



**Norcot Community Centre, Lyndhurst Road,
Reading, RG30 6UB**

REMEDIATION METHOD STATEMENT



Beard Construction Limited

September 2020

P20-069rms

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REPORT ISSUE AND TRACKING

ISSUE	DATE	Written by	Comment
1	16/09/2020	Stephen J Fisk BSc FGS	-
		Reviewed and approved by	
		Matt Paddock MSc FGS	
For and on behalf of Paddock Geo Engineering Limited			

1.0 INTRODUCTION

Paddock Geo Engineering Limited (PGE) was instructed by the Client, Beard Construction Limited, to prepare a Remediation Options Appraisal and Method Statement (RMS) as Phase 3 of a Site Contamination Assessment for the proposed residential flats redevelopment of a parcel of agricultural land referred to as Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB.

The subject site is located in an urban area, Norcot, a western suburb of Reading, the town centre of which is some 3.6km east.

The site comprises an irregular shaped parcel of land formerly occupied by Norcot Community Centre at the northern end of Lyndhurst Road. The site is currently covered with crushed demolition rubble and is hoarded on all sides. Vegetation and several trees of mixed species and maturity are present around the perimeter of the site.

The approximate centre of the site is located at grid reference 467880, 174510 and the site covers an area of approximately 0.19Ha. The site has a gentle becoming moderate slope down to the south towards a shallow north-south trending valley feature to the south of the site area.

There is a strip along the northeast border of the site is approximately 1m lower in elevation than the central and western area of the site.

Site Location Plans and an Aerial Photograph are presented in Appendix A.

1.1 Terms of Reference

- British Standard (BS) 10175:2011 Investigation of Potentially Contaminated Sites – Code of Practice.
- British Standard (BS) 8485:2015+A1:2019 Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings.
- British Standard (BS) 5930:1999+A2:2010 Site Investigation Code of Practice.
- British Standard (BS) 8576:2013 Guidance on Investigations for Ground Gas - Permanent Gases and Volatile Organic Compounds (VOC)
- CIRIA C665 Assessing Risks Posed by Hazardous Ground Gases to Buildings. CIRIA 2007.
- CLR7 Assessment of Risks to Human Health from Land Contamination, 2002, DEFRA / Environment Agency (*currently withdrawn*).
- CLR8 Potential Contaminants for the Assessment of Land, 2002, DEFRA / Environment Agency (*currently withdrawn*).
- CLR11 Model Procedures for the Management of Land Contamination, 2010, DEFRA / Environment Agency.
- Environmental Protection Act: 1990 – Contaminated Land Statutory Guidance, April 2012, DEFRA.
- GPLC1 Guiding Principles for Land Contamination, 2010, Environment Agency.

- PPG23 (PPS23) Planning and Pollution Control (contaminated land aspects), 2002 (*currently withdrawn*).
- SC030114/R1 Verification of Remediation of Land Contamination Guidance Document, 2010, Environment Agency.

1.2 Overview of Previous Works

We understand that a previous site investigation was undertaken on the site in early 2020 prior to our clients (Beard Construction Limited) involvement with the site.

A Phase 1 Preliminary Contamination Risk Assessment (PRA) and a Ground Investigation (GI) and Site Contamination Assessment (SCA) have been produced for the site by Paddock Geo Engineering Limited (PGE). The works were undertaken at the site in 2020 and are summarised in the following reports.

- **Norcot Community Centre Technical Memo – Project 70012984 (January 2020), William Sale Partnership (WSP).**

We understand that a previous report has been produced for the site by the William Sale Partnership (WSP) in early 2020. The report was undertaken on behalf of Reading Council and we have reviewed the factual finding of the Technical Memo for the investigation. No reliance has been placed upon the previous investigation by PGE, however, some factual data relating to the ground conditions encountered has been referred to where appropriate.

- **PRA – P20-069pra - Preliminary Contamination Risk Assessment Report (August 2020), Paddock Geo Engineering Limited (PGE).**

The conclusions of the PRA stated:

“The preliminary contamination risk assessment has identified complete Contaminant-Pathway-Receptor (CPR) linkages with a maximum **Low** risk level from the potential contamination sources and risk drivers identified on the site and surrounding area.

The most significant of these potential source drivers, representing the greatest potential to impact the proposed site user (equivalent to residential without plant uptake) is the former development including domestic garages on site, now demolished with the likely presence of asbestos on site due to the age of the former buildings and the possible presence of hydrocarbon contamination due to vehicle movements and parking on site.

The site was initial apparently open agricultural land with the potential for use of agrichemicals, however, given the time elapsed and subsequent developments on site, the risk of residual agrichemicals remaining on site is minimal and the risk is considered very low.

There are records of two historical landfills since within 100m of the site and several potentially infilled areas from former chalk, sand and gravel and clay pits excavated in the wider areas. As such, there is considered to be the potential for ground gases to be generated and migrate through any near surface highly permeable soils to impact the proposed highly sensitive end site users.

The proposed site use will allow contact with potential contaminant through direct contact, ingestion and inhalation pathways. As the site is to be residential apartments with minimal ornamental soft landscaping, however, some of the pathways such as direct ingestion or soil or ingestion via fruits and vegetables will be limited.

Given the above discussion, in order to verify that 'Significant Possibility of Significant Harm' does not exist with respect to the potential contamination sources, and the proposed end user, it is recommended that a ground investigation be undertaken across the site to confirm the risks to receptors and confirm ground conditions with respect to potential geotechnical and geo-environmental risks. Specific objectives of this investigation should include sampling and assessment of the imported aggregate on the cattle barn area in the northwest of the site. Ground gas monitoring wells should be installed in order to assess the ground gas risk regime beneath the site.

Further to this, should any unexpected contamination be identified during the future development groundworks, then a suitably qualified and experienced Geo-Environmental Engineer should be consulted and if necessary further assessment should be undertaken."

- **SCA – P20-078sca - Site Contamination Risk Assessment Report (March 2020), Paddock Geo Engineering Limited (PGE).**

The main fieldworks were carried out between Wednesday 29th and Friday 31st July 2020 and comprised the forming of 2no. machine excavated Trial Pits, 6no. percussion liner boreholes and 7no. dynamic probes.

The trial pits were formed to depths of 1.50m and 2.40m below ground level (bgl) to assess the infiltration potential of the shallow soils on site.

The boreholes were formed to depths of 5.0m and the dynamic probing to 10m bgl in order to establish the ground conditions at depth, especially the potential soft strata noted at depth in the previous investigation.

Disturbed samples of the strata encountered were recovered at regular intervals within all of the exploratory points to the full depth of the investigation for geotechnical laboratory testing. Samples were also recovered in suitable containers for chemical analysis from the top metre of soils from the general site area. Shallow samples were also olfactorily screened for agrichemicals.

Made Ground was encountered across the site and typically comprised a surface layer of coarse GRAVEL of demolition rubble to between 0.10m to 0.20m depth. Underlying the surface gravel was soft to stiff grey brown and brown variably gravelly sand CLAY and gravelly clayey silty SAND. Made Ground deposits were encountered to between 0.40m and 1.00m depth across the site.

Head deposits were encountered within all exploratory positions directly underlying the Made Ground. The Head deposits were highly variable in consistency and composition between stiff locally firm orange brown and brown variably sandy gravelly CLAY and medium dense, locally loose brown and orange brown variably clayey SAND and GRAVEL / gravelly SAND. The base of the Head deposits was only proven within boreholes WS101 and WS102 at 4.50m depth on the western area of site. Head deposits extended to beyond the base depth of the percussion liner sampling boreholes at 5.00m depth across the remaining area of the site.

The SNCK Chalk stratum was encountered within boreholes WS101 and WS102 only at depth of 4.50 bgl. Th SNCK soil comprised structureless chalk composed of white gravelly CLAY, the gravel fine to medium angular extremely weak low density chalk with occasional black flint.

Chalk was proven within the previous investigation at depth of between 3.50m and 5.20m on the southern and western area of the site, and at a depth of 8.90m bgl on the northern corner of site.

No distinct indication of a Head / Chalk boundary was noted within the DP records.

No groundwater was encountered during the site works within the trial pit or the boreholes or in subsequent monitoring carried out to date. Some perched water was identified in the previous works at a depth of 4.90m bgl.

A total of 6no. soil samples were sent to an external laboratory to obtain total soil concentrations for a range of priority contaminants.

The conclusions of the intrusive contamination assessment carried out as Phase 2 of a Site Contamination Assessment stated:

“Generally low levels of priority contaminants were noted in the shallow soils from across the site with no exceedances compared to the most stringent residential GACs.

Given the above, the shallow soils across the majority of the site are **not** considered to pose an unacceptable risk to the proposed highly sensitive end site users. The exception being the very low level asbestos impacted soils identified in Made Ground from WS105 at 0.80m depth. Therefore, measures should be put in place to ensure that this soil is not able to be contacted by the end users of the site. These mitigation measures could comprise removal of the impacted soil and replacement with clean soil in open areas of the site. From the proposed development plan presented in Appendix A, it would appear that the WS105 location is beneath the main structure, therefore, creating a suitable separation from these soils.”

Notwithstanding the above assessment, if any unexpected or previously unidentified contamination is discovered during the site development works, a suitably qualified and experienced person should be contacted so any further assessment required can be carried out.”

The risk to construction workers has not been assessed as generally any risks posed to site construction workers from identified contamination can be mitigated through good site practices and robust sitework risk assessment. However, works carried out on sites where asbestos fibres have been identified must be carried out by a suitable contractor and a site specific Health and Safety Plan for site construction workers must be produced in line with CAR 2012¹.

Further the PRA report concluded that there was a potential risk of contamination of the site from ground gases. Therefore, monitoring standpipes were installed during the fieldworks for the purpose of monitoring ground gas and groundwater level.

Initial ground gas contaminant monitoring comprising 4no. visit has been carried out on the site in July and August 2020.

¹ Control of Asbestos Regulations 2012

The gas monitoring results to date gave a worst-case gas screening value of 0.0022l/hr for CO₂. This allows a Characteristic Situation 1 employing the Modified Wilson and Card classification detailed in CIRIA C665 2007.

The monitoring visits carried out to date indicated atmospheric pressure of above 1000mb. A minimum of 6 visit over a period of 3 month is recommended for a very low classification of gas generation potential with at least 2 no. at atmospheric pressures below 1000mb as per the CIRIA C665 guidance.

The further monitoring visits are scheduled at the time of issue of this report which will allow the risk assessment refined prior to development of the site. The report will be updated and reissued once this monitoring is complete.

1.3 Regulatory Liaison

The Local Planning Authority have not been consulted by PGE for comment. It is understood that the previous PRA and GI/SCA reports have been forwarded to them for comment.

1.4 Current Site Use and Site History

A site walkover survey was conducted on 29th July 2020 by a representative of Paddock Geo Engineering Limited. A Site Walkover Survey Plan and series of photographs taken during the walkover survey are presented in Appendix B of the PRA report that should be read in conjunction with the current report.

The western and central area of the site are relatively level in topography; however, a central section of site is approximately 0.50m to 1.0m lower than the north, west and south, apparently where the former structure stood on site. A strip along the northeast edge of the site approximately 1m lower in elevation than the rest of the site. The site would appear to have been levelled historically as the rear or southern boundary and flanking sides of the site have retaining structures with the adjacent land some 1-2m higher.

The site is currently a disused parcel of land surfaced with crushed brick and concrete comprising demolition rubble from the former development on site, and bare earth in places. Scrub vegetation, brambles and weed are beginning to colonise the site surface. Areas of macadam surfacing are still present on the central northern and southeast areas of site, apparently a section of the car park remaining from the previous site development. It appears that the demolition rubble may have been placed directly over the existing macadam access road and car parking areas.

The site boundaries are currently marked by timber hoarding on the northeast and southeast with a gate on the eastern corner of site providing access from Lyndhurst Road. The borders of the northwest and southwest are marked by timber fencing marking the rear of residential gardens bounding the site. The fencing is heavily overgrown with brambles and several mature trees are present in the adjacent gardens.

A historical map regression of the site area was carried out for the associated PRA and this indicated that the site was an agricultural field from the earliest mapping, and from around 1936 appear to be located within the grounds of a Mission Church to the northeast of the site. The site was redeveloped in circa 1969 with a central structure and apparent domestic garages along the northwest and southwest boundaries. The central structure was latterly labelled at Norcot Clinic.

The surrounding area was undeveloped until circa 1936 when developed with residential housing. The areas of housing were extended during the 1960. Several chalk and gravel pits were noted to the southeast, east and northeast. Some of which were later developed over with residential housing and some of which are now located within an area of public green space named as McIlroy Park.

2.0 PROPOSED DEVELOPMENT

The proposed development scheme is indicated by the client to involve the development of the site with a central three storey steel framed structure housing residential apartments and including associated access, parking, infrastructure and ornamental soft landscaping.

A proposed site plan is presented in Appendix A.

3.0 PARTIES AND RESPONSIBILITIES

The parties involved in the design, construction and operation of the remediation are categorised according to their roles as follows:

Current Owner	Beard Construction Limited
Developer	Beard Construction Limited
Architects / Designers	Saunders Architecture and Urban Design / SDS Consulting Limited – Civil and Structural Engineers
RQA Supervision	Paddock Geo Engineering Limited (PGE)
Remediation Design	Paddock Geo Engineering Limited (PGE)
Regulators	Reading Borough Council Environment Agency
Analytical Testing Laboratory	I2 Analytical Limited, Watford (UKAS Accredited Testing Laboratory No. 4041)
Waste Haulier	Currently unknown
Waste Disposal Site	Currently unknown
Remediation Contractor	Beard Construction Limited

4.0 RISK MANAGEMENT OPTIONS APPRAISAL

4.1 Introduction

The proposed development (as detailed in Section 2.0) will include the development of the site with a central three storey steel framed structure housing residential apartments and including associated access, parking, infrastructure and ornamental soft landscaping. The nature of the proposed development is considered highly sensitive due to the residential nature of the proposed structure, however, only peripheral ornamental soft landscaping areas are included within the proposed development.

The SCA Phase of the site contamination assessment did not identify significant evidence of potentially contaminated soils on site, with the exception of very low level asbestos impacted soils identified in Made Ground from WS105 at 0.80m depth. It was concluded following the ground investigation that it would be necessary to put in place measures to ensure that this soil is not able to be contacted by the end users of the site. In addition, although not identified as contamination the near surface Made Ground soils on site contained significant quantities of brick, concrete, ash and occasional clinker which would render the Made Ground soils unsuitable as a Topsoil material for soft landscaping areas. This will ensure that the site is suitable for the proposed end-use as a residential development.

4.2 Remedial Objectives

Remedial works are regarded as a form of risk management, the aim of which is to demonstrably break the chain of any potentially unacceptable pollutant linkages that connect contaminant sources to receptors via pathways on site. The aims of the remedial works are:

- To ensure that human health (site end-users including future residents, visitors and ground workers including construction and future maintenance workers) are not exposed to elevated concentrations of hazardous substances on site.
- Ensure that any remedial works overcome any perceived risks or blight associated with the previous use of the site and any potential associated contamination.

4.3 Source, Pathway and Receptor Management

A Source Pathway Receptor Conceptual Model has been produced for the site using the data from the SCA and is presented in Appendix B. There are three potential options to break the pollutant linkages at the site. These options are presented below:

4.3.1 Source Reduction

This involves the reduction, removal, modification or destruction of the contamination source. Applicable techniques include:

- Source removal through excavation and disposal of contaminated soils and any associated contaminated infrastructure.
- In-situ or ex-situ physical, chemical, biological and thermal source reduction methods.

4.3.2 Pathway Management

This involves the prevention of movement of contaminants on route to receptors. Applicable techniques include:

- Removal or destruction of contaminants e.g. bioactive zones.
- Preventing pathways from operating e.g. separation-layer or clean-soil cover layer capping system, stabilisation and slurry walls.

4.3.3 Receptor Protection

This protects the receptor by modifying activities and behaviour to reduce exposure and is not normally classed as remediation, but as risk reduction. It is generally a less favourable method for mitigating the risk from contamination. Applicable techniques include:

- Restricting or changing the land use e.g. change to residential use without gardens.
- Changing the design, layout or the proposed construction e.g. adding hardstanding to problem areas.
- Restricting access of the receptor e.g. fencing or walls.

4.4 Viable Remediation Techniques

As with any proposed remedial works, the size, scale and nature of the site, site characteristics, quantity, type and extent of contaminated material present in soils and groundwater, the time frame, cost / benefit analysis and value and the sustainability of the remedial method must all be considered when exploring remedial options. A Remediation Option Matrix for the site is presented in Appendix C.

A range of remedial technologies exist and have been explored and the methods considered most viable for the site are listed below.

4.4.1 Excavation and Disposal

Excavation and disposal (colloquially known as dig and dump) is the most basic of remedial techniques, but often most effective. Contaminated soils and any associated infrastructure i.e. buried pipework and impacted materials such as concrete bases are removed either in their entirety or to acceptable levels to allow the inclusion of an inert capping layer. Contaminated materials are generally disposed of to landfill void, material recovery or soil treatment facilities.

The drawback of this technique is the potential for spiralling costs due to unknown and potential non-sustainable quantities of material and increased disposal costs. This method is also generally not considered suitable for deep contamination deeper than 2m bgl due to large volumes which would require disposal and the potential for ground instability from such an excavation.

Due to the relatively small and discrete area of soft landscaping in the vicinity of WS105 where asbestos was identified the excavation and disposal of these soils is considered a viable remedial approach as only limited quantities of soil will require removal and replacement. This is considered to be a practical, cost effective and environmental-friendly approach.

4.4.2 Cover System

A cover system is generally employed along with Excavation and Disposal of contaminated soils to separate end site users from impacted soils which remain at depth on the site due to their low risk of mobilisation to impact off site receptors.

A cover system comprises a cover of clean soil, often imported to the site, with a marker layer at its base often comprising a differing colour soil layer than the host soil and/or a geomembrane barrier to physically limit direct contact with the remaining impacted soils. A minimum 300mm thick topsoil layer is generally included at surface in areas of the site which are proposed to be soft landscaped.

The thickness of the cover system depends on the concentrations of contaminants present on the site and the background concentrations of the contaminants within the cover soils. The depth is calculated using the BRE Cover Systems spreadsheet² however, as the contaminant identified is asbestos the BRE Cover System spreadsheet is not applicable to specify the required depth in this case.

This is considered to be a suitable approach for the site as an addition to excavation and disposal of the impacted soils.

4.4.3 Soil Stabilisation

Soil stabilisation is achieved by the reaction of contaminants with reagents to promote sorption, precipitation or incorporation into crystal lattices.

This is not deemed viable at the site due to the presence of residential garden areas on site.

4.4.4 Solidification

Solidification is a remediation technology that involves the addition of reagents to a contaminated material to impart physical and dimensional stability to contain contaminants in a solid product and reduce access by external agents (e.g. air and rainfall).

This technology is not viable within the proposed residential garden areas or within or close to the residential dwelling building footprint due to potential drainage and possible geotechnical issues.

4.4.5 Chemical Oxidation

In its simplest form, chemical oxidation remediation comprises the introduction of an oxidation agent into the ground or a stockpiled material to allow an oxidation reaction to occur (in soil and groundwater) and convert the contaminants to a lower risk form.

For in-situ treatment, this method requires permeable soils to allow the circulation of treatment chemicals which are generally in an aqueous form. This method is not suitable due to the nature of the contaminants (asbestos) and the poor permeability of the near surface Made Ground.

4.4.6 Monitored Natural Attenuation

This method comprises the natural attenuation of contaminants in soil and groundwater through various means such as natural bio-gradation, abiotic oxidation, sorption, volatilisation and dispersion, with monitoring to assess the progress of the attenuation. For this method to

² Based on worst case lead and PAH concentration and:

Cover systems for Land Regeneration: Thickness Design of Cover Systems for Contaminated Land, BRE. 2004.

be viable, the affected soil must be physically and chemically suitable and demonstrate that natural attenuation is occurring or could have the ability to occur.

Due to the nature of the contaminant present on site this option is not viable.

4.5 Remedial Sustainability

As discussed in Section 4.0, a range of remedial options have been investigated and several factors considered within the option appraisal process including; efficiency and effectiveness of the remedial technique, potential costs, haulage movements on and off-site and potential carbon emissions, other environmental factors, accurate focusing of remedial works, timescales and the general overall benefits.

4.6 Most Viable Remedial Option

It is considered that the most viable remediation method for the site, given the low levels of asbestos identified within WS105 is the excavation of the Made Ground materials within the proposed soft landscaping in this area and replacement with imported clean suitable Topsoil material. This will prevent the proposed site users coming into contact with the potential asbestos within the Made Ground soils.

In addition, given the deleterious material within the shallow Made Ground encountered on the site, a surface dressing of Topsoil is recommended within all proposed soft landscaped areas.

None of the remaining remedial options outlined in Section 4.0 are considered practical or suitable for the site.

5.0 REMEDIATION ACTION REQUIRED

5.1 Introduction

The remedial measures required are detailed in this section of the report and comprise the removal of the shallow Made Ground containing low levels of asbestos in the vicinity of boreholes WS105 and replacement with imported clean suitable Topsoil material to provide a separation between these impacted soils and the end site users to allow a break of the related S-P-R linkages.

Provision for a surface dressing of clean Topsoil material should also be made within other soft landscaping areas on site due to the unsuitable nature of the near surface Made Ground as a growing medium.

5.2 Remedial Action – Removal of near surface asbestos impacted Made Ground in soft landscaping areas in vicinity of WS105 and protection of construction workers

Low levels of asbestos were recorded within borehole WS105 on site. An area of soft landscaping is located in the vicinity of where borehole WS105 was undertaken.

A minimum of 600mm separation² from the end site users is required given the Made Ground materials identified on the site. However, the impacted Made Ground stratum was identified to depth 1.0m bgl in WS105; and given the nature of the asbestos contamination, it is therefore recommended that the full depth of Made Ground is removed from the proposed soft landscaping area. Therefore, the actual depth of excavation and soil removal will depend upon the supervising Remediation Engineer and the final proposed site levels.

No volatile contamination was identified on site and as such, no vapour pathways linkages have been concluded on the S-P-R model and therefore, remediation works are not required where the impacted soils are not accessible on the site, i.e. covered in permanent hardstanding such as building footprints and driveways.

A chemically and geotechnical suitable fill material will need to be used to fill the remediation excavation upon completion. This can comprise site groundworks arising from proven clean areas of the site beneath the Made Ground.

There still exists a potential pathway between the potentially asbestos impacted soils and other users of the site, such as construction workers, prior to the development being finalised. Works carried out on sites where asbestos fibres have been identified must be carried out by a suitable contractor and a site specific Health and Safety Plan for site construction workers must be produced in line with CAR 2012³.

A plan indicating the area of the site which require remediation is presented in Appendix D.

All soils excavated as part of the works on site should be loaded immediately into a haulage vehicle for removal or placed on banded geo-membrane and covered to prevent the generation of wind-blown dust. The material should be removed off-site once the waste has been classified and a disposal destination selected.

Alternatively given the low levels of asbestos identified within borehole WS105, the material excavated could be removed from site or could feasibly be safely incorporated beneath the building footprint / or car park hardstanding. As such the building / hardstanding will effectively act as a cover system in this area preventing the proposed site users coming into contact with the potential asbestos within the Made Ground soils. If the material is replaced on the site a record of the locations should be kept.

It is recommended that the Client considers the use of a soil treatment facility as oppose to landfill, not only is this a more sustainable approach but also a more cost effective one.

5.3 Remedial Action – Capping of soft landscaping areas with suitable Topsoil

No elevated concentrations of priority contaminants were identified within the samples of Made Ground soils tested during the SCA. The Made Ground material however did contain significant deleterious material such as ash, concrete, brick and clinker would render the Made Ground soils unsuitable as a growing medium within soft landscaping areas

A minimum dressing of 300mm of clean Topsoil should be placed in soft landscaped areas across the site to prevent blight and provide a suitable growing medium for vegetation within the proposed ornamental soft landscaping areas.

A chemically clean suitable fill material will need to be used within soft landscaping areas. Given the lack of suitable Topsoil material on site this will likely have to be imported from off site.

³ Control of Asbestos Regulations 2012

5.4 Backfilling of Remediation Excavations

The remediation excavations will require backfilling to facilitate the development. The excavation should be backfilled with clean soils including a clean Topsoil cover layer of at least 300mm at surface in areas of open soil, such as soft landscaped areas.

In the first instance it is preferred to use site won soils and Topsoil sourced from the on-site groundworks/strip for backfilling, however, given the lack of suitable Topsoil type material on site this is unlikely to be a viable option on this site.

Any backfill soils must be certified clean before being reused from site or brought to site and it is recommended that Topsoil be imported from a reputable Topsoil supplier.

Topsoil employed should be a good quality growing medium and have been subjected to chemical testing (at the rate of a minimum of two samples per source and one sample per 1,000m³ thereafter).

The imported materials are required to meet the British Standard for Topsoil (BS 3822: 2015) and the PGE In-House total soil contaminant concentration GACs for a residential without plant uptake land-use scenario, which are included in Appendix E.

5.5 Remediation Quantities

It is unclear at the present how much material will need to be excavated and disposed as part of the remediation process. Calculations will be made in due course to enable appropriate cut and fill balance to be maintained at the site.

5.6 Waste Classification

The HazWaste online classification system was employed to assess the waste classification employing the total determinand concentrations within samples of the near surface Made Ground and near surface natural soils, in relation to groundworks arising disposal. This indicated the samples of the near surface soils tested to have a Non-Hazardous classification with EWC code **17 05 04**.

Waste Acceptance Criteria (WAC) testing was also carried out to determine if the soils tested could be disposed of into an inert facility. This indicates that the samples of soils had leachable determinand levels below the related guidance levels for disposal into an inert facility. Based upon the testing carried out the waste soils generated on site may still be suitable for disposal at an inert facility.

Further to this, asbestos fibres were identified within one sample. The sample from WS105 at 0.80m depth tested positive with the asbestos being identified as Chrysotile – Loose Fibrous debris. Subsequent quantification testing was carried out and indicated an asbestos concentration of <0.001%. As such, based upon the testing to date the Made Ground soils on site is not necessarily considered as asbestos impacted soils.

The results of the soil waste classification testing are presented in Appendix C.

On the above basis, it is considered that the soils tested would classify as non-hazardous waste and may be suitable for disposal into an inert facility.



All waste classification should be confirmed with the waste receiving facility prior to disposal. The waste receiving facility, especially if not an inert landfill, may also require the total soil priority contaminant concentrations which are also presented in Appendix F.

The results of the soil waste classification testing are presented in Appendix F.

5.7 Remediation Validation

The remedial works shall be performed under the supervision of a suitably qualified person, who will fill the role of a Remedial Quality Assurance Engineer (RQA) which is required for validation purposes.

During the remedial works and following general site clearance, a watching brief shall be maintained such that should the sub-soil conditions in other areas of the site appear to be inconsistent with those found in the areas sampled, then this can be brought to the attention of the RQA Engineer and these recommendations reviewed.

A Validation Report will be prepared by PGE on completion of the remedial works to confirm the removal of the Made Ground materials in soft landscaping areas and replacement with suitable imported clean topsoil materials.

The objective of the Verification Report will be to document all aspects of the works undertaken and will include all records collected and maintained by the Client and their appointed construction team / remediation contractor throughout the duration of the project.

The Validation Report will be prepared in accordance with the Environment Agency guidance document Verification of Remediation of Land Contamination (report SC030114/R1 dated 2010).

The Validation Report will describe the site, remediation objectives, remediation technique, verification data, supported by sketches and as-built drawings, figures, photographic records and any additional information that may supplement the report. For the validation of the remediation works detailed records should be maintained of:

- Details of the remediation arisings removed from the site following excavation and disposal destination (licensed facility).
- A photographic record of the works.

Copies of the Validation Report will be provided to the concerned regulatory authorities, who will be asked to state whether they are satisfied with the level of detail provided and confirm that it appears to be reasonable given the data presented. Based on the information supplied, they will then make a statement about whether the site is fit for its proposed residential end use to allow discharge of the related planning conditions.

Any substantial change to the remediation objectives will be agreed with the Local Planning Authority, as appropriate, prior to commencement and communicated to all relevant parties.

5.8 Health, Safety and Environmental Requirements

The construction operatives working on this site should take precautions commensurate with the degree of contamination identified in the previous contamination assessment reports produced for the site and detailed within the Construction Phase Health and Safety Plan.

Best practicable environmental protection should always be employed during the remediation and construction works.

Appropriate Health & Safety precautions including the use of signage, site inductions and toolbox talks to raise awareness of the risks on site, regular dampening down of stockpiles and site surfaces to minimise the generation of wind-blown dusts and the covering of stockpiles (where possible) and the use of PPE should be adopted. Respiratory PPE may be required for use by ground workers if suspect asbestos-containing materials are encountered.

Groundwater is unlikely to be encountered on site during the remedial works at the proposed depths. However, any groundwater encountered should be left in-situ if possible and if it is necessary to be removed off site, the water must be removed off site by a suitable tanker or treated, such as via the site oil / water interceptor system, prior to discharge.

6.0 REMEDIATION QUALITY ASSURANCE

The site remediation should be considered as a comprehensive process which requires clear and effective management. The Remediation Quality Assurance (RQA) procedures detailed in the Sections above have been included within the Remediation Method Statement to ensure that the objectives are achieved and that:

- The remediation is competent and of a high standard.
- The approach and actions taken are well documented.
- The Client should be confident that the remediation works are suitable for the indicated proposed end site use.

Throughout the site remediation works a suitably qualified and experienced Engineer or Scientist (the RQA Engineer) shall direct the operations for remediation and maintain records of the works carried out whilst supervising all site work. A Validation Report will then be produced and forwarded to the concerned parties.

REFERENCES

Investigation of Potentially Contaminated Sites – Code of Practice, British Standards Institution BS 10175:2001.

Code of Practice for Site Investigations, British Standards Institution BS5930: 1999+A2:2010

Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination, R&D Technical Report P5-066/TR, 2000, Environment Agency.

National House-Building Council, NHBC Standards Chapter 4.2 'Building near Trees', 2003

CLR8 Potential Contaminants for the assessment of Land, 2002, DEFRA/Environment Agency.

BRE Special Digest 1 'Concrete in Aggressive Ground', 2001.

Contaminated Land Exposure (CLEA) Model version 1.03 developed by the Environment Agency, Department for Environment, Food and Rural Affairs and the Scottish Environment Protection Agency. 2008

CLR7 Assessment of Risks to Human Health from Land Contamination, 2002, DEFRA/Environment Agency.

CLR8 Potential Contaminants for the assessment of Land, 2002, DEFRA/Environment Agency.

CLR11 Model Procedures for the Management of Land Contamination, 2004, DEFRA/Environment Agency.

Environment Agency guidance document Verification of Remediation of Land Contamination (report SC030114/R1 dated 2010).

Method for Deriving Site-Specific Human Health Criteria for Contaminants in Soil, SNIFFER, 2003.

Technical evaluation of the Intervention Values for Soil/Sediment and Groundwater, RIVM Report 711701 023, National Institute of Public Health and the Environment, 2001.

The Water Supply (Water Quality) Regulations. HMSO. 2000

Code of Practice for Investigation and Mitigation of Possible Petroleum –Based Land Contamination, 1993, Institute of Petroleum, London.

Contaminated Land Management – Ready Reference, J Nathanail, P Bardos and P Nathanail, Land Quality Press, 2002.

BRE Digest 412 'Desiccation in Clay Soils', 1996

Hydrogeological Risk Assessment for Land Contamination Remedial Targets Worksheet, release 3.1 – October 2006

Mobilising Nature's Army: Monitored Natural Attenuation – dealing with pollution using natural processes, Environment Agency. 2004

Remediation Targets Methodology: Hydrogeological Risk Assessment for Land Contamination, Environment Agency. 2006

LFTGN01. Hydrogeological Risk Assessment for landfill and the derivation of groundwater control and trigger levels. Environment Agency 2003

NOTES AND LIMITATIONS

This report is produced for the sole use of the Client, and no responsibility of any kind, whether for negligence or otherwise, can be accepted for any Third Party who may rely upon it.

The conclusions and recommendations given in this report are based on our understanding of the proposed plans for the site in the future. If, however, the site is developed for a varying use, then a different interpretation might be appropriate.

The report has been prepared following the guidelines and principles established in the British Standards. It necessarily relies on the co-operation of other organisations and the free availability of information and total access. Where data supplied by the Client, including that from previous site investigations, have been used, it has been assumed that the information is correct. No responsibility can be accepted by PGE for inaccuracies within the data supplied.

No responsibility can, therefore, be accepted for conditions arising from information that was not available to the investigating team because of information being withheld or access being denied.

The scope of this Ground Investigation was discussed and agreed with the Client. No responsibility is accepted for conditions not encountered, which are outside of the agreed scope of work.

This report may suggest an opinion on a possible configuration of strata or conditions between exploratory points and below the maximum depth of investigation. However, this is for guidance only and no liability can be accepted for its accuracy. Comments on the groundwater conditions are based on observations made at the time of the investigation unless otherwise stated. It should be noted, however, that groundwater levels might vary due to seasonal or other effects.

It should be noted that this report is based solely on the samples collected in the borehole locations investigated. During the works and following general site clearance, should the sub-soil conditions in other areas of the site appear to be inconsistent with those found in the areas sampled then this geotechnical appraisal and site contamination assessment may need to be reviewed.

This report is prepared and written in the context of the proposals stated in the introduction to this report and it should not be used in a differing context. Furthermore, new information, improved practices and changes in legislation may require an alteration to the report in whole or in part after its submission. Therefore, with any changes in circumstances, or after one year from the date of the report, the report should be referred to Paddock Geo Engineering Limited for re-assessment (and, if necessary, for an estimate for the cost of such).

The copyright of this report and any associated plans and documents prepared by Paddock Geo Engineering Limited is owned by them and should not be reproduced, published or adapted, in whole or part, without their written consent.

The report is provided for the sole use by the Client and is confidential to him/her and his/her professional advisors. No responsibility whatsoever for the contents of this report will be accepted to any other person other than the Client.

APPENDIX A

Site Location Plan

Aerial Photograph

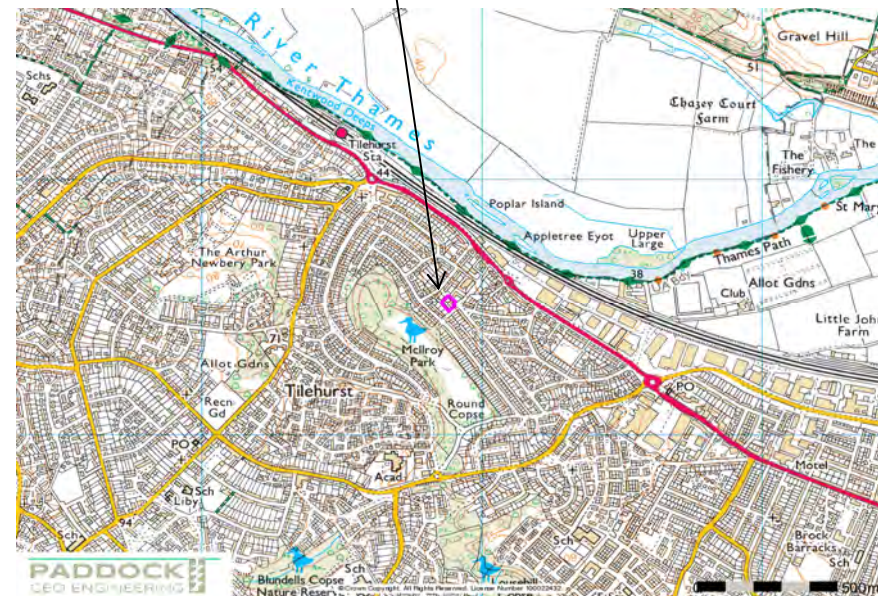
Site Plan

Proposed Site Layout Plan

SITE LOCATION PLAN



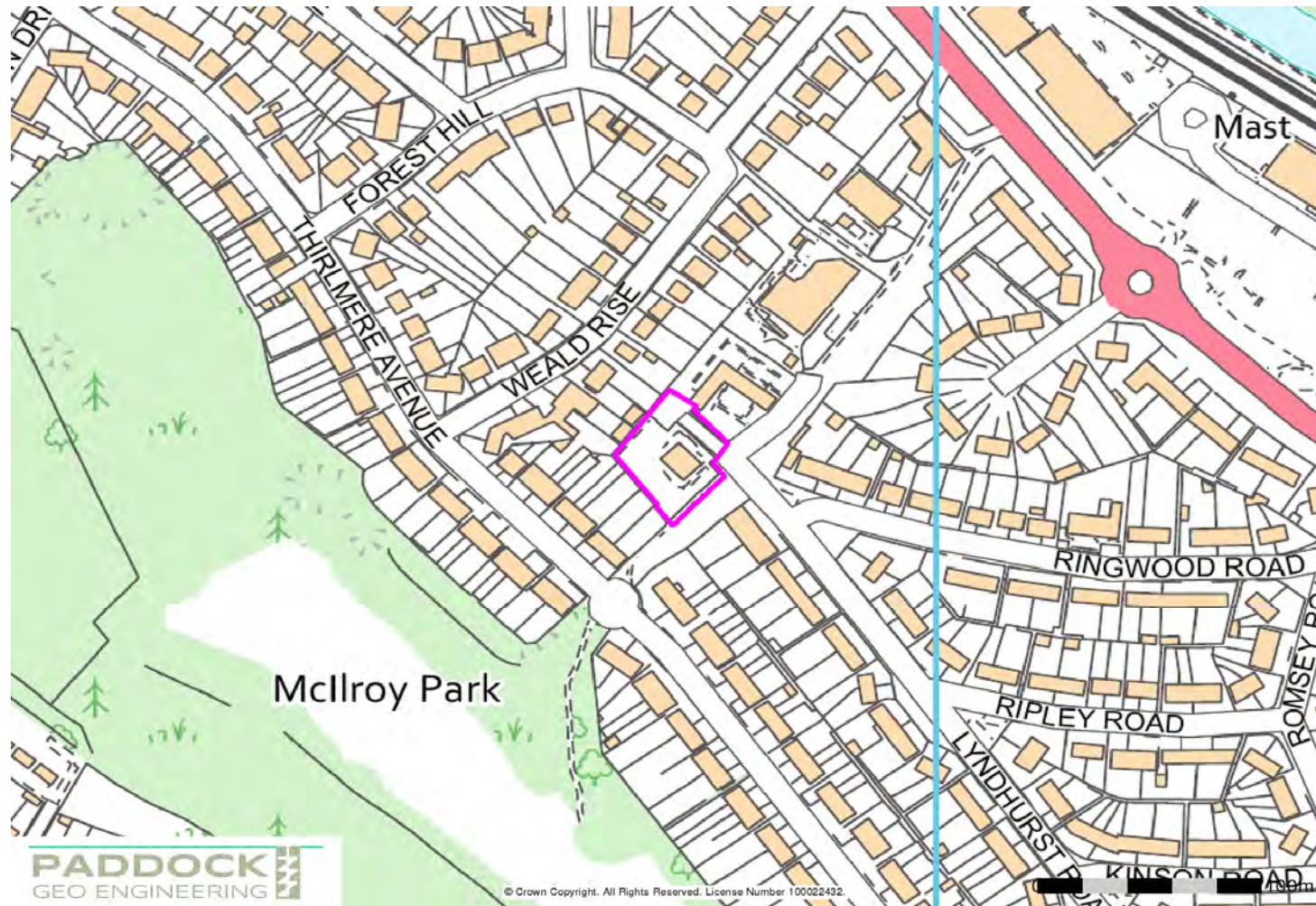
Site Location



PADDOCK
GEO ENGINEERING

CLIENT: Beard Construction Limited
PROJECT No: P20-069
PROJECT TITLE: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

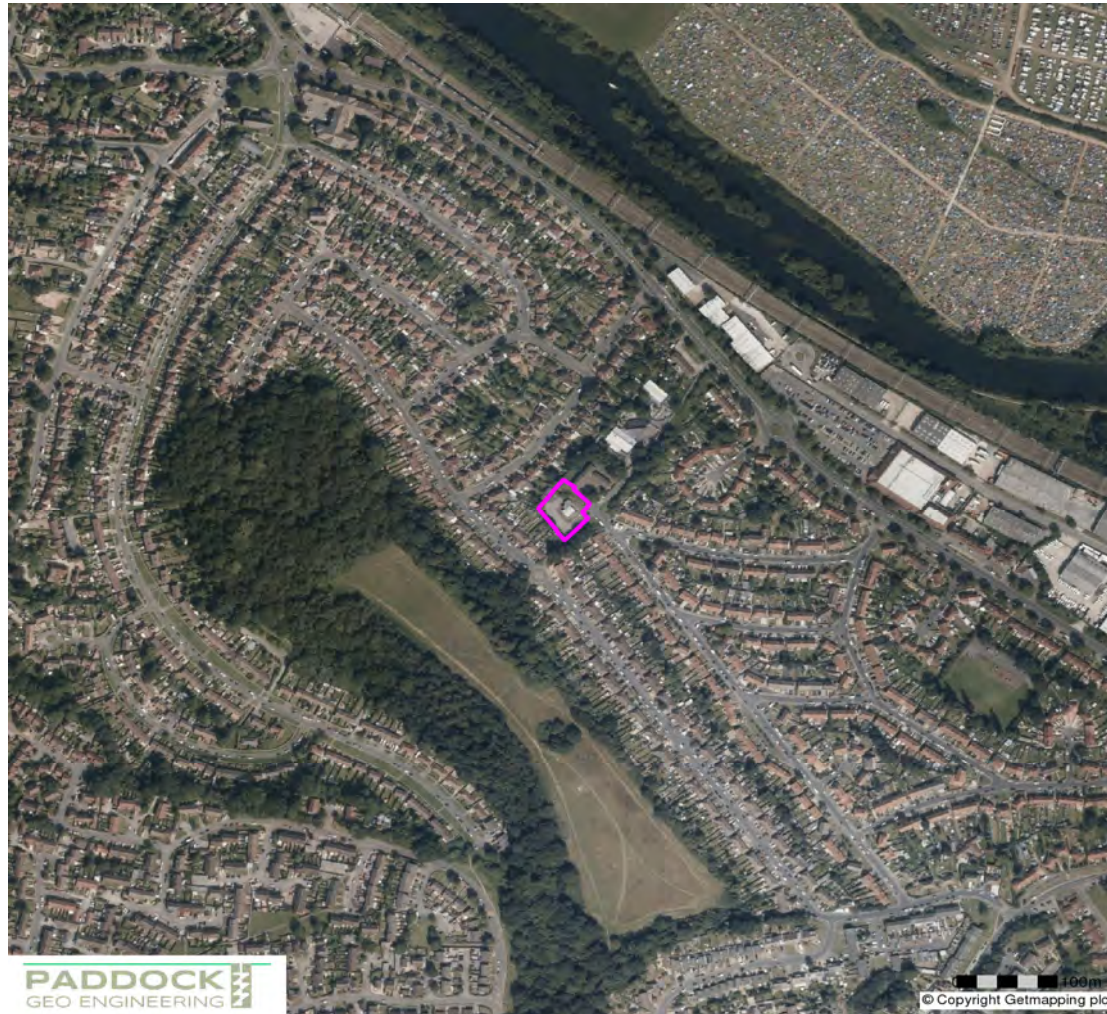
SITE PLAN



PADDOCK
GEO ENGINEERING

CLIENT: Beard Construction Limited
PROJECT No: P20-069
PROJECT TITLE: Norcot Community Centre, Lyndhurst Road,
Reading, RG30 6UB

AERIAL PHOTOGRAPH



CLIENT:	Beard Construction Limited
PROJECT No:	P20-069
PROJECT TITLE:	Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB



NOTES

This drawing is to be read in accordance with the specification/Bills of Materials and related drawings. No Dimensions to be scaled from this drawing. All stated dimensions to be verified on site and the Architect notified of any discrepancies

0 50
Scale bar 50mm at 1:1

D	Layout changes in accordance with discussion with Reading Borough Council planning team	09/05/19	JT
C	Parking layout revised	20/11/18	SB

Project

Norcot Community Centre
Lyndhurst Road
Tilehurst
Reading

Title

Rendered Site Plan

Scale 1:200 @ A1	Date 15/04/2018
Drawn AS	Checked MS

Drawing Number 7870_PL102	Revision D
-------------------------------------	----------------------

Saunders
Architecture + Urban Design

APPENDIX B

Source-Pathway-Receptor Ground Models

Potential On-Site Contaminant Sources	Potential Pathways	Potential Receptors	Pathway Complete
Very low levels of asbestos fibres in MG from WS105 at 0.80m depth. (Under proposed building footprint)	Dermal/Direct Contact	Current Site Users (Disused site)	N
	Direct Ingestion		N
	Direct Inhalation		N
	Inhalation of Radon Gas		N
	Inhalation of Wind Blown Dust		N
	Vapour Migration		N
	Gas Migration		N
	Dermal/Direct Contact	Future Site Users (Residential without plant uptake)	Y
	Direct Ingestion		N
	Direct Inhalation		Y
	Inhalation of Radon Gas		N
	Inhalation of Wind Blown Dust		Y
	Vapour Migration		N
	Ground Gas Migration		N
	Direct Contact	Service	N
	Migration of Contaminants – Non-Aqueous Phased		N
	Migration of Contaminants – Aqueous Phased		N
	Migration of Contaminants – Non-Aqueous Phased	Adjacent Properties	N
	Migration of Contaminants – Aqueous Phased		N
	Vapour Migration		N
	Inhalation of Wind Blown Dust	Ecological Impacts	N
	Migration of Contaminants – Non-Aqueous Phased		N
	Migration of Contaminants – Aqueous Phased		N
	Migration of Contaminants from site – Non-Aqueous Phased	Controlled groundwater	N
	Migration of Contaminants from site – Aqueous Phased		N
	Migration of Contaminants – Non-Aqueous Phased	Surface Waters	N
	Migration of Contaminants – Aqueous Phased		N

APPENDIX C

Remediation Options Matrix

Remediation Option Applicability Matrix: Organic Substances

Remediation Option	Applicable Media	Applicable Substances						
		VOCs	Halogenated hydrocarbons	Non-halogenated hydrocarbons	PAHs	PCBs	Dioxins + Furans	Pesticides + herbicides
Civil Engineering Methods								
Containment - Cover systems	S	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Containment - Hydraulic barriers	W	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Containment - In-ground barriers	S, W	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Excavation and Disposal	S	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Biological Methods								
Natural Attenuation	W	Yes	Yes	Yes	Yes	No	No	Yes
Biopiles	S	Yes	No	Yes	Yes	No	No	Yes
Bioventing	S	Yes	Yes	Yes	Yes	No	No	No
Biosparging	S, W	Yes	Yes	Yes	Yes	No	No	Yes
Landfarming	S	Yes	No	Yes	Yes	No	No	Yes
Slurry phase biotreatment	S	Yes	Yes	Yes	Yes	No	?	Yes
Windrow turning	S	Yes	No	Yes	Yes	No	No	Yes
Chemical Methods								
Chemical oxidation	S, W	Yes	Yes	Yes	Yes	No	No	Yes
Chemical dehalogenation	S	Yes	Yes	Yes	No	No	Yes	No
Soil flushing	S	Yes	Yes	Yes	Yes	No	No	No
Solvent extraction	S	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Surface amendments	S	No	No	No	No	No	No	No
Physical Methods								
Dual Phase SVE	S, W	Yes	Yes	Yes	No	No	No	No
Air sparging	W	Yes	Yes	Yes	No	No	No	No
Soil vapour extraction (SVE)	S	Yes	Yes	Yes	No	No	No	No
Permeable reactive barriers (PRBs)	W	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Soil washing	S	No	Yes	Yes	Yes	Yes	No	Yes
Stabilisation and Solidification Methods								
Hydraulic binders (e.g., cement)	S	No	No	?	Yes	Yes	Yes	?
Vitrification	S	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Thermal Methods								
Incineration	S	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Thermal desorption	S	Yes	Yes	Yes	Yes	Yes	No	Yes

Yes	Most Suitable Method
Yes	Potentially applicable
No	Not applicable
?	A pre-treatment step may be necessary prior to the method being suitable
S	Soils, made ground and sediments
W	Groundwater and surface water

Remediation Option Applicability Matrix: Inorganic Substances

Remediation Option	Applicable Media	Applicable Substances				
		Heavy metals	Non-metals	Asbestos	Cyanides	Explosives
Civil Engineering Methods						
Containment - Cover systems	S	Yes	Yes	Yes	Yes	Yes
Containment - Hydraulic barriers	W	Yes	Yes	Yes	Yes	Yes
Containment - In-ground barriers	S, W	Yes	Yes	Yes	Yes	Yes
Excavation and Disposal	S	Yes	Yes	Yes	Yes	Yes
Biological Methods						
Natural Attenuation	W	Yes	Yes	No	No	Yes
Biopiles	S	No	No	No	No	Yes
Bioventing	S	No	No	No	No	No
Biosparging	S, W	No	No	No	No	No
Landfarming	S	No	No	No	No	Yes
Slurry phase biotreatment	S	No	No	No	Yes	Yes
Windrow turning	S	No	No	No	No	Yes
Chemical Methods						
Chemical oxidation	S, W	No	Yes	No	No	No
Chemical dehalogenation	S	No	No	No	No	No
Soil flushing	S	Yes	No	No	No	No
Solvent extraction	S	No	No	No	No	Yes
Surface amendments	S	Yes	Yes	No	No	No
Physical Methods						
Dual Phase SVE	S, W	No	Yes	No	No	No
Air sparging	W	No	No	No	No	No
Soil vapour extraction (SVE)	S	Yes	No	No	No	No
Permeable reactive barriers (PRBs)	W	No	No	No	No	Yes
Soil washing	S	Yes	Yes	No	No	No
Stabilisation and Solidification Methods						
Hydraulic binders (e.g., cement)	S	Yes	Yes	Yes	?	No
Vitrification	S	Yes	Yes	Yes	Yes	Yes
Thermal Methods						
Incineration	S	Yes	Yes	Yes	Yes	Yes
Thermal desorption	S	Yes	No	No	Yes	No

Yes	Most Suitable Method
Yes	Potentially applicable
No	Not applicable
?	A pre-treatment step may be necessary prior to the method being suitable
S	Soils, made ground and sediments
W	Groundwater and surface water

APPENDIX D
Remediation Plan



Remediation Plan

Norcot Community Centre
Lyndhurst Road
Tilehurst
Reading

Beard Construction Ltd

September 2020

-  Window Sample Borehole Location
-  Machine Excavated Infiltration Test Location
-  In-situ CBR Test Location
-  Dynamic Probing Test Position
-  Areas of soft landscaping where 300mm surface Topsoil dressing required.
-  Area of asbestos impacted soil - removed of Made Ground to 1.0m and replacement with clean cover system.

Not to scale.
All positions are approximate and subject to change.
Plan based on plan provided by Saunders Architecture and Urban Design
Drawing Number 7870_PL102

APPENDIX E

Soil Waste Classification Data

PGE In-House GACs

**Stephen**

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Analytical Report Number : 20-22959

Project / Site name:	Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB	Samples received on:	04/08/2020
Your job number:	P20-069	Sample instructed/ Analysis started on:	04/08/2020
Your order number:	P20-069 G 01	Analysis completed by:	13/08/2020
Report Issue Number:	1	Report issued on:	13/08/2020
Samples Analysed:	2 soil samples		

Signed:

Zina Abdul Razzak
Senior Quality Specialist

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

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

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.

Iss No 20-22959-1 Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB P20-069.XLS

This certificate should not be reproduced, except in full, without the express permission of the laboratory.

The results included within the report relate only to the sample(s) submitted for testing.

Page 1 of 4



4041



Analytical Report Number: 20-22959

Project / Site name: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

Your Order No: P20-069 G 01

Lab Sample Number				1582487	1584543			
Sample Reference				WS106	WS106			
Sample Number				None Supplied	D			
Depth (m)				0.05	2.50			
Date Sampled				29/07/2020	29/07/2020			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	3.7	11			
Total mass of sample received	kg	0.001	NONE	0.82	0.50			

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

pH - Automated	pH Units	N/A	MCERTS	8.2	7.8			
Total Sulphate as SO ₄	mg/kg	50	MCERTS	460	140			
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.029			
Loss on Ignition @ 450°C	%	0.2	MCERTS	2.2	-			

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-			
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-			
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-			
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-			
Phenanthrene	mg/kg	0.05	MCERTS	2.3	-			
Anthracene	mg/kg	0.05	MCERTS	0.56	-			
Fluoranthene	mg/kg	0.05	MCERTS	5.3	-			
Pyrene	mg/kg	0.05	MCERTS	4.7	-			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.8	-			
Chrysene	mg/kg	0.05	MCERTS	2.6	-			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	3.2	-			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.4	-			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.0	-			
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.5	-			
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.34	-			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.6	-			

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	29.2	-			
-----------------------------	-------	-----	--------	------	---	--	--	--

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.3	-			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.75	-			
Boron (water soluble)	mg/kg	0.2	MCERTS	2.0	-			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	-			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	-			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	51	-			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	17	-			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	28	-			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	75	-			

Petroleum Hydrocarbons

TPH C10 - C40	mg/kg	10	MCERTS	180	-			
---------------	-------	----	--------	-----	---	--	--	--



Analytical Report Number : 20-22959

Project / Site name: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

* 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 *
1582487	WS106	None Supplied	0.05	Brown sand with gravel.
1584543	WS106	D	2.50	Brown clay and sand with gravel and vegetation.



4041



Analytical Report Number : 20-22959

Project / Site name: Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

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

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 disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Loss on ignition of soil @ 450oC	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
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/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
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	W	MCERTS

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

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

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



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Analytical Report Number : 20-23163

Replaces Analytical Report Number: 20-23163, issue no. 2

Additional analysis undertaken.

Project / Site name:	Norcot Community Centre, Lyndhursts Road, Reading, RG30 6UB	Samples received on:	31/07/2020
Your job number:	P20-069	Samples instructed on/ Analysis started on:	31/07/2020
Your order number:	P20-069 G01	Analysis completed by:	18/08/2020
Report Issue Number:	2	Report issued on:	18/08/2020
Samples Analysed:	10 soil samples		

Signed: *Karolina Marek*

Karolina Marek
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

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

Analytical Report Number: 20-23163

Project / Site name: Norcot Community Centre, Lyndhursts Road, Reading, RG30 6UB

Your Order No: P20-069 G01

Lab Sample Number				1583480	1583481	1583482	1583483	1583484
Sample Reference				WS101	WS101	WS102	WS102	WS103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	4.50	0.60	2.60	0.30
Date Sampled				29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	10	15	6.7	4.1	9.3
Total mass of sample received	kg	0.001	NONE	0.5	0.61	0.45	0.42	1

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.3	8.3	8	8.1	8
Total Sulphate as SO ₄	mg/kg	50	MCERTS	150	290	130	160	96
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.02	0.012	-	0.0033	-
Loss on Ignition @ 450oC	%	0.2	MCERTS	1.8	-	1.2	-	0.9

Speciated PAHs

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

Total PAH

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

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	-	9.9	-	11
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.2	-	0.56	-	0.58
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3	-	0.4	-	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-	0.2	-	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37	-	16	-	17
Copper (aqua regia extractable)	mg/kg	1	MCERTS	12	-	8.5	-	7.1
Lead (aqua regia extractable)	mg/kg	1	MCERTS	12	-	21	-	11
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	0.6	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	30	-	15	-	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	2	-	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	55	-	25	-	30
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	49	-	47	-	34

Analytical Report Number: 20-23163

Project / Site name: Norcot Community Centre, Lyndhursts Road, Readoing, RG30 6UB

Your Order No: P20-069 G01

Lab Sample Number				1583480	1583481	1583482	1583483	1583484
Sample Reference				WS101	WS101	WS102	WS102	WS103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	4.50	0.60	2.60	0.30
Date Sampled				29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		
Petroleum Hydrocarbons								
TPH C10 - C40				mg/kg	10	MCERTS	< 10	-
							< 10	-
								< 10

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



Analytical Report Number: 20-23163

Project / Site name: Norcot Community Centre, Lyndhursts Road, Reading, RG3

Your Order No: P20-069 G01

Lab Sample Number				1583485	1583486	1583487	1583488	1583489
Sample Reference				WS103	WS104	WS104	WS105	WS105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.80	0.40	4.50	0.80	3.50
Date Sampled				29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	11	9.1	4.7	8.5	13
Total mass of sample received	kg	0.001	NONE	0.44	0.43	0.62	0.44	1

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	Chrysotile	-
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	-	Detected	-
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	< 0.001	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	< 0.001	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8	8	8	7.3	7.7
Total Sulphate as SO4	mg/kg	50	MCERTS	110	160	250	190	100
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0068	0.019	0.042	0.033	0.0076
Loss on Ignition @ 450oC	%	0.2	MCERTS	-	1.7	-	1.6	-

Speciated PAHs

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

Total PAH

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

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	11	-	13	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	0.63	-	0.71	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	0.6	-	0.5	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	0.3	-	0.3	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	26	-	33	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	12	-	13	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	31	-	44	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	< 0.3	-	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	17	-	18	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	2	-	< 1.0	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	29	-	34	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	52	-	58	-



Analytical Report Number: 20-23163

Project / Site name: Norcot Community Centre, Lyndhursts Road, Reading, RG3

Your Order No: P20-069 G01

Lab Sample Number				1583485	1583486	1583487	1583488	1583489
Sample Reference				WS103	WS104	WS104	WS105	WS105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.80	0.40	4.50	0.80	3.50
Date Sampled				29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		
Petroleum Hydrocarbons								
TPH C10 - C40				mg/kg	10	MCERTS	-	< 10
							-	< 10
							-	-

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



Analytical Report Number: 20-23163
Project / Site name: Norcot Community Centre, Lyndhursts Road, Reading, RG30 6UB
Your Order No: P20-069 G01

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-PL 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
1583488	WS105	0.80	151	Loose Fibres	Chrysotile	< 0.001	< 0.001

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



Analytical Report Number : 20-23163

Project / Site name: Norcot Community Centre, Lyndhursts Road, Reading, RG30 6UB

* 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 *
1583480	WS101	None Supplied	0.8	Brown clay with gravel.
1583481	WS101	None Supplied	4.5	White chalk.**
1583482	WS102	None Supplied	0.6	Brown sandy clay with gravel.
1583483	WS102	None Supplied	2.6	Brown sand with gravel.
1583484	WS103	None Supplied	0.3	Brown sandy clay with gravel.
1583485	WS103	None Supplied	1.8	Brown sandy clay with gravel.
1583486	WS104	None Supplied	0.4	Brown loam and clay with gravel.
1583487	WS104	None Supplied	4.5	Light brown sand with gravel.
1583488	WS105	None Supplied	0.8	Brown sandy clay with gravel.
1583489	WS105	None Supplied	3.5	Brown sandy clay.

** Non MCERTS matrix



Analytical Report Number : 20-23163

Project / Site name: Norcot Community Centre, Lyndhursts Road, Reading, RG30 6UB

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Loss on ignition of soil @ 450oC	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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	W	MCERTS
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025

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

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

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

**Stephen**

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Analytical Report Number : 20-23164

Project / Site name:	Norcot Community Centre, Lyndhursts Road, Readoing, RG30 6UB	Samples received on:	31/07/2020
Your job number:	P20-069	Sample instructed/ Analysis started on:	31/07/2020
Your order number:	P20-069 G01	Analysis completed by:	14/08/2020
Report Issue Number:	1	Report issued on:	14/08/2020
Samples Analysed:	10:1 WAC sample		

Signed: Karolina Marek

Karolina Marek
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

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

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Waste Acceptance Criteria Analytical Results

Report No:	20-23164						
					Client: PADDOCK		
Location	Norcot Community Centre, Lyndhurts Road, Reading, RG30 6UB						
Lab Reference (Sample Number)	1583491 / 1583492				Landfill Waste Acceptance Criteria		
Sampling Date	29/07/2020				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WAC1						
Depth (m)	0.60-1.20						
Solid Waste Analysis							
TOC (%)**	0.1				3%	5%	6%
Loss on Ignition (%) **	2.3				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	7.7				--	>6	--
Acid Neutralisation Capacity (mol / kg)	3.0				--	To be evaluated	To be evaluated
Eluate Analysis					Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1			10:1	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
	mg/l			mg/kg			
Arsenic *	0.0026			0.0226	0.5	2	25
Barium *	0.0013			0.0111	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	< 0.0004			< 0.0040	0.5	10	70
Copper *	0.0021			0.019	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	< 0.0004			< 0.0040	0.5	10	30
Nickel *	< 0.0003			< 0.0030	0.4	10	40
Lead *	0.0020			0.018	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0024			0.021	4	50	200
Chloride *	0.51			4.5	800	15000	25000
Fluoride	0.32			2.9	10	150	500
Sulphate *	1.7			15	1000	20000	50000
TDS*	20			170	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	5.07			44.8	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	2.0						
Dry Matter (%)	91						
Moisture (%)	9.4						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.					* = UKAS accredited (liquid eluate analysis only)		
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation					** - MCERTS accredited		

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.



Analytical Report Number : 20-23164

Project / Site name: Norcot Community Centre, Lyndhursts Road, Reading, RG30 6UB

* 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 *
1583491	WAC1	None Supplied	0.60-1.20	Brown clay and sand.

Analytical Report Number : 20-23164

Project / Site name: Norcot Community Centre, Lyndhursts Road, Reading, RG30 6UB

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance on Sampling and Testing of Wastes to Meet Landfill Waste Acceptance"	L046-PL	W	NONE
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as received, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Loss on ignition of soil @ 450oC	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
Metals in leachate by ICP-OES	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""	L039-PL	W	ISO 17025
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH at 20oC in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	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.	L019-UK/PL	D	NONE
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	ISO 17025

Iss No 20-23164-1 Norcot Community Centre, Lyndhursts Road, Reading, RG30 6UB P20-069.XLS

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The results included within the report relate only to the sample(s) submitted for testing.

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Analytical Report Number : 20-23164

Project / Site name: Norcot Community Centre, Lyndhursts Road, Reading, RG30 6UB

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

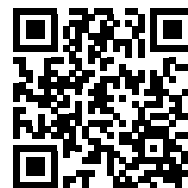
Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS

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

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

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

Waste Classification Report



A2V7E-LRZ7U-F86AD

Job name

Norcot Community Centre

Description/Comments

Project

P20-069

Site

Norcot Community Centre, Lyndhurst Road, Reading, RG30 6UB

Related Documents

#	Name	Description
None		

Waste Stream Template

Example waste stream template for contaminated soils

Classified by

Name:
Matthew Paddock
Date:
26 Aug 2020 08:14 GMT
Telephone:
07377 422528

Company:
Paddock Geo Engineering
The Annex,
14 Burns Road
Milton Keynes
MK3 5A

HazWasteOnline™ Training Record:

Course	Date
Hazardous Waste Classification	-
Advanced Hazardous Waste Classification	-

Report

Created by: Matthew Paddock
Created date: 26 Aug 2020 08:14 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	WS101	0.8	Non Hazardous		2
2	WS102	0.6	Non Hazardous		4
3	WS103	0.3	Non Hazardous		6
4	WS104	0.4	Non Hazardous		8
5	WS105	0.8	Non Hazardous		10
6	WS106	0.05	Non Hazardous		12

Appendices

	Page
Appendix A: Classifier defined and non CLP determinands	14
Appendix B: Rationale for selection of metal species	15
Appendix C: Version	16

Classification of sample: WS101

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:
WS101	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.8 m	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				16 mg/kg	1.32	21.125 mg/kg	0.00211 %			
	033-003-00-0	215-481-4	1327-53-3								
2	beryllium { beryllium oxide }				1.2 mg/kg	2.775	3.33 mg/kg	0.000333 %			
	004-003-00-8	215-133-1	1304-56-9								
3	boron { diboron trioxide; boric oxide }				0.3 mg/kg	3.22	0.966 mg/kg	0.0000966 %			
	005-008-00-8	215-125-8	1303-86-2								
4	cadmium { cadmium oxide }				0.2 mg/kg	1.142	0.228 mg/kg	0.0000228 %			
	048-002-00-0	215-146-2	1306-19-0								
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				37 mg/kg	1.462	54.078 mg/kg	0.00541 %			
		215-160-9	1308-38-9								
6	copper { dicopper oxide; copper (I) oxide }				12 mg/kg	1.126	13.511 mg/kg	0.00135 %			
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	12 mg/kg	1.56	18.718 mg/kg	0.0012 %			
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				0.3 mg/kg	1.353	0.406 mg/kg	0.0000406 %			
	080-010-00-X	231-299-8	7487-94-7								
9	nickel { nickel chromate }				30 mg/kg	2.976	89.288 mg/kg	0.00893 %			
	028-035-00-7	238-766-5	14721-18-7								
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.554 mg/kg	0.000255 %			
	034-002-00-8										
11	zinc { zinc chromate }				49 mg/kg	2.774	135.933 mg/kg	0.0136 %			
	024-007-00-3	236-878-9	13530-65-9								
12	TPH (C6 to C40) petroleum group				10 mg/kg		10 mg/kg	0.001 %			
			TPH								
13	pH				7.3 pH		7.3 pH	7.3 pH			
			PH								
14	naphthalene				0.05 mg/kg		0.05 mg/kg	0.000005 %			
	601-052-00-2	202-049-5	91-20-3								
15	acenaphthylene				0.05 mg/kg		0.05 mg/kg	0.000005 %			
		205-917-1	208-96-8								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
16	acenaphthene	201-469-6	83-32-9		0.05 mg/kg		0.05 mg/kg	0.000005 %		
17	fluorene	201-695-5	86-73-7		0.05 mg/kg		0.05 mg/kg	0.000005 %		
18	phenanthrene	201-581-5	85-01-8		0.05 mg/kg		0.05 mg/kg	0.000005 %		
19	anthracene	204-371-1	120-12-7		0.05 mg/kg		0.05 mg/kg	0.000005 %		
20	fluoranthene	205-912-4	206-44-0		0.05 mg/kg		0.05 mg/kg	0.000005 %		
21	pyrene	204-927-3	129-00-0		0.05 mg/kg		0.05 mg/kg	0.000005 %		
22	benzo[a]anthracene	601-033-00-9	200-280-6		0.05 mg/kg		0.05 mg/kg	0.000005 %		
23	chrysene	601-048-00-0	205-923-4		0.05 mg/kg		0.05 mg/kg	0.000005 %		
24	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.05 mg/kg		0.05 mg/kg	0.000005 %		
25	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.05 mg/kg		0.05 mg/kg	0.000005 %		
26	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.05 mg/kg		0.05 mg/kg	0.000005 %		
27	indeno[123-cd]pyrene	205-893-2	193-39-5		0.05 mg/kg		0.05 mg/kg	0.000005 %		
28	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.05 mg/kg		0.05 mg/kg	0.000005 %		
29	benzo[ghi]perylene	205-883-8	191-24-2		0.05 mg/kg		0.05 mg/kg	0.000005 %		
Total:								0.0344 %		

Key

- User supplied data
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration

CLP: Note 1 Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because In house threshold.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.001%)

Classification of sample: WS102

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:
WS102	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.6 m	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				9.9 mg/kg	1.32	13.071 mg/kg	0.00131 %			
	033-003-00-0	215-481-4	1327-53-3								
2	beryllium { beryllium oxide }				0.56 mg/kg	2.775	1.554 mg/kg	0.000155 %			
	004-003-00-8	215-133-1	1304-56-9								
3	boron { diboron trioxide; boric oxide }				0.4 mg/kg	3.22	1.288 mg/kg	0.000129 %			
	005-008-00-8	215-125-8	1303-86-2								
4	cadmium { cadmium oxide }				0.2 mg/kg	1.142	0.228 mg/kg	0.0000228 %			
	048-002-00-0	215-146-2	1306-19-0								
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				16 mg/kg	1.462	23.385 mg/kg	0.00234 %			
		215-160-9	1308-38-9								
6	copper { dicopper oxide; copper (I) oxide }				8.5 mg/kg	1.126	9.57 mg/kg	0.000957 %			
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	21 mg/kg	1.56	32.756 mg/kg	0.0021 %			
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				0.6 mg/kg	1.353	0.812 mg/kg	0.0000812 %			
	080-010-00-X	231-299-8	7487-94-7								
9	nickel { nickel chromate }				15 mg/kg	2.976	44.644 mg/kg	0.00446 %			
	028-035-00-7	238-766-5	14721-18-7								
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2 mg/kg	2.554	5.107 mg/kg	0.000511 %			
	034-002-00-8										
11	zinc { zinc chromate }				47 mg/kg	2.774	130.385 mg/kg	0.013 %			
	024-007-00-3	236-878-9	13530-65-9								
12	TPH (C6 to C40) petroleum group				10 mg/kg		10 mg/kg	0.001 %			
			TPH								
13	pH				8 pH		8 pH	8pH			
			PH								
14	naphthalene				0.05 mg/kg		0.05 mg/kg	0.000005 %			
	601-052-00-2	202-049-5	91-20-3								
15	acenaphthylene				0.05 mg/kg		0.05 mg/kg	0.000005 %			
		205-917-1	208-96-8								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
16	acenaphthene	201-469-6	83-32-9		0.05 mg/kg		0.05 mg/kg	0.000005 %		
17	fluorene	201-695-5	86-73-7		0.05 mg/kg		0.05 mg/kg	0.000005 %		
18	phenanthrene	201-581-5	85-01-8		0.05 mg/kg		0.05 mg/kg	0.000005 %		
19	anthracene	204-371-1	120-12-7		0.05 mg/kg		0.05 mg/kg	0.000005 %		
20	fluoranthene	205-912-4	206-44-0		0.05 mg/kg		0.05 mg/kg	0.000005 %		
21	pyrene	204-927-3	129-00-0		0.05 mg/kg		0.05 mg/kg	0.000005 %		
22	benzo[a]anthracene	601-033-00-9	200-280-6		0.05 mg/kg		0.05 mg/kg	0.000005 %		
23	chrysene	601-048-00-0	205-923-4		0.05 mg/kg		0.05 mg/kg	0.000005 %		
24	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.05 mg/kg		0.05 mg/kg	0.000005 %		
25	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.05 mg/kg		0.05 mg/kg	0.000005 %		
26	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.05 mg/kg		0.05 mg/kg	0.000005 %		
27	indeno[123-cd]pyrene	205-893-2	193-39-5		0.05 mg/kg		0.05 mg/kg	0.000005 %		
28	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.05 mg/kg		0.05 mg/kg	0.000005 %		
29	benzo[ghi]perylene	205-883-8	191-24-2		0.05 mg/kg		0.05 mg/kg	0.000005 %		
Total:								0.0262 %		

Key

- User supplied data
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration

CLP: Note 1 Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because In house threshold.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.001%)

Classification of sample: WS103

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:
WS103	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.3 m	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				11 mg/kg	1.32	14.524 mg/kg	0.00145 %			
	033-003-00-0	215-481-4	1327-53-3								
2	beryllium { beryllium oxide }				0.58 mg/kg	2.775	1.61 mg/kg	0.000161 %			
	004-003-00-8	215-133-1	1304-56-9								
3	boron { diboron trioxide; boric oxide }				0.3 mg/kg	3.22	0.966 mg/kg	0.0000966 %			
	005-008-00-8	215-125-8	1303-86-2								
4	cadmium { cadmium oxide }				0.2 mg/kg	1.142	0.228 mg/kg	0.0000228 %			
	048-002-00-0	215-146-2	1306-19-0								
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				17 mg/kg	1.462	24.846 mg/kg	0.00248 %			
		215-160-9	1308-38-9								
6	copper { dicopper oxide; copper (I) oxide }				7.1 mg/kg	1.126	7.994 mg/kg	0.000799 %			
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	11 mg/kg	1.56	17.158 mg/kg	0.0011 %			
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				0.3 mg/kg	1.353	0.406 mg/kg	0.0000406 %			
	080-010-00-X	231-299-8	7487-94-7								
9	nickel { nickel chromate }				15 mg/kg	2.976	44.644 mg/kg	0.00446 %			
	028-035-00-7	238-766-5	14721-18-7								
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.554 mg/kg	0.000255 %			
	034-002-00-8										
11	zinc { zinc chromate }				34 mg/kg	2.774	94.321 mg/kg	0.00943 %			
	024-007-00-3	236-878-9	13530-65-9								
12	TPH (C6 to C40) petroleum group				10 mg/kg		10 mg/kg	0.001 %			
			TPH								
13	pH				8 pH		8 pH	8pH			
			PH								
14	naphthalene				0.05 mg/kg		0.05 mg/kg	0.000005 %			
	601-052-00-2	202-049-5	91-20-3								
15	acenaphthylene				0.05 mg/kg		0.05 mg/kg	0.000005 %			
		205-917-1	208-96-8								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
16	• acenaphthene	201-469-6	83-32-9		0.05 mg/kg		0.05 mg/kg	0.000005 %		
17	• fluorene	201-695-5	86-73-7		0.05 mg/kg		0.05 mg/kg	0.000005 %		
18	• phenanthrene	201-581-5	85-01-8		0.05 mg/kg		0.05 mg/kg	0.000005 %		
19	• anthracene	204-371-1	120-12-7		0.05 mg/kg		0.05 mg/kg	0.000005 %		
20	• fluoranthene	205-912-4	206-44-0		0.05 mg/kg		0.05 mg/kg	0.000005 %		
21	• pyrene	204-927-3	129-00-0		0.05 mg/kg		0.05 mg/kg	0.000005 %		
22	benzo[a]anthracene	601-033-00-9	200-280-6		0.05 mg/kg		0.05 mg/kg	0.000005 %		
23	chrysene	601-048-00-0	205-923-4		0.05 mg/kg		0.05 mg/kg	0.000005 %		
24	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.05 mg/kg		0.05 mg/kg	0.000005 %		
25	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.05 mg/kg		0.05 mg/kg	0.000005 %		
26	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.05 mg/kg		0.05 mg/kg	0.000005 %		
27	• indeno[123-cd]pyrene	205-893-2	193-39-5		0.05 mg/kg		0.05 mg/kg	0.000005 %		
28	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.05 mg/kg		0.05 mg/kg	0.000005 %		
29	• benzo[ghi]perylene	205-883-8	191-24-2		0.05 mg/kg		0.05 mg/kg	0.000005 %		
Total:								0.0214 %		

Key

- User supplied data
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration

CLP: Note 1 Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because In house threshold.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.001%)

Classification of sample: WS104

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:
WS104	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.4 m	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				11	mg/kg	1.32	14.524	mg/kg	0.00145 %		
	033-003-00-0	215-481-4	1327-53-3									
2	beryllium { beryllium oxide }				0.63	mg/kg	2.775	1.748	mg/kg	0.000175 %		
	004-003-00-8	215-133-1	1304-56-9									
3	boron { diboron trioxide; boric oxide }				0.6	mg/kg	3.22	1.932	mg/kg	0.000193 %		
	005-008-00-8	215-125-8	1303-86-2									
4	cadmium { cadmium oxide }				0.3	mg/kg	1.142	0.343	mg/kg	0.0000343 %		
	048-002-00-0	215-146-2	1306-19-0									
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				26	mg/kg	1.462	38	mg/kg	0.0038 %		
		215-160-9	1308-38-9									
6	copper { dicopper oxide; copper (I) oxide }				12	mg/kg	1.126	13.511	mg/kg	0.00135 %		
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	31	mg/kg	1.56	48.354	mg/kg	0.0031 %		
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				0.3	mg/kg	1.353	0.406	mg/kg	0.0000406 %		
	080-010-00-X	231-299-8	7487-94-7									
9	nickel { nickel chromate }				17	mg/kg	2.976	50.597	mg/kg	0.00506 %		
	028-035-00-7	238-766-5	14721-18-7									
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2	mg/kg	2.554	5.107	mg/kg	0.000511 %		
	034-002-00-8											
11	zinc { zinc chromate }				52	mg/kg	2.774	144.256	mg/kg	0.0144 %		
	024-007-00-3	236-878-9	13530-65-9									
12	TPH (C6 to C40) petroleum group				10	mg/kg		10	mg/kg	0.001 %		
			TPH									
13	pH				8	pH		8	pH	8pH		
			PH									
14	naphthalene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
	601-052-00-2	202-049-5	91-20-3									
15	acenaphthylene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		205-917-1	208-96-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
16	acenaphthene	201-469-6	83-32-9		0.05 mg/kg		0.05 mg/kg	0.000005 %		
17	fluorene	201-695-5	86-73-7		0.05 mg/kg		0.05 mg/kg	0.000005 %		
18	phenanthrene	201-581-5	85-01-8		0.05 mg/kg		0.05 mg/kg	0.000005 %		
19	anthracene	204-371-1	120-12-7		0.05 mg/kg		0.05 mg/kg	0.000005 %		
20	fluoranthene	205-912-4	206-44-0		0.05 mg/kg		0.05 mg/kg	0.000005 %		
21	pyrene	204-927-3	129-00-0		0.05 mg/kg		0.05 mg/kg	0.000005 %		
22	benzo[a]anthracene	601-033-00-9	200-280-6		0.05 mg/kg		0.05 mg/kg	0.000005 %		
23	chrysene	601-048-00-0	205-923-4		0.05 mg/kg		0.05 mg/kg	0.000005 %		
24	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.05 mg/kg		0.05 mg/kg	0.000005 %		
25	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.05 mg/kg		0.05 mg/kg	0.000005 %		
26	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.05 mg/kg		0.05 mg/kg	0.000005 %		
27	indeno[123-cd]pyrene	205-893-2	193-39-5		0.05 mg/kg		0.05 mg/kg	0.000005 %		
28	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.05 mg/kg		0.05 mg/kg	0.000005 %		
29	benzo[ghi]perylene	205-883-8	191-24-2		0.05 mg/kg		0.05 mg/kg	0.000005 %		
Total:								0.0312 %		

Key

- User supplied data
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration

CLP: Note 1 Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because In house threshold.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.001%)

Classification of sample: WS105

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:
WS105	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.8 m	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				13	mg/kg	1.32	17.164	mg/kg	0.00172 %		
	033-003-00-0	215-481-4	1327-53-3									
2	beryllium { beryllium oxide }				0.71	mg/kg	2.775	1.97	mg/kg	0.000197 %		
	004-003-00-8	215-133-1	1304-56-9									
3	boron { diboron trioxide; boric oxide }				0.5	mg/kg	3.22	1.61	mg/kg	0.000161 %		
	005-008-00-8	215-125-8	1303-86-2									
4	cadmium { cadmium oxide }				0.3	mg/kg	1.142	0.343	mg/kg	0.0000343 %		
	048-002-00-0	215-146-2	1306-19-0									
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				33	mg/kg	1.462	48.231	mg/kg	0.00482 %		
		215-160-9	1308-38-9									
6	copper { dicopper oxide; copper (I) oxide }				13	mg/kg	1.126	14.637	mg/kg	0.00146 %		
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	44	mg/kg	1.56	68.632	mg/kg	0.0044 %		
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				0.3	mg/kg	1.353	0.406	mg/kg	0.0000406 %		
	080-010-00-X	231-299-8	7487-94-7									
9	nickel { nickel chromate }				18	mg/kg	2.976	53.573	mg/kg	0.00536 %		
	028-035-00-7	238-766-5	14721-18-7									
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1	mg/kg	2.554	2.554	mg/kg	0.000255 %		
	034-002-00-8											
11	zinc { zinc chromate }				58	mg/kg	2.774	160.9	mg/kg	0.0161 %		
	024-007-00-3	236-878-9	13530-65-9									
12	TPH (C6 to C40) petroleum group				10	mg/kg		10	mg/kg	0.001 %		
			TPH									
13	pH				7.3	pH		7.3	pH	7.3 pH		
			PH									
14	naphthalene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
	601-052-00-2	202-049-5	91-20-3									
15	acenaphthylene				0.05	mg/kg		0.05	mg/kg	0.000005 %		
		205-917-1	208-96-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
16	acenaphthene	201-469-6	83-32-9		0.05 mg/kg		0.05 mg/kg	0.000005 %		
17	fluorene	201-695-5	86-73-7		0.05 mg/kg		0.05 mg/kg	0.000005 %		
18	phenanthrene	201-581-5	85-01-8		0.05 mg/kg		0.05 mg/kg	0.000005 %		
19	anthracene	204-371-1	120-12-7		0.05 mg/kg		0.05 mg/kg	0.000005 %		
20	fluoranthene	205-912-4	206-44-0		0.05 mg/kg		0.05 mg/kg	0.000005 %		
21	pyrene	204-927-3	129-00-0		0.05 mg/kg		0.05 mg/kg	0.000005 %		
22	benzo[a]anthracene	601-033-00-9	200-280-6		0.05 mg/kg		0.05 mg/kg	0.000005 %		
23	chrysene	601-048-00-0	205-923-4		0.05 mg/kg		0.05 mg/kg	0.000005 %		
24	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.05 mg/kg		0.05 mg/kg	0.000005 %		
25	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.05 mg/kg		0.05 mg/kg	0.000005 %		
26	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.05 mg/kg		0.05 mg/kg	0.000005 %		
27	indeno[123-cd]pyrene	205-893-2	193-39-5		0.05 mg/kg		0.05 mg/kg	0.000005 %		
28	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.05 mg/kg		0.05 mg/kg	0.000005 %		
29	benzo[ghi]perylene	205-883-8	191-24-2		0.05 mg/kg		0.05 mg/kg	0.000005 %		
Total:								0.0356 %		

Key

- User supplied data
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration

CLP: Note 1 Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because In house threshold.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.001%)

Classification of sample: WS106

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:
WS106	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.05 m	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				9.3 mg/kg	1.32	12.279 mg/kg	0.00123 %			
	033-003-00-0	215-481-4	1327-53-3								
2	beryllium { beryllium oxide }				0.75 mg/kg	2.775	2.082 mg/kg	0.000208 %			
	004-003-00-8	215-133-1	1304-56-9								
3	boron { diboron trioxide; boric oxide }				2 mg/kg	3.22	6.44 mg/kg	0.000644 %			
	005-008-00-8	215-125-8	1303-86-2								
4	cadmium { cadmium oxide }				0.2 mg/kg	1.142	0.228 mg/kg	0.0000228 %			
	048-002-00-0	215-146-2	1306-19-0								
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				17 mg/kg	1.462	24.846 mg/kg	0.00248 %			
		215-160-9	1308-38-9								
6	copper { dicopper oxide; copper (I) oxide }				19 mg/kg	1.126	21.392 mg/kg	0.00214 %			
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	51 mg/kg	1.56	79.551 mg/kg	0.0051 %			
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				0.3 mg/kg	1.353	0.406 mg/kg	0.0000406 %			
	080-010-00-X	231-299-8	7487-94-7								
9	nickel { nickel chromate }				17 mg/kg	2.976	50.597 mg/kg	0.00506 %			
	028-035-00-7	238-766-5	14721-18-7								
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.554 mg/kg	0.000255 %			
	034-002-00-8										
11	zinc { zinc chromate }				75 mg/kg	2.774	208.061 mg/kg	0.0208 %			
	024-007-00-3	236-878-9	13530-65-9								
12	TPH (C6 to C40) petroleum group				180 mg/kg		180 mg/kg	0.018 %			
			TPH								
13	pH				8.2 pH		8.2 pH	8.2 pH			
			PH								
14	naphthalene				0.05 mg/kg		0.05 mg/kg	0.000005 %			
	601-052-00-2	202-049-5	91-20-3								
15	acenaphthylene				0.05 mg/kg		0.05 mg/kg	0.000005 %			
		205-917-1	208-96-8								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
16	acenaphthene	201-469-6	83-32-9		0.05 mg/kg		0.05 mg/kg	0.000005 %		
17	fluorene	201-695-5	86-73-7		0.05 mg/kg		0.05 mg/kg	0.000005 %		
18	phenanthrene	201-581-5	85-01-8		2.3 mg/kg		2.3 mg/kg	0.00023 %		
19	anthracene	204-371-1	120-12-7		0.56 mg/kg		0.56 mg/kg	0.000056 %		
20	fluoranthene	205-912-4	206-44-0		5.3 mg/kg		5.3 mg/kg	0.00053 %		
21	pyrene	204-927-3	129-00-0		4.7 mg/kg		4.7 mg/kg	0.00047 %		
22	benzo[a]anthracene	601-033-00-9	200-280-6		2.8 mg/kg		2.8 mg/kg	0.00028 %		
23	chrysene	601-048-00-0	205-923-4		2.6 mg/kg		2.6 mg/kg	0.00026 %		
24	benzo[b]fluoranthene	601-034-00-4	205-911-9		3.2 mg/kg		3.2 mg/kg	0.00032 %		
25	benzo[k]fluoranthene	601-036-00-5	205-916-6		1.4 mg/kg		1.4 mg/kg	0.00014 %		
26	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		3 mg/kg		3 mg/kg	0.0003 %		
27	indeno[123-cd]pyrene	205-893-2	193-39-5		1.5 mg/kg		1.5 mg/kg	0.00015 %		
28	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.34 mg/kg		0.34 mg/kg	0.000034 %		
29	benzo[ghi]perylene	205-883-8	191-24-2		1.6 mg/kg		1.6 mg/kg	0.00016 %		
Total:								0.0589 %		

Key

- User supplied data
 - Determinand defined or amended by HazWasteOnline (see Appendix A)
 - Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- CLP: Note 1 Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because In house threshold.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.018%)

Appendix A: Classifier defined and non CLP determinands

■ **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462

Description/Comments: Data from C&L Inventory Database

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>

Data source date: 17 Jul 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302 , Acute Tox. 4 H332

■ **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: Aquatic Chronic 2 H411 , Repr. 2 H361d , Carc. 1B H350 , Muta. 1B H340 , STOT RE 2 H373 , Asp. Tox. 1 H304 , Flam. Liq. 3 H226

■ **pH** (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

■ **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

■ **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

■ **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

■ **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

■ **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

■ **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

• **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

• **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Carc. 2 H351

• **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 23 Jul 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds (edit as required)

beryllium {beryllium oxide}

Reasonable case CLP species based on hazard statements/molecular weight. Industrial sources include: most common (non alloy) form, used in ceramics (edit as required)

boron {diboron trioxide; boric oxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass (edit as required)

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass (edit as required)

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

selenium {selenium compounds with the exception of cadmium sulposelenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulposelenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil. (edit as required)

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.1, May 2018**

HazWasteOnline Classification Engine Version: 2020.224.4427.8663 (11 Aug 2020)

HazWasteOnline Database: 2020.224.4427.8663 (11 Aug 2020)

This classification utilises the following guidance and legislation:

WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018

CLP Regulation - Regulation 1272/2008/EC of 16 December 2008

1st ATP - Regulation 790/2009/EC of 10 August 2009

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004

1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010

2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

GENERIC HUMAN HEALTH SCREENING TOTAL SOIL CONCENTRATION ASSESSMENT CRITERIA (GAC)

DETERMINAND		RESIDENTIAL (mg/kg)		COMMERCIAL (mg/kg)
Chemical	GAC Sources and units	With Home Grown produce	Without Home Grown produce	
Asbestos Screen & ID*	-	Detected	Detected	Detected
Cyanide - Total	SNIFFER	53.25	53.25	53.25
Cyanide - Free	SNIFFER	53.25	53.25	53.25
Loss on Ignition @ 450°C	-	-	-	-
Sulphate (as SO ₄) - Total	BRE****	2400	2400	2400
Sulphide	ICRCL	2500	2500	2500
Sulphur - Total	ICRCL	2500	2500	2500
Phenol (Total Monohydric)	CLEA	420	420	3200
pH	ICRCL	<5,>12	<5,>12	-
Metals and Metalloids (CLEA Metals)				
Arsenic	LQM S4UL	37	40	640
Beryllium	LQM S4UL	1.7	1.7	12
Cadmium	LQM S4UL	11	85	190
Chromium III	LQM S4UL	910	910	8600
Lead	DEFRA C4SL	190	310	2300
Mercury (Total)	LQM S4UL (Inorganic)	40	56	1100
Selenium	LQM S4UL	250	430	12000
Copper (phytotoxicity)	LQM S4UL	2400 (111)	7100	68000
Nickel	LQM S4UL	180	180	980
Zinc (phytotoxicity)	LQM S4UL	3700 (330)	40000	730000
Vanadium	LQM S4UL	410	1200	9000
Boron - Water Soluble	LQM S4UL	290	11000	240000
Total Petroleum Hydrocarbons**				
TPH (EC6-EC10) - PRO	LQM S4UL (2.5% SOM)	65	100	4800
TPH (EC10-EC21) - DRO	LQM S4UL (2.5% SOM)	300	600	23000
TPH (EC21-EC40) - Min. Oil	LQM S4UL (2.5% SOM)	1500	1900	28000
Total TPH (EC10-EC40)	LQM S4UL (2.5% SOM)	600	900	23000
Polycyclic Aromatic Hydrocarbons***				
Naphthalene	LQM S4UL (2.5% SOM)	5.6	5.6	460
Flourene	LQM S4UL (2.5% SOM)	400	3800	68000
Benzo[a]pyrene	LQM S4UL (2.5% SOM)	2.7	3.2	35
Dibenzo[a,h]anthracene	LQM S4UL (2.5% SOM)	0.28	0.32	3.6

Notes

The Generic Assessment Criteria (GAC) are based on CLEA Soil Guidance Values published values and CIEH/LQM S4CLs where available or ICRCL, DoE, BRE and HSE levels where necessary. Where gaps remain GACs were calculated using the latest CLEA spreadsheet using DEFRA C4SL toxicology and physiochemical parameters from DEFRA SP1010.

* Guidance level set at any fibre identification.

** TPH 3 band is employed as a screening tool to instigate detailed speciated analysis to the TPHCWG methodology. Based on mean of fractions included

*** Testing based on USEPA Priority 16 compounds. GACs for four compounds and total PAH with published GACs only, used as a screening tool.

**** BRE SD1 - DS-1 Concrete Sulphate Design Class limit. Sulphate is not considered to pose a significant risk to human health under normal circumstances.

GENERIC HUMAN HEALTH HYDROCARBON TOTAL SOIL CONCENTRATION ASSESSMENT CRITERIA (GAC)

DETERMINAND		RESIDENTIAL (mg/kg)		COMMERCIAL (mg/kg)
Chemical	GAC Sources and units	With Home Grown produce	Without Home Grown produce	
TPH CWG				
Aliphatic EC 5-6	LQM S4UL (2.5% SOM)	78	78	5900
Aliphatic EC >6-8	LQM S4UL (2.5% SOM)	230	230	17000
Aliphatic EC >8-10	LQM S4UL (2.5% SOM)	65	65	4800
Aliphatic EC >10-12	LQM S4UL (2.5% SOM)	330	330	23000
Aliphatic EC >12-16	LQM S4UL (2.5% SOM)	2400	2400	82000
Aliphatic EC >16-35	LQM S4UL (2.5% SOM)	92000	92000	1700000
Aliphatic EC >35-44	LQM S4UL (2.5% SOM)	92000	92000	1700000
Aromatic EC 5-7 (Benzene)	LQM S4UL (2.5% SOM)	140	690	46000
Aromatic EC >7-8 (Toluene)	LQM S4UL (2.5% SOM)	290	1800	110000
Aromatic EC >8-10	LQM S4UL (2.5% SOM)	83	110	8100
Aromatic EC >10-12	LQM S4UL (2.5% SOM)	180	590	28000
Aromatic EC >12-16	LQM S4UL (2.5% SOM)	330	2300	37000
Aromatic EC >16-21	LQM S4UL (2.5% SOM)	540	1900	28000
Aromatic EC >21-35	LQM S4UL (2.5% SOM)	1500	1900	28000
Aromatic EC >35-44	LQM S4UL (2.5% SOM)	1500	1900	28000
Aliphatic and Aromatic EC >44	LQM S4UL (2.5% SOM)	1500	1900	28000
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	LQM S4UL (2.5% SOM)	510	4700	97000
Acenaphthylene	LQM S4UL (2.5% SOM)	420	4600	97000
Anthracene	LQM S4UL (2.5% SOM)	5400	35000	540000
Benzo[a]anthracene	LQM S4UL (2.5% SOM)	11	14	170
Benzo[a]pyrene	LQM S4UL (2.5% SOM)	2.7	3.2	35
Benzo[b]fluoranthene	LQM S4UL (2.5% SOM)	3.3	4	44
Benzo[ghi]perylene	LQM S4UL (2.5% SOM)	340	360	4000
Benzo[k]fluoranthene	LQM S4UL (2.5% SOM)	93	110	1200
Chrysene	LQM S4UL (2.5% SOM)	22	31	350
Dibenzo[ah]anthracene	LQM S4UL (2.5% SOM)	0.28	0.32	3.6
Fluoranthene	LQM S4UL (2.5% SOM)	560	1600	23000
Fluorene	LQM S4UL (2.5% SOM)	400	3800	68000
Indeno[123-cd]pyrene	LQM S4UL (2.5% SOM)	36	46	510
Naphthalene	LQM S4UL (2.5% SOM)	5.6	5.6	460
Phenanthrene	LQM S4UL (2.5% SOM)	220	1500	22000
Pyrene	LQM S4UL (2.5% SOM)	1200	3800	54000
Coal Tar (BaP as marker)	LQM S4UL (2.5% SOM)	0.98	1.2	15

Notes

The Generic Assessment Criteria (GAC) are based on CIEH/LQM S4ULs.

CLIENT:

PROJECT No:

PROJECT TITLE:

Beard Construction Limited

P20-069

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