

4.7 Validation of Soils for Reuse

4.7.1 Sampling and Testing Procedures

Soil samples will be taken by the qualified geo-environmental specialist. Samples will be taken either directly into glass jars or vials or using a stainless steel trowel which will be cleaned between sampling points. The samples will be placed in a cool box with ice packs and when returned to the site compound will be kept in a refrigerator until one hour before collection for transport to the laboratory. Samples will be transported to the laboratory in a cool box with ice packs to maintain a temperature between 4°C and 8°C, normally on the same day as sampling.

The project laboratory will be accredited by UKAS for ISO17025 and MCERTS standards for most analytical tests. Chain of custody forms will be used and kept on file or alternatively automatic electronic chain of custody will be in place. Analytical results will be available in pdf and Excel formats and other formats if required. Results will be made available on site for inspection.

4.7.2 Site Won and Imported Materials

Site Won Materials

Where site won are to be re-used as fill, samples will be tested at a frequency of:

- One sample for soil suite test per 250m³ excavated arisings for re-use as general fill.

Imported Materials

For imported topsoil, a minimum 3 number test results shall be submitted to BC for approval of the source prior to bring the material to site.

All topsoil will be imported and will be a minimum of 450mm thick in soft landscaped areas. The topsoil will be supplied and placed in accordance with the Architects' specification.

The topsoil is to be at least 'Multipurpose' grade in accordance with BS 3882:2007 'Specification for Topsoil and Requirements for Use'. One sample for every 250m³ imported is to be tested by the supplier in accordance with Clause 5 of BS 3882:2007 with the results submitted to the project architect or landscape architect for acceptance.

For verification purposes chemical analysis of the topsoil is to be undertaken at a frequency of one sample every 100m³ used.

Disposal

For disposal of excavated hotspot materials held in quarantine, samples will be tested at a frequency of:

- One sample per 250m³ for waste classification and waste acceptance criteria conducted on specific materials designated for off-site disposal.

All site won and imported samples should be collected and analysed for the following list of contaminants based on the soil screening remediation value's included in **Appendix 4**.

4.7.3 Hotspot Delineation

Any areas of gross contamination exposed during the bulk excavation works will be investigated by a procedure of Delineation. The surveyor will set out the location of the identified contamination. The geo-environmental engineer will direct the sampling. Soil samples will be taken from the location at a distance of 4.0m in each of four directions horizontally from the point where the

contamination was recorded. A second sample will be taken from each location at an elevation 0.2m below the level of the contamination hotspot.

Samples will be sent to the laboratory for analysis for the relevant contaminants. If the results for the delineation samples exceed the derived soil screening remediation value's, the hotspot will be deemed to extend from the original sample point to a distance of 2.0m in the direction of the contaminated sample. If any delineation sample does not meet the criterion a further sample will be taken at a distance of 2.0m from the first delineation sample and the assessment procedure will be repeated. Sampling will continue until uncontaminated ground is proved on all four sides. Similarly, sampling will be extended to 0.5m below the previous sampling point if the lower sample at any location does not meet the criterion. The hotspot will be deemed to extend down to within 0.2m of the uncontaminated sample location.

In any delineation area with sides longer than 10m, additional samples will be taken from that side so that the frequency of sampling along the side is at least 1 sample per 10m. If the additional samples do not meet the criterion, delineation will be extended as above.

Sampling and analysis will continue until the geo-environmental engineer is satisfied that the hotspot has been delineated. The sample locations will be recorded by the surveyor and delineation hotspots will be defined as the approximately circular area 1m inside the locations of uncontaminated samples.

The sampling procedure in **Section 4.7.1** will be followed.

On completion of excavation and soil removal the void will be surveyed and photographed. Soil movement will be recorded on the soil tracking register.

4.8 Tracking of Soil Movement

A soil tracking method will be used so that the source area and the final destination of soils will be recorded and available for future reference.

The geo-environmental engineer will track soils and will prepare sheets showing daily movements from source to temporary (quarantine area) and permanent (offsite) destination during the remediation of the hotspot.

The site supervisor shall also keep records of soil movement after the hotspots have been remediated up till completion of the construction works.

A weekly survey will be made and a progress drawing prepared showing soil movement and soil sampling points.

An example of a tracking sheet is attached in **Appendix 5**.

4.9 Unexpected Contamination

During the bulk excavation works, any unforeseen contamination that was not encountered during the site investigation will be investigated. Excavation works in the area shall be immediately suspended and BC informed by ODL as soon as reasonably practicable such that an investigation and sampling will be undertaken prior to removal in accordance with this strategy.

If additional risks are identified, then ODL will be required to develop a specific methodology to remove the identified risks.

4.10 Waste Disposal

ODL shall be responsible for the removal and disposal of all required arisings from its activities.

All waste related activities shall be undertaken in accordance with the Waste Management and Landfill Regulations. Any proposed reuse of materials must be in accordance with the Waste (England and Wales) Regulations 2011. With respect to waste soils disposal, as a minimum, the following information shall be collected and retained by ODL for subsequent validation:

- source and origin of the waste;
- information on the process producing the waste;
- European Waste Catalogue code and characteristics of material;
- for hazardous waste, definition of the relevant properties according to the Hazardous Waste Directive (Annex III 91/689/EC);
- confirmation that waste is not prohibited waste;
- appearance of the waste;
- landfill class and;
- Duty of Care records including full and completed chain of custody documentation.

ODL shall be responsible for the final waste classification and shall be determined in conjunction with the receiving landfill and in liaison with the Environment Agency (and their technical guidance).

ODL shall also be responsible for keeping all public and private roadways free from mud and other debris arising from the disposal activities.

4.11 Water Supply

Water supply pipes laid in ground containing elevated concentrations of some contaminants, notably petroleum hydrocarbons and PAHs, may need to be specified to an enhanced protected specification. The requirements of the water supply utility company should be sought.

4.12 Verification of Topsoil Thickness

On completion of placing the 450mm thick capping layer to managed soft landscaping areas, hand dug exploratory hole with photographic record will be undertaken by ODL to identify the combined thickness of the topsoil and sub soil layer provided and the coloured geotextile.

Samples of the material shall be collected and analysed at a frequency of 1/100m³ for the following list of contaminants based on the soil screening remediation value's included in **Appendix 4**.

5.0 Validation

5.1 Validation Plan

A Remediation Verification and Materials Management Report will be produced by ODL on completion of the site-based works. The following sections refer to the validation of remediation of contamination which will be required by the regulatory authorities in accordance with current guidance. The report will be required by the Regulatory Authorities.

5.2 Evidence of Validation

On completion of the remedial works, a verification report will be drafted and distributed to the relevant regulatory bodies and the local authority Planning Department. In the report, the evidence that was collected over the course of the works will be assembled in a format suitable to satisfy the Client and Regulatory Authorities that the work was undertaken in the correct manner, the targets were achieved, and the objectives met. Information to be presented in the report will be assembled as the work progresses and will be available on site for inspection by the Regulatory Authorities.

The lines of evidence that will be presented in the verification report will be those developed during the course of the remediation. They are summarised in **Table 6**. All documentation generated from site such as chemical analyses, the soil tracking register and waste consignment notes will be kept on site until completion of the works then held in the ODL's head office for 2 years from completion of the works.

5.3 Contents of Validation Report

The verification report will include the following to meet regulatory requirements:

- **Site Details:** This section of the report will include an introduction to the site with a summary of the original site conditions and the reasons for carrying out the remedial works. It will list the details of the parties involved including ODL and any sub-contractors. It will make reference to ODL's Remediation Strategy Implementation Plan and MMP.
- **Works Undertaken:** The report will address how the works were completed, the approach used, whether the program was adhered to and will detail any delays or variations. It will describe general site works and photographic records, environmental monitoring undertaken, the volumes of soils excavated including hotspot soils, site won and imported materials placed in final destinations. It will also include information on volumes and types of unsuitable material taken off site and details of licensed waste disposal facilities.
- **Validation:** This section of the report will summarise the delineation validation tests, and groundwater testing and monitoring results. Drawings will be included indicating where soil and groundwater samples were taken and where geotechnical tests were completed. The results of sampling will be presented in electronic format and summarised in tables and on graphs and drawings. Records will be provided as evidence that the soil remediation criteria have been met. The soil tracking register will be presented to show an audit trail of the origin of the sample, the type of validation it represents and the destination of the soil. An 'as built' survey of the final site levels will be presented and a drawing showing the surveyed areas where soils have been excavated and placed.

Evidence of compliance will be provided for aspects of the remediation that were dependent on results obtained during the works. This includes the soil sampling frequency. In respect of analytical results, if there are any exceedances of the soil quality criteria not already addressed in risk assessments, further assessment will be presented to show that the remediation objectives are met.

The validation report shall also provide evidence in relation to the agreed actions of the remediation strategy.

Waste transfer notes will be presented in respect of any soils, liquids or materials for recycling which are taken off-site.

Table 6 Summary of Lines of Evidence for Validation of Remediation

Remediation required	Action	Lines of Evidence	Person responsible for Evidence	Frequency
Remediated hotspot/s.	Excavate contaminated material and disposal offsite.	Soil tracking register, chemical data and photographs.	Geo-environmental engineer.	Update daily.
		Survey of voids.	Surveyor as requested by geo-environmental engineer.	On completion of excavation.
Destination of moved soil.	Move to soil placement area/s.	Soil tracking register.	Site supervisor.	Update daily.
		Survey of material.	Surveyor as requested by geo-environmental engineer.	On completion of placement.
Contaminated groundwater management.	Dewater, audit test and discharge via sewer.	Site records and chemical data.	Geo-environmental engineer.	Update daily.
Clean Cover System.	Validate imported landscape material	Site records and chemical data.	Geo-environmental engineer.	On completion of placement.
Water Supply.	Validate pipeline route.	Chemical data and risk assessment.	Geo-environmental engineer.	On completion of works.

- **Environmental Monitoring:** The report will include the daily environmental logs which record all the information required to meet the CEMP including the compliance monitoring of vibration, noise, dust and odour.
- **Regulatory Correspondence:** It is intended that this report will be approved by the regulators and as such any correspondence from the regulatory bodies during the works will be documented in the completion report.
- **Conclusion:** The report will conclude with a review of the conceptual model and a summary of the evidence presented to show that the objectives of the remediation works were achieved.

The validation report will be submitted to the Regulatory Authorities within one month of completion of works on site.

END OF REPORT

June 2022

FIGURES

FIGURE 1
SITE LOCATION PLAN



Client:	Opulwood Developments Ltd
Figure No.:	Figure 1
Figure Title:	Summerseat Site Location Plan
Date:	07 January 2022

FIGURE 2
SITE LAYOUT PLAN



Client:	Opulwood Developments Ltd
Figure No.:	Figure 2
Figure Title:	Summerseat Site Layout Plan
Date:	07 January 2022

FIGURE 3
PROPOSED DEVELOPMENT LAYOUT PLAN



Existing bridge parapet rebuilt to suit revised road levels, parapet height to be 1100 above finished surface level.

Note: New footway and parapet wall shown constructed in accordance with Planning Consent 02897.



NOTES		
• This drawing is copyright. No unauthorised copying of drawing without the express permission of the architect.		
• Do not scale from prints. Use figure dimensions only.		
• Contractors to check all dimensions on site prior to commencement of works.		
• All works to be carried out in accordance with current statutory Health and Safety Regulations.		
• This drawing is to be read in conjunction with all relevant consultants' and / or specialists' drawings / documents and any discrepancies or variations are to be notified to the architect before affected work commences.		
REV.	AMENDMENTS	DATE
A	site boundary omitted	12.12.18
B	building footprint amended	20.03.19
C	4 car spaces added to suit Planning Dept comments. Boundary amended and Amenity Area shown.	18.04.19

PROPOSED SITE PLAN 1:200

Project	RESIDENTIAL DEVELOPMENT WATERSIDE SUMMERSEAT PROPOSED SITE PLAN		
Drawing			
Client	KINGSLEY PROPERTIES LTD		
Dwn. By	MMKD		
Scale	1:200		
Dwg. No.	18-518-11-Rev C		
Dwg. Size	A1		
Date	DECEMBER 2018		

JOHN HOLT ARCHITECTS LTD.

FIGURE 4
EXPLORATORY HOLE LOCATION PLAN



Existing bridge parapet reduced to suit new road levels. parapet height to be 1100 above finished surface level.

Note: New footway and parapet wall shown constructed in accordance with Planning Consent 12/07/18.

RIVER IRWELL

KAY STREET

HILL STREET

SUMMER HILL

WS01

WS02

WS03

WS04

BH02

BH01

CAR PARK 20 SPACES

APARTMENT BLOCK 16 UNITS

AMENITY AREA

PROPOSED SITE PLAN 1:200

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- | REV. | AMENDMENTS | DATE |
|------|---|----------|
| A | site boundary omitted | 12.12.18 |
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4 car spaces added to suit Planning Dept comments | 20.03.19 |
| C | Boundary amended and Amenity Area shown | 18.04.19 |

Project	RESIDENTIAL DEVELOPMENT WATERSIDE SUMMERSEAT PROPOSED SITE PLAN
Client	KINGSLEY PROPERTIES LTD
Dwn. By	MMKD
Scale	1:200
Dwg. No.	18-518-11 Rev C
Dwg. Size	A1
Date	DECEMBER 2018

APPENDICES

APPENDIX 1

CONTAMINATION LABORATORY TEST RESULTS (JANUARY 2022)

FINAL ANALYTICAL TEST REPORT

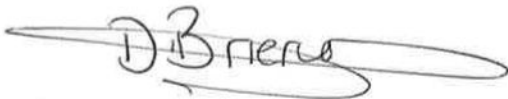
Envirolab Job Number: 22/00110
Issue Number: 1

Date: 25 January, 2022

Client: UA Antia (UK) Ltd Geoenvironmental Solutions
The Enterprise Centre
Manchester
M22 8LF

Project Manager: Carl Hill/Umo Antia
Project Name: Kay Bridge, Summerseat
Project Ref: Not specified
Order No: TBC
Date Samples Received: 06/01/22
Date Instructions Received: 10/01/22
Date Analysis Completed: 25/01/22

Approved by:



Danielle Brierley
Deputy Client Services Supervisor

Envirolab Job Number: 22/00110

Client Project Name: Kay Bridge, Summerseat

Client Project Ref: Not specified

Lab Sample ID	22/00110/1	22/00110/2							
Client Sample No									
Client Sample ID	BH02	BH02							
Depth to Top	1.20	3.50							
Depth To Bottom									
Date Sampled	05-Jan-22	05-Jan-22							
Sample Type	Soil	Soil							
Sample Matrix Code	6A	6A							
	Units	Limit of Detection	Method ref						
% Stones >10mm _A	% w/w	0.1	A-T-044						
pH ₀ ^{MS}	pH	0.01	A-T-031a						
pH BRE ₀ ^{MS}	pH	0.01	A-T-031a						
Sulphate (water sol 2:1) ₀ ^{MS}	g/l	0.01	A-T-026a						
Sulphate BRE (water sol 2:1) ₀ ^{MS}	mg/l	10	A-T-026a						
Cyanide (total) _A ^{MS}	mg/kg	1	A-T-042aTCN						
Phenols - Total by HPLC _A	mg/kg	0.2	A-T-030a						
Arsenic ₀ ^{MS}	mg/kg	1	A-T-034a						
Cadmium ₀ ^{MS}	mg/kg	0.5	A-T-034a						
Copper ₀ ^{MS}	mg/kg	1	A-T-034a						
Chromium ₀ ^{MS}	mg/kg	1	A-T-034a						
Lead ₀ ^{MS}	mg/kg	1	A-T-034a						
Mercury ₀	mg/kg	0.17	A-T-034a						
Nickel ₀ ^{MS}	mg/kg	1	A-T-034a						
Selenium ₀ ^{MS}	mg/kg	1	A-T-034a						
Zinc ₀ ^{MS}	mg/kg	5	A-T-034a						
Leachate Prep BS EN 12457-2 (10:1) _A	*	*	A-T-001						
pH (leachable) _A [#]	pH	0.01	A-T-031w						
Sulphate (leachable) _A [#]	mg/l	1	A-T-026w						
Cyanide (total) (leachable) _A [#]	mg/l	0.005	A-T-042wTCN						
Phenols (total by HPLC) (leachable) _A	mg/l	0.01	A-T-030w						
Arsenic (leachable) _A [#]	µg/l	1	A-T-025w						
Cadmium (leachable) _A [#]	µg/l	1	A-T-025w						
Copper (leachable) _A [#]	µg/l	1	A-T-025w						
Chromium (leachable) _A [#]	µg/l	1	A-T-025w						
Lead (leachable) _A [#]	µg/l	1	A-T-025w						
Mercury (leachable) _A [#]	µg/l	0.1	A-T-025w						
Nickel (leachable) _A [#]	µg/l	1	A-T-025w						
Selenium (leachable) _A [#]	µg/l	1	A-T-025w						
Zinc (leachable) _A [#]	µg/l	1	A-T-025w						
1.10a PSD (Grading/63um/sand fraction/wet sieve) BS1377 pt 2 1990 cl 9.2 _A [#]	Appended	Appended	Subcon SS						
1.02 Atterburg 4Pt BS1377 1990 pt2 cl4.4,5.3+5.4 _A [#]	Appended	Appended	Subcon SS						
1.01 % Moisture BS1377 1990 pt2 cl3.2 _A [#]	Appended	Appended	Subcon SS						

Envirolab Job Number: 22/00110

Client Project Name: Kay Bridge, Summerseat

Client Project Ref: Not specified

Lab Sample ID	22/00110/1	22/00110/2						Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH02	BH02								
Depth to Top	1.20	3.50								
Depth To Bottom										
Date Sampled	05-Jan-22	05-Jan-22								
Sample Type	Soil	Soil								
Sample Matrix Code	6A	6A								
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil [#]	NAD	NAD								A-T-045
Asbestos Matrix (visual) ₀	-	-								A-T-045
Asbestos Matrix (microscope) ₀	-	-								A-T-045
Asbestos ACM - Suitable for Water Absorption Test? ₀	N/A	N/A								A-T-045

Envirolab Job Number: 22/00110

Client Project Name: Kay Bridge, Summerseat

Client Project Ref: Not specified

Lab Sample ID	22/00110/1	22/00110/2						Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH02	BH02								
Depth to Top	1.20	3.50								
Depth To Bottom										
Date Sampled	05-Jan-22	05-Jan-22								
Sample Type	Soil	Soil								
Sample Matrix Code	6A	6A								
PAH-16MS										
Acenaphthene _A ^{M#}	2.59	1.78						mg/kg	0.01	A-T-013a
Acenaphthylene _A ^{M#}	0.06	0.04						mg/kg	0.01	A-T-013a
Anthracene _A ^{M#}	0.93	0.63						mg/kg	0.02	A-T-013a
Benzo(a)anthracene _A ^{M#}	1.25	0.91						mg/kg	0.04	A-T-013a
Benzo(a)pyrene _A ^{M#}	0.46	0.36						mg/kg	0.04	A-T-013a
Benzo(b)fluoranthene _A ^{M#}	0.58	0.44						mg/kg	0.05	A-T-013a
Benzo(ghi)perylene _A ^{M#}	0.13	0.10						mg/kg	0.05	A-T-013a
Benzo(k)fluoranthene _A ^{M#}	0.25	0.20						mg/kg	0.07	A-T-013a
Chrysene _A ^{M#}	1.19	0.89						mg/kg	0.06	A-T-013a
Dibenzo(ah)anthracene _A ^{M#}	0.05	<0.04						mg/kg	0.04	A-T-013a
Fluoranthene _A ^{M#}	4.80	3.31						mg/kg	0.08	A-T-013a
Fluorene _A ^{M#}	2.12	1.41						mg/kg	0.01	A-T-013a
Indeno(123-cd)pyrene _A ^{M#}	0.19	0.15						mg/kg	0.03	A-T-013a
Naphthalene _A ^{M#}	6.49	5.75						mg/kg	0.03	A-T-013a
Phenanthrene _A ^{M#}	6.88	4.74						mg/kg	0.03	A-T-013a
Pyrene _A ^{M#}	3.24	2.26						mg/kg	0.07	A-T-013a
Total PAH-16MS _A ^{M#}	31.2	23						mg/kg	0.01	A-T-013a