

**Discovery Strategy, Remediation Strategy
and Verification Plan** | Residential Development



Report prepared at

Ladds Garden Village
Bath Road
Hare Hatch
RG10 9SB

On behalf of

Westbourne Homes Limited

Report reference

24-304.05
Version 1

Report date

May 2026

Prepared by

Aviron Associates Limited

Report Quality Management			
Project Name	Ladds Garden Village, Bath Road, Hare Hatch, RG10 9SB		
Project Title	Discovery Strategy, Remediation Strategy and Verification Plan		
Client	Westbourne Homes Limited		
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Version	1		Date
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1.0 PROJECT AND SITE INFORMATION

1.1 APPOINTMENT

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

Ladds Garden Village, Bath Road, Hare Hatch, RG10 9SB (hereafter referred to as the “site”).

The report proceeds the Preliminary Risk Assessment (PRA) and Site Investigation (SI) report, prepared by Aviron, referenced 34-304.01, version 2 and dated September 2025.

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

1.2 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 on Bath Road (A4), in Hare Hatch, approximately 10 kilometres (km) to the north-east of Reading. Figure 1 is presented as the Site Location Plan.
National Grid Ref.	Centred at approximately 480680, 177930.
Current Land Use	The site comprises the commercial premises of Ladds Garden Village. River Sand and Gravel Limited operates at the site, supplying sand, gravel and other aggregates along with Turf Supplies, supplied rolls of turf. Figure 2 is presented as the Existing Site Layout Plan. Figure 3 is presented as the Site Photographs.
Surrounding Land Use	The site is located on the north-eastern outskirts of Hare Hatch, with Bath Road forming the northern site boundary. Landuse in the immediate surrounding area comprises the grounds of Hare Hatch House to the north-west, open fields to the east, The Hollies and Scarletts Lane to the south-east, and a residential development site under construction to the south-west and west.
Proposed Land Use	The proposed development comprises the demolition of the existing buildings and the construction of nineteen detached and semi-detached dwellings with private gardens, garages and parking as well as associated access drive and communal amenity space. Figure 4 is presented as the Proposed Development Plan.

1.3 SUMMARY OF PREVIOUS REPORT

Table 1.3 summarises the pertinent environmental risks established within the PRA and SI providing advice on further works and assessment.

Table 1.3: Environment Risk Summary			
Medium	Item	Risk Description	Comments/Recommendations
Soils	1	Polycyclic Aromatic Hydrocarbon (PAH) soil contamination within the Made Ground of the existing road plainings yard area which is considered to present a risk to human health if left in-situ within proposed garden areas/soft landscaping.	Remediation via the removal of road plainings (PAH source) and installation of a clean cover system to private gardens and soft landscaping. Figure 5 is enclosed as a Remediation and Verification Plan. Prepare Discovery Strategy, Remediation Action Plan and Verification Plan.
	2	Potential for undiscovered soil contamination beneath hardstanding following removal of floor slabs and during groundworks excavations.	Prepare a Discovery Strategy enable management of any events of contamination discovery.
	3	Any imported Topsoil should be chemically suitable for use in private gardens.	Import suitable Topsoil (BS3882) to sustain planting.
	4	Ensure material encountered is suitable for desired water main.	Consult local water authority prior to water main installation.
Ground Gas	n/a	Preliminary risk assessment and gas monitoring has determined very low risk from ground gas. Two rounds of monitoring have been completed which has determined acceptable gaseous concentrations and GSVs. A CS1 has been determined and ground gas protection is not considered necessary.	
Radon	n/a	Information from the Envirocheck report (using data supplied by the BGS) indicates that 'The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level)', and that 'The property is included in a 'lower probability radon area' (less than 1% of homes are estimated to be at or above the Action Level)'. No protective measures are considered necessary in the construction of new dwellings or extensions, according to the British Geological Survey. The information can be verified through checking on the interactive radon map for Great Britain provided by the UK Health Security Agency (UKHSA) and the British Geological Survey (BGS). The HSA website (ukradon.org) can be used to purchase radon reports, where an address-specific radon report may be obtained. It should however be noted that for redevelopment sites, a GeoReport provided by the British Geological Survey may be more appropriate.	
Groundwater	n/a	Ground conditions are not considered to present a notable risk to groundwater or controlled waters.	

The aim of the remediation is not necessarily to remove all contamination 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

Information from the Envirocheck report of May 2025 (using data supplied by the BGS) indicates that 'The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level)', and that 'The property is included in a 'lower probability radon area' (less than 1% of homes are estimated to be at or above the Action Level)'. No protective measures are considered necessary in the construction of new dwellings or extensions, according to the British Geological Survey.

The information can be verified through checking on the interactive radon map for Great Britain provided by the UK Health Security Agency (UKHSA) and the British Geological Survey (BGS).

As of May 2026, ukradon.org (UKHSA) indicates the site is within a 1km grid-square where the maximum radon potential is 1-3% of properties being above the action level.

It is recommended prior to re-development a site-specific radon report is obtained. For redevelopment sites a GeoReport provided by the British Geological Survey would be most suited to determine an 'up to date' and site-specific radon protection requirement prior to final design and construction.

3.0 DISCOVERY STRATEGY

3.1 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 I**. 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.

4.0 REMEDIATION OPTION APPRAISAL AND APPROACH

4.1 REMEDIATION OPTION APPRAISAL

The plan in **Figure 5** highlights the locations where PAH soil contamination has been detected through laboratory analyses. The pollutant linkage pathway to cause harm is considered to exist to site end users and construction/maintenance workers upon completion of the development. The routes of exposure are considered to be ingestion and inhalation (of dust) and dermal contact.

Contamination is limited to PAH contamination within the overlying unit of Made Ground (road plainings) in the east of the site. The location of PAH contamination is illustrated in **Figure 5** which has been prepared by overlaying the outline of the road plainings/gravel surface from the topographic survey upon the proposed development plan and cross referencing the detection of PAH contamination along with Made Ground observations.

The potential exposure risks could be mitigated through either removal of the source or management of the potential pathways.

The roading plainings Made Ground surfacing at WS8, WS9 and HP1 was shown to be 0.4m thick following review of the corresponding exploratory hole logs.

The most appropriate remedial solution will be through the management of potential pathways by:

-  The provision of clean soils in areas of soft landscaping by removing the overlying ~0.4m thick unit of Made Ground on to the sub-crop of 'clean' natural Clay strata.
-  Buildings and hardstanding will break residual pathways

Due to the limited contamination and remedial options, a full Remedial Options Appraisal is not considered appropriate.

4.2 REMEDIATION AND VERIFICATION APPROACH

The basic concept to achieve the remedial objective shall follow the process outlined below:

1. **Step 1** - Reduced level (over-site) dig to reduce and arrange levels in advance of construction.
2. **Step 2** - Stage 1 of verification to inspect and verify the out-cropping natural Clay in areas of proposed gardens/soft landscaping to confirm the absence of PAH contamination following the removal of the contaminated Made Ground (road plainings).

3. **Step 3** - Stage 2 of verification, the selection and verification of imported soils (Sub-soil/Topsoil) for use within proposed gardens and soft landscaping.

4.2.1 Step 1 – Contaminated Soil Removal

The reduced level dig to strip the site and arrange construction levels should be increased in the east of the site to at least 0.4m below existing ground levels in order to remove the overlying unit of Made Ground/road plainings which are defined by (though not limited to) the purple shaded area in **Figure 5**.

This process shall be managed by the Client's principal contractor, with any necessary support from the Client's remediation contractor.

Once the natural Clay strata has been exposed Step 2 may commence to confirm the absence (or residual) presence of PAH contamination within the resultant natural Clay formation.

4.2.2 Step 2 – Clay Formation Verification

Following site clearance and the over-site strip to arrange construction levels and remove the road plainings in the east of the site (purple area of **Figure 5**), verification soil samples S1 to S10 should be collected from the out-cropping natural/native Clay.

The formation level verification samples have been targeted to proposed gardens and soft landscaped areas to confirm the presence or absence of PAH contamination and associated exposure risks.

Figure 5 identifies the locations of S1 to S10, which are targeted to garden and soft landscaped areas, whereby a pollutant linkage would exist.

Subject to the outcome of the additional sampling and testing exercise the Remediation Strategy may be updated and a clean cover system may be proposed, subject to suitable risk assessment upon fruition of results. As previously discussed, this document remains live thorough the remedial process.

A detailed method to complete the formation level verification sampling is presented within section 6.0.

4.2.3 Step 3 – Selection and Verification of Sub-soil and Topsoil

This process is most likely to be undertaken towards the end of development works and during the landscaping phase where sub-soil and Topsoil shall be imported to complete garden and soft landscaped areas.

Section 7.0 provides a detailed approach to the verification of imported soils.

5.0 STEP 1 - CONTAMINATED SOIL 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. Made Ground/road plainings/gravel
2. Natural Clay strata (possible).

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

5.2 PAH CONTAMINATED MADE GROUND/ROAD PLAININGS

Following the superstructure and site clearance the Made Ground/road plainings (**Figure 5**) shall be excavated/stripped to at least 0.4m on to the sub-crop of the natural Clay and stockpiled (as necessary) for off-site disposal. 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. 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 STEP 2 - CLAY FORMATION VERIFICATION

Following site clearance and the over-site strip to arrange construction levels and remove the road plainings in the east of the site (purple area of **Figure 5**), verification soil samples S1 to S10 should be collected from the out-cropping natural/native Clay.

The formation level verification samples have been targeted to proposed gardens and soft landscaped areas to confirm the presence or absence of PAH contamination and associated exposure risks.

Figure 5 identifies the locations of S1 to S10, which are targeted to garden and soft landscaped areas, whereby a pollutant linkage would exist.

The following method of sampling is proposed:

1. Following over-site stripping the Consultant should set out sample locations across the cleared site as shown in **Figure 5**.
2. The consultant should collect a near surface sample (GL-0.2m deep) from the overlying soils to confirm if during over-site stripping cross contamination or uncontrolled distribution of contamination occurred. Near surface sampling is proposed, being the depth where cross-contamination (from plant machinery tracking) is most likely and exposure risk is greatest.
3. The verification samples should be submitted for speciated PAH analysis at an appropriately accredited laboratory; these being the known contaminants of concern.
4. The remediation targets for PAH are enclosed within **Appendix II**, being the 'private gardens' criteria.
5. Should PAH contamination be detected within laboratory results; it may be necessary to update the Remediation Strategy to provide a 'clean cover system'.
6. Should PAH contamination not exist within the laboratory results no further action other than suitably 'dressing' gardens with 'clean' Topsoil shall be necessary.

Subject to the outcome of the additional sampling and testing exercise the Remediation Strategy may be updated and a clean cover system may be proposed, subject to suitable risk assessment upon fruition of results. As previously discussed, this document remains live thorough the remedial process.

7.0 STEP 3 - VERIFICATION CRITERIA FOR IMPORTED SOILS

Appendix II provides a verification criterion for imported soils for the purpose of confirming the chemical quality of imported soft landscaping sub-soil and Topsoil.

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

-  Any imported/soft landscaping soils, used generally, to complete private or communal gardens, though not necessary connected to the prescribed remediation strategy.

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 accredited laboratory for chemical testing as set out in **Appendix II**.
4. Should imported soils fail the criteria set out in **Appendix II** 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 II** the guidelines for private gardens shall be adopted given the majority of landscaping soils shall be required for 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.

Given the requirements for re-use of materials and criteria set out which is to be approved within an MMP it is unlikely significant volumes of material shall be generated for off-site disposal. Such materials would be those which fail to meet the physical and chemical re-use criteria and in such an event the following guide should be considered:

-  Locate a suitable area on site where material destined for off-site disposal can be quarantined and stockpiled should it not be possible to directly load to wagons.
-  As necessary, once the stockpile(s) is formed, collect representative soil samples from the stockpile(s). Samples should be submitted for chemical testing and Waste Acceptance Criteria (WAC) testing.
-  For all materials to leave site the laboratory test results should be presented to haulage contractors to formally classify waste soils.

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
Radon	Design phase. Purchase up-to-date radon report to confirm radon protection requirement.	Production of report (from BGS).
Made Ground/road plaining removal	Enabling/remediation phase. To be completed by appointed principal/remediation contractor.	Inspection, photographs, written site notes Environmental consultant to be involved.
Formation verification sampling	Enabling/ groundworks 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/soils 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.

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.

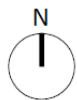
The intrusive points relate to the data collected; the risk assessment and recommendations will rely on these points only. It therefore follows that some areas of the site will not be examined. It is always possible that some areas not investigated may contain conditions which would be impossible to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

- | | |
|---|-----------------------------------|
| 1 | Site Location Plan |
| 2 | Existing Layout Plan |
| 3 | Site Photographs |
| 4 | Proposed Development Plan |
| 5 | Remediation and Verification Plan |



Legend

 Approximate Site Boundary

Notes

Figure 1

Drawing Title

Site Location Plan

Project Number 24-304.05

Project Title

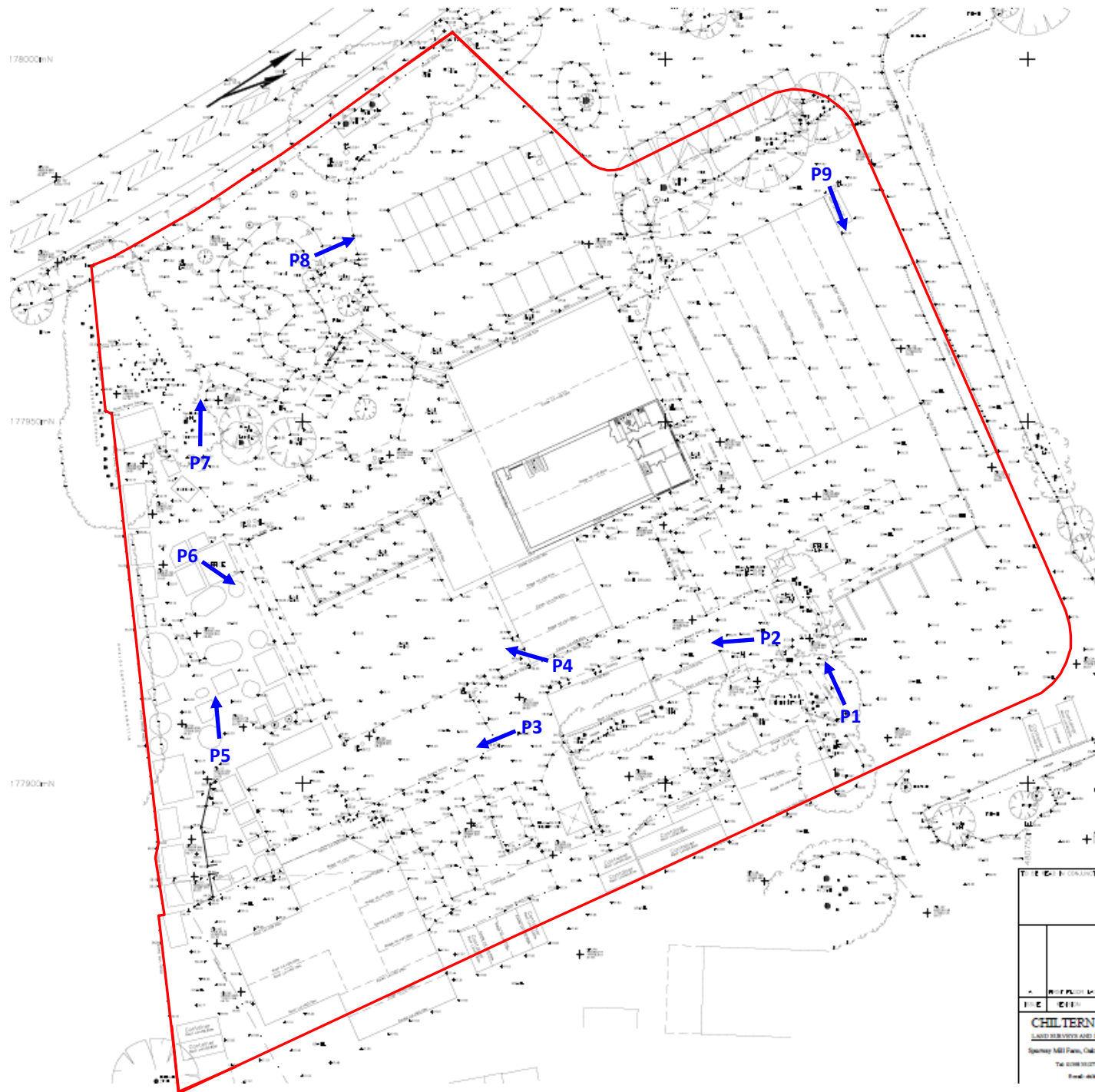
Ladds Garden Village, Bath Road,
Hare Hatch, RG10 9SB

Drawn by OB

Checked by JB

Scale NTS





Legend

-  Approximate Site Boundary
-  Photo Direction

Notes

Figure 2

Drawing Title

Existing Site Layout Plan

Project Number 24-304.05

Project Title

Ladds Garden Village, Bath Road,
Hare Hatch, RG10 9SB

Drawn by OB

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Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



Photo 8



Photo 9

Legend

Notes

Figure 3

Drawing Title

Site Photographs

Project Number 24-304.05

Project Title

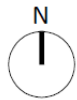
Ladds Garden Centre, Bath Road,
Hare Hatch, RG10 9SB

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Legend



Approximate Site Boundary

Notes

Figure 4

Drawing Title

Proposed Development Plan

Project Number 24-304.05

Project Title

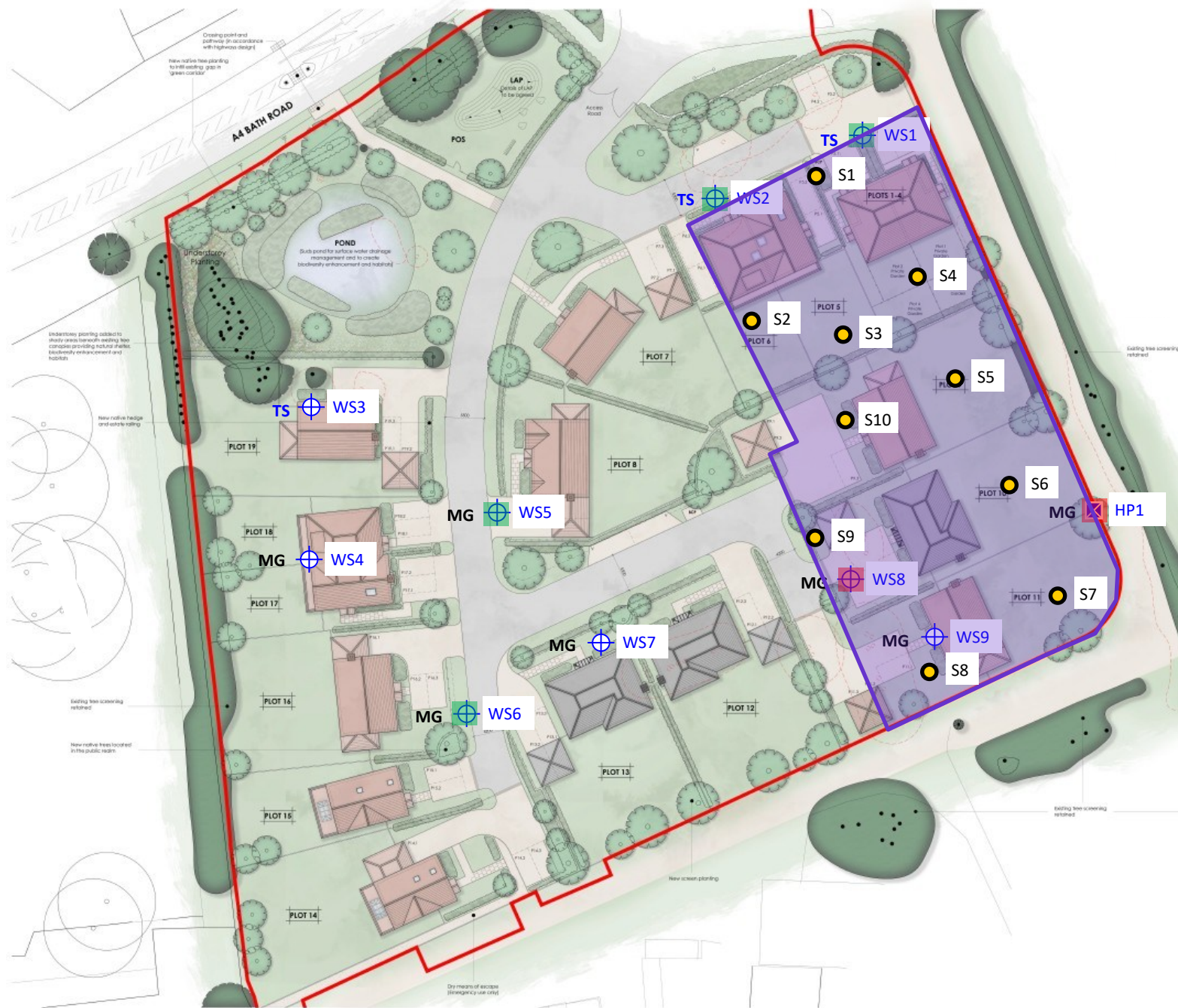
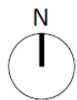
Ladds Garden Centre, Bath Road,
Hare Hatch, RG10 9SB

Drawn by OB

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Scale NTS





Legend

- Window Sample Location
- Hand Trial Hole
- CBR by DCP
- 'Contaminated' Location
- 'Uncontaminated' Location
- Approximately Area of Road Plainings
- Verification Sample (Formation Level Cay)

Notes

TS = Topsoil. **MG** = Made Ground.
Where positions are not highlighted red or green, these have not been tested.

Figure 5

Drawing Title

Remediation and Verification Plan

Project Number 24-304.05

Project Title

Ladds Garden Village, Bath Road,
Hare Hatch, RG10 9SB

Drawn by OB

Checked by JB

Scale NTS



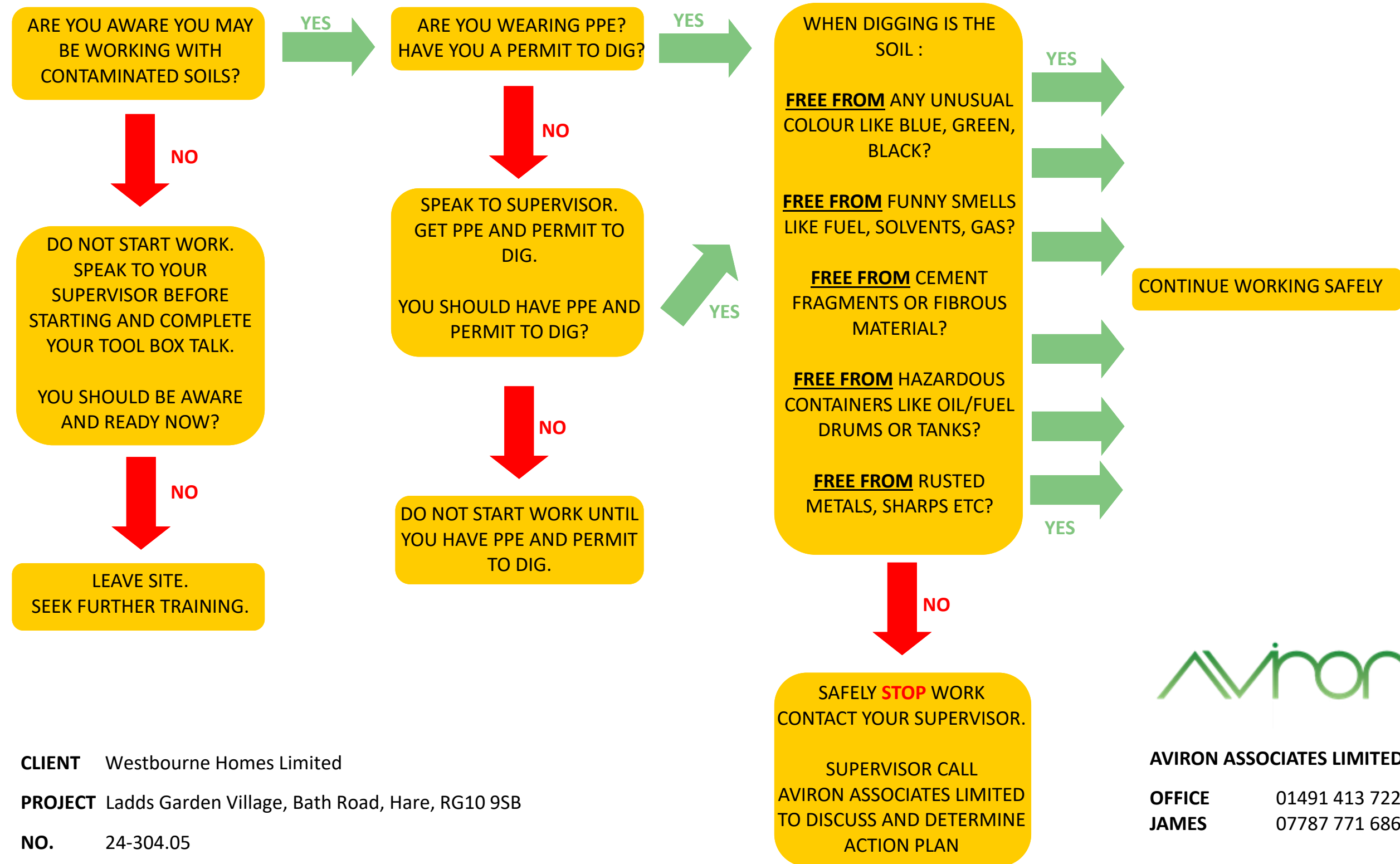
Appendices

- I Discovery Strategy Flow Chart
- II Verification Targets and Soil Import Chemical Assessment Criteria

Appendix

I	Discovery Strategy Flow Chart
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HOW TO IDENTIFY CONTAMINATED SOILS AND WHAT TO DO?



CLIENT Westbourne Homes Limited

PROJECT Ladds Garden Village, Bath Road, Hare, RG10 9SB

NO. 24-304.05

ISSUE Version 1



AVIRON ASSOCIATES LIMITED

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Appendix

II	Verification Targets and Soil Import Chemical Assessment Criteria
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LAND CONTAMINATION REMEDIATION 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 IMPORTED 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 (GACs)
Private Gardens

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

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.

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