DENVER COMMERCIAL LLP

DENVER STORAGE, OKEHURST LANE, BILLINGSHURST,
WEST SUSSEX RH14 9HR

Contamination Risk Assessment

December 2024

eas ltd
Environmental Assessment Services Ltd

REPORT DATA SHEET

Requirement	Data
Report Ref:	752/DenverComLLP/CRA2024
Date	December 2024
Client	Denver Commercial LLP
Report type	Contamination Risk Assessment
Purpose	Submission to planning
Revisions	-
Prepared by	Nathaniel Scott BSc (Hons), MSc [redacted] Signed
Approved by	Lucy Monday BSc (Hons), ACIEEM [redacted] Signed

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Contamination Risk Assessment

December 2024

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WEST SUSSEX RH14 9HR

Contamination Risk Assessment

December 2024

1. BACKGROUND

1.1 Planning permission has been granted (under planning application DC/22/1458) for the demolition of the existing building and erection of 3No storage units (Use Class B8), incorporating vehicular access, landscaping, and on-site parking at the site known as Denver Storage, Okehurst Lane, Billingshurst, here-on referred to as 'the site'.

1.2 Two pre-commencement conditions have been placed on the redevelopment for further contamination assessment and, where deemed appropriate, remediation (Condition 3), and for the confirmation of soil suitability and verification reporting (Condition 4).

1.3 This report follows the Preliminary Contamination Risk Assessment completed for the site, by EAS Ltd, in April 2021, and includes further contamination risk assessment and advice relating to the requirement for soil remediation. This report does not include verification of remedial works.

1.4 This report does not include a pre-demolition asbestos survey and/or method statement, which is to be provided by others in accordance with Planning Condition 5, please refer.

2. THE SITE & PROPOSED DEVELOPMENT

2.1 The site comprises a former poultry shed, and surrounding parcel of land including an area of hardstanding to the west (where a second poultry shed had been located), together with storage containers to the north, located within a disused plot of land to the south of Okehurst Lane, approximately 1 mile north of Billingshurst. The site area is approximately 0.7 ha. The Ordnance Survey (OS) map reference for the site is TQ 09068 27458. The site elevation is approximately + 50 m OD. See Appendix A for the Site Location Plan and Existing Site Layout.

2.2 The site is intended for commercial use comprising storage (B8). In accordance with the approved development plans, the majority of the site is to be retained under hard cover, however, the scheme does include areas of soft landscaping and the creation of a new surface water body (wildlife pond). The approved scheme plans are provided in Appendix B.

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3. POTENTIAL SOURCES OF CONTAMINATION

3.1 Past land use at the site has comprised:

- Poultry Farm (1970s – ~ mid 1980s)
- Vehicle Storage (~ mid 1980s – 2005)
- Storage Yard to include the storage of vehicles (2005 onwards)

3.2 It is understood that the site remained undeveloped until the 1970s, when Denver Poultry Farm was constructed. Contaminants used within the farming of poultry include copper sulphate, which was used to maintain health of poultry. Pesticides and rodenticides were also potentially used while the site was operational as a poultry farm. Waste, including bedding and faeces, cleared from the barns is likely to have been stored in piles on site prior to offsite disposal (usually spread on local fields for fertilisation).

3.3 Potential contamination risks associated with the storage and use of vehicles, include possible storage, use and potential leakage of fuels and oils (usually stored in small quantities). The presence of concrete surfacing on site is likely to have acted as a barrier between any maintenance fluids and the underlying ground. No evidence of any significant spillage/s was noted during the site walkover.

3.4 The use of the site as a storage facility has the potential for unknown contaminants. However, storage is likely to have taken place on concrete hardstanding, acting as a barrier between potential contamination sources and the underlying ground.

3.5 Rubble piles, which appear to comprise a mix of building materials predominantly including concrete and brick, thought to have derived from the demolition of onsite buildings, have the potential to contain asbestos containing materials (ACMs).

3.6 ACMs were identified on / within the walls and roof materials of the poultry shed. These materials are to be removed from the site as part of the site's redevelopment.

3.7 No significant contamination risks associated with adjacent land uses (residential and pasture) have been identified.

4. SITE SENSITIVITY

4.1 **Environmental site sensitivity**

4.1.1 The site lies on Weald Clay Formation, which is a Secondary A Aquifer at this location. The bedrock comprises a material containing permeable layers capable of supporting water supplies at a local scale only. The area may, in some cases,

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form an important source of base flow to rivers. There are no recorded watercourses or lakes within 250 m of the site.

4.1.2 The site does not lie within a Source Protection Zone and there are no groundwater, surface water or potable water abstraction licences within 2000 m of the site.

4.1.3 According to the Environment Agency flood mapping, the site lies within Flood Zone 1 (low risk of flooding).

4.2 Potential Receptors

4.2.1 It is proposed to redevelop the site for commercial use including areas of soft landscaping around the perimeter of the site, and a water body (wildlife pond) to the south of the site.

4.2.2 Future site users in this case are likely to include demolition and construction workers (during the redevelopment and future maintenance of the site), future site users (commercial and grounds maintenance), buildings and services (including underground water mains) and the wider environment.

4.2.3 Demolition and site clearance workers may be exposed to contamination including asbestos within building and waste materials on site. They may also be exposed to potential contaminants within the soils on site.

4.2.4 Construction workers working on exposed soils may be exposed to ground contamination post site clearance where any potentially contaminated soils or materials are not removed from site prior to commencing construction.

4.2.5 Future site users are considered less likely to be exposed to contamination following the redevelopment of the site during normal site activities, which are likely to be restricted to the hard standing areas of the site. Post development the soft landscaping areas are to be planted for the benefit of wildlife.

4.2.6 Post development, those appointed to undertake grounds maintenance works, including regular planting maintenance and possible repairs and below surface level works (for example on the pond, or the laying of new service lines), could be exposed to contamination within the soil, if significant contamination is permitted to remain post development.

4.2.7 The proposed scheme includes the development of a new water body (a wildlife pond). That we are aware, the feed for the pond is not yet confirmed.

4.2.8 The wider environment is not considered particularly hydrogeologically sensitive, and no sensitive habitats have been identified that are deemed likely to be impacted by the proposed future site use. However, potentially contaminative materials including ACM and potentially contaminated soils may be removed from site. Appropriate waste disposal will need to be implemented to protect the wider environment from the anthropogenic spread of contaminated wastes.

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4.2.9 New underground service lines will need to be installed as part of the site's development. Depending on the materials used, some water supply pipework may be vulnerable to contaminants within the soil (where present). See UKWIR guidelines.

5. INTRUSIVE SITE INVESTIGATION

5.1 The intrusive site investigation was carried out on 6 November 2024 and comprised the excavation of 11 trial pits. The trial pits allowed for visual inspection of the underlying soil and the selection of samples for laboratory analysis.

5.2 The objectives of the site investigation were to confirm the nature of the underlying soil to establish or confirm whether the former land uses have resulted in contamination of the soil and/or groundwater at the site.

5.3 The proposed site layout and trial pit locations are shown in Appendix C, and the trial pit logs are given in Appendix D. Three of the trial pits (TP4, 7 and 8) are located toward the centre of the site, within an area which will be retained under hard cover. The remaining trial pits were located towards the boundaries of the site, within the proposed soft landscaping areas.

5.4 The determinands selected for analysis included those contaminants typically associated with past land use as identified in the PCRA. A full list of the contamination analysis suite and the laboratory accreditations can be found in Appendix E.

6. RESULTS

6.1 A total of 21 soil samples, comprising 11 upper soil samples and 10 lower soil samples, were taken during the site investigation and sent for analysis at i2 Analytical Limited of Woodshots Meadow, Watford. Copies of the sample analysis certificates, together with the laboratory's methods and accreditations, are given in Appendix E.

6.2 **Physical appearance and topography of the soils**

6.2.1 Soil conditions across the site were found to be fairly consistent, comprising a shallow layer of topsoil (sometimes under hard cover) over weathered clay becoming stiffer with depth to the undisturbed clay (natural ground).

6.2.2 Surfacing at TP1, 2 and 5 comprised road plannings over a shallow layer of topsoil above the clay. The remaining trial pit locations were excavated within areas without hard standing. The topsoil across the site was often found to contain small fragments of brick, and sometimes chalk.

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6.2.3 Notable features identified within the trial pits included the following:

- A chalk band at 0.5 m in TP6 (sample taken at 0.45 m).
- Cobbles surrounding drainage pipe at the edge of the hardstanding at the western end of TP7.
- The ground level at TP9 was higher than that of the surrounding area, suggesting the potential deposit of materials. The topsoil layer within this location was marginally greater than that observed elsewhere within the site, however, no deposits where identified.
- Carpet and underlay found at 0.4 m at the northern end of TP10.
- Subterranean structure at TP11 comprising a concrete slab and metal runners.

6.2.4 No other evidence of potential contamination such as oil staining, unusual colouring, odour or other superficial indications of significant contamination were observed in any of the trial pits. Photographs taken at the site during the current investigation are provided in Appendix F.

6.3 Analysis of the soil samples

6.3.1 The results of the soil sample analysis have been compared with the published DEFRA Category 4 Screening Levels (C4SL) for Assessment of Land Affected by Contamination (as updated 2014) and the LQM/CIEH Suitable for Use Levels (S4UL) for Human Health Risk Assessment (2015). *Copyright Land Quality Management Limited reproduced with permission; Publication Number: S4UL3601. All rights reserved.*

6.3.2 The pH values of the soil samples were between 7.2 and 9.4 ranging from neutral to moderately alkaline. The moderate alkalinity of the samples is thought to be caused by the underlying Weald clay.

6.3.3 The toxic metal: cadmium, mercury, and the phytotoxic metals: copper, nickel, and zinc were recorded within most of the soil samples at generally low concentrations or below the limit of detection. The recorded concentrations all fall well below the current threshold values for commercial use.

6.3.4 Elevated levels of Chromium have been identified within samples taken from TP3 and TP4. Chromium mainly occurs within the environment in two forms: trivalent chromium (Cr III) and hexavalent chromium (Cr VI) with the latter being predominantly used in the production of stainless steel, and as catalysts in chemical manufacturing, while Cr III is commonly used as a dietary supplement. Given that the historic land use of the site has included use as a poultry farm, it is thought the chromium present within the site is Cr III rather than the more harmful Cr VI. Given this, both samples fall well below the exceedance values for Cr III. The presence of chromium within the site is not thought likely to be widespread or problematic.

6.3.5 Total Petroleum Hydrocarbons (TPHs) within all soil samples fell below the threshold values for commercial use.

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6.3.6 Polycyclic Aromatic Hydrocarbons (PAHs) were recorded at generally low concentrations or below the limit of detection. However, there were three exceedances of the current threshold values for commercial use. Samples from the topsoil of TP3, TP8, and TP9 exceeded the current threshold values for chrysene, benzo(B)fluoranthene, and dibenz(a,h)anthracene

6.3.7 Asbestos in the form of amosite, chrysotile, and crocidolite loose fibres were identified to be present within one of the samples taken from the topsoil from TP8. Asbestos was not identified within any other samples from the site.

6.3.8 Further asbestos quantification, carried out by i2 Analytical Ltd, on the one sample found to contain asbestos, was found to contain 0.002% total asbestos within the sample (weighing 138g). This level is not considered to be significant.

7. INTERPRETATION OF RESULTS

7.1 Based on the analysis of the soil samples taken during the current CRA, it is apparent that there is some localised contamination within the site although it is not thought to be widespread across the site.

7.2 The two occurrences of chromium within the north of the site are not thought to be problematic as the most likely form of chromium to be encountered based on the site use history is Cr III. Levels identified within the soil fall well below the LQM/CIEH S4ULs for Cr III.

7.3 Exceedances of the Polycyclic Aromatic Hydrocarbons (PAHs) chrysene and benzo(B)fluoranthene were recorded within the upper samples from TP3 (located within the proposed location of the rainwater harvesting tank adjacent to the western site boundary), and TP8 (located within the southern section of the proposed hardcover). Elevated levels of these contaminants were not measured in samples elsewhere across the site. This contamination is not considered likely to be widespread.

7.4 The upper sample from TP9 (located within the southwest corner of the site) does not exceed the S4UL's for PAHs; however, Dibenz(a,h)anthracene was recorded at the limit for commercial use. Elevated levels of PAH can be associated with combustion including the burning of animal waste. Given the site's historic use as a poultry farm, it is considered possible that this area may have been used to deposit organic waste from the chicken sheds prior to offsite disposal or burning.

7.5 Whilst the presence of asbestos was identified within the upper sample of TP8 (located within the proposed hardstanding area to the south of the site), it was not identified in any other samples taken from across the site. Further quantification suggests that whilst present, the amount present within the sample is not considered significant (0.002%).

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7.6 No further need for additional sampling or analysis is indicated in this case.

8. RISK ASSESSMENT

8.1 The contamination risk assessment has been produced in accordance with the recommendations given in the Defra/EA publication: *Model Procedures for the Management of Land Contaminated – Contaminated Land Report 11, 2004.*

8.2 For contamination to be significant, there must be three elements present: *Contamination* (a substance that has the potential to cause harm or cause pollution of controlled waters), a *receptor* (something that could be adversely affected by a contaminant), and a feasible *pathway* (route or means) between substance and receptor.

Contamination

8.3 Some contamination of the soils has been identified. This is limited to PAH's within the upper soils at TP3 and TP8, and loose asbestos fibres (recorded present, but not at significant levels) at TP8. Contamination is not widespread. Soils at TP3 are to be excavated for the installation of a rainwater harvesting tank. Soils at TP8 will be capped beneath permanent hard standing. The upper soil sample at TP9 was found to be at the commercial land use limit for Dibenz(a,h)anthracene. This area will form part of the soft landscaping area.

Receptor

8.4 In this case, the model may be applied to four cases:

i. Demolition and construction workers engaged in the redevelopment of the site and exposed to contamination. The receptor assumed to be an adult.

ii. Future site users (post development) of the commercial development. Receptor assumed to include adults.

iii. Grounds maintenance operatives (post development). The receptor assumed to include adults.

iv. Post-redevelopment impacts on the wider environment includes off-site contamination migration, contamination of watercourses, etc.

An illustration of the conceptual model is provided in Appendix G.

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Pathway

8.5 Exposure During Development

8.5.1 In this case, there is a potential risk that site workers will be exposed to PAHs and possibly asbestos during site clearance, preparation and construction.

8.5.2 A pre-development asbestos survey and removal scheme is to be prepared and implemented as part of the site's redevelopment. Measures to ensure that all operatives are protected during site work are to be implemented together with measures to avoid asbestos contamination of the site and wider environment.

8.5.3 In addition to the above, site clearance and preparation contractors should be made aware of the potential for asbestos to be found within the soils on site. Based on the findings of the intrusive site investigation, it is not suspected that asbestos soil contamination is widespread, but it is acknowledged that asbestos containing materials have been present on site and may have been present on buildings which have been demolished. We are not aware of the treatment / containment measures implemented during demolition of past buildings; therefore, it is acknowledged that soils could have been impacted, however, current soil testing has not identified any significant asbestos contamination.

8.5.4 During the redevelopment of the site, all site operatives should employ appropriate industrial hygiene measures. Measures should include the wearing of boots, gloves, coveralls, and dust masks. Eating and smoking should be restricted to designated clean areas.

8.5.5 As part of the site's redevelopment new planting is to be undertaken within the proposed soft landscaping areas together with the installation of a new wildlife pond. Much of these areas lie within the root protection area of trees which are to be retained and protected (i.e. no dig areas). No contamination of the soils was identified within the location of the proposed pond or other sampling locations around the perimeter of the site. Elevated levels of PAH were only found within one of the soil samples from the proposed soft landscaping areas and this was at the threshold level. Those appointed to undertake new planting within the soft landscaping areas are deemed most likely to be exposed to any potential PAH contamination within the retained soils. Appropriate industry hygiene measures should be implemented during this work to avoid exposure as a precaution. Once the area is planted, the risk of exposure during general vegetation maintenance (i.e. cutting and pruning) is likely to be low-negligible.

8.6 Exposure Post Development

8.6.1 Soil analysis indicates that the upper soil samples from TP8 exceed the threshold value for dibenz(a,h)anthracene (a PAH) for commercial land use. Analysis has also indicated the presence of asbestos fibres within TP8, although further quantification found the upper sample to contain 0.002% total asbestos (total weight of sample 138 g). The soils within this area of the site are to be retained beneath hard cover post development. In this case, the surfacing will act as a suitable barrier to prevent exposure. There will be no reasonable route of

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exposure between contaminated soils retained beneath the hard cover and future site users and the wider environment. No soil remediation is recommended at this location.

8.6.2 Analysis indicates that the upper soil samples from TP3, located towards the northwest corner of the site, exceed the threshold values of a number of PAHs for commercial land use. The soil within this area is to be excavated to make way for the underground rainwater harvesting tank. In this case, soil excavated from this area is either to be capped beneath permanent hard standing or disposed of offsite via a suitable waste contractor. A copy of the soil analysis certificate is to be provided to the waste contractor prior to disposal.

8.6.3 Trial pit 9 is situated within the southern section of the site within an area of proposed soft landscaping. Soil from the upper sample from TP9 does not exceed the S4UL's for Dibenz(a,h)anthracene, but it was recorded at the limit for commercial land use. Elevated levels of PAH were not recorded elsewhere within the other areas of proposed soft landscaping that were tested. In this case, PAH contamination of the soils on site is not considered widespread. Once planted, the risk of exposure to PAHs on site during routine vegetation maintenance is considered very low. No remediation of the soils within the proposed soft landscaping areas is indicated in this case.

8.7 Post-Redevelopment Risks to Buildings, Services, and the Wider Environment

8.7.1 There are no particular concerns regarding sulphate concentrations within the soil in relation to concrete foundations, etc.

8.7.2 Migration of contamination off-site is considered unlikely due to the low permeability of the underlying strata.

8.7.3 The site does not lie within a groundwater Source Protection Zone (SPZ) and is within an area which is not considered to be hydrogeologically sensitive. In this case, the proposed redevelopment of the site is not considered likely to pose a risk of contamination to the wider environment.

8.7.4 The site lies within a Nitrate Vulnerable Zone. Nitrate Vulnerable Zones are designated as being at risk from agricultural nitrate pollution and were introduced in order to reduce the levels of nitrates in water. The proposed redevelopment of the site is not considered likely to lead to the generation of agricultural nitrate pollution.

9. CONCLUSIONS

9.1 The site lies on Weald Clay Formation, which is a Secondary A Aquifer at this location, with no superficial deposits. The site does not lie within a ground water Source Protection Zone and is considered not to be particularly hydrogeologically sensitive.

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9.2 The site is in Flood Zone 1 (minimal flood risk) and is not within 250 m of any landfill likely to present a landfill gas migration risk. The site is not within a radon affected area.

9.3 The site is to be redeveloped for commercial use. The majority of the site will be retained under hard cover, with the exception of a narrow belt of soft landscaping which is to include a wildlife pond within the southern section of the site.

9.4 Former land uses at the site have included use as a poultry farm together with use as a storage yard. The intrusive site investigation, comprising the excavation of 11 trial pits together with soil sampling and analysis, identified generally minor contamination limited to two areas of the site. Contamination was limited to Polycyclic Aromatic Hydrocarbons (PAHs) within the topsoil, together with the presence of asbestos fibres (at trace levels) within the soil at one location. The underlying Weald Clay was found to be free of any contamination.

9.5 PAH contamination on sites with a similar development history is not unusual. PAH contamination and elevated PAH levels were identified at three of the 11 locations tested within the site. Given the lack of any other exceedances within the site, it is not thought that contamination is widespread.

9.6 The overall environmental risk for the site is rated according to the risk assessment matrix in Table 9.1 below:

TABLE 9.1
RISK ASSESSMENT MATRIX

PROBABILITY OF IMPACT	CONTAMINATION POTENTIAL		
	SEVERE	MODERATE OR UNCERTAIN	MINIMAL
High	4	3	2
Medium	3	2	1
Low	2	1	1

1 = low risk, 2 = low to medium risk, 3 = medium to high risk, 4 = high risk

9.7 In this case, contamination of the soils on site is minimal, but not absent. The majority of the site will be contained beneath hard cover post development. In this case, the risk of exposure to future site users and the wider environment is low, however, measures will need to be taken to ensure that those appointed to undertake site clearance, preparation and redevelopment works are not exposed to contamination during the redevelopment of the site. This may be achieved through the implementation of appropriate industrial hygiene measures. See recommendations below.

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10. RECOMMENDATIONS

10.1 All future ground workers should be made aware of the findings of this assessment. Whilst contamination at the site is not considered to be widespread, some soil contamination has been identified.

10.2 Asbestos fibres were identified a very low levels within the soil at one location on site. Although the concentration of asbestos is not considered to be significant, and no asbestos was identified elsewhere, it remains possible that other fibres or fragments of asbestos may remain on site from past land use. As a result, appropriate precautions should be taken. If any further evidence of asbestos is identified during site clearance works, works should cease and advise should be sought before proceeding.

10.3 Groundworkers engaged in the removal of, or working within, the existing upper soil should practice appropriate industrial hygiene. Measures should include the wearing of boots, gloves, coveralls, and dust masks on dry days if dust is generated. Eating and smoking in excavations should be avoided.

10.4 The soil which is to be excavated within the location of the proposed rainwater harvesting tank should either be retained under hardcover or be removed from site via an appropriate waste contractor. A copy of the soil analysis certificate should be provided to the contractor.

10.5 Evidence that the appropriate protection and remediation measures have been carried out as part of the site's redevelopment should be recorded. This should include photographs of the work in progress, documentary evidence of the origin of any imported soils and copies of the tickets for material disposed of off-site. On completion of the works, a completion or verification report should be provided to the local planning authority in accordance with the approved scheme.

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APPENDIX A: **Site Location Plan and Existing Site Layout**

NOTES

- DO NOT SCALE OFF THIS DRAWING EXCEPT FOR PLANNING PURPOSES
- CHECK ALL DIMENSIONS ON SITE BEFORE ANY WORK IS COMMENCED
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Block Plan As Proposed - scale - 1:500 @ A1



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Location Plan - scale - 1:1250 @ A1

0 20 40 60 80 100

scale bar - 1:1250 @ A1

scale bar - 1:500 @ A1

REV	DATE	BY	AMENDMENT

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JOB TITLE
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DRAWING TITLE
Location & Block Plan

PLANNING ISSUE

DATE	SCALE	DRAWN BY
Feb 2022	as indicated	ec
		CHECKED BY mf

JOB NO.	DRAWING NO.	REVISION
21034	2.01	

APPENDIX B: **Approved Development Plans**

N

NOTES

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The Barn

Aspen Place

OKEHURST LANE

existing conifers to be felled and new trees to be planted to north western corner to compliment Ecological Uplift Strategy

existing conifers to be retained to provide year round screening

sewage treatment plant

rain water harvesting tank

access gates

06no. parking spaces

EV

EV

dashed lines denotes extent of existing building/ slab footprints

dashed outline of HGV denotes potential standing areas to reflect vehicle tracking

there is an existing Public Footpath, No.1333-4, coloured blue, which is currently subject to a diversion, coloured green.

Footpath diversion not part of this application

A future application is to seek to straighten out the Public Footpath and permanently relocate the route, coloured red, which will be 3.0m wide with a 2.0m soft landscaping buffer to the eastern side, and timber fencing to the western side

05no. parking spaces

09no. parking spaces

EV

illustrative Root Protection Areas to existing trees - refer to Arboricultural Report for additional information

hatched areas denote proposed area of ecological uplift, including, but not limited too:

- flowering plants
- bird and bat boxes, either on the buildings , or surrounding trees,
- log/ compost piles
- hedgehog house
- wildflower grassland areas

REV	DATE	BY	AMENDMENT
E	11.10.23	EC	ref. to PRoW diversion omitted
D	15.06.23	EC	scheme amended following planning officers comments
C	31.03.23	EC	rwht added to landscaping
B	25.03.22	EC	southern car parking amended
A	15.03.22	EC	PLANNING ISSUE

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DRAWING TITLE
Proposed Master Plan

PLANNING ISSUE

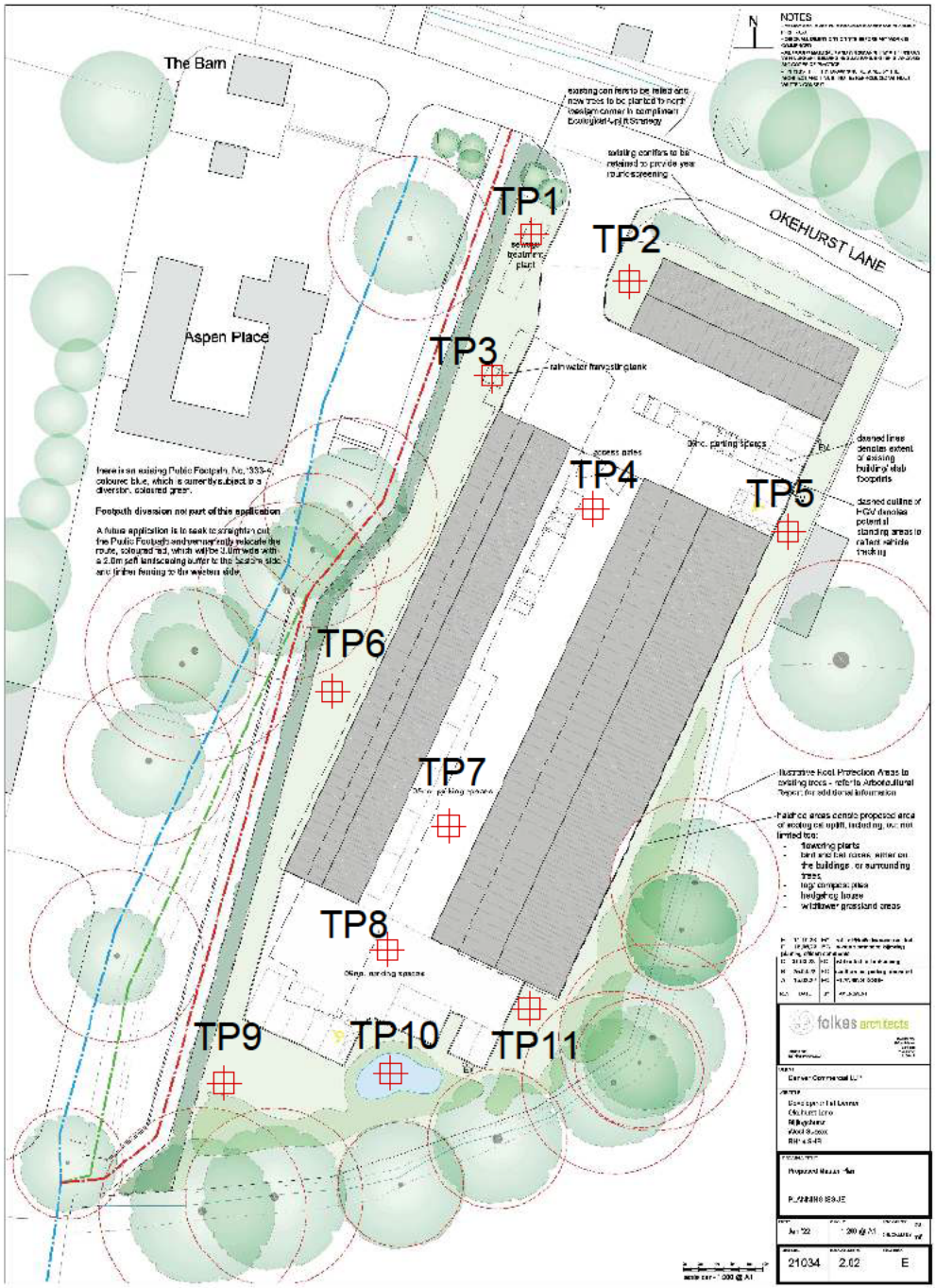
DATE	SCALE	DRAWN BY	CHECKED BY
Jan '22	1:200 @ A1	ec	mf

JOB NO.	DRAWING NO.	REVISION
21034	2.02	E

0m 2m 4m 6m 8m 10m
scale bar - 1:200 @ A1

APPENDIX C: **Trial Pit Location Plan**

11 Proposed sample locations



APPENDIX D: **Trial Pit Logs**

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Site: Denver Storage, Billingshurst

Date: 06 Nov. 2024

Standpipe	Sampling Type	Depths From	Depths To	Legend	Depth bgl	Strata Description
	Soil	0.02	0.08		0.02	Road planings
					0.08	Light brown topsoil with chalk fragments
	Soil	0.25	0.35			Mid brown clayey soil
					0.4	Mottled clay Weald Clay Formation
					0.6	END

Remarks
No ground water

Method	Trial pit
Dimensions Dia	
Made by	
Job No.	ECE/DenverComLLP
Borehole or Trial Pit No.	**TP1**

Environmental Assessment Services Limited

Site: Denver Storage, Billingshurst

Date: 06 Nov. 2024

Standpipe	Sampling Type	Depths From	Depths To	Legend	Depth bgl	Strata Description
	Soil	0.05	0.15		0.05	Road planings over dark topsoil
					0.09	Clayey topsoil with brick
	Soil	0.15	0.25			Mottled orange clay Weald Clay Formation
					0.5	END

Remarks
No ground water

Method	Trial pit
Dimensions Dia	
Made by	
Job No.	ECE/DenverComLLP
Borehole or Trial Pit No.	**TP2**

Environmental Assessment Services Limited

Site: Denver Storage, Billingshurst

Date: 06 Nov. 2024

Standpipe	Sampling Type	Depths From	Depths To	Legend	Depth bgl	R L	Strata Description
	Soil	0.05	0.15				Dark brown topsoil with brick, metal & slate fragments
	Soil	Mix	Mix		0.2		Light brown clay Fading into Mottled blue/grey clay Weald Clay Formation
					0.8		END

Remarks

No ground water

Method	Trial pit
Dimensions Dia	
Made by	
Job No.	ECE/DenverComLLP
Borehole or Trial Pit No.	**TP3**

Environmental Assessment Services Limited

Site: Denver Storage, Billingshurst

Date: 06 Nov. 2024

Standpipe	Sampling Type	Depths From	Depths To	Legend	Depth bgl	R L	Strata Description
	Soil	0.05	0.15				Mid brown top soil with roots
					0.15		Light brown clay
	Soil	0.25	0.35				
					0.5		Mottled clay
					0.6		END

Remarks

No ground water

Method	Trial pit
Dimensions Dia	
Made by	
Job No.	ECE/DenverComLLP
Borehole or Trial Pit No.	**TP4**

Environmental Assessment Services Limited

Site: Denver Storage, Billingshurst

Date: 06 Nov. 2024

Standpipe	Sampling Type	Depths From	Depths To	Legend	Depth bgl	Strata Description
	Soil	0.02	0.12		0.07	Loose road planings mixed with dark topsoil
	Soil	0.15	0.25		0.17	Clayey topsoil
					0.20	Sand
						Weathered clay (orange into mottled brown/blue clay) Weald Caly Formation
					0.55	END

Remarks

No ground water

Method	Trial pit
Dimensions Dia	
Made by	
Job No.	ECE/DenverComLLP
Borehole or Trial Pit No.	**TP5**

Environmental Assessment Services Limited

Site: Denver Storage, Billingshurst

Date: 06 Nov. 2024

Standpipe	Sampling Type	Depths From	Depths To	Legend	Depth bgl	R L	Strata Description
	Soil	0.05	0.15				Mid brown topsoil
					0.4		
	Soil	0.40	0.45				Chalk
					0.5		Weathered orange/brown clay
							Weald Caly Formation
					0.9		
							END

Remarks

No ground water

Method	Trial pit
Dimensions Dia	
Made by	
Job No.	ECE/DenverComLLP
Borehole or Trial Pit No.	**TP6**

Environmental Assessment Services Limited

Site: Denver Storage, Billingshurst

Date: 06 Nov. 2024

Standpipe	Sampling Type	Depths From	Depths To	Legend	Depth bgl	R L	Strata Description
	Soil	0.00	0.15		0.05		Topsoil with roots
							Light brown clay
					0.45		
					0.65		Mottled orange/grey clay Weald Clay Formation
							END

Remarks

No ground water

Cobbles adjacent to nearby hardstanding with drainage pipe

Method	Trial pit
Dimensions Dia	
Made by	
Job No.	ECE/DenverComLLP
Borehole or Trial Pit No.	**TP7**

Environmental Assessment Services Limited

Site: Denver Storage, Billingshurst

Date: 06 Nov. 2024

Standpipe	Sampling Type	Depths From	Depths To	Legend	Depth bgl	R L	Strata Description
	Soil	0.05	0.15		0.15		Dark brown topsoil with roots & brick fragments
	Soil	0.20	0.30				Mid brown orange clayey soil with fine brick fragments
					0.4		Orange weathered clay
					0.6		Grey/orange mottled clay Weald Clay Formation
					0.75		END

Remarks

No ground water

Method	Trial pit
Dimensions Dia	
Made by	
Job No.	ECE/DenverComLLP
Borehole or Trial Pit No.	**TP8**

Environmental Assessment Services Limited

Site: Denver Storage, Billingshurst

Date: 06 Nov. 2024

Standpipe	Sampling Type	Depths From	Depths To	Legend	Depth bgl	R L	Strata Description
	Soil	0.00	0.06				Mid brown topsoil with roots
	Soil	0.10	0.20		0.15		Light brown clayey soil fading into
					1.0		Blue/grey clay Weald Clay Formation
							END

Remarks

No ground water

Method	Trial pit
Dimensions Dia	
Made by	
Job No.	ECE/DenverComLLP
Borehole or Trial Pit No.	**TP9**

Environmental Assessment Services Limited

Site: Denver Storage, Billingshurst

Date: 06 Nov. 2024

Standpipe	Sampling Type	Depths From	Depths To	Legend	Depth bgl	R L	Strata Description
	Soil	0.05	0.15		0.05		Mid brown top soil with roots
	Soil	0.35	0.45		0.55		Mid brown clayey soil with waste materials including carpet and foam underlay
					0.80		Mottled orange - blue/grey clay Weald Clay Formation
							END

Remarks

No ground water

Method	Trial pit
Dimensions Dia	
Made by	
Job No.	ECE/DenverComLLP
Borehole or Trial Pit No.	**TP10**

Environmental Assessment Services Limited

Site: Denver Storage, Billingshurst

Date: 06 Nov. 2024

Standpipe	Sampling Type	Sampling Depths From	Sampling Depths To	Strata Legend	Strata Depth bgl	Strata R L	Strata Description
	Soil	0.05	0.15		0.15		Topsoil
							Light brown clayey soil with chalk and flint fragments
		0.35	0.45		0.40		Weathered mid brown clay Weald Clay Formation
					0.75		END

Remarks

No ground water

Unknown subterranean structure - concrete slab and metal runners

Method	Trial pit
Dimensions Dia	
Made by	
Job No.	ECE/DenverComLLP
Borehole or Trial Pit No.	**TP11**

APPENDIX E: **Analysis Certificates**

Environmental Assessment Services Ltd☐
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i2 Analytical Ltd.
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Analytical Report Number : 24-052879

Replaces Analytical Report Number: 24-052879, issue no. 1
Additional analysis undertaken.
Asbestos quantification added to sample 374540 at clients request

Project / Site name:	Denver	**Samples received on:**	11/11/2024
Your job number:		**Samples instructed on/ Analysis started on:**	11/11/2024
Your order number:		**Analysis completed by:**	06/12/2024
Report Issue Number:	2	**Report issued on:**	09/12/2024
Samples Analysed:	21 soil samples		



Signed:

Adam Fenwick
Key Account Executive
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 24-052879
Project / Site name: Denver

Lab Sample Number				374526	374527	374528	374529	374530
Sample Reference				TP1	TP1	TP2	TP2	TP3
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.04	0.30	0.10	0.20	0.10
Date Sampled				06/11/2024	06/11/2024	06/11/2024	06/11/2024	06/11/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Stone Content	%	0.1	NONE	42.2	33.7	65.4	< 0.1	58.1
Moisture Content	%	0.01	NONE	6.3	17	4.1	18	8.1
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.9	0.9	0.8
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MJN	MJN	MJN	MJN	MJN
Actinolite detected	Type	N/A	ISO 17025	-	-	-	-	-
Amosite detected	Type	N/A	ISO 17025	-	-	-	-	-
Anthophyllite detected	Type	N/A	ISO 17025	-	-	-	-	-
Chrysotile detected	Type	N/A	ISO 17025	-	-	-	-	-
Crocidolite detected	Type	N/A	ISO 17025	-	-	-	-	-
Tremolite detected	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos % by hand picking/weighing	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	-	-	-	-
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	9.2	7.7	9	8.3	8.8
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO_4	mg/kg	50	MCERTS	790	430	500	2400	2500
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	250	84	71	240	600
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	125	41.7	35.7	120	299
Sulphide	mg/kg	1	MCERTS	11	< 1.0	71	< 1.0	2700
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	3.8	1.9	4.8	0.9	5.9
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.06	0.17	0.96	30
Acenaphthylene	mg/kg	0.05	MCERTS	0.05	0.22	0.13	0.13	9.4
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.53	0.31	1.1	87
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.55	0.29	1.3	94
Phenanthrene	mg/kg	0.05	MCERTS	0.31	6.3	2.6	9.2	810
Anthracene	mg/kg	0.05	MCERTS	0.08	1.3	0.62	2	210
Fluoranthene	mg/kg	0.05	MCERTS	0.87	14	4.2	10	920
Pyrene	mg/kg	0.05	MCERTS	0.92	12	3.7	9	770
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.41	5.3	1.6	3.7	350
Chrysene	mg/kg	0.05	MCERTS	0.59	5.9	2	3.9	360
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.71	7.2	1.8	4.1	390
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.31	3.1	0.91	2	200
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.56	6.4	1.7	4.1	380
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.4	3.3	1	2.1	170
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.75	0.26	0.41	37
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.51	3.6	1.2	2.2	180

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

Analytical Report Number: 24-052879
Project / Site name: Denver

Lab Sample Number				374526	374527	374528	374529	374530
Sample Reference				TP1	TP1	TP2	TP2	TP3
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.04	0.30	0.10	0.20	0.10
Date Sampled				06/11/2024	06/11/2024	06/11/2024	06/11/2024	06/11/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	5.74	69.9	22.5	56.4	4980
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	22	7.2	16	9.7
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	1.1	0.6	1	1.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	0.7	0.5	0.8	0.7
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	15	25	13	24	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	21	14	270	54
Lead (aqua regia extractable)	mg/kg	1	MCERTS	25	67	17	190	24
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	13	20	9	17	24
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	1.5	< 1.0	< 1.0	U/S *U/S
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	84	150	94	300	180
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	8
TPHCWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	2.4	< 2.0	4	< 2.0	53
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	11	< 8.0	19	18	77
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	210	< 8.0	360	12	180
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	230	< 10	380	30	320
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	1.1	< 1.0	33
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	3.9	6	7.6	290
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	16	20	44	24	1800
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	410	40	760	31	2500
TPHCWG - Aromatic >EC5 - EC35 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	430	64	810	62	4700
TPH (EC10 - EC40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	MCERTS	1200	67	2400	96	5400
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

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

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Analytical Report Number: 24-052879
Project / Site name: Denver

Lab Sample Number				374531	374532	374533	374534	374535
Sample Reference				TP3	TP4	TP4	TP5	TP5
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				None Supplied	0.10	0.30	0.07	0.20
Date Sampled				06/11/2024	06/11/2024	06/11/2024	06/11/2024	06/11/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Stone Content	%	0.1	NONE	39.6	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	21	18	16	15
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.8	0.8	0.9
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MJN	MJN	MJN	MJN	MJN
Actinolite detected	Type	N/A	ISO 17025	-	-	-	-	-
Amosite detected	Type	N/A	ISO 17025	-	-	-	-	-
Anthophyllite detected	Type	N/A	ISO 17025	-	-	-	-	-
Chrysotile detected	Type	N/A	ISO 17025	-	-	-	-	-
Crocidolite detected	Type	N/A	ISO 17025	-	-	-	-	-
Tremolite detected	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos % by hand picking/weighing	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	-	-	-	-
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	8.6	8.7	7.8	8.3	7.8
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO_4	mg/kg	50	MCERTS	2000	750	430	730	560
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	600	60	39	260	42
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	301	29.9	19.7	128	20.8
Sulphide	mg/kg	1	MCERTS	630	7.2	4.1	4.3	< 1.0
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	4.1	2.7	1.3	3.2	2.8
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	4.7	0.39	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	2.9	0.79	0.16	0.08	0.06
Acenaphthene	mg/kg	0.05	MCERTS	15	1.6	0.07	0.06	< 0.05
Fluorene	mg/kg	0.05	MCERTS	14	1.8	< 0.05	0.07	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	160	17	1.1	0.9	0.47
Anthracene	mg/kg	0.05	MCERTS	43	4.9	0.31	0.22	0.12
Fluoranthene	mg/kg	0.05	MCERTS	270	34	3.9	2.1	1.4
Pyrene	mg/kg	0.05	MCERTS	230	33	3.9	1.9	1.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	110	15	1.8	0.93	0.61
Chrysene	mg/kg	0.05	MCERTS	110	15	2	1.1	0.66
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	140	18	2.8	1.2	0.76
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	52	8	1.2	0.52	0.48
Benzo(a)pyrene	mg/kg	0.05	MCERTS	130	18	2.7	0.96	0.82
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	59	8.4	1.6	0.61	0.43
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	12	1.7	0.31	0.16	0.08
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	65	8.7	1.8	0.73	0.48

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

Analytical Report Number: 24-052879
Project / Site name: Denver

Lab Sample Number				374531	374532	374533	374534	374535
Sample Reference				TP3	TP4	TP4	TP5	TP5
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				None Supplied	0.10	0.30	0.07	0.20
Date Sampled				06/11/2024	06/11/2024	06/11/2024	06/11/2024	06/11/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	1430	185	23.7	11.5	7.61
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	9.6	17	15	13
Boron (water soluble)	mg/kg	0.2	MCERTS	2	0.8	0.6	0.8	0.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.4	0.4	< 0.2	0.7	0.5
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	39	43	21	21	18
Copper (aqua regia extractable)	mg/kg	1	MCERTS	61	20	14	20	15
Lead (aqua regia extractable)	mg/kg	1	MCERTS	74	28	38	34	37
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	48	9	12	14	11
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.5	5.9	< 1.0	1.3	1.6
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	500	110	100	160	120
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	11	2	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	22	11	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	73	49	< 8.0	59	< 8.0
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	110	63	< 10	59	< 10
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	11	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	150	21	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	440	210	< 10	11	< 10
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	790	340	18	140	13
TPHCWG - Aromatic >EC5 - EC35 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	1400	570	18	150	13
TPH (EC10 - EC40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	MCERTS	1800	670	24	440	16
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

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

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Analytical Report Number: 24-052879
Project / Site name: Denver

Lab Sample Number				374536	374537	374538	374539	374540
Sample Reference				TP6	TP6	TP7	TP8	TP8
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.15	0.45	0.01	0.01	0.25
Date Sampled				06/11/2024	06/11/2024	06/11/2024	06/11/2024	06/11/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Stone Content	%	0.1	NONE	32.3	< 0.1	< 0.1	54.9	32.5
Moisture Content	%	0.01	NONE	15	17	25	19	14
Total mass of sample received	kg	0.1	NONE	0.9	0.8	0.8	0.8	0.8
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Detected
Asbestos Analyst ID	N/A	N/A	N/A	MUA	MUA	MUA	MUA	WEM
Actinolite detected	Type	N/A	ISO 17025	-	-	-	-	Not-detected
Amosite detected	Type	N/A	ISO 17025	-	-	-	-	Detected
Anthophyllite detected	Type	N/A	ISO 17025	-	-	-	-	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	-	-	-	-	Detected
Crocidolite detected	Type	N/A	ISO 17025	-	-	-	-	Detected
Tremolite detected	Type	N/A	ISO 17025	-	-	-	-	Not-detected
Asbestos % by hand picking/weighing	%	0.001	ISO 17025	-	-	-	-	0.002
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	-	-	-	Loose Fibres
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	8	7.8	7.8	8.3	9.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO_4	mg/kg	50	MCERTS	420	560	620	1200	2100
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	37	48	55	660	320
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	18.7	23.9	27.3	332	160
Sulphide	mg/kg	1	MCERTS	< 1.0	1.1	2.1	24000 [&+]	68
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.4	0.8	3.1	4.8	1.1
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.69	0.11
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.1	1.8	0.35
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.05	4.4	0.31
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	3.7	0.27
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.33	0.82	58	4.3
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.07	0.24	14	1.4
Fluoranthene	mg/kg	0.05	MCERTS	0.05	0.7	2.5	85	10
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.65	2.5	73	9.7
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.27	1.1	34	5.2
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.31	1.2	30	4.8
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.37	1.8	34	7.1
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.16	0.67	19	2.5
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.34	1.7	36	6.9
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.17	0.89	17	3.8
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.15	3.7	0.77
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.21	1	18	4.6

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Analytical Report Number: 24-052879
Project / Site name: Denver

Lab Sample Number				374536	374537	374538	374539	374540
Sample Reference				TP6	TP6	TP7	TP8	TP8
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.15	0.45	0.01	0.01	0.25
Date Sampled				06/11/2024	06/11/2024	06/11/2024	06/11/2024	06/11/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	3.59	14.6	433	62.4
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.3	3.9	11	3.9	9.1
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.8	2	0.8	0.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	< 0.2	0.4	0.3	0.5
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	8	16	13	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	5.9	9.5	14	7.3	27
Lead (aqua regia extractable)	mg/kg	1	MCERTS	12	9.9	42	22	150
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	8.4	7	8.8	3.9	12
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.4	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	81	60	400	65	100
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	6.3
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	12	31
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	29	30
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	41	68
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	3.1	1.8
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	61	17
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	12	410	59
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	20	640	130
TPHCWG - Aromatic >EC5 - EC35 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	32	1100	200
TPH (EC10 - EC40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	MCERTS	< 10	< 10	32	1200	300
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

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

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Analytical Report Number: 24-052879
Project / Site name: Denver

Lab Sample Number				374541	374542	374543	374544	374545
Sample Reference				TP9	TP9	TP10	TP10	TP11
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.01	0.15	0.10	0.40	0.01
Date Sampled				06/11/2024	06/11/2024	06/11/2024	06/11/2024	06/11/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Stone Content	%	0.1	NONE	36.8	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	16	12	21	20	22
Total mass of sample received	kg	0.1	NONE	0.9	0.8	0.8	0.8	0.9
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SPU	SPU	SPU	SPU	SPU
Actinolite detected	Type	N/A	ISO 17025	-	-	-	-	-
Amosite detected	Type	N/A	ISO 17025	-	-	-	-	-
Anthophyllite detected	Type	N/A	ISO 17025	-	-	-	-	-
Chrysotile detected	Type	N/A	ISO 17025	-	-	-	-	-
Crocidolite detected	Type	N/A	ISO 17025	-	-	-	-	-
Tremolite detected	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos % by hand picking/weighing	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	-	-	-	-
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	8.2	8.1	7.2	7.4	7.5
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO_4	mg/kg	50	MCERTS	1300	1200	680	1600	780
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	670	590	87	530	280
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	337	293	43.6	266	141
Sulphide	mg/kg	1	MCERTS	17000 [&+]	140	< 1.0	1.3	18
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	4.5	1.3	3.1	5	3.6
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	2.3	1	0.06	0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	1.1	0.55	0.1	0.34	0.1
Acenaphthene	mg/kg	0.05	MCERTS	6.1	1.6	< 0.05	0.28	0.11
Fluorene	mg/kg	0.05	MCERTS	4.6	1.8	0.08	0.25	0.09
Phenanthrene	mg/kg	0.05	MCERTS	79	19	1.1	3.8	1.5
Anthracene	mg/kg	0.05	MCERTS	17	4.3	0.26	1.1	0.34
Fluoranthene	mg/kg	0.05	MCERTS	90	27	1.5	10	4.3
Pyrene	mg/kg	0.05	MCERTS	76	24	1.4	9.4	4
Benzo(a)anthracene	mg/kg	0.05	MCERTS	34	9.8	0.63	4.6	1.9
Chrysene	mg/kg	0.05	MCERTS	32	9.5	0.66	4.6	1.9
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	39	11	0.7	5.7	2.4
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	15	4.6	0.36	3.2	1.2
Benzo(a)pyrene	mg/kg	0.05	MCERTS	37	11	0.64	6.1	2.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	18	5.7	0.31	3.2	1.2
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	3.6	1	0.07	0.61	0.23
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	20	6.2	0.34	3.6	1.3

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Analytical Report Number: 24-052879
Project / Site name: Denver

Lab Sample Number				374541	374542	374543	374544	374545
Sample Reference				TP9	TP9	TP10	TP10	TP11
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.01	0.15	0.10	0.40	0.01
Date Sampled				06/11/2024	06/11/2024	06/11/2024	06/11/2024	06/11/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	475	139	8.23	56.8	22.9
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.7	15	19	12	18
Boron (water soluble)	mg/kg	0.2	MCERTS	2.7	1	1.1	1.2	2.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	< 0.2	1.8	0.9	0.7
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	18	23	20	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22	12	59	63	38
Lead (aqua regia extractable)	mg/kg	1	MCERTS	30	31	190	85	54
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	1.4	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	22	12	39	16	16
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	2	1.8	< 1.0	< 1.0	1.8
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	130	93	860	450	190
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	15	11	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	15	11	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	2	2.1	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	52	21	< 2.0	2.6	< 2.0
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	380	94	< 10	35	24
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	420	72	12	67	47
TPHCWG - Aromatic >EC5 - EC35 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	850	190	12	100	71
TPH (EC10 - EC40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	MCERTS	910	210	23	110	84
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	6.5	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

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

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Analytical Report Number: 24-052879
Project / Site name: Denver

Lab Sample Number				374546
Sample Reference				TP11
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.40
Date Sampled				06/11/2024
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	17
Total mass of sample received	kg	0.1	NONE	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SPU
Actinolite detected	Type	N/A	ISO 17025	-
Amosite detected	Type	N/A	ISO 17025	-
Anthophyllite detected	Type	N/A	ISO 17025	-
Chrysotile detected	Type	N/A	ISO 17025	-
Crocidolite detected	Type	N/A	ISO 17025	-
Tremolite detected	Type	N/A	ISO 17025	-
Asbestos % by hand picking/weighing	%	0.001	ISO 17025	-
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO_4	mg/kg	50	MCERTS	890
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	600
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	300
Sulphide	mg/kg	1	MCERTS	< 1.0
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.5

Total Phenols

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

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.11
Acenaphthene	mg/kg	0.05	MCERTS	0.1
Fluorene	mg/kg	0.05	MCERTS	0.11
Phenanthrene	mg/kg	0.05	MCERTS	1.5
Anthracene	mg/kg	0.05	MCERTS	0.35
Fluoranthene	mg/kg	0.05	MCERTS	3.4
Pyrene	mg/kg	0.05	MCERTS	3.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.5
Chrysene	mg/kg	0.05	MCERTS	1.6
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.9
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.96
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.8
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.21
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.1

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Analytical Report Number: 24-052879
Project / Site name: Denver

Lab Sample Number				374546
Sample Reference				TP11
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.40
Date Sampled				06/11/2024
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**	
Total PAH				
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	18.8
Heavy Metals / Metalloids				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	21
Boron (water soluble)	mg/kg	0.2	MCERTS	1.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	33
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	2.1
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	100
Petroleum Hydrocarbons				
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.02	MCERTS	< 0.020
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	28
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	66
TPHCWG - Aromatic >EC5 - EC35 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	95
TPH (EC10 - EC40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	MCERTS	100
VOCs				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0

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

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Analytical Report Number: 24-052879
Project / Site name: Denver
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

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

Quantitative Analysis

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

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

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

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
374540	TP8	0.25	138	Loose Fibres	**Amosite & Chrysotile & Crocidolite**	0.002	**0.002**

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

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 24-052879
Project / Site name: Denver

* 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 *
374526	TP1	None Supplied	0.04	Brown loam and sand with vegetation and stones
374527	TP1	None Supplied	0.3	Brown loam and clay with vegetation and stones
374528	TP2	None Supplied	0.1	Brown sandy loam with vegetation and stones
374529	TP2	None Supplied	0.2	Brown clay and sand with gravel
374530	TP3	None Supplied	0.1	Brown loam and sand with vegetation and stones
374531	TP3	None Supplied	None Supplied	Brown loam and sand with vegetation and stones
374532	TP4	None Supplied	0.1	Brown loam and clay with gravel and vegetation
374533	TP4	None Supplied	0.3	Brown loam and clay with gravel and vegetation
374534	TP5	None Supplied	0.07	Brown loam and clay with gravel and vegetation
374535	TP5	None Supplied	0.2	Brown clay and sand with gravel
374536	TP6	None Supplied	0.15	Brown loam and clay with vegetation and stones
374537	TP6	None Supplied	0.45	Brown clay and sand with gravel and chalk
374538	TP7	None Supplied	0.01	Brown loam and clay with gravel and vegetation
374539	TP8	None Supplied	0.01	Brown loam and clay with vegetation and stones
374540	TP8	None Supplied	0.25	Brown sand with stones and vegetation
374541	TP9	None Supplied	0.01	Brown loam and clay with vegetation and stones
374542	TP9	None Supplied	0.15	Brown loam and clay with gravel and vegetation
374543	TP10	None Supplied	0.1	Brown loam and clay with gravel and vegetation
374544	TP10	None Supplied	0.4	Brown loam and clay with gravel and vegetation
374545	TP11	None Supplied	0.01	Brown loam and clay with gravel and vegetation
374546	TP11	None Supplied	0.4	Brown clay and loam with gravel and vegetation

Analytical Report Number : 24-052879
Project / Site name: Denver

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references	HSE Report No: 83/1996, HSG 248 (2021), HSG 264 (2012) & SCA Blue Book (draft)	A006B	D	ISO 17025
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode	In-house method	L010-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
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	L038B	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088-PL	D/W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088-PL	D/W	MCERTS
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS

Analytical Report Number : 24-052879
Project / Site name: Denver

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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

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

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

&+ - Result is above calibration range after the maximum dilution has been applied. The result should be considered the minimum value. The actual result could be significantly higher. This result is not accredited.

*U/S - Unsuitable for analysis due to sample matrix.

APPENDIX F: **Photographs**



Photograph 1: Trial pit 1.



Photograph 2: Trial pit 2.



Photograph 3: Trial pit 3.

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Photograph 4. Trial pit 4.



Photograph 5. Trial pit 5.

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Photograph 6. Trial pit 6.



Photograph 7. Trial pit 7.

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Photograph 8. Trial pit 8.



Photograph 9. Trial pit 9.

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Photograph 10. Trial pit 10.



Photograph 11. Trial pit 11.

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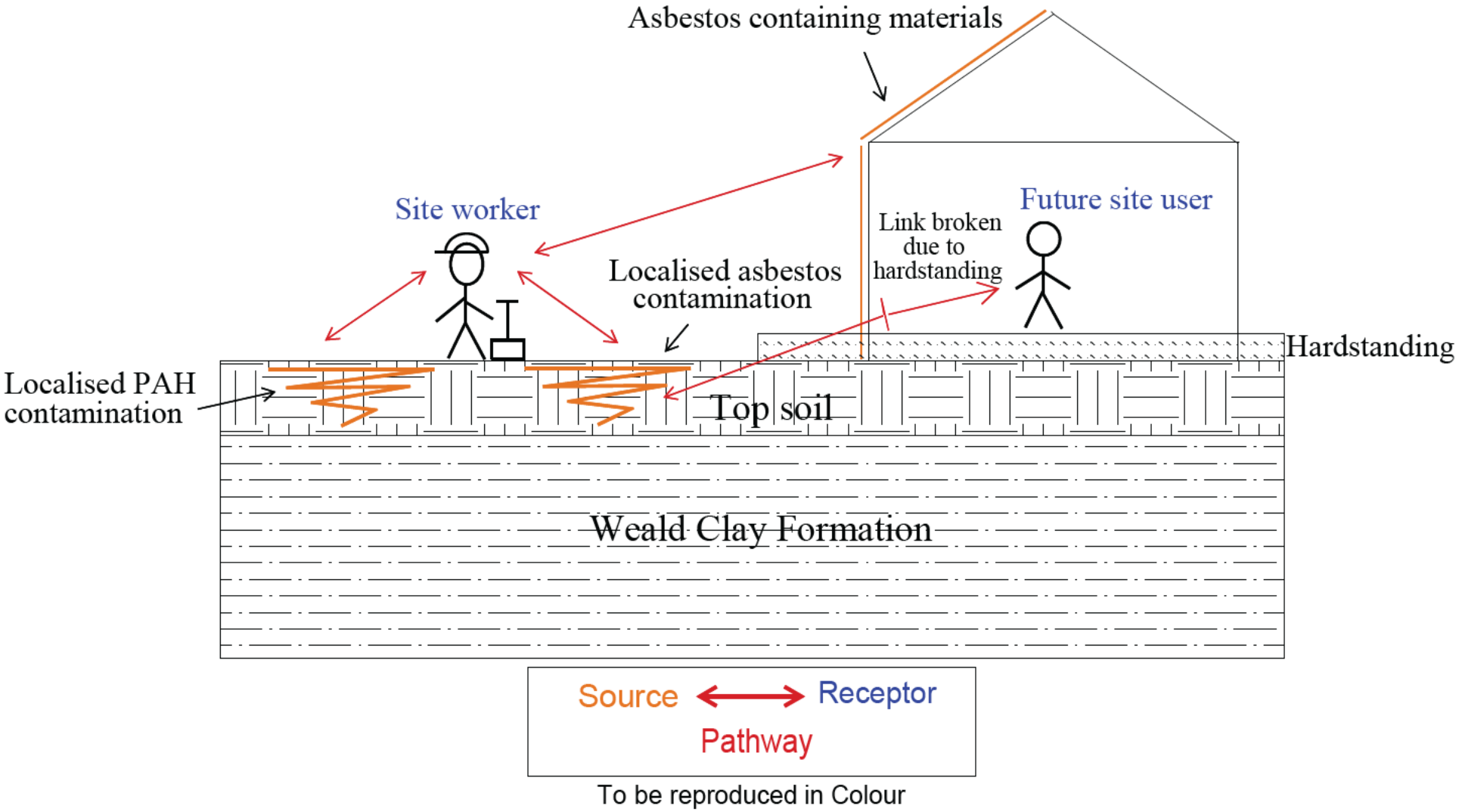
APPENDIX G: **Conceptual Model**



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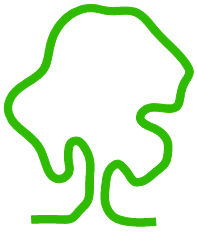

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