavation is in excess of 100m^2 the base shall be sampled on a 10m grid. Samples shall be tested for the contaminants listed in Table 8.1.

All works shall be overseen by the Contractors appointed geo-environmental consultant.

6.9 Task 13: Excavation to required formation levels, Cut to Fill, and stockpile testing

6.9.1 General

Soils on site will be excavated to reach the required formation level in accordance with final ground level model developed by BED (reference NWK 180009-BED-EX-00-DR-C-2804, NWK 180009-BED-EX-00-DR-C-2805, NWK 180009-BED-EX-00-DR-C-2806).

An initial cut to fill assessment has been completed by Hydrock as part of the wider earthworks strategy. This assumes a 400mm topsoil strip but does not take into consideration any over-excavation (such as for the Landfill Material or for removal of soft spots). This assessment is shown in Figure 6-1 for reference. It is noted that the Principal Contractor shall complete their own volumetrics assessment prior to starting on site.

All cut and fill shall be undertaken in accordance with the Geotechnical Design Report and Earthworks Specification.

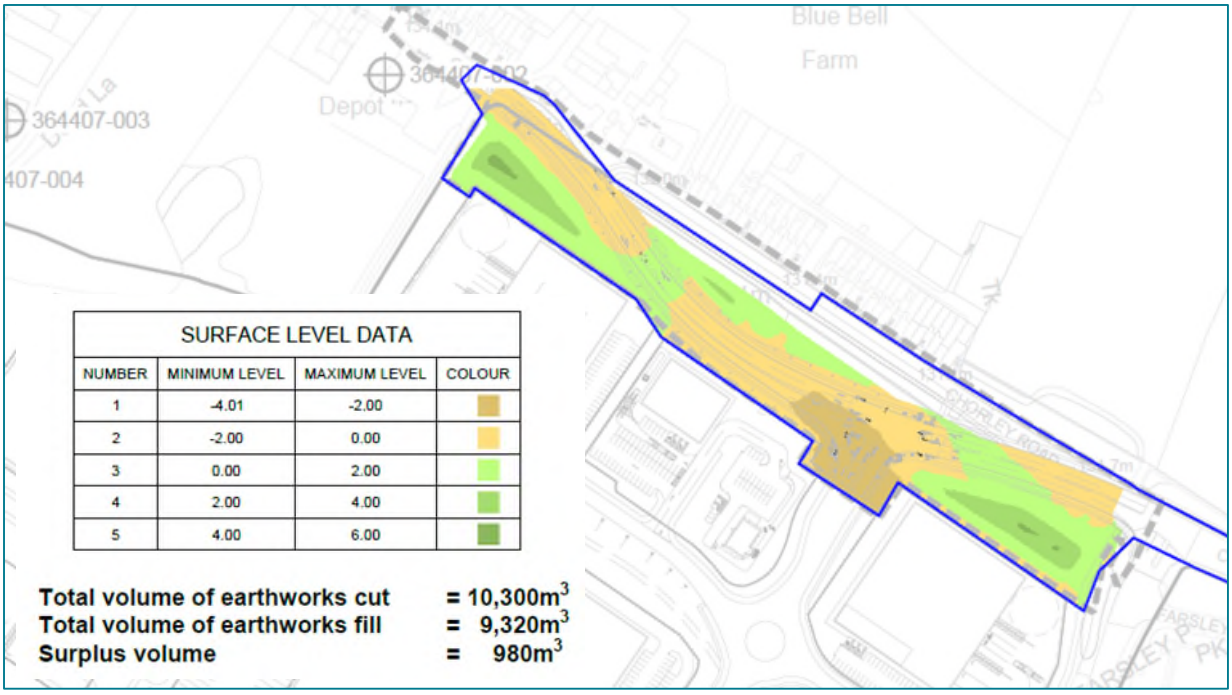

Figure 6-1: Outline Cut to Fill Earthworks (following site strip)

Excavated materials will be stockpiled and tested to determine their fate (on-site re-use or off-site disposal) in accordance with a Materials Tracking System which the Contractor will be required to formulate. Example forms are included in Appendix A.

The Principal Contractor will manage the works in accordance with relevant legislation.

Any areas of unexpected contamination encountered during excavation works should be dealt with in line with the Discovery Strategy at Appendix B.

6.9.2 Control of Risk from Dust Emissions

To reduce the potential for the generation of dust, it is recommended that double handling of soils is kept to a minimum and soils are disposed of by direct transfer to wagons and measures to minimise dust (e.g. wind or plant / vehicle movements) should be undertaken.

Appropriate risk assessment and mitigation measures should be in place throughout the development. As a minimum, this should include damping down of the site surface, excavations and stockpiles to prevent the generation of dust, additional measures may include:

- stockpiles (if any are created) should be kept to a minimum to reduce 'wind whip' causing potentially hazardous material to be blown from the pile;
- air quality and dust monitoring stations will be set up and monitored by the Contractor to record the dust concentrations during the works;
- stockpiles shall be placed on a suitable and robust polythene membrane or hardstanding to prevent any cross contamination;
- care should be taken not to pierce the sheeting when placing the bulky elements of the material;
- stockpiles should be dampened down or covered to prevent dust - whilst the Contractor, based on site constraints, should make the final choice, the options may include covering with plastic/polythene membrane, or by a layer of clean soil material;
- plant will be appropriately loaded to prevent spillages;
- the drop distance from excavator bucket to stockpile/process plant will be kept as short as reasonably practicable to reduce dust; and
- appropriate signage should be displayed so that site workers/visitors are alerted to the potential hazards associated with the material to be stored on site, and roadways within the site will be kept moist by spraying from a water bowser.

6.9.3 Vehicle Movements

Risks associated with the transport of soils that potentially contain asbestos fibres, such as dust emission, should be appropriately managed.

The works could create mud from vehicle movements and subsequent tracking off site on vehicle tyres. This will be managed during the works to prevent off site mud transfer. Measures to control these issues may include the provision of a wheel wash facility and when necessary, a mechanical road sweeper to further ensure that the road is kept clean.

6.9.4 Personal Monitoring

As a matter of good practice, construction workers and services personnel should follow guidance stated in 'HSG 66 Protection of Workers and the General Public during Redevelopment of Contaminated Land' during development works. Adequate standard personal protective equipment and the implementation of basic hygiene measures will be necessary.

Ground workers and sub-surface maintenance workers should be made aware of the possibility of encountering contaminants within soils or groundwater at the site through 'toolbox' talks.

Safe working procedures should be implemented in accordance with CIRIA132, good standards of personal hygiene should be observed, and appropriate levels of PPE provided and utilised.

Eating, drinking and smoking should be strictly prohibited in the development site other than in designated mess areas.

During excavation in the landfill areas groundworkers are to have access to a combination of suitable personal protective equipment (PPE) and respiratory protective equipment (RPE) for immediate use if required.

Should elevated levels of airborne asbestos fibres be recorded during personal monitoring, the work item or area shall be suspended and the area affected will be declared a total exclusion zone, the perimeter of which being 3m beyond the limit of the asbestos. A further 3m safety zone shall be established and clearly marked. The Principal Contractor's Site Manager shall be immediately informed, who will consider if further mitigation measures are necessary, e.g., whether materials need to be further covered. The Site Manager will inform the Client and the EHO within 24 hours of encountering suspected asbestos materials / the airborne asbestos fibres recorded and agree measures necessary.

6.9.5 *Earthworks – Asbestos Implications*

All works should be undertaken in accordance with CAR 2012, with a watching brief by suitably trained personnel during any excavation works.

Whilst asbestos materials are only expected in the landfill areas, there is a possibility of asbestos having been buried on other parts of the site given the history of landfilling at the site. If gross asbestos is encountered during excavations, works should stop in this area and the area cordoned off to prevent access. Asbestos containing materials (ACM) should be hand-picked and disposed of off-site to a suitably licenced facility by suitably qualified personnel and waste carrier. A suitably qualified consultant should be contacted and additional testing and risk assessment works may be required to determine suitability for re-use or disposal of the surrounding excavated materials.

Once the above assessment has been completed, the requirements for undertaking any hand-picking works can be identified more clearly. In some cases, this may involve the use of a 'Licensed Asbestos Contractor' to further assess the requirements under CAR 2012 and notification of the works to the HSE.

If works are considered to be non-licensed then the Contractor must use operatives with adequate information, instruction and training to undertake the hand-picking works.

Should visible fragments of Asbestos Containing Material (ACM) be encountered they should be hand-picked and segregated from the bulk of the material. All works should be carried out in accordance with CAR-SOIL™ and disposed of off-site to a suitably licenced facility by a registered waste carrier.

The resultant materials should be assessed by a suitably qualified consultant, and additional testing and risk assessment works may be required to determine suitability for re-use or disposal. Hydrock believe the following is suitable for placement of soils containing non-visible asbestos loose fibres at concentrations of (<0.001% w/w) subject to EHO agreement:

1. Soils below outside of soft landscaping that are between ground level and 0.75m depth must be characterised by 'below limit of detection' that is, < 0.001% w/w; and
2. Nil asbestos within areas of soft landscaping.

There is a general preference for placing soils containing 0.01% w/w – 0.001% w/w asbestos where they will not be disturbed in the future. An accurate record of where such soils are placed must be kept in a health & safety file.

Note materials excavated within the landfill areas must be disposed of off-site.

6.9.6 *Management of groundwater*

There will be a requirement to appropriately manage any accumulation of groundwater in excavations. The Contractor will be required to make arrangements for the treatment (i.e removal of silts) prior to discharge to the network. The Contractor will be responsible for carrying out the application for a discharge consent and complying with the requirements including regular chemical testing, turbidity monitoring and flow monitoring where required. The discharge consent should be applied for through United Utilities.

6.10 Task 14: Reuse and placement of soils (Excluding Landfill Material)

Reuse of soils is allowed and will need to be undertaken in accordance with the CL:AIRE 'Development Industry Code of Practice - Definition of Waste' i.e. in accordance with a declared Materials Management Plan (MMP).

If reuse of soils in accordance with an MMP is proposed, segregation and stockpiling of soils will be based on the following suitability criteria:

- Site won topsoil potentially suitable for reuse on site in landscaped areas, which comply with the requirements of Table 8.1.
- Imported topsoil suitable for use on site within landscaped areas, which comply with the requirements of Table 8.1.
- Site won subsoil potentially suitable for reuse on site in the cut and fill, which comply with the requirements of the Earthworks Specification.

Soils that are to be reused on site will be recorded in line with a MMP and accompanied with supporting excavation and placement logs.

The reuse of soils on site and material management is discussed further in Section 10.

Materials should be placed in accordance with the Earthworks Specification and the Hydrock Geotechnical Design Report.

Given that no soils showed any signs of contamination above generic assessment criteria, it is deemed that little chemical testing during general earthworks is required. However, it is recommended that the testing strategy in Table 6-2 is adopted as a precautionary measure

Table 6-2: Chemical Testing Requirements for General Fill

Material Type	Sampling Frequency*	Testing Requirements	Acceptability Limits
General Fill**	1/5000m^3	Chemical Constituents	Table 8.1
***all material types shall be subject to a minimum of 5 tests** **Reference should also be made to the requirements of the earthworks specification where additional geotechnical testing and acceptability limits are stated.			

6.10.1 *Testing*

All sampling, logging and testing of soils shall be undertaken in accordance with BS 5930:2015+A1:2020 'Code of Practice for Site Investigations' and BS 10175:2011+A2:2017 'Investigation of Potentially Contaminated Sites – Code of Practice'.

The Contractor shall undertake all testing at a laboratory which holds UKAS and MCERTS accreditation for the specific tests. Where it is not possible to obtain the testing of a material for a specific property to a UKAS or MCERTS accredited method, the Contractor shall obtain permission

from the Consultant for the test to be completed at the proposed laboratory before the test is undertaken.

The results of all testing undertaken (and a copy of the test certificates), shall be submitted to the Contractors Geoenvironmental Consultant as soon as they are reported, and no more than one day after issue of the test certificate to the Contractor. The analysis of the results and outcome of the assessment shall be reported to Hydrock within 1 week. It is recognised that different tests may take different timescales to complete. However, the Contractor shall advise Hydrock of any delay that they are aware of regarding the completion of any tests (e.g. a sample is being retested and the report will be delayed). The Contractors Geoenvironmental Consultant shall be given sufficient time to review the content of the testing and the associated test results.

The Contractor is to make available on site at all times a file containing all test certificates in addition to the testing summary, for inspection by Hydrock.

Test results are to be summarised in a single master spreadsheet (which contains all data) and is to be in a format agreed with Hydrock. Data that does not meet the specification shall be highlighted and include details of what works were undertaken to address the non-compliance. The master spreadsheet, results of chemical testing and drawings shall be maintained and kept up to date. Updated versions of these documents are to be provided to Hydrock by 10:00am every Monday morning throughout the Contract (or similar regularity to be agreed).

6.11 Task 15: Off-site disposal of geotechnically or environmentally unsuitable material

Any material excavated on site may be classified as waste and it is the responsibility of the holders of a material to form their own view on whether or not it is waste. This includes determining when waste that has been treated in some way it can cease to be classed as waste for a particular purpose.

As the site is partially brownfield, in order to inform the preliminary waste characterisation process, Hydrock has undertaken an exercise using the proprietary web-based tool HazWasteOnline™. The exercise confirmed that soils excavated associated with the general Made Ground and Landfill Material are likely to be classified as Non-Hazardous. At the time of writing additional chemical testing and waste Acceptance Criteria (WAC) testing is being undertaken on the Landfill Material for the purposes of providing additional information. However, it is likely that further testing will be required at the point of disposal in line with the waste receiver's requirements.

Any Made Ground removed from site must be removed to a licensed waste management facility. The waste is to be taken by a registered waste carrier in accordance with applicable Waste Management Regulations.

Waste consignment / transfer notices will be required and are to be retained by the Contractor. Copies of all waste consignment / transfer notices are to be provided for inclusion in the Contractors Completion Report.

6.12 Task 16: Implementation of the Discovery Strategy

If during the course of the excavation works unexpected contamination or unsuitable materials are encountered, works in the area should cease and the Discovery Strategy in Appendix B implemented.

7. Remedial Strategy Implementation - Construction Phase

The following will be undertaken during the Construction Phase of works by the Principal Contractor.

7.1 Task 17: Importation of Materials

At this stage it is not anticipated that import of subsoil or topsoil will be required to meet the design requirements. Where material is required to be imported it shall be undertaken in accordance with the MMP. Prior to import, the MMP will require updating to include the proposed material source. Material shall only be imported once approved by Hydrock who are employed by the Client to manage the MMP.

There will be a requirement to import aggregates as part of the pavement construction as none are available on site. The specification for the pavement foundation material is included in the Civil Engineers designs. All aggregates shall be imported in accordance with a suitable Quality Protocol.

Assessment and testing of any imported materials will be required in order to confirm that they are suitable for the site. The testing protocols for imported material are summarised in Table 7-1.

Table 7-1: Chemical Testing Requirements for Imported Materials

Material Type	Sampling Frequency*		Testing Requirements	Acceptability Limits
	At Source	On site		
Topsoil	Minimum of 5	1/250m^3	Chemical Constituents	Table 8.1
Subsoil/Fill**	Minimum of 5	1/500m^3	Chemical Constituents	Table 8.1
Recycled Aggregate	Minimum of 5	1/250m^3	Chemical Constituents	Table 8.1

*all material types shall be subject to a minimum of 5 tests

****Clean naturally occurring material only**

Reference should also be made to the requirements of the earthworks specification where additional geotechnical testing and acceptability limits are stated.

7.2 Task 18: Validation during Enablement Works and Reporting.

7.2.1 Principal Contractor's Completion Report

The Principal Contractor or their appointed Geoenvironmental Consultant will provide a validation report for the earthworks and remediation on completion. This will be used to form the basis of the Hydrock verification on behalf of the Client and for the discharging of planning conditions.

All reports provided by the Principal Contractor shall be available in Adobe pdf format which has been digitally bookmarked at each section heading. All chemical data is also required to be provided in Microsoft Excel format.

7.2.1.1 Contents of the Validation Report

The Principal Contractor will maintain records of the works and a Validation Report shall be prepared by the Principal Contractor or their appointed Geoenvironmental Consultant on those aspects of the works it has completed and is responsible for.

The Validation Report will provide a complete record of the remediation activities undertaken at the site and the data collected to support compliance with remediation objectives and criteria. It will also include descriptions of the works with associated 'as built' drawings and details of any unforeseen conditions encountered during the works and how they were dealt with.

The Validation Report shall incorporate a summary of and commentary on:

- Site stripping and clearance activities as necessary.
- Hardstanding and existing pavement removal.
- An outline of the remedial action taken to remove any impacted soils associated with any hotspots identified.
- Results of environmental monitoring (noise/dust).
- Details of retained services and obstructions encountered but not removed.
- Records of excavations, including:
  a. Ordnance Datum survey of extents and depth;
  b. Ordnance Datum survey of extents and depth of any residual features;
  c. record of decisions for over-excavation;
  d. photographic record of each excavation; and
  e. records of inspection and final extents of validation.
- Records of laboratory analytical and in situ field test results, including:
  a. laboratory results and location plan for each analytical test;
  b. field test kit results and particulars of monitoring (e.g., date, location, personnel);
  c. laboratory measurements of accuracy and precision;
  d. calibration data for field measurement equipment in accord with manufacturers guidance; and
  e. Chain of Custody forms.
- Waste classification and management documentation, including:
  a. copies of all consignment notes, in particular those relating to the hazardous waste regulations; and
  b. details of waste facilities where materials were disposed of.
- Stockpile plan of all stockpiles generated by the works and remaining on site.
- Copies of chemical testing of the stockpiles.
- Final as-built survey of the as excavated voids (in AutoCAD format).
- Final as-built survey of the site (in AutoCAD format).
- Confirmation that site levels are as required by the civil design and Geotechnical Design Report.

Information associated with regulatory health and safety, control of noise, nuisance, dust, and waste will be excluded from the technical validation reporting and will be submitted as separate documentation. This separation is made to differentiate between technical remediation requirements stated herein and operational controls of work.

7.2.2 Materials Management Plan Verification report

The Materials Management Plan Verification Report is to document the validation of the approved Materials Management Plan (or an equivalent document if the DoW/CoP is not applicable to the works described in the Earthworks Specification) and will include the validation of imported soils, site won soils and placed soils. A separate MMP will be required for the import of fill material or topsoil, if the source of this material is not known at the time of declaring the bulk earthworks MMP.

Hydrock will prepare the MMP verification report. However, the Contractor shall provide information on the below items in order for Hydrock to complete the report.

As a minimum the Materials Management Validation Report is to include:

- Details of the import mechanisms for each material source;
- Detailing the testing (chemical and geotechnical) of imported materials to prove each source is suitable for use;
- Detailing the testing (chemical and geotechnical) of site won materials to prove each source is suitable for use;
- Records of material movement, including:
    a. stockpile inspection records;
    b. stockpile reuse appraisal record;
    c. volumes, origin and placement location of soils referenced to field results and inspections;
    d. details and quantities of excavated, screened, treated, imported and reused soils; and
    e. Records of earthworks excavations including as built drawings, photographs, quantities of materials and records of progress.

8. Suitability and Acceptability of Materials

Although there is no requirement for a cover system in soft landscaping areas, no Made Ground or secondary materials are to be re-used below areas of soft landscaping. Subsoil is to comprise of natural site won material or naturally occurring suitable subsoil.

As a cover system is not proposed then specific chemical testing of the subsoil placed in soft landscaping areas is not required, however as stated in Section 6.10 and Table 6-2 general earthworks testing at 1 per 5,000m^3 is adopted as a precautionary approach.

Should topsoil or subsoil be imported to site, this will be subject to chemical testing to ensure it is suitable for use as detailed below.

Material re-used and imported to site will be managed in accordance with this approved Remediation Strategy and Verification Plan and the approved Materials Management Plan.

Should it be identified that there is a shortfall in material on site to achieve the required finished levels then material will need to be imported. The following sections detail the importing protocol to ensure its suitability for use.

8.1 Imported Materials

Imported materials should be in accordance with the Materials Management Plan permitting their import onto site, the Earthworks Specification and the requirements of the Landscape Architects design.

8.1.1 Sourcing of Material

The criteria for imported topsoil and subsoil are detailed in Sections 8.1.3 and 8.1.4. Any imported soils should be from a proven natural greenfield source not expected to be contaminated.

Prior to importation of material from a commercial supplier, certification should be obtained from the supplier detailing the source site, its previous and current land use and relevant test results. A copy of this should be forwarded to the Contractors Geoenvironmental Consultant and Hydrock for review and comparison against the import criteria.

If the proposed source is not from a commercial supplier (which can supply certificates), there is a requirement that the source is tested prior to import to confirm it is acceptable for use. Material which is imported and subsequently found to fail the criteria will need to be removed from site to an appropriate facility with all costs borne by the Contractor.

Following import to site (regardless of the source), chemical testing of the imported soils will be required to confirm the soils imported are the same as those sampled at the donor site. Refer to Table 7-1 for the testing details.

8.1.2 Stockpiling of Imported Materials

On importation of Topsoil, Subsoil and other materials, the materials should be stockpiled at a suitable location on site. Copies of the carrier's consignment notes should be retained and a copy forwarded to the Contractors Geoenvironmental Consultant and be made available on request.

Topsoil and Subsoil should be stockpiled separately and away from areas designated for storing other materials or potential sources of contamination. Soils should be stockpiled on geotextile separator layers to prevent cross contamination.

Separate stockpiles should also be created for each different source. Topsoil stockpiles are to be kept below 2m in height at all times and traffic on the stockpile is to be minimised.

All stockpiles should be identified with clear signs and each stockpile of imported material should be given a clear reference number and designated sheet recording the following:

- identification reference (e.g. Stockpile A, B, C etc.);
- material type (e.g. Topsoil);
- source site;
- the carrier's consignment notes reference numbers;
- the approximate volume (number of loads); and
- which area the material is to be used.

Each entry shall be signed and dated by the Site Manager or their Assistant. A template form is provided in Appendix A. Note other templates or the Contractors own documentation may be used. These sheets should be available for inspection by the Client, Hydrock, Local Authority staff and others involved with this development. A copy should also be given to Hydrock when verification visits are made.

8.1.3 Physical Requirements of Imported Soils

Imported topsoil should conform to the requirements of BS 3882:2015 (Specification for Topsoil and requirements for use), or as agreed with the Client and the Client's landscape architect.

As a minimum imported topsoil should not comprise chalk, clay and/or sand and should have a maximum of 60% of fragments in excess of 2mm, a maximum of 30% in excess of 20mm and a maximum of 10% in excess of 50mm, with nothing in excess of 75mm. It should be noted that clay soils are not recommended as they are likely to become waterlogged during handling and placement. The imported material is to be confirmed by visual inspection of the material by a suitably qualified Contractors Geoenvironmental Consultant and if necessary, by laboratory Particle Size Distribution assessment.

Imported soils should be free of any man-made materials including asbestos, metal, plastic, wood, glass, tarmac, brick, paper, concrete or other potentially hazardous foreign material which could cause injury. In addition, all materials must be free from aggressive / invasive weeds (especially Japanese Knotweed and Giant Hogweed) and bulk vegetative growth, in order to ensure negligible risk of subsequent weed problems.

8.1.4 Chemical Requirements of Imported Soils

For all imported soils, certification from the commercial supplier should be reviewed prior to import, or if not a commercial supplier, then the soils should be tested at source in accordance with Table 7-1.

Chemical testing will then be required once the material arrives at site. Testing should be undertaken as follows:

- Imported Topsoil at a rate of one test per 250m^3, with a minimum of five tests per import round.
- Imported Subsoil at a rate of one test per 500m^3, with a minimum of five tests per import round.

Depending on the source or variability of imported material, Hydrock may, at their discretion, request additional testing to be undertaken. If consistent sources are used for the Topsoil and Subsoil and the results recorded are consistently acceptable, consideration may be given to reducing the number of samples tested, subject to agreement with the EHO.

The results of chemical testing of topsoil to be used in soft landscaping areas are to be compared with the criteria presented in Table 8.1, and if Total TPH exceeds 100mg/kg, the criteria for the individual petroleum hydrocarbon fractions. If any of these thresholds are exceeded the material shall be considered to be unsuitable and removed from site.

Testing should be carried out for the following general suite of contaminants and the results compared to Table 8.1:

- As, B (water soluble), Be, Cd, Cr (total), Cr(VI), Cu, Hg, Ni, Pb, S (elemental), Se, V, Zn, cyanide (total), sulphide, pH, asbestos screen, speciated polycyclic aromatic hydrocarbons (PAH, by GC-FID), total phenols and fraction of organic carbon; and
- total TPH.

Table 8.1: Chemical Criteria for reuse of material on site

Contaminant	Proposed RTV mg/kg (any SOM)	Contaminant	Proposed RTV mg/kg		
			1% SOM	2.5% SOM	6% SOM
Arsenic	37	Acenaphthene	50**	50**	50**
Beryllium	300	Acenaphthylene	50**	50**	50**
Boron*	3	Anthracene	50**	50**	50**
Cadmium	14	Benzo(a)anthracene	4.2	6.7	8.6
Chromium (III)*	400	Benzo(a)pyrene	1.5	1.5	1.5
Chromium (VI)*	25	Benzo(b)fluoranthene	7.6	9.4	10
Copper*	135	Benzo(ghi)perylene	50**	50**	50**
Lead	200	Benzo(k)fluoranthene	12	14	15
Mercury, inorganic	170	Chrysene	7.7	11	13
Nickel*	75	Dibenzo(a,h)anthracene	1.1	1.3	1.4
Selenium	360	Fluoranthene	50**	50**	50**
Vanadium	410	Fluorene	50**	50**	50**
Zinc*	300	Indeno(1,2,3,cd)pyrene	4.3	5.5	6.2
Cyanide (free)**	10	Naphthalene	2.2	5.2	12
Phenol (total)**	10	Phenanthrene	50**	50**	50**
Asbestos	See below	Pyrene	50**	50**	50**
Total TPH	100	If Total TPH exceeds 100 mg/kg			
		Aliphatics EC5-EC6	42	78	150**
		Aliphatics >EC6-EC8	100	150**	150**
		Aliphatics >EC8-EC10	27	65	150
		Aliphatics >EC10-EC12	48	120	150**
		Aliphatics >EC12-EC16	24	59	140
		Aliphatics >EC16-EC35	150**	150**	150**

Contaminant	Proposed RTV mg/kg (any SOM)	Contaminant	Proposed RTV mg/kg		
			1% SOM	2.5% SOM	6% SOM
		Aliphatics >EC35-EC44	150**	150**	150**
		Aromatics EC5-EC7	73	150**	150**
		Aromatics >EC7-EC8	130	150**	150**
		Aromatics >EC8-EC10	35	84	150**
		Aromatics >EC10-EC12	75	150**	150**
		Aromatics >EC12-EC16	150	150**	150**
		Aromatics >EC16-EC21	150**	150**	150**
		Aromatics >EC21-EC35	150**	150**	150**
		Aromatics >EC35-EC44	150**	150**	150**

*GAC to protect plant life (pH7).

**Concentrations intentionally limited to values at which no visual or olfactory evidence of contamination anticipated

Proposed criteria for asbestos:

- No evidence of visible asbestos containing material (as far as reasonably practicable); and
- Asbestos quantification: non-Detect.

For imported granular materials, particularly recycled aggregate (Type 1/6F5) Hydrock proposes the following guidelines:

- no visual contamination (oil staining, asphalt, etc.) as confirmed by the Contractors Geoenvironmental Consultant watching brief and verified by Hydrock;
- limited deleterious material (organics, wood, metal etc.) demonstrated by a value of <1% Class X where tested in accordance with SHW Clause 710 for constituent parts; and
- no visible asbestos containing material (ACM) as confirmed by the Contractors Geoenvironmental Consultant watching brief and verified by Hydrock.

9. Supervision, Verification and Reporting

Necessary changes to the agreed Remediation Strategy and Verification Plan, arising during the course of the works, are to be agreed in writing with the Local Authority and Environment Agency prior to being undertaken on site.

It is advised (although not required by the regulators) that details of the environmental works undertaken, the rationale and design for the implementation of this strategy and verification details of the works undertaken are appended to the deeds for the property to ensure the site is sold with full knowledge of the works undertaken and the ground conditions present.

9.1 Site Supervision

Specific remedial activities will require a full-time site watching brief by the Contractors Geoenvironmental Consultant.

Regular supervision and monitoring of all works associated with the A6 realignment shall be undertaken by suitably qualified staff as part of the contract.

Hydrock will undertake periodic site visits during the course of the works in order to provide verification on behalf of the Client. It should be noted that the Hydrock site visits do not remove or absolve the Contractor or their Consultant from their duties under this remediation strategy. Where any aspect of this document is not complied with, the works cannot be verified by Hydrock and the planning conditions cannot be discharged until the defective aspect of the works in question is rectified.

9.2 Collection of Samples

All samples are to be taken in accordance with relevant guidance (e.g. BS 10175) and by suitably qualified staff. Soils for inorganic analysis will be sealed in air-tight polythene tubs.

Soils for organic analysis will be sealed in amber glass jars with the minimal practicable headspace.

If required, groundwater samples will be collected in suitable containers and with the correct preservatives, as provided by the laboratory.

All samples shall be scheduled on Chain of Custody forms prior to being dispatched to the UKAS accredited laboratory for analysis. All testing will be MCERTS accredited where available.

9.3 Enablement Phase Verification

Upon the provision of a Validation Report from the Principal Contractor (see Section 7.2.1), to demonstrate that all of the remediation works have been undertaken in accordance with the RSVP, Hydrock will provide a Verification Report on behalf of the Client.

The report will provide a summary of the key elements of work and will be referenced to the agreed redevelopment strategy and planning requirements with supporting information presented within appendices.

This shall be based upon LCRM (Environment Agency, 2021) and will incorporate a summary and commentary of, where applicable:

- background information on the site;
- statutory and regulatory requirements;
- details of the remediation required;
- decision records covering agreements with regulators;

- records of works undertaken and associated validation and monitoring records obtained from the Contractor (specified above e.g., chemical testing data);
- specialist Contractor's validation reports for particular elements of work;
- supporting data (e.g., as built drawings);
- final status of remediation and achievement of remedial objectives to satisfy the planning conditions; and
- additional risk assessments/non-scheduled reactive works undertaken and residual risk.

On completion of the verification works the appropriate documentation will be forwarded to the Client and the Local Authority.

10. Reuse Of Soils on Site and Materials Management

10.1 Waste Management Background

The site is partially a brownfield site; as such any material excavated on site will be classified as waste as soon as it is excavated unless there is a clear plan in place for the reuse of soils at the site.

One of the ways this can be achieved is set out in the Contaminated Land: Applications in Real Environments (CL:AIRE) document: 'The Definition of Waste: Development Industry Code of Practice' (Version 2) (CoP), dated March 2011.

The handling, reuse or disposal of waste is regulated by the Environment Agency (EA). The EA will take into account the use of the CoP in deciding whether to regulate materials as waste.

If materials are dealt with in accordance with the CoP, the Environment Agency considers that those materials are unlikely to be waste at the point when they are to be used for the purpose of land development. This is because the materials were never discarded in the first place, or because they have been submitted to a recovery operation and have been completely recovered so that they have ceased to be waste.

The procedures to be followed for the production of the MMP will need to follow the protocols outlined for 'Route A' – Remediation Strategy (as outlined by CL:AIRE) for the reuse of materials on the site of origin (ref CL:AIRE Code of Practice, Appendix 1).

At the time of writing, it is assumed that Hydrock will be responsible for writing and preparing the MMP including obtaining qualified person (QP) sign off. However, it is the responsibility of the Principal Contractor to ensure all works are undertaken in accordance with the MMP.

10.2 Material Suitability

10.2.1 Chemical Suitability

The following section is a summary of chemical suitability based on the site investigation works undertaken at the site.

All materials retained on site are to be tested in accordance with the frequency stated in this report and compared to the compliance limits in Table 8.1.

Made Ground

Made Ground materials are not permitted to be reused below areas of soft landscaping or beneath buildings. However, these materials can be processed and reused below hardstanding external areas.

Landfill Material

Soils excavated from within the Landfill areas are not permitted to be re-used on site. Following excavation and sorting all soils are to be disposed of off-site.

Topsoil

It is envisaged that there will be sufficient site won topsoil for re-use in soft landscaped areas. Should there be a requirement to import Topsoil, this will need to be from a proven greenfield source with additional chemical testing as per rates within Section 7.1 and 8.1.4.

Granular Soil

Following the site clearance granular soils shall be segregated and tested for re-use in accordance with Section 6.6 and the Earthworks Specification. It is anticipated that permitted classes of fill will be Class 1 General Fill or Class 6F2 capping.

Any other materials not suitable for use, or not required during construction, will need to be disposed of to an appropriate waste disposal facility at cost to the Contractor.

10.2.2 Geotechnical Suitability

The Contractor will be responsible for undertaking any geotechnical testing as required and placing any material in accordance with the Earthworks Specification.

10.3 Certainty of use and Quantity of Material

It is anticipated that the majority of site soils will be reused as part of the cut to fill earthworks with the exception of the Landfill Material. Any excess soils will be disposed of at the Contractors cost.

Following the Enablement Works the following will be required during the Construction Phase:

- placement of subbase asphalt layers in accordance with the pavement design.
- Placement of topsoil in accordance with the landscape design.

Materials excavated during the Construction Phase could be stockpiled for re-use on other phases (subject to inclusion within the MMP) or will need to be disposed of off-site.

There will be a requirement for clean granular (Type 1 / 6F5) material for pavement construction.

Only materials deemed suitable for use by an appropriately qualified person will be utilised on site. Any out of specification material obtained from the site which is not deemed suitable for use will, if appropriate, be classified as waste and will be disposed of or recovered in the proper manner and in accordance with waste legislation.

Material imported to site will be subject to the necessary testing/review prior to delivery to site to minimise the risk of the importation of material unsuitable for the required specification. Any material deemed unsuitable upon arrival at the site will be rejected.

Only sufficient material required on site for the purposes of raising levels in accordance with the pre-determined proposals (planning conditions and drainage strategy) will be imported or reused on site.

Any surplus material that cannot be accommodated on other phases or material which does not meet the required specification arising from development will be disposed of off-site. It is the responsibility of the Contractor at each stage of the works to have checked all volume calculations and have allowed for disposal of unsuitable or excess materials.

Any materials considered suitable for reuse will require confirmatory testing following excavation or processing. Where confirmed following additional testing, these materials are considered suitable for reuse within landscaped areas.

10.4 On Site Materials Management

10.4.1 Stockpiles

Site won material for potential reuse will be stored on site in stockpiles. The stockpiles are to be managed by the Principal Contractor during the relevant phases of work and will be subject to operational constraints at the time of stockpiling.

Stockpile locations will be clearly marked and documented on working drawings maintained in the site office.

The Contractor for each phase of works is to take appropriate mitigation measures and environmental precautions as considered necessary at storage locations. However, as a minimum, stockpiles should be compacted to prevent dust and they should be kept wet in periods of dry weather.

During the remediation works, materials will be excavated and consolidated into designated stockpiles, with the different soil types stockpiled in different clearly marked stockpiles. A record of the excavated quantities and reuse locations will also be maintained on site. An example tracking system and example forms are provided at Appendix A. A copy of all tracking forms and delivery tickets used for transportation of soils to site will be held at the site office.

10.4.2 Confirmatory Chemical Testing

Material for On Site Reuse – Excavated Material

Topsoil proposed for reuse in soft landscaped areas will be sampled at the rate set out in Section 8.1.4 and test results compared to the criteria in Table 8.1

Materials found to be out of specification are to remain on site in segregated stockpiles until such time that they can be disposed to a suitably licenced waste disposal facility.

At each phase of works a record should be maintained by the Contractor of the movement of the stockpiled material and the area within the excavation into which it is placed.

Material for Off-Site Disposal

Any material requiring disposal (during any phase of works) shall be disposed of in accordance with Section 6.11. It is the responsibility of the Contractor to ensure adequate and appropriate disposal, including testing to satisfy the proposed waste facility.

Records of the removal of stockpiles off site should be maintained by the Contractor including details of the disposal or treatment site to which they have been taken. These details are to be passed to Hydrock to form part of the verification report.

Appropriate precautions should be taken by the Contractor to ensure that the stockpiled material does not result in risks to neighbouring land users.

Imported Material

Only clean, naturally occurring materials (topsoil, subsoil and quarried aggregates) should be imported to the site or recycled materials produced in accordance with the WRAP Protocol. Evidence of compliance with these rules should be gathered and provided to the suitably qualified and experienced Contractors Geoenvironmental Consultant for inclusion with the Validation Report.

Imported soil will be tested to determine it is suitable for use.

The Contractor importing the material is to provide laboratory analysis to the Client to prove the suitability of the material to be brought on to site in line with the requirements specified in Section 8.1.

Once the soils are present on site, additional testing will be undertaken in accordance with Sections 8.1.3 and 8.1.4.

11. Contingency Plan and Areas Of Unexpected Contamination

There is potential for areas of unexpected contamination to be present, due the areas of known landfilling present on site. Any significant quantities of suspected oily or odorous material, significant ashy soils and unusual brightly coloured or asbestos containing materials should be considered as possibly contaminated.

The Discovery Strategy, included in Appendix B, must remain on site at all times during the Enablement Phases of works. This demonstrates a clear allocation of responsibility for reporting and dealing with contamination.

A copy of the Discovery Strategy must be placed on the Health & Safety Notice Board and/or displayed in a prominent area where all site staff are able to take note of and consult the document at any time. Any member of the workforce entering the site to undertake any excavation must be made aware of the potential to discover contamination and the requirement to follow the Discovery Strategy.

A report should be prepared by the Contractors Geoenvironmental Consultant and submitted to the regulatory parties, the Local Authority and the Environment Agency where groundwater may potentially have been impacted.

As it is proposed to excavate, screen, sort and where appropriate reuse the soils on site during a separate enablement phase of works, the Discovery strategy will be less relevant to the Construction Phase of works but will still apply.

If additional materials are identified, these materials will be subject to the procedures stated in this RSVP.

12. References

BRITISH STANDARDS INSTITUTION. 1999. Code of practice for Site Investigations. BS 5930 Incorporating Amendment No.2:2010. BSI, London.

BRITISH STANDARDS INSTITUTION. 2011. Code of Practice for Investigation of Potentially Contaminated sites. BS 10175. BSI, London.

BRITISH STANDARDS INSTITUTION. 2003. Geotechnical investigation and testing - Identification and classification of rock - Part 1: Identification and description. BS EN ISO 14689-1 Incorporating Corrigendum No.1. BSI, London

BRITISH STANDARDS INSTITUTION. 2007. Code of practice for the characterization and remediation from ground gas in affected developments. BS 8485. BSI, London.

CL:AIRE. March 2011. The Definition of Waste: Development Industry Code of Practice, Version 2. Contaminated Land: Applications in the Real Environment (CL:AIRE), London.

DCLG. March 2012. National Planning Policy Framework. DCLG, London.

DCLG. March 2012. Technical Guidance to the National Planning Policy Framework. DCLG, London.

DEFRA. April 2012. Contaminated Land Statutory Guidance. DEFRA, London.

ENVIRONMENT AGENCY. 2021. Land contamination: risk management. https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm (updated 19th April 2021).

RUDLAND, D. J., LANCEFIELD, R. M. and MAYELL, P. N. 2001. Contaminated land risk assessment. A guide to good practice. CIRIA Report C552. CIRIA, London. 158 pp.

UK WATER INDUSTRY RESEARCH (UKWIR). 2010 re-issued. Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites. Report 10/WM/03/21.

Appendix A Form Templates

Imported Soil Documentation Form

Stockpile Identification Reference	
Material Type	
Source Site	
Consignment Note Reference Numbers	
Volume of Stockpile (or number of loads)	
Proposed Classification (Class 1, Class 2, Class 6F5 etc)	
Areas Material to be used in	

Sketch Plan of Stockpile Location and Sample Points

Signed _____

Position_____

Date_____

Site-won Stockpiles Soil Documentation Form

Stockpile Identification Reference	
Material Type	
Source Area within Site	
Volume of Stockpile (or number of loads)	
Proposed Classification (Class 1, Class 2, Class 6F2 etc)	
Areas Material to be used in	

Sketch Plan of Stockpile Location and Sample Points

Signed _____

Position_____

Date_____

Appendix B Discovery Strategy

DISCOVERY STRATGEY
DISPLAY AND AWARENESS

This Discovery Strategy must be placed on the Health & Safety Notice Board and/or displayed in a prominent area where all site staff are able to consult the document at any time.

Any member of the workforce entering the site to undertake any excavation must be made aware of the potential to discover contamination and the discovery strategy.

HOW TO IDENTIFY POTENTIAL CONTAMINATED MATERIAL

- Looks oily and has an oily odour.
- Solvent type of odour.
- Man-made materials in fill such as paint cans, car parts, glass fragments.
- Contains fragments of white asbestos sheeting, coal/coke clinker.
- Sand bags, and or/subsurface concrete structures.
- Unusual colour e.g. Blue, red or green.
- Asbestos cement/lagging.

(Examples only – This list is not exhaustive. If in any doubt ask the Site Manager)

PROCEDURE

If unexpected evidence of contamination is found the following procedures shall be adhered, including:

1. All site works at the position of the suspected contamination should stop.
2. Site Personnel to inform the Site Manager/Agent.
3. Visual and olfactory observations of the condition of the ground and the extent of contamination should be made and notification shall be given to Hydrock Consultants, who will inform the Local Authority within circa 24 hours after discovery. Should the contamination be likely to affect controlled waters the Environment Agency shall also be informed.
4. In the presence of a suitably qualified geo-environmental engineer on behalf of the Contractor, investigation works shall commence to recover samples for testing and, using visual and olfactory observations of the condition of the ground, delineate the area over which contaminated materials are present.
5. Should Hydrock deem it appropriate, the affected material may be excavated and placed in a stockpile on a suitable impermeable surface. This should be suitably quarantined with no addition to, or removal of, the stockpile while chemical analysis is being undertaken. Alternatively, the material should remain in situ until laboratory test results have been obtained.
6. A photographic recorded should also be made of relevant observations.
7. Hydrock will determine an appropriate testing suite based on visual and olfactory observations.
8. Test results will be compared against current assessment criteria suitable for the future use of the area of the site affected.
9. If after testing the ground is found to be contaminated, the Local Authority shall be informed. After consultation with the Local Authority and if necessary the Environment Agency, materials should either be removed for disposal to a licensed waste management facility or remediated to agreed clean-up criteria.

10. If the evidence for contamination is sever, as if it leads to pollution of water courses, the Environment Agency shall be informed immediately as an environmental incident (see EA website).

UNEXPECTED TANKS

It is possible that underground tanks, which have not been identified by the investigations to date, may be present. The following procedures are to be adhered to if tanks are identified:

11. All site works at the position of the tanks should stop.
12. A description of the tank should be made by the Contractors Geoenvironmental Consultant including; condition and surround, along with visual and olfactory observations should any contents in the tank be apparent. A photographic recorded should also be made of relevant observations.
13. The tank's position and depth should be determined and marked on a plan of the site.
14. Notification shall be given to Hydrock Consultants who will inform the Local Authority within 24 hours.
15. During the presence of a suitably qualified geo-environmental engineer on behalf of the Contractor, investigation works should be undertaken to obtain samples of any liquid or sludge contents and to establish dimensions of the tank.
16. Laboratory testing will be determined by Hydrock Consultants based on visual and olfactory observations of the material.
17. Test results will be compared against current assessment criteria and proposals for disposal of any contents determined in agreement with the appropriate Regulatory Parties.
18. Emptying the tank and disposal of contents to a suitable licenced disposal facility.
19. Once the tank has been emptied in accordance with the above proposals, it is to be removed for disposal to a licensed waste management facility. Copies of the relevant waste consignment notes are to be forwarded to Hydrock Consultants.
20. Excavation and remediation of any contaminated soils in accordance with Section 5.2.
21. Samples of the base and sides of the resultant hole will be sampled as per the Consultant's instructions and an assessment as to whether this may have been a source for groundwater contamination made.

A report will be prepared by Hydrock and submitted to the regulatory parties, the Local Authority and the Environment Agency where groundwater may potentially have been impacted.

Appendix C Contractor Requirements

Contractors Requirements

Compliance with Legislation and Standards

The works are to be undertaken in compliance with all relevant British Standards, codes of practice, regulations, guidance and legislation.

Whilst not an exhaustive list, works shall be in compliance with the latest revision of all relevant legislation, HSE Guidelines and good working practice including, but not be limited to, the following:

- The Health and Safety at Work etc. Act 1974;
- Construction Health Safety and Welfare Regulations 1996;
- Health and Safety Executive 'Protection of Workers and the General Public during Redevelopment of Contaminated Land' HS (G) 66, HMSO 1991;
- The Construction, Design and Management Regulations 2015;
- The Control of Substances Hazardous to Health Regulations 2002 (COSHH Regulations);
- The Control of Asbestos Regulations, 2012; and
- BS6187:2011 'Code of Practice for Full and Partial Demolition'.

The Contractor is responsible for obtaining all necessary approvals, licences, consents and permits from regulatory bodies and third parties prior to commencement.

Licences, Permits and Consents

Any conditions associated planning permission should be addressed prior to carrying out the works.

It will be a requirement of the Contractor to obtain any of the necessary permits and undertake the appropriate notifications and assessments. The Contractor should only expect approvals have been sought by others where explicitly provided to the Contractor or advised in writing by the Client or Hydrock.

If treatment of the soils is to be undertaken (e.g. bioremediation of unexpected contamination), it will need to be undertaken in accordance with an appropriate Environmental Permit.

Any reuse of soils will need to be undertaken in accordance with the "Definition of Waste: Development Industry Code of Practice - Definition of Waste. Development Industry Code of Practice", Version 2 2011 i.e. in accordance with an approved Materials Management Plan (MMP) and Qualified Person Declaration. The Contractor is responsible for the MMP.

Health and Safety Requirements

The Contractors must manage the risks in accordance with their legal requirements and all works are to be undertaken in compliance with all relevant regulations, guidance and legislation.

A Construction Phase Plan (CPP) will be required to be submitted to the Principal Designer, the Client and the LPA in advance of mobilisation to site.

The CPP will be passed to the Site Manager who will implement all Health and Safety measures on site. The Site Manager will fully induct the Site Operatives prior to commencement of any works. The CPP will be kept as an open document and will be adapted as required to during the project. This will (as a minimum) include:

- welfare arrangements, storage and security;
- air monitoring requirements (and action levels);
- traffic management plan;
- segregation of working areas and site welfare (and decontamination units if required);

- site inductions, daily safety briefings and toolbox talks;
- activity specific risk assessments;
- method statement briefings;
- daily inspection records; and
- permits to work.

During the works it will be necessary to protect the health and safety of the site personnel. General guidance on these matters is given in the Health and Safety Executive (HSE) document 'Protection of Workers and the General Public during the Redevelopment of Contaminated Land' HS (G) 66. In summary, the following measures are suggested to provide a minimum level of protection:

- all ground workers should be issued with protective clothing (including high visibility clothing), hard hats, footwear and gloves, personnel instructed as to how it should be used;
- all personnel shall wear hard hats, high visibility clothing and protective footwear at all times;
- ensure that everyone on site complies with the health and safety plan;
- take reasonable steps to ensure that only authorised persons are allowed on site (or part thereof as the case may be);
- display, where they can be easily read, any notification that has been sent to the Health and Safety Executive;
- hand washing and boot cleaning facilities shall be provided;
- no smoking except in designated areas;
- good practices relating to personal hygiene shall be adopted;
- prepare method statements for construction operations as required by the CDM Co-ordinator; and
- provide the Principal Designer with any other relevant information.

Before site operations are commenced, the necessary COSHH Assessments, Method Statements and Health and Safety Plans should be completed, approved to the Principal Designer's satisfaction and issued in accordance with the CDM Regulations.

The Health and Safety Plan should pay particular attention to the following hazards which may be encountered:

- potentially hazardous or contaminated materials used or encountered on site;
- deep excavations;
- the potential for ground gases and risks on confined spaced entry;
- working in the vicinity of existing underground or overhead services;
- working in confined spaces;
- working on, or in the vicinity of highways;
- working with materials which have the potential to contain asbestos and the risk of inhalation of asbestos fibres;
- manual handling;
- the potential for fire;
- working with electrical apparatus in the vicinity of mobile plant and the potential presence of water;
- poor lighting;
- the potential for falling/slipping/tripping and sustaining injury;

- the possibility for biological agents to be present, including, but not limited to: psittacosis, leptospirosis (Weill's disease), tetanus, legionella, human waste; and
- working in the vicinity of voids and openings.

The Contractor shall take all necessary safety precautions throughout the ground treatment operations and shall comply with the Health and Safety at Work Act 1974 or any subsequent re-enactment thereof.

The Contractor shall submit for approval all necessary method statements to the Client and the Consultant prior to commencing the works.

The Contractor shall provide details of emergency procedures. Emergency services shall be informed of the site operations prior to commencement.

All statutory records to be kept in the site manager's office and these may include (not an exhaustive list and note not all may be required):

- ASB NNLW1 – Notification of non-licensed asbestos work if the work is deemed not be requiring a licence;
- appropriate licence with regards to CAR 1012 if the work is deemed to require a licence;
- HSE Notification F10;
- Pre-construction Information Pack;
- Construction Phase Health and Safety Plan;
- Method Statements and Risk Assessments;
- Environmental Permit deployment form and associated paperwork;
- Discharge Consents for disposal of groundwater;
- competence records (including asbestos awareness training and face-fit test records
- service records;
- plant and machinery maintenance records;
- Duty of Care paperwork.

In addition, if asbestos is found during the demolition works/enablement works, it is recommended that:

- Asbestos Awareness training / briefing to be given to all staff;
- background and ongoing air dust monitoring (to include asbestos) to be undertaken to check for presence of asbestos fibres during the works; and
- licensed asbestos contractors are employed to manage the licensed asbestos controlled areas, all other operatives involved in the operations must have appropriate training to satisfy the requirements of the Control of Asbestos Regulations 2012.

Site Establishment and Security

Prior to the commencement of any works, the Contractor, in conjunction with the Client, shall establish the boundaries of the site and working areas.

The Contractor shall make adequate provision to secure the site boundary and prevent unauthorised access onto the site during the course of the works.

Prior to the commencement of any works, the Contractor, shall undertake a dilapidation survey of all adjacent features/construction including but not limited to boundary walls/ fences, adjacent footpath and road constructions etc. The survey is to be agreed with the Client or their representative prior to commencing any work on site.

The Contractor shall be responsible for all costs associated with rectification of damage to adjacent features/construction including but not limited to boundary walls/ fences, adjacent footpath and road

constructions etc. resulting from the demolition works. If damage is not noted on the dilapidation survey (or the dilapidation survey is not undertaken) and damage is later reported, it is the responsibility of the Contractor to rectify.

The Contractor is to provide surveying capability as set out in this document facilitate the above.

Prior to the completion of the works the Contractor is to discuss the continuation of the site security, including the fences, with the client and acceptable arrangements for continued security are to be agreed prior to the removal of the Contractor's security provision.

Traffic Safety and Management

The Contractor shall comply in all respects with Chapter 8 of the Traffic Signs Manual for works on or affected the public highway and/or private roads forming the highway access to/from the site. The Enabling Works Contractor shall obtain all necessary consents from the Local Highway Authority for works on the public highway.

On-site access and haul routes should be provided and maintained by the Contractor in such a manner so as not to endanger either the user, those working in the vicinity of such accesses/haul routes and or the Works.

Access to the site will be agreed with the Client prior to commencement.

Suitable precautions shall be taken to prevent the spread of mud and debris on the public highways. Regular inspections of the public highway adjacent to the site shall be carried out. If deemed necessary by the Contractor, the Client or the Consultant, the highway shall be swept regularly to remove any mud, slurry or dust deposited by vehicles entering or departing the site. If the Consultant considers that significant amounts of any detritus have been deposited on the public highway then operations shall be temporarily suspended until appropriate cleaning operations have been undertaken.

The Contractor is to co-operate with other contractors if they are present during the works.

The proposed works will generate a number of vehicle movements associated with the removal of soils and delivery to site of materials. Consideration should be given to the route and the timing of these vehicle movements, to minimise risk and disturbance to sensitive locations (such as schools, residential areas).

Risks associated with the transport of soils that are potentially containing contaminated, such as dust emission, should be appropriately managed by the Contractor.

Welfare Facilities

Site cabins and welfare facilities will be established at a location to be agreed with the Client.

The Contractor is deemed to have made provision and arrangements for all temporary services associated with the welfare facilities.

Working Hours

Noisy operations i.e. the use of hydraulic breakers shall be restricted to operating times as specified by the Client and by the planning permission. It is understood that these are 8:30 am to 5:30 pm, or other hours agreed with the Local Authority, Monday to Friday and 9.00 am to 1.0 pm on Saturday. No working shall take place on Sunday or Bank Holidays.

Prior to commencement the Contractor is to make contact with the Local Authority to establish if any further restrictions apply.

Mobile Plant

Mobiles plant shall be operated by suitably trained and qualified operators experienced for each item of plant. When not in use all plant shall be locked to prevent all plant shall be locked to prevent unauthorised operation.

All traffic entering or working on site shall obey a maximum 10 mph speed limit.

Fuelling of any plant shall be undertaken in a designated area and all above ground fuel storage tanks shall comply with the requirements of the Pollution Prevention Guidelines PPG2.

Specifically, any storage tanks used should:

- be sited within an oil-tight secondary containment system such as an impermeable bund;
- the secondary containment must provide storage for at least 110% of the tanks maximum capacity;
- be located within a secure area; and
- all taps and valves should be fitted with a lock and kept locked shut when not in use.

Maintenance of mobile plant should be undertaken in a designated area, unless absolutely necessary.

Waste oil, hydraulic fluid etc. should not be tipped directly or discharged on to site. Such materials shall be stored separately, in a secure bunded area, for off-site disposal. Waste oil may be a special waste and disposal shall be undertaken by a registered carrier in accordance with the Duty of Care Regulations.

A spill kit shall be kept on site in an accessible place adjacent to the designated refuelling area and used in the event of a spillage or leak.

Surveying

The Contractor shall provide full time surveying personnel and equipment to undertake the following activities and any other requirement for topographical information relating to the project that arises through the duration of the enabling works contract. The survey personnel and equipment should be capable of providing accurate levels and co-ordinates in relation to the national grid and topographical survey provided within 1 day of request.

The following key activities are covered by the requirements for surveying:

- confirmation of topographical survey on possession of the site, and setting out of the site boundary;
- confirmation of positions of existing services and site features;
- surveying the base and extent of all excavations and remaining obstructions (to be undertaken prior to backfilling);
- all setting out and levelling relating to delivery of the enabling works;
- the location of sub-structures removed;
- interim surveys to be undertaken during the infilling works to provide information on issues such as depth of excavation, progress of earthwork, quantities of materials etc.;
- the location and elevation of test samples and locations; and
- as built survey information.

The Contractor is required to undertake all necessary topographical survey works to verify these levels before the commencement of the contract. Should the Contractor find any discrepancies on the drawings they are to refer the matter to the Client for verification before proceeding with the part of the works affected.

The Contractor shall undertake a topographical survey following completion of the enablement works.

All topographical surveys shall include levels at maximum 10m spacing and details of any features, changes in slope, structures, services and any other features of interest.

All of the above features shall be surveyed for line and level at the site boundary and marked on a plan. Levels shall be to Ordnance Datum and locations to National Grid. The survey shall be calibrated against existing site surveys and benchmarks in the vicinity of the site.

Testing

The Contractor shall be responsible for undertaking all testing necessary to satisfy the Consultant that the works have been carried out in accordance with and comply with the specification.

All soils and chemical testing shall be carried out by a UKAS and MCERTS accredited laboratory, with accreditation for the specific analysis, to the approval of the Consultant. The lowest level of detection shall be used for all testing. The Contractor is to submit to the Consultant the proposed levels of detection for all proposed testing.

The Contractor is to make available on site at all times a file containing all test data received for inspection by the Client or Consultant or Named Representative (NR). The Contractor is to prepare a summary table for presentation with the contractors report detailing test results and associated status.

This summary table will be in Excel format and be updated and sent to the Consultant by 10:00am every Monday. This summary will include an up to date location plan, all samples taken, tests scheduled, laboratory results received and outstanding testing.

Offsite Disposal

Materials for offsite disposal shall be sampled and analysed, by the Contractor, at rates sufficient to allow the material to be adequately categorised.

Material exported from site to landfill, or other appropriately licensed facility, shall be hauled by a registered waste carrier in accordance with the requirements of the Duty of Care Regulations, 1991 and where appropriate the Special Waste Regulations, 1996.

A transfer note shall be completed, signed and retained by all parties involved. The transfer note shall state the volume of waste, the nature of the material and statement to the chemical composition.

The waste transfer notes shall be kept by the Contractor for a period of at least 2 years.

Contamination

Contractors should be made aware of the possibility of encountering contaminants within soils or groundwater at the site (including asbestos) through 'toolbox' talks.

Safe working procedures should be implemented in accordance with CIRIA132 and good standards of personal hygiene should be observed and appropriate levels of PPE provided and utilised.

Eating, drinking and smoking should be strictly prohibited in the development site other than in designated mess areas.

The Control of Noise, Vibration and Dust Nuisance

The Contractor shall comply with the recommendations for practical measures to reduce noise and vibration set out in BS5228-1:2009 and BS5228-2:2009 and with any specific Principal Contractor requirements.

The Contractor shall take all reasonable measures to prevent dust nuisance from being generated by construction traffic, etc.

If necessary, working methods will be altered in order to ensure that the level of noise generated from the works is within published tolerable limits.

The requirements of the LPA are to be sought and undertaken.

General

No fires shall be permitted on site.

Dust Mitigation

Appropriate measures shall be implemented at all times during the demolition and enabling works to minimise any dust emissions.

Any main temporary haul roads shall, where practical to do so, be constructed of crushed hardcore products. The haul roads shall be maintained for the duration of their use to minimise any build-up of loose spoil etc.

Traffic both entering and working on site shall obey a maximum speed limit of 10 mph (unless otherwise agreed).

Mobile water bowsers and sprayers shall be available on site at all times to water unpaved haul roads and working areas. The water spray may include chemical dust suppressants or wetting agents to improve dust control.

Wagons that are to be used for the haulage of any contaminated material from site shall be appropriately sealed or sheeted to prevent the release of fugitive dust.

An adequate supply of water shall be maintained on site at all times to allow for dust suppression activities to be carried out at short notice.

Where mobile water bowsers are no effective in suppressing dust then vapour masts shall be used. Such vapour masts shall be deployed at 20m centres on the downwind side of haul roads or excavations giving rise to significant dust or emissions of odour.

Air quality and dust monitoring stations will be set up and monitored by the Contractor to record the dust concentrations during the works.

With regards to stockpiles:

- stockpiles should be kept to a minimum to reduce 'wind whip' causing potentially hazardous material to be blown from the pile;
- stockpiles should be placed on a suitable polythene membrane to prevent any cross contamination and care should be taken not to pierce the sheeting when placing the bulky elements of the material;
- stockpiles should be dampened down or covered to prevent dust, whilst the final choice should be made by the Contractor based on site constraints, but the options include covering with plastic/polythene membrane, or by a layer of clean soil material; and
- the drop distance from excavator bucket to stockpile will be kept as short as reasonably practicable to reduce dust.

Odour

In general terns the excavation works are not considered likely to give rise to any significant odour problems.

If highly odorous materials are encountered, which may give rise to nuisance to neighbouring properties, appropriate vapour masts shall be deployed to provide suitable odour control. Any odorous materials shall

be covered at the end of each working day and any stockpiles will be located away from any sensitive areas.

Plant and machinery shall be serviced regularly to ensure that exhaust fumes are compliant with best practice and relevant regulations.

Noise

The requirements of the Local Planning Authority and BS 5228: 1997 'Noise and vibration control on construction sites' shall be adhered to at all times.

All machinery shall be fitted with effective silencers and shall be serviced at regular intervals. No items of plant shall be operated with engine covers raised.

The location of any crushing plant shall take into consideration the location of neighbouring properties and other noise sensitive receptors and shall be located away from these areas and located adjacent to proposed stockpile locations where possible.

Asbestos in Soils

Although asbestos was not identified during the ground investigation, there remains a possibility for asbestos to be present with the landfill material. The Contractor for each phase of works must manage the risks in accordance with their legal requirements and will need to prepare appropriate health and safety documentation and obtain appropriate approvals, licences, consents and permits prior to commencement.

Whilst appropriate measures are required for all contaminants present, the Contractor should note the additional details provided below with regards to asbestos in the soils:

- Asbestos is a hazard to Human Health when airborne fibres are inhaled. Asbestos containing material (ACM) that is in a bound form (such as asbestos cement tiles) is a low risk where the asbestos fibres cannot become airborne. However, if lagging is present or the ACM is broken or crumbled in a dry condition the asbestos fibres could become airborne and could then be inhaled. When soil with asbestos is covered by hardstanding, buildings or a cover of clean soil or when the soil is kept damp, the asbestos fibres are less likely to become airborne and the risk is greatly reduced.
- The Health and Safety at Work Act 1974 forms the basis of health and safety legislation in in the UK. In addition, the Control of Asbestos Regulations 2012 (CAR 2012) applies throughout the UK. CAR 2012 applies if land has significant asbestos content and is relevant to any work conducted on asbestos contaminated land.
- CAR 2012 defines a 'control limit' of 0.1 fibres per cubic centimetre of air averaged over a continuous period of 4 hours. This limit is not risk based and may be much higher than the levels for control of environmental pollution.
- CAR 2012 applies even where exposure to asbestos of employees is sporadic and of low intensity and where exposure to asbestos of any employee will not exceed the control limit. In addition, the work must be of short non-continuous activities where non-friable materials are handled, or removal without deterioration of non-degraded materials in which asbestos fibres are firmly linked in a matrix.
- Lagging, broken fragments of asbestos and loose fibres have the potential to release airborne fibres in dry conditions. In addition, as the ACM and asbestos fibres have been contained in the soil for many years, the likelihood is that they would be degraded to some extent. However, if the asbestos fibres detected at the site are within a soil matrix and if this is kept damp, this should assist in minimising the risk of the release of airborne fibres.
- Given the above factors, it is possible that the works being undertaken would not be exempt from CAR 2012 licensing requirements and it is the Contractors responsibility to assess the licencing position.

- It should be noted that information presented in this document is provided to assist in managing the soil at the site which contains asbestos. Hydrock cannot be held responsible for how the control measures associated with these risks are implemented and recommend that an appropriate asbestos specialist assist with both the preparation of documents and licences and site supervision.

Task specific risk assessments and method statements should be in place, and risks and required mitigation measures communicated to all relevant personnel prior to the works commencing. Appropriate PPE and if required RPE should be provided and utilised.

Visible fragments of suspected asbestos containing materials on the site surface should be handpicked. If hand picking is being undertaken it needs to be undertaken in accordance with and Environmental Permit and ACM shall be placed in a dedicated covered and lockable skip pending off-site disposal to a suitably licensed facility. Such remediation measures will be undertaken by suitably qualified contractors and in accordance with CAR 2012.

Water Quality Controls

The Contractor shall provide for such measures as may be necessary to ensure that water, whether ground water, from precipitation or any other source does not accumulate in excavations or on sub-grades.

Adequate drainage sumps will be installed during works and cut off trenches/dewatering measures will be used as required to manage surface water run-off, to prevent any water from entering watercourses, either directly as surface water run-off, or indirectly via the surface water drainage systems.

If materials escape, appropriate the Contractor is to undertake (at their cost) appropriate remedial action as soon as possible.

Services

Service records are to be provided by the Client for information purposes within the enabling works documentation. However, the Contractor shall be responsible for liaison with the statutory service providers to ensure all service records are current and correct. The Contractor is also responsible for the safe disconnection of existing services entering the site, except those which are to remain operational.

Prior to site work commencing, the position of all services indicated as on site or offsite but close to the site boundary shall be determined and clearly identified where on site. The locations should be confirmed on site by appropriate investigation, observations and survey. Any discrepancies between the anticipated positions and confirmed locations are to be reported to the Client.

All retained manholes should be located and clearly identified on site to prevent damage. The location, depth, diameter and invert level of each manhole and the size and depth of all stream connections shall be recorded. Where drains or sewers are to be grubbed up the downstream ends should be plugged prior to commencement to prevent offsite systems becoming blocked or contaminated.

Where existing drains or sewers are to remain, CCTV surveys are to be provided by the contractor. These surveys must be undertaken on commencement prior to any physical work and on completion to demonstrate no damage has occurred.

Where damage has occurred, any remedial work must be agreed with the Client and relevant authority/owner prior to repairs commencing. The repair costs will be borne by the contractor.

All services on site that are to be retained through the works are to be positively located on site, reliance shall not be placed on existing records. Services are to be visibly marked and protected for the duration of the works. Appropriate methods are to be put in place to ensure all site staff working in the vicinity of retained services are fully briefed.

The Contractor is responsible for ensuring that all hydrant covers, stop tap boxes manhole covers and the like are raised or lowered to suit the finished levels associated with the proposed enabling works plateaus and future construction thicknesses.

Following the completion of the works, a survey plan of the location of terminated services is to be provided.

Damage to Property

All works are to be undertaken in accordance with the Party Wall etc. Act 1996.

The Contractor shall ensure that all precautions are taken in order to avoid any damage to existing property arising from the Works and shall be responsible for same in the event that any damage should arise from his failure to exercise due care.

Any adjacent structures, services and the like shall be inspected prior to commencement of the Works for evidence of existing defects and, if necessary, a dilapidation survey shall be carried out by the contractor, with the agreement of the Client, prior to works commencing on site. A re-inspection shall take place on completion of the Contract to verify that no damage or deterioration of the said structure, service or apparatus has occurred as a result of the Works. A schedule of the findings of this re-inspection shall be circulated to all parties concerned for their records.

The Contractor shall execute the works with care so as to avoid damage to existing structures and drains or other services to be retained.

All fences, trees, paths, shrubs, grassed areas and other surfaces required to be retained shall be protected by the Contractor from spillage and damage caused by site operations and upon completion of the works they shall be handed over in an undamaged and proper state to the satisfaction of the Client.

Refer to landscape architect drawings and specifications that define the areas that require protection. The Contractor shall not raise or lower the ground level beneath the spread of the branches of any tree to be retained without the approval of the Client.

Drawings and Supplied Information

Whilst efforts have been made to ensure that the information provided to the Contractor is correct and current, the Contractor is responsible for corroborating the existing information with the benefit of their site presence and to report any discrepancies encountered or anticipated to the Client immediately.

Where cutting and filling operations are to be carried out the Contractor is to undertake comparative assessments with the benefit of existing information, additional survey and their anticipated sequence of work to ensure sufficient and suitable material is available to undertake the works as proposed. Any anticipated shortfall or surplus is to be report immediately.

Photographs

A detailed dilapidation survey shall be undertaken of the site and adjacent properties including joint site boundaries, in conjunction with adjacent land owners.

Such survey shall include (but not be limited to) roads, footpaths, street lighting and road signs. A copy of the survey, including record photographs shall be provided to the Client within seven days of commencement of site works.

The Contractor is to provide on-site a digital camera and e-mail facilities to enable electronic transfer of site photographs and other information for the full duration of the contract.

Progress photographs are to be taken at least weekly across all parts of the site for inclusion within the contractor's report. Photographs are to be made available to the Consultant and the Client in electronic

format should they be requested during the contract. Record photographs should be provided as part of the validation information.