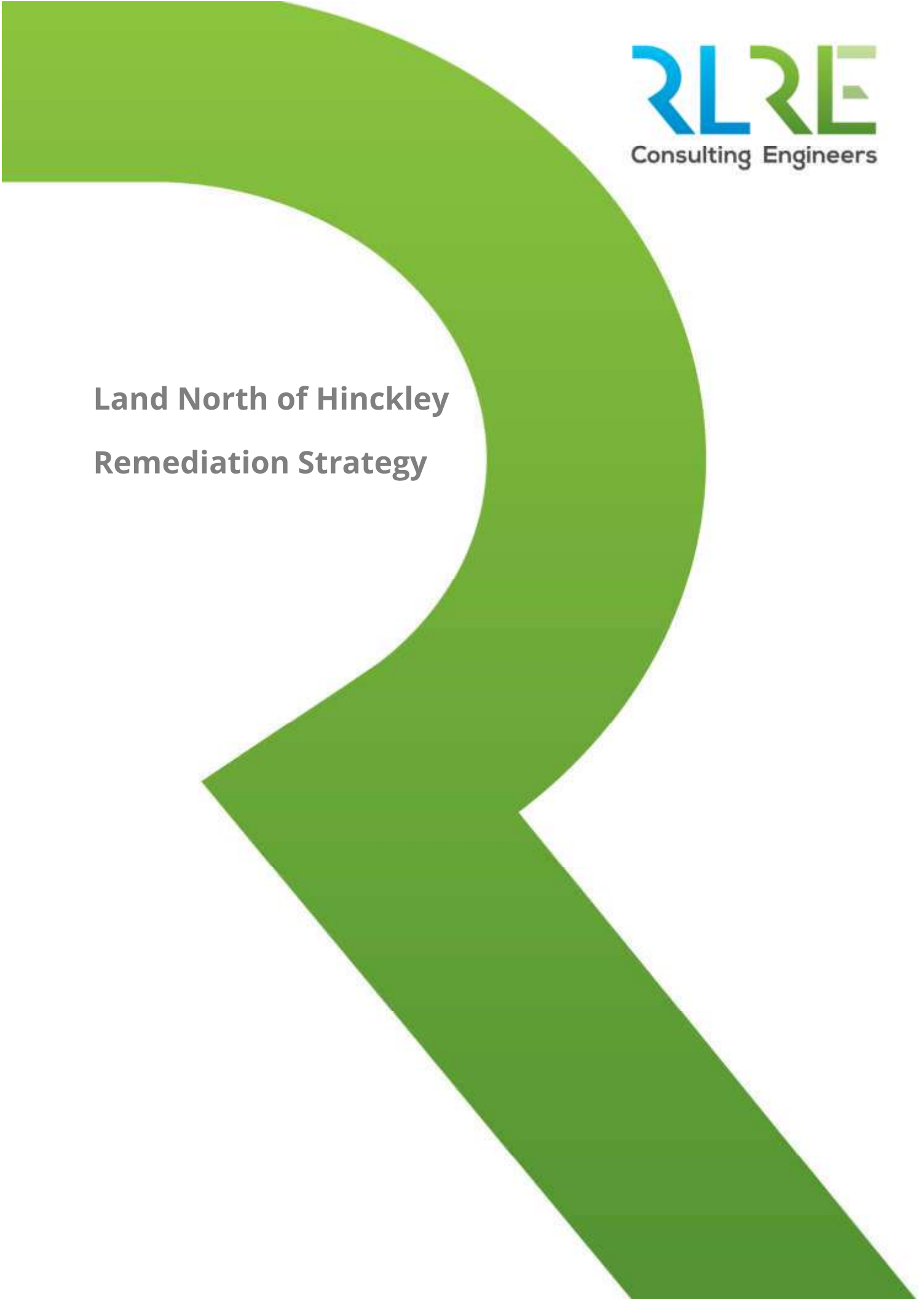




Land North of Hinckley Remediation Strategy

Land North of Hinckley

REMEDIATION STRATEGY

For

Barratt & David Wilson Homes (North Midlands)

DATE: February 2026

REV: P01

P25-279

Document Reference & Control

Project Name: Land North of Hinckley

Project Reference: P25-279

Report Title: Remediation Strategy

Client: Barratt & David Wilson Homes (NM)

Document Reference: 25279-RLL-26-XX-RP-O-0002

Report Status: Final

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Revision Status	Date	Summary of Revision
P01	13/02/26	First issue.

Executive Summary

This presents a summary of the remedial requirements and should not be referred to in isolation.

Instruction	In January 2026, Rodgers Leask Ltd (RLL) was commissioned by Barratt & David Wilson Homes (BDW) to produce a Remediation Strategy for a proposed residential development on land north of Hinckley, Leicestershire. It is understood that the site is proposed to be developed for residential end-use comprising dwellings with associated soft landscaping for gardens and public open space, attenuation ponds, hardstanding for access and associated utilities. The Remediation Strategy is required to specify both the remedial and validation works needed to facilitate the proposed development.
Site Setting	The site is located to the north of Normandy Way, Hinckley, LE10 3DA, at the approximate National Grid Reference 442669E, 295931N. The site has an irregular outline, covers an area of approximately 17ha and comprises Greenfield land, used for cattle grazing and agricultural uses. A 33kV high-voltage overhead electricity line crosses the north-western area of the site. A low-voltage overhead line serves the existing farm and cross the south-eastern site area. The site has largely remained as agricultural land throughout mapped history, with the most notable changes to the site being potential infilling of historical ponds, and the installation of overhead electricity cables. The site is underlain by several types of superficial deposit (Secondary A and Secondary Undifferentiated Aquifers and Unproductive Strata) overlying Mercia Mudstone (Secondary B Aquifer). The site is not within a Source Protection Zone for groundwater or surface water.

Ground Conditions	Three phases of ground investigation have undertaken at the site. Ground conditions generally identified natural topsoil overlying mixed superficial deposits with the exception of 3 No. infilled historic ponds. Localised made ground up to a depth of 2.5m was identified comprising reworked soils containing anthropogenic debris including glass bottles, plastic and metal. Asbestos (fibres/clumps of amosite and chrysotile and amosite lagging) and elevated lead was identified within made ground at Pond 1 in the north of the site and considered a potential risk to human health.
Remediation Strategy	In order to mitigate the risk to site end users, it is proposed to excavate the material and undertake an initial phase of hand-picking and removal of bulk asbestos fragments and then either remove the material from site, or retain beneath an area of POS with a minimum of 1m of clean material placed over the made ground. The remediation strategy provides a methodology which should be followed to validate these remedial works. The strategy provides chemical standards for site-won and imported soils. The strategy also provides a methodology for the removal and validation of unexpected contaminated soils. The site has not been found to be adversely affected by ground gas. Radon protection measures are not required. Liaison with the statutory water providers is required to determine the specification of water main to be used. Conditions potentially aggressive to concrete have been identified within made ground soils and an appropriate concrete specification will be required for all buried concrete in contact with this material.
Validation	Validation of all remedial works will be required and a protocol for carrying out validation works is provided. A completion report will be required to document the remedial works carried out. It shall be necessary to submit the completion report to the regulatory authorities. The responsibility for carrying out remediation, validation and completions works shall be defined during letting of the demolition/remediation contract.

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1.0 Introduction

1.1. Instruction

In January 2026, Rodgers Leask Ltd (RLL) was commissioned by Barratt & David Wilson Homes (BDW) to produce a Remediation Strategy for a proposed residential development on land north of Hinckley, Leicestershire, henceforth referred to as 'the site'.

It is understood that the site is proposed to be developed for residential end-use comprising dwellings with associated soft landscaping for gardens and public open space, attenuation ponds, hardstanding for access and associated utilities. The site was granted outline planning approval by Hinckley and Bosworth Borough Council (Ref: 24/00264/OUT). A proposed development layout which also shows areas of proposed landscaping used to inform this strategy is included as **Appendix A**.

1.2. Objectives

The objectives of this Remediation Strategy are to establish which remedial options provide the most suitable approach to remediation for each of the identified potential contaminant linkages and to assist in the discharge of Planning Condition 8 (24/00264/OUT).

The report has been prepared in accordance with the Land Contamination Risk Management (LCRM) guidance from the Environment Agency.

1.3. Reference Reports

The following existing information/reports have been reviewed as part of this assessment:

- MEC Ltd. Land North of Normandy Way, Hinckley. Phase 1 Geo-Environmental Desk Study. Report Ref: 28047-GEO-0401. Dated August 2023.
- ASL. Site Investigation. Land at Stoke Road, Hinckley Phase 2A. Report Ref: 092-24-087-10. Dated November 2024.
- Ecotech – GI Review Notation Plan. Dated 27th January 2025.
- RLL Supplementary Ground Investigation Report, Land North of Hinckley. Report Ref: 25279-RLL-25-XX-RP-O-0001. Dated July 2025.

- RLL Technical Note – Asbestos Contamination Removal, Land North of Hinckley. Report Ref: 25279-RLL-25-XX-TN-O-0002. Dated June 2025.
- RLL Technical Note – Delineation and Contamination Assessment of Historic Ponds, Land North of Hinckley. Report Ref: 25279-RLL-25-XX-TN-O-0003. Dated July 2025.

This Remediation Strategy is based upon the findings and recommendations of the above reports.

1.4. Scope

In order to achieve the outlined objectives, the scope of the study encompassed:

- A review and summary of the pertinent findings of the reference reports.
- Recommendations for remedial and validation works.

1.5. Approvals

It is recommended that this strategy be submitted, in conjunction with the referenced supporting reports, to the appropriate regulatory bodies for approval prior to implementation.

1.6. Limitations and Confidentiality

All conclusions and recommendations made within this report are based upon and limited to the factual information. No responsibility can be taken by RLL for information obtained by third parties and it has been assumed that all third-party information provided is true and correct.

No liability can be accepted for conditions not revealed within the exploratory holes or pits undertaken. The exploratory points cover only a small proportion of the total site area. RLL has where necessary undertaken extrapolation between locations and no responsibility can be taken for different conditions which may occur between locations.

RLL has undertaken the work in accordance with our understanding of current best practice at the time of undertaking the report. Further assessment and revision of the report may be required should new information come to light or legislation/changes to best practice be introduced after the date of issue of the report.

RLL has prepared the report for the sole use and reliance of the Client. The report may not be used or relied upon by any unauthorised third party without the explicit written agreement of RLL.

The interpretive work undertaken within this report remains the intellectual property of RLL and must not be divulged to any commercial third-party without prior written agreement of RLL.

2.0 Background Information

The following sub-sections are summarised from the existing reports referenced within Section 1.3. It should be noted that the redline boundary of the MEC Geo-environmental Desk Study report includes additional land to the southeast of the current site, including an additional farmyard area (Sunnyside Farm).

2.1. Site Location and Description

The site is located to the north of Normandy Way, Hinckley, LE10 3DA, at the approximate National Grid Reference 442669E, 295931N.

The site has an irregular outline, covers an area of approximately 17ha and comprises Greenfield land, used for cattle grazing and agricultural uses. A 33kV high-voltage overhead electricity line crosses the north-western area of the site. A low-voltage overhead line serves the existing farm and cross the south-eastern site area.

The site does not include Westfield Farm, which lies in the central area and which is surrounded by the site on all sides.

The boundaries comprised:

- Normandy Way to the south.
- A watercourse to the west.
- Further agricultural land to the north.
- Hinckley and Bosworth Community hospital and existing residential dwellings to the east.

2.2. Site History

The site has largely remained as agricultural land throughout mapped history, with the most notable changes to the site being potential infilling of historical ponds, and the installation of overhead electricity cables. Key historical features include:

- A pond to the northeast of the current farmyard area shown on historical maps between 1888 and the 1960's. Given the size of the pond, which is shown on both 1:2,500 and 1:10,000 scale maps, this is likely to have been infilled.

- A small pond in the far eastern corner of the site, possibly located off-site, between 1888 and the last 1:2,500 scale map edition dated 1993. This is possibly off-site and there is no evidence to suggest this has been infilled.
- A small pond in the southern site area between 1889 and 2010.
- A small pond in the far south-western corner of the site between 1924 and the last 1:2,500 scale map edition of 1990. The pond is too small to be shown on 1:10,000 scale maps. It is also shown off-site on the 1924 map edition.
- A tank adjacent to the stream on the western boundary between 1923 and 1999. Anecdotal evidence from the landowner suggests that a sheepwash was originally present at the location of the historical tank.
- Overhead electricity transmission cables in the west, northwest and north from 1977.

It is understood that the existing farmyard area (Westfields Farm) is outside of the development boundary.

From earliest mapping the surrounding area was largely undeveloped agricultural land. With most notable changes being the construction of residential dwellings adjacent to the east and south of the site, construction of the A47 Normandy Way to the south and commercial and industrial developments constructed to the southwest.

Farmyards associated with Westfield Farm and Sunnyside Farm are located adjacent to site boundaries.

2.3. Regulatory Information

No current or historical industrial land uses are recorded on site with the exception of a historical tank recorded on the western boundary of the site (associated with tank/sheepwash recorded on historical mapping).

Records in the site environs within 100m include a hospital adjacent to the northern boundary, additional tanks 57m northeast and 71m north, a depot 58m southwest and a sewage pumping station 65m southwest.

The MEC Desk Study reports that there are no historical landfill sites with 500m of the site.

There is one record of a historical waste site relating to a recycling centre, 220m southwest.

There are two records of current licensed waste sites relating to household, commercial and industrial waste, 273m south.

7 No. waste exemption records associated with the disposal, treatment and use of waste are recorded at Sunnyside Farm, to the southwest of the site.

Regional Unexploded Bomb Risk maps obtained from Zetica indicate that the site is in a low-risk area for unexploded ordnance (UXO).

The site is not in a radon affected area, as less than 1% of properties are above the action level. Therefore, radon protective measures are not required in the construction of new dwellings or extensions.

2.4. Geology, Hydrology and Hydrogeology

The published geological information shows the site to be underlain by:

- Alluvium – Clay, Silt, Sand and Gravel, in the west (Secondary A Aquifer).
- Bosworth Clay Member – Clay and Silt, centrally and to the west (Unproductive Strata).
- Wigston Sand and Gravel – Sand and Gravel, centrally (Secondary A Aquifer)
- Oadby Member – Diamicton, in the east (Secondary Undifferentiated Aquifer).
- Dunsmore Gravel – Sand and Gravel, in the east (Secondary A Aquifer).
- Mercia Mudstone Group – Mudstone, across the entire site (Secondary B Aquifer).

There are no faults indicated within the vicinity of the site.

The Bosworth Clay Member and Alluvium underlying the site are classified as a moderate risk of compressibility by the BGS. Other natural ground stability classifications range between low and negligible.

The site does not lie in a Coal Mining Reporting Area, as defined by the Coal Authority.

No mineral extractions are recorded on, or within 250m of the site.

The site is not located within a groundwater Source Protection Zone (SPZ).

No active groundwater abstractions are recorded within 2,000m.

The nearest watercourse to the site is an unnamed watercourse adjacent to the western boundary.

The site is not within a Flood Zone 2 or 3.

There are no records of surface water abstractions with 2,000m of the site.

2.5. Conceptual site model

The conceptual site model produced at Desk Study stage identified a low to moderate risk to human health and a low risk to controlled waters from site soils. The risk of ground gas was considered to be low. The following potential sources of contamination were identified:

- Historical tank/sheepwash on western boundary.
- Asbestos containing materials associated with agricultural use and historical buildings.
- Made ground associated with infilled ponds and historical site usage.
- Ground gas from made ground and infilled ponds on and off-site.

2.6. Ground Conditions

An initial ground investigation undertaken by ASL in 2024 generally identified topsoil or made ground topsoil to depths of ~0.4m overlying highly variable natural superficial deposits of sandy silty clay or gravelly clayey sand. Localised made ground deposits comprising reworked sandy gravelly clay or clayey sand was encountered and was predominantly associated with the presence of land drains.

Supplementary investigation undertaken by RLL in 2025 generally identified topsoil, overlying Dunsmore Gravel, overlying Oadby Till, overlying Wigston Sand and Gravel, overlying Bosworth Clay and was in general agreement with the published geology. Localised made ground deposits comprising sandy gravelly cobbly clay with abundant glass bottles and waste material was identified in the north of the site, within the footprint of a historic pond feature (Pond 1). Possible asbestos containing materials were encountered at the surface of TP203 within Pond 1 upon completion of backfilling.

Further delineation of Pond 1 and 3 No. additional historical pond features identified from historical mapping was undertaken by RLL in 2025 and

confirmed the presence and approximate extent of made ground at 3 No. locations, including the previously identified made ground at Pond 1. Additional investigation of a fourth potential historical pond in the southwest of the site did not identify evidence of made ground. The following table summarises the made ground encountered:

Pond Ref.	Location	Description of Made Ground	Maximum Depth (m)	Estimated Surface Area of Pond (m ²)	Estimated Volume of Made Ground (m ³)
Pond 1	North	Reworked silty clayey gravelly topsoil overlying firm brown sandy gravelly reworked clay, sandy gravel or gravelly cobbles with localised anthropogenic debris including glass bottles.	2.5	313	235
Pond 2	Far northeast	Reworked silty sandy gravelly topsoil overlying brown silty gravelly SAND with brick, occasional plastic and metal.	0.9	57	23
Pond 4	Central-south	Reworked silty sandy clayey gravelly topsoil overlying gravelly cobbles of brick and concrete, or grey/black reworked sandy gravelly clay.	2.17	194	112

Upon completion of the intrusive works, the extent of made ground was marked out by the RLL Engineer, and the extents surveyed by a specialist. Extents of the made ground encountered are detailed within RLL drawing 25279-RLL-25-XX-DR-O-0011 presented within **Appendix B**.

2.7. Groundwater

Groundwater strikes were recorded at depths of between 0.8m and 11.5m bgl, typically where granular deposits were encountered. Localised running sands and excavation instability was encountered. Subsequent monitoring recorded groundwater levels of between 0.44m and 3.53m bgl.

2.8. Ground Gas

ASL carried out 4 No. soil gas monitoring visits between 8th October and 5th November 2024. No significantly elevated concentrations of soil gas were recorded.

ASL stated that the site should be classified as a CS-1 or “Very Low Hazard Potential” with relation to ground gas risk. As such, no gas protection measures were recommended by ASL.

A further 2 No. rounds of ground gas monitoring were completed between 18th and 25th June 2025 by RLL. No detectable methane was encountered (<0.1%) and a maximum concentration of 1.7% for carbon dioxide was recorded. The maximum initial and steady gas flow rate recorded was <0.1l/hr. Gas protection measures were not considered necessary.

2.9. Contamination – Risk to Human Health from Soils

A risk assessment was carried out based on the source-pathway-receptor contaminant linkage. Chemical test results were compared against a residential end use without plant uptake scenario considered appropriate for the proposed development, using Category 4 Screening Levels (C4SL) as assessment criteria where available. For those contaminants where C4SL's are not published, Generic Assessment Criteria (GAC) for the relevant contaminants of concern included in this report have been derived in accordance with this CLEA guidance and spreadsheet Version 1.071.

Asbestos was identified at TP203 (Pond 1) in the made ground sampled at 0.5m bgl comprising fibres/clumps of amosite and chrysotile. Quantification analysis returned a quantification of <0.001% asbestos within the sample. A possible bulk ACM fragment sampled at the surface of TP203 was also confirmed as asbestos lagging comprising amosite. Additional visual evidence of suspected lagging was noted elsewhere within made ground at Pond 1, although further sampling was not undertaken by RLL for health and safety reasons.

The following additional exceedances for chemical contaminants were identified:

Sample Reference	Depth (m)	Site Area	Strata	Contaminant	Concentration (mg/kg)	Generic Assessment Criteria (mg/kg)
TT06a ES1	0.9	Pond 1	MG	Lead	400	200
TT10a ES1	0.6	Pond 4	MG	Dibenzo (a,h)Anthracene	0.61	0.24-0.3*
TT11a ES2	0.8	Pond 4	Wigston Sand and Gravel	Arsenic	130	37

*GAC dependant on organic matter content

In addition to the above, although not exceeding human health criteria values, a number of samples recorded concentrations of hydrocarbons (C₂₁-C₃₅ and C₃₅-C₄₀) in excess of solubility limits, indicating potential for free-product, although no free product was observed. 4 No. samples from Pond 1, 5 No. samples from Pond 4 and 1 No. sample from Pond 3 exceeded solubility limits.

Made ground sampled at Pond 2 did not return any contaminant concentrations in excess of generic assessment criteria. PAH profiling was undertaken on the dataset for Pond 4 and confirmed a negligible risk to end-users through the use of benzo(a)pyrene as a surrogate marker. No asbestos was identified and the materials were considered chemically suitable for retention in-situ. Although not a contamination risk, given the nature of the materials encountered within Ponds 2 and 4 (made ground with anthropogenic inclusions), it was suggested that there may be a requirement for placement of a suitable thickness of clean, anthropogenic debris-free material overlying the made ground, if the material coincides with proposed garden or landscaped areas.

The contamination assessment identified the need for localised mitigation measures in order to be protective of human health in relation to contaminated made ground soils at Pond 1 located in the north of the site. The estimated extent of contaminated soils is shown on RLL drawing 25279-RLL-26-XX-DR-O-0014 presented within **Appendix C**. The following remedial options were considered applicable for made ground at Pond 1 following removal of bulk fragments of asbestos:

- Either placement of clean cover (typically minimum 1m required) in garden or landscaped areas above the location of the infilled pond, in order to break the pathway to end-users. This would be dependent on proposed levels. The estimated surface area of Pond 1 following delineation works is $\sim 313\text{m}^2$.
- Or allowance for removal of the contaminated material followed by appropriate validation and backfilling with clean material. The estimated volume of made ground material within Pond 1 is $\sim 235\text{m}^3$. The material could either be reused under a less sensitive area of the site (e.g. POS) under a Materials Management Plan (MMP) or disposed off-site to an appropriately licensed treatment or waste disposal facility. To retain materials on site there would need to be certainty of use and the material would also require capping with clean cover as per the above.

Ground Gas

In accordance with CIRIA C665, NHBC NF94 and British Standard BS8485:2015+A1:2019, based on gas monitoring completed to date, all of the monitoring wells would fall under a CS-1 classification; no gas protection measures are therefore considered to be required for the proposed development.

Buried Concrete

In accordance with BRE SD1 and based on the pH and sulphate testing, a Design Sulphate (DS) class of DS-3 and Aggressive Chemical Environment for Concrete (ACEC) class of AC-3 should be adopted for concrete in contact with the Made Ground.

Concrete in contact with natural strata should use a DS Class of DS-1 and an ACEC Class of AC-1, in accordance with BRE SD1.

Any fill imported to increase levels will require further assessment.

Water Mains

It is recommended that the chemical laboratory test results for the site should be forwarded to the mains water service provider to ensure that their requirements for service line construction are satisfied.

2.10. Controlled Waters Risk Assessment

Samples of soil leachates were found to contain elevated Chromium III and Lead, above respective EQS and bioavailable EQS values. It was noted that the bioavailable lead concentration of 1.53 ug/l was only marginally above the annual average (AA) assessment criteria value of 1.2 ug/l and was well below the maximum allowable concentration (MAC) of 14 ug/l. The chromium concentration of 36 ug/l was only marginally in excess of the MAC of 32 ug/l.

The closest surface water feature to the site is the unnamed watercourse adjacent to the west of the site. Risks to controlled waters were not considered significant because of the relatively limited contamination, lack of significant sources and distance to the watercourse from the source of contamination.

3.0 Conceptual Model

The CSM below has been developed based on the commonly adopted source-pathway-receptor model as recommended within the Land Contamination Risk Management (LCRM) guidance from the Environment Agency¹.

The following potential contaminant linkages have been identified:

3.1. Potential Pollutant Linkages

3.1.1. Sources

The site has largely remained as agricultural land throughout mapped history, with the most notable changes to the site being potential infilling of historical ponds, and the installation of overhead electricity cables. A historical tank is recorded on the western boundary of the site (associated with tank/sheepwash recorded on historical mapping).

The environs of the site have predominantly comprised agricultural land uses with farmyards associated with Westfield Farm and Sunnyside Farm located adjacent to the site boundaries. Residential dwellings were constructed adjacent to the east and south of the site, the A47 (Normandy Way) was constructed to the south and commercial and industrial developments constructed to the southwest.

Soil analysis has identified localised asbestos (fibres/clumps of amosite and chrysotile and amosite lagging) and elevated concentrations of lead within made ground materials within Pond 1 in the north of the site based on a generic risk assessment for a residential end-use with plant uptake scenario considered appropriate to the proposed residential end use.

No significant risk to Controlled waters has been identified.

6 No. rounds of gas monitoring have been completed. The site has been classified as Characteristic Situation 1 (CS1). In accordance with BS8485(+A1:2019). A classification of CS1 would mean no gas mitigation measures are required for carbon dioxide or methane. Radon protection measures are also not required.

Potential contaminant sources are summarised in the table below:

¹ <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>

Summary of Potential On Site Sources of Contamination		
Source	Site Area	Key Contaminants
Made Ground	Pond 1 (north of the site)	Asbestos (fibres/clumps of amosite and chrysotile and amosite lagging) and lead.

3.1.2. Pathways and Receptors

Human Health

There is potential for exposure of site end-users to contaminants in soils via the following pathways, based on a residential uptake end-use with plant uptake (Environment Agency, SR3) considered appropriate to the proposed end use:

- Direct soil and dust ingestion via garden / landscaped areas;
- Dermal contact with soil directly and indoor dust from any garden landscaped areas;
- Inhalation of dust and gasses.
- Ingestion of contaminated water via plastic pipes.
- Ingestion of home-grown vegetables/produce.

Contamination in soils may also present a risk to construction workers. As such, appropriate risk assessments and safety measures (PPE / hygiene rules) will need to be implemented in order to provide adequate protection.

Structures

No ground gas or radon protection measures are considered to be required.

In accordance with BRE SD1 and based on the pH and sulphate testing, a Design Sulphate (DS) class of DS-3 and Aggressive Chemical Environment for Concrete (ACEC) class of AC-3 should be adopted for concrete in contact with the Made Ground. Concrete in contact with natural strata should use a DS Class of DS-1 and an ACEC Class of AC-1, in accordance with BRE SD1.

4.0 Site Preparation

4.1. General

The Contractor shall provide appropriate fencing, signage and maintain security at all times.

The Contractor shall be responsible for maintenance of service records, identification of services on site, and maintenance of safe working areas.

The Contractor shall be responsible for the preparation of method statements and risk assessments for carrying out site clearance and earthworks. The method statements shall address measures required to control emissions to land, air and water. Particular attention should be paid to the minimisation of dust emissions given the presence of localised asbestos contamination within made ground materials at Pond 1 and the location of the site adjacent to residential properties. The contractor should ensure adherence to guidance within the Control of Asbestos Regulations 2012 and CAR-SOIL™.

All manholes on site shall be located by the contractor and the position and depth of all manholes and redundant drains recorded prior to removal. Any in-situ liquids shall be pumped out prior to removal of the drain and removed from the site. All removal from site shall be by a registered waste carrier and be carried out in accordance with the Duty of Care Regulations 1991. Any drain runs shall be inspected by the Engineer. Should contamination be identified, the Engineer shall follow the procedure outlined within the 'Contingency Arrangements for Removal of Unidentified Contaminated Soil' as outlined below in Section 7.0.

All existing monitoring wells should be appropriately decommissioned prior to development.

Any upfilling / backfilling works required to achieve design levels are to be undertaken in accordance with an approved specification based upon the 'Specification for Highway Works' (Ref 1). Additional geotechnical testing may be required as part of these works. It should be ensured that no highly organic or putrescible materials are utilised within the earthworks operation, as these materials have the potential to create a new source of ground gas if placed at depth beneath proposed development areas.

5.0 Proposed Remediation Works

5.1. Remediation Options Appraisal & Sustainability

RLL have reviewed the location of contaminated made ground at Pond 1 (**Appendix C**) against the proposed development layout (**Appendix A**) which shows the majority of contaminated soils lie below a proposed access road and 3 No. proposed plots in the north of the site. RLL have been provided with formation cut and fill drawings for the proposed development (H0997-FE105 and H0997-FE106 which indicates approximately half of the area of Pond 1 is within an area of proposed 0-0.5m of cut, and half 0-0.5m of fill. Given that the made ground is expected to extend beneath proposed plots, it is recommended that excavation and either reuse within a less sensitive area, or removal from site is undertaken, rather than retention in-situ and installation of clean cover. Adopting retention in-situ in the north of the site would potentially result in the retention of contaminated soils beneath plot footprints, which could be subsequently disturbed during ongoing construction, particularly excavation of foundations. Based on the cut and fill drawings provided, a localised area of fill in excess of 1m is indicated in the far west of the site within an area of POS beyond a proposed attenuation pond which may be a potential placement site for some material arising from Pond 1, subject to confirmation of volumes required. Material from Pond 1 should not be placed beneath proposed plots, gardens or adoptable roads.

It is recommended that an initial phase of excavation of the made ground and hand-picking of localised bulk fragments of asbestos (amosite lagging) identified within made ground soils at Pond 1 is undertaken. Any identified asbestos should be removed from site to a licensed asbestos disposal facility. It is recommended that advice be sought from a specialist asbestos contractor with regard to these initial works. The hand-picking and removal of the amosite lagging is likely to be classified as licensed works. Confirmatory asbestos analysis should be undertaken on the material post hand-picking to confirm that asbestos content is <0.1% and the materials are suitable for either retention on site or disposal.

Following hand-picking and removal of bulk asbestos, the following remediation options are considered to be suitable for localised contaminated made ground soils within Pond 1 to break the identified contaminant linkages:

- Re-use in less sensitive site areas (e.g. beneath POS).
- Off-site removal to a waste treatment facility.
- Off-site removal to a licensed waste facility.

In accordance with LCRM guidance, a sustainable approach should be considered when selecting remediation options. The industry-led Sustainable Remediation Forum UK (SuRF-UK) has defined a range of Sustainable Management Practices (SMPs) that can be implemented at any stage of a land contamination management project to improve its environmental, social and/or economic performance. SMP's should be adopted during the remediation process and onward development works where possible to reduce cost, the use of natural resources and/or the negative impact on the community or the environment.

From a sustainability perspective, the retention and reuse of contaminated made ground within the proposed development within a less sensitive area of the site is considered the most sustainable remedial option for this material if there is a requirement for fill, and subject to the completion of a Materials Management Plan (MMP). Removing the material from site would require an estimated ~20 additional lorry movements (assuming average 12m³ load of 8-wheel tipper) with cost implications, environmental impact via greenhouse gas emissions and social impact through additional traffic and noise pollution affecting local residents.

5.2. Assessment Criteria for Soil Re-use or Importation for Formation of Capping Layers

Table 1 lists the criteria based on risk to human health for a residential end-use with plant uptake and shall be used to determine the suitability for the use of materials to form capping layers. In addition, material should be free of asbestos.

The criteria shall be used for both imported soils and for site won soils intended for re-use.

The above criteria can be used to assess individual samples in isolation or can be compared against the 95th percentile value where a range of samples have been taken (e.g. from a stockpile of excavated material).

In the interests of sustainability, soils shall be retained on site wherever possible/geotechnically suitable.

Any soils which are visibly contaminated, or odorous, that may meet the respective criteria (e.g. for Total Petroleum Hydrocarbons), may be considered undesirable for re-use, despite not presenting an unacceptable risk. In such circumstances, the Environmental Engineer shall be consulted for advice on whether the material is suitable for re-use, or whether off-site disposal is required.

5.3. Capping Layers within Landscaped Areas

Should it be proposed to retain made ground soils from Pond 1 on site within POS landscaped areas, the proposed strategy for mitigating risk to end users from contaminants is to place a minimum of 1m of clean cover over made ground materials hence breaking the contaminant linkage. In order to render the made ground soils at Pond 1 suitable for retention on site, a programme of hand-picking will be required to remove and dispose from site localised bulk fragments of asbestos as discussed above.

The soils used to form the clean cover and the depth of clean cover should be validated according to Section 7.1 below.

It is likely that topsoil and subsoil for use as capping can be sourced from elsewhere on-site.

5.4. Water Mains

Test results should be made available to the relevant water supply company to confirm suitable water pipes for the site.

5.5. Buried Concrete

In accordance with BRE SD1 and based on the pH and sulphate testing, a Design Sulphate (DS) class of DS-3 and Aggressive Chemical Environment for Concrete (ACEC) class of AC-3 should be adopted for concrete in contact with the Made Ground.

Concrete in contact with natural strata should use a DS Class of DS-1 and an ACEC Class of AC-1, in accordance with BRE SD1.

5.6. Risks to Construction Workers

To mitigate short-term risk to construction workers, it has been recommended that all development personnel wear the appropriate personal protective equipment and to adopt appropriate health and safety protocols where works with impacted soil are required. As a precautionary measure, these mitigation measures should include dust suppression techniques. The primary risk to construction workers is from localised asbestos contamination identified within Pond 1. Specific control/mitigation measures associated with asbestos are discussed below.

5.7. Control Measures for risk from Asbestos Containing Materials (ACM)

Made ground within Pond 1 has been found to contain asbestos comprising fibres/clumps of amosite and chrysotile at <0.001% and bulk fragments of amosite lagging. These substances pose a potential risk to construction workers and nearby residents/members of the public if disturbed during construction.

An initial phase of hand-picking and disposal of bulk fragments of amosite lagging should be undertaken by a specialist asbestos contractor to render the made ground soils suitable for either retention on site or disposal.

The contractor should ensure adherence to guidance within the Control of Asbestos Regulations 2012 and CAR-SOIL™.

Best practice should be adhered to. As a minimum dust generation should be mitigated by damping down. There may be a requirement for airborne fibre monitoring during disturbance of soils within Pond 1.

The contractor should assess any works likely to disturb ACM using a CAR-SOIL risk assessment to classify the works as Licenced Work, Notifiable Non-licenced Work or Non-licenced Work and design a Safe System of Work accordingly. The hand-picking and removal of the amosite lagging is considered likely to be classified as licensed works and should be undertaken prior to the commencement of general earthworks works.

Following removal of bulk fragments of amosite lagging, and confirmatory testing it is considered likely that remaining works involving the made ground on this site will be classified as non-licensed work. This will require re-assessment should additional ACM's be encountered.

5.8. Gas Mitigation

Generally low levels of ground gas were recorded during site investigation works. No remedial works with regard to ground gas were considered necessary.

Nevertheless, contractors and maintenance workers should undertake appropriate method statements and risk assessments relating to risk from ground gas. It is recommended that entry into excavations is prohibited due to the potential for depleted oxygen conditions.

5.9. Hydrocarbon Vapour

Should any unexpected visual or olfactory evidence of made ground, including hydrocarbon contamination be identified during demolition, site strip or excavation of foundations an Engineer should be contacted to supervise appropriate removal of the material in accordance with the methodology set out in Section 7.0. No hydrocarbon resistant membranes are considered to be required at this stage.

6.0 Excavation of Contaminated Soils

Localised soil contamination posing a potential risk to human health has been identified within made ground soils associated with Pond 1 in the north of the site. The location and estimated extent of contaminated made ground is indicated on RLE Drawing: 25279-RLL-26-XX-DR-O-0014 contained within **Appendix C**.

It is recommended that the initial phase of excavation and remedial works to Pond 1 made ground (hand picking of visible amosite lagging) is undertaken by a specialist and licensed asbestos contractor.

6.1. Remediation Methodology

Marking out Contaminated Areas

Identified areas of made ground should be set out on site prior to remediation / verification works.

Extent of Contaminated Materials

The estimated extents of any contamination to be removed will be based on RLL Drawing: 25279-RLL-26-XX-DR-O-0014 and visual and olfactory indicators on site. It should be noted that the area on the above drawing is a best estimate only and made ground may extend beyond the area hatched. The remaining soils shall meet the relevant human health site acceptance criteria targets as presented in Table 1 and shall be free of asbestos.

Excavation of Contaminated Materials

Prior to the commencement of any excavation, appropriate risk assessments and method statements should be provided by the appointed contractor for review by the Environmental Engineer and Local Authority to confirm suitability. This should include details of the licensing status and any relevant licenses obtained and details of proposed safe systems of work including an asbestos plan of works.

Following approval of the proposed methodology, all made ground materials from Pond 1 should be excavated by a specialist asbestos contractor under the supervision of an Environmental Engineer. The Engineer will determine the extent of materials requiring removal during inspection, although this should be confirmed through appropriate validation as detailed below.

Inspection of Formation

An Environmental Engineer should inspect the formation to confirm suitability. Should it be determined that the formation materials are not natural strata, further localised removal will be necessary.

Validation Sampling of Formation

Where materials are removed the exposed formation of natural strata will require validation to confirm successful removal of made ground.

In order to be protective of human health, following removal of the made ground the exposed formation soils shall meet the relevant human health site acceptance criteria targets as presented in Table 1 and shall be free of asbestos.

Soil samples will be taken for validation testing on all sides (if sides have been formed) and from the base of exposed excavations following contaminated material removal. Samples will be tested for the contaminants that did not previously meet the assessment criteria presented in Table 1 to include lead and asbestos.

The minimum number of samples for each excavation will be five i.e. one from each side (if sides have been formed) and one from the base. As a minimum, one sample shall be taken for every 10m along the side per contaminated horizon and one sample per 100m² base area.

If validation samples do not meet the remedial targets further soil will be excavated horizontally and vertically and further validation samples taken. The procedure will be repeated until all samples meet the remedial targets.

Backfilling with suitable uncontaminated sub-soil materials will be required to facilitate proposed site levels. Backfilling works should be undertaken in accordance with a site-specific earthworks specification.

Survey

The extent of any excavation will be surveyed to Ordnance Datum and a plan produced showing the location of all validation samples taken.

Stockpiled Materials and Laboratory Assessment

Excavated material should be placed on a lined, impermeable surface within a bund to reduce the potential for contamination of clean soils beneath and to facilitate the hand-picking and removal of bulk ACM's. Upon completion, the stockpiled materials should be protected from disturbance and infiltration by

rainwater by covering with further plastic sheeting and securing the area with appropriate fencing and signage.

Any stockpiled contaminated arisings destined for retention on site and placement at depth beneath POS, or off-site disposal will be sampled at a minimum rate of 1 sample per 100m³ or a minimum of 3 samples (whichever is greater) to enable classification. Testing should be undertaken for a suite of contaminants to include heavy metals, PAH's, TPH's and asbestos.

Sampling will be in general accordance with BS 10175:2011+A2 2017. The samples will be placed in the containers supplied by the laboratory appropriate to the tests to be undertaken. Trowels or other tools used to take samples will be cleaned between recovering samples.

Samples will be labelled appropriately and placed in cool boxes with ice packs and dispatched to the laboratory at the end of each day.

All samples will be dispatched to a UKAS and MCERTS accredited laboratory for analysis. The same laboratory shall be used for all validation testing and preferably be consistent with that used in the investigation phase. Chain of custody papers shall be completed and retained.

Disposal of Materials Off-Site

If it is proposed to remove contaminated made ground materials from site, these should be removed as required to a suitable waste disposal facility or treatment plant in accordance with the waste management legislation. Material sent to landfill must be hauled by a registered waste carrier in accordance with the Duty of Care Regulation 1991. Waste classification will be required for the purpose of off-site disposal. Preliminary Waste Acceptance Criteria (WAC) testing indicates the material is likely to be classified as non-hazardous following hand picking of any visible fragments of asbestos containing materials. Further WAC testing may be required before the waste is disposed of to a landfill to satisfy the landfill operator that the waste material meets their permit conditions although it is likely that the previously undertaken WAC test and post-hand-picking classification testing specified above will be sufficient.

Placement of Made Ground Beneath POS

If it is proposed to retain made ground materials on site within less sensitive areas (such as beneath POS), a CL:AIRE MMP should be in place to facilitate the reuse of site-won soils in accordance with the Definition of Waste: Code of Practice (DoWCoP). Proposed placement areas for made ground should be agreed with the Environmental Engineer and Local Authority, surveyed and set

out prior to the commencement of material movement. Based on an initial review of the cut and fill drawings provided, a localised area of fill in excess of 1m is indicated in the far west of the site within an area of POS beyond a proposed attenuation pond which may be a potential placement site for some material arising from Pond 1, subject to confirmation of volumes required.

All made ground materials should be placed under the supervision of an Environmental Engineer.

The extent of placed made ground will be surveyed to Ordnance Datum and a plan produced showing the location of all made ground materials placed.

7.0 Verification of Clean Cover Layers

7.1. Validation Methodology

The following method should be adopted for placement and validation of clean cover if made ground materials from Pond 1 are retained on site:

Placement and Testing of Clean Cover Materials

Prior to placement of clean cover, the chemical composition of the material will need to be assessed in order to confirm its suitability for use at the site. Testing should be carried out by a suitably qualified Environmental Engineer.

Site-won natural subsoil proposed for re-use as clean cover should be stripped and stockpiled separately.

Results shall meet the relevant human health site acceptance criteria targets as presented in Table 1 and shall be free of asbestos.

Additionally material should:

- Provide a suitable growing medium.
- Be free of unsuitable or deleterious material such as bricks, metal, timber and glass.
- Not odorous.
- Be free of Japanese Knotweed or other invasive plant or rhizomes.
- Show no visual or olfactory evidence of contamination.

Imported Materials Testing requirements

Wherever possible, chemical test certifications for proposed imported material should be obtained and supplied to the Engineer for assessment against the criteria in Table 1 prior to importation. Details of the source site history should be obtained and provided to the Engineer. Any imported material should be provided with delivery tickets which should state the source site and volume of material imported, and copies of the tickets provided to the Engineer.

If inadequate or insufficient test certificates are available, further testing prior to importation/placement will be required. This is to avoid re-excavating unsuitable material and the possibility of cross-contamination. In exceptional circumstances material can be tested either within stockpiles once transported

to site or worst-case scenario post-placement, although this is not recommended.

Imported materials shall be tested in accordance with the guidance given in the YALPAG document Verification Requirements for Cover Systems, Version 4.1 dated June 2021. In order to assess suitability, imported soils are to be tested at a frequency of:

Type of Material	Number of Samples	Testing Schedule	Assessment Criteria
Virgin Quarried Material	1 or 2 depending on the type of stone utilised, to confirm the inert nature of the material.	Standard metals/metalloids (shall include as a minimum As, Cd, Cr, Cr, VI, Cu, Hg, Ni, Pb, Se, Zn)	Table 1, 3 Free of asbestos
Greenfield/ Manufactured Soils	Minimum 3 or dependant on source and receptor, between 1 per 50m ³ and 1 per 250m ³	Standard metals/metalloids (As above) PAH (16 USEPA speciation), Asbestos, pH and soil organic matter (SOM) (or calculated from TOC).	
Brownfield/ Screened Soils	Minimum 6 or dependant on source and receptor, between 1 per 50m ³ and 1 per 100m ³	Standard metals/metalloids (As above) PAH (16 USEPA speciation) TPH (CWG banded), Asbestos, soil organic matter (SOM) (or calculated from TOC). Any additional analysis dependant on the history of the donor site.	

Sampling will be in general accordance with BS 10175:2011+A2 2017. Handling, transport and storage of samples should conform to BS EN ISO 22475-1:2006, Clause 11.

The samples will be placed in the containers supplied by the laboratory appropriate to the tests to be undertaken. Trowels or other tools used to take samples will be cleaned between recovering samples.

Samples will be labelled appropriately and placed in cool boxes with ice packs and dispatched to the laboratory at the end of each day.

All samples will be dispatched to a UKAS and MCERTS accredited laboratory for appropriate analysis. Chain of custody papers shall be completed and retained.

Results shall meet the relevant human health site acceptance criteria targets as presented in Table 1 and shall be free of asbestos.

Topsoil should also meet the requirements of BS 3882:2015 – Specification for topsoil.

Site-won Material Testing Requirements

Natural site-won topsoil and/or subsoil proposed for reuse as clean cover should be analysed in accordance with the guidance given in the YALPAG document summarised within the table above, at a minimum frequency of 1 sample per 250m³.

Uncontaminated made ground materials identified within Pond 2 and Pond 4 should not be utilised as clean cover due to the presence of anthropogenic debris within the material.

7.2. Validation of Cover Layer Depth

In accordance with YALPAG guidance, verification of depth shall be undertaken by:

- Depth testing in situ – small trial pit excavated to allow measurement of its depth by tape measure or measuring staff, or
- Topographical surveys – accurate survey of the base and final formation layer height to establish the depth of cover.

Validation of POS will be undertaken at a minimum frequency of 3 No. locations per area.

If inspection/survey prior to placement is preferred, photos of the reduced level should be taken with surveying staff to demonstrate the reduced level has been met.

If validation post placement is preferred, validation pits should be undertaken by an Engineer to confirm the correct depth and composition of material is present. Photographic records should be obtained to verify the required capping thickness for inclusion within the validation report.

The frequency or number of pits required may require agreement with the Local Authority.

8.0 Contingency Arrangements for Dealing with Unexpected Contamination

In the event that undiscovered or unexpected contamination be encountered by the Contractor during construction works, a 'Hotspot Protocol' shall be implemented which shall comprise:

- The appointed Environment Engineer shall be informed immediately.
- The Contaminated Land Officer/Environmental Health Officer at the Local Authority and the EA (if necessary) also informed.
- Inspection of the suspected areas of contaminated soils shall be undertaken by the Engineer, with all suspected contaminated soils excavated and stockpiled separately on visqueen sheeting with appropriate bunding and suitably identified.
- Representative samples of affected soils shall be tested for the suspected contaminants of concern. Any potentially contaminated arisings proposed for re-use on site will be re-tested at a minimum frequency of 1 test per ~100m³ to confirm the soils meet the remedial targets (minimum of 3 samples). Any stockpiled arisings destined for off-site disposal will be sampled at a minimum rate of 1 sample per 1000m³ or a minimum of 3 samples (whichever is greater) to enable classification for disposal. Testing should be undertaken for a suite of contaminants to include heavy metals, PAH's, TPH's and asbestos as a minimum.
- Results shall be assessed by the Engineer and advice provide on the suitability for re-use, or the requirement for treatment and/or off-site disposal.

Sampling will be in general accordance with BS 10175:2011+A2 2017. Handling, transport and storage of samples should conform to BS EN ISO 22475-1:2006, Clause 11.

The samples will be placed in the containers supplied by the laboratory appropriate to the tests to be undertaken. Trowels or other tools used to take samples will be cleaned between recovering samples.

Samples will be labelled appropriately and placed in cool boxes with ice packs and dispatched to the laboratory at the end of each day.

All samples will be dispatched to a UKAS and MCERTS accredited laboratory for analysis. The same laboratory shall be used for all validation testing and preferably be consistent with that used in the investigation phase. Chain of custody papers shall be completed and retained.

Results shall be compared against the assessment criteria provided in Table 1 and shall be assessed for the presence of asbestos. Should samples fail to meet the relevant criteria, or be found to contain asbestos soils, will be deemed unsuitable for re-use on site without further assessment or remediation. Any unsuitable material may require disposal from the site.

In the unlikely event that additional specialist remediation works will be required (e.g. removal of free product or bulk asbestos if encountered), in the first instance, the Environmental Engineer should be contacted for advice. Excavation works should be halted in the short term and the advice of a specialist remediation contractor may be required so that appropriate remediation techniques can be utilised.

Should soils require disposal from the site, the soils chemical results shall be used to classify the material as non-hazardous or hazardous waste. Waste Acceptance Criteria (WAC) testing may be required before the waste is disposed of. Material sent to landfill must be hauled by a registered waste carrier in accordance with the Duty of Care Regulations 1991. The Contractor shall be responsible for keeping all records including waste transfer notes.

Validation testing of the sides and base of the resultant excavation shall be carried out by the Engineer. The minimum number of samples for each excavation will be five i.e. one from each side (if sides have been formed) and one from the base. As a minimum, one sample shall be taken for every 10m along the side per contaminated horizon and one sample per 100m² base area. The contaminated soils will be deemed to have been successfully removed once the validation samples meet the relevant criteria.

The extent and location of any contaminated soils removed shall be surveyed and recorded by the Contractor.

9.0 Regulatory requirements

9.1. Licensing and Permitting

It is the Contractors responsibility to ensure all permits and licenses are obtained prior to and for the duration of the works, and may include:

- Environment permit for waste treatment/importation of materials.
- Asbestos removal licenses.
- Waste exemptions.
- Mobile plant licenses.
- HSE notification.
- Site waste management plan.
- CL:AIRE Materials Management Plan (MMP).

9.2. Waste Management

The contractor shall comply with appropriate waste management regulations, to include retention of all waste transfer documentation for a minimum of 6 years.

Any hazardous wastes generated on site intended for landfill must undergo pre-treatment to reduce the volume or hazardous nature of the waste. Treatment may include sorting or other physical, chemical or biological processes.

Materials intended for re-use, or those imported from other sites should be covered by a CL:AIRE Definition of Waste Code of Practice Version 2 Material Management Plan

9.3. 3rd Party Liability

The contractor shall adopt best practice and take all reasonable measures to prevent pollution or nuisance to local properties, watercourses and drainage systems.

10.0 Verification Reporting and timeframes

The remediation works described should be supervised by a suitably qualified Engineer in accordance with the requirements of this strategy.

Following the completion of remediation works, a validation report will be produced to document the works. This will include, but not be limited to, the following:

- Detail the verification testing for topsoil and subsoil placed in garden landscaped areas;
- Detail depth checks of clean cover placed within landscaped areas overlying made ground from Pond 1;
- Detail transfer tickets for any exported/ imported soils to/from site;
- Detail survey plans and test results;
- Detail of licensing and / or certification;
- Document the specification of water mains used.
- Confirmation that the remediation objectives have been met.
- Photographic records.

Any remedial works undertaken by the Contractor shall be documented within a verification report and submitted to the Client's Engineer for approval and inclusion within the validation report.

The validation report will be provided to the relevant regulatory authorities, who will be requested to provide confirmation as to the suitability of the works against the agreed objectives.

Approval to this Remediation Strategy should be sought from the regulatory bodies.

10.1. Timeframes for construction and remedial works

Details of the construction programme were not available at the time of issue of this strategy.

11.0 References

The following documents shall be referred to in conjunction with this Specification.

- 1) HIGHWAYS AGENCY, Manual of Contract Documents for Highway Works, VOLUME 1: Specification for Highway Works. HMSO 1998. (Referred to as SHW within this Specification).
- 2) BS 10175: 2026 Investigation of potentially contaminated sites – Codes of Practice.
- 3) British Standard 1377:1990, Part 1-9, 'Methods of Test for Soils for Civil Engineering Purposes'.
- 4) British Standards Institution: BS 5930:2015+A1 2020 'Code of practice for ground investigations.' BSI 2015.
- 5) British Standards Institution: BS 8485:2015+A1:2019 'Code of practice for the design of protective measures for methane and carbon dioxide.' BSI 2015.
- 6) BRE Cover Systems for Land Regeneration 2004.
- 7) CIRIA C665 Assessing risks posed by hazardous ground gases to buildings, 2007.
- 8) BRE Report 414 – Protective Measures for Housing on Gas Contaminated Land (Johnson, 2001).
- 9) BS 8485:2015+A1:2019 Code of Practice for the Characterization and Remediation from Ground Gas in Affected Developments.
- 10) CL:AIRE / (2011), The Definition of Waste: Development Industry Code of Practice Version 2.
- 11) Nathanial et. al., (2009), The LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment (2nd edition), Land Quality Press, Nottingham.
- 12) Planting trees on contaminated soils: issues and guidance. Land Contamination & Reclamation, 8 (2), 2000.
- 13) YALPAG, Verification Requirements for Cover Systems – Technical Guidance for Developers, Landowners and Consultants, Version 4.1, June 2021.

Table 1: Generic Assessment Criteria Residential End use with Homegrown Produce

Category	Contaminant	Criteria mg/kg			Source
Metals*	Arsenic	37			a
	Boron	290			b
	Cadmium	26			a
	Chromium VI	6			b
	Chromium III	910			b
	Lead	200			a
	Elemental Mercury	1.2			b
	Inorganic Mercury	40			b
	Methyl Mercury	11			b
	Nickel	130			b
	Selenium	250			b
	Beryllium	1.7			b
	Copper	2400			b
	Vanadium	410			b
	Zinc	3700			b
PFAS	PFOA	0.0076			a
	PFOS	0.013			a
	PFHxS	0.0081			a
	PFNA	0.0073			a
Soil Organic Matter Content (SOM) dependent		SOM 1%	SOM 2.5%	SOM 6%	
Cyanides	Free Cyanide				
	Total Cyanide				
Phenols	Phenol	280	550	1100	b
Chlorophenols	Chlorophenols (except pentachlorophenol)	0.87	2.0	4.5	b
	Pentachlorophenol	0.22	0.52	1.2	b
Petroleum Hydrocarbons	Aliphatic EC 5-6	42	78	160	b
	Aliphatic EC>6-8	100	230	530	b
	Aliphatic EC>8-10	27	65	150	b
	Aliphatic EC>10-12	130 (48) ^{vap}	330 (118) ^{vap}	760 (283) ^{vap}	b
	Aliphatic EC>12-16	1100 (24) ^{sol}	2400 (59) ^{sol}	4300 (142) ^{sol}	b
	Aliphatic EC>16-35	65000 (8.48) ^{sol}	92000 (21) ^{sol}	110000	b
	Aliphatic EC>35-44	65000 (8.48) ^{sol}	92000 (21) ^{sol}	110000	b
	Aromatic EC 5-7 (Benzene)	70	140	300	b
	Aromatic EC>7-8 (Toluene)	130	290	660	b
	Aromatic EC>8-10	34	83	190	b
	Aromatic EC>10-12	74	180	380	b
	Aromatic EC>12-16	140	330	660	b
	Aromatic EC>16-21	260	540	930	b
	Aromatic EC>21-35	1100	1500	1700	b
	Aromatic EC>35-44	1100	1500	1700	b
	Aliphatic + Aromatic EC>44-70	1600	1800	1900	b

Category	Contaminant	Criteria mg/kg			Source
Polycyclic Aromatic Hydrocarbons	Acenaphthene	210	510	1100	b
	Acenaphthylene	170	420	920	b
	Anthracene	2400	5400	11000	b
	Benz(a)anthracene	7.2	11	13	b
	Benzo(a)pyrene	2.2	2.7	3.0	b
	Benzo(b)fluoranthene	2.6	3.3	3.7	b
	Benzo(ghi)perylene	320	340	350	b
	Benzo(k)fluoranthene	77	93	100	b
	Chrysene	15	22	27	b
	Dibenzo(a,h) anthracene	0.24	0.28	0.3	b
	Fluoranthene	280	560	890	b
	Fluorene	170	400	860	b
	Indeno(1,2,3cd)pyrene	27	36	41	b
	Naphthalene	15	36	85	a
	Phenanthrene	95	220	440	b
	Pyrene	620	1200	2000	b
Chloroalkanes & alkenes	1,2-Dichloroethane	0.11	0.18	0.31	a
	Cis-1,2-Dichloroethene	0.46	0.78	1.5	a
	Trans-1,2-Dichloroethene	0.90	1.6	3.3	a
	1,1,1-trichloroethane	8.8	18	39	b
	1,1,2,2 Tetrachloroethanes (PCA)	1.6	3.4	7.5	b
	1,1,1,2 Tetrachloroethanes (PCA)	1.2	2.8	6.4	b
	Tetrachloroethene (PCE)	0.31	0.70	1.6	a
	Tetrachloromethane (Carbon Tetrachloride)	0.026	0.056	0.13	b
	Trichloroethene (TCE)	0.0093	0.020	0.043	a
	Trichloromethane (chloroform)	0.91	1.7	3.4	b
	Vinyl Chloride (chloroethene)	0.0064	0.01	0.017	a
Explosives	2,4,6 Trinitrotoluene	1.6	3.7	8.1	b
	RDX	120	250	540	b
	HMX	5.7	13	26	b
Pesticides and herbicides	Aldrin	5.7	6.6	7.1	b
	Dieldrin	0.97	2	3.5	b
	Atrazine	3.3	7.6	17.4	b
	Dichlorvos	0.032	0.066	0.14	b
	Endosulfan	7.4	18	41	b
	Hexachlorocyclohexanes (including Lindane)	0.23	0.55	1.2	b
Chlorobenzenes	Chlorobenzene	0.46	1.0	2.4	b
	1,2 Dichlorobenzenes	23	55	130	b
	1,3 Dichlorobenzenes	0.40	1.0	2.3	b
	1,4 Dichlorobenzenes	61	150	350	b
	1,2,3 Trichlorobenzenes	1.5	3.6	8.6	b
	1,2,4 Trichlorobenzenes	2.6	6.4	15	b
	1,3,5 Trichlorobenzenes	0.33	0.81	1.9	b