WML CONSULTING
Civil, Structural and Geotechnical Engineers

Geo-Environmental Investigation & Assessment

For a site at

St Vincent's, Loreto College

Undertaken for

Walter Carefoot & Sons (Construction) Ltd

on behalf of

Loreto College

Report No. 10939G-WML-XX-ZZ RP-G-0005B

January 2025

WML CONSULTING
Civil, Structural and Geotechnical Engineers

Report Title:	**St Vincent's, Expansion Project** **Geo-environmental Investigation and Assessment**
Report Reference:	**10939G-WML-XX-ZZ RP-G-0005B**
Client:	**Walter Carefoot & Sons (Construction) Ltd** **on behalf of** **Loreto College**
Issue Date:	**28th January 2025**
Drafted By:	**T P Booth**
Reviewed By:	**S Seddon**
Authorised By:	**S Seddon**

This document has been prepared for the titled project (or named part thereof) and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authorization being obtained from WML Consulting. WML accepts no responsibility or liability for the consequences of the use of this document, wholly or in part, for any other purpose than that for which it was commissioned. Any persons so using or relying upon this document for such other purpose do so at their own risk.

This report was prepared for the sole use of the Client and shall not be relied upon or transferred to any other party without the express written authorisation of WML. It may contain material subject to copyright or obtained subject to license; unauthorised copying of this report will be in breach of copyright/license.

The findings and opinions provided in this document are given in good faith and are subject to the limitations imposed by employing site assessment methods and techniques, appropriate to the time of investigation and within the limitations and constraints defined within this document. The findings and opinions are relevant to the dates when the assessment was undertaken, but should not necessarily be relied upon to represent conditions at a substantially later date.

The findings and opinions conveyed in this report are based on information obtained from a variety of sources as detailed and which WML assumes to be reliable, but has not been independently confirmed. Therefore, WML cannot and does not guarantee the authenticity or reliability of third-party information it has relied upon.

Where opinions expressed in this report are based on current available guidelines and legislation, no liability can be accepted by WML for the effects of any future changes to such guidelines and legislation.

The limitations of liability of WML for the contents of this document have been agreed with the Client, as set out in the terms and conditions of offer and related contract documentation.

No reliance should be placed on any part of the executive summary until the whole of the report has been read. Other sections of the report may contain information which puts into context the findings which are summarised in the executive summary.

Revision Status / History

Rev	Date	Issue / Purpose/ Comment	Prepared	Checked	Authorised
-	28/01/2025	First Issue	TPB	SCS	SCS
A	04/02/2025	Inclusion of geotechnical laboratory testing	-	-	SCS
B	26/03/2025	Inclusion of post demolition testing	TPB	SCS	SCS

WML Consulting Ltd
Third Floor South
Metropolitan House
Station Road
Cheadle Hulme
Cheshire
SK8 7AZ

Tel: 0161 482 0600

Email:info@wmlconsulting.com
www.wmlconsulting.com

Executive Summary

Site Location	The site comprises land within the existing Loreto College campus, located on Chichester Road South, Manchester,M15 5PB.
Development Proposals	The project consists of demolition of the existing St Vincent's building and construction of a new low-rise college structure located to the west of the E&K Building. The structure is to be used as a kitchen with servery, offices and a meeting room.
Ground Conditions	Ground conditions encountered during the intrusive investigation generally comprised made ground to depths of between 1.10m and 1.50mbgl, underlain by glacial deposits to a maximum proven depth of 2.80mbgl.
Site Preparation	Site development will include the demolition of existing structures which should not proceed until an appropriate Asbestos survey of the existing building has been undertaken and any Asbestos Containing Materials (ACM) removed by an appropriately licensed contractor. Historical/existing foundations, ground floor slabs and other buried concrete/brick obstructions will need to be broken out and subject to appropriate screening and crushing, will be suitable for re-use as bulk fill beneath hard cover areas.
Foundations	The new structure could be supported on traditional spread foundations constructed within medium dense granular glacial deposits, anticipated at a depth of around 2.00mbgl. In order for total and differential settlements to be kept to tolerable limits, such foundations would need to be designed on a presumed net allowable bearing pressure of no more than 150kN/m². Alternatively, in view of the anticipated relatively light loadings imposed by the structure, consideration could be given to a thickened and reinforced raft within the made ground designed on a net allowable bearing pressure not exceeding 75kN/m² to limit total differential settlements to tolerable limits. Foundations should be suitably reinforced and constructed on a layer of selected and imported granular fill which should be compacted to a suitable engineering specification on proof-rolled ground. In cohesive strata further consideration as to the soil heave or shrinkage potential should then be undertaken in consideration of a medium volume change potential for the clay with foundations designed to appropriate depths where such effects are envisaged. Floor slabs for the new structures should be suspended unless underlain by fill which has been excavated and recompacted to an appropriate specification.
New Pavements	New road pavement design should be based on a California Bearing Ratio (CBR) value of no more than 3% in untreated made ground and natural cohesive strata.
Soakaways	Soakaways might be considered a feasible drainage option subject to detailed design.
Concrete Classification	The typical design sulphate (DS) class and "Aggressive Chemical Environment for Concrete" (ACEC) class for the site are DS-1 and AC-1 respectively.
Ground Contamination	The long-term exposure risk to human health based on chemical analyses is confirmed to be low with no specific remediation requirements. Risks to controlled waters are also considered to be low with no specific remedial actions required.
Ground Gas	No specific ground gas protection measures are required.
Waste Soils	For preliminary guidance based on the current information, it is likely that made ground, would be classified as 'Non-hazardous' with natural soils classified as 'Inert' for landfill disposal. It will be the responsibility of the waste producer to undertake further testing and classification of any waste soils for disposal to an appropriately licenced landfill in accordance with current guidelines and Duty of Care requirements.

CONTENTS

1.0 INTRODUCTION 1
Appointment 1
Proposed Development 1
Objective 1
Scope 1
2.0 SITE LOCATION AND DESCRIPTION 2
Site Location 2
Site Description 2
Topography 2
3.0 SUMMARY OF ENVIRONMENTAL AND HISTORICAL SETTING 3
Geology 3
Radon 3
Mining and Subsidence 3
Environmental Setting 3
Site History 3
Preliminary Contamination Risk Assessment 4
UXO Risk 4
4.0 SITE INVESTIGATION 5
Rationale 5
Intrusive Works 5
Geotechnical and Chemical Testing 5
5.0 GROUND CONDITIONS 6
General 6
Made Ground 6
Glacial Deposits 6
Weathered Chester Pebble Beds 6
Geotechnical Testing 7
Visual/Olfactory Evidence of Contamination 7
Groundwater 7
General 7
6.0 GEOTECHNICAL APPRAISAL 8
Site Preparation 8
Foundations 8
Floor Slabs 9
Excavations and Groundwater 9
External Pavements 9
Concrete Design 9
Drainage and Soakaways 9
7.0 GENERIC QUANTITATIVE RISK ASSESSMENT (GQRA) 10
General 10
Human Health 10
Soil Test Results 11
Discussion and Conclusions 11
8.0 GROUND GAS RISK ASSESSMENT 12
Methodology 12
Ground Gas Conceptual Model 12

Recommendations 13
9.0 OTHER POTENTIAL DEVELOPMENT CONSIDERATIONS 14
Excavated Soils 14
Imported Fill 14
Water Supply Pipes 14

APPENDICES

Appendix 01 - Drawings
Appendix 02 - Exploratory Hole Records
Appendix 03 - Geotechnical Testing Results
Appendix 04 - Chemical Analytical Results
Appendix 05- Site Wide Ground Gas Monitoring
Appendix 06 - Site Specific Assessment Criteria

1.0 INTRODUCTION

Appointment

1.1 WML Consulting has been commissioned by Walter Carefoot & Sons (Construction) Ltd on behalf of Loreto College, to undertake a Geo-environmental Investigation and Assessment of a site referred to as St Vincent's within the larger Loreto College campus.

Proposed Development

1.2 The project consists of demolition of the existing St Vincent's building and construction of a new low-rise college structure located to the west of the E&K Building. The structure is to be used as a kitchen with servery, offices and a meeting room.

1.3 External areas are anticipated to comprise hardstanding for pedestrian access and potentially localised soft landscaping.

1.4 The proposed location plan and elevations by 10architect, referenced LCVL-10A-V9-00-DR-A-9004_T1 and LCVL-10A-V2-XX-DR-A-2540_T1, is presented in Appendix 01.

Objective

1.5 The objective of the ground investigation and assessment was to provide geotechnical recommendations for construction design purposes together with a geo-environmental risk assessment in terms of possible ground contamination.

1.6 To achieve the objective, the following tasks were undertaken:

- Review the existing desk study report for the site and design a Phase 2 Ground Investigation.
- Characterise the ground conditions in terms of geology, soil geotechnical parameters and ground contamination from information provided by the ground investigation.
- Provide recommendations regarding suitable foundations together with any other geotechnical considerations that could affect possible future development.
- Determine a ground conceptual model for the site so as to undertake a ground contamination Generic Quantitative Risk Assessment (GQRA).

Scope

1.7 A Phase 1 Desk Study for the site has been undertaken by WML and is presented in the following report:

- Phase 1 Desk Study and Preliminary Geoenvironmental Assessment, Reference 10939G-WML-00-XX RP-G-0004, dated May 2024.

1.8 This report includes the findings of a Phase 2 Ground Investigation designed on conclusions and recommendations within the Phase 1 Desk Study. For ease of reference, the findings of the Desk Study are summarised in the following sections. However, the two reports are not exclusive and should be read in conjunction.

1.9 The ground investigation comprised the formation of window sample probeholes undertaken with reference to BS5930:2015 + A1:2020 Code of Practice for Ground Investigation and BS10175:2011 & A2:2017, "Investigation of Potentially Contaminated Sites - Code of Practice" except where superseded by EN ISO 22475-1 "Geotechnical Investigation and Assessment – Sampling by Drilling and Excavation and Groundwater Measurements".

1.10 Geotechnical soil testing was undertaken in general accordance with guidelines provided in BS1377:1990 – Parts 1-9, "Method of Test for Soils for Civil Engineering Purposes". Samples for chemical analysis were obtained and handled generally in accordance with the current guidelines (BS10175: 2011 and A2:2017).

2.0 SITE LOCATION AND DESCRIPTION

Site Location

2.1 The site comprises land within the existing Loreto College campus, located on Chichester Road South in Manchester. It is centred on approximate Ordnance Survey National Grid Reference 383291E, 396048N with an indicative postcode of M15 5PB.

2.2 The site was bounded to the north by the existing Loreto College campus and to the east by the E&K Building. To the south the site is bounded by the Loreto College expansion site (the former probation office) with Maher Gardens to the west.

Site Description

2.3 At the time of the inspection the site comprised a single storey brick structure surrounded by areas of hardstanding for pedestrian access. Localised areas of maintained grass landscaping are located to the south-west with a smaller area of soft landscaping to the north-eastern corner of the site.

2.4 Vehicular access to the site is through a gate from Maher Gardens to the west.

Topography

2.5 A topographic survey was not provided at the time of this report. However, the site is generally level and commensurate with the surrounding area at around 32.25m to 33.00m Above Ordnance Datum (AOD).

3.0 SUMMARY OF ENVIRONMENTAL AND HISTORICAL SETTING

3.1 The following paragraphs summarise the most relevant findings of the Phase 1 Desk Study report.

Geology

3.2 The BGS plans indicate that the site is underlain by the Glaciofluvial Sheet Deposits, indicated to mainly comprise sand and gravel. The drift deposits are in turn underlain by the Triassic Chester Pebble Beds Formation, indicated to comprise sandstone.

Radon

3.3 The site is not in a Radon Affected Area as defined by the UK Health Security Agency were less than 1% of properties are above the Action Level of exposure. Therefore, no radon protection measures are necessary for new structures as described in publication BR211 by the Building Research Establishment.

Mining and Subsidence

3.4 In consideration of the indicated geology, risks to the development from subsidence relating to shallow, unrecorded abandoned coal mine workings are considered low and can be discounted.

3.5 The risk from non-coal mining activity at the site is also considered low.

Environmental Setting

3.6 The bedrock underlying the site is classified as a 'Principal Aquifer'. The superficial strata is classified as a 'Secondary A Aquifer'.

3.7 The site is not within an Environment Agency Source Protection Zone (SPZ). No active groundwater abstraction licenses are located within 500m of the site.

3.8 Corn Brook culvert is inferred to be located 24m south. However, recent surveys on the wider college area have located the culvert immediately south of the current development boundary.

3.9 There are no active landfills located within 500m of the site. A historic landfill is located 116m north-east at Moss Side Shopping Centre. This is recorded to comprise inert and industrial waste deposited between 1994 and 1995 to create a construction platform prior to redevelopment of the area.

3.10 There are no designated environmentally sensitive sites within 250m of the subject site.

Site History

3.11 The earliest map dated 1848 indicates the site to comprise undeveloped land within a rural / agricultural setting. The eastern part of the site was occupied by gardens associated by Brookside Terrace to the north-east and Corn Brook was located running roughly north-east to south-west some 25m south of the site.

3.12 By 1889 the site comprised gardens within the grounds of the adjacent Convent of our Lady of Loreto. The areas surrounding the site had been primarily developed for residential use.

3.13 By 1949 a small structure had been constructed in the western part of the site possibly associated with a school to the north. By 1978 the site had been redeveloped with a new college structure occupying the eastern part of the site.

3.14 The site has remained in roughly this configuration until the 2010 when it was cleared and the current single storey structures were constructed.

3.15 The area surrounding the site has historically comprised undeveloped land in rural / agricultural use until extensive residential development occurred sometime prior to 1889. At this time Corn Brook was

culverted immediately south of the subject site. Localised clearance of residential terrace structures in the surrounding area occurred between 1932 and 1949, including around 90m south-west, possibly as a result of bomb-damaged during World War II. Historical industrial development in the immediate surrounding area is limited to a brewery located 125m south-east, later converted for residential use.

Preliminary Contamination Risk Assessment

3.16 The approach at the Phase 1 Desk Study stage was precautionary until such time as uncertainties in the conceptual model could be verified by appropriate site investigation.

3.17 However, based on the site history and the proposed development scenario, potential pollution linkages were considered low or unlikely with associated preliminary risks generally being assessed as low.

3.18 Such uncertainties related in the main to the potential for ACM and asbestos fibres to be present within shallow soils resulting from unrecorded historical demolition. The level of historical contamination as a result of the site's brownfield status should also be established.

UXO Risk

3.19 A review of the University of Manchester's Online Map Collection, namely 'Record of location of aerial bombs on the City of Manchester' has revealed that bomb strikes were recorded to the north-east and south-west of the site in 1940.

3.20 The Zetica UXO Unexploded Bomb Risk Map, presented in Appendix 04 of the Desk Study report, indicates the site be located in a moderate risk area due to the adjacent bombing.

3.21 Prior to work on the main college site WML operatives underwent a Bomb Risk Awareness briefing. The previous investigations which included holes to greater depths also included 1st Line Defence Ltd magnetometer scan of the cable percussive boreholes during formation.

3.22 Therefore, risks from encountering UXO's during initial investigations were mitigated.

3.23 However, in consideration of the proposed demolition, including widespread removal of floor slabs and foundations, together with the anticipated foundation and service excavations, it would be considered prudent for the contractor to obtain a development specific UXO 'Detailed Risk Assessment' which would likely result in the requirement for a UXO site safety briefing and/or supervision during the groundworks by a specialist UXO engineer.

4.0 SITE INVESTIGATION

Rationale

4.1 Intrusive investigations were undertaken primarily to provide geotechnical parameters for structural design purposes but also to verify the preliminary site conceptual model and clarify the anticipated environmental risk.

4.2 Window sample probeholes were undertaken to provide information on near surface deposits and to obtain samples for chemical analysis and geotechnical testing. Due to the small diameter of the probing equipment, the depth of penetration achieved is dependent on favourable ground conditions. As such, ground penetration may be restricted in circumstances where the ground is particularly strong or contains relatively large obstructions such as cobbles and/or boulders.

4.3 The investigation locations were chosen so as not to impact on the presence of known/suspected services beneath the site. Access to parts of the site was restricted due to the presence of the existing disused structure.

4.4 Chemical analysis of a general suite of contaminants was undertaken on selected samples of soil. This was to clarify the expected contamination risk.

Intrusive Works

4.5 The ground investigations were undertaken by Dynamic Sampling UK Ltd on 17th January 2025. This comprised the formation of 3no window sample probeholes to a maximum depth of 2.80 metres below ground level (mbgl) to refusal within the strata.

4.6 Following the demolition of the structure occupying the central part of the site additional sampling of the shallow made ground in previously inaccessible areas was undertaken by WML on 17th March 2025.

4.7 The exploratory hole records are presented in Appendix 02 whilst the exploratory hole locations are shown on drawing 10939G-SK01-B in Appendix 01.

Geotechnical and Chemical Testing

4.8 In-situ geotechnical testing was undertaken at regular intervals during the formation of the window samples in the form of Standard Penetration Tests (SPT's). The results for this testing are presented on the descriptive logs in Appendix 02.

4.9 Geotechnical soils testing has been scheduled on selected samples for the following:

- Natural moisture content
- Liquid and Plastic limits.

4.10 The results of the geotechnical testing are presented in Appendix 03.

4.11 Chemical analysis was undertaken on selected soil samples for the following contaminants of concern:

- Total arsenic, boron, cadmium, chromium VI, copper, lead, mercury, nickel, selenium, vanadium, zinc.
- Total cyanide, phenols, sulphur, sulphate.
- Speciated USEPA polyaromatic hydrocarbons (PAH).
- Asbestos screen and identification.
- 2:1 water/soil sulphate extract, pH.

4.12 The results of the chemical analysis are presented in Appendix 04.

5.0 GROUND CONDITIONS

General

5.1 Ground conditions encountered during the intrusive investigation generally comprised made ground to depths of between 1.10m and 1.50mbgl, underlain by glacial deposits to a maximum proven depth of 2.80mbgl.

Made Ground

5.2 Made ground was encountered within all of the exploratory from ground level or beneath the topsoil to depths of between 1.10m and 1.50mbgl.

5.3 Within WS01 and WS03 the made ground comprised a surface horizon of concrete paving underlain by brown to grey, variably sandy gravel or gravelly sandy to depths of between 0.75m and 0.80mbgl. In turn underlain by dark grey to brown, slightly silty, slightly gravelly sandy clay to depths of between 1.10m and 1.50mbgl. Gravel sized fragments included brick, limestone, concrete and locally ash and clinker.

5.4 Within WS02 the made ground comprised a surface horizon of gravelly sand, underlain by reddish brown, slightly sandy gravel and cobbles to a maximum proven depth of 0.90mbgl where excavation was no longer possible due to the cobbles. Gravel and cobbles sized fragments included concrete, limestone and brick.

5.5 SPT N values within the made ground recorded a single value of 6.

Glacial Deposits

5.6 Glacial deposits were encountered within all of the exploratory holes (with the exception of WS02) underlying the made ground from 1.10m and 1.50mbgl and extending to a maximum proven depth of 2.80mbgl. However, in the investigations located immediately south of the E&K Building the base of the glacial deposits was encountered at a depth of 11.00mbgl.

5.7 The strata generally comprised soft to firm, brown and grey mottled, slightly silty, slightly sandy clay to between 1.80 and 1.95mbgl underlain by medium dense to dense orange, variably gravelly sand.

5.8 A single SPT 'N' values within the upper cohesive strata of 7 indicates a very locally soft consistency although the rest of the cohesive strata was noted to be firm.

5.9 SPT 'N' values within the granular glacial deposits ranged between 24 and in excess of 50 indicating a generally medium dense to dense state of compaction.

5.10 These findings generally concur with the ground conditions encountered within the investigations in the adjacent Loreto Expansion area.

Weathered Chester Pebble Beds

5.11 Although not encountered during the St Vincent's Investigations, BH01 formed previously by WML immediately south-east of the red line boundary encountered strata considered to represent the completely weathered Chester Pebble Beds Formation at a depth of 11.00mbgl, extending to a maximum proven depth of 12.50mbgl.

5.12 The sandstone was recovered as a very dense completely weathered reddish brown, weakly cemented sand. SPT 'N' values within the weathered Chester Pebble Beds Formation ranged between 19 and in excess of 50 indicating the equivalent of a medium dense, becoming dense state of compaction.

Geotechnical Testing

5.13 Geotechnical testing undertaken on the St Vincent's and wider college area summarised in the following table:

Test	Made Ground	Glacial Till
Natural Moisture Content	18.9 - 23%	14 – 32%
Liquid Limit	38 - 48%	28 – 60%
Plasticity Index	20 - 25% (Modified to 15 – 24.5%)	15 – 34% (Modified to 13.2 - 33.3%)
Atterberg Classification	Intermediate Plasticity	Low – High Plasticity
Quick Undrained Triaxial	-	28 kPa
Bulk Density	-	2.09Mg/m^3
Dry Density	-	1.70Mg/m^3

Visual/Olfactory Evidence of Contamination

5.14 No visual and/or olfactory evidence of significant ground contamination was identified within the exploratory holes during the investigation.

Groundwater

5.15 Groundwater was not encountered during the formation of the exploratory holes.

5.16 During the 2023 investigations in the wider site areas the longer-term monitoring recorded all standpipes to be dry indicating groundwater to be in excess of 3.00mbgl.

5.17 It should be appreciated that the groundwater observations described above have been undertaken during a very short period of time. Significant variations in the long-term groundwater regime may occur at other times, particularly with prolonged, extreme weather conditions, and that no account can be taken of such in this report.

General

5.18 It should also be appreciated that ground conditions may vary between and away from the exploratory hole positions, and that no account can be taken in this report of such variations.

6.0 GEOTECHNICAL APPRAISAL

Site Preparation

6.1 Site development will include the demolition of existing structures which should not proceed until an appropriate Asbestos survey of the existing building has been undertaken and any Asbestos Containing Materials (ACM) removed by an appropriately licensed contractor. Similarly, any demolition materials present on site and considered for re-use should be inspected with any ACM removed accordingly prior to crushing.

6.2 Historical/existing foundations, ground floor slabs and other buried concrete/brick obstructions associated with current and former structures are envisaged. Where encountered, these will need to be broken out to suitable depths below formation levels where they are to impinge on the proposed buildings. Such materials removed as part of the clearance work, subject to appropriate screening and crushing, will be suitable for re-use as bulk fill beneath hard cover areas.

6.3 The locations of all existing services will need to be accurately determined across the full footprint of the development area. It cannot be ruled out that services may need to be diverted to accommodate the proposed new structure.

6.4 There is an existing culvert, which is understood to have been delineated south of the subject site, it should be ensured that its location and any associated easement does not impact on the proposed development layout.

6.5 In consideration of the current site levels no significant earthworks would be anticipated, other than localised regrading.

Foundations

6.6 Made ground and any soft / loose natural deposits should be considered unsuitable for the direct support of structural loads as they will be weak and compressible, leading to possibly unacceptable total and differential settlements.

6.7 The new structure could be supported on traditional spread foundations constructed within medium dense granular glacial deposits, anticipated at a depth of around 2.00mbgl. In order for total and differential settlements to be kept to tolerable limits, such foundations would need to be designed on a presumed net allowable bearing pressure of no more than 150kN/m². Formation levels would need to be thoroughly inspected, with any unsuitable material being removed and replaced with foundation concrete.

6.8 Alternatively, in view of the anticipated relatively light loadings imposed by the structure, consideration could be given to a thickened and reinforced raft within the made ground designed on a net allowable bearing pressure not exceeding 75kN/m² to limit total differential settlements to tolerable limits. Foundations should be suitably reinforced and constructed on a layer of selected and imported granular fill which should be compacted to a suitable engineering specification on proof-rolled ground. Any loose, soft or otherwise unsuitable material identified at proof-rolling stage should be removed and replaced with well compacted granular fill.

6.9 If / where foundations are located in cohesive strata further consideration will also need to be given to be constructed in clay soils at shallow depth and close proximity to existing and/or removed trees. Identification of the tree species should be undertaken to determine its water demand as provided in Appendix 4.2-A of NHBC Standards 2010, Foundations, Chapter 4.2, Building Near Trees. Assessment as to the soil heave or shrinkage potential should then be undertaken in consideration of a medium volume change potential for the clay with foundations designed to appropriate depths where such effects are envisaged.

6.10 Foundation construction will also need to take account any remaining and/or new services, where they are in close proximity, may need to be taken down to beneath the lowest level of the service trench so that their structural integrity is maintained.

Floor Slabs

6.11 Floor slabs for the new structures should be suspended unless underlain by fill which has been excavated, screened and replaced in compacted to an appropriate specification.

Excavations and Groundwater

6.12 Excavations at the site will be feasible using conventional hydraulic plant. All excavations at the site and specifically requiring man-entry, will need adequate lateral support, or will need to be battering back to a safe angle to ensure their stability.

6.13 Conventional 'sump and pump' dewatering measures are likely to be adequate to keep excavations dry.

6.14 However, it cannot be discounted that groundwater exclusion measures such as interlocking sheet piles, within deeper granular made ground, would be required to prevent excessive ingress of water during periods of prolonged rainfall. Such support measures will also reduce the risk of conditions that could lead to loss of ground beneath any nearby adjacent structures or infrastructure.

External Pavements

6.15 In consideration of the near surface ground conditions, it is recommended that new road pavement design should be based on a California Bearing Ratio (CBR) value of no more than 3% in untreated made ground and natural cohesive strata.

6.16 The CBR will need to be reviewed and confirmed by site inspection and possibly suitable in-situ testing at formation levels following any earthwork operations and prior to pavement construction.

6.17 In any event, all formations should be proof-rolled with any soft, loose or otherwise unsuitable material being removed and replaced with compacted granular fill.

Concrete Design

6.18 Design/mix of buried concrete should be undertaken in accordance with the "Aggressive Chemical Environment for Concrete" (ACEC) classification, of BRE Special Digest 1:2005 (Concrete in Aggressive Ground). With reference to the site history, it is deemed appropriate to classify the site as "Brownfield", with respect to BRE Special Digest, assuming static groundwater conditions.

6.19 Values of 2:1 water/soil extract for sulphate ranged between 40 and 420mg/l. Values of pH range from 7.77 to 11.06 indicating generally alkaline conditions.

6.20 On the basis of these results, the typical design sulphate (DS) class and "Aggressive Chemical Environment for Concrete" (ACEC) class for the site are DS-1 and AC-1 respectively.

Drainage and Soakaways

6.21 In consideration of the proposed layout and areas of deeper made ground, soakaways might be considered a feasible drainage option if they could be located in the proposed new landscaping away from existing structures and extend into the underlying granular glacial deposits. This would be subject to full scale BRE soakaway testing at detailed drainage design stage.

7.0 GENERIC QUANTITATIVE RISK ASSESSMENT (GQRA)

General

7.1 A review of the readily available information had concluded that the potential for exposure to ground contamination is unlikely to low leading to a low preliminary risk.

7.2 However, it has been considered prudent to undertake chemical analysis of the sub-surface soils to confirm the low human health risk status of the site.

Human Health

7.3 Selected samples have been analysed for a general suite of contaminants of concern and compared against Screening Levels (SL's) for human health to determine the significance of the measured concentrations in relation to the site conceptual model. Thus, a Generic Quantitative Risk Assessment has been undertaken in line with guidelines provided in Land Contamination Risk Management, updated July 2023.

7.4 The criteria for a limited number of contaminants have been derived by DEFRA in their document entitled SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination, April 2014.

7.5 Within the document, Category 4 Screening Levels (C4SL's) are described as being more pragmatic than previous screening criteria and represent concentrations in soil that present an 'acceptable' level of risk within the context of Part 2A.

7.6 The National Planning Policy Framework states that 'after development, as a minimum, land should not be capable of being determined as contaminated land under Part 2A of the Environmental Protection Act 1990'. Therefore, by inference, the C4SL's are appropriate for use in the planning context.

7.7 Although the SP1010 document states that C4SL only apply for a 'sandy loam soil with 6% soil organic matter', it is generally accepted that assessment criteria for metals are not sensitive to changes in soil organic content (SOM). The C4SL's have therefore been adopted as assessment criteria in this report for the listed metals within the SP1010.

7.8 Subsequent to SP1010, LQM/CIEH have published a document entitled 'The LQM/CIEH S4ULs for Human Health Risk Assessment' 2015. In brief, the document provides updated assessment criteria which have been derived in accordance with UK legislation, national as well as EA policy and using a modified version of the CLEA software and available guidance. The new screening criteria, or Suitable 4 Use Levels (S4ULs), are intended to provide a complete and updated replacement to the previous LQM/CIEH GAC of 2009. As such they are considered appropriate for use in this assessment for other contaminants not covered by C4SL's and/or for organic contaminants assuming a worst-case Soil Organic Matter (SOM) of 1% as an initial conservative assessment.

7.9 For each contaminant, S4UL's and C4SL's have been calculated for six land use scenarios, namely:

- Residential with homegrown produce.
- Residential without homegrown produce.
- Allotments.
- Commercial.
- Public Open Space, near residential housing.
- Public Parks, remote from residential housing.

7.10 In light of the proposed development, the SL's for a "Commercial" end-use are considered appropriate for the assessment at this stage. A table of relevant SL's are provided in Appendix 06.

Soil Test Results

7.11 10no soil samples (6no pre demolition, 4no post demolition) were analysed for a suite of Contaminants of Concern (CoC). All of the concentrations were measured below the SL's for a "Commercial" end-use.

7.12 No asbestos was detected within any of the samples analysed.

Discussion and Conclusions

Human Health

7.13 The chemical analysis results have confirmed that the site does not contain any significant and/or widespread contamination sources.

7.14 The long-term exposure risk to human health, based on the samples analysed, is therefore confirmed to be low with no specific remediation requirements.

7.15 Any suspected area of contamination encountered beneath the existing structures, after demolition, can be manged as part of a watching brief to ensure that any suspected contamination is suitably remediated as part of site redevelopment.

Controlled Waters

7.16 No significant or widespread ground contamination has been encountered beneath the site.

7.17 The site is not within an Environment Agency Source Protection Zone (SPZ). No active groundwater abstraction licenses are located within 500m of the site.

7.18 The culverted Corn Brook extends roughly north-east to south-west immediately to the south of the subject site.

7.19 The bedrock underlying the site is classified as a 'Principal' Aquifer. The superficial strata is classified as a 'Secondary A' Aquifer.

7.20 The relatively low permeability of the intervening cohesive glacial deposits underlying the site will limit lateral and vertical migration of any undetected mobile contamination towards the underlying (bedrock) aquifer.

7.21 Therefore, the risk to controlled waters from the site is considered low with no environmental remediation considered necessary.

8.0 GROUND GAS RISK ASSESSMENT

Methodology

8.1 Current guidance for the assessment of risk associated with the presence of hazardous ground gases (principally methane and carbon dioxide) is provided in two key documents, namely:

- Code of practice for the Characterisation and remediation from Ground Gas in Affected Developments. British Standard Institution (BS 8485: 2015 & A1:2019); and
- Assessing Risks posed by Hazardous Ground Gases to Buildings CIRIA (C665, 2007).

8.2 The assessment presented herein is primarily based on the BS8485 document.

8.3 Hazardous ground gas qualitative risk assessment is based on a conceptual model similar to that used for soil and groundwater contamination sources (i.e., source-pathway-receptor pollutant linkages). A semi-quantitative estimate of risk can be assessed based on knowledge of the conceptual model and a measure of hazardous gas concentration and gas flow at the site within monitoring standpipes.

8.4 Based on the measured flow rates and hazardous gas concentrations, individual "hazardous gas flow rates" (Qhg) can be derived for each monitoring point, from which the "site characteristic hazardous gas flow rate" (Qhgs), and then the "Characteristic Situation" (CS) can be determined.

8.5 BS8485 provides guidance on the level of gas protection requirements based upon the characteristic situation and the proposed development based on building type as outlined in Table 3.

Table 3 - Building Types

	Type A	Type B	Type C	Type D
Ownership	Private	Private or commercial/ Public, possible multiple	Commercial / Public	Commercial / Industrial
Control (Change of use)	None	Some but not all	Full	Full
Room Sizes	Small	Small/ medium	Small to Large	Large Industrial/ Retail Park

8.6 The proposed development therefore is indicated to comprise the construction of Type C buildings which include commercial or public structures with small to large room sizes.

Ground Gas Conceptual Model

8.7 The site is not in Radon Affected Area, defined by the UK Health Security Agency as less than 1% of properties are above the Action Level of exposure. Therefore, no radon protection measures are necessary for new structures as described in publication BR211 by the Building Research Establishment.

8.8 There are no active landfills located within 500m of the site. A historic landfill is located 116m north-east at Moss Side Shopping Centre. This is recorded to comprise inert and industrial waste deposited between 1994 and 1995. In consideration of the age of the landfill (circa 30 years) it is unlikely to provide a significant source of landfill gas.

8.9 The presence of ground gas resulting from shallow unrecorded mine workings can be discounted based on the site geology.

8.10 No appreciable thickness of made ground which include significant organic content have been encountered beneath the site.

8.11 No natural deposits which include significant organic content have been encountered beneath the site.

8.12 In addition, in the wider college expansion site located immediately to the south of the subject site it was considered prudent to undertake ground gas monitoring, primarily for methane and carbon dioxide, with associated flow rates, on six occasions between 31st March and 21st June 2023. The indicated the peak and steady state methane concentrations were below instrument detection limit of 0.1% by volume in air (v/v), in all monitoring wells on all six monitoring rounds. Peak carbon dioxide concentrations ranged from 0.3 to 2.1% v/v with steady-state concentrations generally between 0.2 and 2.1%. No detectable gas flow rates were recorded in the standpipes during any of the monitoring visits. The subsequently derived Characteristic Gas Situation provided a maximum Qhg of 0.0021l/hr and concluded that the site to classified as Characteristic Situation (CS) 1 – Very Low Gas Risk'

Recommendations

8.13 Therefore, in consideration of the very low preliminary risks for the subject site together with the lack of organic soils and taking into consideration the results of the gas monitoring in the wider college site, no specific ground gas protection measures are required.

9.0 OTHER POTENTIAL DEVELOPMENT CONSIDERATIONS

Excavated Soils

9.1 Excavation works undertaken during the development are likely to produce waste soils for which appropriate waste management will be required. In line with current sustainability principals, any waste soils should firstly be considered for re-use where possible by incorporation into the development. However, due to the extent of the proposed redevelopment, it is envisaged that such excavated soil will, in the main, need to be removed from site under appropriate duty of care.

9.2 It should be noted that the chemical analysis results for disposal classification are assessed against different assessment criteria to those relating to contamination risk assessment. Soils that are deemed suitable for use in terms of risk to human health and the environment may not necessary be un-contaminated and could be classified as Non-Hazardous or even Hazardous for disposal purposes.

9.3 For preliminary guidance based on the current information, it is likely that made ground, would be classified as 'Non-hazardous' with natural soils classified as 'Inert' for landfill disposal.

9.4 However, excavated soils which are contaminated with TPH compounds may classify as 'Hazardous' if disposed to landfill. Any soils containing ACM or significant asbestos fibres may also classify as 'Hazardous' following further quantification analysis.

9.5 In addition, for Inert and Hazardous waste disposal, allowance will need to be made for adequate Waste Acceptance Criteria (WAC) testing with appropriate consideration of the additional time and cost associated with this.

9.6 It will be the responsibility of the waste producer to undertake further testing and classification of any waste soils for disposal to an appropriately licenced landfill in accordance with current guidelines and Duty of Care requirements.

Imported Fill

9.7 Imported fill will be subject to specific quality requirements and should be accompanied by appropriate certification to confirm its suitability. Allowance should also be made for testing imported fill materials prior to placement to ensure suitability.

Water Supply Pipes

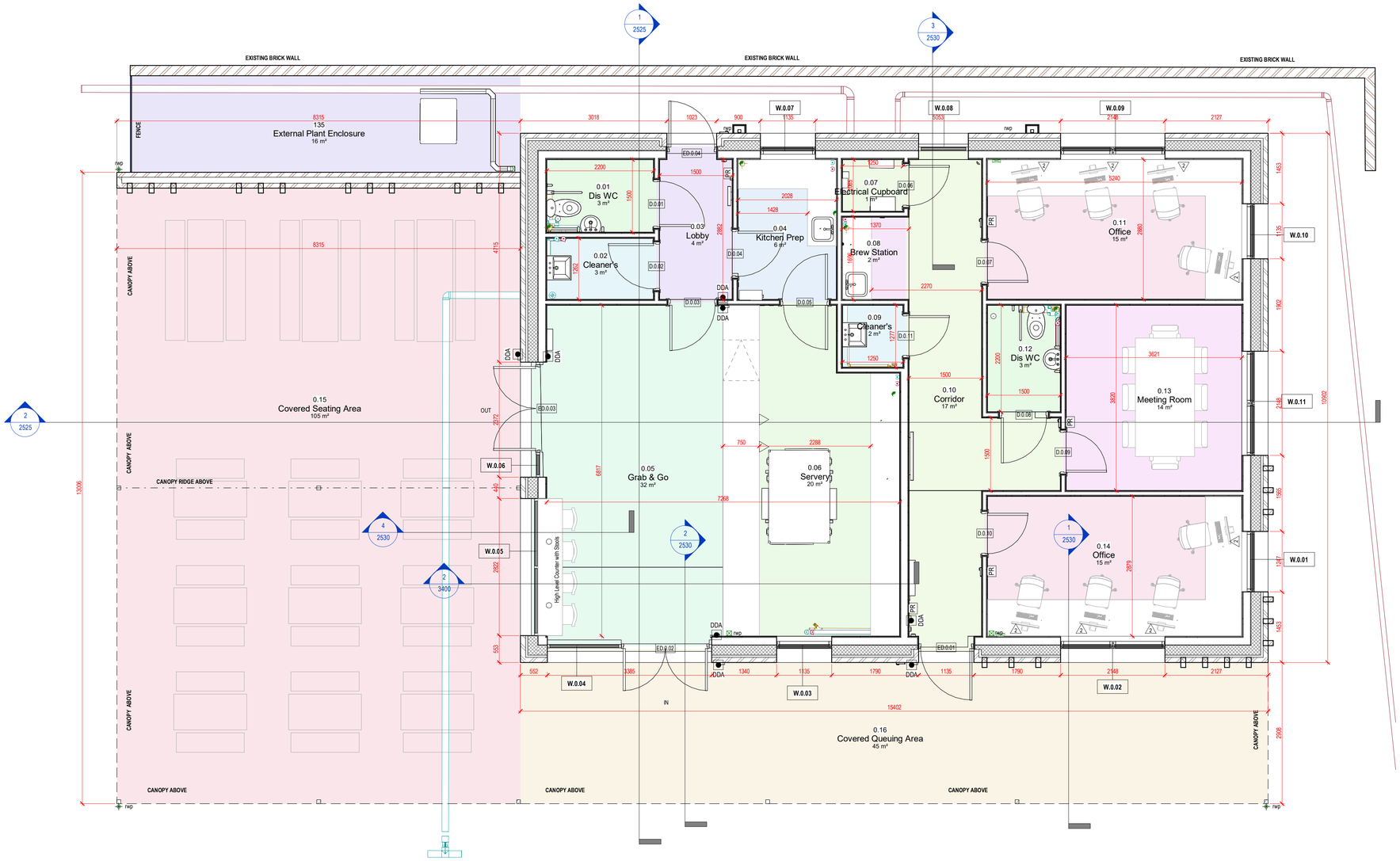
9.8 The relevant water supply provider will need to be consulted with regards the selection of suitable water supply pipe materials for the development, should these be required. In light of the ground conditions encountered, the requirement for specific materials and measures to protect the water supply from ground contamination are not anticipated.

APPENDIX 01

Drawings

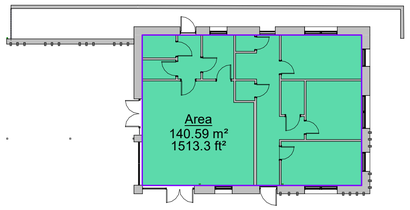
Rev	Revision Notes
T1	/100 - Tender Pack

LCSV- 10A- V2- XX- DR- A- 2200- T1



1 Proposed GA Plan

1 : 50



Stage 3 Issue

Scale 1:50

0 1 2 3 4 5

Client:	Loreto College
Project:	Loreto College St Vincent's
Job No.:	1404
Date:	05/14/24
BIM Model:	LCSV-10A-M3
QA:	JC DD
Scale:	As indicated@A1
Drawing:	**Proposed GA Plan**
Rev notes:	/100 - Tender Pack

LCSV- 10A- V2- XX- DR- A- **2200**- T1

10architect

10architect. unit 16, 12 hilton street, manchester, m1 1jf

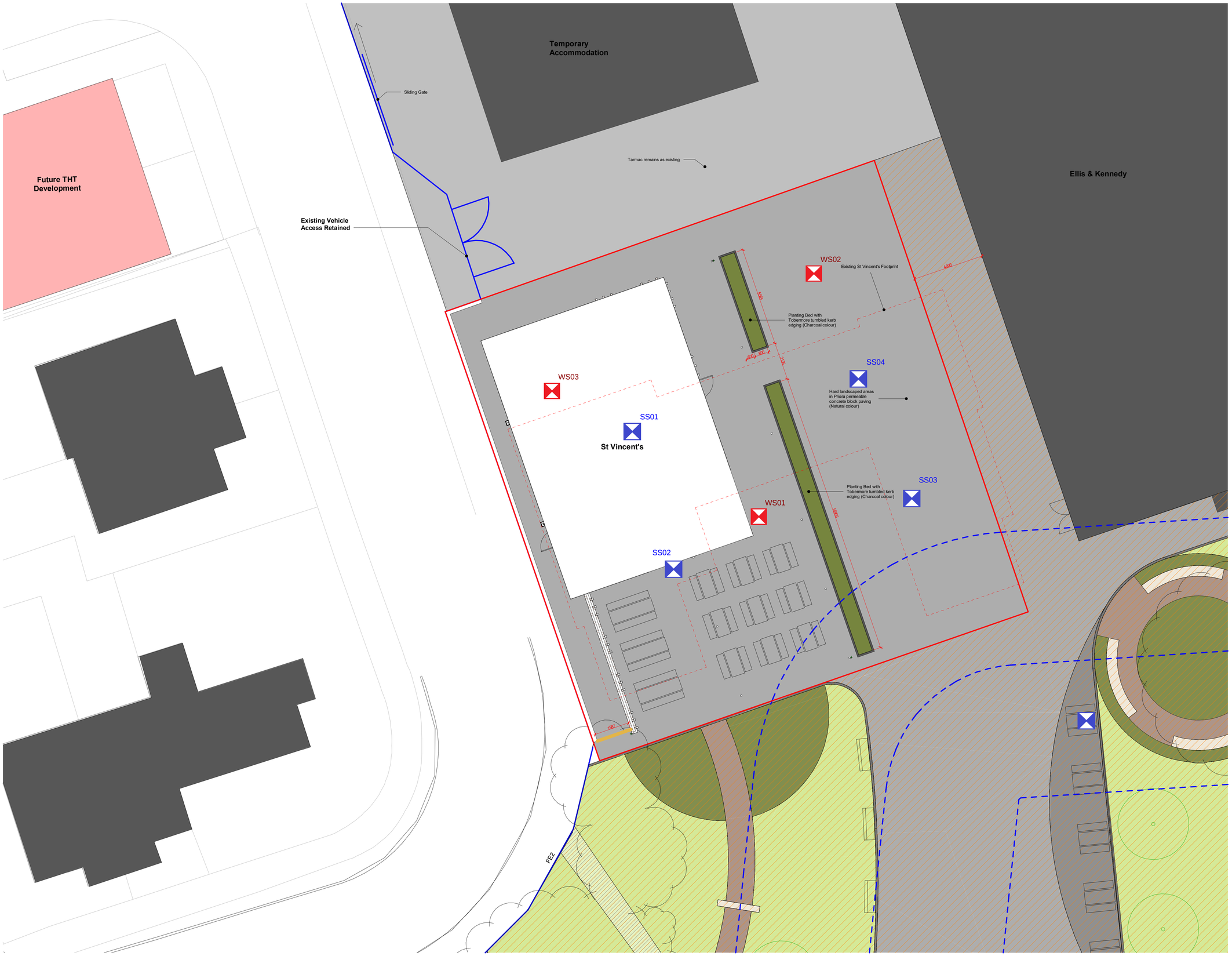
This drawing is copyright. Do not scale dimensions from this drawing "if in doubt ask". This drawing is to be read in conjunction with all other relevant drawings and specifications. All discrepancies on this drawing are to be reported to the architect. Do not modify any element of this drawing. Use drawing only for purpose(s) issued.

Rev	Revision Date	Revision Notes
T1	09/08/24	I100 - Tender Pack

LCVL- 10A- V9- 00- DR- A- 9004- T1

WML CONSULTING

Project: St Vincent's
Drg Title: Exploratory Hole Plan
Job No: 10939G By: TPB
Drg No: SK-01 Rev: B
Date: 17/03/2025 Scale: NTS



Key

- Site Boundary (to be included by Tendering Contractor)
- Ownership Boundary
- Landscaping area excluded from St Vincent's tender
- Location of Culvert and 7m easement zone from culvert centre line
- Lines of Demolition
- Future THT Development
- Planting Areas
- 2m(H) metal and post rail fence to match existing
- Windowless sample probehole
- Post Demolition Sample Position

1 Proposed Landscaping Plan
1 : 100

Stage 3 Issue

Scale 1:100
0 1 2 3 4 5 10 15

Client: Loreto College
Project: St Vincent's
Job No.: 1404
Date : 21/04/23
BIM Model : LCVL-10A-M3
QA: AD DD
Scale : As Indicated@A1
Drawing: Proposed Landscaping
Rev notes: I100 - Tender Pack

LCVL- 10A- V9- 00- DR- A- 9004- T1

10architect

10architect unit 16, 12 hilton street, manchester, m1 1jf

This drawing is copyright. Do not scale dimensions from this drawing "If in doubt ask". This drawing is to be read in conjunction with all other relevant drawings and specifications. All discrepancies on this drawing are to be reported to the architect. Do not modify any

APPENDIX 02

Exploratory Hole Records

WML CONSULTING	Project Title: St Vincent's, Loreto College		WS01
	Project Number: 10939G-A	Client: Loreto College	Sheet 1 Of 1
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 17/01/2025	Method: Window Sample	Driller: DSUK Ltd	Logged By: TPB

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.10	E					Concrete paving slab. (MADE GROUND)		
					0.30	Dark brownish grey, sandy, subangular, fine to coarse gravel including concrete, limestone and brick. Geotextile membrane at base. (MADE GROUND)		
0.40	E							
					0.55	Grey, slightly silty, gravelly sand. Gravel is subangular, fine to coarse, including limestone. (MADE GROUND)		
0.60	E							
					0.75	Dark grey, slightly silty, sandy, subangular, fine to coarse gravel including brick, ash and clinker. (MADE GROUND)		
					1.00			
					1.10	Dark grey, slightly gravelly, sandy clay. Gravel is subangular, fine to coarse, including brick. (MADE GROUND)		
1.20	D	N=7 (2,2,1,2)						
1.30	J					Soft, becoming firm, brown and grey mottled, slightly silty, slightly sandy CLAY. (GLACIAL DEPOSITS)		
		N=33 (8,8,8,9)			2.00	Medium dense, orange brown, gravelly, fine to coarse SAND. Gravel is subangular to subrounded, fine to coarse, of mixed lithologies. (GLACIAL DEPOSITS)		
					2.70			
		pp 50/20mm			2.80	Dense, brown, sandy, subangular to rounded, fine to coarse GRAVEL of mixed lithologies. (GLACIAL DEPOSITS)		
					3.00	End Of Borehole At 2.80 m		

KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed
W - Water Sample
S - Standard Penetration Test
C - Cone Penetration Test
N - Penetration Test 'N' Value
V - Hand Shear Vane kPa
▽ - Groundwater Strike
▼ - Groundwater Level

AGS

REMARKS
No Groundwater Encountered
Hole refused at 2.80mbgl.

Scale: 1:20

Water Strikes

Date	Strike	Level	Minutes	Casing	Sealed

Daily Log Of Depths

Date	Casing	Water

Chiselling

From	To	Hours

Printed By GeoLogs (www.GeoLogs.com)

WML CONSULTING	Project Title: St Vincent's, Loreto College		WS02
	Project Number: 10939G-A	Client: Loreto College	Sheet 1 Of 1
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 17/01/2025	Method: Window Sample	Driller: DSUK Ltd	Logged By: TPB

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.10	E				0.15	Dark brown, gravelly sand. Gravel is subangular, fine to coarse, including limestone and brick. (MADE GROUND)		
0.40	E				0.90	Reddish brown and grey, slightly sandy, subangular, fine to coarse gravel and cobbles including concrete, limestone and brick. (MADE GROUND)		
					1.00	End Of Borehole At 0.90 m		
					2.00			
					3.00			

KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed
W - Water Sample
S - Standard Penetration Test
C - Cone Penetration Test
N - Penetration Test 'N' Value
V - Hand Shear Vane kPa
▽ - Groundwater Strike
▼ - Groundwater Level

AGS

REMARKS
No Groundwater Encountered
Hole terminated at 0.90mbgl
due to brick cobbles in pit.

Scale: 1:20

Water Strikes

Date	Strike	Level	Minutes	Casing	Sealed

Daily Log Of Depths

Date	Casing	Water

Chiselling

From	To	Hours

Printed By GeoLogs (www.GeoLogs.com)

WML CONSULTING	Project Title: St Vincent's, Loreto College		WS03
	Project Number: 10939G-A	Client: Loreto College	Sheet 1 Of 1
	GL (mAOD):	N Coord: 0	E Coord: 0
Date: 17/01/2025	Method: Window Sample	Driller: DSUK Ltd	Logged By: TPB

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
					0.10	Concrete paving slab. (MADE GROUND)		
0.30	E					Concrete. (MADE GROUND)		
0.50	E				0.45	Grey, sandy, subangular, fine to coarse gravel including brick and concrete. (MADE GROUND)		
					0.80	Dark grey, slightly silty, sandy, subangular, fine to coarse gravel including brick, sandstone and ash. (MADE GROUND)		
					1.00	Dark grey, slightly silty, slightly gravelly, sandy clay. Gravel is subangular, fine to coarse, including brick. (MADE GROUND)		
		N=6 (1,1,2,2)			1.15	Brown, slightly silty, slightly gravelly, sandy clay. Gravel is subangular, fine to coarse, including brick. (MADE GROUND)		
1.50	D				1.50	Firm, brown and grey mottled, slightly silty, slightly sandy CLAY. (GLACIAL DEPOSITS)		
1.60	J				1.80	Medium dense, orange brown, gravelly, fine to coarse SAND. Gravel is subangular to subrounded, fine to coarse, of mixed lithologies. (GLACIAL DEPOSITS)		
		N=24 (6,6,6,6)			2.00			
					2.70			
		pp 50/163mm			2.80	Dense, brown, sandy, subangular to rounded, fine to coarse GRAVEL of mixed lithologies. (GLACIAL DEPOSITS)		
					3.00	End Of Borehole At 2.80 m		

KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed
W - Water Sample
S - Standard Penetration Test
C - Cone Penetration Test
N - Penetration Test 'N' Value
V - Hand Shear Vane kPa
▽ - Groundwater Strike
▼ - Groundwater Level

AGS

REMARKS
No Groundwater Encountered
Hole refused at 2.80mbgl.

Scale: 1:20

Water Strikes

Date	Strike	Level	Minutes	Casing	Sealed

Daily Log Of Depths

Date	Casing	Water

Chiselling

From	To	Hours

Printed By GeoLogs (www.GeoLogs.com)

APPENDIX 03

Geotechnical Testing Results

LABORATORY REPORT

Contract Number: PSL25/0628

Report Date: 30 January 2025

Client's Reference: 10939G

Client Name: WML Consulting
Third Floor South
Metropolitan House
Station Road
Cheadle Hulme
SK8 7AZ

For the attention of: Tom Booth

Contract Title: St Vincent's

Date Received: 28/01/2025
Date Commenced: 28/01/2025
Date Completed: 30/01/2025

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Managing Director)	R Berriman (Associate Director)	S Royle (Laboratory Manager)
L Knight (Assistant Laboratory Manager)	D Nicholson (Senior Technician)	T Watkins (Senior Technician)

5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: 01302 768098
Email: rberriman@prosoils.co.uk
awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS01		D	1.20		Brown mottled grey slightly sandy CLAY.
WS03		D	1.50		Brown mottled grey slightly sandy slightly gravelly CLAY.

UKAS TESTING 4043 PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	St Vincent's	Contract No: PSL25/0628 Client Ref: 10939G

SUMMARY OF SOIL CLASSIFICATION TESTS

BS 1377 - Part 2 : 2022 in accordance with BS EN ISO 17892 (as below)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Water Content %	Linear Shrinkage	Particle Density Mg/m^3	Liquid Limit %	Plastic Limit %	Plasticity Index %	Passing 0.425mm %	Remarks
WS01		D	1.20		28.1			56	24	32	100	High Plasticity CIH
WS03		D	1.50		18.9			48	23	25	98	Medium Plasticity CIM

Water Content - BS 1377 - Part 2 : 2022 : Clause 4 in accordance with BS EN ISO 17892 - 1 : 2014 + A1 : 2022
Linear Shrinkage - BS 1377 - Part 2 : 2022 : Clause 7
Particle Density (Gas Jar method) - BS 1377 - Part 2 : 2022 : Clause 9
Liquid, Plastic Limit & Plasticity Index - BS 1377 - Part 2 : 2022 : Clause 5 & 6 in accordance with BS EN ISO 17892 - 12 : 2018 + A2 : 2022

SYMBOLS : NP = Non Plastic

UKAS TESTING 4043

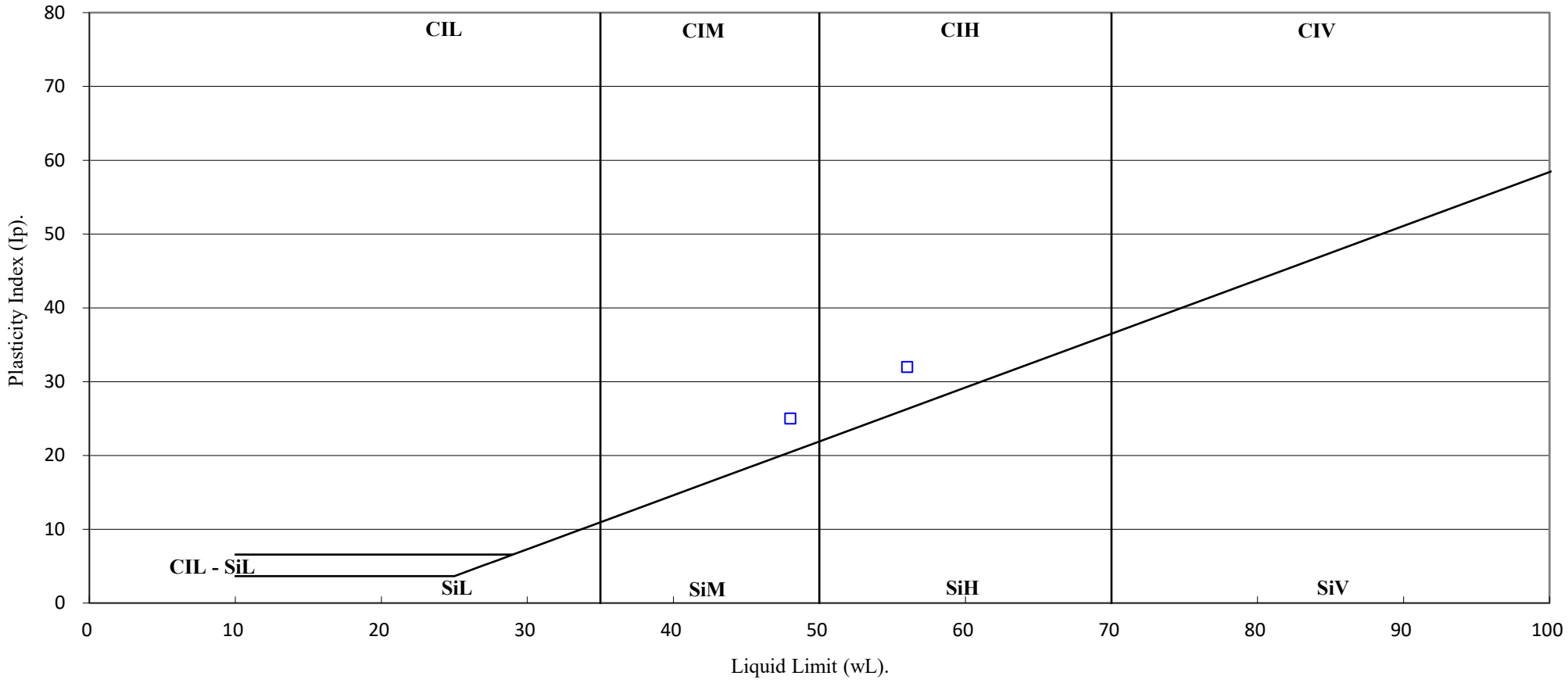
PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY

St Vincent's

Contract No:
PSL25/0628
Client Ref:
10939G

PLASTICITY CHART

BS EN ISO 14688-2:2017 Clause 4.4



UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	St Vincent's	**Contract No:**
		PSL25/0628
		Client Ref:
		10939G

APPENDIX 04

Chemical Analytical Results

envirolab
Hattersley Science & Technology Park
Stockport Road, Hattersley, SK14 3QU

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 25/00405
Issue Number: 1 **Date:** 24 January, 2025

Client: WML Consulting Ltd
Third Floor South
Metropolitan House
Station Rd
Cheadle Hulme
Cheshire
SK8 7AZ

Project Manager: Tom Booth
Project Name: St Vincents
Project Ref: 10939G
Order No: 10939G
Date Samples Received: 20/01/25
Date Instructions Received: 21/01/25
Date Analysis Completed: 24/01/25

Approved by:

Richard Wong
Client Manager

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 1247

Envirolab Job Number: 25/00405

Client Project Name: St Vincents

Client Project Ref: 10939G

Lab Sample ID	25/00405/1	25/00405/2	25/00405/3	25/00405/4	25/00405/6	25/00405/7	25/00405/8	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS01	WS01	WS01	WS01	WS02	WS03	WS03			
Depth to Top	0.10	0.40	0.60	1.20	0.40	0.30	0.50			
Depth To Bottom										
Date Sampled	17-Jan-25	17-Jan-25	17-Jan-25	17-Jan-25	17-Jan-25	17-Jan-25	17-Jan-25			
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL	SOIL - ES	SOIL - ES	SOIL - ES			
Sample Matrix Code	4ABE	5AB	4A	6A	4ABE	5AB	4ABE			
% Stones >10mm$_{A}$	28.1	10.7	22.8	<0.1	7.7	23.7	33.0	% w/w	0.1	A-T-044
pH$_{D}^{M\#}$	11.06	10.09	9.04	8.13	10.38	10.78	10.24	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_{D}^{M\#}$	0.07	0.08	0.10	0.10	0.42	0.04	0.05	g/l	0.01	A-T-026s
Sulphate (acid soluble)$_{D}^{M\#}$	1500	1100	930	-	9900	960	1100	mg/kg	200	A-T-028s
Sulphur (total)$_{D}$	968	797	747	221	3910	524	996	mg/kg	50	A-T-024s
Cyanide (total)$_{A}^{M\#}$	<1	<1	<1	-	<1	<1	<1	mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_{A}$	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	mg/kg	0.2	A-T-050s
Organic Matter$_{D}^{M\#}$	4.49	3.24	10.3	-	3.82	2.11	4.37	% w/w	0.14	A-T-032s
Arsenic$_{D}^{M\#}$	3	5	8	-	6	5	7	mg/kg	1	A-T-024s
Boron (water soluble)$_{D}^{M\#}$	<1.0	<1.0	<1.0	-	1.8	<1.0	<1.0	mg/kg	1	A-T-027s
Cadmium$_{D}^{M\#}$	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	mg/kg	0.5	A-T-024s
Copper$_{D}^{M\#}$	19	29	46	-	19	27	40	mg/kg	1	A-T-024s
Chromium (hexavalent)$_{D}$	<1	<1	<1	-	<1	<1	<1	mg/kg	1	A-T-040s
Lead$_{D}^{M\#}$	32	80	83	-	249	80	182	mg/kg	1	A-T-024s
Mercury$_{D}$	<0.17	<0.17	0.25	-	<0.17	<0.17	<0.17	mg/kg	0.17	A-T-024s
Nickel$_{D}^{M\#}$	15	15	25	-	16	13	12	mg/kg	1	A-T-024s
Selenium$_{D}^{M\#}$	<1	<1	<1	-	<1	<1	<1	mg/kg	1	A-T-024s
Vanadium$_{D}^{M\#}$	27	22	29	-	26	19	27	mg/kg	1	A-T-024s
Zinc$_{D}^{M\#}$	42	59	71	-	61	78	77	mg/kg	5	A-T-024s

Envirolab Job Number: 25/00405

Client Project Name: St Vincents

Client Project Ref: 10939G

Lab Sample ID	25/00405/1	25/00405/2	25/00405/3	25/00405/4	25/00405/6	25/00405/7	25/00405/8	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS01	WS01	WS01	WS01	WS02	WS03	WS03			
Depth to Top	0.10	0.40	0.60	1.20	0.40	0.30	0.50			
Depth To Bottom										
Date Sampled	17-Jan-25	17-Jan-25	17-Jan-25	17-Jan-25	17-Jan-25	17-Jan-25	17-Jan-25			
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL	SOIL - ES	SOIL - ES	SOIL - ES			
Sample Matrix Code	4ABE	5AB	4A	6A	4ABE	5AB	4ABE			
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	NAD	NAD	NAD	-	NAD	NAD	NAD			A-T-045
Asbestos Matrix (visual)$_{D}$	-	-	-	-	-	-	-			A-T-045
Asbestos Matrix (microscope)$_{D}$	-	-	-	-	-	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	N/A	N/A	-	N/A	N/A	N/A			A-T-045

Envirolab Job Number: 25/00405

Client Project Name: St Vincents

Client Project Ref: 10939G

Lab Sample ID	25/00405/1	25/00405/2	25/00405/3	25/00405/4	25/00405/6	25/00405/7	25/00405/8	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS01	WS01	WS01	WS01	WS02	WS03	WS03			
Depth to Top	0.10	0.40	0.60	1.20	0.40	0.30	0.50			
Depth To Bottom										
Date Sampled	17-Jan-25	17-Jan-25	17-Jan-25	17-Jan-25	17-Jan-25	17-Jan-25	17-Jan-25			
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL	SOIL - ES	SOIL - ES	SOIL - ES			
Sample Matrix Code	4ABE	5AB	4A	6A	4ABE	5AB	4ABE			
PAH-16MS										
Acenaphthene$_{A}^{M\#}$	0.63	0.60	0.60	-	0.12	0.15	2.75	mg/kg	0.01	A-T-019s
Acenaphthylene$_{A}^{M\#}$	0.31	0.17	1.66	-	<0.10	<0.10	0.92	mg/kg	0.01	A-T-019s
Anthracene$_{A}^{M\#}$	1.73	1.13	4.02	-	0.35	0.43	9.07	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_{A}^{M\#}$	6.82	3.28	21.1	-	1.99	1.59	18.4	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_{A}^{M\#}$	5.78	2.85	14.7	-	1.55	1.31	14.7	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_{A}^{M\#}$	6.81	3.35	17.4	-	1.83	1.49	17.4	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_{A}^{M\#}$	4.71	2.43	10.1	-	1.14	0.94	11.8	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_{A}^{M\#}$	2.36	1.31	7.05	-	<0.70	<0.70	6.48	mg/kg	0.07	A-T-019s
Chrysene$_{A}^{M\#}$	8.11	3.91	24.1	-	2.15	1.82	22.3	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_{A}^{M\#}$	0.85	0.48	2.28	-	<0.40	<0.40	2.20	mg/kg	0.04	A-T-019s
Fluoranthene$_{A}^{M\#}$	12.5	8.85	32.7	-	2.87	3.11	37.7	mg/kg	0.08	A-T-019s
Fluorene$_{A}^{M\#}$	0.41	0.16	0.79	-	0.12	0.12	3.48	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_{A}^{M\#}$	4.67	2.38	10.6	-	1.16	0.94	11.8	mg/kg	0.03	A-T-019s
Naphthalene $_{A}^{M\#}$	<0.30	<0.30	<0.30	-	<0.30	<0.30	0.32	mg/kg	0.03	A-T-019s
Phenanthrene$_{A}^{M\#}$	5.77	3.62	10.3	-	1.21	1.61	26.2	mg/kg	0.03	A-T-019s
Pyrene$_{A}^{M\#}$	14.8	8.40	31.6	-	3.34	2.91	32	mg/kg	0.07	A-T-019s
Total PAH-16MS$_{A}^{M\#}$	76.3	42.9	189	-	17.8	16.4	218	mg/kg	0.01	A-T-019s

Envirolab Job Number: 25/00405

Client Project Name: St Vincents

Client Project Ref: 10939G

Lab Sample ID	25/00405/9							Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS03									
Depth to Top	1.60									
Depth To Bottom										
Date Sampled	17-Jan-25									
Sample Type	SOIL									
Sample Matrix Code	6A									
% Stones >10mm$_{A}$	10.7							% w/w	0.1	A-T-044
pH$_{D}^{M\#}$	7.77							pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_{D}^{M\#}$	0.04							g/l	0.01	A-T-026s
Sulphur (total)$_{D}$	134							mg/kg	50	A-T-024s

Report Notes

General

•This report shall not be reproduced, except in full, without written approval from Envirolab.
•The client Sample No, Client Sample ID, Depth to top, Depth to Bottom and Date Sampled are all provided by the client and can affect the validity of results.
•The results reported herein relate only to the material supplied to the laboratory.
•The residue of any samples contained within this report, and any received within the same delivery, will be disposed of **four weeks** after the initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of **six months** after the initial Asbestos testing is completed.
•Analytical results reflect the quality of the sample at the time of analysis only.
•Opinions and Interpretations expressed are outside our scope of accreditation.
•A deviating sample report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
•If a sample is outside of the calibration range or affected by interferences then it may need diluting. This will result in the limit of detection (LOD) being raised.
•Subcontracted Analysis: Please see the appended report for any deviations, current LODs and accreditation status of the test.

Key

Superscript "#"	Accredited to ISO 17025
Superscript "M"	Accredited to MCertS
Superscript "U"	Individual result not accredited
None of the above symbols	Analysis unaccredited
Subscript "A"	Analysis performed on as-received Sample
Subscript "D"	Analysis performed on the dried sample, crushed to pass 2mm sieve.
Subscript "D" on Asbestos	Analysis performed on a dried aliquot of sample provided.
Subscript "^"	Analysis has dependant options against results. Details appear in the comments of your Sample receipt
IS	Insufficient Sample for analysis
US	Unsuitable Sample for analysis
NDP	No Determination Possible
NAD	No Asbestos Detected
Trace	Asbestos found not suitable for Gravimetric Quantification – not enough to accurately weigh.
N/A	Not applicable

Asbestos

Identification: Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis
"Trace Asbestos Identified" will be reported if there is not enough present to verify the type.
Quantification: Generally a 2 stage process including visual identification, hand picking and weighing, and fibre counting. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres). "TRACE" will be reported as a quantification result.
PLEASE INFORM THE LABORATORY IF YOU WOULD LIKE THE STAGE 3 SEDIMENTATION PROCESS CARRIED OUT. Note this will be subcontracted.

Assigned Matrix Codes

1	SAND	6	CLAY/LOAM	A	Contains Stones
2	LOAM	7	OTHER	B	Contains Construction Rubble
3	CLAY	8	Asbestos Bulk (Only Asbestos ID accredited)	C	Contains visible hydrocarbons
4	LOAM/SAND	9	Incinerator Ash (some Metals accredited)	D	Contains glass / metal
5	SAND/CLAY			E	Contains roots / twigs
Note: 7,8,9 matrices are not covered by our ISO 17025 or MCertS accreditation, unless stated above.					

Soil Chemical Analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH by method A-T-007:
For waters, free and visible oils are excluded from the sample used for analysis, so the reported result represents the dissolved phase only.
Results "with Clean up" indicates samples cleaned up with Silica during extraction.

EPH CWG (method A-T-055) from TPH CWG:
EPH CWG results have humics mathematically subtracted through instrument calculation.
Where these humic substances have been identified in any IDs from "TPH CWG with clean up" please note that the concentration is **NOT** included in the quantified results but present in the ID for information.

Electrical Conductivity of water by method A-T-037:
Results greater than 12900µS/cm @ 25^{0}C / 11550µS/cm @ 20^{0}C fall outside the calibration range and as such are unaccredited.

Please contact your client manager if you require any further information.

Envirolab Deviating Samples Report

Hattersley Science & Technology Park, Stockport Road, Hattersley, SK14 3QU
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: WML Consulting Ltd, Third Floor South, Metropolitan House, Station Rd, Cheadle Hulme, Cheshire, SK8 7AZ

Project: St Vincents

Clients Project No: 10939G

Project No: 25/00405

Date Received: 21/01/2025 (am)

Cool Box Temperatures (°C): 10.2

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	25/00405/1	25/00405/2	25/00405/3	25/00405/4	25/00405/6	25/00405/7	25/00405/8	25/00405/9
Client Sample No								
Client Sample ID/Depth	WS01 0.10m	WS01 0.40m	WS01 0.60m	WS01 1.20m	WS02 0.40m	WS03 0.30m	WS03 0.50m	WS03 1.60m
Date Sampled	17/01/25	17/01/25	17/01/25	17/01/25	17/01/25	17/01/25	17/01/25	17/01/25
A-T-019s	24/01/2025	24/01/2025	24/01/2025		24/01/2025	24/01/2025	24/01/2025	
A-T-024s	24/01/2025	24/01/2025	24/01/2025	24/01/2025	24/01/2025	24/01/2025	24/01/2025	24/01/2025
A-T-026s	24/01/2025	24/01/2025	24/01/2025	24/01/2025	24/01/2025	24/01/2025	24/01/2025	24/01/2025
A-T-027s	24/01/2025	24/01/2025	24/01/2025		24/01/2025	24/01/2025	24/01/2025	
A-T-028s	23/01/2025	23/01/2025	23/01/2025		23/01/2025	23/01/2025	23/01/2025	
A-T-031s	24/01/2025	24/01/2025	24/01/2025	24/01/2025	24/01/2025	24/01/2025	24/01/2025	24/01/2025
A-T-032s	23/01/2025	23/01/2025	23/01/2025		23/01/2025	23/01/2025	23/01/2025	
A-T-040s	24/01/2025	24/01/2025	24/01/2025		24/01/2025	24/01/2025	24/01/2025	
A-T-042sTCN	22/01/2025	22/01/2025	22/01/2025		22/01/2025	22/01/2025	22/01/2025	
A-T-044	23/01/2025	23/01/2025	23/01/2025	23/01/2025	23/01/2025	23/01/2025	23/01/2025	23/01/2025
A-T-045	22/01/2025	22/01/2025	22/01/2025		22/01/2025	22/01/2025	22/01/2025	
A-T-050s	23/01/2025	23/01/2025	23/01/2025		23/01/2025	23/01/2025	23/01/2025	

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Hattersley Science & Technology Park
Stockport Road, Hattersley, SK14 3QU

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 25/02794
Issue Number: 1 **Date:** 25 March, 2025

Client: WML Consulting Ltd
Third Floor South
Metropolitan House
Station Rd
Cheadle Hulme
Cheshire
SK8 7AZ

Project Manager: Tom Booth
Project Name: St. Vincents
Project Ref: 10939G
Order No: 10939G
Date Samples Received: 18/03/25
Date Instructions Received: 19/03/25
Date Analysis Completed: 25/03/25

Approved by:

Gemma Berrisford
Deputy Client Services Supervisor

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 1247

Envirolab Job Number: 25/02794

Client Project Name: St. Vincents

Client Project Ref: 10939G

Lab Sample ID	25/02794/1	25/02794/2	25/02794/3	25/02794/4				Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	SS01	SS02	SS03	SS04						
Depth to Top	0.10	0.10	0.10	0.10						
Depth To Bottom										
Date Sampled	17-Mar-25	17-Mar-25	17-Mar-25	17-Mar-25						
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES						
Sample Matrix Code	6AB	6ABE	6AB	6AB						
% Stones >10mm$_{A}$	30.2	41.6	33.8	35.2				% w/w	0.1	A-T-044
pH$_{D}^{M\#}$	11.04	11.64	11.76	11.43				pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_{D}^{M\#}$	0.13	0.08	0.08	0.14				g/l	0.01	A-T-026s
Sulphate (acid soluble)$_{D}^{M\#}$	1300	1500	2200	2400				mg/kg	200	A-T-028s
Sulphur (total)$_{D}$	744	894	1150	1200				mg/kg	50	A-T-024s
Cyanide (total)$_{A}^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_{A}$	<0.2	<0.2	<0.2	<0.2				mg/kg	0.2	A-T-050s
Organic Matter$_{D}^{M\#}$	3.94	1.55	2.58	1.67				% w/w	0.14	A-T-032s
Arsenic$_{D}^{M\#}$	6	3	3	3				mg/kg	1	A-T-024s
Boron (water soluble)$_{D}^{M\#}$	<1.0	<1.0	<1.0	<1.0				mg/kg	1	A-T-027s
Cadmium$_{D}^{M\#}$	<0.5	<0.5	<0.5	<0.5				mg/kg	0.5	A-T-024s
Copper$_{D}^{M\#}$	26	12	16	14				mg/kg	1	A-T-024s
Chromium (hexavalent)$_{D}$	<1	<1	<1	<1				mg/kg	1	A-T-040s
Lead$_{D}^{M\#}$	86	29	30	29				mg/kg	1	A-T-024s
Mercury$_{D}$	1.87	2.13	2.44	2.26				mg/kg	0.17	A-T-024s
Nickel$_{D}^{M\#}$	11	9	10	10				mg/kg	1	A-T-024s
Selenium$_{D}^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-024s
Vanadium$_{D}^{M\#}$	14	12	17	13				mg/kg	1	A-T-024s
Zinc$_{D}^{M\#}$	52	33	44	38				mg/kg	1	A-T-024s

Envirolab Job Number: 25/02794

Client Project Name: St. Vincents

Client Project Ref: 10939G

Lab Sample ID	25/02794/1	25/02794/2	25/02794/3	25/02794/4				Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	SS01	SS02	SS03	SS04						
Depth to Top	0.10	0.10	0.10	0.10						
Depth To Bottom										
Date Sampled	17-Mar-25	17-Mar-25	17-Mar-25	17-Mar-25						
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES						
Sample Matrix Code	6AB	6ABE	6AB	6AB						
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	NAD	NAD	NAD	NAD						A-T-045
Asbestos Matrix (visual)$_{D}$	-	-	-	-						A-T-045
Asbestos Matrix (microscope)$_{D}$	-	-	-	-						A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	N/A	N/A	N/A						A-T-045

envirolab

Envirolab Job Number: 25/02794

Client Project Name: St. Vincents

Client Project Ref: 10939G

Lab Sample ID	25/02794/1	25/02794/2	25/02794/3	25/02794/4				Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	SS01	SS02	SS03	SS04						
Depth to Top	0.10	0.10	0.10	0.10						
Depth To Bottom										
Date Sampled	17-Mar-25	17-Mar-25	17-Mar-25	17-Mar-25						
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES						
Sample Matrix Code	6AB	6ABE	6AB	6AB						
PAH-16MS										
Acenaphthene$_{A}^{M\#}$	0.76	0.22	0.21	0.06				mg/kg	0.01	A-T-019s
Acenaphthylene$_{A}^{M\#}$	0.33	<0.10	0.19	0.05				mg/kg	0.01	A-T-019s
Anthracene$_{A}^{M\#}$	2.60	0.56	0.89	0.34				mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_{A}^{M\#}$	7.86	1.97	4.24	1.73				mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_{A}^{M\#}$	7.71	2.24	4.21	1.50				mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_{A}^{M\#}$	9.05	2.74	4.93	1.42				mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_{A}^{M\#}$	3.77	1.61	2.26	0.80				mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_{A}^{M\#}$	3.38	0.89	1.73	0.57				mg/kg	0.07	A-T-019s
Chrysene$_{A}^{M\#}$	9.35	2.52	4.97	1.43				mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_{A}^{M\#}$	0.88	<0.40	0.45	0.18				mg/kg	0.04	A-T-019s
Fluoranthene$_{A}^{M\#}$	18.1	4.33	8.49	2.69				mg/kg	0.08	A-T-019s
Fluorene$_{A}^{M\#}$	0.90	0.17	0.26	0.06				mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_{A}^{M\#}$	3.90	1.50	2.23	0.94				mg/kg	0.03	A-T-019s
Naphthalene $_{A}^{M\#}$	<0.30	<0.30	<0.30	<0.03				mg/kg	0.03	A-T-019s
Phenanthrene$_{A}^{M\#}$	9.12	2.24	3.62	0.86				mg/kg	0.03	A-T-019s
Pyrene$_{A}^{M\#}$	15.7	4.00	7.87	2.57				mg/kg	0.07	A-T-019s
Total PAH-16MS$_{A}^{M\#}$	93.4	25	46.5	15.2				mg/kg	0.01	A-T-019s

Report Notes

General
•This report shall not be reproduced, except in full, without written approval from Envirolab.
•The client Sample No, Client Sample ID, Depth to top, Depth to Bottom and Date Sampled are all provided by the client and can affect the validity of results.
•The results reported herein relate only to the material supplied to the laboratory.
•The residue of any samples contained within this report, and any received within the same delivery, will be disposed of **four weeks** after the initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of **six months** after the initial Asbestos testing is completed.
•Analytical results reflect the quality of the sample at the time of analysis only.
•Opinions and Interpretations expressed are outside our scope of accreditation.
•A deviating sample report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
•If a sample is outside of the calibration range or affected by interferences then it may need diluting. This will result in the limit of detection (LOD) being raised.
•Subcontracted Analysis: Please see the appended report for any deviations, current LODs and accreditation status of the test.

Key

Superscript "#"	Accredited to ISO 17025
Superscript "M"	Accredited to MCertS
Superscript "U"	Individual result not accredited
None of the above symbols	Analysis unaccredited
Subscript "A"	Analysis performed on as-received Sample
Subscript "D"	Analysis performed on the dried sample, crushed to pass 2mm sieve.
Subscript "D" on Asbestos	Analysis performed on a dried aliquot of sample provided.
Subscript "^"	Analysis has dependant options against results. Details appear in the comments of your Sample receipt
IS	Insufficient Sample for analysis
US	Unsuitable Sample for analysis
NDP	No Determination Possible
NAD	No Asbestos Detected
Trace	Asbestos found not suitable for Gravimetric Quantification – not enough to accurately weigh.
N/A	Not applicable

Asbestos
Identification: Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis
"Trace Asbestos Identified" will be reported if there is not enough present to verify the type.
Quantification: Generally a 2 stage process including visual identification, hand picking and weighing, and fibre counting. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres). "TRACE" will be reported as a quantification result.
PLEASE INFORM THE LABORATORY IF YOU WOULD LIKE THE STAGE 3 SEDIMENTATION PROCESS CARRIED OUT. Note this will be subcontracted.

Assigned Matrix Codes

1	SAND	6	CLAY/LOAM	A	Contains Stones
2	LOAM	7	OTHER	B	Contains Construction Rubble
3	CLAY	8	Asbestos Bulk (Only Asbestos ID accredited)	C	Contains visible hydrocarbons
4	LOAM/SAND	9	Incinerator Ash (some Metals accredited)	D	Contains glass / metal
5	SAND/CLAY			E	Contains roots / twigs
Note: 7,8,9 matrices are not covered by our ISO 17025 or MCertS accreditation, unless stated above.					

Soil Chemical Analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH by method A-T-007:
For waters, free and visible oils are excluded from the sample used for analysis, so the reported result represents the dissolved phase only.
Results "with Clean up" indicates samples cleaned up with Silica during extraction.

EPH CWG (method A-T-055) from TPH CWG:
EPH CWG results have humics mathematically subtracted through instrument calculation.
Where these humic substances have been identified in any IDs from "TPH CWG with clean up" please note that the concentration is **NOT** included in the quantified results but present in the ID for information.

Electrical Conductivity of water by method A-T-037:
Results greater than 12900µS/cm @ 25^{0}C / 11550µS/cm @ 20^{0}C fall outside the calibration range and as such are unaccredited.

Please contact your client manager if you require any further information.

Envirolab Deviating Samples Report

Hattersley Science & Technology Park, Stockport Road, Hattersley, SK14 3QU
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: WML Consulting Ltd, Third Floor South, Metropolitan House, Station Rd, Cheadle Hulme, Cheshire, SK8 7AZ

Project: St. Vincents

Clients Project No: 10939G

Project No: 25/02794

Date Received: 19/03/2025 (am)

Cool Box Temperatures (°C): 9.8

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	25/02794/1	25/02794/2	25/02794/3	25/02794/4
Client Sample No				
Client Sample ID/Depth	SS01 0.10m	SS02 0.10m	SS03 0.10m	SS04 0.10m
Date Sampled	17/03/25	17/03/25	17/03/25	17/03/25
A-T-019s	24/03/2025	24/03/2025	24/03/2025	21/03/2025
A-T-024s	25/03/2025	25/03/2025	25/03/2025	25/03/2025
A-T-026s	24/03/2025	24/03/2025	24/03/2025	24/03/2025
A-T-027s	24/03/2025	24/03/2025	24/03/2025	24/03/2025
A-T-028s	24/03/2025	24/03/2025	24/03/2025	24/03/2025
A-T-031s	24/03/2025	24/03/2025	24/03/2025	24/03/2025
A-T-032s	25/03/2025	25/03/2025	25/03/2025	25/03/2025
A-T-040s	24/03/2025	24/03/2025	24/03/2025	24/03/2025
A-T-042sTCN	21/03/2025	21/03/2025	21/03/2025	21/03/2025
A-T-044	24/03/2025	24/03/2025	24/03/2025	24/03/2025
A-T-045	20/03/2025	20/03/2025	20/03/2025	20/03/2025
A-T-050s	21/03/2025	24/03/2025	21/03/2025	21/03/2025

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

APPENDIX 05

Site Wide Gas and Groundwater Monitoring Results

Gas & Groundwater Monitoring Record Sheet

WML CONSULTING

Project Name:- Loreto College 2023 Expansion
Project No:- 10939G
Client:- Loreto College

Date:- 31/03/2023
Start Time:- 13:50
End Time:- 15:00
Ground Conditions:- Damp
Weather Conditions:- Cool, light drizzle

Atmospheric Pressure
Start:- 983
End:- 983
Trend:- Steady

Instrument:- Gas Data GFM436

Operator:- T Sheen

Hole ID	Peak Flow l/hr	Steady Flow l/hr	DP	CH4			CO2			Min O2 %	Peak H2S ppm	Peak CO ppm	Hexane %	Water Level mbgl	Base of Hole mbgl
				Peak %	Steady %	Qhg l/hr	Peak %	Steady %	Qhg l/hr						
WS01	<0.1	<0.1	0	0.0	0.0	0.0000	0.6	0.6	0.0006	19.3	0	0	0.000	Dry	2.91
WS03	<0.1	<0.1	0	0.0	0.0	0.0000	0.6	0.6	0.0006	19.7	0	0	0.000	Dry	2.99
WS04	<0.1	<0.1	0	0.0	0.0	0.0000	0.6	0.6	0.0006	19.5	0	0	0.000	Dry	1.90

Additional Comments

Gas & Groundwater Monitoring Record Sheet

WML CONSULTING

Project Name:- Loreto College 2023 Expansion
Project No:- 10939G
Client:- Loreto College

Date:- 19/04/2023
Start Time:- 13:30
End Time:- 14:45
Ground Conditions:- Dry
Weather Conditions:- Patchy cloud, dry

Atmospheric Pressure
Start:- 1026
End:- 1026
Trend:- Steady

Instrument:- Gas Data GFM436

Operator:- T Sheen

Hole ID	Peak Flow l/hr	Steady Flow l/hr	DP	CH4			CO2			Min O2 %	Peak H2S ppm	Peak CO ppm	Hexane %	Water Level mbgl	Base of Hole mbgl
				Peak %	Steady %	Qhg l/hr	Peak %	Steady %	Qhg l/hr						
WS01	<0.1	<0.1	0	0.0	0.0	0.0000	0.9	0.9	0.0009	18.5	0	0	0.000	Dry	2.91
WS03	<0.1	<0.1	0	0.0	0.0	0.0000	0.9	0.9	0.0009	19.6	0	0	0.000	Dry	2.99
WS04	<0.1	<0.1	0	0.0	0.0	0.0000	0.4	0.4	0.0004	20.4	0	0	0.000	Dry	1.90

Additional Comments

Gas & Groundwater Monitoring Record Sheet

WML CONSULTING

Project Name:- Loreto College 2023 Expansion
Project No:- 10939G
Client:- Loreto College

Date:- 11/05/2023
Start Time:- 11:30
End Time:- 12:30
Ground Conditions:- Damp
Weather Conditions:- Overcast, cool

Atmospheric Pressure
Start:- 1013
End:- 1013
Trend:- Steady

Instrument:- Gas Data GFM436

Operator:- T Sheen

Hole ID	Peak Flow l/hr	Steady Flow l/hr	DP	CH4			CO2			Min O2 %	Peak H2S ppm	Peak CO ppm	Hexane %	Water Level mbgl	Base of Hole mbgl
				Peak %	Steady %	Qhg l/hr	Peak %	Steady %	Qhg l/hr						
WS01	<0.1	<0.1	0	0.0	0.0	0.0000	1.3	1.3	0.0013	18.7	0	0	0.000	Dry	2.91
WS03	<0.1	<0.1	0	0.0	0.0	0.0000	1.3	1.3	0.0013	19.0	0	0	0.000	Dry	2.99
WS04	<0.1	<0.1	0	0.0	0.0	0.0000	1.7	1.7	0.0017	18.0	0	0	0.000	Dry	1.90

Additional Comments

Gas & Groundwater Monitoring Record Sheet

WML CONSULTING

Project Name:- Loreto College 2023 Expansion
Project No:- 10939G
Client:- Loreto College

Date:- 25/05/2023
Start Time:- 11:50
End Time:- 13:00
Ground Conditions:- Dry
Weather Conditions:- Warm, patchy cloud

Atmospheric Pressure
Start:- 1027
End:- 1026
Trend:- Falling

Instrument:- Gas Data GFM436

Operator:- T Sheen

Hole ID	Peak Flow l/hr	Steady Flow l/hr	DP	CH4			CO2			Min O2 %	Peak H2S ppm	Peak CO ppm	Hexane %	Water Level mbgl	Base of Hole mbgl
				Peak %	Steady %	Qhg l/hr	Peak %	Steady %	Qhg l/hr						
WS01	<0.1	<0.1	0	0.0	0.0	0.0000	1.0	1.0	0.0010	19.9	0	0	0.000	Dry	2.91
WS03	<0.1	<0.1	0	0.0	0.0	0.0000	1.4	1.4	0.0014	20.1	0	0	0.000	Dry	2.99
WS04	<0.1	<0.1	0	0.0	0.0	0.0000	2.0	2.0	0.0020	19.0	0	0	0.000	Dry	1.90

Additional Comments

Gas & Groundwater Monitoring Record Sheet

WML CONSULTING

Project Name:- Loreto College 2023 Expansion
Project No:- 10939G
Client:- Loreto College

Date:- 08/06/2023
Start Time:- 11:00
End Time:- 12:30
Ground Conditions:- Dry
Weather Conditions:- Warm, sunny

Atmospheric Pressure
Start:- 1019
End:- 1018
Trend:- Falling

Instrument:- Gas Data GFM436

Operator:- T Sheen

Hole ID	Peak Flow l/hr	Steady Flow l/hr	DP	CH4			CO2			Min O2 %	Peak H2S ppm	Peak CO ppm	Hexane %	Water Level mbgl	Base of Hole mbgl
				Peak %	Steady %	Qhg l/hr	Peak %	Steady %	Qhg l/hr						
WS01	<0.1	<0.1	0	0.0	0.0	0.0000	0.5	0.5	0.0005	20.3	0	0	0.000	Dry	2.91
WS03	<0.1	<0.1	0	0.0	0.0	0.0000	0.3	0.2	0.0002	20.4	0	0	0.000	Dry	2.99
WS04	<0.1	<0.1	0	0.0	0.0	0.0000	0.8	0.8	0.0008	20.3	0	0	0.000	Dry	1.89

Additional Comments

Gas & Groundwater Monitoring Record Sheet

WML CONSULTING

Project Name:- Loreto College 2023 Expansion
Project No:- 10939G
Client:- Loreto College

Date:- 21/06/2023
Start Time:- 11:30
End Time:- 13:00
Ground Conditions:- Damp
Weather Conditions:- Sunny, cool

Atmospheric Pressure
Start:- 1012
End:- 1009
Trend:- Falling

Instrument:- Gas Data GFM436

Operator:- T Sheen

Hole ID	Peak Flow l/hr	Steady Flow l/hr	DP	CH4			CO2			Min O2 %	Peak H2S ppm	Peak CO ppm	Hexane %	Water Level mbgl	Base of Hole mbgl
				Peak %	Steady %	Qhg l/hr	Peak %	Steady %	Qhg l/hr						
WS01	<0.1	<0.1	0	0.0	0.0	0.0000	1.1	1.0	0.0010	19.8	0	0	0.000	Dry	2.91
WS03	<0.1	<0.1	0	0.0	0.0	0.0000	0.5	0.4	0.0004	20.5	0	0	0.000	Dry	2.99
WS04	<0.1	<0.1	0	0.0	0.0	0.0000	2.1	2.1	0.0021	19.1	0	0	0.000	Dry	1.89

Additional Comments

APPENDIX 06

Site Specific Acceptance Criteria

Screening Levels for "Commercial" end use assuming a 2.5% SOM for Hydrocarbons.

Contaminant	Screening Levels for Commercial End Use (mg/kg)
Metals	
Arsenic	640
Boron	240,000
Cadmium	190
Chromium III	8,600
Chromium VI	33
Copper	68,000
Lead*	2330
Mercury	58
Nickel	980
Selenium	12,000
Vanadium	9,000
Zinc	730,000
Non Metals	
Phenol	690
Polyaromatic Hydrocarbons (PAHs)	
Benz[a]anthracene	170
Benzo[a]pyrene	35
Benzo[b]fluoranthene	44
Benzo[ghi]perylene	4,000
Benzo[k]fluoranthene	1,200
Chrysene	350
Dibenz[ah]anthracene	3.6
Fluoranthene	23,000
Indeno[123-cd]pyrene	510
Naphthalene	460^{f} $(183)^{sol}$
Pyrene	54,000

Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3240. All rights reserved.

* Where not included in the S4UL's criteria for a limited number of contaminants, namely lead, have been derived by DEFRA in their document entitled SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination, April 2014.

Contaminant	Screening Levels for Commercial End Use (mg/kg)
Volatile Organic Compounds	
Benzene	47
Ethylbenzene	13,000[vap] (1220)
Toluene	110,000[vap] (1920)
M - Xylene	14,000
O - Xylene	15,000
P - Xylene	14,000
Total Petroleum Hydrocarbons	
Aliphatic C5-6	5,900
Aliphatic C6-8	17,000
Aliphatic C8-10	4,800
Aliphatic C10-12	23,000
Aliphatic C12-16	82,000
Aliphatic C16-35	1,700,000
Aliphatic C35 - 44	1,700,000
Aromatic C5 - 7	46,000
Aromatic C7 - 8	110,000
Aromatic C8-10	8,100
Aromatic C10-12	28,000
Aromatic C12-16	37,000
Aromatic C16-21	28,000
Aromatic C21-35	28,000
Aromatic C35 - 44	28,000

Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3240. All rights reserved.

* Where not included in the S4UL's criteria for a limited number of contaminants, namely lead, have been derived by DEFRA in their document entitled SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination, April 2014.