

Remediation Verification Report

Home Bargains, Newport

February 2025



FAIRHURST

CONTROL SHEET

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REPORT TITLE: Remediation Verification Report
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Contents

1.0	Introduction.....	3
2.0	Remediation Strategy Summary	5
3.0	Completed Remedial and Verification Works – Specific Requirements	3
4.0	Completed Remedial and Verification Works – General Requirements	6
5.0	Conclusions.....	8

Figures

Figure 1	Site Location Plan
Figure 2	Proposed Development Plan

Appendices

Appendix A	Clean Cover System Evidences
Appendix B	Drinking Water Supply Pipes Evidences
Appendix C	Ground Gas Protection Evidences
Appendix D	Unexpected Contamination Statement
Appendix E	Imported Material Evidences
Appendix F	Waste Evidences

1.0 Introduction

Fairhurst were appointed by TJ Morris Ltd., (the Client) to prepare a Remediation Verification Report for the proposed Home Bargains Newport site, located at West Retail Park, Docks Way, Newport, NP20 2NS. A Site Location Plan is shown in Figure 1, Appendix A.

This Remediation Verification Report is based on a Ground Investigation Report and Remediation Strategy and Verification Plan produced by Fairhurst. The report references are presented below and should be read in conjunction with this report.

- Fairhurst, Ground Investigation Report (Ref. 151157/R2.01, dated April 2024).
- Fairhurst, Remediation Strategy and Verification Plan (Ref. 151157/R3.0, dated March 2024).

A supplemental report has been produced by others to undertake a ground gas risk assessment (Ref. 9774-GGA-001, dated November 2024). The assessment considered the gas generation potential of the Tidal Flat Deposits in accordance with BS 8485. The report concluded that Characteristic Situation 2 is appropriate for the site.

1.1 Objectives

This report aims to provide the required verification evidences as set out in the Remediation Strategy and Verification Plan, in support of an application to discharge the associated planning condition summarised below.

1.2 Planning Condition Details

The Planning Application (Ref. 23/0091) was submitted to Newport City Council and granted in October 2023 with Planning Conditions, including the pre-occupation Planning Condition 3 which states:

a) An appropriate Desk-Study of the site has been carried out, to include a conceptual model and a preliminary risk assessment, and the results of that study have been submitted to and approved in writing by the Local Planning Authority.

b) If potential contamination is identified then an appropriate intrusive site investigation shall be undertaken and a Site Investigation Report to (BS10175/2011), containing the results of any intrusive investigation, shall be submitted and approved in writing by the Local Planning Authority.

c) Unless otherwise agreed in writing by the Local Planning Authority as unnecessary, a Remediation Strategy, including Method statement and full Risk Assessment shall be submitted to and approved in writing by the Local Planning Authority.

No part of the development hereby permitted shall be occupied until:

d) Following remediation a Completion/Verification Report, confirming the remediation has being carried out in accordance with the approved details, shall be submitted to, and approved in writing by, the Local Planning Authority.

e) Any additional or unforeseen contamination encountered during the development shall be notified to the Local Planning Authority as soon as is practicable. Suitable revision of the remediation strategy shall be submitted to and approved in writing by the Local Planning Authority and the revised strategy shall be fully implemented prior to further works continuing.

This Remediation Verification Report shall be submitted to Newport City Council for the discharge of Planning Condition 3, along with the Ground Investigation Report and Remediation Strategy and Verification Plan outlined in Section 1.0.

1.3 Limitations

This report is for the private and confidential use of the Client for whom the report is undertaken and should not be reproduced in whole or in part, or relied upon by third parties for any use whatsoever. Fairhurst accepts no duty or responsibility (including negligence) to any party other than the stated Client(s) and disclaims all liability of any nature whatsoever to any such party in respect of this report.

This report presents records provided by contractors who worked on the scheme, Fairhurst assumes that information provided is correct and a true representation of the works conducted. Fairhurst were not on site during the works.

2.0 Remediation Strategy Summary

2.1 Pollutant Linkages Summary

The Remediation Strategy and Verification Plan outlines the identified pollutant linkages based on the findings of the ground investigation reports, and a summary is provided in Table 1.

Table 1 – Summary of identified S-P-R linkages

Pollutant Linkage ID	Source	Description of Risk
1	Asbestos and ACM within the Made Ground.	Potential risks to human health through inhalation of soils with asbestos fibres.
2	VOCs, SVOCs, MTBE and Total Phenols within soils.	Potential risks to human health via permeation into potable water pipes.
3 ⁽¹⁾	Carbon dioxide and methane associated with the Tidal Flat Deposits.	Potential risks to human health through the inhalation of accumulated ground gases.
Notes: (1) In accordance with the ground gas risk assessment (Ref. 9774-GGA-001, dated November 2024).		

In addition to the above, the remediation strategy also sets out general requirements relating to materials management, asbestos risk, unexpected contamination, the importation of materials and waste.

3.0 Completed Remedial and Verification Works – Specific Requirements

3.1 Pollutant Linkage 1 – Risks to Construction Workers and Future Commercial End Users from Asbestos

Remedial Requirements

Laboratory analysis undertaken has identified asbestos fibres and bulk ACM in a single sample within Made Ground. There is a risk that groundworks may disturb contaminated soils thus coming into contact with construction workers, and that site end users may come into contact within areas of soft landscaping. Minor soft landscaping is proposed at the southern and eastern perimeter of the site where a Clean Cover System (CCS) is required.

The remedial requirements associated with the risk to construction workers is addressed within Section 4.1.

A CCS is considered the most appropriate method of mitigating the identified risk to future site users. The implementation of a CCS will provide clean, safe soils for end users and prevent exposure to any potential residual contamination at depth, as well as providing a suitable growing medium for flora. Based on the proposed development and the ground investigation, the following are required in all soft landscaped areas:

- High-visibility orange marker barrier.
- CCS-450mm thick.

Verification Requirements

Laboratory testing of all imported materials to be used in the CCS should be undertaken in accordance with the frequencies and Site Acceptance Criteria detailed within the Remediation Strategy and Verification Plan.

Validation pits are to be undertaken by an independent party to conduct a visual inspection of the material utilised within the CCS to confirm the absence of visual/olfactory evidence of contamination, the depth of the CCS and the presence of the high-visibility marker barrier. Other verification evidences include:

- Delivery records and product specification information of high-visibility marker barrier.
- Confirmation that the CCS material is free from visual / olfactory evidence of contamination (including presence of ACMs).
- Delivery notes for all materials imported detailing the source, volume and carrier of materials, and provided for inclusion within the site Verification Report.
- Details and results of testing in compliance with this remediation strategy.
- Photographic evidence displaying the placement on both the high-visibility marker barrier and minimum required depth of CCS.

Verification Evidences Presented

A Product Data Sheet for the high-visibility marker has been provided. The product is an 'Alert™ Woven Polypropylene Geotextile and Contamination Indicator' designed to indicate the break between potentially contaminated ground and imported clean fill. Supporting photographs have also been provided to show that the product has been imported to the site.

3 No. delivery notes suggest that 40 tonnes of topsoil and 20 tonnes of sub-soil has been sourced from Freeland Horticulture Limited and imported to the site by Aggregate Haulage.

Pre-import laboratory testing has been undertaken on the topsoil to determine the suitability of the topsoil for general landscaping purposes. The topsoil was described as a dark brown, slightly moist and friable with well-developed, fine to medium granular structure. The material contained a low fraction of

small stones and no deleterious materials or unusual odours suggesting that the material is free from visual and/or olfactory evidence of contamination.

It is noted that a full suite of pre-import testing has not been provided for the sub-soil material. Alternatively, a general constituent report has been provided indicating that the material is free of visual and/or olfactory evidence of contamination.

The Principal Contractor has provided photographs of the installed high visibility marker and a statement that the correct thickness of landscaping materials has been installed >450mm.

The evidences are presented in Appendix A.

3.2 Pollutant Linkage 2 – Risks to Potable Water Supply Pipes

Remedial Requirements

The presence of VOCs, SVOCs, MTBE and Total Phenols identified in shallow soils across the entire extent of the site, and that potable water supply pipes are likely to be laid in contact with Made Ground, it is recommended that barrier pipe is installed as this will protect against any contamination present.

Verification Requirements

- Copies of the delivery and installation records of water supply pipes, and water supplier approvals of the chosen pipe material.

Verification Evidences Presented

A quote and corresponding invoice has been provided by Robert Price (Builders' Merchants) LTD to show that a 'Radius Puriton Barrier Pipe' has been imported to the site. Photographic evidence has been provided to show that barrier pipe has been installed.

Correspondence with the local water supplier stated that the 'Water Regulations Team have confirmed that they are satisfied with the internal arrangement and that it meets the required specifications.'

The evidences are presented in Appendix B.

3.3 Pollutant Linkage 3 – Potential risks to human health through the inhalation of accumulated ground gases.

Remedial Requirements

The ground gas risk assessment (Ref. 9774-GGA-001, dated November 2024) concludes that the appropriate classification is Characteristic Situation 2 (CS2) (see Appendix C).

The Proposed Development Plan (see Figure 2) suggest that the building is characterised as a Type D, and for a CS2 classification 1.5 gas protection points are required. The measures to achieve the score is presented in Table 2.

Table 2 – Summary of Gas Protection

Gas Protection Measure	Points	Open Shop Floor Area (Type D Building)
Installation of a gas resistant membrane across the entire extent of the proposed building, with all joints and penetrations sealed and appropriate installation validation.	2	✓
Required Points		1.5
Points achieved by measures		2.0

The site is within a lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level), therefore no radon protective measures are necessary.

Verification Requirements

The verification plan for this pollutant linkage required provision of detailed drawings indicating where and how the ground gas membrane would be fitted, specification details of the membrane, and post-installation verification of the gas membrane to be carried out by a suitably qualified third party.

Verification Evidences Presented

As shown on the Extent of Gas Membrane drawing (Ref. 151157-GEO-SK001) the gas membrane was proposed to extend across the entire building footprint at the site.

According to the Ground Gas Protection Verification Report (Referred to herein as the GGPVR, Ref. 9774-GGVR-001, dated February 2025) two types of gas membranes have been installed beneath the building footprint, namely the Toughsheet and the Radbar Radon 400.

The GGPVR presents the available verification evidences of membrane installation provided by the installation contractor.

It was noted in the GGPVR that the membrane was installed in accordance with BS8485:2015 and CIRIA C735, however both these guidance documents require verification to be conducted by an independent party. The GGPVR presents verification conducted by the contractor.

Whilst the GGPVR does not fully comply with CIRIA C735, it does present evidence that a membrane has been installed.

It is recommended that on completion, a surface emissions survey is conducted internally during a low pressure event, especially focused on penetrations of the membrane as an additional line of evidence that the membrane is providing adequate gas protection.

The evidences are presented in Appendix C.

4.0 Completed Remedial and Verification Works – General Requirements

4.1 Asbestos Risk Assessments and Method Statements (RAMS)

Remedial Requirements

RAMS are to be provided specifically addressing the potential for ACM contamination within the Made Ground and how risks to site personnel and offsite human health receptors will be mitigated during the construction works.

Any ACMs visually identified onsite shall be handpicked and disposed of. Records of volumes removed from site, verification sampling and confirmation of suitable waste barrier and disposal routes will be provided.

Verification Requirements

Asbestos RAMS, evidence of compliance (e.g., site photographs, site diaries, evidence of tool box talks, evidence of watching brief), ACM removal documentation (e.g., volume of material removed, chemical laboratory results of verification samples, waste carrier details and licence, and receiving facility information).

Verification Evidences Presented

A statement has been provided to show that no unexpected contamination has been identified at the site.

The evidence is presented in Appendix D.

4.2 Unexpected Contamination

Remedial Requirements

If any unexpected contamination is encountered, works in the area / affected works should cease and an appropriately qualified Geo- Environmental Engineer and Local Planning Authority should be consulted.

Site inspections, further testing and risk assessment may be required to determine if the potential risks associated with the unexpected contamination pose an immediate, and / or long term risk, and mitigation measures should be designed accordingly in consultation with the project Geo-environmental Engineer.

Verification Requirements

In the event that no unexpected contamination is encountered, a brief statement is required from the Principal Contractor advising that no unexpected contamination was encountered during the works.

However, in the event that unexpected contamination is encountered, information on the occurrence of unexpected contamination and remedial methods undertaken is required.

Verification Evidences Presented

A statement has been provided to show that no unexpected contamination has been identified at the site.

The evidence is presented in Appendix D.

4.3 Imported Materials

Remedial Requirements

Material was required to be imported to achieve development platform at the site.

Verification Requirements

Delivery notes for all materials imported should be collated detailing the source, volume and carrier of materials, and provided for inclusion within the site Verification Report.

Verification Evidences Presented

The Principal Contractor has provided an Imported Stone Summary indicating that 6F2, 10 – 20mm bedding, MOT and 40mm single materials have been imported to the site. The volumes of the materials have also been provided.

This document has been supplemented with 4 No. delivery notes showing that the carrier of the materials was Newport Land Reclamation Ltd., and imported to the Newport site.

The evidence is presented in Appendix E.

4.4 Waste

Remedial Requirements

Where materials are geotechnically or geo-environmentally unsuitable for reuse on-site, they will be either sent to a waste recovery facility for recycling or a suitably licensed waste disposal facility.

Verification Requirements

Documentation of waste disposal records including volumes removed, type of waste, details of waste carrier / licence and details of the receiving site.

Verification Evidences Presented

The Principal Contractor has provided an Export Summary (see Appendix F) indicating that inert / non-hazardous soil has been exported from the site, including volumes.

This document has been supplemented with a Waste Transfer Note (see Appendix F) showing that the carrier of the materials was Newport Land Reclamation Ltd., and exported to a waste disposal facility.

The evidence is presented in Appendix F.

4.5 Summary of Works

Table 3 - Post Remediation Pollutant Linkages Summary

Pollutant Linkage ID	Source	Pathway	Receptors	Remedial Action	Post Remediation Status
1	Asbestos fibres and ACMs within the Made Ground	Dermal contact, inhalation and ingestion	Site end user	Clean Cover System	The pollutant linkage is disrupted based on the actions taken.
2	VOCs, SVOCs, MTBE and Total Phenols within soils.	Degradation of drinking water supply pipes and resultant contamination of drinking water supply to site	Site End users	Installation of barrier pipes	The pollutant linkage is disrupted based on the actions taken.
3	Carbon dioxide and methane associated within the Tidal Flat Deposits.	Potential risks to human health through the inhalation of accumulated ground gases.	Site End users	Installation of ground gas membrane.	The pollutant linkage is disrupted based on the actions taken.

In summary, it is considered that remediation mitigation of the identified potentially complete pollutant linkages have been achieved, and verification evidences in accordance with the approved Verification Plan have been provided.

5.0 Conclusions

The purpose of this Remediation Verification report was to assess whether the required remedial actions have been undertaken in response to the Remediation Strategy and Verification Plan. The Principal Contractor has provided evidences suggesting that the previously identified pollutant linkages has generally been addressed, with the following supporting evidences to be included within this report:

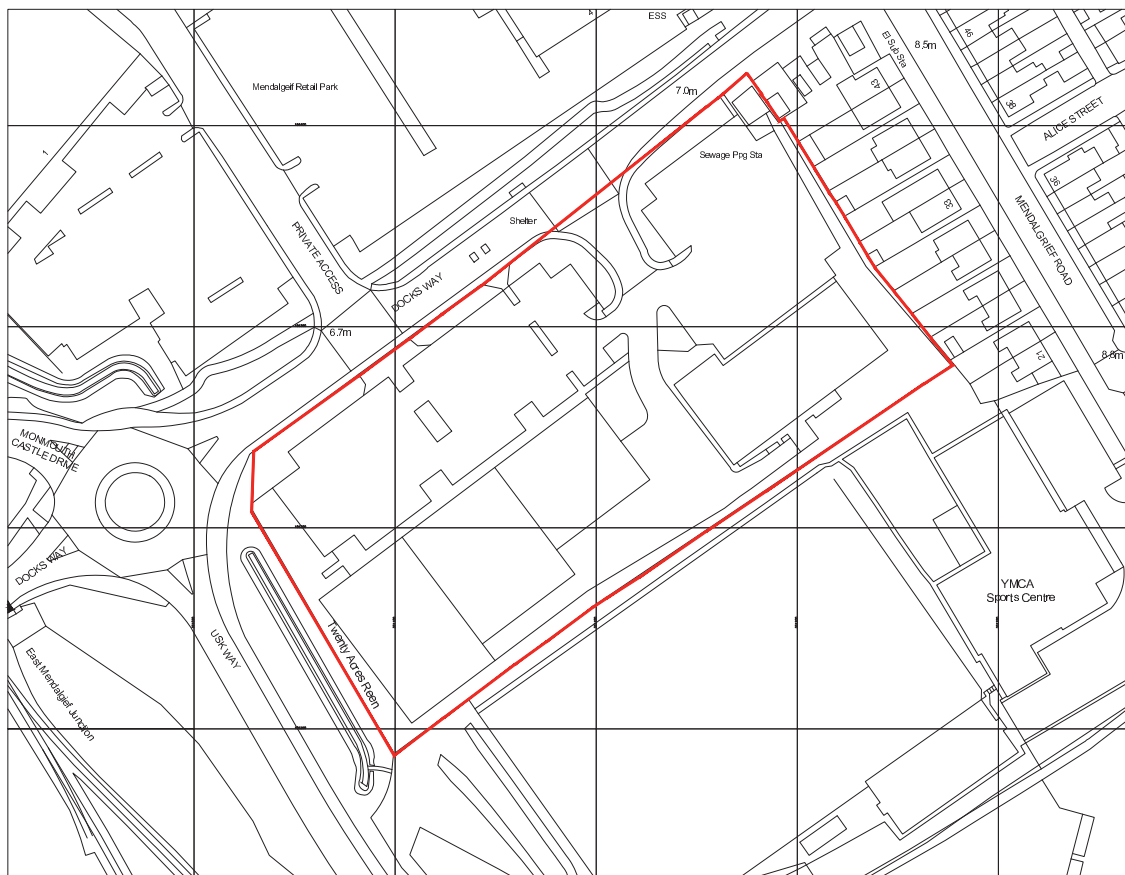
- Undertake a surface emissions survey to show that the membrane is providing adequate gas protection.

It is considered that the requirements for Planning Condition 3 have been achieved and once the evidences outstanding evidences have been achieved the planning condition can be discharged in full.

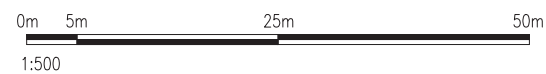
This validation report should be issued to Newport City Council for review and approval.

Figure 1

Site Location Plan



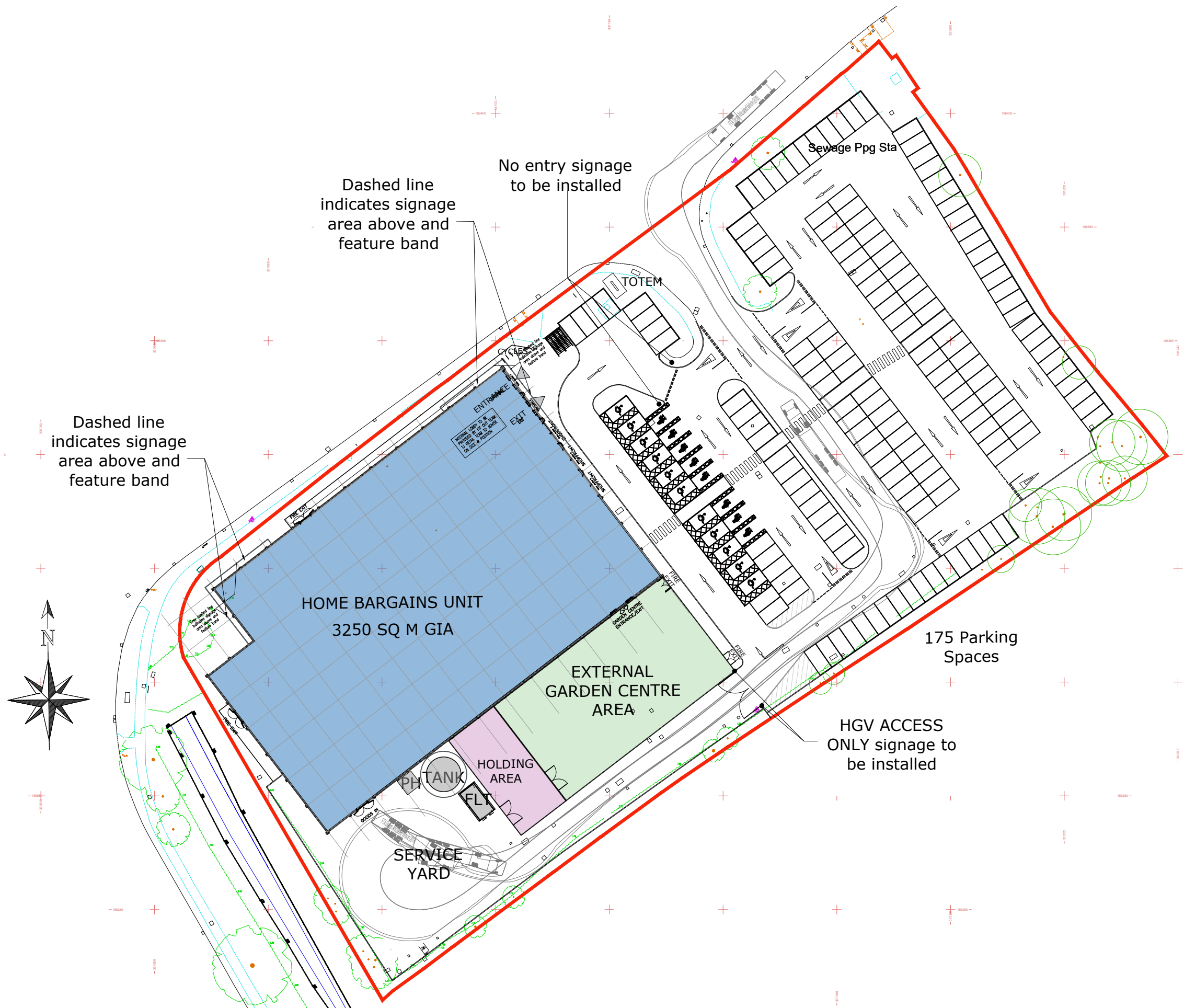
Ordnance Survey, (c) Crown Copyright 2021. All rights reserved. Licence number 100022432
RED LINE = OWNERSHIP BOUNDARY



REV.	DATE	AMENDMENT
 WPL Consulting LLP 1 Airport West · Lancaster Way · Leeds · LS19 7ZA Tel: 0113 202 9444 Fax: 0113 202 9333 E-mail: mail@wplconsulting.co.uk		
PROJECT TITLE West Retail Park Docks Way Newport NP20 2NS For Home Bargains		
DRAWING TITLE Site Location Plan		
PROJECT No:	DRAWING No:	REVISION:
SCALE:	DATE:	DRAWN BY:
1:1250@A3	05.05.22	TR
CHECKED BY:		DATE:

Figure 2

Proposed Development Plan



A REV.	05.05.22 DATE	GIA Sq M added, holding area and garden centre areas removed AMENDMENT
WPL WPL Consulting LLP 1 Airport West Lancaster Way Leeds LS19 7ZA Tel: 0113 202 9444 Fax: 0113 202 9333 E-mail: mail@wplconsulting.co.uk		
PROJECT TITLE Newport West Retail Park		
DRAWING TITLE Sketch Proposal Proposed Site Plan		
PROJECT No: 8658	DRAWING No: PROP01	REVISION: A
SCALE: 1:500 @ A2	DATE: 22.04.22	DRAWN BY: TR
CHECKED BY:		DATE:

Appendix A

Clean Cover System Evidences

Alert™

Alert™ Woven Polypropylene Geotextile and Contamination Indicator

Alert™ was developed by Geosynthetics Limited to provide a cost effective and practical way to indicate the break between potentially contaminated ground and imported or site won clean fill. The large roll size combined with industrial leading technical specifications and strength have lead to the vivid orange **Alert™** woven geotextile being the product of choice in the UK.



PROPERTY	TEST METHOD	Value
Colour		Orange
Tensile strength - warp	BS EN ISO 10319	18 kN/m
Tensile strength - weft	BS EN ISO 10319	12 kN/m
Elongation at break - warp	BS EN ISO 10319	28 %
Elongation at break - weft	BS EN ISO 10319	16 %
CBR puncture resistance	BS EN ISO 102236	1840 N
Water flow normal to the plane	BS 6906 Part 3	32 l/m ² /sec
Pore size 90% finer than	BS 6906 Part 2	230 microns
Effects of UV light		The polypropylene used contains a UV inhibitor
Fabric thickness under 2 kN/m ²		0.39 mm
Standard roll width		4.5 m
Standard roll length		100 m
Applications		Brownfield sites Developed land Warning indicator
CE Reference		0338-CPR-5058

This information corresponds to our current knowledge on the subject. It is offered solely to provide possible suggestions for your own experimentation. It is not intended, however, to substitute for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purposes. This information may be subject to revision as new knowledge becomes available. Since we cannot anticipate all variations in actual end use conditions, Geosynthetics Limited makes no warranties and assumes no liabilities in connection with this information. Nothing in this publication is to be considered as a licence to operate under or a recommendation to infringe any patent right.

DR: 04/V2/29.10.15

**UK
CA**
**Geosynthetics**

Pollutant Linkage 1 - High Visibility Marker



Photo 1 – High visibility marker at the perimeter of the site.



Photo 2 – High visibility marker at the perimeter of the site.

Ignore Delete Reply Reply All Forward More Quick Steps: 159429 47 Che... To Manager Done Create New Move OneNote Actions Mark Unread Categorize Tags Follow Up Translate Find Related Select Zoom Send to OneNote Viva Insights

Richard Sanders <Richard@braithwaitegroup.com> Mircea Dobrescu; Josh Braithwaite Tue 14:48
Fw: Photos Of no dig and topsoil
You replied to this message on 11/02/2025 14:51.

Caution! This message has come from an external source. Do not click on any links unless you are expecting this message.

Hi Mircea

Please see photos below, the Landscapers are being very thorough with the installation of the no dig barrier and the depth of the subsoil and topsoil.

I have taken photos of the tree pits as well to show before the install in the pits and after. The topsoil is at the average depth of 200mm ant the subsoil around 400mm. The no dig also goes down between the tree pits before topsoiling. I have chosen random areas around site to take the photos.

Please let me know if you have any questions or need further information.



Rosedale Nursery
College Road
Hextable
Kent
BR8 7LT

Tel: 01322 619161
Fax: 01322 619135

Email: enquiries@freelandhorticulture.co.uk

Customer/Delivery Address

ORDER NOTE

Afan Landscapes

Delivery To

Home Bargains opposite Smiths toy store.
West Retail Park
Dockway
NP20 2NZ

Customer Order No

DAMIAN EMAIL

Delivery Ticket No

253690

Vehicle Registration

YK19 YTX

Driver

Anthony

Special Instructions

Delivery Date & Time Required

24/01/2025

QTY Unit Description

20.00 Tonne Tn Subsoil - Forest Wood

GROSS: - 32000KS.

TARE: - 12240KS.

NET: - 19760KS

Weighbridge Signature

GC

Hauliers Signature

Anthony

Haulage Company Aggregate Express

Received the above in good order and condition

Signed _____

Print Name _____

Customer ordering Vehicle off the Public Road do
so entirely at their Own risk and will be liable
for any damages incurred



Rosedale Nursery
College Road
Hextable
Kent
BR8 7LT

Tel: 01322 619161
Fax: 01322 619135
Email: enquiries@freelandhorticulture.co.uk

Customer/Delivery Address

ORDER NOTE

Email: enquiries@freelandhorticulture.co.uk

Afan Landscapes
Delivery To
Home Bargains opposite Smiths toy store.
West Retail Park
Dockway
NP20 2NZ

Customer Order No **DAMIAN EMAIL**

Delivery Ticket No **253691**

Vehicle Registration **YK19 YXX**

Driver **Anthony**

Special Instructions

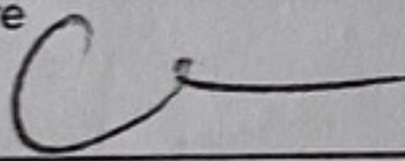
Delivery Date & Time Required

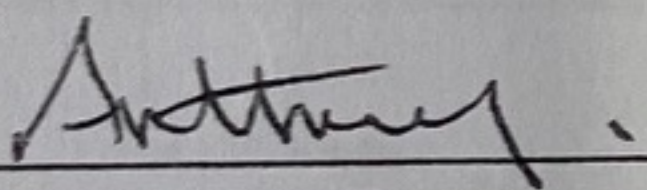
24/01/2025

QTY Unit Description

20.00 Tonne Tn Topsoil - Forest wood

GROSS: - 32000KGS
TARE: - 12240KGS
NET: - 19760KGS

Weighbridge Signature 

Hauliers Signature 

Haulage Company **Aggregate Express**

Received the above in good order and condition

Signed

Print Name

Customer ordering Vehicle off the Public Road do so entirely at their Own risk and will be liable for any damages incurred



Rosedale Nursery
College Road
Hextable
Kent
BR8 7LT

Tel: 01322 619161
Fax: 01322 619135

Email: enquiries@freelandhorticulture.co.uk

Customer/Delivery Address

Afan Landscapes

Delivery To

Home Bargains opposite Smiths toy store.
West Retail Park
Dockway
NP20 2NZ

ORDER NOTE

Customer Order No

DAMIAN EMAIL

Delivery Ticket No

254110

Vehicle Registration

CE21 FVG

Driver

ADAM

Special Instructions

Delivery Date & Time Required

31/01/2025

QTY	Unit	Description
20.00	Tonne	Tn Topsoil - Forest wood

GROSS :- 32000KGS

TARE :- 12080KGS

NET :- 19920KGS

Weighbridge Signature

Hauliers Signature

Haulage Company **Aggregate Express**

Received the above in good order and condition

Signed

Print Name

VS

Customer ordering Vehicle off the Public Road do
so entirely at their Own risk and will be liable
for any damages incurred



Freeland Horticulture Ltd
Rosedale Nursery
College Road
Hextable
Kent
BR8 7LT

Attention: Philippa Lambourne

Our Ref: 1340-SA

15 November 2024

Dear Philippa

Topsoil Analysis Report: Forest Wood, Cardiff Topsoil – November 2024

We have completed the analysis of the topsoil sample recently taken from the above site and it has been forwarded to an approved laboratory for analysis and have the pleasure of reporting our findings. The purpose of the analysis was to determine the suitability of the topsoil for general landscaping purposes and its compliance with the current British Standard for topsoil (BS3882).

SOIL SAMPLING & EXAMINATION

At the time of our sampling visit the topsoil was stored in a stockpile. A series of 10 hand augered trial holes were constructed across the stockpile for the purpose of soil examination and sample collection. As the soil examination confirmed a consistent topsoil composition, the ten samples were combined together to form one composite sample for analysis purposes. The soil was described as dark brown, slightly moist and friable with a well-developed, fine to medium granular structure. The soil contained a low fraction of small stones and no deleterious materials (eg. building waste materials, glass, roots or rhizomes of pernicious weeds) or unusual odours (eg. hydrocarbons) were recorded.

LABORATORY ANALYSIS

The topsoil sample was submitted to a UKAS and MCERTS accredited laboratory for routine physical and chemical parameters to confirm the composition and fertility of the soil. The following parameters were determined:

- ⊕ pH & electrical conductivity values;
- ⊕ major plant nutrients (N, P, K, Mg) & organic matter content;
- ⊕ particle size distribution and stone content;
- ⊕ heavy metals & potentially toxic elements (As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn, B);
- ⊕ sulphate, sulphur, sulphide;
- ⊕ total cyanide and total (mono) phenols;
- ⊕ speciated PAHs (US EPA16)
- ⊕ banded aromatic and aliphatic petroleum hydrocarbons (C₅-C₃₅).
- ⊕ Asbestos

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below.

Phone: 01322 619161

Freeland horticulture Ltd. Registered in England: Rosedale Nursery, College Road, Hextable, Kent BR8 7LT
Company Registration No: 04015968

COMMENTS

pH & Electrical Conductivity (salinity) Values

The sample was alkaline in nature (pH 8.5) with a pH value that would be considered suitable for general landscaping purposes.

The electrical conductivity (salinity) value using the soil:water extract was (936 μ S/cm) indicating that soluble salts are not present at levels that would be harmful to plants.

The electrical conductivity values by CaSO₄ extract (BS3882 requirement) fell below the maximum specified value (3300 μ S/cm) given in BS3882:2015.

Organic Matter & Nutrient Status

The sample was rich in organic matter and all major plant nutrients. No further additions of compost or fertiliser are required, or indeed recommended, for at least the first growing season.

The C:N ratio of the sample was acceptable for general landscape purposes.

Particle Size Distribution & Stone Content

The sample contained 74% sand and fell into the sandy loam texture class. This particle size distribution is considered suitable for a broad range of landscape applications, including tree and shrub planting, turfing and seeding.

The sample was Virtually free from stones of 50 mm and upwards in diameter and only contained a slight fraction of smaller stones (7.3%). As such, stones will not restrict the use of the soil for landscaping purposes.

Potential Contaminants

We are not aware of any specified contaminant levels set for the proposed end-use of this topsoil. This includes human health, environmental protection and metals considered toxic to plants. In the absence of any site-specific assessment criteria, the concentrations that affect human health have been compared with the 'residential with homegrown produce' land use in the Suitable For Use Levels presented in 'The LQM/CIEH S4UIs' for Human Health Risk Assessment (2015) and DEFRA SP1010: 'Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document (2014)'.
Freeland 0322609161

Of the potential contaminants determined, none was found at levels that would exceed their respective guideline values.

CONCLUSION

The purpose of the analysis was to determine the suitability of the topsoil for general landscaping purposes. From the soil examination and laboratory analysis, the soil is described as an alkaline, non-saline, sandy loam. The organic matter and nutrient levels are acceptable, and no significant contamination was found with respect to the parameters determined. This soil would adhere to the current BS3882 specification for 'multipurpose grade'.

To conclude, based on our findings, the topsoil would be considered well-suited to general landscaping purposes provided the physical condition of the soil is maintained.

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if you have any queries or comments.

George Longmuir MSc Soil Sci. M.I Soil Sci.

Client	Freeland Horticulture Ltd
Job Name	Topsoil Analysis
Site	Forest Wood, Cardiff
Month/Year	November 24
Our Ref	1340-SA
Date	15 November 2024

Composite sample

pH Value & Salinity

pH value (1:2.5 soil/water ext)	units
Electrical Conductivity (1:2.5 soil/water ext)	µS/cm
Electrical Conductivity (1:2.5 soil/CaSO4 ext)	µS/cm

8.5
936
2892

Organic Matter & Nutrient Status

Organic Matter (LOI)	%
Organic Carbon (Derived)	%
Total Nitrogen	%
Carbon:Nitrogen Ratio	:1
Available Phosphorus	mg/l
Available Potassium	mg/l
Available Magnesium	mg/l

6.3
3.7
0.273
13.4
66.8
1132
223

Particle Size Analysis & Stones

Clay (<0.002mm)	%
Silt (0.063-0.002mm)	%
Sand (2.0-0.063mm)	%
Texture Class	UK Class

10
16
74
SandyLoam

Stones 2-20mm	% by DW
Stones 20-50mm	% by DW
Stones >50mm	% by DW

7.8
8.4
0.0

Potential Contaminants

Total Arsenic (As)	mg/kg	10.3
Total Cadmium (Cd)	mg/kg	0.23
Total Chromium (Cr)	mg/kg	45.2
Hexavalent Chromium (CR ^{VI})	mg/kg	0.2
Total Copper (Cu)	mg/kg	15.6
Total Lead (Pb)	mg/kg	19.4
Total Mercury (Hg)	mg/kg	<0.2
Total Nickel (Ni)	mg/kg	35.2
Total Selenium (Se)	mg/kg	0.15
Total Zinc (Zn)	mg/kg	95.2
Total Beryllium (Be)	mg/kg	<1
Total Barium (Ba)	mg/kg	60.7
Total Vanadium (V)	mg/kg	14.6
Hot Water Soluble Boron (B)	mg/kg	1.2
Total Cyanide (CN)	mg/kg	<1
Elemental Sulphur (S)	mg/kg	<5
Easily Liberated Sulphide (S ₂)	mg/kg	<1
Water Soluble Sulphate (SO ₄ ²⁻)	mg/l	149
Total Phenols Index	mg/kg	<1
Asbestos Screen	-	N.D.

Chain of Custody requires Freeland Ticket: 01322 619161

Client	Freeland Horticulture Ltd
Job Name	Topsoil Analysis
Site	Forest Wood, Cardiff
Month/Year	November 24
Our Ref	1340-SA
Date	15 November 2024

Polyaromatic Hydrocarbons

Naphthalene	mg/kg	0.3
Acenaphthylene	mg/kg	<0.05
Acenaphthene	mg/kg	<0.05
Fluorene	mg/kg	<0.05
Phenanthrene	mg/kg	0.4
Anthracene	mg/kg	<0.05
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo[a]anthracene	mg/kg	<0.1
Chrysene	mg/kg	0.1
Benzo[b]fluoranthene	mg/kg	<0.1
Benzo[k]fluoranthene	mg/kg	<0.1
Benzo[a]pyrene	mg/kg	<0.1
Indeno[1,2,3-cd]pyrene	mg/kg	<0.1
Dibenzo[a,h]anthracene	mg/kg	<0.1
Benzo[g,h,i]perylene	mg/kg	<0.1
Total PAHs sum US EPA 16	mg/kg	<1

Banded Petroleum Hydrocarbons

Aliphatic TPH >C ₅ -C ₆	mg/kg	<0.05
Aliphatic TPH >C ₆ -C ₈	mg/kg	0.17
Aliphatic TPH >C ₈ -C ₁₀	mg/kg	<0.05
Aliphatic TPH >C ₁₀ -C ₁₂	mg/kg	<10
Aliphatic TPH >C ₁₂ -C ₁₆	mg/kg	<10
Aliphatic TPH >C ₁₆ -C ₂₁	mg/kg	<10
Aliphatic TPH >C ₂₁ -C ₃₅	mg/kg	15.0
Aliphatic TPH >C ₃₅ -C ₄₄	mg/kg	<12

Aromatic TPH >C ₅ -C ₇	mg/kg	<0.05
Aromatic TPH >C ₇ -C ₈	mg/kg	<0.05
Aromatic TPH >C ₈ -C ₁₀	mg/kg	0.18
Aromatic TPH >C ₁₀ -C ₁₂	mg/kg	<10
Aromatic TPH >C ₁₂ -C ₁₆	mg/kg	<10
Aromatic TPH >C ₁₆ -C ₂₁	mg/kg	<10
Aromatic TPH >C ₂₁ -C ₃₅	mg/kg	58.0
Aromatic TPH >C ₃₅ -C ₄₄	mg/kg	14.0

Total Petroleum Hydrocarbons (C ₅ -C ₄₄)	mg/kg	113
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BTEX

Benzene	mg/kg	<0.02
Toluene	mg/kg	<0.2
Ethyl Benzene	mg/kg	<0.04
m- & p- Xylene	mg/kg	<0.2
o-Xylene	mg/kg	<0.1