

Oxleaze Business Park, Greenhill, Royal Wootton Bassett, SN4 8EH

Remediation Method Statement



Skyline Aero Ltd

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P25-399rms

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1.0 INTRODUCTION

Paddock Geo Engineering Limited (PGE) was instructed by the Client, Skyline Aero Ltd, to prepare a Remediation Options Appraisal and Method Statement (RMS) in accordance with Tier 1 and 2 of the guidance set out in Land Contamination Risk Management (LCRM) 2023, for the proposed residential redevelopment of the subject site, referred to as Oxleaze Business Park, Greenhill, Royal Wootton Bassett, SN4 8EH.

1.1 Site Description

The site is irregular in shape, occupies an area of approximately 1.37 hectares and is centred around National Grid Reference (NGR) 407550, 186160.

Access to the site is through a gated entrance and across a small asphalt covered car park from the south off Greenhill. The access road leads into a second carpark area which extends to the west of a single large commercial unit.

The areas to the north and northeast of the main commercial unit are in use for general storage and contain stockpiles of various materials including demolition rubble, timber, dismantled miscellaneous equipment and old disused plant (excavators). The northeastern extent of the yard contains an aircraft hangar used for general storage.

Surface cover across the site comprises a mixture of concrete and asphalt hardstanding.

The site is generally level and is cut into the surrounding land to the west and raised above the area surrounding the site to the east.

A stream extends from south to north approximately 50m from the sites eastern and northern boundaries at an elevation approximately 10m below that of the subject site.

The site is bounded to the north by a densely wooded area with the areas to then east south and west comprising open agricultural fields.

A Site Location Plan is presented in Appendix A.

1.2 Terms of Reference

- British Standards BS 10175:2011 Investigation of Potentially Contaminated Sites – Code of Practice.
- British Standard (BS) 8485:2015+A1:2019 Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings.
- British Standard (BS) 8576:2013 Guidance on Investigations for Ground Gas - Permanent Gases and Volatile Organic Compounds (VOC)
- SC030114/R1 Verification of Remediation of Land Contamination Guidance Document, 2010, Environment Agency.
- BRE414: 2001 Protective measures for housing on gas-contaminated land. Building Research Establishment: 2001

- BS8576: 2013. Guidance on Investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs). British Standard Institute. 2013.
- PPG23 (PPS23) Planning and pollution control (contaminated land aspects), 2002 (withdrawn)
- GPLC1 Guiding Principles for Land Contamination, 2010, Environment Agency
- Environmental Protection Act: 1990 – Contaminated Land Statutory Guidance, April 2012, DEFRA
- NHBC Standards Chapter 4.2 2006, Building Near Trees
- TRL Laboratory Report 1132:1984 – The Structure of Bituminous Road, Appendix C Table C1
- BS 5930:1999+A2:2010 Site Investigation Code of Practice
- BS 8485:2015 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings
- CIRIA C665 Assessing risks posed by hazardous ground gases to buildings. CIRIA 2007
- NHBC report No 10627-R01(04) Guidance on development proposals on sites where methane and carbon dioxide are present (March 2007)
- CL:AIRE Research Bulletin RB17 A pragmatic approach to ground gas risk assessment (November 2012)
- CIRIA C735 Good practice and verification of protection systems for buildings against hazardous ground gases.
- Land Contamination Risk Management (LCRM) 2023, Environment Agency

1.3 Proposed Development

The proposed development is understood to comprise the construction of three additional commercial/industrial units within an existing commercial industrial yard area. The proposal includes for Shed 1 which lies to the central northern boundary of the site, Shed 2 which lies at the eastern end of the site and Shed 3 which is located on the western portion of the site.

The proposal includes the construction of asphalt hardstanding for car parking and access roads along with some areas of soft landscaping for decorative planting.

As the proposal is for the construction of additional commercial units within an existing commercial yard, the soil contamination exposure characteristics for the proposed development will be analogous to a commercial/industrial site end-use.

A proposed development plan is presented within Appendix A.

2.0 OVERVIEW OF PREVIOUS WORKS

The relevant details of the available previous investigations and reports completed for the site are summarised in the following sub-sections. Reference should be made to the full reports for detailed information.

2.1 Stage 1, Tier 1 – PGE Preliminary Risk Assessment, ref. P25-399pra, December 2025

A Preliminary Contamination Risk Assessment (PRA) was carried out for the site by PGE in December 2025. A summary of the main findings of the PRA report is included within Table 1.

Table 1: Summary of PRA information

Geology	The site is directly underlain by bedrock of the Ringsbury Spiculite Member (sandstone). Bedrock deposits of the Hazelbury Bryan Formation and Kingston Formation (sandstone, siltstone and mudstone) are shown to encroach onto the northern tip of the site. Deposits of the Oxford Clay Formation are shown to extend adjacent to the northern site boundary. No superficial deposits or artificial ground/Made Ground are indicated to be present on the site. The site lies within a low probability radon area where less than 1% of dwellings are estimated to be above the radon action level.
Hydrogeology	The bedrock at the site is classified as Secondary A aquifer. No active groundwater abstractions are reported to be present within 1km of the site The site lies within a Zone IIc Groundwater Source Protection Zone (SPZ).
Hydrology	The nearest recorded surface water feature is an unnamed inland river at 25m west. No surface water abstractions are located within 1km of the subject site.
Ecological Receptor	No major ecological receptors are present within 1km of the site.
Flood Risk	The site is situated within an area with a limited potential for groundwater flooding. the site is located within flood zone 1 (< 1 in 1000 (0.1%) annual probability of flooding in any given year) and is at Low risk of flooding from surface water.
Site History	The earliest available map shows that by 1886 the site comprised an undeveloped parcel of land with a small area of non-coniferous woodland contained within the northeastern corner. By 1990 the site was developed to include a commercial/industrial yard containing a large commercial/industrial unit and a tank within its central portion along with an additional water tank in its northwestern extent. No further development upon the site is shown. By 1886, the area surrounding the site comprised undeveloped open agricultural fields in all directions with a small area of woodland (Mathews

	Copse) present adjacent to the northern site boundary and an Iron age hillfort, 'Ringsbury Camp' at 500m north. From 1900 to 1960 a kiln, brickworks and clay pit was operating at 750m west and a sawpit at 750m southwest. No further significant developments are shown within the vicinity of the site.
Waste Management, Landfill	Two historical landfill sites are located within 500m of the site. These include • Onsite - Blackfords Landscaping Services, Inert, Industrial, Commercial and Household Waste – 1981 • 638m west - Blackfords Land, Inert, Industrial, Commercial and Household Waste - 1981
Mining	The site is not located within a Coal Mining Reporting Area. A single BGS recorded mineral site within 500m of the site. This is listed as; • Opencast clay and shale quarry at 671m west, status - ceased,
Preliminary Conceptual Site Model	The PRA identified 'Source-Pathway-Receptor' linkages have the potential to be completed with respect to human health (future site users) and controlled waters (groundwater), from ground contamination at the site. The identified potential contamination sources to include; Current • Unknown Made Ground/fill associated with historical landfill on the site • Unknown Made Ground associated with existing structures on the site • Contamination associated with ongoing industrial use of the site including plant and machinery storage/use • Potential unknown Made Ground/fill associated with historical development in the immediate vicinity of the site Historical • Contamination associated with historical tank onsite • Contamination associated with historical industrial use of the site including plant and machinery storage/use • Potential unknown Made Ground/fill associated with historical development in the immediate vicinity of the site The PRA assessed the worst-case overall risk as Low to Moderate considering contamination and a Low risk considering ground gas. The PRA recommended that further investigation be undertaken including sampling and testing of soils and groundwater. A geotechnical appraisal of the geology and groundwater beneath the site was also advised to derive foundation design criteria for any proposed structures on the site.

2.2 Stage 1, Tier 2 Ground Investigation and Generic Quantitative Risk Assessment

PGE, Oxleaze Business Park, Greenhill, Royal Wootton Bassett, SN4 8EH, Ground Investigation, reference P25-399gi, January 2026

Following the recommendations and conclusions from the PGE PRA report, Paddock Geo Engineering Ltd undertook an intrusive investigation to establish the ground conditions beneath the site to assess the contamination status of the near surface soils. A summary of the main findings of the report, relevant to the soil remediation is included within Table 2 below.

Table 2: Summary of 2025 Ground Investigation and Risk Assessment

Scope of Investigation	The agreed scope of work was to undertake a ground investigation to allow characterisation of the geological and hydrogeological environment at the site and to facilitate the recovery samples for chemical analysis. The investigation comprised the progression of eight percussion liner sampler boreholes (WS01 to WS08). Monitoring wells were installed within WS01, WS02A, WS02B, WS03 and WS05. A subsequent Generic Quantitative Risk Assessment was carried out in accordance with LCRM 2023 to assess the potential risk posed by contamination within groundwater at the site to human health.
Encountered Geology	The encountered strata across the site primarily included Made Ground over strata interpreted as Hazelbury Bryan Formation and Kingston Formation. <u>Made Ground</u> Made Ground was encountered from ground surface in all exploratory locations. The encountered Made Ground within WS01 to WS02B (western portion of the site) extended to between 4.50m and >4.80m bgl and was noted to represent the thickest extent of the encountered Made Ground. The encountered Made Ground within these boreholes was variable and included gravelly Clay within gravel of brick and concrete, rubber thought to be old car tyres and clinker. The encountered Made Ground within Boreholes WS03 to WS08 was variable in thickness with the encountered Made Ground ranging from 0.90m (WS03 and WS08) to 2.50m (WS07). The general trends indicate Made Ground across the central and eastern portions of the site increases in thickness towards the northern site boundary. The encountered Made Ground across this area generally comprised macadam planning at the ground surface over gravelly Clay with gravel of brick and concrete with glass plastic and rare rubber (tyres) also encountered. <u>Hazelbury Bryan Formation and Kingston Formation</u>

	Strata interpreted as Hazelbury Bryan Formation and Kingston Formation was encountered under Made Ground in all locations with the exception of WS02A and WS02B in which Made Ground extended beyond the base of the boreholes. The encountered Hazelbury Bryan Formation and Kingston Formation deposits comprised soft to firm thinly laminated grey and yellowish-brown sandy Clay. The full thickness of the Hazelbury Bryan Formation and Kingston Formation was not proven.
Groundwater	No groundwater was encountered in any of the boreholes as part of the ground investigation. Subsequent groundwater monitoring identified resting groundwater across the site between 0.32m bgl and Dry.
Ground Contamination	A total of eight soil samples were sent to an external UKAS/MCERTS accredited laboratory to obtain total soil concentrations for a range of priority contaminants of concern including asbestos, metals, inorganic compounds, polycyclic aromatic hydrocarbons (PAH) USPEA Priority 16 Compounds and total petroleum hydrocarbons (TPH) EC10-EC40 screen. The relevant findings of the assessment are summarised below, • Elevated PAH (benzo(b)fluoranthene, benzo(a)pyrene and dibenzo(a,h)anthracene) within Made Ground at WS02B (0.50m bgl). • Presence of <0.001% loose chrysotile asbestos fibres in Made Ground at WS01 (0.50m bgl) and WS04 (0.70m bgl) No further determinants were identified within soils at concentrations in exceedance of their respective GAC concentrations
Ground Gas	Ground gas monitoring results were assessed in accordance with CIRIA C665 2007 / BS8485:2015. Based on the monitoring results, the assessment indicates that the site falls into Characteristic Situation 2 (CS2), due to elevated carbon dioxide concentrations. Therefore, it is considered that gas protection measures are required for methane and carbon dioxide for any new developments at the site.

3.0 PARTIES AND RESPONSIBILITIES

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

Current Owner	Skyline Aero Ltd
Developer	Skyline Aero Ltd
Architects / Designers	Skyline Aero Ltd
RQA Supervision	Paddock Geo Engineering Limited (PGE)
Remediation Design	Paddock Geo Engineering Limited (PGE)
Regulators	Wiltshire Councils Environment Agency
Analytical Testing Laboratory	I2 Analytical (UKAS 4041)
Waste Haulier	TBC
Waste Disposal Site	TBC
Remediation Contractor	TBC

4.0 RISK MANAGEMENT OPTIONS APPRAISAL

4.1 Introduction

The proposed development (as detailed in Section 1.3) will comprise the construction of three additional commercial/industrial units within an existing commercial industrial yard area. The proposal includes for Shed 1 which lies to the central northern boundary of the site, Shed 2 which lies at the eastern end of the site and Shed 3 which is located on the western portion of the site.

The proposal includes the construction of asphalt hardstanding for car parking and access roads along with some areas of soft landscaping for decorative planting.

As the proposal is for the construction of additional commercial units within an existing commercial yard, the soil contamination exposure characteristics for the proposed development will be analogous to a commercial/industrial site end-use.

The intrusive investigation and risk assessment phase of the site contamination assessment identified a potential source on the site as summarised below:

1. Elevated PAH (benzo(b)fluoranthene, benzo(a)pyrene and dibenzo(a,h)anthracene) within Made Ground at WS02B (0.50m bgl).
2. Presence of <0.001% loose chrysotile asbestos fibres in Made Ground at WS01 (0.50m bgl) and WS04 (0.70m bgl)
3. Characteristic Situation 2 (CS2), due to elevated carbon dioxide concentrations.

The risk assessment concluded that;

- Where exploratory location WS01 and WS02B are located within the footprint of the proposed Shed 3, the exceeding PAH compounds and asbestos within this area are considered encapsulated beneath hardstanding and due to their non-volatile nature and lack of associated contact S-P-R linkages these can remain on site. Further under the current development proposals, as shown within Appendix B, it is understood that the areas of impacted soil will be encapsulated by buildings and can remain on site.
- The position of the detected asbestos within Made Ground WS04 is located within an area of proposed peripheral soft landscaping for the proposed development. Therefore, an associated Source–Pathway–Receptor (S-P-R) linkage would be present within this area and further consideration is considered necessary and risk mitigation or remediation will likely be required.

4.2 Remedial Objectives

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

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

4.3 Remedial Options

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

4.3.1 Source Reduction

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

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

4.3.2 Pathway Management

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

- Removal or destruction of contaminants e.g., bioactive zones.
- Preventing pathways from operating e.g., separation-layer or clean-soil cover layer capping system (cover system), stabilisation, slurry walls and correctly installed gas protection measures, such as membranes.

4.3.3 Receptor Protection

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

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

4.3.4 Viable Remediation Techniques

As with any proposed remedial works, when exploring remedial options, a remediation strategy must consider

- the size, scale and nature of the site,
- site characteristics,
- quantity, type and extent of contaminated material in soils and/or groundwater,
- time frame, cost / benefit analysis and value and the sustainability of the remedial method

Considering the above points, following consideration of a range of remedial technologies, the methods considered most viable for the site are detailed in section 4.5 below.

A Remediation Option Matrix for the site and descriptions of various remedial technologies are provided in Appendix C.

4.4 Remedial Sustainability

As discussed in Section 4.3, a range of remedial options have been investigated and several factors considered within the options appraisal process. Considerations have included efficiency, sustainability and effectiveness of the remedial technique along with potential costs, haulage movements on and off-site and potential carbon emissions, other environmental factors, accurate focusing of remedial works, timescales and the general overall benefits.

4.5 Most Viable Remedial Option

It is considered that the most viable remediation method for the site, considering the proposed development, and based on the potential risks from the identified asbestos impacted Made Ground in the area of WS04 is source reduction or removal and pathway management. Source reduction should be achieved by the excavation and disposal of the contaminant impacted material. Where required, if all impacted soils are not fully removed, pathway management should comprise the implementation of a supplementary clean cover system, consisting of clean soils, with a high visibility 'alert' geo-textile membrane at the base where required. These measures are considered sufficient to protect the end site users from any remaining legacy contamination.

None of the remaining remedial options outlined in Section 4.3 are considered practical or suitable for the site.

5.0 SOIL REMEDIATION ACTIONS

5.1 Impacted Soils and Remediation Areas

Where the proposed development includes soft landscaped areas, there is the potential for future site users to come into contact with impacted soils. Therefore, the site land use scenarios have been modelled as worst case Commercial land use.

The finding of the intrusive investigation and risk assessment phase of the site contamination assessment, with relevance to the required remediation at the site included asbestos in shallow Made Ground in borehole WS04.

It is indicated by the proposed layout plan that peripheral soft landscaping is to be incorporated within the area surrounding the location of WS04.

A Remediation Plan of the approximate remediation area is presented in Appendix D.

5.2 Delineation of Impacted Soils

Given the isolated and sporadic distribution of the detected exceedances within Made Ground at WS04, and practical constraints preventing further delineation through additional ground investigation, remediation will proceed on a precautionary basis during the development groundworks. This approach is consistent with the principles of the Environment Agency's *Land Contamination Risk Management (LCRM)* guidance, which allows for adaptive, evidence-led remediation where further intrusive investigation is not practical.

5.3 Removal of Impacted Soils

When determining the remediation methods, it has been assumed that the current and proposed site levels will remain relatively consistent.

An effective clean cover system for soft landscaping within public open space would require the incorporation of a minimum 300mm separation of clean Topsoil at surface placed over a suitable geotextile marker layer where residual impacted Made Ground remains in-situ.

On this basis, where detailed source delineation has not been completed, to facilitate the construction of a 300mm capping layer, the impacted Made Ground should be removed from across the full extent of the area of proposed soft landscaping around the location of WS04.

Where the impacted Made Ground is noted in the borehole log for WS04 to extend to a depth of 1.50m bgl, it is expected that the removal of 300mm of the impacted soil will not fully remove the impacted Made Ground within this area.

Where practicable, the full or partial removal of impacted soil at all locations should be confirmed by visual inspection during or on completion of the excavation works. Where residual impacted soil extends below the depth of the excavation, as anticipated within the area of WS04, a suitable geotextile membrane should be placed as a marker layer at the base of the cover system to mitigate the risk from any residual contamination and to act as a no dig warning membrane.

Where practicable, it is recommended that the depth of remediation excavations should be extended beyond 300mm to remove the full extent of impacted Made Ground within the area around WS04 (c. 1.50m bgl).

To ensure the impacted soils are sufficiently dealt with, impacted soil/Made Ground should be removed from across the full extent of the delineated source area.

All impacted soil/Made Ground excavated as part of the remedial works should be either

- directly removed from site following excavation; or
- placed into covered skip or on banded geo-membrane and covered to prevent the generation of wind-blown dust prior to removal from site at a later date.

The excavated material should be tested, classified and removed off-site to a suitably licensed landfill facility or soil treatment centre.

As no volatile contaminants of concern have been identified, no vapour pathways linkages have been concluded on the S-P-R model. As such, no remedial works are required where the impacted soils will be encapsulated by hardstanding and/or buildings.

5.4 Construction of the Cover System

The implementation of a clean cover system should be considered primarily in areas where both soft landscaped areas are present as part of the proposed development and impacted soil/Made Ground has been removed and/or remains present following excavation, as described in Section 5.2. The requirements for the implementation of a clean cover system are outlined below.

As a precautionary approach, it is recommended that the methods described below are also utilised when backfilling excavations in which the full extent of impacted soil/Made Ground is removed.

- The implementation of a suitable cover layer (min. 300mm thick) comprising of clean imported Topsoil within the areas of proposed soft landscaping where impacted soil/Made Ground is known to be present or has been removed.

- If potentially impacted soil/Made Ground remains present at depth below the minimum 300mm strip, a high visibility geo-textile membrane should be placed at the base of the clean cover layers to act as a marker layer to demarcate underlying potential remaining residual contamination to the end site users
- Importation of clean certified Topsoil for soft landscaped areas where no clean site-won Topsoil is available.
- Careful watching brief during groundworks for any unforeseen pockets of contamination.

The cover system should comprise the placement of clean Imported soil which comply with BS 3882:2015 (Topsoil) and BS 8601:2013 (Subsoil)

In the first instance, it is preferred to use site won soils to construct the cover system. However, if suitable site won material availability is limited, imported soil is likely to be required.

Any imported Topsoil should be a good quality growing medium and have been subjected to chemical testing (at the rate of a minimum of two samples per source and one sample per 1000m³ thereafter (minimum 3no. samples).

The imported materials are required to meet the British Standard for Topsoil (BS 3882: 2015) and BS8601:2013 for Sub-Soil and also the PGE In-House total soil contaminant concentration GACs for a residential with plant uptake end-us scenario. The soils should be chemically tested to confirm it meets *suitable for use* criteria (e.g. C4SLs or other appropriate GACs) for the intended end use.

A schematic section is presented in Appendix D detailing the ideal remediation cover system cross section.

5.4.1 Buried Water Pipes

Published guidance on the type of potable water supply pipe to be employed for new structures on reused land and residential development sites is given by UKWIR.

Samples were generally recovered from shallow depth on the site in Made Ground as well as shallow which extends below suspected pipe burial depths and routes (c. 0.70m – 1.00m depth). These samples were analysed for a suite of contaminants which are in general accordance with the UKWIR requirements. The analysis results indicated low or below detection level concentrations of hydrocarbons within the samples of natural soil analysed around target depths of 0.70m and 1.00m.

Therefore, conventional PE pipe may be suitable for the potable water supply pipework on the site where services are laid within clean natural soils. Where services are laid within or penetrate through Made Ground soils conventional PE pipe may not be suitable and consideration should be given to the use of barrier pipe in these areas.

The classification will be decided by the local water company, and their advice should be sought prior to the laying of any potable water supply pipework. The local water company may require further, more detailed sampling, testing and assessment prior to pipe selection.

All pipework should be laid in corridors of clean soil as best practice.

5.4.2 Previously Unidentified Contamination

The Remediation Engineer should be consulted if unexpected and/or previously unidentified contamination is discovered during the site development works, so any further assessment required can be carried out.

5.5 Remediation Action Summary

It is the responsibility of the Client to ensure they or their contractor manages the remediation works as detailed above and agreed by the regulatory authorities. PGE can act as a watching brief and offer advice during the works as required but are not responsible for the management of remediation sub-contractors and/or the quality of their work.

The following table summarises the remedial actions which are required to be undertaken by the contractors during the redevelopment of the site.

Table 3: Remediation Actions Summary

	Remedial Action	Reason
1	Removal of impacted Made Ground or up to 300mm of shallow soil from areas of soft landscaping in the around WS04	To remove the 'source' contaminant which poses a risk to human health in areas of soft landscaping as per the risk assessment.
2	Placement of barrier membrane at base of remediation excavation where Made Ground soils are not fully removed.	To provide a warning/separation layer between the placed clean cover system and residual Made Ground soils.
3	Sample and analyse Topsoil and Sub-soil proposed for cover system	To ensure remediation cover system is constructed in suitable clean soils.
4	Placement of clean cover system in areas of soft landscaping	To provide required clean cover thickness to break the pathway between the source and receptor. Minimum 300mm of Topsoil to be placed to break the direct contact and incidental ingestion pathways.
5	Installation of suitable water pipe in clean soils corridor with pipes specification as specified from water authority.	To break the pathway between any remaining contaminated soils and the receptor, which in this case would be the potable water supply to the properties.
6	Watching Brief for unforeseen contamination.	To protect both ground groundworkers and future residents from sources of potential unforeseen contamination.

5.6 Remediation Quantities

It is unclear at present how much material will need to be excavated and disposed as part of the remediation process.

6.0 GROUND GAS REMEDIATION ACTION

Advice should be sought from a specialist Engineer or contractor to enable the design and installation of an appropriate protection system.

Where the Characteristic Situation system is employed in accordance with BS 8485:2015, and taking into account the proposed Type C Commercial Building classification and the Characteristic Situation 2 (CS2) ground-gas regime, Table 4 of the standard indicates that a minimum gas protection score of 2.5 points is required.

Once the minimum gas protection score has been determined for the building (or for individual building elements where applicable), the required score should be achieved through a combination of two or more of the following protection measure categories:

- the structural barrier, typically the ground floor slab or basement slab and walls (where a basement is present);
- ventilation measures, which allow gas dispersal beneath or around the structure; and
- a gas-resistant membrane installed across the building footprint.

Tables 5, 6 and 7 of BS 8485:2015 provide examples of protective measures within each of these categories and the points allocated to each measure. These measures can be combined to achieve the total points score required for the development; however, no more than one measure from each category (i.e. from each table) should normally be combined when calculating the total protection score.

For Characteristic Situation 2 (CS2), protection measures capable of contributing to the required score may include the following examples:

Structural barrier measures

- Precast suspended segmented floor (e.g. beam and block): **0 points**
- Cast in-situ ground-bearing floor slab: **0.5 points**
- Reinforced cast in-situ monolithic raft slab or reinforced suspended slab: **approximately 1.0–1.5 points**
- Basement floor and walls designed in accordance with **BS 8102:2009**
 - Grade 2 waterproofing: **2 points**
 - Grade 3 waterproofing: **2.5 points**

Gas-resistant membrane

- Suitable gas-resistant membrane correctly installed and sealed across the building footprint: **2 points**

Ventilation measures

- Pressure relief pathway: **0.5 points**
- Passive sub-floor dispersal layer (e.g. clear void, polystyrene void former, geo-composite void former, or no-fines gravel layer with gas drains): **approximately 1.5–2.5 points depending on performance**
- Active dispersal layer (e.g. fan-assisted system): **approximately 1.5–2.5 points**
- Active positive pressurisation systems: **approximately 1.5–2.5 points**
- Ventilated basement or undercroft car park: **4 points**

Where the NHBC Traffic Light System described within NHBC Report 10627-R01(04) and CIRIA C665 is adopted as an alternative assessment method, a CS2 site would broadly correspond to an *Amber 1* classification.

For Amber 1 sites, the expected protection measures typically comprise low-level gas protection, generally including:

- a gas-resistant membrane, and
- a ventilated sub-floor void to create a permeability contrast and limit the ingress of ground gas into buildings.

Guidance within BRE Report 414 indicates that ventilation beneath the floor should normally facilitate a minimum of one complete air change per 24 hours.

Further expectations and verification requirements are outlined in NHBC Technical Extra Issue 20, which typically include:

Ventilation

- Sub-floor ventilation designed to achieve at least one air exchange per day, typically with:
 - minimum 150 mm void height, and
 - 1500 mm²/m ventilation openings or 500 mm²/m² of floor area,
 - vents spaced at not more than 2 m centres on at least two opposing elevations.

Gas membrane

- Membrane to be suitable for purpose and compatible with ground conditions.
- As no significant volatile organic compounds (VOCs) were identified during the investigation, a hydrocarbon-resistant membrane is not considered necessary.

Membrane installation and detailing

- The membrane should provide continuous coverage across the entire building footprint.
- All joints, service penetrations and interfaces must be appropriately sealed to maintain integrity.

The performance of gas membranes is highly dependent on the quality of installation, resistance to post-installation damage, and integrity of joints and service penetrations. Accordingly, installation should be undertaken by a competent and suitably qualified contractor, and the installation verified by the Remediation Engineer or other suitably qualified professional.

The above recommendations and design approaches are subject to agreement with the relevant regulatory authority. A suitably qualified engineer or specialist gas protection designer should be consulted to undertake the detailed design of the gas protection measures and ground-floor construction interface.

7.0 SOIL WASTE CLASSIFICATION

Soil Waste Assessment is outside the scope of this report.

8.0 REMEDIATION VALIDATION

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

The PGE supervising Geo-Environmental Engineer acting as a Remediation Engineer on site would be a relevant Degree qualified Geo-Environmental Engineer with sufficient experience for the complexity of the remediation works.

All projects should be managed, and more Junior site staff supervised remotely, by a Senior or Principal Geo-Environmental Engineer, with at least a Higher Degree in a relevant discipline, and at least 10 years of directly related industry experience.

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

8.1 Remediation Supervision

PGE should be in attendance to supervise and confirm the removal of the contamination impacted soils from around WS04. This could be accomplished by visual inspection completed by Remediation Engineer either in a single visit following completion of the impacted soil removal, or over several site visits throughout the process.

Where appropriate, validation samples should be recovered from the sides and base of the excavation on completion. All validation samples should be scheduled for laboratory analysis using the same suite as the associated SCA to ensure the soils used are suitably clean.

It is not deemed necessary for PGE to supervise the placement of the verified clean sub-soils and Topsoil to construct the Cover System as this would occur later in the build to mitigate damage to the cover system during construction.

However, the suitability of any soils used in the cover system construction should be validated through visual and laboratory assessment with the results approved by PGE prior to importation and use.

8.2 Post Remediation Validation

Following the remediation works, hand excavated inspection pits should be progressed within the remediated areas of the site to validate the removal of the impacted soil/Made Ground and the placement of sufficient soils for the required cover system. Further to this, where incorporated, the placement of the geotextile marker layer, if installed, should be validated at this time.

A minimum of 2 no. inspection pits should be progressed to facilitate validation of the clean cover system. Additional pits maybe required depending on the size of the final remediation area.

Samples should be recovered from the remediation cover system Topsoil and sub-soils and analysis carried out to the same suite as the associated SCA to ensure the soils used are suitably clean.

8.3 Validation Reporting

A Validation Report will be prepared by PGE on completion of the remedial works to confirm the removal of the impacted Made Ground where necessary, and the correct placement /construction of the cover system.

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

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

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

- Details of the removal of impacted material in the remediation areas and marker 'alert' membrane fitted.
- Appropriate assessment and records of any works by licensed asbestos contractors to remove ACMs as a separate waste stream and details of ACMs removed from site and disposal destination (licensed facility).
- Details of the removal from site and disposal of remediation arisings following excavation and disposal (transfer notes, licensed facility).
- Details of construction of the cover system
- Details of soils imported and used for the cover system
- A photographic record of the works.
- Details of any unexpected contamination encountered and how it was dealt with.
- Proposed and as built drawings for ground gas protection measures– showing position of membrane, sealing details and ventilation points
- Membrane specification – technical data sheet(s) for gas membrane, including gas permeability data (the supplier should usually be able to provide a data sheet for any such membrane sourced).
- Details of the installers of membranes and relevant qualifications and experience
- A photographic record of the installation of the membrane works. Photographic records should be kept as installation of membranes progresses showing the various stages of installation, not only the final laid membrane
- Records of inspection of the membrane installation and details of integrity testing where carried out.
- Records of any defects found during the inspection and repairs/corrections affected

Copies of the Validation Report will be provided to the concerned regulatory authorities, who will be asked to state whether they are satisfied with the level of detail provided and confirm that it appears to be reasonable given the data presented.

Based on the information supplied, they will then make a statement about whether the site is fit for its proposed residential end use to allow discharge of the related planning conditions. Any substantial change to the remediation objectives will be agreed with the Local Planning Authority, as appropriate, prior to commencement and communicated to all relevant parties.

8.4 Validation Data Collection

It is the responsibility of the Client to ensure they or their contractor carries out the remediation works as detailed above and agreed by the regulatory authorities.

The following table summarises the data collection and validation point during the remedial works and who is the party responsible for collecting the data.

Table 4: Validation Data Collection Responsibilities

Location	Required Data	Party Responsible for Collation
Remediation Area	Confirmation of strip of contaminant impacted soils from the areas where proposed soft landscaping overlies impacted soil/Made Ground.	Developer through Remediation Contractor, Ground Gas Protection Specialist and notify/forward to PGE
	Details of delineation exercise for impacted Made Ground within areas of proposed soft landscaping	
	Placement of 'alert' marker membrane (if required).	
	Post Placement Soil Thickness Validation.	
	Collation of imported soil consignment notes, validation and testing (if required).	
	Imported soil validation and testing (if required).	
	Soil waste consignment notes.	
	Details of watching brief for any unexpected contamination	
Ground Gas Protection Measures	Conformation of suitable protection and correct installation	Developer through Remediation Contractor, Ground Gas Protection Specialist and notify/forward to PGE
Buried Utilities	Suitable pipework for incoming services	
Site	Note on any unexpected contamination during site groundworks.	

8.5 Health, Safety and Environmental Requirements

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

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

Appropriate Health & Safety precautions including the use of signage, site inductions and toolbox talks to raise awareness of the risks on site. In dry conditions, regular dampening down of stockpiles and site surfaces should be undertaken to minimise the generation of wind-blown dusts. Where possible, stockpiles should be covered, and the use of PPE should be adopted. Respiratory Protective Equipment (RPE) may be required for use by ground workers where asbestos-containing materials and impacted soils are considered possible or encountered.

Groundwater maybe encountered on site during the remedial works. Any encountered groundwater should be left in-situ if possible. However, if groundwater abstraction is required, water should be either discharged under an appropriate discharge consent or stored and removed to a suitable licenced disposal or treatment facility.

9.0 REMEDIATION QUALITY ASSURANCE

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

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

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

REFERENCES

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

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

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

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

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

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

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

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

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



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

Land Contamination Risk Management (LCRM) 2023, Environment Agency

NOTES AND LIMITATIONS

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

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

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

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

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

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

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

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

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

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

APPENDIX A

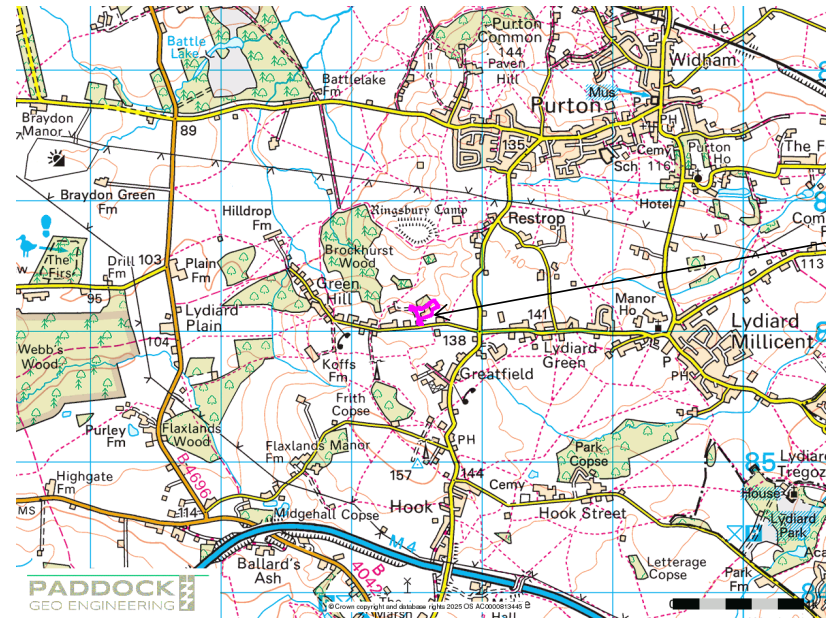
Site Location Plans

Site Layout Plan

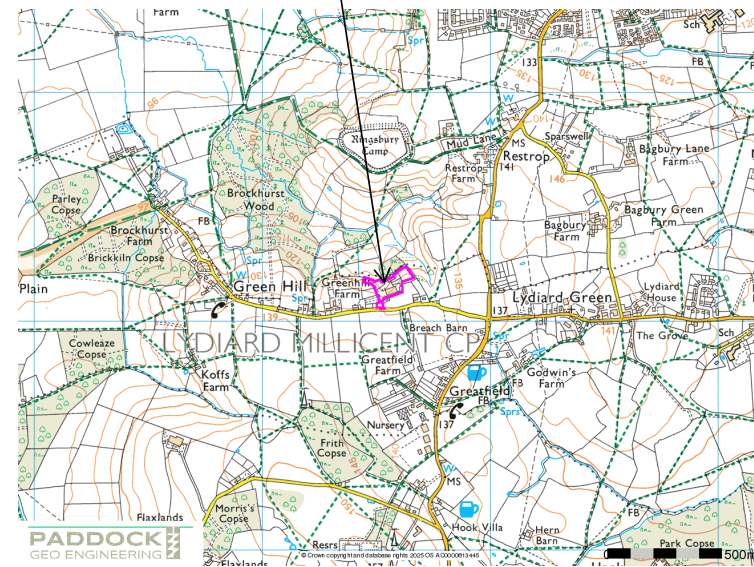
Arial Photographs

Proposed Development Plans

SITE LOCATION PLAN



Site Location

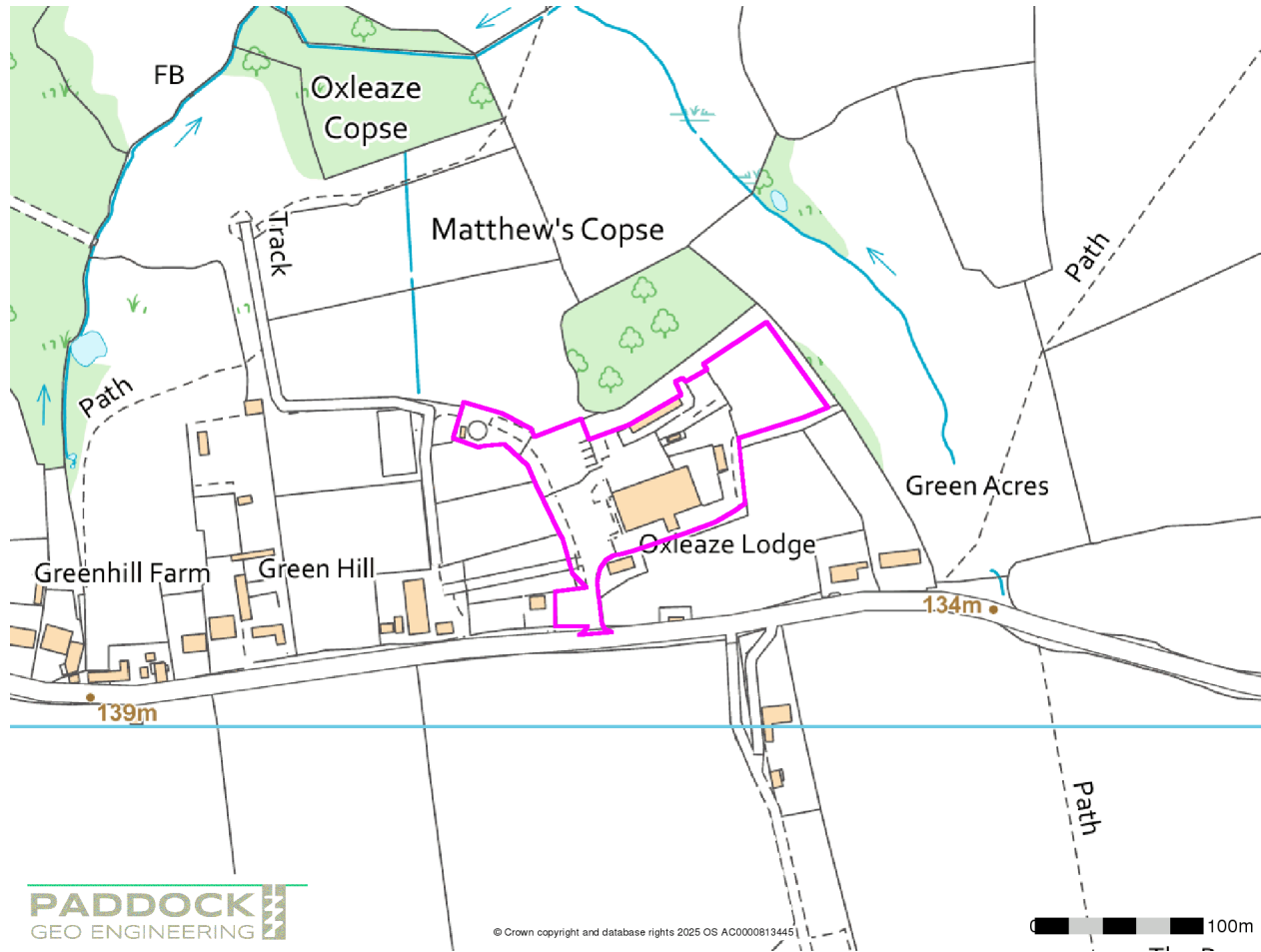


PADDOCK
GEO ENGINEERING

CLIENT:
PROJECT No:
PROJECT TITLE:

Skyline Aero Ltd
P25-399
Oxleaze Business Park, Greenhill, Royal Wootton Bassett, SN4 8EH

SITE PLAN



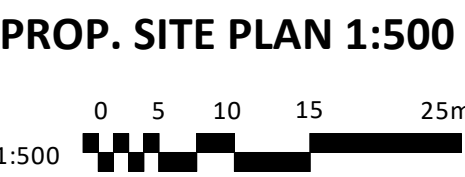
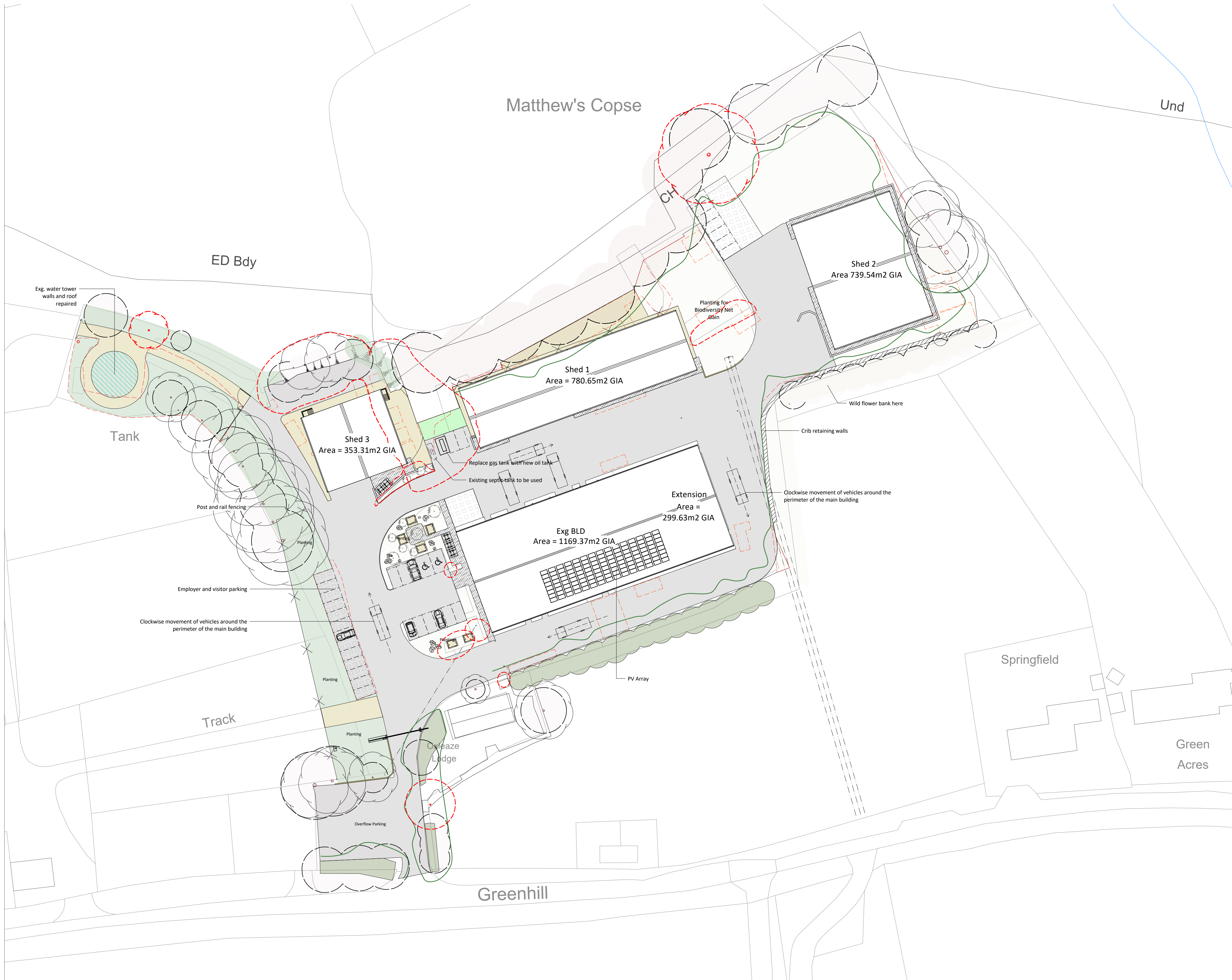
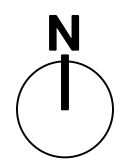
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PROJECT No:
PROJECT TITLE:

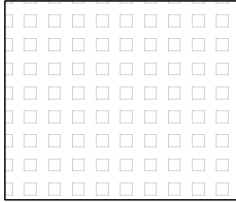
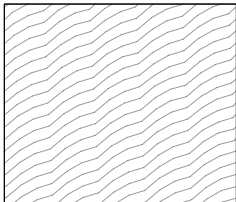
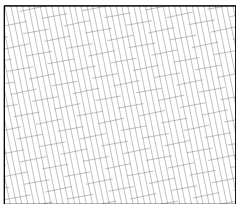
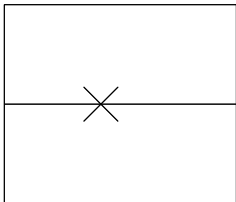
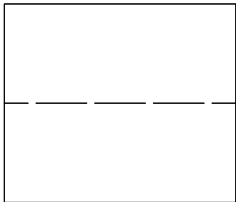
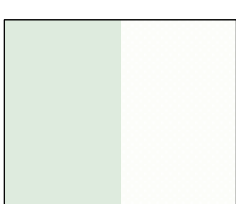
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Oxleaze Business Park, Greenhill, Royal Wootton Bassett, SN4 8EH

AERIAL PHOTOGRAPH





Hard Landscaping Key:

-  = Hex Paving
-  = Tarmac
-  = Bound Gravel
-  = Crib Walls
-  = Cotswold Gravel
-  = Sandstone Paving
-  = Post & Rail Fencing
-  = Low profile kerbs
-  = Soft landscaping; varies
-  = Root protection zones
-  = Tree Canopy
-  = Tree Removal

C B A	25/11/2025	General Update
	19/11/2024	General Update
	14/06/2024	General Update
No.	Date	Revision Notes
 info@offgridarchitecture.co.uk www.offgridarchitecture.co.uk +44 (0)7759 482619		

These details are subject to all relevant statutory approvals. If in doubt, check. All dimensions are to be checked on site. Areas where quoted are approximate. Figure dimensions only are to be taken from this drawing. Any discrepancies with other related information is to be reported to Offgrid Architecture prior to order/construction/installation. This document should not be relied on or used in circumstances other than those for which it was originally prepared and for which Offgrid Architecture was commissioned. Offgrid Architecture accepts no responsibility for this document to any party other than the person by whom it was commissioned.

Status

PLANNING

Project Title
EXTENSIONS & ALTERATIONS

Project Address
Oxleaze Business Park, Greenhill, Royal Wootton Bassett,
SN4 8EH

Sheet Title
PROP SITE PLAN

Scale	Date	Drawn By	Project ID
1:500 @ A1	21/03/2024	SJT	2315 040C

Hard Landscaping Materials:





APPENDIX B

Site Details

Source-Pathway-Receptor Ground Model

Potential Site Contaminant Sources	Potential Pathways	Potential Receptors	Pathway Complete
Presence of <0.001% Loose fibres (chrysotile), asbestos fibres within Made Ground at WS07 (0.70m bgl) and WS04 (0.70m bgl) CS1 determined for ground gas risk	Dermal / direct contact	Current site users (Disused Land and Buildings)	No
	Direct ingestion		No
	Direct inhalation		No
	Inhalation of Radon		No
	Inhalation of wind-blown dust		No
	Vapour migration		No
	Ground gas migration		No
	Dermal / direct contact	Future site users (residential without productive planting)	No
	Direct ingestion		No
	Direct inhalation		Yes
	Inhalation of Radon gas		No
	Inhalation of wind-blown dust		Yes
	Vapour Migration onto the site		No
	Ground gas migration		No
	Direct contact	On Site Services (following redevelopment)	No
	Migration of contaminants: non-aqueous phase		No
	Migration of contaminants: aqueous phase		No
	Migration of contaminants off-site: non-aqueous phase	Adjacent Properties	No
	Migration of contaminants off site: aqueous phase		No
	Vapour migration		No
	Inhalation of wind-blown dust	Ecological Impacts	No
	Migration of contaminants: non-aqueous phase		No
	Migration of contaminants: aqueous phase		No
	Migration of contaminants from site: non-aqueous phase	Controlled groundwater	No
	Migration of contaminants from site: aqueous phase		No
	Migration of Contaminants: non-aqueous phase	Surface Waters	No
	Migration of contaminants: aqueous phase		No

APPENDIX C

Remediation Options

Remediation Options Matrix

Remediation Options Descriptions

Remediation Option Applicability Matrix: Organic Substances

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

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



CLIENT: Skyline Aero Ltd
PROJECT No: P25-399rms
PROJECT TITLE: Oxleaze Business Park, Greenhill, Royal Wootton Bassett, SN4 8EH

Remediation Option Applicability Matrix: Inorganic Substances

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

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

REMEDIATION OPTIONS DESCRIPTIONS

Excavation and Disposal

Excavation and disposal of impacted soils is the most basic of remedial techniques, but often most effective. Contaminated soils and any associated infrastructure i.e., buried pipework and impacted materials are removed either in their entirety or to an acceptable depth to allow the inclusion of an inert capping layer with an 'alert' geomembrane marker at the base if not all impacted material is removed.

Contaminated materials are generally disposed of to landfill void, material recovery or soil treatment facilities. Some materials may be physically suitable for reuse on site, such as impacted sub-base, which can be reused under new roadways and permanent hardstanding as capped by the hard surfacing.

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

This is considered to be a practical, cost effective and environmental-friendly approach for the remediation of the shallow impacted Made Ground soils in open soft landscaped areas.

Soil Stabilisation

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

This is not deemed viable at the site due to the presence of soft landscaped areas on site.

Solidification

Solidification is a remediation technology that involves the addition of reagents to a contaminated material to impart physical and dimensional stability to contain contaminants in a solid product and reduce access by external agents (e.g., air and rainfall). This technology is not viable within the

proposed residential garden areas or within or close to the residential dwelling building footprint due to potential drainage issues.

This method is not viable on the site due to the presence of soft landscaped areas in which the drainage would be adversely impacted.

Chemical Oxidation

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

For in-situ treatment, this method requires permeable soils to allow the circulation of treatment chemicals which are generally in an aqueous form.

Given the site geology and nature of the contamination present at the site, this method is not considered to be viable.

Monitored Natural Attenuation

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

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

Given the site geology and nature of the heavy metal contamination present at the site this method is not deemed viable at the site due to arsenic not readily attenuating/degrading over time, therefore concentrations are unlikely to significantly decrease over time.

APPENDIX D

Remediation Plans

Remediation Plan

Schematic Section of Ideal Cover System

Remediation Plan

Oxleaze Business Park,
Greenhill,
Royal Wootton Bassett,
SN4 8EH

Skyline Aero Ltd

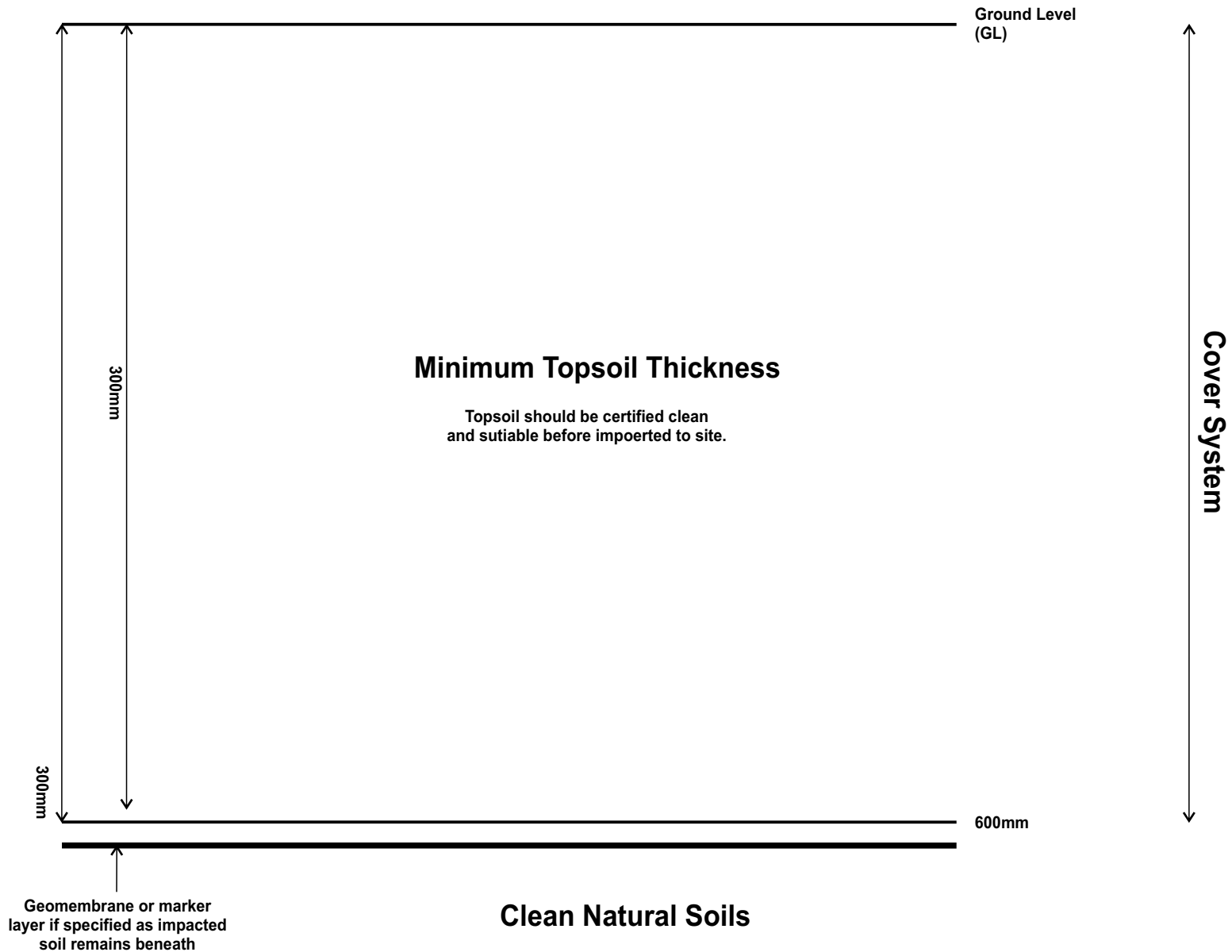
March 2026



- Site Boundary
- ⊕ Percussion Liner Sampler Boreholes
- ⊕ Percussion Liner Sampling Borehole (Install)
- ▨ Remediation Area

Not to scale.
All positions are approximate.

**Ideal Cover System
Schematic Cross Sections**



APPENDIX E

Guideline Thresholds

PGE In-House GACs

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

DETERMINAND		RESIDENTIAL (mg/kg)		COMMERCIAL (mg/kg)
Chemical	GAC Sources and units	With Home Grown produce	Without Home Grown produce	
Asbestos Screen & ID*	-	Detected	Detected	Detected
Cyanide - Total	SNIFFER	53.25	53.25	53.25
Cyanide - Free	SNIFFER	53.25	53.25	53.25
Loss on Ignition @ 450°C	-	-	-	-
Sulphate (as SO ₄) - Total	BRE****	2400	2400	2400
Sulphide	ICRCL	2500	2500	2500
Sulphur - Total	ICRCL	2500	2500	2500
Phenol (Total Monohydric)	CLEA	420	420	3200
pH	ICRCL	<5,>12	<5,>12	-
Metals and Metalloids (CLEA Metals)				
Arsenic	LQM S4UL	37	40	640
Beryllium	LQM S4UL	1.7	1.7	12
Cadmium	LQM S4UL	11	85	190
Chromium III	LQM S4UL	910	910	8600
Lead	DEFRA C4SL	190	310	2300
Mercury (Total)	LQM S4UL (Inorganic)	40	56	1100
Selenium	LQM S4UL	250	430	12000
Copper (phytotoxicity)	LQM S4UL	2400 (111)	7100	68000
Nickel	LQM S4UL	180	180	980
Zinc (phytotoxicity)	LQM S4UL	3700 (330)	40000	730000
Vanadium	LQM S4UL	410	1200	9000
Boron - Water Soluble	LQM S4UL	290	11000	240000
Total Petroleum Hydrocarbons**				
TPH (EC6-EC10) - PRO	LQM S4UL (2.5% SOM)	65	100	4800
TPH (EC10-EC21) - DRO	LQM S4UL (2.5% SOM)	300	600	23000
TPH (EC21-EC40) - Min. Oil	LQM S4UL (2.5% SOM)	1500	1900	28000
Total TPH (EC10-EC40)	LQM S4UL (2.5% SOM)	600	900	23000
Polycyclic Aromatic Hydrocarbons***				
Benzo(a)anthracene	LQM S4UL (2.5% SOM)	11	14	170
Benzo(b)fluoranthene	LQM S4UL (2.5% SOM)	3.3	4	44
Naphthalene	LQM S4UL (2.5% SOM)	5.6	5.6	460
Flourene	LQM S4UL (2.5% SOM)	400	3800	68000
Benzo[a]pyrene	LQM S4UL (2.5% SOM)	2.7	3.2	35
Dibenzo[a,h]anthracene	LQM S4UL (2.5% SOM)	0.28	0.32	3.6

Notes

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

* Guidance level set at any fibre identification.

** TPH 3 band is employed as a screening tool to instigate detailed speciated analysis to the TPHCWG methodology. Based on mean of fractions included
*** Testing based on USEPA Priority 16 compounds. GACs for four compounds and total PAH with published GACs only, used as a screening tool.

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



CLIENT:
PROJECT No:
PROJECT TITLE:

Skyline Aero Ltd
P25-399
Oxleaze Business Park, Greenhill, Royal
Wootton Bassett, SN4 8EH

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

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

Notes

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