



Urban Regen

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**Former Mondi Mills, Ramsbottom:
Phase 2 Remediation Strategy &
Method Statement**

For: Ecclestone Homes

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1 Introduction

- 1.1. Planning Consent is had been granted for the redevelopment, to a residential end land use, of a derelict brownfield land parcel associated with the former Mondi Mill, located off Belmont Road, Belmont (see Figure 1.1). Urban Regen has been undertaking Remediation and Preparatory works in advance of construction, in accordance with Betts Geo Remediation Strategy (Ref: 19ECH016/RS, Dated June 2023).

Figure 1.1: Site Location



- 1.2. The Betts Remediation Strategy has been approved for Phase 1 by Bury Council Contaminated Land Officers, and their consultee in respect of pollution risks, the Environment Agency, as appropriate for most of the site with the exception for an historical landfill in the southwest corner of the site, now referred to as Phase 2. This Remediation Strategy and Method Statement has been prepared by Urban Springside Ltd. (USL) to provide additional detail of the Remediation Proposals and Implementation Plan for Phase 2.
- 1.3. This document does not provide any further site investigation or risk assessment and it is assumed that the Remediation Objectives and Criteria set out in the Betts report and applied to the Phase 1 area remain valid and acceptable for the Phase 2 area.

- 1.4. The site comprises a former reservoir and adjacent land that formed part of the paper mill. The Phase 2 area also includes an area outside the former landfill where a concrete slab has been left intact to facilitate future soils treatment. A foul sewer is present beneath the southern parcel.
- 1.5. It had been proposed to carry out the soils treatment via a physical sort and screen exercise to remove wastes for off-site disposal and produce soil substitutes and aggregates for use as general fill material, temporary works (pile mats), and road capping. However further investigations have indicated that some of the materials within the landfill are classified as Hazardous Waste due to their total metals and hydrocarbon content and cannot be treated under the Mobile Plant Permit Currently deployed at the site.
- 1.6. A treatment trial for 1,000m³ of the materials has been completed under the conditions of Regulatory Position Statement (RPS) 215, which attempted to segregate the wastes that would be classified as hazardous and non-hazardous and treat these through physical means to segregate unacceptable waste inclusions and materials that could be recovered for processing to generate aggregates. A report detailing the process, outcomes, and verification of this is appended in in Appendix A: 414-VP1.0 Final Former Mondi Mill Ramsbottom Phase 2: Verification Report for Tip Waste Soil Treatment Trial.
- 1.7. Specific site information is detailed in Table 1.1:

Table 1.1: Site Information

Address	Accessed off Bridge St, the site is located between the East Lancashire Railway with Acre Bottom Cricket Ground)
National Grid Reference	SD7933016667
Local Authority	Bury Council
Site Area	Phase 2: 6,000m ²
Current Nature of Site	Open ground either side of cricket club access, cleared of vegetation and levelled, containing 2 stockpiles of material treated under small-scale/trial.
Proposed use	Residential Development, access roads and drainage

- 1.8. The Final Remediation Strategy must secure the safe and sustainable redevelopment of the site based upon risk assessments completed using information obtained in previous site investigations/monitoring, and sampling/analysis of soils. These assessments of the risks presented by Land Contamination hazards to controlled waters and human health have been completed by Betts Geo and define the Remediation Objectives and inform the selection of the various available options to manage the risks in the context of the site, its environs, and the development proposals.
- 1.9. Any Remediation Strategy is necessarily informed by the requirements of both the Local Planning Authority (Bury Council), and the Environment Agency (EA), specifically contaminated land, and water quality issues. Permit Deployments are being dealt with separately by the EA Permitting Team, however

the Method Statement developed to accompany the Permit is included in Appendix B: Mondi Mill Phase 2: Soils Treatment Method Statement 414- MS-ST2-V1.0, August 2025.

- 1.10. This Remediation Strategy details the anticipated works to be implemented by the demolition, remediation, and earthworks contractors only. The assessment methodology follows the framework described in the EA/DEFRA Contaminated Land Report 11: *'Model Procedures for the Management of Land Contamination'* 2004 and its replacement *'Land Contamination: Risk Management'* issued 5th June 2019, last updated 23rd December 2019.
- 1.11. It is intended that this Remediation Strategy is submitted in support of the application for Planning Condition Discharge and to gain approval for the proposals prior to the commencement of works.

2. Site Characterisation

2.1. Site Investigations

- 2.1.1. URL rely on the site investigations and risk assessments previously carried out by Betts Geo to define the Remediation Objectives; specifically, the Desk Study and Ground Investigation Report for Mondi Site Ramsbottom (Ref: 19ECH016DSGI, Dated August 2024).
- 2.1.2. Some supplementary information has been obtained since this which has been used to inform the most recent iteration of the Remediation Strategy; however, URL have adopted the Remediation Objectives and criteria as understood from the Betts Geo reporting.

2.2. Historical Development and Use

- 2.2.1. Historically, in the 19th and 20th centuries, the site formed part of a major Paper Mill with associated power generation, reservoirs, and effluent treatment. The site contains areas of waste deposited sometime between 1976 and 1990 in a historical landfill operated under old licensing arrangements, now surrendered and located in the southwest corner within part of a historical reservoir .
- 2.2.2. Recent enabling works completed in, and immediately adjacent to, Phase 2 comprise the treatment of Japanese knotweed, removal of two soil mounds placed after the closure of the tip and a new surface water culvert to carry water from the historical “Goit” that crosses the site to the surface water channel to the north of the tip.

2.3. Geology

- 2.3.1. Published BGS mapping shows the majority of the site to be underlain by Superficial Deposits comprising alluvium. The former reservoir does not appear to have been lined and site investigation within the tips following removal of overlying soil mounds (deposited after the tip had closed) but appears to extend laterally over the footprint of a historical reservoir and extend to about 2-3m below the surrounding contemporary ground level. These have included general and household wastes, textiles, wood, metals, paper wastes & plastic inclusions within a silty sand gravel matrix and a relatively high proportion of inert inclusions of brick, concrete, and masonry.

2.4. Drainage & Hydrogeology

- 2.4.1. The trial pits and excavations into the waste have indicated generally dry conditions, and it is concluded that these are present above the Secondary A alluvial aquifer anticipated in the natural superficial deposits. The bedrock has previously been classified by the EA as a Secondary A Aquifer. The site does not lie within a source protection zone.

2.4.2. The nearest watercourse is the open channel for the Goit that historically drew water from upstream River Irwell which flows through a new culvert constructed in the Phase 1 area and outside the Phase 2 eastern boundary.

2.5. Soil Contamination

2.5.1. In general, the made ground on the site is characterised by moderate to high levels of PAH's, total hydrocarbons, and metals, with low concentrations of dispersed asbestos fibres also confirmed. These conditions necessitate mitigation to protect future residents, however, in respect of remediation/preparatory works, the concentrations do not pose an unacceptable risk to the development workforce provided appropriate occupational hygiene and environmental controls are adopted. Special precautions are only required in respect of the potential for asbestos fibres to become airborne and thus protect workers from exposure.

2.5.2. The presence of Per/Poly-fluoroalkyl substances has been raised as a concern and supplementary investigations and risk assessment have been undertaken by Betts Geo. URL understand that these have been assessed as not presenting an unacceptable risk to human health or controlled waters following implementation of the original Remediation Strategy provisions, but that at one location (WS302, just north of the cricket club access road which bisects the historical tip) where they have identified Perfluorooctane sulfonic acid (PFOS) concentrations exceeding an interim Category 4 Screening Level¹ in a single sample. PFOS in the adjacent entries WS301 & WS303 being undetectable and below this threshold. URL understand that this location is to be treated as a contamination hotspot requiring remediation to reduce soil concentrations to below this threshold, applying at as a Remediation Criteria.

2.5.3. While there is no existing information confirming the presence of other significant contamination sources, or that pollution of ground or surface water has occurred, it is considered prudent to examine all areas during the works to determine if other remedial action is required. The supplementary investigations (Reported in the Treatment Trial Report -Appendix A), indicate a similar suit of largely non-volatile hydrocarbons, metals and low concentrations of asbestos that were considered in the previous human health risk assessments for the wider site could be managed through isolation by application a site cover system and ground gas protection measures.

2.6. Ground and Surface Water pollution

2.6.1. Betts Geo concluded that the site (Phase 1 & Phase 2) did not pose an unacceptable pollution risk to the aquifer or surface water receptors.

2.7. Ground Gas & VOC Vapour Migration

¹ <https://claire.co.uk/projects-and-initiatives/category-4-screening-levels>

2.7.1. The planned residential development will introduce new on-site receptors. Gas monitoring indicates the requirement for gas protection and that risks can be managed through the provision of basic gas protection measures within any new buildings, although a recommendation was made that risks following remediation should be reassessed in case these can be reduced or dispensed with.

2.8. Conceptual Site Model

2.8.1. On the basis of the above information, the proven or likely contamination sources that will need to be considered when redeveloping the site are as follows:

- the general made ground & wastes with localised incidences of mainly heavy (C12+) hydrocarbons, PAHs, metals, asbestos, and organic materials (timber fragments, plastics, paper waste);
- asbestos building materials/demolition arisings in the wastes (including dispersed low-level fibres);
- possible (unconfirmed) further organic contaminant hotspots associated with individual features buried drums not encountered in investigations or remediation excavations completed to date;
- methane and carbon dioxide concentrations within and near to the landfill generated by degradation of the organic matter, although migration into the development area has not been identified.

2.8.2. The existing environmental receptors will remain largely unchanged following development (ground and surface waters, ecologically sensitive areas, and neighbouring properties). New receptors, in respect of human health, will be introduced to the site under the development proposals. These will include residents, maintenance workers, visitors, and users of amenity/ecological areas. These are in addition to the workers associated with the demolition/re-engineering/re-profiling of the site. A summary of the sources, receptors and feasible exposure pathways which need to be addressed by the Remediation Strategy to enable a Planning Consent to be implemented is presented in Table 3.7.

Table 2.1: Summary of Pollutant Linkages under development and residential use

Receptors	Pathways	Contaminant Sources
Human health – Future residents and other site users (Transient risks to construction and maintenance workers addressed under HSWA 1974 / COSSH)	soil and dust ingestion, dermal uptake	asbestos, metals/metalloids/PAHs/localised PFOS in made ground, asbestos residues, and other low-mobility contaminants likely to be widespread throughout the wastes, more localised high concentration sources may also be present in limited areas not identified to date which will confer higher risks.
	migration and accumulation of harmful ground gas including VOC vapours in confined spaces	Identified methane and carbon dioxide concentrations within and locally to the Landfill are not migrating to the development area, however localised elevated gas concentrations within the wastes are anticipated due to the high incidence of organic inclusions Localised hydrocarbon VOC and SVOC sources with naphthalene as the main indicator compound exceeding human health criteria for soils exist. There is the potential for similar exceedances.
Construction materials and structures	migration and accumulation of flammable ground gas	Identified methane and carbon dioxide concentrations within the landfill could pose risk to development.
	Permeation of polymers by organic compounds or attack of construction materials (including concrete) by aggressive ground conditions	Localised hydrocarbon sources have been identified, and there is the potential for further, similar exceedances throughout the wastes Strongly acidic conditions, or the presence of sulphates is likely and an appropriate classification of materials will be required.
Plants / ecologically sensitive areas	root uptake of phytotoxic metals, ecotoxicity/fouling in wetland areas/watercourses	Metals in made ground and migration of other pollutants.
Groundwater and surface water	Leaching and migration of dissolved substances (groundwater)	Currently not assessed as causing pollution of the superficial aquifer or surface waters, however, there is potential for the release of substances from the unsaturated zone following site disturbance.
	Run-off / drain discharges, and baseflow from shallow groundwater (surface waters)	suspended solids (silt), hydrocarbons, leachate mobilised from drain sediments or loose deposits on the site surface, or activities around the removal, treatment, or transport of wastes.

3. Options Appraisal

3.1. Regulatory Context

- 3.1.1. The overarching requirement for the remediation works, is to create a landform which enables the residential development of the site under the existing Planning Consent, whilst addressing the relevant risks from land contamination to human health, controlled waters, and the wider environment.
- 3.1.2. In order to achieve this, the works must address all foreseeable risks to human health with future residents/visitors being the priority, but also including existing residents/visitors of neighbouring properties, the construction workforce, and future maintenance workers. In order to discharge the relevant Planning Conditions for Phase 2, the LPA must be satisfied that the site can be safely developed and risks managed in the long term.
- 3.1.3. It is anticipated that, in advance of residential development commencing, this Options Appraisal, Remediation Strategy, and Verification Plan must be approved by the Local Authority. The objectives, scope and implementation plan for this Remediation Strategy must therefore be acceptable to both the Local Authority (Human Health Risks) and their consultee, the Environment Agency (Controlled Waters Risks).
- 3.1.4. A second set of related but separate requirements exist in respect to the Environmental Permits to be deployed to treat the wastes, these are more focussed on the monitoring and controls to prevent unacceptable emissions from the treatment to cause harm, pollution, or nuisance.

3.2. Remediation Objectives

- 3.2.1. The Remediation Objectives, Criteria, and Implementation and Verification Plans are based on URL's understanding of the Betts Geo Risk Assessment Outcomes and the Remediation Strategy provided to URL by Ecclestone Homes, supplemented by the requirements for the relevant Mobile Plant Deployment to treat the wastes present.
- 3.2.2. The results of all testing, monitoring, and inspections, will be submitted to the Regulatory Authorities. If additional contamination is encountered, and subsequent investigations/risk assessment indicates the requirement for a substantial revision to the strategy, these will be submitted to the Regulatory Authorities for approval prior to any associated works being carried out. The key remediation objectives are to:
- Delineate the PFOS impacted materials at WS302 and remediate to below the adopted threshold;
 - Excavate all of the waste materials and carry out further ground inspections to identify and characterise any currently unidentified contamination sources;

- break any identified significant or potentially significant existing/future pollutant linkages, and to prevent the potential pollution of the nearby Goit surface watercourse and by extension the River Irwell;
- include measures to preclude the establishment of future pollutant linkages during the works resulting from the change of land use,
- remove/remediate/treat significant pollution sources and unacceptable waste residues;
- respond appropriately to contingencies, in particular, the discovery of previously undiscovered contamination;
- remove development constraints and prepare the site physically to achieve the approved landform;
- manage all emissions to air and water to protect surface/ground waters and the atmosphere during the remediation works;
- implement measures to manage residual risks caused by the introduction of new receptors to the site following construction of residential dwellings and infrastructure.

3.2.3. The identified risks will be managed in order to break any potential pollution linkages and allow the development of the site for its intended residential end use without harm to human health, property, and the environment. Each of the potential contaminant linkages identified in the site conceptual model and risk assessment will be addressed for the Remediation Strategy to be considered appropriate for the site, and to allow construction to commence.

3.2.4. During the remediation works, various contaminated materials will be exposed, and mitigation to prevent exposure of site workers, local residents, and site visitors to harmful or nuisance substances, is a fundamental requirement of the Remediation Strategy. Similarly, the works must not cause pollution by discharge of silt or other materials to the surface water receptors on/adjacent to the site.

3.2.5. Risks to human health associated with the identified levels of contamination from asbestos, metals, PAHs and non-volatile hydrocarbons, can be managed by isolation of the affected soils (it is assumed that these substances may be widespread in the made ground across the site). Initially, new receptors will be limited to the workers implementing the scheme, and as such, additional risks will be minimal. As residential development commences and new dwellings are completed, more sensitive receptors will be introduced (including infants and children), who must be isolated from exposure to such ubiquitous/low level contamination, to maintain risks as low as is reasonably practicable.

3.2.6. PFOS require remediation at a single, specified location (WS302). The requirement for soil remediation of hydrocarbons or other organic contaminants is anticipated to be absent or limited as these have not been identified as posing an unacceptable risk to controlled waters and the majority of the hydrocarbon contaminant mass present are non-volatile. However, a number of these areas have already been investigated and confirmed as containing concentrations of specific indicator compounds which could

pose a theoretical risk of adverse impacts to human health through chronic exposure to VOC vapours. These will require additional isolation as exposure can be indirect through the migration into indoor areas and accumulation to concentrations that can pose a chronic inhalation exposure risk.

3.2.7. As a priority, the general proposed remediation works must not cause the release of any polluting substances to controlled waters, either via sub-surface, or overland flows or the generation of aerial dust and deposition.

3.3. Remediation Criteria

3.3.1. Remediation Criteria are site specific objectives that have been determined through either qualitative, generic quantitative, or detailed quantitative risk assessment. These are usually defined concentrations of the contaminants of concern in soil, groundwater, and gas, below which no unacceptable impacts to the receptors are anticipated. The proposed Remediation Criteria for the site are explored and defined in the accompanying Baseline Reports for Controlled Waters and Human Health Risk Assessment, and are summarised in Table 4.1:

Table 3.1: Summary of Various Remediation Criteria to be applied to the site/development

Medium	Requirements for Remediation Criteria	Selected Criteria and Reference
Soils at Surface / Shallow Depth (gardens)	Must be protective of human health in a residential land use scenario – private gardens	The Threshold Criteria adopted in the Betts Risk Assessment appear to be Generic Assessment Criteria for Residential (with gardens) land-use so are appropriate for direct exposure of future residents to soils
Soils at Surface / Shallow Depth (landscaped areas)	Must be protective of human health in a residential land use scenario – private gardens	The Threshold Criteria adopted in the Betts Risk Assessment appear to be Generic Assessment Criteria for Residential (with gardens) land-use – equivalent Criteria for Public Open Space (POS) exist and it is assumed these can be adopted for areas external to plots
Soils at depth	Only PFOS has been identified in the risk assessment as requiring remediation to reduce concentrations in materials that will be left below the specified cover system.	The Threshold Criteria adopted in the Betts Risk Assessment appear to be Generic Assessment Criteria for Residential (with gardens) land-use being applied to materials identified at 1m depth below existing ground levels (>600mm from finished levels in gardens).
Imported or site - won aggregates	Asbestos is the only contaminant of concern in recycled aggregates given their use, no definitive standards protective of human health exist but risk assessment profiles dependent on the intended use have been	The Threshold Criteria asbestos concentrations adopted in the Betts Risk Assessment are relevant to intended uses of materials at or near the site surface in soft landscaping (gardens or POS), near surface engineering applications (Pile mats or Road

Medium	Requirements for Remediation Criteria	Selected Criteria and Reference
	developed in accordance with the principals of maintaining exposure to As Low as Reasonably Practicable (ALARP)	Capping) and at lower levels where future exposure is less likely (>1m).
Indoor/Outdoor Air	VOC standards should be protective of human health in a residential land use scenario - indoor air inhalation pathways only	The Threshold Criteria adopted in the Betts Risk Assessment appear to be Generic Assessment Criteria for Residential (with gardens) land-use so are appropriate for exposure of future residents through vapour intrusion and indoor inhalation
	Carbon Dioxide and Methane Concentrations/flows should not be prohibitive of development to private (unmanaged) dwellings	The Betts Geo Strategy mandates post-remediation gas monitoring; concentrations are assumed to be compared to the same Gas Screening Values as adopted in the initial risk assessment, developed from CIRIA C665
Surface water	Demonstrate absence of Pollution during the works	If the assessment that the site does not pose an unacceptable risk to controlled waters is accepted , then specific criteria for this pollutant linkage do not need to be met. However, given the additional disturbance and temporary increase in pollution risks, establishment of baseline concentrations in the nearby watercourses and monitoring to demonstrate no deterioration is appropriate
Groundwater	Not considered at risk, although measures to achieve betterment through the long-term reduction of leaching is considered beneficial	If the assessment that the site does not pose an unacceptable risk to controlled waters is accepted , then specific criteria for this pollutant linkage do not need to be met. This is not likely to change due to the planned activities which will infer a general betterment through a reduction in infiltration by construction of roofs, impermeable surfacing and surface water drains so specific groundwater protective criteria are not proposed.

3.4. Options Appraisal Objectives

3.4.1. The objective of the Options Appraisal is to determine the most appropriate means of meeting the above Remediation Objectives, using the Defined Remediation Criteria, whilst taking into account project and site-specific considerations including:

- Physical site constraints (boundaries, groundwater levels, available space);
- Costs;
- Programme (Duration);
- Sustainability (use of resources);

- Environmental Impact (pollution, nuisance);
- Health and Safety requirements;
- Geotechnical Requirements & Development Design;
- Regulatory Controls -Permitting and Waste;
- Cost / Benefit assessments.

3.4.2. Physical site clearance, has already been completed, and are not considered further. However, the chosen techniques must not impede the works to physically prepare the site or unduly compromise the stability of the ground in respect of foundation design, pavements, and infrastructure.

3.4.3. The assemblages of contamination (moderately elevated metals, PAHs, hydrocarbons, and asbestos) appear to vary in concentration, generally with the upper tip materials and those in the east and north appearing less contaminated. The preferred remediation methods must be sufficiently flexible to deal with the currently anticipated distribution and the presence of hotspots (rogue loads, drums, etc. which can be a feature of any uncontrolled waste deposition and is difficult to identify during site investigations reliant on the spacing of discrete entries.

3.4.4. Lengthy post-remediation monitoring to demonstrate the adequacy of the remediation techniques to achieve the objectives is undesirable, however, some monitoring may be unavoidable in the case of dynamic, mobile contaminant linkages such as landfill gas, although programme durations can be limited through the adoption of continuous monitoring during and immediately subsequent to the relevant works that could theoretically impact the gas regime.

3.4.5. Also, given an anticipated earthworks deficit and requirement to remove non-compliant waste materials it is important that the volume of any waste soils is minimised, and that as far as possible, excavated materials can be retained, subject to their contamination status and geotechnical suitability.

3.4.6. Several potential methods (or combinations of methods), could be considered to meet the site remediation objectives and criteria, however, these will vary in their impacts and requirements as well as their effectiveness. The objective of the Options Appraisal is to assess what remedial techniques might be effective, and then balance the advantages and disadvantages of each to determine the most appropriate method (or combination of methods).

3.5. Viable Technical Approaches

3.5.1. The pollutant linkages identified as primary objectives are:

- 1) Preventing exposure of future residents to unacceptable concentrations of contaminants in soils or air.

- 2) Achieving betterment through a reduction in the potential for future leaching and mobilisation of hydrocarbons (and other organic pollutants if present), from soil sources into groundwater, and preventing any discharge to adjacent surface watercourses.

There are multiple viable, or potentially viable, pollutant sources, sensitive receptors, and linkages at the site. Remediation measures can be targeted to any of these three elements, to reduce risk to acceptable levels.

- 3.5.2. Material impacted with low level, assumed immobile contamination is present on/across the site, the volumes of which preclude any viable means of totally removing/reducing the source. For these classes of materials, the source will remain in place. For such dispersed substances, a universal mitigation approach through isolation of sensitive receptors (limited to future residents, and to a lesser extent maintenance workers) would be required, with measures to prevent cross contamination of clean cover material placed to isolate residual low-level contamination.
- 3.5.3. One hotspot with elevated PFOS at 1m below contemporary ground levels has been identified as requiring remediation. The existing Remediation Strategy specifies that this material is likely to require offsite disposal (rather than treatment for retention).
- 3.5.4. The mixed wastes present contain some materials that are a potential source of ground gas, as well as uncompliant with the Geotechnical Earthworks Specification. Discrete inclusions of timber, paper and card, plastics, metal, rubber etc, Provision for the removal of concentrated accumulations/deposits of polluting or particularly hazardous materials should be considered to reduce any long-term potential for harm at the site e.g., drums containing liquid wastes, buried caches of asbestos containing materials. This provides a quick and certain means of eliminating potential sources of both indoor air exposure (following any ingress into buildings), and although not currently identified, any groundwater impact. Such materials can be removed from the site and disposed of as waste.
- 3.5.5. Steps to modify migration pathways following the release of dissolved or vapour phases (pathway blocking) might be technically feasible through the use of barriers such as watercourse diversion, sheet piles, cut-off walls, pumping, or barriers/venting beneath buildings. However, the source would remain viable as a potential long-term liability. Other processes which change the potential for migration at source could be considered, which stop initial dissolution and mobilisation of leachable pollutants, these might include capping to prevent infiltration (which will be achieved through areas covered by buildings, roads, and drives), encapsulation, or solidification/stabilisation of the contaminant matrix.
- 3.5.6. Conversely, breaking migration pathways for gas or vapour intrusion into buildings where accumulations could cause human health impacts to occur is a well established and widely adopted technique. Risks from

this contaminant linkage have been assessed as low or moderate and basic, passive protection measures are sufficient to manage risks in most circumstances.

3.5.7. Based on the above considerations, a combination of inspections, selected source reduction and isolation is considered the most appropriate means of managing risks to the surface watercourses in the medium to long-term. Source reduction can be achieved through a number of means, the simplest is to remove the contamination from the site, to be dealt with elsewhere. Other methods generally utilise chemical or biological processes which destroy the contaminants, or achieve a reduction in the amount of effective contaminant mass through removal of mobile phase contaminants only, or fixing these within the soil matrix.

3.5.8. Treatment techniques to reduce the mass of the viable contaminant source can be applied within the source mass of contaminants, or at some point along the migration pathway in the sub-surface. These are referred to as in-situ techniques. Ex-situ techniques include the removal of the contamination and off-site disposal or treatment at the surface. It is of note that destructive techniques which reduce the overall mass of contaminants are not applicable to metals, asbestos, or in this context, recalcitrant organic substances including PFOS, for which removal has been specified as the preferred option. Stabilisation is suggested in the existing Remediation Strategy as a means of treating contaminants, and while this is well established for metals and has a limited application for some other inorganic, and some organic contaminants it is not well established as a viable treatment for PFOS.

3.5.9. Isolation or containment can also be considered for other sources which cannot be readily removed, such as the low gas risk presented by the organic wastes and more general areas of deep made ground, or where residual concentrations of volatile organics remain that are not a risk, except through vapour ingress to buildings.

3.5.10. Feasible Remediation Options

3.5.11. Based on existing information gained from the intrusive investigations and associated risk assessments, a variety of techniques could be applied to manage the pollutant sources. The general classifications of technique which could be considered viable in the context of the site, and the requirement to manage the identified pollution linkages under consideration are listed below:

- Isolation of the materials through cover systems, capping, or in-ground barriers to achieve *Engineered Encapsulation*;
- *Excavation and Disposal* of selected waste materials impacted by mobile contaminants or geotechnically unsuitable off-site;
- Excavation and *Ex-Situ Treatment* by physical or chemical means to reduce the mobilisation of metals from the soil mass;

- Application of similar chemical, biological or physical processes to change geochemical conditions and reduce the solubility or enhance absorption or mineralisation while still in the ground, or *In-Situ Treatment* to reduce concentrations sufficiently to achieve the Remediation Criteria;
- Use of chemical/physical treatments to reduce the mobilisation of the contaminants from the impacted material matrix by *Solidification and Stabilisation* – may be achieved In-situ or Ex-situ and provide a combination of encapsulation (if the resultant mass is of reduced permeability), and chemical fixing.
- *Pathway interruption* for ground gas and residual vapours to prevent migration into buildings with in-ground barriers and venting available as a contingency in case conditions deteriorate over the remediation programme (although this is not considered likely based on the risk assessment).

3.5.12. Several different techniques could be used for the above methods giving a wide range of options, these are explored further below with the costs/benefits and advantages/disadvantages of each, and a separate assessment of the possibility of option combinations.

3.6. Feasibility Screening

3.6.1. Each class of remediation that could be applied to contamination sources have relative advantages and disadvantages, with some allowing early exclusion from the feasibility screening procedure, and others which could be considered.

Table 3.2: Feasibility Screening Assessment

Method Class	Advantages / Merits	Disadvantages / Limitations	Feasible?
Encapsulation	Avoids generation of wastes and large-scale earthworks. Short term programme constructing engineered barriers	Given planned land use, long-term requirement to maintain and monitor effectiveness may not be possible. Conflicts with programme constraints. Likely to be viewed as waste deposition, likely requiring a bespoke Environmental Permit for deposit for recovery	No
Isolation	Widely adopted, economic, and simple techniques to isolate sensitive receptors through cover systems (soils), and other simple barriers integrated into buildings (gasses & vapours). More sophisticated and expensive barriers can be used to block migration pathways to, or divert surface watercourses.	Costs for groundwater barriers can be very high, does not reduce the potential sources of pollution and harm, must be robust to guarantee long-term performance without excessive monitoring.	Yes

Method Class	Advantages / Merits	Disadvantages / Limitations	Feasible?
Excavation and disposal	Fast and can be achieved using traditional plant. Verification by on-site observations and comparison of residual soil concentrations to SSTVs. Allows inspection physical preparation of the site (through removal of structures), to be completed at the same time.	Excessive cost for large volumes, particularly as likely hazardous waste classification. Large number of lorry movements and use of resources (landfill space and replacement fill). Could be retained as an option for specific classes and limited volumes of materials not amenable to other techniques (drums, free product, caches ACM for example & PFOS)	Yes
Physical sorting and screening of materials	Extension of excavation and disposal: Potentially fast and can be achieved using traditional plant. Allows segregation into deleterious waste materials requiring removal. Proven effective at segregating soils, oversized hard materials for recovery and unacceptable waste residues in treatment trial complete don site	Can be difficult if materials wet or well graded, may require secondary or tertiary screening in some circumstances and hand-picking	Yes
Excavation and Ex-Situ Treatment : Destructive Techniques	All advantages of excavation and disposal (above) without generation of excessive wastes. Wide range of techniques applicable.	The organic contaminants assessed to date requiring removal or reduction appear to be both readily accessible for excavation (not located at significant depths) but may not be amenable to biodegradation over the short-medium term, possibly requiring expensive chemical oxidation agents or similar to be used, was not identified as viable option for PFOS.	Possibly (excluding PFOS)
In-Situ Treatment : Destructive Techniques	Avoids generation of wastes, and large-scale earthworks. Wide range of techniques applicable, can be applied at excessive depths and to materials in the saturated zone	Delineation and field trials required to provide effective targeting of treatments. Most techniques involve ongoing monitoring for an extended period to check for rebound. Significant uncertainties in relation to cost and programme	No

Method Class	Advantages / Merits	Disadvantages / Limitations	Feasible?
Stabilisation / Solidification	All advantages of Excavation and Disposal without generation of excessive wastes. Fast - materials can be processed in short timescales and binder curing completed to allow fast recovery of fill. Cost effective depending on amount and type of binders used. Can produce geotechnically suitable fill materials which are of lowered permeability, giving treated materials intrinsic properties with some of the advantages of encapsulation.	Proven technology with strong track record for dealing with inorganic contamination. However, site pollution risks appear to be associated with organic hydrocarbon pollutants which do not have a proven track record using this technology except at the highest molecular weights (tars, PAHs) which do not appear to pose a pollution risk at this site. For PFOS, various admixes to hydraulic are postulated as potential fixation agents, however no commercial applications have been identified and a lengthy trial process would be required if this option were to be perused.	(excluding PFOS)

3.6.2. Based on the anticipated requirement to remove obstructions to the preferred piled foundation solution and the construction of foundations, drainage, re-engineer made ground, and delineate areas of contamination, those techniques which involve the excavation of impacted soils have the least divergence from the established general remediation requirements for the site. They infer a large advantage, with the identification of any unacceptable contamination and verification and its segregation being performed contemporaneously with the preparatory earthworks.

3.6.3. The other advantage of these techniques is that excavation can be completed rapidly with traditional earthworks plant and techniques. Once the material is out of the ground, physical sorting, segregation, and screening is required to meet the geotechnical specification, recover materials suitable for re-use and remove waste residues unsuitable for treatment. Destructive or stabilisation treatments could then be applied, although the risk assessment provided does not identify significant pollution risks and risks to human health can be adequately managed through isolation so this may not be necessary if similar conditions to those described in the previous site characterisation and risk assessment are confirmed. Removal from the site is the least desirable option in terms of cost and sustainability, but it should be considered as a contingency to provide surety and balance the uncertainty of other methods of treatment

3.6.4. It is therefore considered that, provided the risks of harmful or nuisance emissions can be adequately managed, the benefits of ex-situ techniques in terms of initial segregation of unacceptable waste materials, timescales and certainty of removal, are much preferred than in-situ treatments or encapsulation with a provision for ex-situ destructive techniques or immobilisation through stabilisation/solidification. For PFOS these, and on-site treatment alternatives require significant additional assessment (and trials), and a long period of post-completion monitoring to ensure long-term

compliance. If robust ex-situ treatment options cannot be proven within the desired timescales and in consideration of other constraints, then removal from the site for disposal must be considered, depending on disposal costs.

3.6.5. The segregation of different classes of material during excavation works is a powerful tool in minimising 1) the volumes requiring treatment, and 2) the requirement for off-site disposal. The general appearance of materials and on-site screening for elevated VOC's can also be used for making on-site decisions, although it is important the existing Remediation Criteria are only applied to shallow soils and verification test results compared to these demonstrate that excessive risks to receptors from direct exposure of any residues left in-situ, or following treatment of the soils, does not exist.

3.6.6. Residual impacts can only practicably be managed through the isolation of receptors: this is only suitable to manage risks to human health from direct exposure to contaminated materials (mainly in gardens) or gas/vapour intrusion into dwellings. A degree of groundwater isolation will be achieved through the construction of impermeable surfaces, the management of surface water drainage, and the diversion/rechannelling of the surface watercourse. Given the current apparent lack of mobile water pollution sources, and impacts to ground and surface waters, this level of betterment is considered proportionate to the risks of pollution from the site, provided more significant contamination sources are not identified during the works.

3.7. Treatment Techniques.

3.7.1. There is a requirement for excavated material to be re-used in the earthworks wherever possible but physical obstructions to ground engineering and the construction of foundations and infrastructure must be removed as must any deleterious materials and unacceptable concentrations of waste inclusions. Based on this site-specific requirement, a physical screening sorting and segregation process is considered the best option to ensure the necessary criteria for retention provided that the approach of isolation is maintained through the subsequent stages of remediation in the construction phase of the development.

3.7.2. Therefore, the deployment of treatment plant for sorting and separation, and particle size reduction and separation will be required. These will not reduce the total concentrations or the leachability of the contaminants present; however; these are not Remediation Objectives based on the current site characterisation and risk assessment.

3.7.3. If a total reduction in concentrations of organic contaminants becomes necessary then bioremediation is the preferred option, although chemical treatment could also be considered. If a reduction in leachability becomes required then stabilisation would be the preferred option as these technologies would allow the maximum retention of materials, reducing the requirement for off-site disposal. These approaches are not proved means of addressing PFOS risks and given the lateral and vertical extent of these has been

assessed as a limited hotspot, excavation and off-site disposal has been identified as the preferred option assuming a limited volume of impacted materials. If impacts are found to be more widespread then further risk assessment and reconsideration of Remediation Criteria may be necessary to ensure a cost-effective and sustainable solution.

3.8. Preferred Approach

3.8.1. Any other attempt to apply selective treatment techniques to metals, asbestos, or the heavy, immobile, hydrocarbons (PAHs) widely dispersed in site fills at low to moderate concentrations is not considered feasible. It is therefore necessary for the adoption of a universal barrier system, through the application of a soil cover system to garden and landscaped areas, and gas / VOC vapour protection measures to the planned buildings. Given the likely pervasive presence of low-level contamination by these substances in the made ground, the prevention of cross contamination is required.

3.8.2. If discrete deposits of more heavily contaminated materials, then those currently characterised are present, these can be removed, or treated placing less reliance in the universal measures designed to protect human health. This is the preferred approach to dealing with the identified PFOS hotspot.

3.8.3. While the potential exists for some materials to require disposal, based on the targeted site investigation data and risk assessment these have not been identified to date. A programme of soils bioremediation/chemical oxidation and/or stabilisation/solidification could be applied, although the reduction in total/leachable concentrations these would infer have not been prescribed based on the results of the Risk Assessment on which this Remediation Strategy has been developed.

3.9. Decision

3.9.1. The lateral and vertical extent of the PFOS hotspot at WS302 must be determined before works start. It is envisaged that a series of trial pits or trenches will be excavated radiating out from WS302 with sample collected at multiple depths and distances to confirm the volume of materials needing excavation and to fully characterise the materials in terms of waste classification and acceptance criteria. The material can then be excavated and removed and the exercise verified by further collection of samples from the base and sidewalls of the excavation. If PFOS exceedances of the adopted Remediation Criteria prove widespread, disposal costs are higher than anticipated and the economic viability of excavation and off-site disposal changes a reassessment of the Remediation Objectives and compliance criteria could be considered.

3.9.2. The physical screening of the landfill contents to recover materials for re-use and segregate materials requiring disposal is the primary Remediation Objective. The selection of materials can be carried out through a combination of visual assessment supplemented by on-site testing. Removed materials could be amenable to on-site treatment to reduce contamination concentrations but this is not required by the

Risk Assessment, Remediation Objectives or Remediation Criteria for soils to be retained below the site cover system and provided adequate gas /VOC vapour protection is provided.

- 3.9.3. The removal of unacceptable waste residues can be carried out contemporaneously with the works to physically prepare the site for development, specifically, the removal and processing of oversized materials and the removal of any deleterious materials (prior to re-grading/re-engineering fills).
- 3.9.4. A system of barriers can be used to control any residual risks to human health. These are to comprise of suitable soil cover systems for landscaped and private garden areas, unless natural, clean soils can be identified and verified as such it is anticipated this will comprise imported soils with careful materials management and verification testing to demonstrate suitability for use and successful prevention of cross contamination. Utility corridors can be isolated by using selected backfill (with suitable concrete and polymer specifications), and the provision of gas protection measures in all new dwellings to manage the risk of any gas and vapour migration.
- 3.9.5. The Developer will be responsible for managing soil stockpiles and completing areas of soil cover so as to avoid cross-contamination of materials. The general requirements will be as follows:
- provision of a 600mm clean soil cover layer over made ground materials within garden and POS areas, typically comprising 450mm of subsoil, and 150mm of imported topsoil, with a reduced thickness of 300mm in landscape areas;
 - materials to be used as the garden/POS/landscape soils must be suitable for use and validated;
 - potential cross-contamination of cover soils due to secondary excavations for foundation construction or trenching must be avoided.
 - Implementation of effective materials management to prevent cross-contamination and minimise disposal.
- 3.9.6. Following the initial screening of cover soils generated on site/imported during the earthworks phase, or subsequently imported for use in a soil cover system, a default sampling frequency of 1 sample per 50m³ will be adopted. It may be possible to reduce the testing frequency if soils of known provenance comprising well characterised low-risk donor sites are used.
- 3.9.7. Quality criteria for the garden cover soils will be authoritative published generic criteria selected for residential soils with plant uptake. Criteria for public open space areas may be relaxed by agreement with the Local Authority to reflect the reduced potential for exposure pathways under managed permanent grassland. Soils will be tested at an MCERTS or UKAS accredited environmental laboratory. Sampling, quality, and depth validation, will be undertaken by independent specialist contaminated land consultants, with depth validation carried out at a frequency of 1 test pit per 3 plots following placement

- of the final soil cover, or test pits on a 25m grid in public open space areas.
- 3.9.8. Where recovered or imported aggregates are used under plots or roads, the risk assessment requires that these do not contain quantifiable concentrations of asbestos (<0.001%). Materials with these levels can be retained below 1m from final levels in areas where future disturbance is not anticipated but in accordance with the Risk Assessment, higher concentrations (>0.1%) would need to be located to managed areas (POS) where records of their presence can be maintained and additional decontamination/barriers provided; there is a small area to the rear of the back gardens in Phase 2 where such an approach may be feasible for limited volumes.
- 3.9.9. Excavations where telecommunications, water, gas, and electricity supplies are laid must be backfilled with clean materials to prevent exposure of future maintenance workers. It is considered possible that protected water mains will be required across parts of the site unless post-remediation testing and risk assessment can demonstrate that protection is not required. Specific guidelines for water supply pipes in contaminated ground exist and require detailed risk assessments to be completed prior to construction.
- 3.9.10. Some information on sulphates and pH are available in the older ground investigations reports, however, a specific assessment of concrete classification will be required.
- 3.9.11. A separate verification report will be required for all of the construction-stage mitigation measures with a verification plan developed and submitted to Bury Council for approval prior to implementation. Separate phased or individual plot certification/reporting may be required for other stakeholders such as the NHBC.

4. Implementation Plan

4.1. General Approach

4.1.1. The general approach to the site preparatory/remediation works is described below:

Table 4.1 Site Preparatory / Remediation Works

Site security and supervision	The site will be securely fenced throughout the works. the remediation contractor will provide a visiting Project Manager to support full time supervision by an engineer or foreman.
Access	Access will be gained off Bridge St. through the Phae 1 area via Road 1 and onto the cricket club access road.
Enabling works	These have already been completed, specifically, vegetation strip, the treatment of invasive species, breakout of hard surfacing and the completion of a pilot treatment trial.
Permit Requirements	The previous Mobile Plant Environmental Permit Deployment (SR2022 No.2) was not suitable for some of the landfill contents which could be characterised as hazardous waste. A separate application for the deployment of a different Permit (SR2008 No.27) for contaminated materials has therefore been obtained which allows for physical treatment (screening, sorting, crushing), bioremediation, chemical treatment, and stabilisation.
Investigation/Delineation & removal of PFOS hotspot	Excavation under independent supervision of a series of trial pits and trenches radiating from WS302. Collection of a sufficed number of samples to asses the extent of the PFOS impacts deemed unacceptable in the risk assessment provided. Waste characterisation and classification, identification of a valid disposal route and confirmation of acceptable costs. Potential reassessment risk-based Remediation Criteria followed by excavation and removal from the site with independent verification of the base and sidewalls to demonstrate complete removal.
Inspections	The storage, quarantine and treatment areas, welfare, administration, emissions controls, and monitoring procedures must be inspected by a WAMITAB qualified Technically Competent Manager before the commencement of treatment to ensure compliance with the deployment provisions and regularly while the treatment is being undertaken. An independent consultant specialising in the verification of remediation works must also attend to record the works and verify the treatment has been completed in accordance with the remediation strategy, implementing the Verification Plan.

Materials recovery / Waste Treatment	Materials will be excavated sequentially across the northern and southern parts of Phase 2 (these are spit by the current access to the adjacent cricket ground) and processed in small batches not exceeding 500m³ of consistent appearance to prevent cross contamination. Unacceptable waste inclusions such as timber, card, paper, plastic, rubber, scrap metal and oversized hard materials will be screened out All hard materials (masonry, concrete, brick) will be crushed and stockpiled for re-use in construction. Crushing and screening plant will be operated under a valid permit with appropriate environmental controls implemented for noise, dust, and vibration. Feedstock stockpiles will be inspected for any potentially asbestos-containing materials before crushing, with any suspect materials removed for testing/disposal. All materials processing will be carried out in accordance with approved Environmental Management Plans. Individual stockpiles of the treated materials will then be subject to geotechnical, waste constituent and contamination testing prior to demonstrate compliance prior to their replacement in the excavation void and trimming to the required level to accept the site cover system, road, or plot construction. The use of ancillary soil treatments would only be applied if the residual concentrations of contaminants in the recovered materials were deemed to be significantly higher than those already considered acceptable for retention; i.e. the range of concentrations identified in the site investigation which have been assessed as not posing an unacceptable risk in the context of the other Remediation techniques to be applied.
Handling / treatment of hazardous materials / liquid wastes / leachates	Secure skips/tanks will be retained on site for the receipt of any small volume hazardous materials encountered, such as liquid/asbestos/chemical wastes.
Earthworks completion	On completion of the enabling/remediation earthworks, the site will be re-graded to the approved landform. Following completion of the earthworks, it is anticipated that a surface layer of compacted aggregate will be placed selected areas (pile mats and road capping) across the development area in order to protect the site surface and facilitate construction

4.1.2. The above works will have to be completed to the satisfaction of all stakeholders before construction of the development can commence. Once this starts there are a number of supplementary mitigation measures that are required.

Table 4.3 Construction Stage mitigation measures

Management of development arisings	Road, sewer, foundation, and utility excavations will all generate arisings. and it is likely that there will be constraints on where the materials can be re-used. Unless there is a suitable on-site location to deposit the arisings e.g. an earthworks deficit to accommodate the arisings, the materials will have to be removed off-site as waste. Arisings of site-generated made ground must be prevented from cross contamination the site cover system.
Road capping, Plot footprints and Utility corridors	Any aggregate generated must either meets the relevant Remediation Criteria for use at shallow depth in roads or temporary works (pile mats) or be located at the prescribed depths. Backfill locations which are likely to undergo re-excavation should be backfilled with clean materials to prevent any future generation of contaminated spoils or worker exposure. Use suitable pipeline materials for water supply pipes to prevent any risk of permeation by organic substances leading to the tainting or toxification of water supplies
Concrete classification	Use appropriate specification of concrete for the ground conditions
Gas Protection	Currently, it is envisaged that passive gas protection measures specified in the original site wide (accepted for Phase 1) will be constructed, this allowed for further post-remediator gas monitoring to confirm the specification, design, and verification.
Placement of Soil Cover system to gardens and landscaping areas	The site risk assessment anticipated residual soil contamination concentrations that do not necessitate an engineered cover system to protect future residents, however, 600mm of soil cover is required for private gardens. In managed landscaped areas where lower exposure frequencies would be anticipated, a reduced 300mm thickness was deemed appropriate.

4.2. Site Inspections

4.2.1. Provided that conditions encountered are consistent with the existing site characterisation and risk assessments, and do not necessitate changes to the Remediation Objectives and Criteria, additional confirmatory inspections will be restricted to visual inspections of the excavations with supplementary testing of materials which appear different to those assessed in the previous phases of Site Investigation and Risk Assessment. A watching brief by operatives, supervisors, management, the TCM and independent consultant will be maintained throughout excavation works.

4.3. Uncharacterised Contamination

4.3.1. It is considered unlikely, but possible, that rogue loads containing ACM, drums of liquid wastes or other currently uncharacterised materials, may have resulted in localised contamination by contaminants in other than those assessed in the Risk Assessment that has defined the Remediation Objectives and Criteria.

4.3.2. If any unexpected (currently uncharacterised) contamination indicators are encountered during the works, the materials will be removed/the location accurately recorded so that it can be located during the later stages of the remediation. Where such material is removed, the following general provisions will apply:

- excavated materials will be relocated to a secure, bunded, quarantine area established on an impermeable surface (preferably an existing concrete floor). The stockpile is to be covered to minimise dust/ leachate generation, and odour;
- the volume of material to be treated and/or disposed of will be minimised by segregation of contaminated and non-contaminated materials where possible;
- the sidewalls and bases of any excavations where contaminated materials are removed, will be sampled to verify that contamination has been reduced to acceptable level;
- any oil, fuel, other free product, sludge, or residues, located in containers encountered in these areas will be checked using an intrinsically safe PID to assess the potential for flammable or toxic VOC vapours. Residual product will then be identified by laboratory testing to confirm the appropriate waste classification and disposal route;
- The suspect materials will be tested for an appropriate suite of contaminants determined by the independent consultant.

4.3.3. Based on the risk assessment carried out to date, there is no requirement to remediate the groundwater on the site. Shallow groundwater has not been encountered within the landfill area, but if de-watering is required to facilitate excavation works, this will be diverted to an on-site holding facility, characterised and disposed of off-site by tanker.

4.3.4. The local authority and EA will be immediately informed in writing following the discovery of any materials which are not considered within the existing site-characterisation and Risk Assessment, and for which any material alteration to the Remediation Strategy is required.

4.4. Materials Management Plan (MMP) / Waste Regulation

4.4.1. A Standard Rules Mobile Plant Permit for the Treatment of Contaminated Materials has been deployed for the separation, sorting, particle size reduction, and separation. As a contingency the deployment also allows for secondary/tertiary treatment by other technologies (bioremediation, chemical treatment, and stabilisation), although these would only be required if currently uncharacterised levels or types of contamination are present. These technologies are unproven for dealing with PFOS and a series of trials would be required to demonstrate efficacy if these were to be considered for the material excavated from the PFOS hotspot: currently the option of removal from the site for disposal is the preferred option, provided cost-effective for the volumes generated under the existing Risk-Based Remediation Criteria.

4.4.2. A Materials Management has been produced accordance with the Definition of Waste: Development Industry Code of Practice by the URL and declared for the Phase 1 Remediation, however these are not generally applied to former waste facilities and an End-of-Waste test for the individual batches of recovered materials would normally apply to provide confidence that an unauthorised deposit of waste materials is avoided.

4.4.3. This will address soils treatment and recovery operations to provide general fill to backfill the void, the crushing and re-use of hard materials (concrete, brick, and masonry), its geotechnical and chemical suitability, acceptable levels of residual wastes and ultimately its suitability for re-use and the requirement for the material. All waste transfer records for residues removed from the site will be retained for reference.

4.5. Programme and Phasing

4.5.1. As the Phase 2 area works cannot commence until the Remediation Strategy is accepted and the relevant Mobile plant Deployment is in place, it must be dealt with in isolation from the Phase 1 area where remediation and preparatory works have been completed and verification reports submitted, and construction activities are underway.

4.5.2. Given the limited areas available and the requirement for verification of the treated materials entails laboratory testing that can take a number of weeks, it is likely that the batching approach will not allow continuous excavation and screening of materials, a limited volume of 500m³ or 1,000m³ will be excavated, processed, and formed to temporary stockpiles while the various assessments are carried out. In order to avoid the presence of open excavations that could potentially fill with water, the initial 1,000m³ of already treated materials (under RPS215) will be replaced.

4.5.3. Once approved as suitable a second excavation cell of no more than 500m³ will be opened up and screening of this material started while the previously treated materials are backfilled to the initial void and the process repeated until all wastes within the former landfill have been treated, recovered, and suitable validated materials replaced as engineered fill.

4.5.4. A limited area of Phase 2 is outside the former landfill area. This is to be remediated following completion of the treatment as described as it contains an intact concrete slab (without drainage) so is needed for storage, quarantine, and treatment. The volume of made ground here is limited and this task will be carried out under the provisions of the Phase 1 Remediation Strategy.

4.5.5. A period of monitoring is then anticipated to confirm the relevant gas protection measures for the dwellings while the verification reporting for the Phase 2 treatment and preparatory works is prepared, submitted, and agreed with the LPA to allow built development to commence.

4.6. Health and Safety Roles / Responsibilities

- 4.6.1. The Principal Contractor under the Construction Design and Management Regulations 2015, and is responsible for managing health and safety during the remediation/preparatory works. The Phase 1 Developer will assume the role of Principal Contractor.
- 4.6.2. Protection of site workers, local residents and visitors during the remediation works will be achieved by the adoption of appropriate health and safety practices, environmental management, and the securing of the site. All site workers will be given a comprehensive health and safety induction identifying site hazards (including any contamination), and detailing personal protective equipment requirements.
- 4.6.3. With regards to the remediation of the site, a specific method statements/plans have been prepared which sets out the measure required during the treatment works, this is attached in Appendix B.

5. Verification Plan

5.1. PFOS hotspot

- 5.1.1. The lateral and vertical extent of the materials identified in WS302 and specified in the risk assessment as requiring removal from the site must be determined in advance of works starting. A series of trial trenches extending from WS302 through the full depth of the waste materials should be excavated under the supervision of an independent contaminated land specialist with samples collected at regular intervals and analysed for PFOS. Following removal of the soils and wastes where exceedances are confirmed, further samples will be collected from the base and sidewalls at 5m centres to confirm complete removal.

5.2. General Inspections & Monitoring

- 5.2.1. In order to provide support to the contractor, and undertake verification inspections and testing, an independent specialist Contaminated Land Practitioner will be required to attend the site. While full-time attendance for the full programme of works is not considered necessary, regular attendance will be required to fully implement the verification plan, inspect, and sample the arisings selected for treatment, test the treated materials and confirm their successful recovery, and provide guidance and support to site management.
- 5.2.2. A record of descriptions supplemented by photographic records of the exposed materials in all areas remediation excavations are carried out will be maintained by the Environmental Consultant, together with detailed logs of monitoring results, field testing, sample locations, drawings, and other relevant information, for inclusion in the final verification reporting.
- 5.2.3. A programme surface water monitoring will be commenced in advance of works to provide baseline data and continued on the same basis throughout the works as far as is practicable, but supplemented by a higher intensity monitoring regime for surface waters during the remediation works as the risk of discharges increase. Daily visual inspections for suspended matter, or other impacts, will be carried out, supplemented by weekly sampling at the existing surface water monitoring locations. The locations of the surface water and leachate monitoring points (and other emissions monitoring locations for dust, asbestos, noise, odour, and VOC vapours), are detailed in the attached Method Statement (Appendix B).
- 5.2.4. All samples for testing shall be collected in accordance with best practice under the appropriate guidance, placed in suitable containers provided by the laboratory, and stored/delivered to a UKAS/MCERTS accredited laboratory, in compliance with storage conditions and holding times specified for the particular test suite to be carried out.

5.3. Compliance Criteria

- 5.3.1. Results from the delineation and verification of the PFOS hotspot will be compared to the Remediation Criteria set out in the Risk assessment of 0.013 mg/kg total PFOS. It is understood that this is a Generic Assessment Criteria Based on Human Health Risks, so is likely to be conservative and may require reassessment depending outcome of the delineation exercise and acquisition of further data on the incidence, extent, and degree of PFOS contamination.
- 5.3.2. It is intended that the crushed oversized materials arisings can be used for various purposes, including protection of the site surface, on haul routes, for use by the developer, or as general fill to make up the anticipated deficit. Testing of the material will be restricted to screening for asbestos fibres at a minimum frequency of one sample per 500m³. Where quantifiable concentrations of asbestos are determined (>0.001%), this may place some constraints on the use of the material in respect of the location and depth where it may be placed e.g., as engineered fill as opposed to capping.
- 5.3.3. The risk assessment carried out did not provide other compliance criteria for sub-cover fill materials, and in general it is assumed that provided concentrations of the contaminants considered in the site characterisation (metals, PAHs, TPH fractions) do not significantly exceed those assumed in the site conceptual model (which did not indicate significant pollution or harm would occur provided the construction stage mitigation measures of a cover system and gas protection were applied), then the materials will remain chemically suitable. Therefore, testing of each recovered stockpile at a minimum frequency of 1/500m³ will be for this suite of contaminants but instead of comparing to Remediation Target Values, they will be assessed as to whether they fall into the general range of concentrations confirmed by the site investigation and treatment trial.
- 5.3.4. Aggregate and general fill material recovery should be undertaken in accordance with the Earthworks Specification with particle size analysis also required to demonstrate compliance with the required specification. This will also be completed at a minimum frequency of 1/500m³.
- 5.3.5. Finally, the successful segregation of unacceptable waste inclusions must be assessed. This is carried out by a forensic constituent test analogous to that used to assess potential ground gas sources in CLAiRE RB17: "A Pragmatic Approach to Ground Gas Risk Assessment" and BS EN 933-11, where "Class X" constituents (metals, wood, plastic, rubber, gypsum plaster) are required to be below 1% for recycled aggregates – the same threshold is applied to general fill and is demonstrated by collection of a large bulk multi-point composite sample, sieving to 10mm down and sorting and weighing the fines and larger inclusions into the various types of acceptable (inert) and unacceptable (Class X inclusions). These are then weighed and the overall representative proportions determined as a percentage. This will also be completed at a minimum frequency of 1/500m³.

5.3.6. Analysis and acceptability criteria for Residential (Resi) or public open space (POS_{resi}) use within a residential setting cover systems is as set out below and are compliant with the existing Remediation Strategy applied to Phase 1. This criterion is primarily taken from the LQM/CIEH Suitable for Use Levels (S4ULs)² which are used to define land that is 'not contaminated'. These are derived for a sandy loam soil; reference is initially made to the S4ULs derived for a soil with 1% organic matter as a conservative assumption for screening purposes. The Defra Category 4 Screening Level (C4SL) for lead in soils under a POS_{resi} land-use has been utilised to allow an initial screening for risk to human health. This is intended to demonstrate that the site is definitely not Contaminated Land as defined under Part IIA of the Environmental Protection Act. The adoption of the C4SL in a planning scenario has not been universally accepted, however, in the absence of any other generic screening criteria for lead following the withdrawal of the SGV, it is considered appropriate to utilise this screening criterion.

Table 6.1: Landscaped soils in public open space (0-300mm) Compliance Criteria

Contaminant	Landscaping (POS) Use Screening criteria (mg/kg unless stated)
Asbestos	<0.001% by mass (LOD)
arsenic	79LQM/CIEH S4UL
cadmium	120LQM/CIEH S4UL
chromium (total)	1,500LQM/CIEH S4UL
copper	2,400LQM/CIEH S4UL
lead	630C4SL
mercury (inorganic)	16LQM/CIEH S4UL
nickel	230LQM/CIEH S4UL
zinc	81,000LQM/CIEH S4UL
naphthalene	4,900LQM/CIEH S4UL
acenaphthylene	15,000LQM/CIEH S4UL
acenaphthene	15,000LQM/CIEH S4UL
fluorene	9,900LQM/CIEH S4UL
phenanthrene	3,100LQM/CIEH S4UL
anthracene	74,000LQM/CIEH S4UL
fluoranthene	3,100LQM/CIEH S4UL
pyrene	7,400LQM/CIEH S4UL
benzo(a)anthracene	29LQM/CIEH S4UL
chrysene	57LQM/CIEH S4UL
benzo(b)fluoranthene	7.1LQM/CIEH S4UL
benzo(k)fluoranthene	5.7LQM/CIEH S4UL
benzo(a)pyrene	82LQM/CIEH S4UL
indeno(123cd)pyrene	29LQM/CIEH S4UL
dibenzo(ah)anthracene	640LQM/CIEH S4UL
benzo(ghi)perylene	304LQM/CIEH S4UL
aliphatic >C5-C6	600,000LQM/CIEH S4UL
aliphatic >C6-C8	13,000LQM/CIEH S4UL
aliphatic >C8-C10	13,000LQM/CIEH S4UL
aliphatic >C10-C12	13,000LQM/CIEH S4UL
aliphatic >C12-C16	250,000LQM/CIEH S4UL
aliphatic >C16-C35	250,000LQM/CIEH S4UL

² Nathaniel, C.P., McCaffrey, C., Gillet, A.G., Ogden, R.C. and Nathaniel, J.F. 2015. The LQM/CIEH S4ULs for Human Health Risk Assessment. Land Quality Press, Nottingham

Contaminant	Landscaping (POS) Use Screening criteria (mg/kg unless stated)
aromatic >C5-C7	56,000LQM/CIEH S4UL
aromatic >C7-C8	56,000LQM/CIEH S4UL
aromatic >C8-C10	5,000LQM/CIEH S4UL
aromatic >C10-C12	5,000LQM/CIEH S4UL
aromatic >C12-C16	5,100LQM/CIEH S4UL
aromatic >C16-C21	3,800LQM/CIEH S4UL
aromatic >C21-C35	3,800LQM/CIEH S4UL

Notes to table:

ND: no asbestos fibres detected

S4UL: LQM / CIEH Suitable for Use Levels (S4ULs); residential with plant uptake land use (at 1% SOM / 6% for metals). Copyright land quality management limited reproduced with permission publication number S4UL 3102. All rights reserved.

C4SL: Category 4 Screening Levels (C4SLs) published by CL:AIRE 'residential with plant uptake use (at 1% SOM)

Table 6.2 Garden Soils (0-600mm) Compliance Criteria

Contaminant	Residential Use Screening criteria (mg/kg unless stated)
Asbestos	<0.001% by mass (LOD)
Arsenic	37 LQM/CIEH S4UL
Cadmium	11 LQM/CIEH S4UL
Chromium (total)	910 LQM/CIEH S4UL
Hexavalent Chromium	6 LQM/CIEH S4UL
Copper	2,400 LQM/CIEH S4UL
Lead	200 (C4SL)
Mercury	40 LQM/CIEH S4UL
Nickel	180 LQM/CIEH S4UL
Zinc	3,700 LQM/CIEH S4UL
Naphthalene	2.3 LQM/CIEH S4UL
Acenaphthylene	170 LQM/CIEH S4UL
Acenaphthene	210 LQM/CIEH S4UL
Fluorene	170 LQM/CIEH S4UL
Phenanthrene	95 LQM/CIEH S4UL
Fluoranthene	2400 LQM/CIEH S4UL
Anthracene	280 LQM/CIEH S4UL
Pyrene	620 LQM/CIEH S4UL
Benzo(a)anthracene	7.2 LQM/CIEH S4UL
Chrysene	15 LQM/CIEH S4UL
Benzo(b)fluoranthene	2.6 LQM/CIEH S4UL
Benzo(k)fluoranthene	77 LQM/CIEH S4UL
Benzo(a)pyrene	2.2 LQM/CIEH S4UL
Indeno(123cd)pyrene	27 LQM/CIEH S4UL
Dibenzo(ah)anthracene	0.24 LQM/CIEH S4UL
Benzo(ghi)perylene	320 LQM/CIEH S4UL
Aliphatic C5-C6	42 LQM / CIEH S4UL
Aliphatic C6-C8	100 LQM / CIEH S4UL
Aliphatic C8-C10	27LQM / CIEH S4UL
Aliphatic C10-C12	130LQM / CIEH S4UL
Aliphatic C12-C16	1100 LQM / CIEH S4UL
Aliphatic C16-C21	65,000 LQM / CIEH S4UL
Aliphatic C21-C35	65,000 LQM / CIEH S4UL
Aromatic C5-C6	70 LQM / CIEH S4UL
Aromatic C6-C8	130 LQM / CIEH S4UL

Contaminant	Residential Use Screening criteria (mg/kg unless stated)
Aromatic C8-C10	34 LQM / CIEH S4UL
Aromatic C10-C12	74 LQM / CIEH S4UL
Aromatic C12-C16	140 LQM / CIEH S4UL
Aromatic C16-C21	260 LQM / CIEH S4UL
Aromatic C21-C35	1100 LQM / CIEH S4UL
Benzene	0.08 LQM / CIEH S4UL
Toluene	130 LQM / CIEH S4UL
Ethyl-benzene	47 LQM / CIEH S4UL
m/p-xylene	56 LQM / CIEH S4UL
o-xylene	60 LQM / CIEH S4UL

Notes to table:

S4UL: Generic assessment criteria published by Chartered Institute of Environmental Health and Land Quality Management Ltd S4UL, residential land use scenario; [COPYRIGHT Land Quality Management Limited reproduced with permission; publication number UL3102. All Rights Reserved](#)

C4SL: Category 4 Screening Levels published by CL: AIRE 'residential land use with plant uptake'

5.3.7. These criteria will also be used for the general screening of all cover materials. If imported under a Direct Transfer definition, these must comprise natural uncontaminated materials and the application of 'standards' protective of site users in a residential scenario is considered sufficiently stringent to justify their use; a frequency of 1 sample per 50m³ will be used. The material will also require visual inspection of every load to confirm it is natural, and geotechnical testing to demonstrate suitability for use under the direct transfer MMP.

5.3.8. Remediation criteria for hazardous ground gas concentrations and flows remain those adopted for the GGS report '*Ground Gas Risk Assessment: Springside Bolton*' (Ref: GGS3993GGRA01, July 2025), specifically CIRIA Characteristic Situation 2 and 3. Reference to the equivalent NHBC "Traffic Light" levels Amber 1 & 2 can be made if this is a specific requirement of the warrantee provider.

5.4. Contingencies

5.4.1. If previously uncharacterised materials are identified during the works, a decision must be made as to whether these can be dealt with using the techniques selected to manage the contamination characterised to date. Materials must be inspected by an appropriate person and, if required, samples analysed. The analysis suite will be determined by the assessment of the materials, and where substances other than those in the standard screening suite are suspected, similarly derived criteria will be used. If significant departures from the Strategy are necessitated, these must be agreed in consultation with Bury Council and the EA.

5.5. Reporting

5.5.1. Interim reporting of the assessments to confirm the suitability of recovered materials will be required to provide confidence that these have been fully recovered and do not present a risk of unauthorised waste deposition when they are returned to the ground and placed as engineered fill material. Essentially this is equivalent to an End-of-Waste Self-Assessment, and will be carried out by an independent consultant to provide additional confidence in the conclusions.

- 5.5.2. Upon completion of the remediation/preparatory works, a validation/verification report will be prepared by the Environmental Consultant and submitted to BDBC and the EA for approval . The report will include a full description of the works carried out, findings of all investigations/monitoring/sampling, a photographic record, details of wastes removed, any fills imported, and recommendations concerning development requirements.
- 5.5.3. It is envisaged that the Verification Report will be used to confirm the appropriateness of the Remediation Objectives that are to be implemented during the construction-stage of the planned residential development. A separate, possibly phased or plot-specific, verification reporting programme will be required for this, later stage of the works.

6. Conclusions and Recommendations

6.1. Conclusions

- 6.1.1. It is considered that provided the Site Investigations and Risk Assessments are accepted by all stakeholders, including the Regulators and Warranty providers, that the site has been adequately characterised for the purposes of devising a Remediation Strategy suitable to allow the safe and sustainable preparation of the Phase 2 area (incorporating the historical landfill), and the construction of the planned residential development.
- 6.1.2. The scheme requires integration of specific tasks, including delineation and removal of the identified PFOS hotspot to appropriate risk-based criteria, the excavation of the tip areas and their physical treatment to remove deleterious and unacceptable materials, enabling/preparatory works to remediate and re-profile the site, and the placement/compaction of suitable fill materials to create a development platform suitable for the planned residential development and supporting infrastructure.
- 6.1.3. Remediation works are intended to stabilise the site in preparation for residential development and isolate the future releases of contaminants from sources that may remain. The preferred approach requires the selective removal and treatment of soils/made ground materials, identification of any which have the potential to cause harm or pollution, with the retention of moderately contaminated materials separated from receptors by the use of various barrier systems. Following completion of the prescribed works, it is not considered likely that significant, viable pollution sources will remain on the site.
- 6.1.4. During the works, additional inspections/assessments will be carried out in specific parts of the site, with any modifications to the Remediation Strategy agreed with BWDBC and the EA. Provided that on-going inspections and reassurance monitoring results do not necessitate a substantial revision to this Interim Remediation Strategy, it is proposed that it can be finalised and implemented accordingly, enabling the site to be prepared for residential development.
- 6.1.5. The proposed management, programming of supplementary site inspections/assessment, and verification/validation testing regime, will demonstrate that the proposed remedial works have been carried out and the site made suitable for the proposed development (subject to the implementation of additional requirements by the developer as set out above).

6.2. Recommendations

- 6.2.1. This iteration of the Remediation Strategy will be submitted in order that the appropriate Planning Conditions can be discharged by Bury Council in full consideration of the completed risk assessments and proposed mitigation measures in accordance with the provisions of Land Contamination Risk

Management which allows for the iterative development of Remediation Strategies to enable the safe and sustainable remediation of brownfield land under UK planning policy.

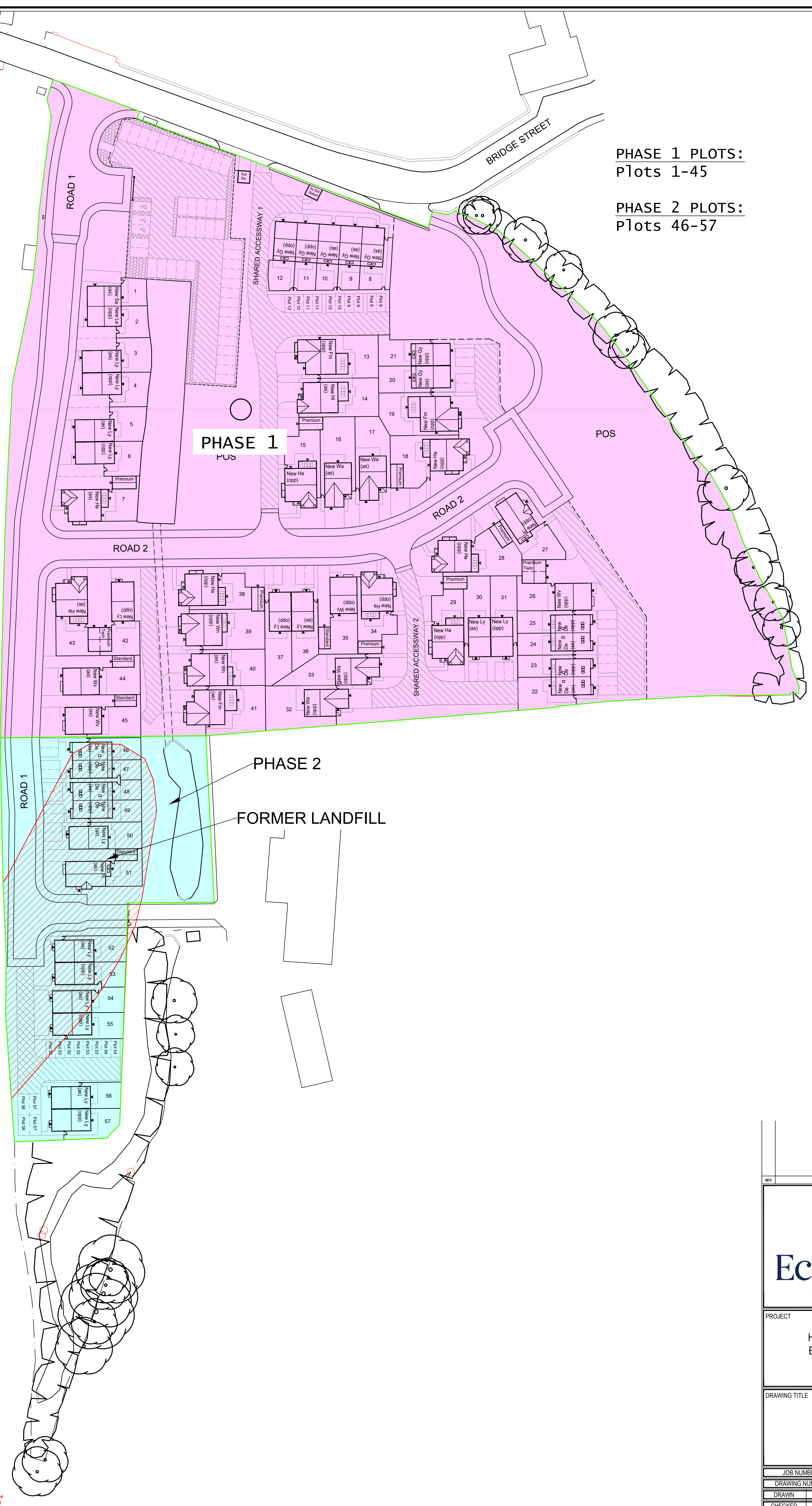
- 6.2.2. All of the appropriate Environmental Permit deployments and other EA consents required for the treatment and recovery of tip wastes described need to be agreed and in place before the associated works to prepare the site for residential redevelopment commence. These requirements will be subject to separate discussions and submissions with the EA permitting team, however, the requirements are necessarily outlined in this Remediation Strategy and the attached Method Statement (Appendix B).
- 6.2.3. Approval by the Regulators must be gained for the various aspects of the scheme prior to the commencement of works. Requirements as described in this Interim Remediation Strategy must be integrated into the earthworks programme required to physically remediate/re-profile the site.
- 6.2.4. The scheme must be implemented by competent management, supervision, and operatives, in accordance with the specific and general requirements of this Remediation Strategy. Allowance must be made in the budget and programme for the various inspections, sampling and monitoring regimes required to successfully validate the works, manage the risks from contamination, and compile all records/results into a verification report to allow conclusions on the adequacy of the works to be made.
- 6.2.5. With the adoption of the above normal practices for brownfield development, and on the information available, it is considered that the site can be safely and economically redeveloped, and the existing and future environmental liabilities managed.

6.3. Limitations

- 6.3.1. This report has been prepared for the sole and exclusive use of Urban Regen Ltd and Urban Soil Solutions Ltd. Reasonable skill, care, and diligence has been exercised within the budget available, and in accordance with the technical requirements of the brief. This assessment makes use of the information provided by previous site investigators and risk assessors and is taken in good faith; where errors or conflicting information have been noted this has been identified, however Urban Regen Ltd does not accept liability for missing or erroneous information provided by others.
- 6.3.2. Notwithstanding the efforts made by the professional team in undertaking the assessment and preparing this report, it is possible that other ground conditions and contamination as yet undetected may exist. Reliance on the findings of this report must therefore be limited accordingly. Such reliance must be based on the whole report and not on extracts which may lead to incomplete or incorrect conclusions when taken out of context.

6.3.3. Urban Regen Ltd reserves the right to alter any of the foregoing information in the event of new information being disclosed or provided and in the light of changes to legislation, guidelines, and responses by the statutory and regulatory authorities.

DRAWINGS



PHASE 1 PLOTS:
Plots 1-45

PHASE 2 PLOTS:
Plots 46-57

PHASE 1

PHASE 2

FORMER LANDFILL

REV.	DESCRIPTION	INT.	DATE
 Eccleston HOMES			
PROJECT			
HOLCOMBE MILL, BRIDGE STREET, RAMSBOTTOM			
DRAWING TITLE			
REMEDIATION PHASES			
JOB NUMBER		-	REV
DRAWING NUMBER		550	-
DRAWN	SM	08.05.25	SCALE
CHECKED	-	-	1:500
			A1

Appendix A

Soils Treatment Trial Report



Urban Regen

ESTABLISHED 2001

**FORMER MONDI MILL RAMSBOTTOM PHASE 2
VERIFICATION REPORT FOR TIP WASTE SOIL TREATMENT TRIAL**

**For: Urban Regen Ltd
&
Urban Soils Solutions Ltd.**

July 2025

Report Ref: 414-VP1.0 Final

Site: FORMER MONDI MIL RAMSBOTTOM

Report Title: VERIFICATION REPORT FOR TIP WASTE SOIL TREATMENT TRIAL

Author: Ben Thomas
BSc MSc MCIWEM C.Env
SiLC

Reference 414-VP1

Version 1.0

Status Final

Date 21st July 2025



Contents

- 1 Introduction
- 2 Materials Selection and Segregation
- 3 Materials Treatment Methodology
- 4 Materials Treatment Verification
- 5 Conclusions

Appendices

- A Compliance Testing: Contamination
- B Compliance Testing: Geotechnical
- C Compliance Testing: Forensic Constituents

Limitations

This report has been prepared for the sole and exclusive use of Urban Regen Ltd (URL) & Urban Soils Solutions Ltd (USS). This report may be relied upon or transferred to any other parties only with the express written authorisation of URL & USS. Any other Third Party relies on it at their own risk and the authors owe them no duty or care of skill. Notwithstanding the efforts made by the professional team in undertaking the assessment and preparing this report, it is possible that other ground conditions and contamination as yet undetected may exist. Reliance on the findings of this report must therefore be limited accordingly. Such reliance must be based on the whole report and not on extracts which may lead to incomplete or incorrect conclusions when taken out of context. The factual information and recommendations have been largely informed by information prepared by third parties and provided to URL & USS. The recommendations contained within this report have been made in good faith, based on the totality of the information provided to URL & USS, however URL & USS accepts no responsibility or liability for errors or omissions caused by information which has been withheld, or where errors or omissions within previous reporting have led to false or unreliable conclusions by others relating to the contamination status of the site. URL & USS reserve the right to alter any of the foregoing information in the event of new information being disclosed or provided and in the light of changes to legislation, guidelines, and responses by the statutory and regulatory authorities.

1. Introduction

- 1.1. Urban Regen Ltd (URL) & Urban Soil Solutions (USS) are appointed by Ecclestone Homes Ltd (EH) to prepare the former Mondi Paper Mill, Ramsbottom for residential development. URL are preparing the site for residential development by EH in accordance with a Remediation and Enabling Works Strategy produced by Betts Geo Environmental Ltd (Betts). This assessment is intended to serve as a record of a trial carried out to treat waste materials within a historical landfill that forms Phase 2 of the works, forming a line of evidence to be considered by the verifier in assessing the adequacy of the planned treatment to segregate contaminated materials and recover materials for use as general fill or capping aggregate.

Table 1.1: Site Details

Address	Off Bridge St, Ramsbottom, Bury, BL0 0BS
National Grid Reference	379320, 416640
Local Authority	Bury Council
Site Area (Phase 2)	5,000m ²
Current Nature of Site	Former reservoir infilled under a waste licence
Proposed Use	Residential development

- 1.2. Preliminary and supplementary site investigations and a Remediation Strategy have been completed by various parties on behalf of the EH, and submitted to, Bury Council (BC) and the Environment Agency (EA). While the methodology of the supporting assessments (site investigations and risk assessments) which informed the development of the Remediation Strategy, and its overall objectives, scope and methods are acceptable to BC & the EA, a separate Phase 2 specific Remediation Strategy is under development by Betts.
- 1.3. URL have a SR2010:No11 Mobile Plant Permit Deployment in place (Ref: EPR/PP3924SA/D10001) for the Treatment of Waste to produce soil, soil substitutes and aggregate. However, this does not allow the hazardous waste materials which form a significant portion of the tip wastes to be treated. In advance of finalisation of the Remediation Strategy, a trial has been carried out under the provisions of Regulatory Position Statement 215 (Treatment of small volumes of contaminated soil and groundwater), notified to the EA 30/04/2025.

- 1.4. It is intended that the outcome of this trial will inform the Options Appraisal for the Phase 2 Remediation Strategy and determine the appropriate remediation technologies under a future SR2008 No.27 Mobile Plant Permit deployment to treat the hazardous wastes present.

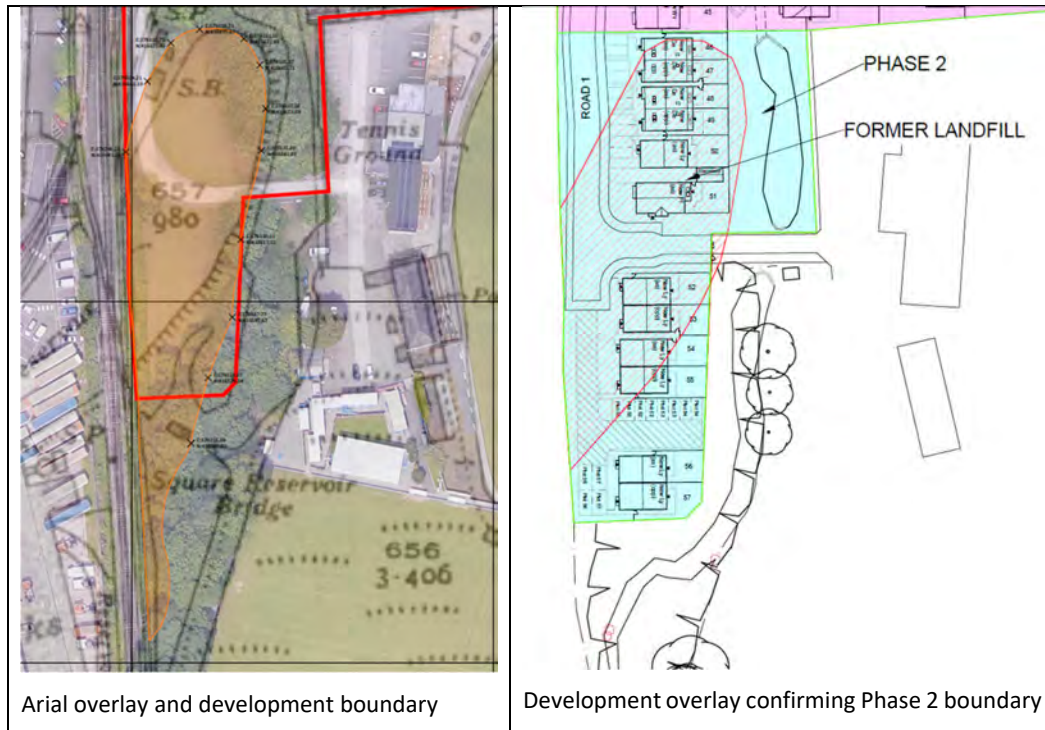
2. Materials Selection and Segregation

2.1. Trial Objectives

- 2.1.1. The area excluded from the Site MMP and requiring materials treatment under Mobile Plant Permit deployments is the former reservoir spanned by Square Reservoir Bridge and a thin strip of land to the south.

Figure 2.1: Plans showing extent of Tip / Wastes





2.1.2. The objective of the trial was to determine whether recovery of these materials to a product suitable for use as fill material could be achieved using a physical process of screening, crushing, and sorting. Or whether additional treatment methods allowed under the site remediation strategy such as ex-situ bioremediation and stabilisation/solidification would be required to address risks of harm, pollution, or instability.

2.1.3. The Remediation Strategy for Phase 2 is currently being developed so the results will need to be compared to suitable risk-based criteria once these are agreed to determine if the treatment was sufficient to meet End of Waste Criteria for the site.

2.2. Observations

2.2.1. A trial pitting exercise was undertaken by Urban Regen following removal of mounded soils not deemed to form part of the waste deposit. A total of 5 trial pits were excavated over all parts of the tip area; a summary and photographic records is presented below.

Figure 2.2: Photographic Record -Trial Pitting to examine fills

	
LFTP1 -1.2m of soil fill with low-moderate waste over 1.9m of black odorous clay with frequent waste	LFTP1-Excavation extended to natural silt (base of historical reservoir at 3.9m
	
LFTP2--1.8m of soil fill with low-moderate waste over >1.3m of black odorous clay with frequent waste	LFTP2-very high proportion of wastes in lower materials
	
LFTP3—2.5m of soil fill with low-moderate waste over >1.2m of black odorous clay with frequent waste	LFTP3-very high proportion of wastes in lower materials

	
LFTP4—2.1m of soil fill with low-moderate waste over >1.8m of black odorous clay with moderate waste	LFTP 4-
	
LFTP5-0.4m of soil fill with low-moderate waste over >1.8m of black odorous clay with frequent waste: hydrocarbon odour	LFTP5- upper brown soil materials much thinner in northern areas
	
LFTP6- 0.6m of soil fill with low-moderate waste over 2.4m of black odorous clay with frequent waste- natural proved 3.0m	LFTP6 materials likely only require minimal processing to yield acceptable fill materials.

2.3. Test Results – Lower potentially contaminated materials

- 2.3.1. Samples were collected from the lower, black, and odorous soil/clay matrix in each trial pit to determine the hazardous/non hazardous status of the materials whether screening out the material would be likely to result in an unacceptably contaminated material, possibly requiring further treatment. Samples were delivered to 12 Analytical Laboratories and tested for a standard suite of metals, asbestos, and hydrocarbons like that used in the main Site Investigation Phase. Results are provided in Appendix A (25-021773) and compared to residential criteria below.

Figure 2.3a: Results from Lower potentially contaminated materials

Contaminant	Number of Samples	Range of Concentrations (mg/kg or indicated)	Soil standard adopted for a residential scenario (mg/kg or indicated)	Exceedances
Asbestos screen	6	ND-0.011	<0.001%	LFTP3
Arsenic		15-49	S4UL 37	LFTP2
Cadmium		0.9-3.2	S4UL 11	
Chromium (total)		32-80	S4UL 910	
Copper		94-410	S4UL 2400	
Lead		300-660	C4SL 200	All
Mercury		0.3-1.5	S4UL 1.2	LFTP2
Nickel		30-110	S4UL 180	
Zinc		250-840	S4UL 3700	
Naphthalene		0.26-2.1	S4UL 2.3 (13, if SOM 6%)	
Acenaphthylene		<0.05-0.09	S4UL 170	
Acenaphthene		0.3-2.6	S4UL 210	
Fluorene		0.43-2.1	S4UL 170	
Phenanthrene		2.4-13.0	S4UL 95 (440, if SOM 6%)	
Anthracene		<0.05-3.1	S4UL 2400	
Fluoranthene		3.2-16.0	S4UL 280 (890, if SOM 6%)	
Pyrene		2.7-14.0	S4UL 620	
Benzo(a)anthracene		1.4-6.5	S4UL 7.2 (13, if SOM 6%)	
Chrysene		1.6-6.9	S4UL 15 (27, if SOM 6%)	
Benzo(b)fluoranthene		1.5-7.7	S4UL 2.6 (3.7, if SOM 6%)	

Contaminant	Number of Samples	Range of Concentrations (mg/kg or indicated)	Soil standard adopted for a residential scenario (mg/kg or indicated)	Exceedances
Benzo(k)fluoranthene		0.66-2.5	S4UL 77 (100, if SOM 6%)	
Benzo(a)pyrene		1.3-6.6	S4UL 2.2 (3.0, if SOM 6%)	LFTP5
Indeno(123cd)pyrene		0.57-2.9	S4UL 27 (41, if SOM 6%)	
Dibenzo(ah)anthracene		0.16-0.59	S4UL 0.24 (0.3, if SOM 6%)	LFTP4, LFTP5
Benzo(ghi)perylene		0.8-3.4	S4UL 320	
Aliphatic C5-C6		<0.01	S4UL 42	
Aliphatic C6-C8		<0.01-0.15	S4UL 100	
Aliphatic C8-C10		0.08-1.5	S4UL 27	
Aliphatic C10-C12		6.0-8.9	S4UL 130	
Aliphatic C12-C16		120-230	S4UL 1100	
Aliphatic C16-C21		590-4500	S4UL 5000	
Aliphatic C21-C35		930-2900	S4UL 5000	
Aromatic C6-C7		<0.01	S4UL 70	
Aromatic C7-C8		<0.01	S4UL 130	
Aromatic C8-C10		<0.02-0.62	S4UL 34	
Aromatic C10-C12		<1-4.3	S4UL 74	
Aromatic C12-C16		46-210	S4UL 140 (660, if SOM 6%)	LFTP3
Aromatic C16-C21		460-3200	S4UL 260 (930, if SOM 6%)	All
Aromatic C21-C35		440-1200	S4UL 1100 (1700, if SOM 6%)	LFTP1
Benzene		<0.005	S4UL 0.087	
Toluene		<.0005	S4UL 130	
Ethylbenzene		<0.005-0.01	S4UL 47	
m/p-xylene		<0.008-0.16	S4UL 59/56	
o-xylene		<0.005-0.056	S4UL 60	

Notes to table:

S4UL: Suitable for Use Levels published by Chartered Institute of Environmental Health and Land Quality Management Ltd, residential with plant uptake scenario (1% SOM); copyright Land Quality Management Ltd reproduced with permission publication number S4UL3102. All rights reserved.

C4SL: Category 4 Screening Levels published by CLAIRe (C4SLs); 'residential without home grown produce land use' (at 1% SOM)

2.3.2. Several exceedances of residential criteria were detected, although this does not render the materials

- 2.3.3. The results also indicate widespread total hydrocarbons and total metal concentrations in excess of 0.1%, or the total hazardous waste threshold for oils and ecotoxic substances. These materials could therefore be considered Hazardous Wastes and although the adopted criteria are not specifically protective of controlled waters these results could potentially indicate a pollution risk under specific circumstances.
- 2.3.4. Following receipt of the results, a further sub sample was collected from the original bulk samples and sent to I2 for leachate testing for metals to assess whether these are likely to pose a pollution risk. Results are provided in Appendix A (25-032694) and compared to Freshwater Priority Hazardous or Specific Pollutant Environmental Quality Standard (EQS) below.

Figure 2.3b: Results from Lower potentially contaminated materials

Contaminant	Number of Samples	Range of Concentrations (µg/l or indicated)	EQS adopted for a surface watercourse * (µg/l or indicated)	Exceedances
Arsenic		<1-3.3	50	
Cadmium		<0.08	0.15	
Chromium ^		<0.4-0.6	4.7	
Copper #		19-25	1	All
Lead #		<1	1.2	
Mercury		<0.5	0.07	
Nickel #		4.3-8.6	4	All
Zinc #		19-51	10.9	All

Notes to table:

*: Assumed hardness 100-200 mg/l
 #: Bioavailable
 ^: Assumed Trivalent

- 2.3.5. Leachable metal concentrations were generally low, however for certain ecotoxic metals with very low EQS exceedances were reported in all elute samples tested. This is not necessarily indicative of a pollution risk as a viable pathway to a sensitive receptor may not exist, although further assessment would be required to confirm the absence of pollution risks from these materials.

2.3.6. Leachate tests are not suitable for organic substances (hydrocarbons, including PAHS and BTEX), however the generally low concentrations of hydrocarbons lighter than C12 indicates a reduced solubility and mobility in the environment

2.4. Results – Upper potentially clean materials

2.4.1. Samples were collected from the upper brown sandy soil matrix to determine the hazardous/non hazardous status of the materials whether screening out the material would be likely to result in an unacceptable material, and whether the feedstock material could be treated as a non-hazardous material under the existing Permit Deployment. Samples were delivered to I2 Analytical Laboratories and tested for a standard suite of metals, asbestos, and hydrocarbons similar to that used in the main Site Investigation Phase. Results are provided in Appendix A (25-025618) and compared to residential criteria below.

Figure 2.4a: Results from Upper potentially uncontaminated materials

Contaminant	Number of Samples	Range of Concentrations (mg/kg or indicated)	Soil standard adopted for a residential scenario (mg/kg or indicated)	Exceedances
Asbestos screen	4	<0.001-0.003	<0.001%	LFNH 1, 2 & 4
Arsenic	4	17-56	S4UL 37	LFNH 4
Cadmium	4	1.2-4.1	S4UL 11	
Chromium (total)	4	22-39	S4UL 910	
Copper	4	74-170	S4UL 2400	
Lead	4	190-300	C4SL 200	All
Mercury	4	0.3-1.4	S4UL 1.2	LFNH 2
Nickel	4	27-48	S4UL 180	
Zinc	4	190-660	S4UL 3700	
Naphthalene	4	0.18-0.33	S4UL 2.3 (13, if SOM 6%)	
Acenaphthylene	4	<0.005-0.11	S4UL 170	
Acenaphthene	4	0.31-0.90	S4UL 210	
Fluorene	4	0.30-0.75	S4UL 170	
Phenanthrene	4	2.2-5.7	S4UL 95 (440, if SOM 6%)	
Anthracene	4	0.6-1.5	S4UL 2400	
Fluoranthene	4	3.6-7.0	S4UL 280 (890, if SOM 6%)	
Pyrene	4	3.2-6.8	S4UL 620	
Benzo(a)anthracene	4	1.5-3.5	S4UL 7.2 (13, if SOM 6%)	

Contaminant	Number of Samples	Range of Concentrations (mg/kg or indicated)	Soil standard adopted for a residential scenario (mg/kg or indicated)	Exceedances
Chrysene	4	1.4-4.2	S4UL 15 (27, if SOM 6%)	
Benzo(b)fluoranthene	4	1.6-5.0	S4UL 2.6 (3.7, if SOM 6%)	
Benzo(k)fluoranthene	4	0.5-1.5	S4UL 77 (100, if SOM 6%)	
Benzo(a)pyrene	4	1.3-3.6	S4UL 2.2 (3.0, if SOM 6%)	LFNH 2 & 4
Indeno(123cd)pyrene	4	0.67-1.70	S4UL 27 (41, if SOM 6%)	
Dibenzo(ah)anthracene	4	0.16-0.46	S4UL 0.24 (0.3, if SOM 6%)	LFNH 2 & 4
Benzo(ghi)perylene	4	0.75-2.50	S4UL 320	
Aliphatic C5-C6	4	<0.01	S4UL 42	
Aliphatic C6-C8	4	<0.01	S4UL 100	
Aliphatic C8-C10	4	<0.01	S4UL 27	
Aliphatic C10-C12	4	<1.0	S4UL 130	
Aliphatic C12-C16	4	<2.0-8.9	S4UL 1100	
Aliphatic C16-C21	4	26-170	S4UL 5000	
Aliphatic C21-C35	4	77-300	S4UL 5000	
Aromatic C6-C7	4	<0.01	S4UL 70	
Aromatic C7-C8	4	<0.01	S4UL 130	
Aromatic C8-C10	4	<0.02	S4UL 34	
Aromatic C10-C12	4	<1.0-1.6	S4UL 74	
Aromatic C12-C16	4	<2.0-9.6	S4UL 140 (660, if SOM 6%)	
Aromatic C16-C21	4	19-94	S4UL 260 (930, if SOM 6%)	
Aromatic C21-C35	4	40-160	S4UL 1100 (1700, if SOM 6%)	
Benzene	4	<0.005	S4UL 0.087	
Toluene	4	<0.005	S4UL 130	
Ethylbenzene	4	<0.005	S4UL 47	
m/p-xylene	4	<0.008	S4UL 59/56	
o-xylene	4	<0.005	S4UL 60	

Notes to table:

S4UL: Suitable for Use Levels published by Chartered Institute of Environmental Health and Land Quality Management Ltd, residential with plant uptake scenario (1% SOM); copyright Land Quality Management Ltd reproduced with permission publication number S4UL3102. All rights reserved.

C4SL: Category 4 Screening Levels published by CL:AIRE (C4SLs); 'residential without home grown produce land use' (at 1% SOM)

2.4.2. The samples contained some exceedances for residential criteria; however, these were of a much lower magnitude than the lower waste materials. The results are generally similar to the made ground encountered over much of the site external to the historical tips.

2.4.3. Total concentrations were similarly much lower with only one sample having a minor exceedance of the 0.1% threshold for ecotoxic hazardous waste. In general, the upper brown soil materials appear to be Non-Hazardous waste.

2.4.4. These samples also underwent leachate testing for metals to assess whether these are likely to pose a pollution risk. Results are provided in Appendix A (25-025618) and compared to residential criteria below.

Figure 2.4b: Results from Lower potentially contaminated materials

Contaminant	Number of Samples	Range of Concentrations (µg/l or indicated)	EQS adopted for a surface watercourse * (µg/l or indicated)	Exceedances
Arsenic		<1.0	50	
Cadmium		<0.08-0.15	0.15	
Chromium ^		<0.4-1.5	4.7	
Copper #		6.8-16.0	1	All
Lead #		<1.0	1.2	
Mercury		<0.5	0.07	
Nickel #		1-2.8	4	
Zinc #		8.3-19	10.9	LFNH & 2

Notes to table:

*: Assumed hardness 100-200 mg/l

#: Bioavailable

^: Assumed Trivalent

2.4.5. Most metal concentrations in the elutes derived from the upper materials in the tips were below limits of detection and substantially below the EQS, the exceptions being copper and zinc due to the very low EQS adopted as a comparator.

2.4.6. The minimal hydrocarbons present coupled with their physiochemical characteristics infers a very low risk of pollution from organic substances.

3. Treatment Methodology

3.1. Remediation Treatment Regulatory Routes

- 3.1.1. The soils treatment for the landfill tip areas was due to be carried out under Standard Rules SR2010 No11 Mobile Plant for the Treatment of Waste to Produce Soil, Soil Substitutes and Aggregate. A deployment notice for Urban Regn Permit EPR/PP3924SA together with the methodology and environmental management system (including acceptance procedures) for the treatment was set out in the Deployment Form and Remedial Method Statement submitted and approved by the Environment Agency (Ref: EPR/PP3924SA/D1001, Date 21/05/2025).
- 3.1.2. The SR2010 No.11 does not allow the treatment of Hazardous Wastes, and following receipt of the results presented in Section 2.3 it was decided that the deployment was not appropriate for the materials encountered. While it would have been possible to treat the upper clean soils under the existing deployment, URL understands that the Remediation Strategy for Mondi Mill has only been approved for the Phase 1 areas and therefore the Remediation Criteria for acceptance are unconfirmed.
- 3.1.3. Urban Regen therefore undertook a trial to screen both the hazardous and non-hazardous wastes under the provisions of Regulatory Position Statement 215: Treating Small Volumes of Contaminated Soil and Groundwater¹. This imposes limits on the volumes of less than 1,000m³, however allows both the hazardous and non-hazardous materials to be treated under a similar method that was intended under the original SR2010 No11 that are recognised as an established remediation technique: Treatment Plant for sorting and separation and Treatment Plant for Blending bulking, screening, shredding, particle size reduction, or particle separation to facilitate remedial action.
- 3.1.4. It was recognised that the techniques would not alter the contamination status of the materials, however as no Remediation Criteria for the Tip (to be set out in the Phase 2 Remediation Strategy), the aim of the trial was to determine whether the techniques applied could achieve the other compliance criteria for the site: the Geotechnical Earthworks Specification and the General requirement to reduce rase inclusions to below 1% by mass of the finished product before End of Waste can be assessed.
- 3.1.5. As required under RPS 2015 conditions, the Environment Agency was notified by email more than 5 days before the trial commenced n the 30th April 2025, email reference: RPS 215: Remediation Trial at Mondi
-
-
-

Mill, Ramsbottom, BL0 OBS and received confirmation of receipt by email 11/05/2025, Reference 250511/MCH13.

3.1.6. Remediation Treatment Record

- 3.1.7. Approximately 500m³ each of the upper and lower tip materials were excavated using a 30t excavator with various attachments used to pick out large waste inclusions or oversized inert materials that required pre-processing using excavator attachments (Hydraulic Breaker and Pulveriser) before the main processing could be carried out.
- 3.1.8. The feedstock was inspected for unacceptably contaminated materials with small amounts of Asbestos Containing Materials (Cement Sheeting) removed where observed. Hazardous Waste Consignment Note retained by URL.
- 3.1.9. The materials were then screened using Urban Regens 2-way screener (Model: Warrior 1400, Serial No. PID00122JDGBA3874) and the separated brick, stone and concrete broken down to an acceptable particle size using Urban Regen's Crusher (Model: Power-screen R400 S/N Serial No. PIDPR400COMG42268), Permitted by Salford Council (Refs: 166627/030322).
- 3.1.10. Finally, to reduce the number of small inclusions that could not be separated by the mechanical plant, some hand-picking of waste inclusions was carried out.
- 3.1.11. An inspection of the Treatment and Quarantine areas was carried out by a Technically Competent Manager (TCM – EPOC and WAMITAB) during works to ensure that the required emissions controls and monitoring was being carried out and the prescribed working methods adhered to. A written record of this is retained by URL. Independent consultants attend the site once treatment had started to collect samples for laboratory testing and assessment of residual waste content. The treatment of the total 1,000m³ in two batches (hazardous and non-hazardous feedstock) was completed in by the 15th May.

Figure 3.1: Photographic Record of Soil Treatment

	
Eastern boundary -North- with (dry) surface water drain – bund and ditch formed to prevent runoff	Eastern boundary -South- with (dry) surface water drain – bund and ditch formed to prevent runoff
	
Area fenced – Dust/Debris netting on western external boundary.	Area fenced – Dust/Debris netting on eastern external boundary.
	
Cleaning final feedstock off slab for transfer to screener	Loading final feedstock to screener

	
Picked mixed skip waste residue for disposal	Picked mixed skip waste residue for disposal
	
Recovered hardcore (brick, stone, concrete) for crushing to produce aggregate	Segregated, picked ACM bagged for disposal
	
Final feedstock materials being loaded for transfer to screening area	Two stockpiles of material (Non-Hazardous = SP1, foreground) and Hazardous = SP2 background) quarantined while tests in progress

4. Treatment Verification

4.1. Remediation Objectives & Criteria

- 4.1.1. The primary objectives of the treatment trial were to produce physically suitable materials for use as bulk fill. Provided the output materials meets site-specific criteria, replaces the need to import fills, and does not cause harm or pollution then it is intended End-of Waste status will be sought.
- 4.1.2. In respect of the Environmental risks posed by the materials, an updated Remediation Strategy is being prepared for the Phase 2 area. This will present Remediation Criteria protective of controlled waters and human health in the context of the site and development proposals. In order to provide an initial assessment of the results comparison is made to Tier 1 criteria that assume no attenuation of risks and direct receptor exposure to the materials, specifically garden soils criteria for total contaminant concentrations and EQS for leachable metals. A preliminary qualitative assessment of the likely pollution potential of the material is also made, however this will require confirmation in the new Remediation strategy once Remediation Objectives and Remediation Criteria are finalised.
- 4.1.3. In order that the materials provide a stable medium for external development infrastructure (roads, drives, gardens, drainage, and utilities – houses will be piled so loading is transferred to competent natural strata at depth) it must be capable of being compacted. The earthworks specification requires that all site fills are compatible with Highways 600 specification and grading analysis.
- 4.1.4. Furthermore, the proportion of residual degradable materials must be limited to prevent long-term creep settlement occurring. Primarily this is achieved by removing inclusions of degradable or putrescible wastes such as wood, paper, cardboard and similar, and a target of 1% by weight for these and wastes such as plastic, rubber, metal is given in the treatment Method Statement for these inclusions. A very high proportion of degradable materials also infers a potential ground gas risk, although it is assumed that this can be managed using in-built passive gas protection as has been recommended for the Phase 1 area.

4.2. Treated Materials: Contamination Status

- 4.2.1. As these samples are for validation of the method and verification of the measures implemented to manage risks from land contamination the contamination samples were collected by independent specialist consultants Smith Grant LLP from both the Non hazardous (SP1) and Hazardous (SP2) derived stockpiles.

4.2.2. Samples were delivered to I2 Analytical Laboratories and tested for a standard suite of metals, asbestos, and hydrocarbons similar to that used in the main Site Investigation Phase. Results are provided in Appendix A (25-023632) and compared to residential criteria below.

Figure 4.2a: Results from Treated Materials

Contaminant	Number of Samples	Range of Concentrations (mg/kg or indicated)	Soil standard adopted for a residential scenario (mg/kg or indicated)	Exceedances
Asbestos screen	6	<0.001-0.036	<0.001%	SP2 Fill S1, S2 & S3
Arsenic	6	25-28	S4UL 37	
Cadmium	6	1.1-1.4	S4UL 11	
Chromium (total)	6	36-54	S4UL 910	
Copper	6	130-300	S4UL 2400	
Lead	6	280-320	C4SL 200	All
Mercury	6	0.4-0.7	S4UL 1.2	
Nickel	6	39-42	S4UL 180	
Zinc	6	320-520	S4UL 3700	
Naphthalene	6	0.93-5.7	S4UL 2.3 (13, if SOM 6%)	SP Fill S1& S2
Acenaphthylene	6	0.14-0.42	S4UL 170	
Acenaphthene	6	2.1-5.4	S4UL 210	
Fluorene	6	1.8-4.2	S4UL 170	
Phenanthrene	6	13-30	S4UL 95 (440, if SOM 6%)	
Anthracene	6	3.1-7.9	S4UL 2400	
Fluoranthene	6	19-34	S4UL 280 (890, if SOM 6%)	
Pyrene	6	16-30	S4UL 620	
Benzo(a)anthracene	6	7.5-18	S4UL 7.2 (13, if SOM 6%)	
Chrysene	6	7.2-13	S4UL 15 (27, if SOM 6%)	
Benzo(b)fluoranthene	6	7.4-14	S4UL 2.6 (3.7, if SOM 6%)	
Benzo(k)fluoranthene	6	3.7-5.1	S4UL 77 (100, if SOM 6%)	
Benzo(a)pyrene	6	7.3-13	S4UL 2.2 (3.0, if SOM 6%)	All
Indeno(123cd) pyrene	6	3.6-5.7	S4UL 27 (41, if SOM 6%)	
Dibenzo(ah)anthracene	6	0.62-1.2	S4UL 0.24 (0.3, if SOM 6%)	All
Benzo(ghi)perylene	6	4.0-6.5	S4UL 320	
Aliphatic C5-C6	6	<0.01	S4UL 42	
Aliphatic C6-C8	6	<0.01	S4UL 100	
Aliphatic C8-C10	6	<0.02	S4UL 27	

Contaminant	Number of Samples	Range of Concentrations (mg/kg or indicated)	Soil standard adopted for a residential scenario (mg/kg or indicated)	Exceedances
Aliphatic C10-C12	6	<0.1-4.1	S4UL 130	
Aliphatic C12-C16	6	7-29	S4UL 1100	
Aliphatic C16-C21	6	59-320	S4UL 5000	
Aliphatic C21-C35	6	130-440	S4UL 5000	
Aromatic C6-C7	6	<0.01	S4UL 70	
Aromatic C7-C8	6	<0.01	S4UL 130	
Aromatic C8-C10	6	<0.02	S4UL 34	
Aromatic C10-C12	6	<1.0-6.9	S4UL 74	
Aromatic C12-C16	6	10-25	S4UL 140 (660, if SOM 6%)	
Aromatic C16-C21	6	79-270	S4UL 260 (930, if SOM 6%)	
Aromatic C21-C35	6	120-320	S4UL 1100 (1700, if SOM 6%)	
Benzene	6	<0.005	S4UL 0.087	
Toluene	6	<0.005	S4UL 130	
Ethylbenzene	6	<0.005	S4UL 47	
m/p-xylene	6	<0.008	S4UL 59/56	
o-xylene	6	<0.005	S4UL 60	

Notes to table:

S4UL: Suitable for Use Levels published by Chartered Institute of Environmental Health and Land Quality Management Ltd, residential with plant uptake scenario (1% SOM); copyright Land Quality Management Ltd reproduced with permission publication number S4UL3102. All rights reserved.

C4SL: Category 4 Screening Levels published by CL: AIRE (C4SLs); 'residential without home grown produce land use' (at 1% SOM)

4.2.3. In general, the results are more homogenous than the spot sampling reported in Section 2 which is expected given the materials were excavated from smaller, discrete areas and then mixed through the processes described in Section 3. With the exception of some individual PAHs (which are higher in the non-hazardous) Asbestos, metals are similar with moderate exceedances of criteria recorded for PAHs lead and asbestos. Leachate results for metals are presented below:

Figure 4.2b: Leachate Results from Treated Materials

Contaminant	Number of Samples	Range of Concentrations (µg/l or indicated)	EQS adopted for a surface watercourse * (µg/l or indicated)	Exceedances
Arsenic		<1.0-4.4	50	
Cadmium		<0.08	0.15	

Contaminant	Number of Samples	Range of Concentrations (µg/l or indicated)	EQS adopted for a surface watercourse * (µg/l or indicated)	Exceedances
Chromium ^		<0.4-1.3	4.7	
Copper #		11-22	1	All
Lead #		<1.0-3.1	1.2	SP1-Fil S2 SP2-Fill S1 & S2
Mercury		<0.5	0.07	
Nickel #		1-2.5	4	
Zinc #		2.5-6.5	10.9	

Notes to table:

*: Assumed hardness 100-200 mg/l

#: Bioavailable

^: Assumed Trivalent

4.2.4. Most metal concentrations in the elutes derived from the upper materials in the tips were below limits of detection and substantially below the EQS, the exceptions being copper in all samples and lead in 50% of the elutes derived.

4.3. Treated Materials Geotechnical Specification

4.3.1. Samples from both stockpiles were classified by Murray Rix: the results (Certificates Reference MRN25027-55a and MRN25027-97 in Appendix B). These indicate a class 2C classification under highways 600 and are therefore compatible with the site earthworks specification.

4.3.2. Plasticity tests and compaction characteristic both indicate that the material can be adequately compacted at the correct moisture content.

4.4. Treated Materials: Constituent Testing

4.4.1. Bulk Samples were collected by Smith grant and subject to forensic constituent analysis which allowed the residual waste content (including inclusions of degradable waste).

4.4.2. The results certificates are appended Appendix C, these indicate a total residual waste content by mass of 0.6% in the non-hazardous SP1 and 1.0% in hazardous SP2, both below the 1% threshold required, although the SP2 was borderline, indicating that a more intense screening procedure may be required during a full-scale treatment programme.

5. Conclusions

5.1. Remediation Objectives

- 5.1.1. The results of this trial indicate the potential for a physical treatment process on the tip wastes within Phase 2 to achieve Remediation Criteria and the limitations of this method.
- 5.1.2. As expected, residual concentrations of contaminants were higher in outputs from feedstock that could be classed as hazardous waste. Although some conservative remediation criteria for residential gardens were exceeded, this is not unusual in a brownfield and was the case throughout Phase 1 where the materials were deemed suitable for retention and the concentrations are not indicative of very heavy contamination.
- 5.1.3. The results of the leaching tests carried out indicated that the elutes are consistently below the EQS for most metals except for copper and lead (exceedances for zinc are also anticipated on a wider scale) which have very low criteria for bioavailable metals. Although not directly comparable to EQS, the total amounts of hydrocarbons infer a potential risk although the fractions present are dominated by heavy >C12 bands which have a much lower solubility and are typically attenuated rapidly in the environment so are less likely to cause pollution.

5.2. Recommendations

- 5.2.1. This treatment trial report should be provided to the designers of the Phase 2 Remediation Strategy to inform their Options Appraisal for the treatment of the historical tip area.
- 5.2.2. Treatment of the cleaner, upper materials could be continued under the existing SR2020 No.2 deployment. However, given the presence of a substantial quantity of waste that exceeds hazardous waste thresholds, SR2008 No 27 is a more suitable deployment to treat the materials to segregate the unacceptable wastes for disposal and generate suitable aggregate and fill materials to achieve planned development levels.
- 5.2.3. Other remediation technologies could also be applied by this deployment route if it is determined through risk assessment that the reported levels of soil contamination are excessive given the site setting and development proposals. For example, if the hydrocarbons present are determined to pose an unacceptable risk, destructive technologies such as ex-situ bioremediation or chemical oxidation could be employed. If the levels of leachable metals are sufficient to pose a pollution risk, these could be fixed through stabilisation/solidification.

- 5.2.4. This is not considered likely but the Permit deployment must reflect the selected Remediation technologies so confirmation on whether the results from the trial meet site Remediation Criteria and therefore can achieve End-of-Waste status given the need for fill materials is a pre-condition to the deployment application.
- 5.2.5. Although treatment could commence as soon as the deployment is in place, The Strategy must also be agreed by the regulators to provide certainty that the Remediation (and therefore End of Waste) Criteria are accepted to prevent unauthorised deposition of what could still be regarded as a Waste material.

Appendix A

Compliance Testing: Contamination

Urban Regen Ltd
Langley Road
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Salford
Manchester
M6 6FG

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

e: ben.thomas@urbanregen.co.uk

Analytical Report Number : 25-021773

Project / Site name:	MOWPI	Samples received on:	29/04/2025
Your job number:	414	Samples instructed on / Analysis started on:	29/04/2025
Your order number:	025983	Analysis completed by:	09/05/2025
Report Issue Number:	1	Report issued on:	09/05/2025
Samples Analysed:	6 soil samples - 6 leachate samples		



Signed: _____

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

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

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

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

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting
air - once the analysis is complete

Excel copies of reports are only valid when accompanied by this PDF certificate.

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

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

Analytical Report Number: 25-021773
Project / Site name: MOWPI
Your Order No: 025983

Lab Sample Number	528837	528838	528839	528840	528841
Sample Reference	LFTP1	LFTP2	LFTP3	LFTP4	LFTP5
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	1.20-3.10	1.80-3.10	2.50-3.20	2.10-3.90	0.40-2.70
Date Sampled	24/04/2025	24/04/2025	24/04/2025	24/04/2025	24/04/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	40	31	32	29	32
Total mass of sample received	kg	0.1	NONE	0.7	0.7	0.7	0.2	0.5

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Detected	Detected	Not-detected	Detected
Asbestos Analyst ID	N/A	N/A	N/A	MBI	MBI	MBI	WEM	MBI
Analysis completed	N/A	N/A	N/A	08/05/2025	08/05/2025	08/05/2025	07/05/2025	08/05/2025
Actinolite detected	Type	N/A	ISO 17025	-	Not-detected	Not-detected	-	Not-detected
Amosite detected	Type	N/A	ISO 17025	-	Detected	Detected	-	Detected
Anthophyllite detected	Type	N/A	ISO 17025	-	Not-detected	Not-detected	-	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	-	Detected	Detected	-	Not-detected
Crocidolite detected	Type	N/A	ISO 17025	-	Not-detected	Not-detected	-	Not-detected
Tremolite detected	Type	N/A	ISO 17025	-	Not-detected	Not-detected	-	Not-detected

Asbestos % by hand picking/weighing	%	0.001	ISO 17025	-	< 0.001	0.011	-	< 0.001
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Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	Loose Fibres	Loose Fibres, Sheeting/Board Debris	-	Loose Fibres
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General Inorganics

pH (L099)	pH Units	N/A	MCERTS	6.9	6.9	7.5	11.1	7.4
Total Cyanide	mg/kg	1	MCERTS	10	13	9.9	34	8.3
Total Sulphate as SO ₄	mg/kg	50	MCERTS	6800	2900	5300	7800	4100
Sulphide	mg/kg	1	MCERTS	240	120	190	120	1.2
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	6.4	5.4	4.3	4.6	4.9
Loss on Ignition @ 450°C	%	0.2	MCERTS	13	15	8.3	11	11

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	1	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.21	0.26	1.3	0.32	2.1
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.08	0.09
Acenaphthene	mg/kg	0.05	MCERTS	0.3	0.29	0.53	0.54	2.6
Fluorene	mg/kg	0.05	MCERTS	0.43	0.43	0.85	0.53	2.1
Phenanthrene	mg/kg	0.05	MCERTS	2.4	3	3.6	3.5	13
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.7	0.8	1	3.1
Fluoranthene	mg/kg	0.05	MCERTS	3.2	4	3.6	6.3	16
Pyrene	mg/kg	0.05	MCERTS	2.7	3.3	3.2	5.8	14
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.4	1.9	1.5	3.1	6.5
Chrysene	mg/kg	0.05	MCERTS	1.6	2.1	1.6	3.1	6.9
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.7	2.2	1.5	3.8	7.7
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.66	0.85	0.71	1.3	2.5
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.4	1.9	1.3	3.3	6.6
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.57	0.97	0.65	1.7	2.9
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.16	0.24	0.18	0.37	0.59
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.8	1.1	0.74	1.8	3.4

Analytical Report Number: 25-021773
Project / Site name: MOWPI
Your Order No: 025983

Lab Sample Number	528837	528838	528839	528840	528841
Sample Reference	LFTP1	LFTP2	LFTP3	LFTP4	LFTP5
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	1.20-3.10	1.80-3.10	2.50-3.20	2.10-3.90	0.40-2.70
Date Sampled	24/04/2025	24/04/2025	24/04/2025	24/04/2025	24/04/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	17.3	23.2	22	36.5	89.6
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	19	49	15	22	26
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	2.1	3.2	0.9	1.9	1.3
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	62	80	32	36	49
Copper (aqua regia extractable)	mg/kg	1	MCERTS	300	240	94	410	320
Lead (aqua regia extractable)	mg/kg	1	MCERTS	590	660	240	320	380
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.1	1.5	1	< 0.3	0.5
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	37	110	30	51	43
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	650	620	250	840	480

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	0.15	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.01	MCERTS	0.08	0.036	0.045	1.5	0.024
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	6	7.9	6.8	8.9	6.7
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	230	130	150	160	120
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	4500	680	590	740	690
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	2900	1500	930	760	1100
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_1D_AL	mg/kg	10	NONE	7600	2300	1700	1700	2000

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.02	MCERTS	0.1	< 0.020	0.11	0.62	0.065
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	1.6	4.3	1.4	1.9
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	120	53	210	46	71
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	3200	530	570	460	370
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	1200	740	440	310	600
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	4500	1300	1200	820	1000

Petroleum Range Organics (EC6 - EC10) HS_1D_TOTAL	mg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	4.8	< 1.0
TPH (EC10 - EC40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	12000	4500	3100	2700	3300

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	10	< 5.0	9.5	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	62	< 8.0	41	160	40
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	25	56	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 25-021773

Project / Site name: MOWPI

Your Order No: 025983

Lab Sample Number	528842			
Sample Reference	LFTP6			
Sample Number	None Supplied			
Water Matrix	N/A			
Depth (m)	0.60-3.00			
Date Sampled	24/04/2025			
Time Taken	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Stone Content	%	0.1	NONE	24.7
Moisture Content	%	0.01	NONE	11
Total mass of sample received	kg	0.1	NONE	0.5

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Detected
Asbestos Analyst ID	N/A	N/A	N/A	MBI
Analysis completed	N/A	N/A	N/A	08/05/2025
Actinolite detected	Type	N/A	ISO 17025	Not-detected
Amosite detected	Type	N/A	ISO 17025	Not-detected
Anthophyllite detected	Type	N/A	ISO 17025	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	Not-detected
Crocidolite detected	Type	N/A	ISO 17025	Detected
Tremolite detected	Type	N/A	ISO 17025	Not-detected

Asbestos % by hand picking/weighing	%	0.001	ISO 17025	< 0.001
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Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	Loose Fibres
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General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	2000
Sulphide	mg/kg	1	MCERTS	19
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2.8
Loss on Ignition @ 450°C	%	0.2	MCERTS	9

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.22
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.19
Fluorene	mg/kg	0.05	MCERTS	0.18
Phenanthrene	mg/kg	0.05	MCERTS	1.4
Anthracene	mg/kg	0.05	MCERTS	0.3
Fluoranthene	mg/kg	0.05	MCERTS	2.2
Pyrene	mg/kg	0.05	MCERTS	2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1
Chrysene	mg/kg	0.05	MCERTS	1.1
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.4
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.35
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.46
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.09
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.52

Analytical Report Number: 25-021773
Project / Site name: MOWPI
Your Order No: 025983

Lab Sample Number	528842			
Sample Reference	LFTP6			
Sample Number	None Supplied			
Water Matrix	N/A			
Depth (m)	0.60-3.00			
Date Sampled	24/04/2025			
Time Taken	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	12.6
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	34
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18
Copper (aqua regia extractable)	mg/kg	1	MCERTS	240
Lead (aqua regia extractable)	mg/kg	1	MCERTS	120
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	44
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	280

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	15
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	29
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	44

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.02	MCERTS	0.024
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	2.4
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	20
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	19
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	41

Petroleum Range Organics (EC6 - EC10) _{HS_1D_TOTAL}	mg/kg	1	ISO 17025	< 1.0
TPH (EC10 - EC40) _{EH_CU_1D_TOTAL}	mg/kg	10	MCERTS	97

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	6.3
p & m-Xylene	µg/kg	8	MCERTS	9.1
o-Xylene	µg/kg	5	MCERTS	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 25-021773
Project / Site name: MOWPI

Your Order No: 025983

Lab Sample Number	528837	528838	528839	528840	528841
Sample Reference	LFTP1	LFTP2	LFTP3	LFTP4	LFTP5
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	1.20-3.10	1.80-3.10	2.50-3.20	2.10-3.90	0.40-2.70
Date Sampled	24/04/2025	24/04/2025	24/04/2025	24/04/2025	24/04/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Test Limit of detection	Test Accreditation Status		

General Inorganics

Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	17	11	9.2	9.8	5.5
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 25-021773
Project / Site name: MOWPI

Your Order No: 025983

Lab Sample Number				528842
Sample Reference				LFTP6
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.60-3.00
Date Sampled				24/04/2025
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	Units	Test Limit of detection	Test Accreditation Status	

General Inorganics

Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	5.6
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number: 25-021773

Project / Site name: MOWPI

Your Order No: 025983

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample	Analysis completed	Analyst ID
528838	LFTP2	1.80-3.10	121	Loose Fibres	Amosite & Chrysotile	< 0.001	< 0.001	08/05/2025	MBI
528839	LFTP3	2.50-3.20	123	Loose Fibres, Sheeting/Board Debris	Amosite & Chrysotile	0.011	0.011	08/05/2025	MBI
528841	LFTP5	0.40-2.70	140	Loose Fibres	Amosite	< 0.001	< 0.001	08/05/2025	MBI
528842	LFTP6	0.60-3.00	158	Loose Fibres	Crocidolite	< 0.001	< 0.001	08/05/2025	MBI

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

Analytical Report Number : 25-021773

Project / Site name: MOWPI

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
528837	LFTP1	None Supplied	1.20-3.10	Brown clay and loam with gravel and fibrous material
528838	LFTP2	None Supplied	1.80-3.10	Brown clay and loam with plastic and fibrous material
528839	LFTP3	None Supplied	2.50-3.20	Brown clay and loam with plastic and fibrous material
528840	LFTP4	None Supplied	2.10-3.90	Brown clay and sand with gravel
528841	LFTP5	None Supplied	0.40-2.70	Brown clay and sand with gravel
528842	LFTP6	None Supplied	0.60-3.00	Brown loam and sand with vegetation and stones

Analytical Report Number : 25-021773

Project / Site name: MOWPI

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode	In-house method	L010-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Dissolved Organic Carbon in leachate	Determination of dissolved organic carbon in leachate by the measurement on a non-dispersive infrared analyser of carbon dioxide released by acidification	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Loss on ignition of soil @ 450°C	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	In-house method	L047-PL	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
TPH Chromatogram in soil	TPH Chromatogram in soil	In-house method	L064B	D	NONE
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088-PL	D/W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088-PL	D/W	MCERTS
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS

Analytical Report Number : 25-021773
Project / Site name: MOWPI

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Total petroleum hydrocarbons by HS-GC-MS in soil	Determination of total petroleum hydrocarbons in soil by HS-GC-MS	In-house method	L129-PL	W	ISO 17025
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references	HSE Report No: 83/1996, HSG 248 (2021), HSG 264 (2012) & SCA Blue Book (draft)	A006B	D	ISO 17025

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

Analytical Report Number : 25-021773

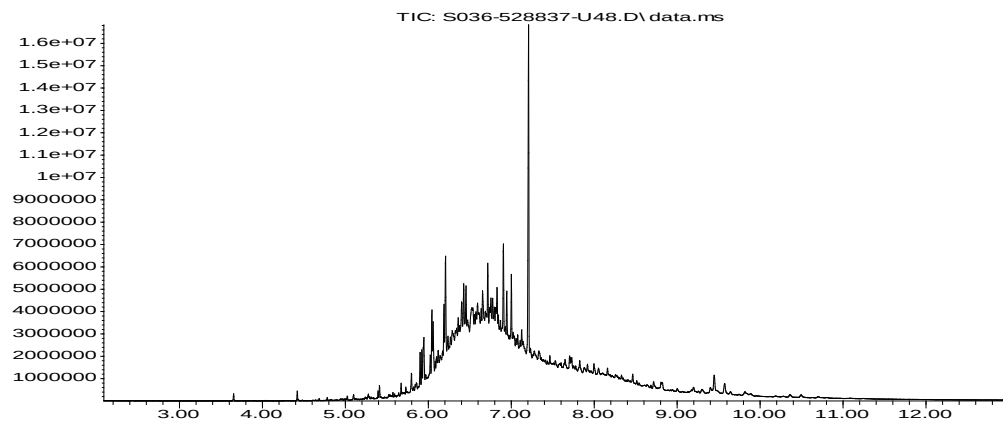
Project / Site name: MOWPI

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

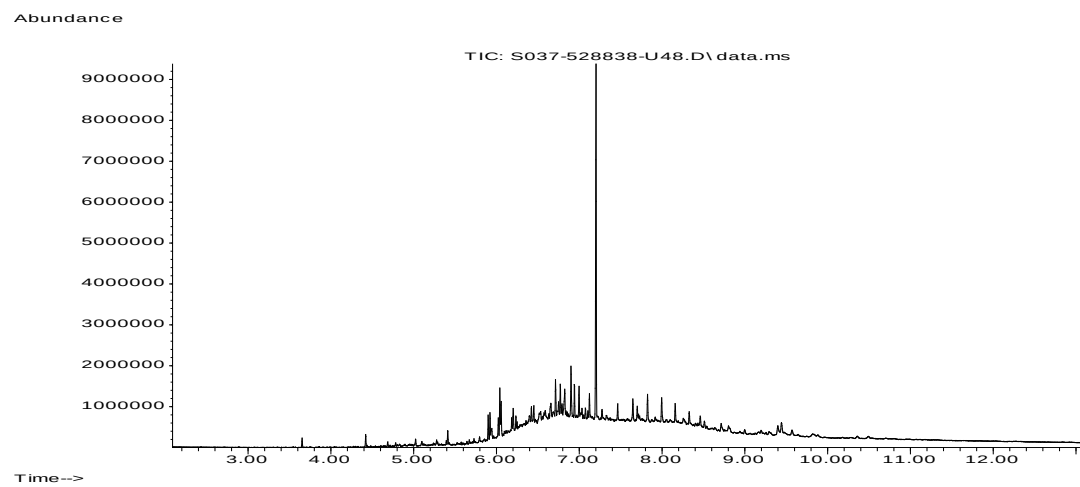
Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

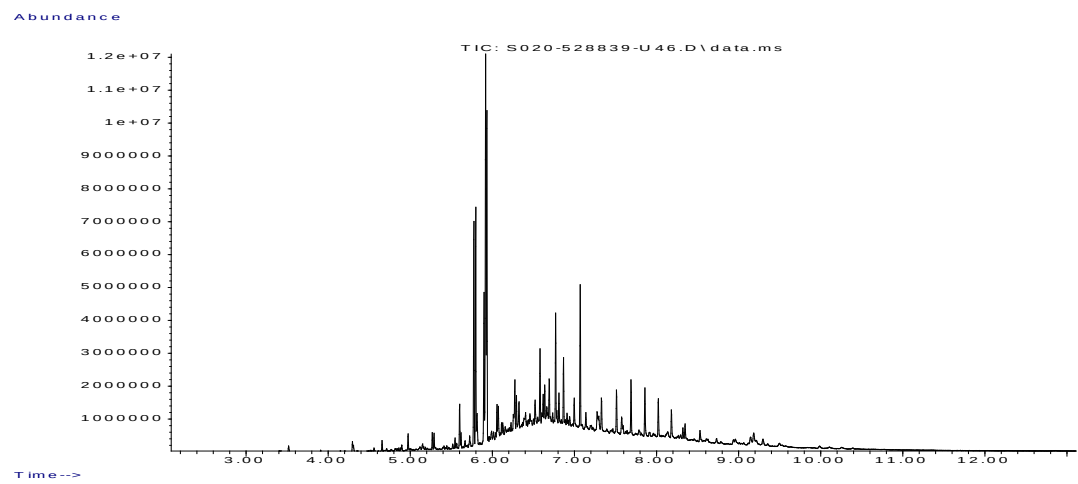
Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
LFTP1	N/A	S	528837	c	Sulphide in soil	L010-PL	c
LFTP2	N/A	S	528838	c	Sulphide in soil	L010-PL	c
LFTP3	N/A	S	528839	c	Sulphide in soil	L010-PL	c
LFTP4	N/A	S	528840	bc	BTEX and/or Volatile organic compounds in soil	L073B	b
LFTP4	N/A	S	528840	bc	Sulphide in soil	L010-PL	c
LFTP4	N/A	S	528840	bc	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	L076B/L088-PL	b
LFTP5	N/A	S	528841	c	Sulphide in soil	L010-PL	c
LFTP6	N/A	S	528842	c	Sulphide in soil	L010-PL	c

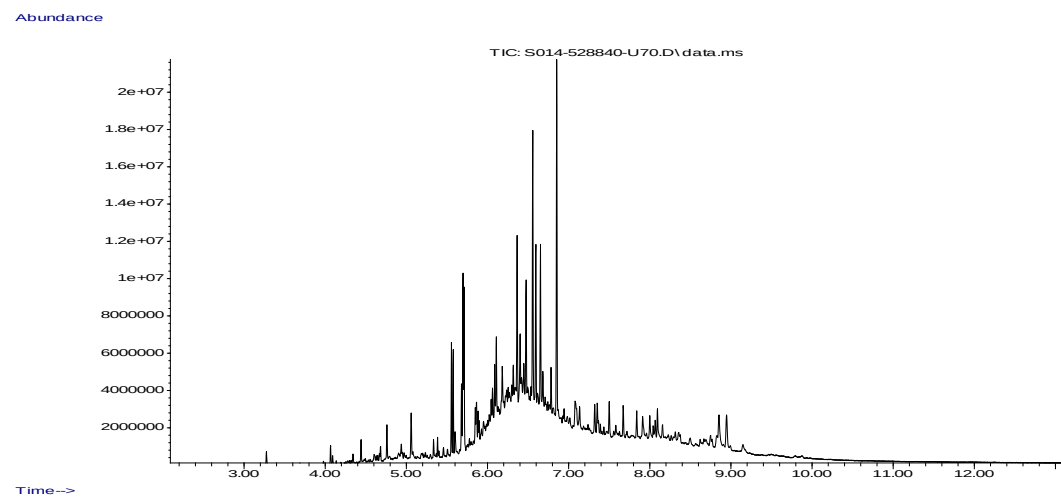
Abundance

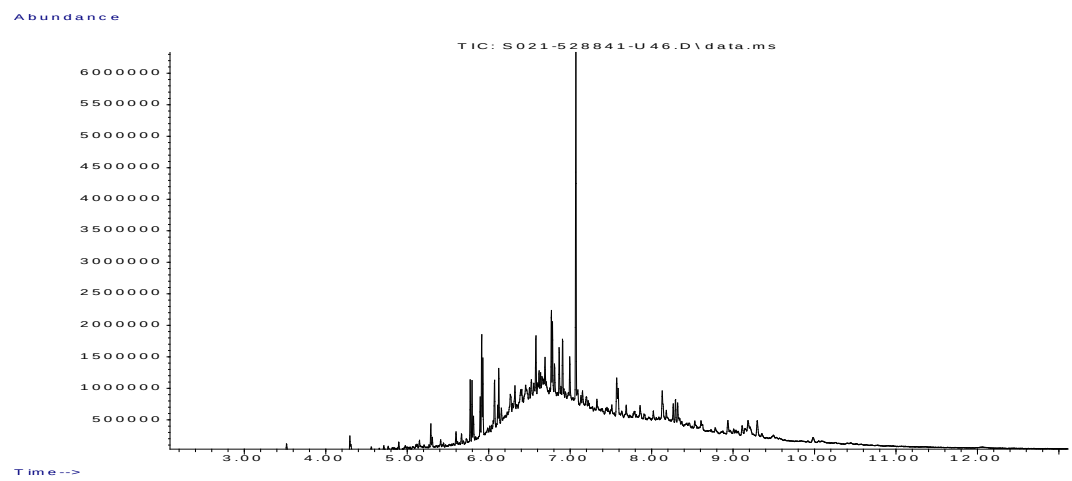


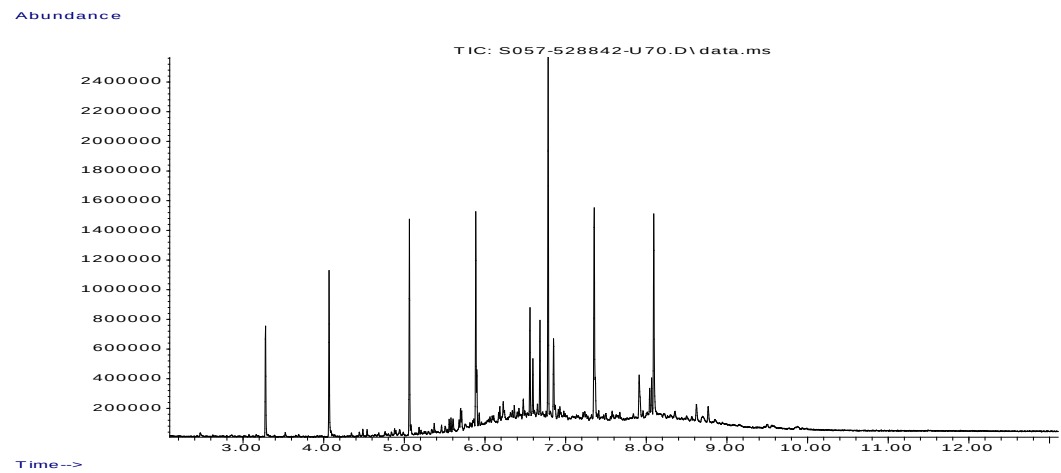
Time-->











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Analytical Report Number : 25-023632

Replaces Analytical Report Number: 25-023632, issue no. 3

Additional analysis undertaken.

Leachate as As, Cd, Cr & Cr6, Cu, Pb, Hg, Ni, Zn added to all samples as per client's request.

Project / Site name:	Mondi - Landfill	Samples received on:	09/05/2025
Your job number:	R3430	Samples instructed on/ Analysis started on:	09/05/2025
Your order number:		Analysis completed by:	16/06/2025
Report Issue Number:	4	Report issued on:	19/06/2025
Samples Analysed:	6 soil samples - 6 leachate samples		



Signed: _____

Kaleem Saleem
I2 Customer Service
For & on behalf of i2 Analytical Ltd.

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :	soils	- 4 weeks from reporting
	leachates	- 2 weeks from reporting
	waters	- 2 weeks from reporting
	asbestos	- 6 months from reporting
	air	- once the analysis is complete

Excel copies of reports are only valid when accompanied by this PDF certificate.

Retention period for records and reports is minimum 6 years from the date of issue of the final report.

Some records may be kept for longer according to other legal/best practice requirements.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.

Application of uncertainty of measurement would provide a range within which the true result lies.

An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 25-023632
Project / Site name: Mondri - Landfill

Lab Sample Number	539473	539474	539475	539476	539477
Sample Reference	SP1-Fill-S1	SP1-Fill-S2	SP1-Fill-S3	SP2-Fill-S1	SP2-Fill-S2
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	07/05/2025	45843	07/05/2025	07/05/2025	07/05/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	35.9	23.8	42.9	33.9	5.8
Moisture Content	%	0.01	NONE	2.4	4.2	2.5	16	18
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.8	0.8	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Detected	Detected	Detected	Detected	Detected
Asbestos Analyst ID	N/A	N/A	N/A	DOC	DOC	DOC	DOC	DOC
Analysis completed	N/A	N/A	N/A	15/05/2025	15/05/2025	15/05/2025	15/05/2025	16/05/2025
Actinolite detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Amosite detected	Type	N/A	ISO 17025	Detected	Not-detected	Not-detected	Detected	Detected
Anthophyllite detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	Detected	Detected	Detected	Detected	Detected
Crocidolite detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Tremolite detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected

Asbestos % by hand picking/weighing	%	0.001	ISO 17025	< 0.001	< 0.001	< 0.001	0.002	0.036
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Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	Loose Fibres	Loose Fibres	Loose Fibres	Loose Fibres	Loose Fibres, Sheeting/Board Debris
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General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.2	7.9	7.4	7.8	7.7
Organic Matter (automated)	%	0.1	MCERTS	5.1	5.5	4.9	6.2	6.9

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	5.7	2.4	1.4	0.93	0.97
Acenaphthylene	mg/kg	0.05	MCERTS	0.21	0.17	0.14	0.33	0.14
Acenaphthene	mg/kg	0.05	MCERTS	4	5.4	3.2	2.6	2.1
Fluorene	mg/kg	0.05	MCERTS	3.1	4.2	2.5	2.3	1.8
Phenanthrene	mg/kg	0.05	MCERTS	23	30	19	19	13
Anthracene	mg/kg	0.05	MCERTS	5.9	7.9	4.8	5.1	3.1
Fluoranthene	mg/kg	0.05	MCERTS	32	34	24	26	19
Pyrene	mg/kg	0.05	MCERTS	28	30	22	22	16
Benzo(a)anthracene	mg/kg	0.05	MCERTS	13	13	10	10	7.5
Chrysene	mg/kg	0.05	MCERTS	12	13	9.8	9.5	7.2
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	14	14	9.9	11	7.4
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	4.9	4.9	5.1	3.7	4
Benzo(a)pyrene	mg/kg	0.05	MCERTS	13	12	9.9	9.5	7.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	5.7	5.7	4.4	4.4	3.6
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.1	1.2	0.84	0.77	0.62
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	6.3	6.5	4.9	4.8	4

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	171	185	131	133	98.1
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Analytical Report Number: 25-023632
Project / Site name: Mondri - Landfill

Lab Sample Number	539473	539474	539475	539476	539477
Sample Reference	SP1-Fill-S1	SP1-Fill-S2	SP1-Fill-S3	SP2-Fill-S1	SP2-Fill-S2
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	07/05/2025	45843	07/05/2025	07/05/2025	07/05/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	25	26	27	25	28
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.2	1.4	1.1	1.2	1.4
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	40	44	38	52	54
Copper (aqua regia extractable)	mg/kg	1	MCERTS	130	150	130	180	300
Lead (aqua regia extractable)	mg/kg	1	MCERTS	280	320	320	260	310
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.5	0.5	0.4	0.7	0.6
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	41	43	39	40	41
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	360	520	320	350	350

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS 1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 _{HS 1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 _{HS 1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU 1D_AL}	mg/kg	1	MCERTS	< 1.0	2	< 1.0	3.6	4.1
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU 1D_AL}	mg/kg	2	MCERTS	7	8.8	4.4	25	29
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU 1D_AL}	mg/kg	8	MCERTS	60	71	59	320	310
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU 1D_AL}	mg/kg	8	MCERTS	160	180	130	440	430
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS 1D_AL}	mg/kg	10	NONE	230	260	190	780	780

TPHCWG - Aromatic >EC5 - EC7 _{HS 1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 _{HS 1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 _{HS 1D_AR}	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU 1D_AR}	mg/kg	1	MCERTS	6.8	3.9	2.3	< 1.0	3.3
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU 1D_AR}	mg/kg	2	MCERTS	22	25	10	17	22
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU 1D_AR}	mg/kg	10	MCERTS	110	120	79	220	270
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU 1D_AR}	mg/kg	10	MCERTS	180	180	120	250	320
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS 1D_AR}	mg/kg	10	NONE	320	330	210	480	610

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 25-023632
Project / Site name: Mondri - Landfill

Lab Sample Number	539478			
Sample Reference	SP2-Fill-S3			
Sample Number	None Supplied			
Water Matrix	N/A			
Depth (m)	None Supplied			
Date Sampled	07/05/2025			
Time Taken	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Stone Content	%	0.1	NONE	3.7
Moisture Content	%	0.01	NONE	19
Total mass of sample received	kg	0.1	NONE	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Detected
Asbestos Analyst ID	N/A	N/A	N/A	SSZ
Analysis completed	N/A	N/A	N/A	17/05/2025
Actinolite detected	Type	N/A	ISO 17025	Not-detected
Amosite detected	Type	N/A	ISO 17025	Detected
Anthophyllite detected	Type	N/A	ISO 17025	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	Detected
Crocidolite detected	Type	N/A	ISO 17025	Not-detected
Tremolite detected	Type	N/A	ISO 17025	Not-detected

Asbestos % by hand picking/weighing	%	0.001	ISO 17025	0.015
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Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	Loose Fibrous Debris, Loose Fibres
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General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.9
Organic Matter (automated)	%	0.1	MCERTS	6.8

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	1.7
Acenaphthylene	mg/kg	0.05	MCERTS	0.42
Acenaphthene	mg/kg	0.05	MCERTS	2.4
Fluorene	mg/kg	0.05	MCERTS	2.3
Phenanthrene	mg/kg	0.05	MCERTS	16
Anthracene	mg/kg	0.05	MCERTS	4.1
Fluoranthene	mg/kg	0.05	MCERTS	20
Pyrene	mg/kg	0.05	MCERTS	18
Benzo(a)anthracene	mg/kg	0.05	MCERTS	7.7
Chrysene	mg/kg	0.05	MCERTS	7.6
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	8.4
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	2.9
Benzo(a)pyrene	mg/kg	0.05	MCERTS	7.7
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.5
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.66
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.9

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	108
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Analytical Report Number: 25-023632
Project / Site name: Mondri - Landfill

Lab Sample Number				539478
Sample Reference				SP2-Fill-S3
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				None Supplied
Date Sampled				07/05/2025
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	28
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.3
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	50
Copper (aqua regia extractable)	mg/kg	1	MCERTS	170
Lead (aqua regia extractable)	mg/kg	1	MCERTS	290
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.7
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	42
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	370

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	2.3
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	23
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	250
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	330
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	610

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.02	MCERTS	< 0.020
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	4
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	23
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	240
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	260
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	530

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number: 25-023632
Project / Site name: Mondri - Landfill
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample	Analysis completed	Analyst ID
539473	SP1-Fill-S1	-	191	Loose Fibres	Amosite & Chrysotile	< 0.001	< 0.001	26/05/2025	SPU
539474	SP1-Fill-S2	-	133	Loose Fibres	Chrysotile	< 0.001	< 0.001	26/05/2025	SPU
539475	SP1-Fill-S3	-	128	Loose Fibres	Chrysotile	< 0.001	< 0.001	26/05/2025	SPU
539476	SP2-Fill-S1	-	140	Loose Fibres	Amosite & Chrysotile	0.002	0.002	26/05/2025	PDO
539477	SP2-Fill-S2	-	134	Loose Fibres, Sheeting/Board Debris	Amosite & Chrysotile	0.036	0.036	26/05/2025	PDO
539478	SP2-Fill-S3	-	119	Loose Fibrous Debris, Loose Fibres	Amosite & Chrysotile	0.015	0.015	26/05/2025	PDO

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

Analytical Report Number: 25-023632
Project / Site name: Mondri - Landfill

Lab Sample Number	539473	539474	539475	539476	539477
Sample Reference	SP1-Fill-S1	SP1-Fill-S2	SP1-Fill-S3	SP2-Fill-S1	SP2-Fill-S2
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	07/05/2025	45843	07/05/2025	07/05/2025	07/05/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1	ISO 17025	4.4 #	< 1.0 #	< 1.0 #	3.8 #	< 1.0 #
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.3	0.9	0.5	1.1	< 0.4
Copper (dissolved)	µg/l	0.7	ISO 17025	14 #	22 #	17 #	11 #	12 #
Lead (dissolved)	µg/l	1	ISO 17025	1.2	1.5	< 1.0	3.1	2.4
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	1.8 #	2.5 #	< 0.3 #	1.8 #	1.5 #
Zinc (dissolved)	µg/l	0.4	ISO 17025	2.7 #	3.5 #	2.5 #	5.5 #	3 #

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 25-023632
Project / Site name: Mondri - Landfill

Lab Sample Number				539478
Sample Reference				SP2-Fill-S3
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				None Supplied
Date Sampled				07/05/2025
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1	ISO 17025	4.3 [#]
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.3
Copper (dissolved)	µg/l	0.7	ISO 17025	7.1 [#]
Lead (dissolved)	µg/l	1	ISO 17025	1.9
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	1.1 [#]
Zinc (dissolved)	µg/l	0.4	ISO 17025	6.5 [#]

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 25-023632

Project / Site name: Mondri - Landfill

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
539473	SP1-Fill-S1	None Supplied	None Supplied	Brown loam with stones
539474	SP1-Fill-S2	None Supplied	None Supplied	Brown loam with stones
539475	SP1-Fill-S3	None Supplied	None Supplied	Brown loam with stones
539476	SP2-Fill-S1	None Supplied	None Supplied	Brown loam with stones
539477	SP2-Fill-S2	None Supplied	None Supplied	Brown loam with stones
539478	SP2-Fill-S3	None Supplied	None Supplied	Brown loam with stones

Analytical Report Number : 25-023632

Project / Site name: Mondri - Landfill

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references	HSE Report No: 83/1996, HSG 248 (2021), HSG 264 (2012) & SCA Blue Book (draft)	A006B	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088-PL	D/W	MCERTS
Hexavalent chromium in leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	ISO 17025
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS

Analytical Report Number : 25-023632
Project / Site name: Mondri - Landfill

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

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

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution

#- Quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as deviating and should be interpreted with caution. The result is not accredited.

Analytical Report Number : 25-023632

Project / Site name: Mondri - Landfill

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container/Insufficient material provided c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
SP1-Fill-S1	N/A	L	539473	b	WAC Leachate 10:1	L043B	b
SP1-Fill-S2	N/A	L	539474	b	WAC Leachate 10:1	L043B	b
SP1-Fill-S3	N/A	L	539475	b	WAC Leachate 10:1	L043B	b
SP2-Fill-S1	N/A	L	539476	b	WAC Leachate 10:1	L043B	b
SP2-Fill-S2	N/A	L	539477	b	WAC Leachate 10:1	L043B	b
SP2-Fill-S3	N/A	L	539478	b	WAC Leachate 10:1	L043B	b

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Analytical Report Number : 25-025618

Replaces Analytical Report Number: 25-025618, issue no. 1

Additional analysis undertaken.

Additional leachate - As, Cd, Cr & Cr6, Cu, Pb, Hg, Ni, Zn added to all samples as per client's request.

Project / Site name:	Mondi	Samples received on:	16/05/2025
Your job number:	414	Samples instructed on / Analysis started on:	16/05/2025
Your order number:	25983	Analysis completed by:	13/06/2025
Report Issue Number:	2	Report issued on:	15/06/2025
Samples Analysed:	4 soil samples - 4 leachate samples		



Signed:

Rachel Chappell
Key Account Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting
air - once the analysis is complete

Excel copies of reports are only valid when accompanied by this PDF certificate.

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

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

Analytical Report Number: 25-025618
Project / Site name: Mond
Your Order No: 25983

Lab Sample Number	549651	549652	549653	549654
Sample Reference	LF-NH1	LF-NH2	LF-NH3	LF-NH4
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	15/05/2025	15/05/2025	15/05/2025	15/05/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Stone Content	%	0.1	NONE	49.1	39.4	< 0.1	33.5
Moisture Content	%	0.01	NONE	10	13	13	11
Total mass of sample received	kg	0.1	NONE	0.9	0.9	0.9	0.9

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Detected	Detected	Detected	Detected
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	SCA	SCA	SCA
Analysis completed	N/A	N/A	N/A	22/05/2025	22/05/2025	22/05/2025	22/05/2025
Actinolite detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected
Amosite detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Detected	Detected
Anthophyllite detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	Detected	Detected	Detected	Detected
Crocidolite detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected
Tremolite detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected

Asbestos % by hand picking/weighing	%	0.001	ISO 17025	0.001	0.001	< 0.001	0.003
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Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	Loose Fibres	Loose Fibrous Debris	Loose Fibres	Loose Fibrous Debris
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General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.9	7.8	7.8	8.1
Total Cyanide	mg/kg	1	MCERTS	2.1	4.2	< 1.0	2.6
Total Sulphate as SO ₄	mg/kg	50	MCERTS	2100	2000	2500	2400
Sulphide	mg/kg	1	MCERTS	31	60	18	7.6
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.7	2.7	1.6	2.5
Loss on Ignition @ 450°C	%	0.2	MCERTS	3	5.8	3.6	6.3

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	1.2	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.18	0.5	0.33	0.3
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.11
Acenaphthene	mg/kg	0.05	MCERTS	0.32	0.9	0.44	0.31
Fluorene	mg/kg	0.05	MCERTS	0.3	0.75	0.5	0.47
Phenanthrene	mg/kg	0.05	MCERTS	2.2	5.7	4.1	3.6
Anthracene	mg/kg	0.05	MCERTS	0.61	1.5	1.2	1.1
Fluoranthene	mg/kg	0.05	MCERTS	3.6	7.1	4.9	7
Pyrene	mg/kg	0.05	MCERTS	3.2	6.4	4.2	6.8
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.5	3.5	2.1	3.5
Chrysene	mg/kg	0.05	MCERTS	1.4	3.6	2.1	4.2
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.6	4.5	2.3	5
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.5	1.5	0.72	1.5
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.3	3.6	1.9	4.4
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.67	1.7	0.85	2
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.16	0.39	0.21	0.46
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.75	1.7	0.93	2.5

Analytical Report Number: 25-025618
Project / Site name: Mondri
Your Order No: 25983

Lab Sample Number	549651	549652	549653	549654
Sample Reference	LF-NH1	LF-NH2	LF-NH3	LF-NH4
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	15/05/2025	15/05/2025	15/05/2025	15/05/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	18.2	43.2	26.8	43.2
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	17	23	20	56
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.2	4.1	1.2	1.1 **1
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	39	22	29
Copper (aqua regia extractable)	mg/kg	1	MCERTS	74	170	89	170
Lead (aqua regia extractable)	mg/kg	1	MCERTS	190	300	230	270
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4	1.4	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	27	36	28	48
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	220	660	190	330

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	5.5	8.9	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	47	170	26	28
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	120	300	77	99
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	170	470	100	130

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	1.6	1.6	< 1.0
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	9.6	4.1	2.5
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	28	94	19	29
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	60	160	40	120
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	88	260	65	150

Petroleum Range Organics (EC6 - EC10) _{HS_1D_TOTAL}	mg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH (EC10 - EC40) _{EH_CU_1D_TOTAL}	mg/kg	10	MCERTS	330	850	190	350

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number: 25-025618
Project / Site name: Mondi
Your Order No: 25983

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample	Analysis completed	Analyst ID
549651	LF-NH1	-	129	Loose Fibres	Chrysotile	0.001	0.001	22/05/2025	KSZ
549652	LF-NH2	-	127	Loose Fibrous Debris	Chrysotile	0.001	0.001	22/05/2025	SCA
549653	LF-NH3	-	135	Loose Fibres	Amosite & Chrysotile	< 0.001	< 0.001	22/05/2025	SCA
549654	LF-NH4	-	129	Loose Fibrous Debris	Amosite & Chrysotile	0.003	0.003	22/05/2025	SCA

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

Analytical Report Number: 25-025618
Project / Site name: Mondri

Your Order No: 25983

Lab Sample Number	549651	549652	549653	549654
Sample Reference	LF-NH1	LF-NH2	LF-NH3	LF-NH4
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	15/05/2025	15/05/2025	15/05/2025	15/05/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Test Limit of detection	Test Accreditation Status	

General Inorganics

Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	6.6	8.1	3.9	5.5
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Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	0.15	< 0.08
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	< 0.4	0.6	< 0.4	1.5
Copper (dissolved)	µg/l	0.7	ISO 17025	11	16	6.8	8.6
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	2.6	2.8	1	1.3
Zinc (dissolved)	µg/l	0.4	ISO 17025	19	14	8.8	8.3

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 25-025618

Project / Site name: Mondri

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
549651	LF-NH1	None Supplied	None Supplied	Brown loam and clay with vegetation and stones
549652	LF-NH2	None Supplied	None Supplied	Brown loam with vegetation and stones
549653	LF-NH3	None Supplied	None Supplied	Brown loam with gravel and vegetation
549654	LF-NH4	None Supplied	None Supplied	Brown loam with vegetation and stones

Analytical Report Number : 25-025618

Project / Site name: Mondri

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos Identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references	HSE Report No: 83/1996, HSG 248 (2021), HSG 264 (2012) & SCA Blue Book (draft)	A006B	D	ISO 17025
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode	In-house method	L010-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Dissolved Organic Carbon in leachate	Determination of dissolved organic carbon in leachate by the measurement on a non-dispersive infrared analyser of carbon dioxide released by acidification	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Loss on ignition of soil @ 450°C	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	In-house method	L047-PL	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
TPH Chromatogram in soil	TPH Chromatogram in soil	In-house method	L064B	D	NONE
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L08B-PL	D/W	MCERTS

Analytical Report Number : 25-025618

Project / Site name: Mondri

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088-PL	D/W	MCERTS
Hexavalent chromium in leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Total petroleum hydrocarbons by HS-GC-MS in soil	Determination of total petroleum hydrocarbons in soil by HS-GC-MS	In-house method	L129-PL	W	ISO 17025
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

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

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution

**i- Data reported unaccredited - Sample affected by spectral interference from high As.\nData reported with additional background correction applied\n

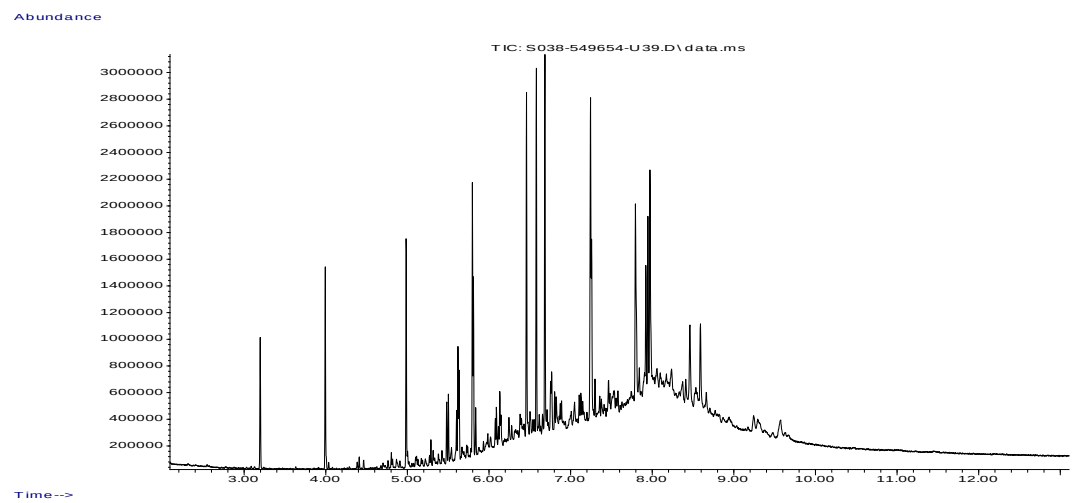
Analytical Report Number : 25-025618

Project / Site name: Mondri

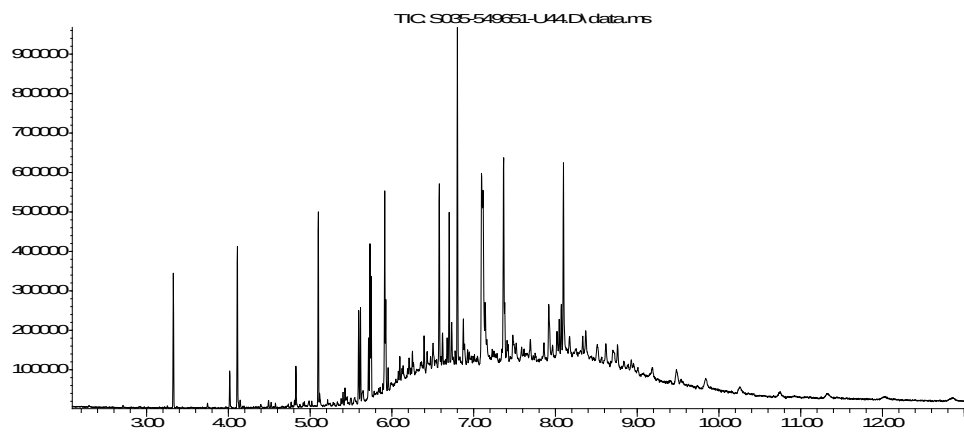
This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container/Insufficient material provided c - Holding time d - Headspace e - Temperature

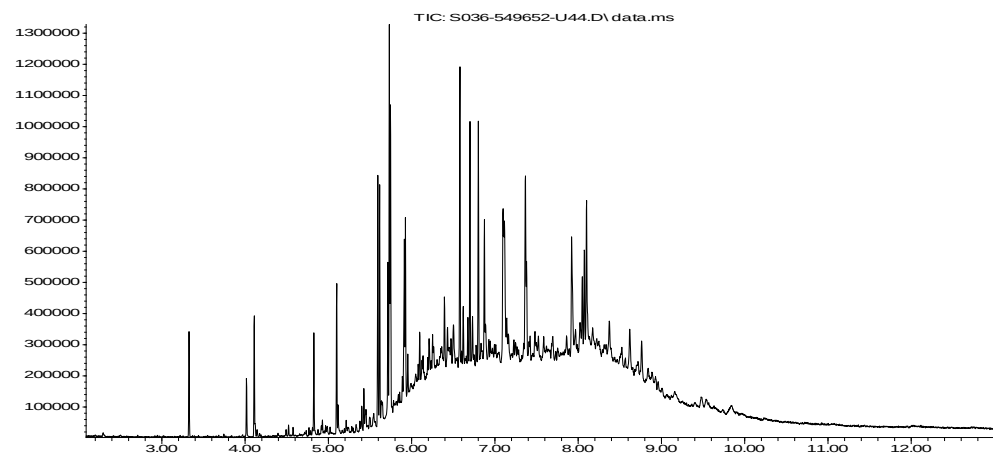
Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
LF-NH1	N/A	L	549651	b	WAC Leachate 10:1	L043B	b
LF-NH2	N/A	L	549652	b	WAC Leachate 10:1	L043B	b
LF-NH3	N/A	L	549653	b	WAC Leachate 10:1	L043B	b
LF-NH4	N/A	L	549654	b	WAC Leachate 10:1	L043B	b



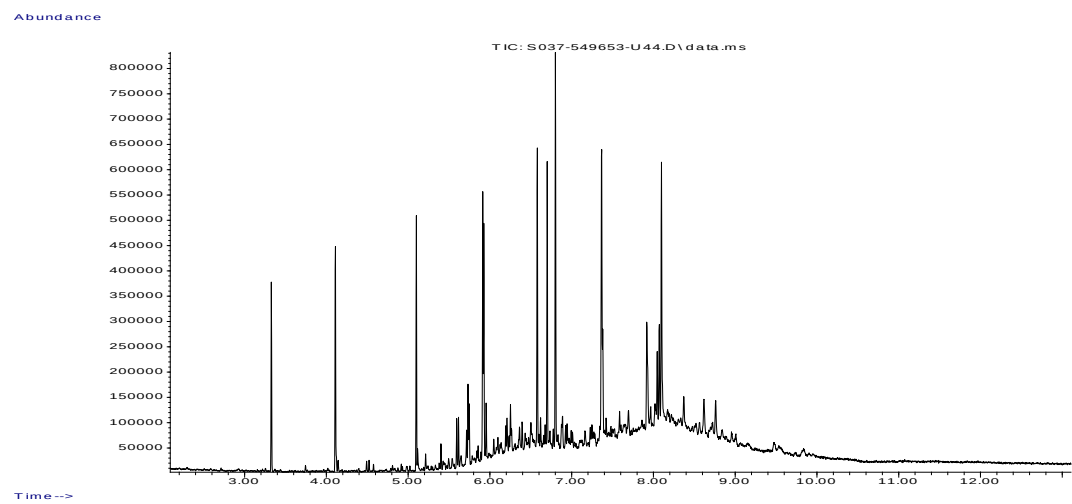
Abundance



Abundance



Time-->



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Analytical Report Number : 25-026629

Project / Site name:	Mondi - Landfill	Samples received on:	09/05/2025
Your job number:	R3430	Samples instructed on / Analysis started on:	21/05/2025
Your order number:		Analysis completed by:	28/05/2025
Report Issue Number:	1	Report issued on:	28/05/2025
Samples Analysed:	6 leachate samples		



Signed: _____

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

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

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

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

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting
air - once the analysis is complete

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Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 25-026629
Project / Site name: Mondri - Landfill

Lab Sample Number	555124	555125	555126	555127	555128
Sample Reference	SP1-Fill-S1	SP1-Fill-S2	SP1-Fill-S3	SP2-Fill-S1	SP2-Fill-S2
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	07/05/2025	07/05/2025	07/05/2025	07/05/2025	07/05/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Test Limit of detection	Test Accreditation Status		

General Inorganics

Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	8	7.7	7.5	5.1	5.9
--------------------------------	------	-----	------	---	-----	-----	-----	-----

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 25-026629
Project / Site name: Mondli - Landfill

Lab Sample Number				555129
Sample Reference				SP2-Fill-S3
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				None Supplied
Date Sampled				07/05/2025
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	Units	Test Limit of detection	Test Accreditation Status	

General Inorganics

Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	7.3
--------------------------------	------	-----	------	-----

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 25-026629

Project / Site name: Mondri - Landfill

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Dissolved Organic Carbon in leachate	Determination of dissolved organic carbon in leachate by the measurement on a non-dispersive infrared analyser of carbon dioxide released by acidification	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

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

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution

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e: megan.jones@smithgrant.co.uk

Analytical Report Number : 25-030200

Project / Site name:	Mondi-Landhill	Samples received on:	10/06/2025
Your job number:	R3430	Samples instructed on/ Analysis started on:	10/06/2025
Your order number:		Analysis completed by:	20/06/2025
Report Issue Number:	1	Report issued on:	20/06/2025
Samples Analysed:	2 soil samples		



Signed: _____

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

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	leachates	- 2 weeks from reporting
	waters	- 2 weeks from reporting
	asbestos	- 6 months from reporting
	air	- once the analysis is complete

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Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 25-030200
Project / Site name: Mondli-Landhill

Lab Sample Number	575526	575527
Sample Reference	LF-Agg-S1	LF-Agg-S2
Sample Number	None Supplied	None Supplied
Water Matrix	N/A	N/A
Depth (m)	None Supplied	None Supplied
Date Sampled	06/06/2025	06/06/2025
Time Taken	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection
		Test Accreditation Status

Stone Content	%	0.1	NONE	55.1	51.2
Moisture Content	%	0.01	NONE	9.8	9.7
Total mass of sample received	kg	0.1	NONE	1	0.2

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	WIK	WIK
Analysis completed	N/A	N/A	N/A	20/06/2025	20/06/2025

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	10.6	9.6
Organic Matter (automated)	%	0.1	MCERTS	2.4	2.8

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	1.2	0.9
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.36
Acenaphthene	mg/kg	0.05	MCERTS	1.6	1.7
Fluorene	mg/kg	0.05	MCERTS	1.3	1.4
Phenanthrene	mg/kg	0.05	MCERTS	8.9	9.3
Anthracene	mg/kg	0.05	MCERTS	2.2	2.2
Fluoranthene	mg/kg	0.05	MCERTS	10	12
Pyrene	mg/kg	0.05	MCERTS	9.2	11
Benzo(a)anthracene	mg/kg	0.05	MCERTS	4.1	4.9
Chrysene	mg/kg	0.05	MCERTS	4.4	4.8
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	4.6	5.4
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.9	2
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4.2	4.7
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.8	2.1
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.44	0.43
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.1	2.4

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	58.1	65.1
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	12
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.6	0.6
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	24
Copper (aqua regia extractable)	mg/kg	1	MCERTS	67	68
Lead (aqua regia extractable)	mg/kg	1	MCERTS	140	120
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	22
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	180	180

Analytical Report Number: 25-030200
Project / Site name: Mondli-Landhill

Lab Sample Number	575526	575527
Sample Reference	LF-Agg-S1	LF-Agg-S2
Sample Number	None Supplied	None Supplied
Water Matrix	N/A	N/A
Depth (m)	None Supplied	None Supplied
Date Sampled	06/06/2025	06/06/2025
Time Taken	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection
		Test Accreditation Status

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	5.1	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	57	71
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	140	180
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	200	250

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.02	MCERTS	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	2.9
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	9.7	17
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	71	84
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	110	130
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	190	230

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number : 25-030200

Project / Site name: Mondri-Landhill

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
575526	LF-Agg-S1	None Supplied	None Supplied	Brown sandy loam with vegetation and stones
575527	LF-Agg-S2	None Supplied	None Supplied	Brown sandy loam with vegetation and stones

Analytical Report Number : 25-030200
Project / Site name: Mondri-Landhill

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088-PL	D/W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

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Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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The result for sum should be interpreted with caution

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Analytical Report Number : 25-032694

Project / Site name:	MONDI	Samples received on:	19/06/2025
Your job number:	414	Samples instructed on/ Analysis started on:	19/06/2025
Your order number:	25983	Analysis completed by:	26/06/2025
Report Issue Number:	1	Report issued on:	26/06/2025
Samples Analysed:	6 leachate samples		



Signed: _____

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

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	leachates	- 2 weeks from reporting
	waters	- 2 weeks from reporting
	asbestos	- 6 months from reporting
	air	- once the analysis is complete

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Analytical Report Number: 25-032694
Project / Site name: MONDI

Your Order No: 25983

Lab Sample Number	589480	589481	589482	589483	589484
Sample Reference	LFTP1	LFTP2	LFTP3	LFTP4	LFTP5
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	1.20-3.10	1.80-3.10	2.50-3.20	2.10-3.90	0.40-2.70
Date Sampled	24/04/2025	24/04/2025	24/04/2025	24/04/2025	24/04/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1	ISO 17025	< 1.0	< 1.0	3.3	< 1.0	2.1
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (dissolved)	µg/l	0.4	ISO 17025	< 0.4	< 0.4	0.6	< 0.4	0.5
Copper (dissolved)	µg/l	0.7	ISO 17025	19	24	20	25	21
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	5.6	8.6	4.9	5.6	4.3
Zinc (dissolved)	µg/l	0.4	ISO 17025	24	19	17	51	25

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 25-032694
Project / Site name: MONDI

Your Order No: 25983

Lab Sample Number				589485
Sample Reference				LFTP6
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.60-3.00
Date Sampled				24/04/2025
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1	ISO 17025	< 1.0
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08
Chromium (dissolved)	µg/l	0.4	ISO 17025	0.6
Copper (dissolved)	µg/l	0.7	ISO 17025	32
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	2.5
Zinc (dissolved)	µg/l	0.4	ISO 17025	19

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 25-032694
Project / Site name: MONDI

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
NRA Leachate 10:1		In-house method based on interim NRA guidance (1994)	L020B	W	NONE

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The result for sum should be interpreted with caution

Appendix B

Compliance Testing: Geotehcnical

TEST REPORT

Client Urban Regen Ltd

Address Langley Road
Pendlebury
Salford
M6 6FG

Contract Mondi Mill

Job Number MRN 25027/55A

Date of Issue 29 May 2025

Page 1 of 4

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
- 3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.
- 4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.
- 5 The results included within the report are representative of the samples submitted for analysis.
- 6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.



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Also at: London: 020 8523 1999

Murray Rix is the trading name of Murray Rix (Northern) Limited. Registered in England 2878361

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

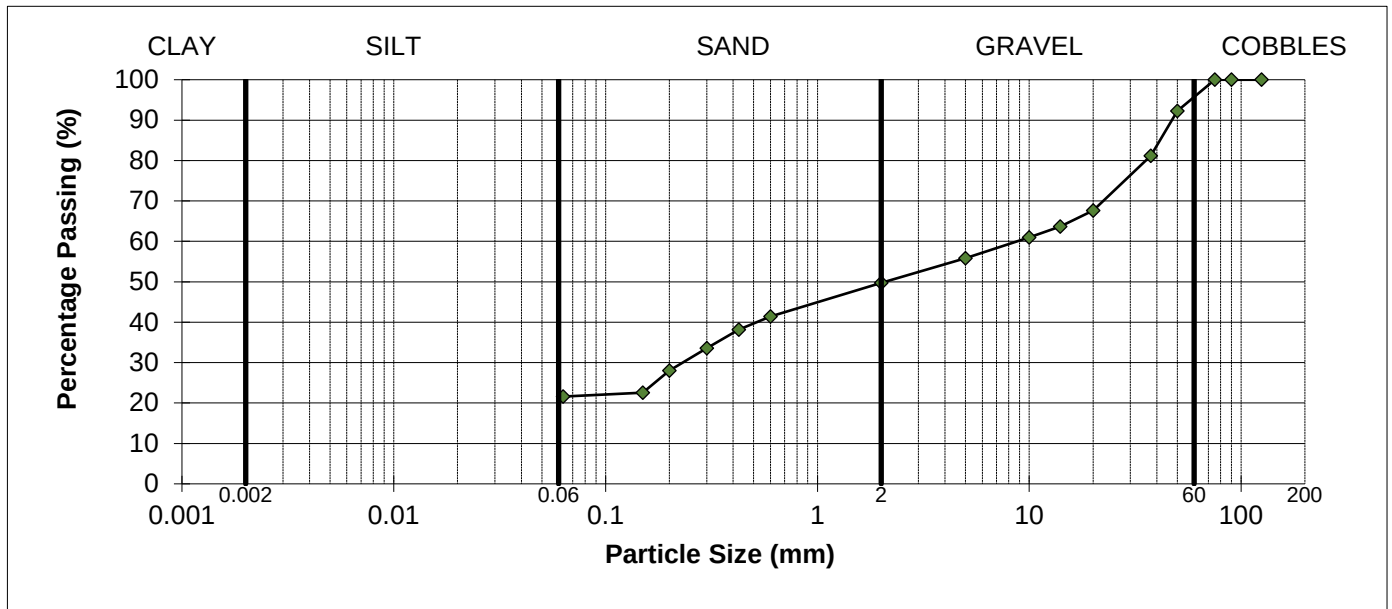
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	Urban Regen Ltd
SITE	Mondi Mill
JOB NUMBER	MRN 25027/55A

SAMPLE LABEL	Trial 1	DATE SAMPLED	06-May-25
LAB SAMPLE No	5075502	DATE RECEIVED	08-May-25
DATE TESTED	12-May-25	SAMPLED BY	Client

MATERIAL	Treated
ADVISED SOURCE	Site Won

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	56	
90	100		2	50	15-80
75	100		0.6	41	
50	92		0.425	38	
37.5	81		0.3	34	
20	68		0.2	28	
14	64		0.15	23	
10	61		0.063	22	15-80



REMARKS

As received water content = 13.1%

Sample complies with the advised grading specification for a 2C material (SHW Series 600, Feb. 2017)

SIGNED

NAME

S.J. Hutchings
(Director)

DATE

29-May-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

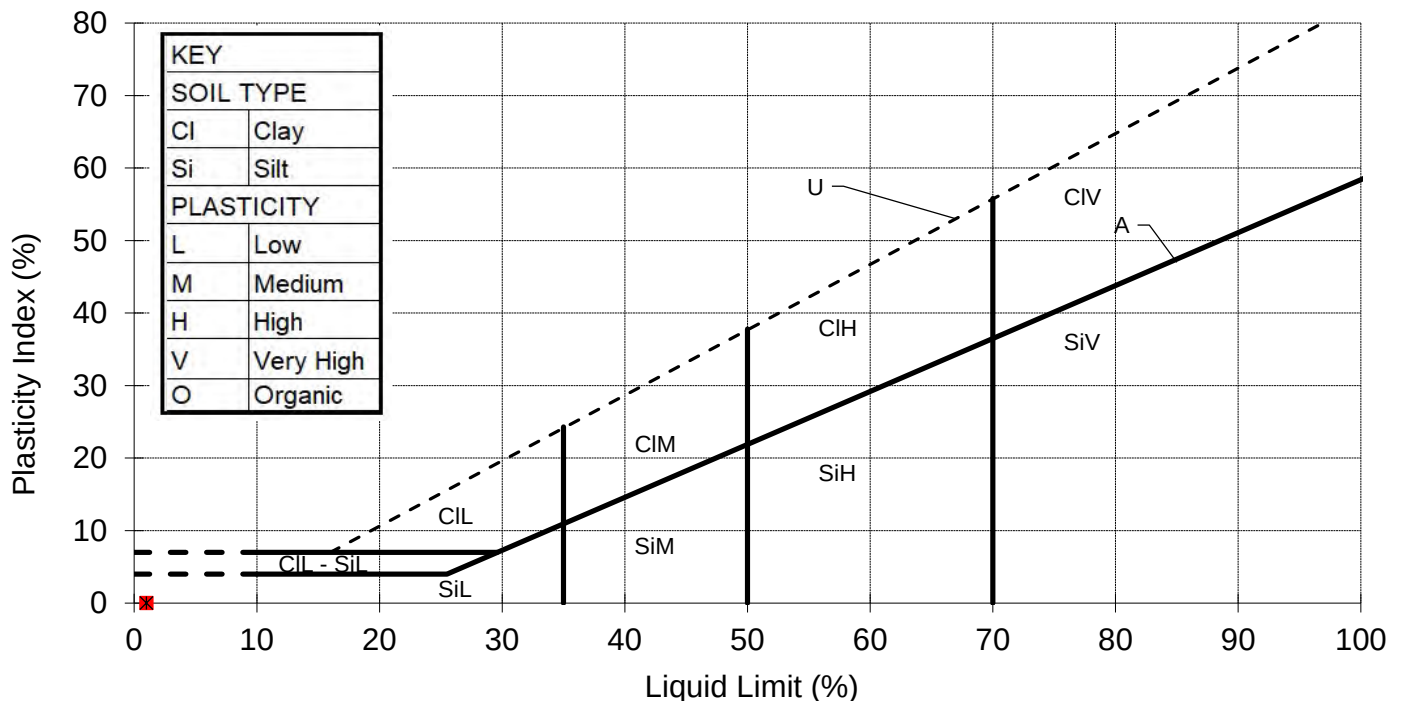
CLIENT	Urban Regen Ltd		
SITE	Mondi Mill		
JOB NUMBER	MRN 25027/55A		

SAMPLE LABEL	Trial 1	DATE SAMPLED	06-May-25
SAMPLE No.	5075502	DATE RECEIVED	08-May-25
DATE TESTED	12-May-25	SAMPLED BY	Client

MATERIAL	Treated		
ADVISED SOURCE	Site Won	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	N/A	N/A	N/A	
Determination 2 (avg)	N/A	N/A		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
13.1	N/A	Non Plastic	N/A	38



REMARKS

Sample did contain a small porportion of plastic material but was found to be non plastic due to the fine sand content..

SIGNED

NAME S.J. Hutchings
(Director)

DATE 29-May-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

DRY DENSITY/WATER CONTENT RELATIONSHIP 2.5kg RAMMER

BS 1377-2:2022 Cl.11

PARTICLE DENSITY METHOD BS 1377-2:2022 Cl.9.2

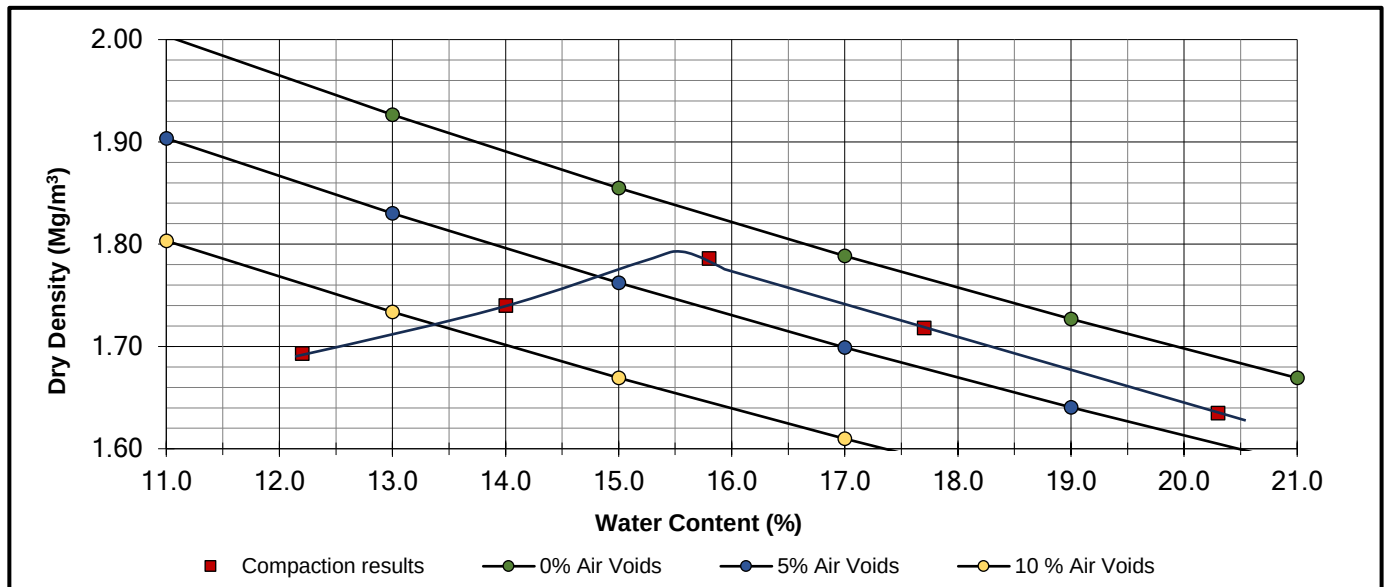
CLIENT	Urban Regen Ltd		
SITE	Mondi Mill		
JOB NUMBER	MRN 25027/55A		

SAMPLE LABEL	Trial 1	DATE SAMPLED	06-May-25
SAMPLE NUMBER	5075502	DATE RECEIVED	08-May-25
DATE TESTED	12-May-25	SAMPLED BY	Client

MATERIAL	Treated		
ADVISED SOURCE	Site Won		
PRE TREATMENT	Air Dried / Separate Batches		

RETAINED 37.5mm	19 %	GRADING ZONE	Zone X
RETAINED 20mm	32 %	PARTICLE DENSITY	2.57 Mg/m ³ (Assumed)

POINT NUMBER	WATER CONTENT (%)	DRY DENSITY (Mg/m ³)
1	12.2	1.693
2	14.0	1.740
3	15.8	1.786
4	17.7	1.718
5	20.3	1.635



OPTIMUM WATER CONTENT	16	(%)
MAXIMUM DRY DENSITY	1.79	(Mg/m ³)

REMARKS

NAME S.J. Hutchings
(Director)

SIGNED

DATE 29-May-25

TEST REPORT

Client Urban Regen Ltd

Address Langley Road
Pendlebury
Salford
M6 6FG

Contract Mondi

Job Number MRN 25027/97

Date of Issue 14 July 2025

Page 1 of 4

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
- 3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.
- 4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.
- 5 The results included within the report are representative of the samples submitted for analysis.
- 6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.



Andrew House, Hadfield Street, Dukinfield, Cheshire SK16 4QX Tel: 0161 475 0870
Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

Murray Rix is the trading name of Murray Rix (Northern) Limited. Registered in England 2878361

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

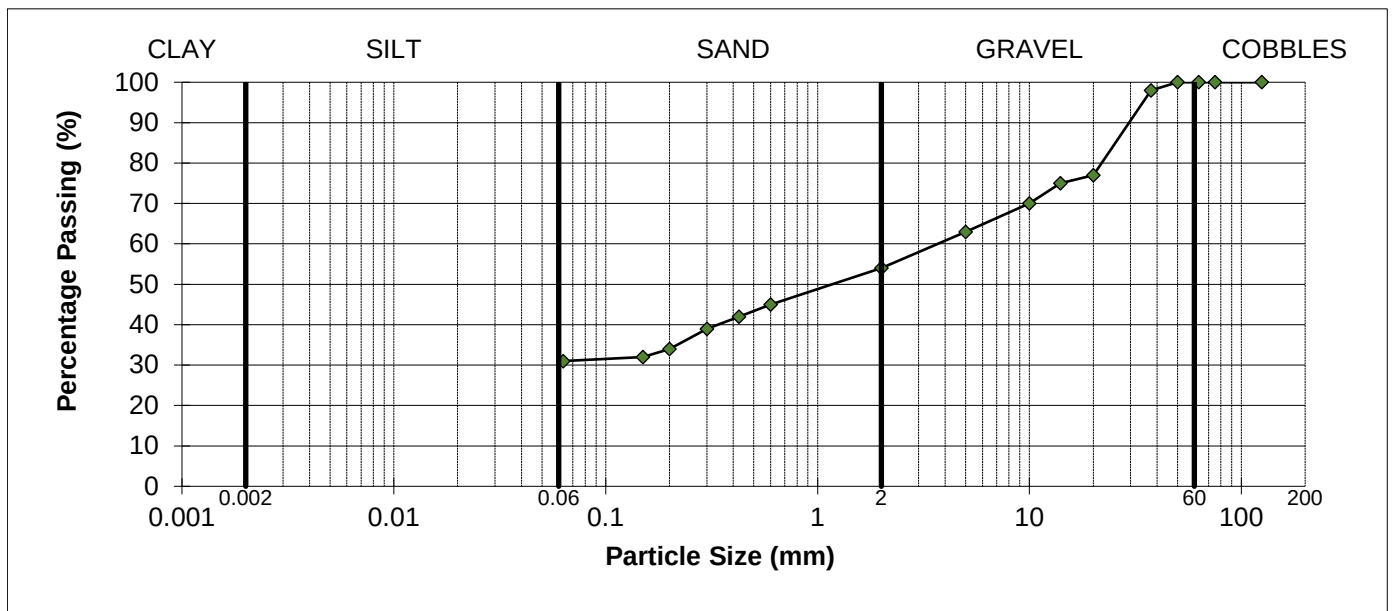
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	Urban Regen Ltd
SITE	Mondi
JOB NUMBER	MRN 25027/97

SAMPLE LABEL	Trial 2	DATE SAMPLED	18-Jun-25
LAB SAMPLE No	5110801	DATE RECEIVED	20-Jun-25
DATE TESTED	25-Jun-25	SAMPLED BY	Client

MATERIAL	General Fill
ADVISED SOURCE	Site Won

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	63	
75	100		2	54	15-80
63	100		0.6	45	
50	100		0.425	42	
37.5	98		0.3	39	
20	77		0.2	34	
14	75		0.15	32	
10	70		0.063	31	15-80



REMARKS

Sample complies with the advised grading specification for a 2C material (SHW Series 600, Feb. 2017)
As received water content = 23.8%

SIGNED



NAME

O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE

14-Jul-25

MURRAY RIX

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TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

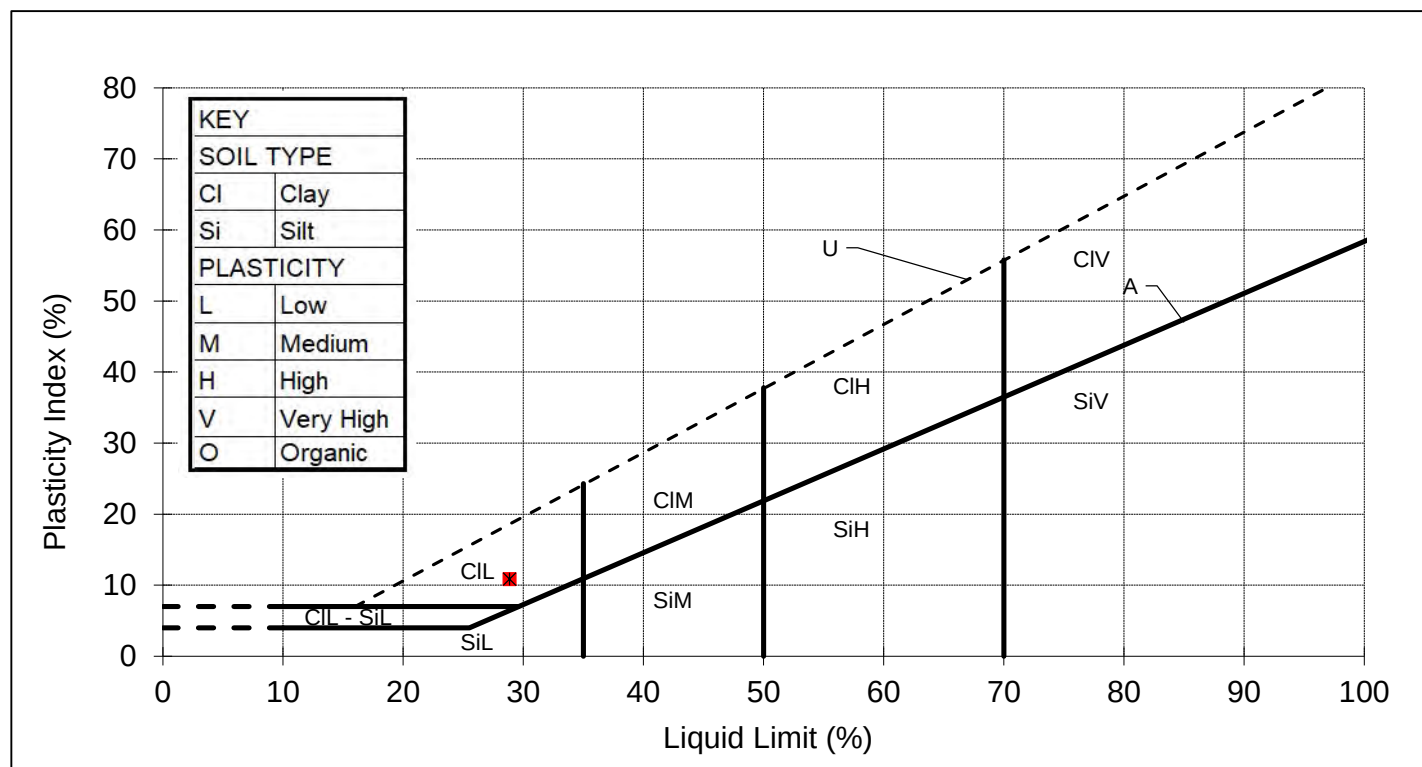
CLIENT	Urban Regen Ltd
SITE	Mondi
JOB NUMBER	MRN 25027/97

SAMPLE LABEL	Trial 2	DATE SAMPLED	18-Jun-25
SAMPLE No.	5110801	DATE RECEIVED	20-Jun-25
DATE TESTED	02-Jul-25	SAMPLED BY	Client

MATERIAL	General Fill		
ADVISED SOURCE	Site Won	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	22.5	29.9	0.967	
Determination 2 (avg)	22.3	29.8		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
23.8	29	18	11	42



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE

14-Jul-25

MURRAY RIX

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TEST CERTIFICATE

DRY DENSITY/WATER CONTENT RELATIONSHIP 2.5kg RAMMER

BS 1377-2:2022 Cl.11

PARTICLE DENSITY METHOD BS 1377-2:2022 Cl.9.2

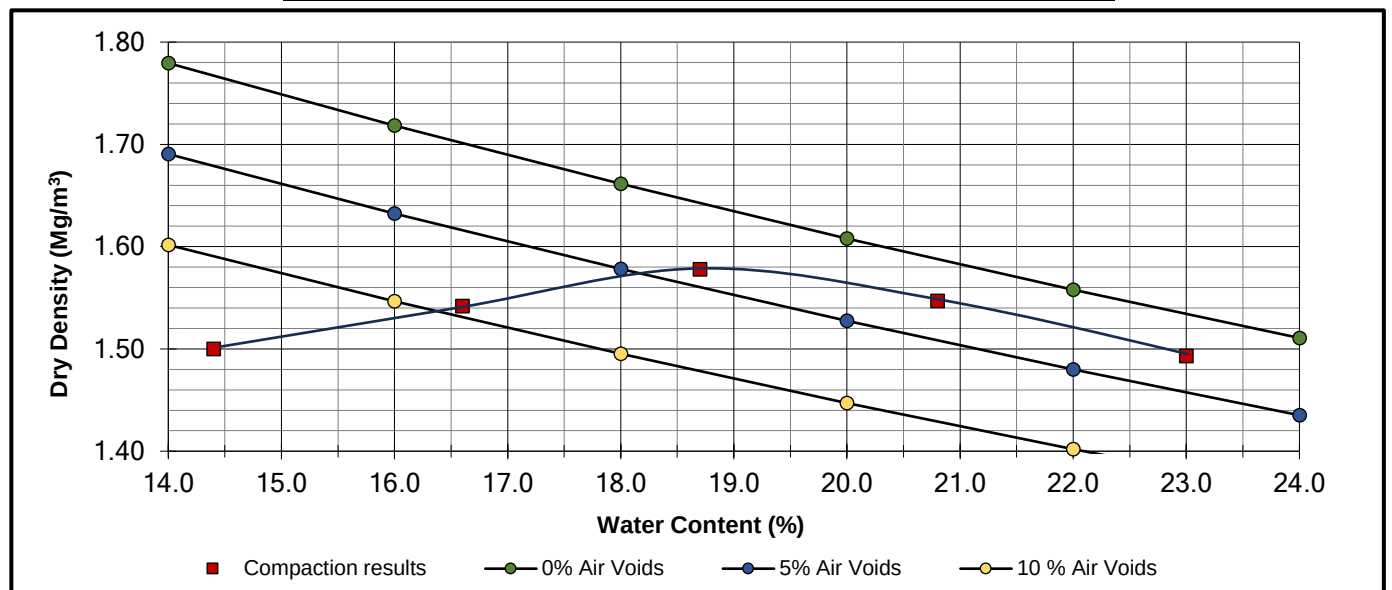
CLIENT	Urban Regen Ltd		
SITE	Mondi		
JOB NUMBER	MRN 25027/97		

SAMPLE LABEL	Trial 2	DATE SAMPLED	18-Jun-25
SAMPLE NUMBER	5110801	DATE RECEIVED	20-Jun-25
DATE TESTED	25-Jun-25	SAMPLED BY	Client

MATERIAL	General Fill		
ADVISED SOURCE	Site Won		
PRE TREATMENT	Air Dried / Separate Batches		

RETAINED 37.5mm	2	%	GRADING ZONE	Zone 4	
RETAINED 20mm	23	%	PARTICLE DENSITY	2.37	Mg/m ³ (Measured)

POINT NUMBER	WATER CONTENT (%)	DRY DENSITY (Mg/m ³)
1	14.4	1.500
2	16.6	1.542
3	18.7	1.578
4	20.8	1.547
5	23.0	1.493



OPTIMUM WATER CONTENT	19	(%)
MAXIMUM DRY DENSITY	1.58	(Mg/m ³)

REMARKS

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

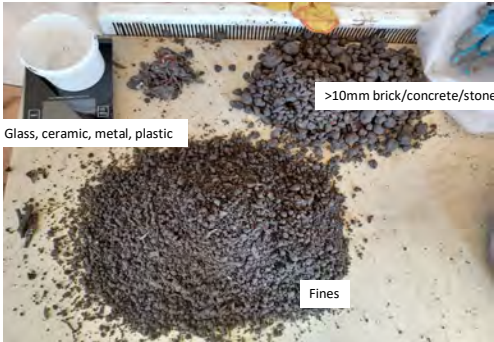
SIGNED

DATE 14-Jul-25

Appendix C

Compliance Testing: Forensic Constituents

 Materials Forensic Constituents (Adopted RB17 method)			
Site Name:	Mondi Papers	Site Address:	Acre Bottom, Ramsbottom
Stockpile / Sample Reference:	Fill-S1	Stockpile Volume (approx):	N/A
Date of test	07.05.25	Treatment Date(s):	N/A
Material Description:	Dark brown very gravelly clay with plastic, brick and glass fragments. Gravel is rounded to subangular coarse to fine.		
Photographs showing whole sample emptied out onto sheet and following sorting into constituent parts	Sample -Pre Sorting  Sample -Post Sorting 		
No Sub Samples (Min 10)		Total Sample Mass Composite (Grams)	5,924
Sampler	MJ	Tester	MJ
Volumes Acceptable Materials (Grams)		Volumes Class X Unacceptable Materials (Grams)	
Volume Passing 10mm Sieve (Fines)	4049	Carboard / Paper	
Residual Consisting of Cohesive Soil (I)		Plastic/Fibreglass/ Rubber	28
>10mm Brick/Concrete/ Stone	1837	Textiles	
Tarmac			
>10mm Other inert (glass ceramic, metal)		Timber/Vegetation	10
Total Volume Acceptable	5,886	Total Volume Class X	38
Total % Acceptable	99.35854153	Total % Unacceptable	0.641458474
Pass / Fail	Pass		

Materials Forensic Constituents (Adopted RB17 method)			
Site Name:	Mondi Papers	Site Address:	Acre Bottom, Ramsbottom
Stockpile / Sample Reference:	Fill-S2	Stockpile Volume (approx):	N/A
Date of test	07.05.25	Treatment Date(s):	N/A
Material Description:	Dark brown very gravelly clay with plastic, brick and glass fragments. Gravel is rounded to subangular coarse to fine.		
Photographs showing whole sample emptied out onto sheet and following sorting into constituent parts	Sample -Pre Sorting 		Sample -Post Sorting 
No Sub Samples (Min 10)		Total Sample Mass Composite (Grams)	4,911
Sampler	MJ	Tester	MJ
Volumes Acceptable Materials (Grams)		Volumes Class X Unacceptable Materials (Grams)	
Volume Passing 10mm Sieve (Fines)	3001	Carboard / Paper	
Residual Consisting of Cohesive Soil (I)		Plastic/Fibreglass/ Rubber	44
>10mm Brick/Concrete/ Stone	1853	Textiles	
Tarmac			
>10mm Other inert (glass ceramic, metal)	6	Timber/Vegetation	7
Total Volume Acceptable	4,860	Total Volume Class X	51
Total % Acceptable	98.96151497	Total % Unacceptable	1.038485034
Pass / Fail	Pass		

Appendix B

Soils Treatment Method Statement

Soils Treatment Method Statement

Method statement for the Treatment of Historical Tip Materials to produce aggregate & soil substitute for use as engineered fill

Mondi Mill, Ramsbottom

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- 4.2 Materials
- 4.3 Contractors and Personnel

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- 5.2 Site compound
- 5.3 Traffic management
- 5.4 Ecological mitigation
- 5.5 Existing services
- 5.6 Preparatory Earthworks

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- 6.3 Works access/egress arrangements
- 6.4 Soils Excavation and Transfer
- 6.5 Soils Treatment
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- D1 Acceptance Criteria- Remediation Strategy**
- D2 Acceptance Criteria – Earthworks Specification**
- E TCM/EPOC Inspection Proforma**
- F Tracking Proforma**

1.0 Introduction

Urban Regen Ltd. is undertaking a programme of remediation and site preparation at part of the former the former Mondi Paper Mill, Ramsbottom to achieve a residential end land use by Ecclestone Homes Ltd. Accessed off Bridge St, the site is located between the River Irwell and the East Lancashire Railway with Acre Bottom Cricket Ground to the south-see Appendix A.

Historically, in the 19th and 20th centuries, the site formed part of a major Paper Mill with associated power generation, reservoirs, and effluent treatment. The site contains areas of waste deposited sometime between 1976 and 1990 in a historical landfill operated under old licensing arrangements (the “Tip”), now surrendered.

Site investigation within the tips has been limited due to the presence of overlying soil mounds (deposited after the tip had closed) but appears to extend laterally over the footprint of a historical reservoir and extend to about 2-3m below the surrounding contemporary ground level. Where descriptions are available these have included general and household wastes, textiles, wood, metals & plastic inclusions with strong odour and leachate. It is assumed that the historical wastes potentially containing deleterious or otherwise unsuitable materials.

Site contamination (defined as concentration above criteria set for the protection of human health or controlled waters), is from hydrocarbons and heavy metals/metalloids. The Tip has not been confirmed to contain unacceptable levels of contamination by site investigation and risk assessment completed to date, however some contamination is anticipated and it is confirmed to contain mixed wastes and organic soils that would be unsuitable for use on the site in their current state.

The site is being remediated under the provisions of a Remediation Strategy and Geotechnical Performance Specification produced by Consultants Betts Associates Ltd and Groundsolve Ltd respectively which allows for the selective excavation and removal of wastes and their replacement with engineered fill. There is a n earthworks balance requiring maximum use of

site-generated materials to achieve final planned development levels to reduce import requirements.

The site MMP is yet to be developed pending Remediation Strategy approval by the regulators, however is anticipated to allow the re-use of site generated materials, however the waste materials in the Tips are specifically excluded from the Definition of Waste: Development Industry Code-of Practice. Therefore, an alternative recovery route must be sought to allow the safe and sustainable reuse of suitable materials.

This material in the tips will need physical treatment to render it suitable under the Enabling Works Strategy. If unacceptable levels of contamination are encountered then this will need to be dealt with under the provisions of the Remediation Strategy by removal from site, or treatment under an appropriate Permit.

The treatment of waste soils and construction /demolition arisings within the Tip to generate suitable fill materials is to be carried out under Standard Rules Mobile Plant Environmental Permit EPR/PP3924SA to deploy Mobile Plant for the Treatment of Waste to produce soil, soil substitutes and aggregate (see Appendix B1 & B2). This was formerly the SR2010:No11 Mobile Plant Permit, now withdrawn and consolidated into SR2022 No 2: mobile treatment of waste to produce soil, soil substitutes and aggregate (see Appendix B4 & B5).

This Method Statement describes the activities to be carried out to enable the treatment and recovery of suitable materials in the Tips to be completed in accordance with the overall Remediation Strategy and Earthworks Specification and prevent the generation of harmful, polluting or nuisance emissions.

2.0 Planning permission

To allow development works to be carried out, Ecclestone Homes have obtained the following planning permission from Bury Council:

Application reference number: 70222

Planning Condition 4 requires the investigation, assessment, remediation, and verification of Land Contamination.

4 No development, other than demolition shall commence until:

- A contaminated land Preliminary Risk Assessment report to assess the actual/potential contamination and/or ground gas/landfill risks at the site shall be submitted to, and approved by, the Local Planning Authority;*
- Where actual/potential contamination and/or ground gas/landfill risks at the site have been identified, detailed site investigation and suitable risk assessment shall be submitted to, and approved by, the Local Planning Authority;*
- Where remediation/protection measures is/are required, a detailed Remediation Strategy shall be submitted to, and approved by, the Local Planning Authority;*

(For the full decision notice and condition wording see Appendix C)

Urban Regen understands that an Outline Remediation Strategy prepared by Betts Geo Ltd that defines the Remediation Objectives for the site has been submitted to the Local Planning Authority and is accepted in principle.

This Method Statement complies with the overall Outline Remediation Strategies & Construction Environmental Management Plan and provides additional detail for the contractor, verifier, and other stakeholders relevant to the implementation of Tip Materials treatment.

3.0 Notifications

3.1 Local Planning Authority

The Outline Remediation Strategy has been submitted to the Local Planning Authority and includes provision for soils treatment and Remediation Criteria based on generic risk-based site- Remediation Targets which will be used to assess the chemical suitability of materials.

3.2 Environment Agency

As a consultee of the Local Authority, and for compliance with the Definition of Waste: Development Industry Code of Practice rules for declaring an MMP, the Environment Agency has been provided with the Remedial Strategy and asked whether they object to the declaration of an MMP for the reuse of materials. Given that the Remediation Strategy is awaiting approval, no MMP for the site is yet declared.

As the treatment of the Tip materials requires deployment of the relevant mobile plant Permit, activities cannot commence until written approval of the application from the Environment Agency has been received having been given at least 25 Days notification by deployment form MPD1. The accompanying Generic Risk Assessment¹ identifies the risks of using mobile plant and this Method Statement details the actions for managing these risks; the Environment Agency will assess whether residual risks exist and compliance with the conditions of the permit and deployment.

The EA have been consulted on the status of two mounds of soil present at the surface within the footprint of the Tip. Urban Regen have been advised that as deposition of the materials occurred after the landfill had closed and site licence was no longer active. This material therefore does not form part of the Tip and can be relocated under the site MMP.

¹ <https://www.gov.uk/government/publications/sr2022-no-2-mobile-treatment-of-waste-to-produce-soil-soil-substitutes-and-aggregate/sr2022-no-2-generic-risk-assessment-mobile-treatment-of-waste-to-produce-soil-soil-substitutes-and-aggregate>

3.3 CLAIRE

Under The Definition of Waste: Development Industry Code of Practice, a Material Management Plan (MMP) for re-use on-site, is the preferred route to recover most materials for re-use the site preparation and remediation works. Certain site-generated materials may require processing and treatment fore reuse under a Site of Origin MMP.

The MMP must be developed which contains the lines of evidence to demonstrate with certainty that the imported material and site generated materials is required to enable the permitted development, and that the materials will be suitable for their intended use. The MMP must be reviewed by an independent Qualified Person (their declaration confirming that it is compliant with the Code of Practice), and registered with the administrators of the scheme (CLAIRE).

Urban Regen intends to declare MMPs for the re-use of site-generated materials however these will not extend to the Tip materials; the excavation of these areas, recovery of materials and their use is therefore not covered by the site MMPs.

A separate MMP may be required for further materials transfer in relation to cover system soils for garden POS and soft landscaping.

3.4 Other Stakeholders

The developer, piling sub-contractor and warrantee providers will have additional requirements, although these are typically related to end-product specifications and approvals by the regulators and provision of independent verification reports demonstrating that the approved remediation and earthworks specifications have been adequately implemented.

4.0 Resources

4.1 Plant

Plant likely to be employed for the works include:

- 2 no. 25T-35T tracked excavators c/w attachments.
 - Riddle bucket
 - Screening Bucket (Alu Bucket)
 - Grab
 - Ditching bucket
- Powerscreen R400 mobile jaw crusher (or equivalent)
- Powerscreen Warrior 1400 inclined scalping screen (or equivalent)
- 1 no 10-15T capacity dump truck.
- Tractor Bowser
- Mobile fuel bowser.
- Jetwash
- Skips and loaders (for materials deliveries/waste removal)

All plant will be accompanied with the relevant certification in accordance with '*PUWER Regulations 1998*' and provided to the Principal Contractor for entry into the relevant register of the Construction Phase Plan

All machines must allow the operator to always have a minimum of 1m visibility around the full perimeter of the machine.

All self-propelled mobile plant operated on site must have an amber warning beacon to alert pedestrians and other plant users of operational equipment in the immediate vicinity.

All plant (including attachments) must be inspected and maintained daily in accordance with the manufacturer's recommendations prior to use (or post re-configuration); a written report made weekly and provided to the Principal Contractor for entry into the relevant register of the Construction Phase Plan

4.2 Materials

Anticipated materials for the works include:

- Gas oil
- Engine oil
- Hydraulic oil
- Suitable spill kits

4.3 Contractors and Personnel

All operations involving soils treatment are to be carried out by Urban Regen Ltd, working in accordance with Urban Regen Management Procedures (Rev 4) January 2024.

Urban Regen Ltd. as Principal Contractor will review all method statements and advise on any additional or supplementary procedures/measures necessary to comply with the site Health, Safety, Environment and Quality requirements.

Management/Supervisory Personnel likely to be employed for the works include:

- Contracts Director (Gary Owen - Urban Regen).
- EPOC/WAMITAB technically competent manager (Ben Thomas - Urban Regen).
- Site Manager & Engineer (Iain Bentley- Urban Regen)
- Independent Consultants (Dan Wayland – Smith Grant LLP & Eve Rowland - Groundsolve Ltd).

All personnel are to be in possession of a valid and suitable CPCS/CCDO/CSCS/NPORS card or similar. Copies of all certification are to be provided to the Principal Contractor for entry into the relevant register of the Construction Phase Plan. Random certification checks are to be carried out, as necessary.

All personnel are to sign in and out of site daily using the relevant register of the Construction Phase Plan.

All site personnel are to receive a site-specific Safety Induction by the Principal Contractor, and associated Method Statement Briefing prior to commencing any works on site. These are to be signed for and entered into the relevant register of the Construction Phase Plan.

All staff, operatives and sub-contractors working in the Tip and waste treatment area will receive a specific briefing on the requirements of this method statement by the EPOC/WAMITAB qualified Technically Competent Manager.

Once characterised and classified, removal of Waste will be carried out by a registered waste carrier to appropriate Permitted facilities.

5.0 Enabling works

Prior to any materials transfer or treatment being carried out the following operations must be completed:

5.1 Site security

High standards of site security are to be always maintained.

The wider site is secured by palisade/temporary hoarding fencing onto publicly accessible areas and adjacent residential/commercial properties and roads. The treatment area is separated from the other construction areas and the access to the Cricket Club by temporary fencing. Gates accessing the wider site are to be kept always locked, except for access during site working hours.

Formal fencing inspections are to be carried out weekly by the Principal Contractor; being recorded on the Fencing Inspection Form, and held on-site in the relevant register of the Construction Phase Plan. Temporary repairs to any damaged fencing are to be carried out immediately upon discovery to prevent third party access, with permanent repairs carried out as soon as is practicable.

Outside of working hours the following actions are also to be taken (if necessary):

- Treatment Area is to be contained, and;
- Immobilise vehicles and plant.

5.2 Site compound

The Principal Contractors site compound is established inside the southern site entrance off Bridge St and is to contain the welfare facilities. On-site car parking is to be adjacent to the site compound.

The welfare facilities are to provide suitable sanitary conveniences, washing facilities, drinking water, and facilities to prepare and eat food. A detailed list of welfare provisions is detailed in the Construction Phase Plan.

No smoking is allowed within the welfare facilities or on operational site. Smoking is only permitted in an area specifically designated by the Principal Contractor.

5.3 Traffic management

A suitable traffic management system is to be established by the Principal Contractor to detail access arrangements, and control vehicle/plant/pedestrian movements around site, to minimise interfaces/potential conflicts.

Particular care will be required around the access to the Cricket Club which bisects the Tips area and where accesses to be maintained. The traffic management plan is to account for the movement of

5.4 Ecological mitigation

Prior to the works commencing, all necessary ecological mitigation works are to be implemented as detailed in the associated Construction Environmental Management Plan.

Japanese Knotweed impacted materials growing on the mound of soi overlying the landfill are to be removed under specialist supervision and disposed off site before any works commence.

5.5 Existing services

Details of all known services in and around the immediate work area are to be provided to the Principal Contractor by the Client prior to any works commencing (to be included in the PCI). This information is to be always held on-site within the relevant register of the Construction Phase Plan.

All relevant services are to be terminated by the Client prior to works commencing with the associated disconnection certification provided, and entered into the relevant register of the Construction Phase Plan.

Any services which are to remain live within or around the immediate work area, or may be impacted by the works i.e., subject to the movement of heavy plant, ground transmitted

vibration from the operation of plant, or from falling debris, are to be always protected. Any protective measures implemented should be as specified by the service providers.

Specifically, the adjacent Goit/Drain that discharges to the River Irwell and other relict site drainage must be protected from any runoff/dust emissions associated with the treatment works.

5.6 Preparatory Earthworks

Following invasive species treatment (removal of Japanese Knotweed and impacted materials), two mounds of soil placed over the landfill during later site works (after the tip had closed) must be removed to facilitate the excavation treatment operation. Urban Regen has been advised this material can be relocated within the site and dealt with under the wider site remediation and earthworks MMP.

The adjacent area of concrete slab is suitable to provide an impermeable surface for quarantine, treatment, and storage, however some preparatory works are required to prevent runoff and protect the open section of the Goit/drain that flows parallel to the east boundary of the Tips/Treatment area, adjacent to the Tip. A series of ditches, bunds, silt traps and sumps will be constructed prior to the commencement of works to catch any runoff or discharge from the excavations, temporary stockpiles, treatment areas or quarantined materials / residues awaiting disposal.

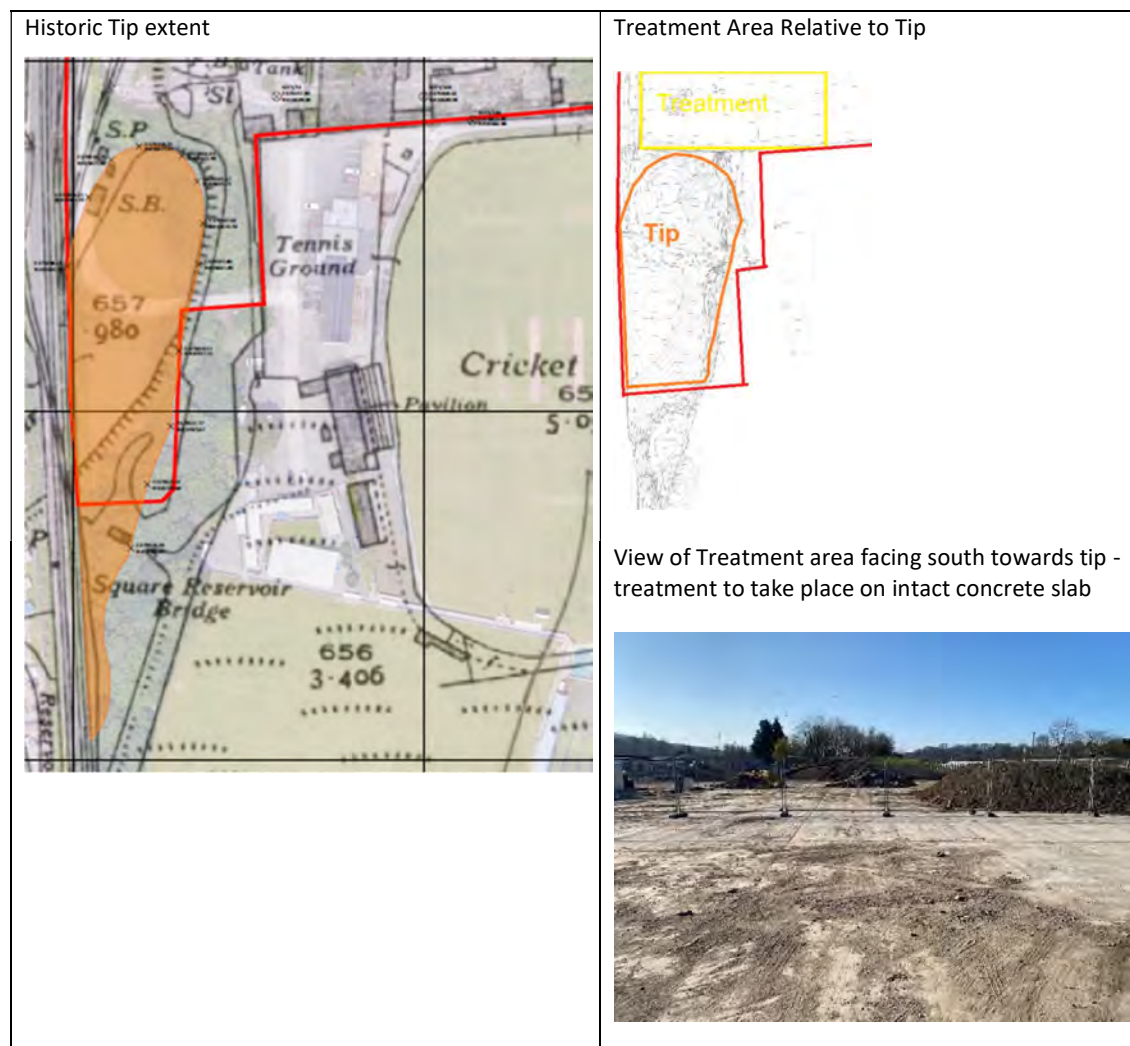
Due to the limited site investigation information available for the tips, following removal of the mounds, trial pits will be excavated to inspect the waste materials and assess whether they can be rendered suitable for reuse within the area through the physical treatment allowed under the planned Mobile Plant Permit deployment. This activity will be undertaken by Betts Associates on behalf of Ecclestone Homes in advance of any waste treatment works starting.

6.0 Materials Treatment Operations

6.1 Materials treatment area

It is intended that the treatment area will be confined to the historical tip footprints to avoid hauling materials, minimise the potential for cross contamination and allow the operations under the Permit deployment to be isolated from other site activities. The boundary for the tips from EA records has been overlaid onto the site topographical survey and set out on site.

Figure 6.1 Tip Extents and treatment area



All mobile plant used for the treatment will be contained within these areas while in operation. This is to be located as far as is practicable away from the site boundaries with occupied land, drains and watercourses, so that the area can be readily contained to prevent harmful, nuisance, or polluting emissions (see Appendix A1).

The quarantine and treatment facility does not have to be sufficiently large to enable all the excavated material to be accommodated at any one time as the material will be processed in batches and replaced placed to the low areas immediately following confirmation each batch is compliant with the site acceptance criteria and earthworks specification (has met End of Waste test). It is envisaged that up to 500m³ will be stored or in treatment at any one time.

Wastes that cannot be recovered will be moved to the designated holding areas for storage prior to disposal, these will be contained within skips, with the exception of bulk waste soils which will be formed to temporary stockpiles. Hazardous waste materials will be stored in the soils treatment area on the impermeable, bunded surface retained for this purpose. The Location of the Quarantine, Storage and treatment areas are shown in Appendix A1.

Prior to the placement of any materials, the storage and treatment areas are to be inspected: as the materials need to be compliant with the site Remediation Criteria, generation of polluting leachate should not be an issue, however the materials will be stored and treated a minimum of 10m away from the “Goit” that passes to the east of the Tip and Treatment Area and the site boundary and the watercourse is to be protected by silt bunds and ditches where it flows above ground. The locations of the existing and planned drainage networks are provided in Appendix A2.

6.2 Storage

All materials delivered to site are to be stored within the confines of the approved storage areas only.

When not in use, site plant associated with the operations are to be stored securely, off hardstanding, in the plant storage area located adjacent to the compound.

6.3 Works access/egress/deliveries

Access/egress arrangements are to be maintained throughout the works. Deliveries of plant/materials are to access site either through the site traffic access off Bridge Street and the Cricket Club access road, using the existing gated site entrances and temporary haul roads to access the quarantine and treatment area.

Other plant and materials will be delivered to the treatment areas by HIAB/telehandler where possible; if not, a tracked excavator using suitable lifting accessories in accordance with the Lift Plan will be used.

All deliveries are to be co-ordinated by the Principal Contractor, with full and detailed records kept in the relevant register of the Construction Phase Plan.

Contractors delivering to the site are to be provided with Traffic Management Rules detailing all access requirements prior to attending site.

Deliveries are to be confined to normal working hours only (although movement of particularly large plant may need to take place at other times).

No construction vehicles are to block roads at any time. Special arrangements are to be made in respect of the southern part of the Tip as the existing access to the cricket club will need to be maintained. It is envisaged that a temporary crossing point will need to be developed.

Road vehicles delivering plant and materials to the site are to always remain on hard standings. Prior to leaving site, these vehicles are to be inspected to ensure that they are sufficiently clean, a record of which is to be maintained and entered into the relevant register of the Construction Phase Plan. If necessary, drivers are to use a wheel wash facility (to minimise off-site dust/trafficking). A road sweeper will be deployed to remove track out as required.

Vehicles leaving the site are to be controlled to minimise/prevent congestion on Bridge St.

Pedestrian access to the treatment area will be restricted to authorised personnel by defined route, and as detailed on the site Traffic Management Plan.

6.4 Materials Excavation and Classification

The materials will be assessed based on the limited existing Site Investigation information, supplementary trial pits and inspection during excavation, most of the materials present within the tips are expected to comprise, construction and demolition wastes, soils, commercial and domestic refuse, and paper manufacturing wastes.

The potential for other, unexpected materials exists, materials will only be diverted into the treatment train for sorting, screening, and crushing provided:

- a) It is of a waste type listed in Table 1 below;
- b) It conforms to the description in the documentation supplied by the producer and holder (in this case the site characterisation as provided in the site Investigation documentation provided by the site owner and developer; Ecclestone Homes);
- c) Its chemical, physical and biological characteristics make it suitable for its intended treatment (limited to physical sorting, screening, and crushing);
- d) Any excavated soil from potentially contaminated area has been shown by prior chemical analysis and assessment to be suitable for the intended use without significant risk of pollution (comparison of concentrations of potentially polluting materials will be made to the Remediation Criteria for gardens at the depth the materials are to be used-Appendix B), and;
- e) It is visually inspected on arrival and before it enters the treatment process to ensure it complies with these standard rules.

It is anticipated that most materials will comprise a mixture of natural soils, brick, concrete, tarmac, and stone with an appreciable amount of metal, glass, ceramic, timber products, textiles, cardboard, paper derived materials, plastics, rubber, and rope. Only materials corresponding to the following EWC codes permitted under the Mobile Plant Permit will be considered for treatment and use on the site:

Table 6.1 Acceptable Waste Materials

EW Code	Description
17 01 07	Mixtures of concrete, bricks, tiles, and ceramics other than those mentioned in 07 01 06*
17 05 04	Construction and Demolition Wastes (including excavated soils from contaminated sites): soil and stones other than those mentioned in 17 05 03*
17 09 04	Mixtures of soil, bricks, stones, and concrete

*Hazardous wastes: no material suspected to be hazardous wastes are allowed, these are specially excluded.

All arisings will be inspected to assess their properties, any which are suspected of levels of contamination sufficient to render them unacceptable (for example the presence of visible suspected ACM, drums / containers, odours, or other contamination indicators) will be quarantined for further assessment and disposed off site. Any waste residues that do not comply with the acceptance criteria shall be rejected, classified, and removed from the site.

Individual stockpiles will be formed for each material type during excavation and assessed, treated, and verified on a batch process.

6.5 Materials Treatment

The objectives of the treatment will be to achieve the earthworks specification (appendix D), as follows

- Remove oversized materials (>125mm);
- Compliance with Highways Class 1, 2 (Exc. 2A & 2E) or 6 fill;
- Amend moisture content to within an acceptable range of OMC, and;
- Removal deleterious materials (<1% Class X);
- Remove unacceptably contaminated materials (Exceedances of Remediation Criteria);

This will be achieved through physical sorting, segregation, screening and crushing, and potentially moisture modification.

The treatment area must be kept free from standing water.

The procedures for managing run-off, and for detecting whether unacceptable emissions are occurring, or are likely to occur, are set out in the Section 7.0 - Health and Safety, and Section 8.0 - Environmental Controls, below.

6.6 System Management and Optimisation

When sufficient volumes of excavated materials of similar appearance and constituents have been stockpiled, mobilised treatment equipment will be deployed and the materials will be physically treated to ensure compliance with the earthwork specification. This will entail screening the materials to remove oversized inclusions that would render the material unsuitable for the planned vibro-stone column ground improvement & foundation strategy.

Samples will be transferred to appropriate containers (supplied by the laboratory), kept cool in accordance with storage requirements, and transferred to UKAS accredited laboratory within 48 hours, and subject to the following testing (at the specified frequency):

- Particle Size Determination (1 per 1,000m³);
- Compaction Testing (1 per 1,000m³);
- Chemical Testing (1 per 1,000m³)

The earthworks specification requirements are set out in the Earthworks Specification (Appendix D2).

The Remediation Criteria are set out in the Remediation Strategy (Appendix D1)

Topographic surveying of the material stockpiles is to be carried out to confirm volumes. The movement of materials will be recorded on the site MMP tracking records.

6.7 Verification

The processed material will be tested for compliance with the site remediation criteria, the remediation strategy also requires materials to be compliant with the earthworks specification, forensic waste content testing of the proportion of Class X materials (timber,

plastic, metal, etc.) to ensure this remains within the tolerable range for a recovered aggregate of less than 1%

Geotechnical and waste content of recovered materials will therefore be carried out at a frequency of 1 sample per 1,000m³ with contamination testing at a frequency of 1 sample per 500m³.

This will be undertaken by independent, competent consultants, in accordance with methodologies set out in the Verification Plan provided in the Remediation Strategy, who will provide a professional opinion as to whether the material has reached End of Waste status and allow Self-Assessment of this before reuse, fulfilling URL's duty of care to prevent unauthorised or harmful deposit of waste.

6.8 Treatment Residues and Waste Disposal

The residues from the treatment process will be limited to:

- Soils which have achieved the specified *Remediation Criteria* or otherwise assessed as acceptable and can be used to the earthworks.
- Soils which cannot be remediated using the selected methods and are unsuitable for retention, by definition these will be waste soils.
- Materials segregated from the soils during treatment that can be subject to further treatment (limited to oversized inert brick, concrete and stone).
- Residues segregated from the soils during treatment that are unsuitable for retention, by definition these will be wastes.

Soils which have achieved the Remediation and Earthworks criteria will be assessed under the Site Verification Plan and, provided they are suitable for use, that there is certainty for their use, and they are not wastes, and that they can be used within the development, subject to the provisions of the Remediation Strategy. This will generally be constraints imposed for the various land uses, for example below buildings or roads/drainage, in utility corridors, or in gardens or public open space.

Materials segregated from the soils and soils which do not achieve the Remediation Criteria will remain wastes. It is anticipated that that most of these could be treated further, by crushing or further screening to recover aggregate however soils which do not meet the site Remediation Criteria must be classified, and disposed of, as waste.

6.9 Record Keeping

The Site Manager will maintain a record of all excavation cells, temporary stockpiles quarantined materials, and deposition areas.

The independent consultant will maintain a record of the verification testing for contamination and earthworks testing for inclusion in the site verification report.

The site manager will make daily records of the emissions monitoring results and any control measures adopted.

The site manager will record all earthworks transfers including movement to quarantine areas, final placement of approved fill materials and waste transfer documentation for residues and unsuitable materials removed from the site.

The TCM will maintain an overview of all the above and maintain a record of regular (weekly) inspections of the site where all the above records are inspected and a general site inspection takes place to ensure the provisions of this Method Statement are adhered to (Appendix E)

6.10 Decommissioning of the Soils Treatment Area

When soils treatment has been completed, all validated soils achieving the Remediation Criteria will be relocated, being re-used within the earthworks as described within the Tip area. This will require the materials to be placed as specific locations and depths which will be recorded on the site tracking system as required by the MMP.

Any surplus or unsuitable materials must be classified for disposal and removed from the site as wastes and transfer documentation retained.

The area will undergo a final inspection by the TCM and the EA notified that the activities have ceased.

7.0 Health and safety

All works to be carried out on site are to be risk assessed, with suitable method statements prepared and approved by the Principal Contractor, prior to any associated works commencing.

7.1 Risk assessments

Risk assessments and Method Statements associated with the works are to be included within the relevant section of the Construction Phase Plan. These include:

- Earthworks / Excavations
- Use of operated construction plant
- HGV Driving on site
- General Operations (Manual Handling, Fire, Skin Disease, Electric, Injury)
- Lifting operations
- Working at height
- Refuelling
- Management of underground services

Particularly hazardous activities are subject to a Permit to Work System.

7.2 COSHH

COSHH data sheets providing recommended precautions and PPE requirements for substances likely to be encountered on site are to be included within the '*Construction Phase Plan*' e.g., fuels, oils, lime, etc.

7.3 Personal protective equipment

PPE is to be supplied to protect against those risks associated with the works that cannot be avoided. Appropriate training is to be provided to all site personnel in the safe use of PPE. Spare PPE is to be always available.

Minimum requirement for PPE is as follows:

-
- Hard hat
 - Hi-visibility vest/coat
 - Safety footwear

Additional task specific PPE as required:

- Eye protection
- Dust mask
- Ear protection
- Gloves

If any other PPE is required to carry out works on site, it is to be provided by the Principal Contractor.

7.4 Manual Handling

Manual handling is to be minimised during the works, with equipment/materials lifted mechanically as detailed in the associated lift plan/risk assessment '**363 URCDLP001**', wherever possible.

7.5 Noise

In construction there are various action levels to control exposure to noise. These are:

LEAV - Lower Exposure Action Value 80dB(A) – provide information.

UEAV - Upper Exposure Action Value 85dB(A) – provide hearing protection.

ELV - Exposure Limit Value 87dB(A) – maximum level personnel can be exposed to.

If a noise level is suspected to be approaching the LEAV an assessment of the noise must be carried out to determine safe working durations and PPE to be Levels will be measured against the normal requirements of development planning approval with monitoring by the site manager at the nearest sensitive boundaries to verify boundary noise remains < 65dB. This will be recorded on for UR_ENV_08a (copy attached) at locations detailed on site Layout Plan.

7.6 Vibration

In construction there are various action levels to control exposure to vibration. In general operatives of modern, well maintained heavy earthmoving plant are unlikely to be exposed to vibration, however

If vibration levels are suspected to be approaching the EAV an assessment of the vibration must be carried out to determine safe working durations and PPE to be worn.

7.7 Dust

Dust is produced when solid materials are broken down into finer particles. The longer that the dust stays in the air the easier it is to breathe in. Airborne dust is usually respirable dust.

Excess levels of construction dust can cause health problems, with harmful effects ranging from minor skin irritation to severe respiratory illnesses. Such problems are not likely to arise if occupational exposure limits and regulations are observed, and safe systems of work maintained.

Exposure to any unlisted substance or general nuisance dust should be limited by reducing the dust levels to the minimum reasonably practicable. These levels should not exceed $10\text{mg}/\text{m}^3$ of air when measured over an 8-hour period. Within this figure, only $4\text{mg}/\text{m}^3$ should be respirable dust. If this level is exceeded the substance becomes hazardous under COSHH.

Dust monitoring will form part of the Environmental Emissions monitoring procedures: If dust can be seen in the air, it is highly possible that the 10mg limit is being approached (or exceeded) and the appropriate mitigation measure implemented.

Wherever necessary dust suppression techniques are to be implemented to prevent dust from becoming airborne/respirable.

7.8 Asbestos

Given the age and status of the landfills it is likely that asbestos will be present. There is therefore an assumption that similarly low levels of asbestos may be sporadically present within the made ground on the site and a watching brief by all personnel (for whom asbestos awareness training is mandatory) will be implemented for asbestos containing materials. If

encountered, these will be assessed by a competent individual to determine whether any modification to the Remediation Strategy or this Method Statement are required and a Plan of Works is required under CAR2012 and guidance on how this is applied to Soils².

Qualified and competent personnel, suitable working methods, PPE and control measures will then be deployed as required.

² <https://claire.co.uk/projects-and-initiatives/asbestos-in-soil>

8.0 Environmental considerations & Emissions Monitoring

Sensitive receptors with the potential to be impacted by harmful, nuisance or pollution from the treatment areas include:

- Users of leisure facilities associated with cricket club and Riverside Stadium (immediately to east and southeast)
- Residents of dwellings Off Nuthall Hal Rd/Bury New Road to east.
- Residential and commercial/tourist premises off Railway St to West.
- Construction workers
- Goit and River Irwell
- Groundwater within the underlying superficial alluvial aquifer.

The main emissions with the potential to cause harm, nuisance or pollution are noise, dust, and surface runoff. Odour, asbestos fibre, pollution (other than by silt) and vibration are less likely based on the planned activities and materials, however monitoring of all of these will be carried out for the duration of the treatment works. Monitoring locations have been selected based on their position relative to the treatment area and the various receptors, these are shown in Appendix A1.

8.1 Contamination/pollution

Mixtures of inert construction and demolition arisings, deleterious/organic wastes and organic soils/silts at the base of the tips forming the former reservoir base are anticipated. Any suspected additional and uncharacterised contamination is encountered during the works and associated works are to cease and the Urban Regen Ltd. Project Manager informed immediately.

A watching brief for the presence of asbestos containing materials (ACM) and indicators of rogue loads such as drums, industrial wastes, domestic refuse, or discrete areas of unrecoverable, deleterious materials, is required.

8.2 Odour

The materials may have a high organic content or unacceptable amounts of degradable inclusions, and strong odours have been described in the site investigation entries that penetrated the former landfill. Any highly odorous materials are to be moved away from the site boundary and covered if necessary.

Odour will be monitored by the site manager daily during treatment operations within the treatment area, site compound and the nearest residential properties outside the site. A note of the perceived offensiveness, strength and the duration of odour emission associated with the site. Locations provided in Appendix A1.

During the works, if any odour considered likely to cause nuisance (or that results in complaints) cannot be controlled with existing methods, all works associated with the odour are to cease, and the Urban Regen Ltd. Project Manager informed immediately.

Apart from covering highly odorous materials, controls on odour emissions involve modifying working methods by reducing the areas exposed and levels of mechanical disturbance or only working when the wind direction is away from sensitive receptors (nearby residential properties).

If necessary, formal odour monitoring is to be carried out. All monitoring is to be recorded and copies held on site within the relevant register of the Construction Phase Plan.

8.3 Noise

Noise generation is to be always kept to a minimum, given the distance to the nearest occupied properties (see Appendix A1), and in consideration of the large-scale earthworks activities required to deliver the site remediation some impacts may occur. To minimise this, the following controls are to be adopted:

- The condition of machinery being used (e.g., efficient engines, silencers, covers and compliance with manufacturers' maintenance requirements).

-
- The citing of machinery (e.g., the use of available shielding such as walls or buildings, the placing of material stores and distance from noise sensitive receptors).
 - The method of operation (e.g., the use of operation time restraints to avoid disturbance).
 - Substitution of machinery (e.g., electric power in place of internal combustion power).
 - Substitution of methodology (e.g., pressure bursting instead of percussive methods).
 - Reduction of boundary noise levels by appropriate positioning of preformed shielding.
 - Be aware of the planning conditions with reference to permitted working hours.

Noise will be monitored daily by the site manager during treatment operations within the treatment area for workplace exposure limits (65 dBA trigger), site compound and the nearest residential properties outside the site for nuisance trigger (5 dBA above background). Locations provided in Appendix A3. A XRCLIF digital decibel meter with a range of 30dBA-130dBA and an accuracy of +/- 1.5 dB will be used

During the works, if any harmful nuisance noise (5db above background being used as a trigger) cannot be controlled with existing methods, all works associated with the noise are to cease, and the Urban Regen Ltd. Project Manager informed immediately. All monitoring is to be recorded, and copies held on site within the relevant register of the Construction Phase Plan.

8.4 Vibration

Vibration is to be always kept to a minimum, however, given the distance to the nearest occupied properties (see Appendix A), the perception of impacts needs to be considered. To ensure this, the following points are to be considered:

- Attention must be always given to the movement of heavy plant and activities such as breaking out and soils compaction
- Sensitive locations are to be avoided if possible.

During the works, if any nuisance vibration cannot be controlled with existing methods, all works associated with the vibration are to cease, and the Urban Regen Ltd. Project Manager

informed immediately. If necessary, formal vibration monitoring is to be carried out. All monitoring is to be recorded, and copies held on site within the relevant register of the Construction Phase Plan.

8.5 Dust

The generation of any dust is to be kept to a minimum. Attention must be given to wind direction during the works, and best practice employed to ensure that this is achieved. Mitigation methods are to be employed, if necessary, to achieve this e.g., damping down haul routes with tractor and bowser, utilising fixed dust suppression on crushing and screening plant or applying water from a jetwash or rain gun.

Visual dust emissions will be monitored daily by the site manager and recorded with visible emissions beyond the site boundary triggering the requirement for dust mitigation. A portable dust monitor will be used to assess conditions within the site boundary with $1\text{mg}/\text{m}^3$ of air triggering the requirement for dust mitigation and $1\text{mg}/\text{m}^3$ air cessation of activities until mitigation measures are put in place. Dustscan discs will be located within the treatment area, the boundaries with sensitive receptors, deposition rates more than $200\text{ mg.m}^2.\text{day}$ outside the site will indicate the control measures require review. Monitoring locations are provided in Appendix A3.

During the works, if any nuisance dust cannot be controlled with existing methods, all works associated with the dust are to cease, and the Urban Regen Ltd. Project Manager informed immediately. All monitoring is to be recorded, and copies held on site within the relevant register of the Construction Phase Plan.

8.6 Asbestos

Given that the site a brownfield site, the potential for the inclusion of asbestos is recognised. Pre-testing carried out to date has not indicated the presence of quantifiable ($>0.001\%$) amounts of asbestos within the tip, which is the site remediation criteria for general fill materials, although trace fibres have been reported widely and chances of ACM have been

encountered elsewhere. Material will be preferentially sourced from stockpiles that have undergone inspection for Asbestos containing materials.

This will minimise the potential for unacceptable, asbestos impacted materials to be diverted into the Tip materials treatment stream, however a number of other basic precautions will be implemented to ensure that any exposure is kept as low as is reasonably practicable and prevent the spread of asbestos:

- All staff involved in the treatment are to have an in-date UKATA approved asbestos awareness training to enable them to identify suspected asbestos containing materials (ACM)
- Inspections of all arising for potential ACM are to be carried out with attendance by a competent person, sampling and laboratory analysis of the suspect material and soil matrix at a UKAS accredited laboratory completed if any suspected material is observed, all materials will be quarantined until such testing is completed
- The precautions relating to dust emission (8.5) are to be followed strictly
- If any quantifiable asbestos is confirmed, reassurance air monitoring will be carried out within the treatment area, at the site compound to confirm emissions at the source area are below the control limit of 0.1 f/ml. If notifiable / licenced works are required, at the at the boundary closest to the nearest residential properties enhanced monitoring to an environmental limit of 0.001 f/ml will be carried out by extending the monitoring period and using Scanning Electron Microscopy. Monitoring locations are provided in Appendix A3

During the works, if any visible ACM is seen in the quarantined feedstock or treated materials, or detectable fibres are reported during monitoring all works on those materials are to cease, and the Urban Regen Ltd. Project Manager informed immediately. All monitoring is to be recorded, and copies held on site within the relevant register of the Construction Phase Plan.

All visible discrete ACM inclusions will be hand picked, or larger deposits excavated. ACMs will be double bagged and placed within a dedicated skip pending off-site disposal as

hazardous waste. Soil residues from the impacted zones will be tested for quantifiable asbestos to confirm their status in relation to the site remediation criteria and waste classification before a decision is made on whether they can be retained. Pending this these will be kept in a separate labelled stockpile which will be properly sealed and damped down. Soil residue materials that cannot be kept on the site will be removed and disposed of using sheeted wagons and thoroughly dampened before loading and transport off the site.

8.7 Surface water

Discharge of silt runoff to the Goit and onward migration to the River Irwell is the main pollution risk associated with the planned treatment activities. The watercourse runs parallel with the southern boundary of the Tip at approximately 5m from the Tip boundary.

The soils treatment area is to be located away from these as far as is possible, in the west of the Tip area, however a bund and ditch system will be constructed to protect the goit from runoff.

No run-off from the soils treatment process is permitted to be discharged to surface waters.

During site works, surface water run-off is to be always managed to ensure that it does not impact on the works, or lead to contamination of adjacent watercourses. All relict drains, etc within this area will be removed during the site preparation and remediation works and the flows diverted into new temporary or permanent drains.

Inspections of the watercourse will be carried out daily by the site manager and recorded with visible silt emissions from the site triggering the requirement for a pause in treatment activities to allow conditions to improve or further mitigation measures to be implemented. Monitoring locations are provided in Appendix A1.

If any perched water is encountered within the tips that needs to be removed to allow the treatment to progress this will be tankered off or discharged to foul sewer in accordance with a temporary trade effluent discharge consent obtained from United Utilities; facilities are available on site to treat water if needed to achieve the agreed discharge criteria.

8.8 Groundwater

The site overlies a Secondary a Aquifer where groundwater is of medium to low vulnerability, however as site Remediation Criteria, deemed protective of controlled waters will be applied to all materials, there is no risk of pollution of groundwaters unless unexpected polluting materials are encountered which will be addressed under the provisions et out in 8.1.

8.9 Emergency procedures

All persons on site are to be instructed in the Emergency Procedure at the Site Induction. The Emergency Procedure is also to be always displayed on the site Notice Board.

In the event of an emergency arising, i.e., physical injury, mechanical damage, fire, etc. all work is to stop, and site management informed immediately.

Project Manager	Iain Bentley	07966 349325
Site Engineer	Iain Bentley	07966 349325
Technically Competent Manager	Ben Thomas	07376 611818
Contract Manager	Gary Owen	07824 325322
Managing Director	Andy Walker	0161 7101930

The Project Manager is the designated First Aider for the works.

The first aid box is in the Principal Contractors site office.

Should an emergency incident occur, all works are to stop, the Urban Regen Ltd. Project Manager is to be informed immediately, and the Emergency Plan is to be implemented.

The Emergency Plan is to be prepared as part of the Construction Phase Plan, and should provide information/detail the procedures to be followed, in the event of physical injuries, mechanical damage, or environmental impact etc.

As a minimum the Emergency Plan should identify the following:

- Emergency contacts (e.g., emergency services/Environment Agency/Waste Management and Spill Management contractors/water companies etc.).
- Site contact details.
- Site specific restrictions (e.g., working hours/noise restrictions/protected and restricted areas etc.).
- Site layout plan detailing the main site features, foul and surface water drainage, waste locations (skips/stockpiles), sensitive receptors (including residents), protected or restricted areas, spill response equipment, firefighting equipment, first aid equipment etc.
- Record of fuels/oils/chemicals on site detailing location, quantity/volume, hazard and means of use.
- A flow diagram detailing the procedure to follow in the event of an incident.

A record of any incidents, and associated correspondences, are to be retained on site; being held within the relevant register of the Construction Phase Plan.

9.0 Implementation Plan

In Summary the steps needed to implement the Remediation Strategy in respect of soils treatment are as follows:

- A. Technical Approvals – Regulatory and other Stakeholder approval for the Works must be obtained before commencement as follows:
 - a. Local Planning Authority Approval of Remediation Strategy
 - b. Environment Agency Approval of Mobile Plant Deployment to Treat the Imported Materials completion of form MPD1 and payment fee
- B. Establish Health and Safety Procedures and Environmental Monitoring & Controls
 - a. Implement Traffic Management Plan
 - b. Implement Construction Phase Plan
 - c. Select Monitoring Locations and commence baseline monitoring in advance of treatment
 - i. Dust Gauges
 - ii. Dust visible
 - iii. Odour
 - iv. Noise
 - v. Vibration
 - vi. Surface waters / surface water drainage sampling and inspection points
 - d. Induction of all site personnel
- C. Assemble Resources and Complete Enabling Works

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- a. Secure Site
 - b. Set up site welfare, office, fuel store & car park.
 - c. Identification of treatment area on relict concrete slab outside development area
 - d. Demark treatment area
 - e. Checking of bunds, and ditches to prevent runoff, blocking drains, sluices, channels, and other and preferential migration pathways
 - f. Appoint Technically Competent Manager and Site Manager
 - g. Appoint Geotechnical Testing Laboratory
 - h. Appoint independent consultant (Verifier)
 - i. Deliver Plant and Materials to site
 - j. Nominate operatives for specific tasks and brief fully

D. Excavate Waste Materials

- a. Classify candidate Material and confirm accepted EWC code
- b. Segregate suspected contaminated materials
- c. Appoint licenced waste carrier for transfer
- d. Inspect every stockpile quarantined for treatment reject if non compliance suspected

E. Carry Out Treatment

- a. Move stockpile to treatment area and screen to remove oversized materials
- b. Check moisture content

-
- c. Modify moisture content through lime addition if needed
 - d. Quarantine for independent testing prior to treatment

F. Verify Treatment Outcomes

- a. Forensic Testing by independent consultant for proportion unacceptable materials waste
- b. Geotechnical testing for earthworks strategy compliance
- c. Determine End of Waste for acceptable materials
- d. Classify waste for disposal for unacceptable residues

G. Completion

- a. Remove any untreated materials, unacceptable residues from site as waste for disposal
- b. Place suitable recovered materials and compact to earthworks specification
- c. Grade treatment area to remediation formation levels
- d. Assemble Materials Tracking Records and as-built surveys / constraints drawing showing locations treated materials placed for MMP Verification report
- e. Demobilise plant, equipment, and personnel

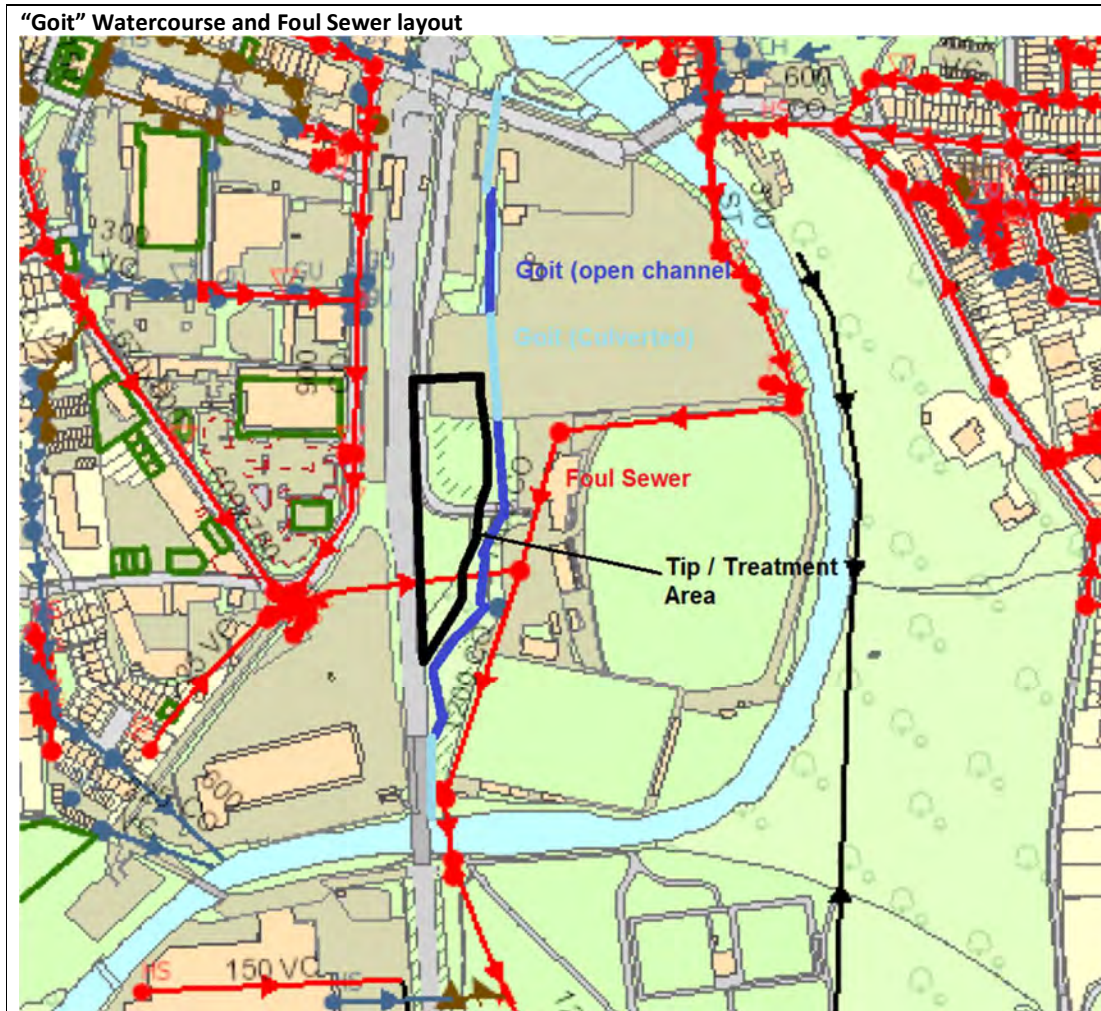
Appendix A1

Site layout & Emissions Monitoring Locations

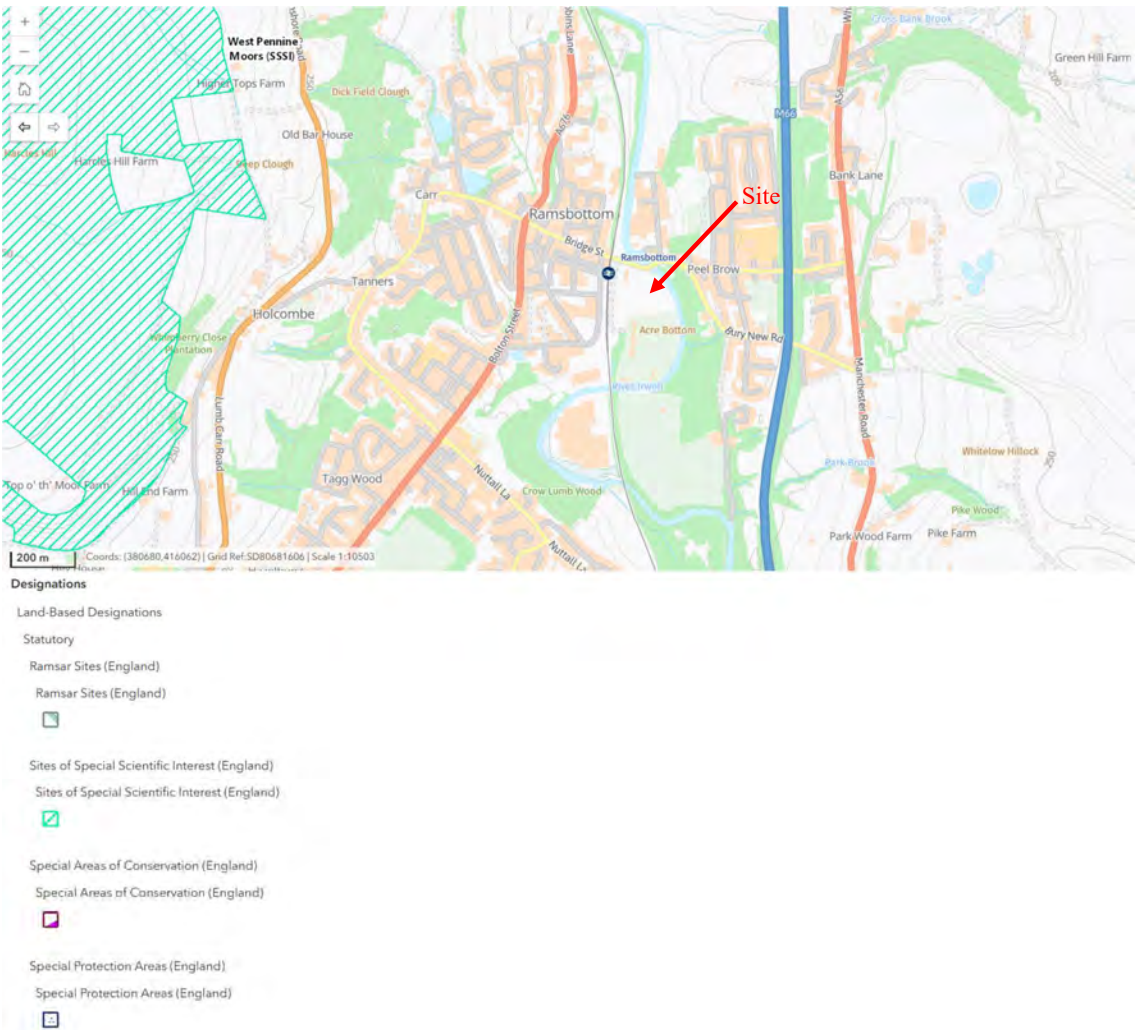


Appendix A2 Drainage Plans

Existing Drainage – Surface & Foul Water



Appendix A3 MAGIC Map Extract



Appendix B Environmental permit (B1 Issue Letter, B2 Notice, B3 Generic Risk Assessment, B4 Introductory Note)

Company Director and/or Secretary
Urban Regen Ltd
Langley Road
Pendlebury
Salford
M6 6FG

Our ref: EPR/PP3924SA/A001

Date: 02.04.2024

Dear Company Director and/or Secretary,

Your new environmental permit

Permit reference: EPR/PP3924SA

Waste returns reference: EAWML 600386

Operator: Urban Regen Ltd

Facility: Mobile Plant

Our determination of your application for a permit is complete. We're satisfied that you can carry out your activities in accordance with the enclosed permit, without harm to the environment or human health. Please keep the permit in a safe place.

This letter contains web links to other documents. If you aren't able to access these, please phone our Customer Contact Centre for help on 03708 506 506.

Please look at the table below and note any of the things that apply to your permit.

If...	then..
you plan to keep your records at a site other than where the activity takes place	you need to let us know within 20 working days of receiving this letter.
your permit includes pre-operational or improvement conditions	make sure you complete the requirements by the set deadlines. Note: additional charges apply for assessments or approvals under these conditions. The exception is for new waste incinerator or co-incinerator permits
your permit includes standard rules	we've enclosed the rules set/s. We may change these in future but will let you know about any changes. You must make sure you're always following the latest rules set.

Table continues on next page.

If...	then..
you're carrying out a waste operation or activity and need to submit quarterly waste returns on waste movements	you can get the forms you need from our website https://www.gov.uk/government/collections/national-operator-waste-returns When you complete your return, use the waste returns reference above.
you need to submit other returns	speak to your local Environment Agency regulatory officer to check arrangements.
your permit includes a (non-low impact) installation	we enclose a legal notice and information about reporting to the Pollution Inventory.

Read the following guides to find out more about complying with your permit:

www.gov.uk/guidance/develop-a-management-system-environmental-permits

www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit

www.gov.uk/guidance/legal-operator-and-competence-requirements-environmental-permits

Subsistence charges

Most permits attract a subsistence charge for each full or part financial year they are in force. For these permits, the first subsistence invoice will be for a pro rata amount. This amount is usually based on the date we grant the permit, until the end of the financial year.

There are a few exceptions and additions. Please look at the table below and see if any apply to your permit.

If...	then..
your permit states a future start date or requires prior notice to be given	the charge starts from that date instead.
you are a domestic householder or charity and your permit is only for the: • discharge of sewage effluent; and • the maximum discharge volume is no more than 5 cubic metres per day	there is no subsistence charge.
your permit is only for mobile plant	there is no subsistence charge. Instead we will charge for each deployment. This does not apply to: • some mobile plant permits that allow the spreading of wastes on land. In these cases both subsistence and deployment charges apply. • mobile specified generator standard rules permit (SR2018 No 8). In these cases there is a fixed subsistence charge, but no separate deployment charge.

Table continues on next page.

If...	then..
your permit is for bespoke medium combustion plant or specified generator(s)	there is no fixed subsistence charge. Instead we will recover costs on a time and materials basis.
construction work or operation of your facility has yet to start	no subsistence charge is due until activities begin. This does not apply to waste incineration or co-incineration plant, where a fixed pre-construction charge applies
your permit is for waste transfer or treatment permit	you will need to pay an one off extra charge of £672 for your first year of operation. This charge covers our additional costs in providing you with advice and support at the start of your operations.

You can find further information on charging, including when additional charges apply in our charging scheme:

<https://www.gov.uk/government/publications/environmental-permitting-charging-scheme-2019> and charging guidance:

<https://www.gov.uk/government/publications/environmental-permitting-charges-guidance/environmental-permitting-charges-guidance>

If you have any questions about this permit please phone our Customer Contact Centre on 03708 506 506. They will put you in touch with a local regulatory officer.

To report a suspected waste crime, please call Crimestoppers on 0800 555 111, or visit: <https://www.gov.uk/report-an-environmental-incident>

The National Permitting Service is committed to improving its customer service. By completing our customer satisfaction survey you can tell us what we are doing right and what we could do better. The survey should take no more than 10 minutes to complete and you can do so by clicking [NPS Survey](#).

Yours sincerely

India Lewin

Permitting Support Advisor

Permit

The Environmental Permitting (England & Wales) Regulations 2016

Urban Regen Ltd

Urban Regen Ltd
Langley Road
Pendlebury
Salford
M6 6FG

We consider that in reaching our decision to grant a permit we have taken into account all relevant considerations and legal requirements.

Permit number

EPR/PP3924SA

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/PP3924SA

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2016

Urban Regen Ltd (“the operator”),

whose registered office is

Urban Regen Ltd
Langley Road
Pendlebury
Salford
M6 6FG

company registration number 4335425

to operate a waste mobile plant described in standard rules 2010 No 11

to the extent authorised by and subject to the conditions of this permit.

Under regulation 27(2) of the Regulations, standard rules 2010 No 11 are conditions of this permit.

Name	Date
Natasha Hatswell	14/03/2024

Authorised on behalf of the Environment Agency



Guidance

SR2022 No 2: generic risk assessment – mobile treatment of waste to produce soil, soil substitutes and aggregate

Published 18 December 2024

Applies to England

Contents

Risk assessment parameters

1. Risk to local human population
2. Risk to local human population and local environment
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Explanation of terms



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This publication is available at <https://www.gov.uk/government/publications/sr2022-no-2-mobile-treatment-of-waste-to-produce-soil-soil-substitutes-and-aggregate/sr2022-no-2-generic-risk-assessment-mobile-treatment-of-waste-to-produce-soil-soil-substitutes-and-aggregate>

The Environment Agency produces the generic risk assessments for all standard rules permits. These list the potential risks and specify the measures required, to manage them.

Check this generic risk assessment to understand:

- the potential risks of using mobile plant to treat waste to produce soils, soil substitutes or aggregates
- how to manage the risks effectively

If your proposed activity has the same risks, you can apply for the standard rules permit.

Each risk comprises:

- information about the source, pathway and receptor – and the potential harm to that receptor
- a judgement of the level of risk and justification of that judgement
- actions for managing the risk (through permitting) and a residual risk rating after managing it

Risk management involves breaking or limiting the source-pathway-receptor linkage to reduce the risk. If we set minimum distances we explain the basis of the distance, for example by modelling.

We will control the residual risk (after risk management) when we assess compliance.

If you need to check the meaning of any terms we have used (in the context of this risk assessment), see the [explanation of terms](#)

(<https://www.gov.uk/government/publications/sr2021-no-2-composting-in-open-systems-waste-recovery-operation/sr2021-no-2-generic-risk-assessment-composting-in-open-systems-for-waste-recovery#terms>).

Risk assessment parameters

This generic risk assessment is based on the following parameters.

Parameter 1

These permitted activities at a deployment site:

- acceptance and storage of waste before and after treatment (R13)
- sorting, separation, screening, crushing and blending of waste for recovery as a soil, soil substitute or aggregate (R3 and R5)
- the deployment site must be either at the site where the waste is produced or is to be used

Parameter 2

The permitted waste types are restricted to those listed in Tables 2.3a and 2.3b of the permit.

Parameter 3

Quantity of waste processed under this permit is restricted to less than 75,000 tonnes each year.

The total quantity of waste stored at a deployment site is 5,000 tonnes.

Parameter 4

Wastes can be stored and handled on either:

- a hardstanding or
- an impermeable surface with a sealed drainage system

When the deployment site is located within a groundwater source protection zone 1 or 2, wastes listed in Table 2.3c of must be stored and handled on an

impermeable surface with a sealed drainage system. Unless otherwise agreed in writing with the Environment Agency.

Parameter 5

The only point source discharges to controlled waters are clean surface water from the roofs of buildings and from areas of the facility not used for the storage or treatment of wastes. No other direct or indirect discharges are permitted.

Parameters 6 and 7

The activities shall not be carried out within 10 metres of a watercourse.

Parameter 8

There are no point source emissions to air.

Parameter 9

If treatment activities are within 200 metres of a workplace or dwelling, the treatment activities must be within a building, or measures specified in condition 2.4.1 Technique 2 put in place.

Parameter 10

Secondary containment follows the recommendations of CIRIA C736 guidance.

1. Risk to local human population

1.1 Release of particulate matter (dust) and micro-organisms (bioaerosols)

Dust and bioaerosols travel through the air and can be:

- inhaled or ingested
- deposited on garden fruit and vegetables and then ingested

There is a risk of dust and bioaerosols causing:

- respiratory irritation and illness
- gastro-intestinal illness

Judgement of risk

We have judged the:

- likelihood of the hazard affecting the receptor as medium
- overall severity of potential consequences as medium
- overall risk rating as medium

The reasons for giving the activity this rating is because:

- permitted waste types include soils and other wastes which are likely to result in particulates when transferred and treated
- there is a low potential to produce bioaerosols
- there is potential for exposure to anyone living or working close to the site (excluding operator and employees)
- there is potential for increased dust generation from permitted activities during prolonged dry periods e.g. summer months

Managing the risk

If within 200 meters of a workplace or dwelling, treatment must be done within a building, or measures set out in condition 2.4.1 technique 2 must be put in place to manage and reduce risk.

The permit requires emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution.

The following actions also need taking:

- all appropriate measures shall be followed as documented in the management system
- if required, an emissions management plan must be submitted and a risk assessment review done
- the emissions management plan is implemented if one is required

Taking these actions will control the risk and rate it as 'low'.

1.2 Waste, litter and mud on local roads

Vehicles entering and leaving the site risk causing:

- nuisance
- loss of amenity
- road traffic accidents

Judgement of risk

We have judged the:

- likelihood of the hazard affecting the receptor as medium
- overall severity of potential consequences as medium
- overall risk rating as medium

The reasons for giving the activity this rating is because:

- there is a risk of creating unsafe road surfaces in wet weather
- local residents are often sensitive to mud on roads

Managing the risk

Risk management is the same as risk 1.1 along with:

- all incoming and outgoing waste or material will be sheeted
- the permitted waste types pose a low risk of windblown litter

- appropriate measures are required to prevent and minimise emissions, including mud tracking from site as documented in the management system
- if required, an emissions management plan must be submitted and a risk assessment review done
- the emissions management plan is implemented if one is required

Taking these actions will control the risk and rate it as 'low'.

1.3 Odour

Odour travels through the air and can be inhaled. There is a risk of causing:

- nuisance
- loss of amenity

Judgement of risk

We have judged the:

- likelihood of the hazard affecting the receptor as low
- overall severity of potential consequences as low
- overall risk rating as low

The reasons for giving the activity this rating is because:

- waste types are unlikely to be odorous

Managing the risk

To manage the risk the standard rules permit requires:

- emissions shall be free from odour at levels likely to cause pollution
- an odour management plan should be produced and implemented if required

Taking these actions will control the risk and rate it as 'low'.

1.4 Noise and vibration

Noise travels through the air and vibration through the ground. There is a risk of causing:

- nuisance
- loss of amenity for local residents and workplaces
- loss of sleep

Judgement of risk

We have judged the:

- likelihood of the hazard affecting the receptor as medium
- overall severity of potential consequences as medium
- overall risk rating as medium

The reasons for giving the activity this rating is because local residents are often sensitive to noise and vibration and the permit allows crushing and screening activities.

Managing the risk

To manage the risk the standard rules permit requires:

- emissions are free from noise and vibration at levels likely to cause pollution
- a noise and vibration management plan to be implemented if required

Taking these actions will control the risk and rate it as 'low'.

1.5 Scavenging animals and birds

Animals and birds travel over land and through the air. There is a risk of causing:

- nuisance
- loss of amenity
- harm to human health from waste carried off-site and from faeces

Judgement of risk

We have judged the:

- likelihood of the hazard affecting the receptor as low

- overall severity of potential consequences as low
- overall risk rating as low

The reason for giving the activity this rating is because the permitted wastes are unlikely to attract scavenging animals and birds.

Managing the risk

To manage the risk the standard rules permit:

- allows only waste types that pose a low risk of attracting scavenging animals or birds
- can require changes to the management system to control pests

Taking these actions will control the risk and rate it as 'low'.

1.6 Pests such as flies

Pests, such as flies can travel through the air or over land. There is a risk of causing:

- nuisance
- loss of amenity
- harm to human health

We have judged the:

- likelihood of the hazard affecting the receptor as low
- overall severity of potential consequences as low
- overall risk rating as low

The reasons for giving the activity this rating is because the permitted wastes are unlikely to attract pests, such as flies.

Managing the risk

To manage the risk the standard rules permit:

- allows only waste types that pose a low risk of attracting pests, such as flies
- can require changes to the management system to control pests and flies

Taking these actions will control the risk and rate it as 'low'.

2. Risk to local human population and local environment

2.1 Flooding of the site

Water can flood the site during heavy or prolonged rainfall.

There is a risk of waste washed off-site contaminating buildings, gardens and natural habitats downstream.

Judgement of risk

We have judged the:

- likelihood of the hazard affecting the receptor as low
- overall severity of potential consequences as low
- overall risk rating as low

The reason for giving the activity this rating is because:

- the permitted waste types are non-hazardous and therefore the risk of contamination is low

Managing the risk

Standard rules permits are not usually issued in flood risk areas. To manage the risk the standard rules permit requires:

- compliance with the sensitive location exclusions
- a deployment for to be submitted and agreed at each site
- a written management system that identifies and documents the process controls to minimise the risk of pollution – includes those arising from operations, maintenance, accidents, incidents and non-conformances

The accident management section of the management system requires:

- assessment of the risk of flooding and measures to prevent or reduce the risk
- contingency plans for the diversion of waste, if required

- emergency procedures that are clearly communicated to all site operatives

Taking these actions will control the risk and rate it as 'low'.

2.2 Fire risk

There is a risk of fire on-site from:

- arson and, or vandalism
- spontaneous combustion from uncontrolled decomposition

Fire can cause:

- polluting materials (smoke or fumes) to travel through the air, water or over land
- spillages and contaminated firewater by direct run-off from the site and through surface water drains and ditches

We have assessed the potential harm as:

- respiratory irritation, illness and nuisance to the local population
- injury to staff, firefighters or arsonists and vandals
- air, water or land pollution

Judgement of risk

We have judged the:

- likelihood of the hazard affecting the receptor as medium
- overall severity of potential consequences as low
- overall risk rating as low

The reasons for giving the activity this rating is because:

- the only combustible waste types are wood and compost

Managing the risk

To manage the risk the standard rules permit requires:

- a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents,

incidents, non-conformances. This includes measures to prevent fires.

- robust waste acceptance procedures
- no burning of wastes
- the quantity of waste stored per deployment is limited to 5,000 tonnes

Taking these actions will control the risk and rate it as 'low'.

3. Risk to local human population, livestock and wildlife

3.1 Litter on surrounding land and in final material

Litter can travel through the air and then be deposited on land. There is a risk of causing:

- nuisance
- loss of amenity
- harm to animal health
- reduction in land bank values due to contamination

Judgement of risk

We have judged the:

- likelihood of the hazard affecting the receptor as low
- overall severity of potential consequences as low
- overall risk rating as low

The reason for giving the activity this rating is because waste types listed in this permit are not likely to produce litter.

Managing the risk

To manage the risk the standard rules permit requires:

- a management system with waste pre-acceptance and acceptance procedures that reduce the risk of accepting unpermitted waste

- compliance with the ‘emissions of substances not controlled by emission limits’ rule and submitting an emissions management plan, if necessary
- operators to follow appropriate measures guidance

Taking this action will control the risk and rate it as ‘low’.

3.2 Gaining unauthorised access to site

There is a risk of direct physical contact with all on-site hazards such as wastes, machinery and vehicles.

There is a risk of causing injury to humans or livestock.

Judgement of risk

We have judged the:

- likelihood of the hazard affecting the receptor as low
- overall severity of potential consequences as low
- overall risk rating as low

The reasons for giving the activity this rating is because the:

- permitted wastes are non-hazardous
- management system includes procedures for worker and visitor safety

Managing the risk

To manage the risk the standard rules permit requires:

- activities shall be managed and operated in accordance with all appropriate measures and a documented and implemented management system that stipulates all preventative measures and emergency responses should accidents occur (including site security measures to prevent unauthorised access)
- emergency contact details shall be displayed at the site entrance
- visitors should receive a health and safety induction when visiting and must follow the site operator’s instructions

Taking this action will control the risk and rate it as ‘low’.

4. Risk to surface waters close to and downstream of site

4.1 Risk of pollution causing acute effects

There is a risk of pollution from spillage of liquids, leachate from waste, contaminated rainwater run-off from waste with high organic and ammonia content and suspended solids.

Contamination can travel through direct run-off from site over the land, surface water drains and ditches.

We have assessed the acute effects as follows:

- oxygen depletion
- fish kill
- algal blooms

Judgement of risk

We have judged the:

- likelihood of the hazard affecting the receptor as low
- overall severity of potential consequences as low
- overall risk rating as low

The reason for giving the activity this rating is because:

- there is potential for contaminated rainwater run-off from waste operations, especially during heavy rain
- leachate may contain suspended solids
- the permitted waste types are non-hazardous

Managing the risk

To manage the risk the standard rules permit requires:

- all operations shall be more than 10 metres from a watercourse

- if operations are located in a source protection zone 1 or 2 waste listed in Table 2.3c shall be stored and handled on an impermeable surface with a sealed drainage system
- a written management system that identifies and documents the process controls to minimise the risk of pollution. This includes those arising from operations, maintenance, accidents, incidents and non-conformances
- all liquids must be stored in containers with secondary containment meeting CIRIA C736 guidance
- run-off is restricted by the 'emissions of substances not controlled by emissions limits' rule
- flood risk contingency plan for the diversion of waste can be activated
- emergency procedures and contingency plans must be in place and clearly communicated to all site operatives

Taking these actions will control the risk and rate it as 'low'.

4.2 Risk of pollution causing chronic effects

There is a risk of pollution from:

- liquid spills
- leachate from waste
- contaminated rainwater run-off from waste

Contamination can travel by:

- direct run-off from site over the land, through surface water drains and ditches
- indirect run-off through soil

We have assessed the chronic effect as deterioration to water quality.

Judgement of risk

We have judged the:

- likelihood of the hazard affecting the receptor as low
- overall severity of potential consequences as medium
- overall risk rating as low

The reason for giving the activity this rating is because pollution is likely to be detected quickly and the effects are temporary and reversible.

Managing the risk

To manage the risk, take the actions included in for risk 4.1 above along with:

- all liquids must be stored in containers with secondary containment
- run-off is restricted by the 'emissions of substances not controlled by emission limits' rule
- using drainage plans to separate clean and dirty water
- considering this risk in an accident management plan

Taking these actions will control the risk and rate it as 'low'.

5. Risk to water abstracted from a watercourse

These risks relate to watercourses downstream of a facility and to water for agricultural or potable use.

This receptor is at risk from:

- liquid spills
- leachate from waste
- contaminated rainwater run-off from waste

There is a risk of contaminants travelling through direct run-off from the site across ground surface, via surface water drains and ditches and finally through abstraction. This could have acute effects and cause the closure of abstraction intakes.

Judgement of risk

We have judged the:

- likelihood of the hazard affecting the receptor as low
- overall severity of potential consequences as low
- overall risk rating as low

The reason for giving this rating is due to the potential for contaminated rainwater run-off from waste operations carried out in the open, especially during heavy rain.

Managing the risk

To manage this risk, take the actions set out in risks 4.1 and 4.2.

Taking these actions will control the risk and rate it as 'low'.

6. Risk to groundwater

Groundwater is at risk from:

- liquid spills
- leachate from waste
- contaminated rainwater run-off from waste

There is a risk of contaminants travelling through soil and groundwater which can then be abstracted from a borehole. This could have a chronic effect resulting in the groundwater requiring treatment or causing closure of a borehole.

Judgement of risk

We have judged the:

- likelihood of the hazard affecting the receptor as low
- overall severity of potential consequences as low
- overall risk rating as low

We have given this rating because of the potential for contaminated rainwater run-off or leachate from waste operations, especially during heavy rain. The consequence is based on the possibility of pollution not being detected for a long time.

Managing the risk

To manage the risk the following actions must be taken:

- if the activities are within a source protection zone 1 or 2 Table 2.3c wastes must be stored and handled on an impermeable surface with sealed drainage system to prevent contaminated run-off