Discovery Strategy, Remediation Strategy and Verification Plan | Residential Development

Report prepared at
Victoria Nurseries
Victoria Road
Wargrave
RG10 8AG

On behalf of
Palatine Homes Limited

Report reference
24-206.04
Version 1

Report date
November 2025

Prepared by
Aviron Associates Limited

Report Quality Management			
Project Name	Victoria Nurseries, Victoria Road, Wargrave, RG10 8AG		
Project Title	Discovery Strategy, Remediation Strategy and Verification Plan		
Client	Palatine Homes Limited		
Project Number	24-206.04		
Version	1		**Date**
Prepared by	Oliver Cock BSc (Hons) MSc	Geo-Environmental Consultant	06/11/2025
Approved by	James Burkitt BEng (Hons) CEnv MRICS	Managing Director	06/11/2025

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1.0 PROJECT AND SITE INFORMATION

1.1 APPOINTMENT

Aviron Associates Limited (Aviron) was retained by Howarth Contractors Limited (the "Client") to prepare and complete a Discovery Strategy (DS), Remediation Strategy (RS) and Verification Plan (VP) of the following premises:

Victoria Nurseries, Victoria Road, Wargrave, RG10 8AG hereafter referred to as the "site").

The report proceeds version 2 of a Ground Investigation Report prepared by Aviron in April 2025 and referenced 24-206.02.

1.2 PREVIOUS REPORT SUMMARY

Table 1.2 summarises the pertinent environmental risks following conclusion of the aforementioned report, providing advice on further works and assessment.

Table 1.2: Environment Risk Summary

Medium	Comments/Recommendations
Soils	Pervasive lead (reworked) Topsoil contamination exists across the site. **Figure 1** is enclosed as a Lead 'Topsoil' Contamination Plan, which provides a visual indication of where re-worked Topsoil has been tested across the site and lead concentrations exceed 200mg/kg. A remedial cover system shall be required comprising 600mm of clean cover to private gardens and 300mm of clean cover to communal gardens/frontage/amenity areas. Construction workers should be aware local pockets of soil contamination may exist, which due to the nature of ground investigation cannot always be detected.
	Ensure material encountered is suitable for desired water main and consult local water authority prior to water main installation.
Landfill (Bio) Ground Gas	Preliminary risk assessment determined a VERY LOW risk from hazardous ground gas ingress and no potential sources of risk were identified. One round of ground gas monitoring has been completed which has reported ambient gas concentrations. Ground gas protection is not considered necessary.
Radon Gas	The advice provided by the UK Health Security Agency indicates 1-3% of homes above action level and ordinarily this would suggest radon protection would not be required. However, in recent years radon protection guidance has been updated and is often ambiguous. Therefore, it is advised a GeoReport is purchased from the BGS. In the absence of this report and the advice within, it is advised project designers allow for Radon Protection, unless said report is purchased and indicates radon protection is not necessary.

Aviron has relied upon information received from the Client and their agents as accurate, unless contradicted by written documentation or site observations.

1.3 THE SITE

Table 1.2 provides a summary of site details and surrounding area.

Table 1.2: Site Details	
Site Location	The site is located at number 109 Victoria Road near the junction of Recreation Road, in Wargrave, approximately 5 kilometres (km) to the south-east of Henley on Thames. **Figure 2** is presented as the Site Location Plan.
National Grid Ref.	Centred at approximately 479240 178795.
Current Land Use	The site comprises Victoria Nurseries, including numerous disused planted beds, glasshouses and dilapidated buildings. A detached single storey building of brick and block construction under a pitched corrugated cement sheet roof is located in the east of the site, previously in use as a store and potting shed. Unmade surfacing is located in the site frontage on Victoria Road. An above ground storage tank (AST) noted in the west of the site (see Figure 4). No obvious staining was observed around the AST which was surrounded by scrub vegetation. Substantial tree stumps were observed in the west of the site. The tree stumps appear to be related to a line of cypress trees, as noted on a Detailed Survey by Survey and Engineering Services (reference 130/501 Topo, dated June 2001). Other cypress trees and a screen of cypress trees are noted on the Detailed Survey in the south and the north-east of the site, however these appear to have been removed. Off-site trees were observed in the vicinity, including what appears to be a poplar to the north-east. The site is shown to slope gently downwards in a north-westerly direction from approximately 55.7 metres (m) above Ordnance Datum (AOD) in the south to 53.0m AOD in the north-west. **Figure 3** is presented as the Existing Site Layout Plan. **Figures 4** and **5** are presented as the Site Photographs.
Surrounding Land Use	The site is surrounded by residential premises of Victoria Road and Purfield Drive, with Victoria News and a Mace convenience store located to the south-west and north-east of the site respectively.
Proposed Land Use	The proposed development works comprise the removal of the existing buildings and the construction of eight new detached and semi-detached dwellings, with private gardens and parking, as well as a new access road. **Figure 6** is presented as the Proposed Development Plan.

The aim of the remediation is not necessarily to remove all contamination identified within the infilled pit but to reduce the identified risk to an acceptable level with respect to human health.

This DS, RS and VP remains a live document and as necessary may need update and amendment as and when required should conditions or works change in response to any unexpected contamination uncovered as part of the DS.

Verification of the works would be documented within a separate verification report for submission to the Local Planning Authority (LPA), other regulators and project stake holders.

2.0 PROJECT DESIGN PHASE

The following should be completed during the design stage and well in advance of commencing remedial works on-site.

2.1 WATER MAIN SUPPLY

Special design for domestic water supply is unlikely to be required. However, to be certain, it is advised that the report should be provided to the local water authority to ensure the correct materials are chosen for water supply pipes. Following the formal withdrawal of WRAS Guidance Note No. 9-04-03 (October 2002), it is recommended that the following reference should be consulted:

Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites" (Ref 10/WM/03/21 by the UK Water Industry Research Ltd (UKWIR); ISBN: 1 84057 5697.

Generally, all services should be placed within dedicated runs and then backfilled with clean imported material.

2.2 RADON PROTECTION

Groundsure GeoInsight report, reference EMS_1062576_1337103 and dated 6 November 2025 has been consulted to determine the radon protection requirement.

An extract of this report is enclosed within **Appendix I** which indicates the site is located in an area where less than 1% of homes are above the Action Level and that **radon protection is not required.**

3.0 DISCOVERY STRATEGY

3.1 GENERAL DISCOVERY STRATEGY

Whilst the investigations undertaken on the site to date have been as thorough as conditions allowed, it remains possible that previously unexpected soil conditions may be encountered during the construction process. Examples may include a potential for asbestos, remnant demolition materials containing deleterious substances, black ashy materials, soils exhibiting strong odours, brightly coloured materials, and oily pockets within the soil.

During site clearance and groundworks all site operatives should be briefed on the discovery strategy, which provides an action plan should potentially contaminated materials be identified during the works.

The Discovery Strategy flow chart should be:

1. Affixed to the site office notice board;
2. Form part of the site induction for all operatives; and
3. Form part of the site health and safety file.

The Discovery Strategy flow chart is presented as **Appendix II.** This should be printed and laminated.

Each site operative should be aware of their duties in the event of a potential 'contamination' discovery.

Any discovery of previously undiscovered contamination should be reported to the LPA and appropriate management of this must be approved by the LPA.

The action of discovery applies in the event suspected soil contamination is discovered. Thus, variations to this plan may be necessary following the results of 'Discovery Works' and, should this be so, further revisions of this RS shall be prepared and consulted; hence this report remains a live document.

3.2 AST DISCOVERY STRATEGY

Figures 3 and **5** identify the location of the AST (Above Ground Tank) in the west of the site.

The following discovery (and remediation strategy) along with verification plan shall be adopted during site clearance:

1. Appoint competent contractor to undertake the works who is expected to be the main groundworkers contractor (principal contractor).

2. The contractor should prepare any necessary notifications to the HSE and any necessary RAMS.

3. Notify the remediation engineer prior to demolition and site clearance. The remediation engineer should be in attendance during works for the purpose of advising, recording and to take suitable photographs.

4. The AST (**Figures 3** and **5**) should be pumped dry, de-gassed, cleaned and readied for removal. As necessary appoint a suitable contractor to complete this task and retain waste transfer notes for the disposal of any product resultant from pumping and cleaning the tank.

5. Under controlled conditions remove the AST from site. Dispose of by means of a registered waste carrier to a suitably licensed and appropriate waste management facility.

6. Carefully complete excavation(s) within the area of the AST (**Figures 3** and **5**) to identify the vertical and lateral extent of potentially impacted/contaminated material. It is expected contamination material shall be easily identified by a dark grey/black colouration and hydrocarbon/oil odour. However, given the appearance of the AST (**Figure 5**) it is unlikely gross contamination shall exist.

7. The excavation should be inspected, and any gross soil contamination removed to a point where hydrocarbon soil contamination has been 'chased out' and 'clean' natural soils are present within the resultant void(s).

8. Waste soils should be quarantined and safely stockpiled/covered if they cannot not be directly loaded to haulage vehicles and disposed of at a suitable waste management facility.

9. A photographic and written log of the exercise should be made.

10. Soil verification samples should then be collected from the resultant excavation to demonstrate the absence of hydrocarbons.

11. Verification sample locations shall targeted to the former footprint of the AST. Given the size of the area occupied by the AST it is recommended three (good science) soil samples are collected from the exposed formation following AST removal to determine if inspection/excavation works were successful in removing the suspected contamination. **Figure 7** is enclosed as a Remediation and Verification Plan.

12. Verification samples should be submitted for TPH analysis and assessed against verification targets of the LQM/CIEH S4ULs (**Appendix III**)

13. The excavation/void should be immediately infilled with clean engineered fill for health and safety reasons.

14. Should excessive hydrocarbon contamination remain; the subject areas shall be further assessed and this 'live' document updated, as necessary, to provide further remediation methods.

4.0 REMEDIATION OPTION APPRIASAL

Given the size pervasive nature of Lead contamination across the site and the requirement to construct private gardens the only viable method of remediation is considered to be:

- Contamination source (excavation) removal.
- Construction of a suitable clean cover system.

5.0 REMEDIATION EXCAVATION - SOURCE REMOVAL METHOD

It is the responsibility of the Principal Contractor and their appointed sub-contractors to implement and manage safe systems of work and prepare their own risk assessments in accordance with Health and Safety legislation in order to protect persons in their employ, as well as mitigate the risk of harm to others due to works in their control.

Special consideration should be given to the provisions of the Construction (Design & Management) Regulations 2015, Health and Safety at Work Act and the Control of Substances Hazardous to Human Health regulations to protect the safety of persons in their employment. Additional guidance can be sought from the CIRIA publications entitled "A Guide for Safe Working on Contaminated Sites" and “Environmental Good Practice on Site Guide (fourth edition)”.

In addition to the safe systems of works to be implemented alongside appropriate risk assessments and method statements, all site personnel shall benefit from on-site hygiene facilities including wash area, toilets and drying room. Separate canteen areas and welfare facilities should be provided. All eating and drinking should be restricted to the canteen area and only once site personnel have removed outer PPE and washed exposed skin.

In the event of dry spells, or where the exposed surface becomes dry, regular damping down of the surface of the site will be required to prevent the release of soil dust which could impact on site operatives or migrate off-site, thereby mitigating both off-site exposure and nuisance for neighbours.

5.1 REMEDIATION METHOD STATEMENT – EXCAVATION OF CONTAMINATION

The following types of waste streams are anticipated:

1. Re-worked Topsoil/Made Ground/building debris.
2. Natural Clay/Chalk strata (possible).

Presented Asbestos Containing Materials (ACM) or Asbestos Containing Soils (ACS) are not anticipated.

5.2 CONTAMINATED MADE GROUND

Following the removal of the overlying concrete slabs/paths, Re-worked Topsoil/Made Ground/building debris shall be excavated to await off-site disposal. The material is not considered suitable for re-use due to the lead contamination and poor geotechnical quality.

No special measures are considered necessary to remove the materials which are currently not considered to contain significantly contaminated soils or ACM/ACS.

Notwithstanding the appointed contractor should ensure that:

1. The necessary material handling and waste segregation practices are observed to achieved material re-use.

2. In the event material is deemed unsuitable for re-use only registered waste carriers are used to dispose of materials at suitable and licenced waste management facilities.

3. All waste transfer notes are retained.

4. In the event of an unsuspected ACM/ACS discovery works should cease and a revised approach followed, which shall be compliant with the Control of Asbestos Regulations 2012. In such an event all work with ACM/ACS should be undertaken by a suitably competent contractor (and as necessary licensed contractor) who should prepare an asbestos specific risk assessment and plan of work detailing the control measures to be applied when working with the asbestos containing materials/soils. The contractor should also assess whether the work would be considered licensable and/or notifiable under the Control of Asbestos Regulations 2012.

6.0 REMEDIATION STRATEGY - CLEAN COVER SYSTEM

6.1 REMEDIATION METHOD STATEMENT – COVER SYSTEM CONSTRUCTION

Where any cover system is to be placed, a deter-to-dig membrane, such as a geotextile Hi-Viz alert membrane, will be laid on the formation prior to placement of the cover system soils. This geotextile membrane acts as a visual barrier, inhibits excavation into the underlying soils and prevents burrowing activity within the cover system and native soil layers.

Any soils imported onto the site will need to be verified free from contamination with chemical testing undertaken to confirm their suitability for use within areas of soft landscaping. Soil importation is discussed in Section 7.0.

6.1.1 Types of Clean Cover System

Two types of cover system are proposed across the site, depending on the proposed end use. The following systems are also subject to local authority approval:

1. Private Gardens (produce growing areas). Layer thickness of 600mm comprising 'clean' Sub-soil and Topsoil upon a geotextile Hi-Viz alert membrane to deter digging beneath.

2. Frontages/Amenity Areas (non-produce growing areas). Layer thickness of 300mm comprising 'clean' (Sub-soil and) Topsoil over a geotextile Hi-Viz alert membrane to deter digging beneath.

Enclosed within **Appendix IV** are cross-sectional drawings of the cover system methods above.

6.2.2 Cover System Construction Method Statement

For all private rear gardens where produce may be grown, references to 'private' and '600mm' shall be applied. For all small-landscaped frontages and amenity areas where produce will not be grown references to 'frontages' and '300mm' shall be applied.

The following sequence of actions is recommended for cover system construction to soft landscaping:

1. Contact environmental consultant prior to undertaking works and request site attendance or remote advice. Should attendance be required ensure sufficient lead-in time is allowed.

2. Operatives undertaking remediation works should be provided with suitable PPE and observe safe systems of work.

3. The action of cover system construction is best completed following the formation of hard landscaping areas to 'frame out' the soft landscaping.

4. Excavate the area(s) of soft landscaping to a depth of 600mm private below or 300mm frontages below final levels using the aid of a laser level to achieve the necessary formation level.

5. Subject to the location of any protected trees consultation shall need to be made with an arboricultural consultant to ensure trees remain protected whilst ensuring the safeguarding of site users (specifically children).

6. During the excavation phase of development, the environmental consultant should over-see and supervise to ensure works are completed diligently and the final excavation depths are met. The environmental consultant should complete a diary of notes and observations as well as log, measure and photograph the works. The information obtained by the consulate can be used to verify the cover system and will be included as part of the final 'verification report' which will be needed by the LPA.

7. Excavated soils should be disposed of as they are unsuitable to remain on-site.

8. The cover system then requires construction as per the detail provided within **Appendix IV** and be of suitable construction dependant upon the final land use; private gardens/frontages.

9. The geotextile membrane should be of high visibility (orange/red) and act as an alert membrane (Terram Hi-Viz or similar). The membrane needs to rest upon the base of the excavation and lap up the sides of the excavation to cover all residual Made Ground which is exposed.

10. The soil layers of the clean cover system shall need to be placed in a manner which also achieves the desired finished site levels and as necessary, subject to new planting, accommodates new root systems (ie tree pits). In this regard consultation with the project's landscaping architect may be necessary to ensure both the remedial and landscaping/planting objective is met, by also meeting final site levels.

11. The remediation should be verified by a suitably qualified specialist and a report prepared which follows the lines of evidence, though not necessarily limited to, shown within section 9.0.

6.1.3 Cover System Verification Plan

The cover system construction and quality should be verified, using the following methods.

1. Photographing the stripped landscaped formation to 600mm private or 300mm frontages below final

levels with a levelling staff set against a fixed point relating to finished levels.

2. Confirming soils to be used in the cover system are suitable, as defined within section 7.0.

3. When the full 600mm private or 300mm frontages depth is met and layered with geotextile, clean and suitable for use Sub-soil and Topsoil should be placed upon the membrane, divided into layers and finished to final ground level(s). This process should be photographed.

An alternative to taking suitable photographs during construction of the cover system, may be to verify the cover system following its construction. If the latter method is used, it will be necessary to excavate to the full depth of the cover system and log the thickness/depth of the soil layers, take photographs and (possibly) samples of soil used for laboratory testing. Verification inspection and testing of gardens will be undertaken at a rate not less than 1 in 4 and in accordance with NHBC Technical Extra issue 8 or as requested by/agreed with the regulators/warranty providers. **Figure 7** is enclosed as a Verification Plan suggesting location of verification hand pits.

7.0 VERIFICATION CRITERIA FOR IN-SITU AND IMPORTED SOILS

Appendix III provides a verification criterion for in-situ and imported soils for the purpose of confirming the extent of the remedial excavation and the chemical quality of soft landscaping sub-soil and Topsoil.

Chemical and asbestos (contamination) Generic Assessment Criteria (GAC) are provided for the following types of soil for their use consideration:

- Any imported/soft landscaping soils, used to complete private gardens.

7.1 IMPORTED LANDSCAPING SOILS

The following process is recommended:

1. Checking the suppliers test certificates/reports for any soils to be imported to site to confirm the provenance of the supply chain.

2. Performing a visual/olfactory inspection of the imported material prior to placement in the proposed areas to ensure the material is void of anthropogenic and deleterious objects. If the material is physically unstable it should be rejected.

3. The environmental consultant or remediation engineer shall independently sample and test Subsoils and Topsoil once on-site and at a frequency of one composite test per 50cu.m for manufactured Subsoil/Topsoil or 250cu.m for Subsoil/Topsoil from a Greenfield source and submitted to a UKAS accreted laboratory for chemical testing as set out in **Appendix III**.

4. Should imported soils fail the criteria set out in **Appendix III** the material should be rejected, removed from site and returned to the supplier or suitability disposed. The Client should manage the contractual necessities of this action.

5. With regard to the chemical selection criteria in **Appendix III** the guidelines for private gardens shall be adopted on the basis the residentially development principally contains private gardens.

Any imported soils should be considered from either reputable manufacturers or CL:AIRE Donor Sites. In either event the above verification process to determine suitability for use should be completed.

8.0 WASTE MANAGEMENT

All materials unsuitable for re-use and leaving site should be conveyed by a registered waste carrier and waste transfer notes should be signed and held on file for submission upon completion of the project. This process shall be managed by the principal contractor as part of waste management diligence.

9.0 VERIFICATION RECORD KEEPING

Table 9.0 provides a check list of items (lines of evidence) which shall need to be documented or enclosed within the expected Verification Report, which have been chronologically itemised in terms operational progress and sequencing.

Table 9.0: Verification Report – Lines of Evidence Checklist		
Remedial Item	**Description**	**Verification Method and Evidence**
Water main	**Design phase.** Client to consult with local water authority for selection of correct water supply pipe work	Written confirmation and inspection physical connection to main
Source removal	**Enabling/remediation phase.** To be completed by appointed remediation contractor.	Inspection, photographs, written site notes and laboratory test results **Environmental consultant to be involved.**
Verification **Formation inspection and cover system designation**	**Enabling/remediation/groundworks/landscaping phase.** To be completed by environmental consultant/remediation engineer	Inspection, photographs, written site notes, laboratory test results. **Environmental consultant to be involved.**
Verification **Selection of materials for import from off-site**	**Groundworks/landscaping.** To be completed by environmental consultant/remediation engineer with input from groundworker/client.	Checking of Provenance, photographs, written site notes, laboratory test results. **Environmental consultant to be involved.**
Verification **Cover System Construction**	**Groundworks/landscaping.** To be completed by principal contractor with support from environmental consultant/remediation engineer.	Checking of soil provenance, inspection, photographs, written site notes, laboratory test results. **Environmental consultant to be involved**

10.0 LONG TERM MONITORING

Suitability of the site for use will be verified by visual inspection and soil sampling/testing. Long term monitoring of any installed measures is not considered necessary.

Long-term monitoring typically applies to a groundwater treatment scheme, where variations in post-remedial groundwater quality may occur in the short and long-term. As previously indicated, groundwater (and surface water) is not considered to pose or be a risk.

11.0 PROJECT INSTRUCTION AND LIMITATIONS

11.1 SCOPE OF WORKS

Preparation of a Discovery Strategy, Remediation Strategy and Verification Plan formed the project brief with use of previously completed site investigation reports.

Aviron has relied upon information received from the Client and their agents as accurate, unless contradicted by written documentation or site observations.

11.2 PUBLISHED GUIDANCE

This report follows the technical approach presented on Land contamination risk management (LCRM), accessed on gov.uk website. The guidance replaced the Contaminated Land Report 11 (CLR11) "Model Procedures for the Management of Land Contamination" prepared by the Environment Agency in 2004. CLR11, which was withdrawn in 2020, provided guidance on the application of management processes when assessing potentially contaminated land.

This project and report have been designed to fulfil the information requirements set out in LCRM.

This report is additionally prepared in accordance with current guidance notes, standards and practices as set out by the Environment Agency and statutory organisations in order to establish potential and significant contaminant linkages as defined in Part IIA of the Environmental Protection Act 1990.

11.3 LIMITATIONS

Aviron's scope of work has been designed to meet the timeframe and as such it may follow that further work would be prudent upon evaluation of the ground conditions. The scope of work provided shall provide a view of site conditions and understanding of potential geo-environmental risks and possible mitigation procedures.

The information used in this report has been derived from the site investigation, which in turn were based on known current and historical land uses identified at the site and surrounding area, available to Aviron at the time of the investigation.

The intrusive points relate to the data collected; the risk assessment and recommendations will rely on these points only. It therefore follows that some areas of the site will not be examined. It is always possible that some areas not investigated may contain conditions which would be impossible to determine due to lack of evidence or time and budget restrictions.

Should changes in legislation, statutory requirements or industry practices occur following issue of this report, this report should be viewed in light of these changes.

Should a notable time period elapse between the date issue of this report and the date of application of this report, or changes to site dynamics, the site inspection notes may no longer be applicable should any change of use occur to the site in the interim.

Figures

Legend

- ‘Contaminated’ Location
- ‘Uncontaminated’ Location

Notes

Where re-worked Topsoil was not test-ed, donatation is not made.

Figure 1

Drawing Title

Lead ‘Topsoil’ Contamination Plan

Project Number	24-206.04
Project Title	Victoria Nurseries, Victoria Road, Wargrave, RG10 8AG
Drawn by	DN
Checked by	JB
Scale	NTS

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Legend

Site Boundary

Notes

Figure 2

Drawing Title

Existing Site Layout and Location Plan

Project Number	24-206.04
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Legend

- Photo Direction
- Oil Tank
- Corrugated Cement (Asbestos) Sheets

Notes

Figure 3

Drawing Title

Existing Site Layout Plan

Project Number	24-206.04
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Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

Legend

Notes

Figure 4

Drawing Title

Site Photos (as of 19/07/2024)

Project Number	24-206.02

Project Title

Victoria Nurseries, Victoria Road, Wargrave, RG10 8AG

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Photo 7 (Oil Tank)

Legend

Notes

Figure 5

Drawing Title

Site Photos (as of 19/07/2024)

Project Number	24-206.04

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Legend

Site Boundary

Notes

Figure 6

Drawing Title

Proposed Development Plan

Project Number	24-206.04

Project Title

Victoria Nurseries, Victoria Road, Wargrave, RG10 8AG

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Legend

- Site Boundary
- AST
- AST Verification Sample
- Cover System Verification Hand Pit

Notes

Figure 7

Drawing Title

Remediation and Verification Plan

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Appendices

I	Radon Report
II	Discovery Strategy Flow Chart
III	Verification Targets and Soil Import Chemical Assessment Criteria
IV	Clean Cover System Cross-Sections

Appendix

I Radon Report

Groundsure LOCATION INTELLIGENCE

Geo Insight

Victoria Nurseries, 109 Victoria Road , Wargrave, RG10 8AG

Order Details

Date: 06/11/2025

Your ref: EMS_1061576_1329301

Our Ref: EMS-1061576_1337103

Site Details

Location: 479241 178796

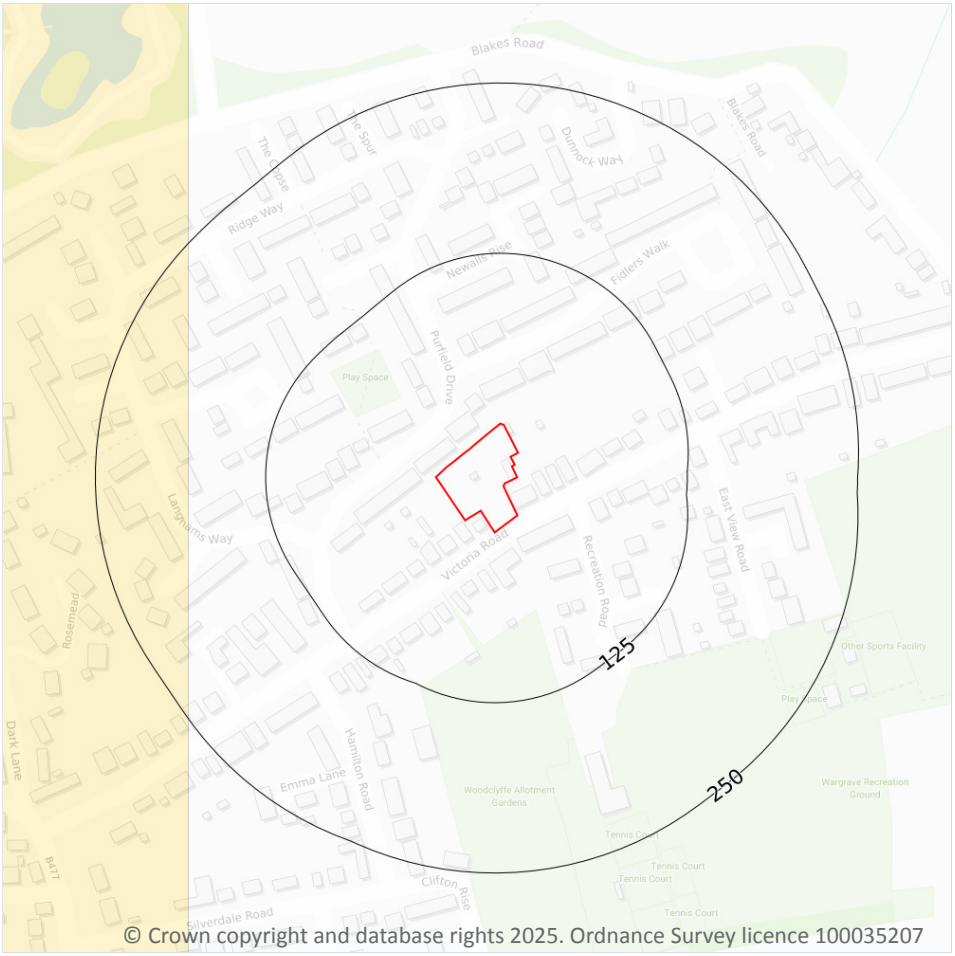
Area: 0.27 ha

Authority: Wokingham Borough Council ↗

Contact us with any questions at:
info@groundsure.com ↗
01273 257 755

Certified B Corporation

7 Radon



Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

7.1 Radon

Records on site	1

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on **page 37 >**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Less than 1%**	**None**

This data is sourced from the British Geological Survey and UK Health Security Agency.

Appendix

II Discovery Strategy Flow Chart

HOW TO IDENTIFY CONTAMINATED SOILS AND WHAT TO DO?

ARE YOU AWARE YOU MAY BE WORKING WITH CONTAMINATED SOILS?

YES

NO

DO NOT START WORK. SPEAK TO YOUR SUPERVISOR BEFORE STARTING AND COMPLETE YOUR TOOL BOX TALK.

YOU SHOULD BE AWARE AND READY NOW?

NO

LEAVE SITE.
SEEK FURTHER TRAINING.

ARE YOU WEARING PPE? HAVE YOU A PERMIT TO DIG?

YES

NO

SPEAK TO SUPERVISOR. GET PPE AND PERMIT TO DIG.

YOU SHOULD HAVE PPE AND PERMIT TO DIG?

YES

NO

DO NOT START WORK UNTIL YOU HAVE PPE AND PERMIT TO DIG.

WHEN DIGGING IS THE SOIL :

FREE FROM ANY UNUSUAL COLOUR LIKE BLUE, GREEN, BLACK?

FREE FROM FUNNY SMELLS LIKE FUEL, SOLVENTS, GAS?

FREE FROM CEMENT FRAGMENTS OR FIBROUS MATERIAL?

FREE FROM HAZARDOUS CONTAINERS LIKE OIL/FUEL DRUMS OR TANKS?

FREE FROM RUSTED METALS, SHARPS ETC?

YES

NO

SAFELY **STOP** WORK
CONTACT YOUR SUPERVISOR.

SUPERVISOR CALL AVIRON ASSOCIATES LIMITED TO DISCUSS AND DETERMINE ACTION PLAN

CONTINUE WORKING SAFELY

CLIENT	Palatine Homes Limited
PROJECT	Victoria Road, Wargrave
NO.	24-206.04
ISSUE	Version 1

AVIRON ASSOCIATES LIMITED

OFFICE	01491 413 722
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Appendix

III Verification Targets and Soil Import Chemical Assessment Criteria

LAND CONTAMINATION REMDIATION
SELECTION AND USE OF RE-USED + IMPORTED SOIL

GENERAL

Soils laid as clean cover soft landscaped areas of private or communal gardens or public open space gardens should not only meet the necessary chemical criteria as defined by Land Contamination Risk Management (LCRM) or site specifically derived chemical targets; but they must also provide a suitable growing medium for plants and not contain deleterious objects (sharps/hard materials) which may cause physical injury

RE-USE OF SOILS

In accordance with CL:AIRE Code of Practice (2011) materials are only considered waste if 'they are discarded, intended to be discarded or required to be discarded by the holder'. Current guidance recommends the retention and re-use of site won soils where there is a need for the materials and where the risk is acceptable.

The Code of Practice therefore allows soils to be re-used on site where the following criteria are met:

- The re-use of the soils will not present an unacceptable or increased risk to controlled waters, the environment and human health;
- The soils are suitable both in terms of chemical and geotechnical properties for the intended use without prior treatment;
- Only the required volume is used, and no more;
- There is a required use and a certainty of use, not just a possibility.

In order to comply with the Code of Practice, a Material Management Plan (MMP) that confirms the above criteria are met has to be prepared in advance of excavation of soils. The material management plan must be reviewed by a 'Qualified Person' who then issues a declaration to the Environment Agency. Where a Remediation Strategy and Verification Plan is in place on the receiver site (under direct transfer) or site of re-use (site or origin scenario), the agreement of the use of the DOWCOP and of the RSVP would be required from the regulators (Environment Agency and Local Authority). Any associated planning conditions in this respect would also need to be complied with. At this stage and subject to regulatory agreement, it is proposed to re-use clean naturally occurring soils (as clean cover soils and general bulk fill) and Made Ground (as general bulk fill beneath a clean cover system) under a MMP for the site.

Where materials do not meet the required criteria, it may be possible to treat them under an environmental permit/appropriate treatment license so that they may be re-used on site.

In accordance with the Definition of Waste Code of Practice, the re-use of materials will need to be fully documented and included within the Verification Report produced on completion of the works.

In addition, any variation or deviation from the Materials Management Plan, where developed for the site, including change in volumes, change in materials or proposed source areas or area of re-use will need to be clearly documented for inclusion in the validation report for the site.

Failure to document and fully record the works may result in the EA and HMRC determining that waste has been deposited on site illegally, which may be subject to large fines and the requirement to subsequently remove the material from the site.

Should excess clean naturally occurring materials be identified on site, it may be possible for these to be re-used these soils on other sites through the CL:AIRE register of materials, as opposed to these materials being considered waste. However, it is understood that there is a deficit of materials on this site, such that this is unlikely.

It should be noted that the Definition of Waste Code of Practice cannot be applied to a site retrospectively.

If soils are to be stockpiled on site as part of the development for a period greater than 1year for ongoing use under the Definition of Waste Code of Practice then regulatory confirmation should be sort in order to demonstrate and confirm an ongoing requirement and certainty of use of those materials in line with the guidance.

POSSIBLE SOURCES OF IMOORTED MATERIAL

Imported soils may be obtained from various sources, however, the source of the soils must be demonstrated to be from land of a non-contaminative history or a reputable manufacturing plant. It shall remain the responsibility of the Client or their Contractor to obtain soils complying with the specification which are likely to be subject to additional on-site/in-situ tests specified by the Consultant to accord with Local Planning Authority (LPA) and/or build warranty requirements.

TOPSOIL

Topsoil should meet the physical criteria set out by the projects landscape architect to ensure suitable growing media for selected planting. Soils should be inspected to ensure no deleterious (harmful to humans) objects, such as sharps or hard materials.

SUBSOIL

Sub-soil should meet the physical criteria set out by the projects landscape architect to ensure suitable growing media for selected planting. Soils should be inspected to ensure no deleterious (harmful to humans) objects, such as sharps or hard materials.

CHEMICAL CRITERIA

Chemical concentrations considered to appropriate for a tier 2 Generic Quantitative Risk Assessment (GQRA) as recommended by LCRM are appended for the following residential land uses:

- Engineering fill (Public Open Space by residential development) with asbestos <0.1%.
- Private gardens with homegrown produce.
- Communal gardens without homegrown produce.
- Public Open Space by residential development.

ACCEPTANCE/REJECTION OF MATERIAL

Where a material considered for procurement fails to meet the above criteria it should be rejected and an alternative source sought. Where material is tested in-situ/on-site and fails the necessary physical criteria (by testing or inspection) and chemical criteria (by testing) it should be removed from site and not used with soft landscaped areas or cover systems.

STORAGE OF RE-USED OR IMPORTED MATERIAL

Any re-used or imported material on to site must be kept in quarantine to prevent cross contamination from any residual soil contamination not yet encapsulated by hardstanding or from uncontrolled deposition of building materials; such as operatives throwing waste on a heap. Ideally quarantine should be upon a membrane and behind fencing/under a tarpaulin.

Residential with Homegrown Produce
Soil Screening Values (GACSs)
Private Gardens

Determinant	1% SOM (mg/kg)	2.5% SOM (mg/kg)	6% SOM (mg/kg)	Criteria
METALS, SEMI-METALS, INROGANICS + PAH				
Arsenic	37	37	37	C4SL/LQM S4UL
Boron	290	290	290	LQM S4UL
Cadmium	11	11	11	LQM S4UL
Chromium III	910	910	910	LQM S4UL
Chromium IV	6	6	6	LQM S4UL
Copper	2,400	2,400	2,400	LQM S4UL
Mercury	1.2	1.2	1.2	LQM S4UL
Nickel	180	180	180	LQM S4UL
Lead	200	200	200	LQM S4UL
Selenium	250	250	250	LQM S4UL
Zinc	3,700	3,700	3,700	LQM S4UL
Free Cyanide	34	34	34	ATRISK
Acenaphthene	210	510	1100	LQM S4UL
Acenaphthylene	170	420	920	LQM S4UL
Anthracene	2,400	5,400	11,000	LQM S4UL
Benzo(a)anthracene	7.2	11	13	LQM S4UL
Benzo(a)pyrene	2.2	2.7	3	LQM S4UL
Benzo(b)fluoranthene	2.6	3.3	3.7	LQM S4UL
Benzo(ghi)perylene	320	340	350	LQM S4UL
Benzo(k)fluoranthene	77	93	100	LQM S4UL
Chrysene	15	22	27	LQM S4UL
Dibenz(ah)anthracene	0.24	0.28	0.3	LQM S4UL
Fluoranthene	280	560	890	LQM S4UL
Fluorene	170	400	860	LQM S4UL
Indeno(123-cd)pyrene	27	36	41	LQM S4UL
Naphthalene	2.3	5.6	13	LQM S4UL
Phenanthrene	95	220	440	LQM S4UL
Pyrene	620	1,200	2,000	LQM S4UL
Phenols	78	0.98	1.1	LQM S4UL
TOTAL PETROLEUM HYDOCARBONS				
Benzene	0.087	0.17	0.37	LQM S4UL
Toluene	130	290	660	LQM S4UL
Ethlybenzene	47	110	260	LQM S4UL
o-xylene	60	140	330	LQM S4UL
m-xylene	59	140	320	LQM S4UL
p-xylene	56	130	310	LQM S4UL
Aliphatic EC 5-6	42	78	160	LQM S4UL
Aliphatic EC >6-8	100	230	530	LQM S4UL
Aliphatic EC >8-10	27	65	150	LQM S4UL
Aliphatic EC >10-12	130	330	760	LQM S4UL
Aliphatic EC >12-16	1,100	2,400	4300	LQM S4UL
Aliphatic EC >16-35	65,000	92,000	110,000	LQM S4UL
Aliphatic EC >35-44	65,000	92,000	110,000	LQM S4UL
Aromatic EC 5-7 (benzene)	70	140	300	LQM S4UL
Aromatic EC >7-8 (toluene)	130	290	660	LQM S4UL
Aromatic EC >8-10	34	83	190	LQM S4UL
Aromatic EC >10-12	74	180	380	LQM S4UL
Aromatic EC >12-16	140	330	660	LQM S4UL
Aromatic EC >16-21	260	540	930	LQM S4UL
Aromatic EC >21-35	1,100	1,500	1,700	LQM S4UL
Aromatic EC >35-44	1,100	1,500	1,700	LQM S4UL
Aromatic EC >44-70	1,600	1,800	1,900	LQM S4UL
ASBESTOS				
None Detectable			Aviron Adopted Value	

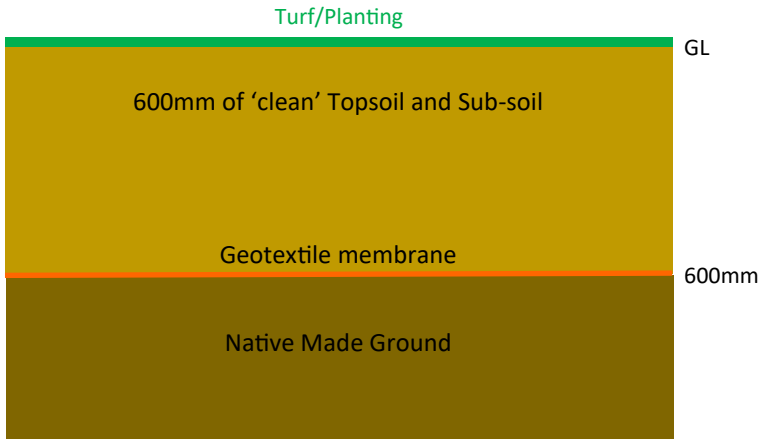
Appendix

IV Clean Cover System Cross-Sections

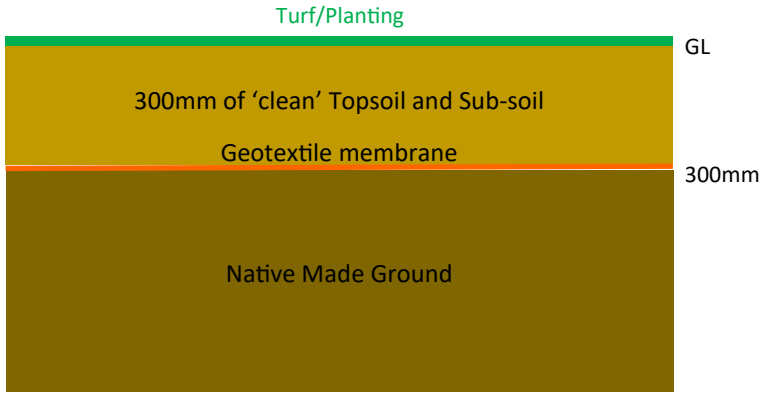
Remedial Cover System Cross-Sections

Project Number 24-206.04 **Project Title** Victoria Nurseries, Victoria Road, Wargrave, RG10 8AG **Drawn by** JB

PRIVATE GARDENS
Scenario 1



FRONTAGES/AMENITY AREAS
Scenario 2



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AVIRON ASSOCIATES LIMITED

is a dynamic company of Chartered Environmental Surveyors and Geotechnical Engineers.

We continuously work hard to ensure our services are the most technically competent, efficient and viable in our market place. Our years of experience of vastly varied sites and projects compliment our ability to deliver assured and effective Ground Investigations and Risk Assessments of both Brownfield, Greenfield and Currently Developed Land.

Our clients choose Aviron to plan, design and manage their Ground Investigations and Land Remediation Schemes assisting in land procurement to deliver engineering requirements, discharge planning and ensure their sites are suitable, developable and sustainable.

Our tenaciously committed team ensure regardless of project value we will always deliver quickly, effectively and exceed expectations.

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