

A horizontal banner at the top of the page. It features a large blue rectangle in the center with the title 'Remediation Strategy and Verification Plan' in white. To the left of the blue rectangle is a vertical strip of images: a large white pipe, a map, and a worker in a high-visibility suit. To the right of the blue rectangle is another vertical strip of images: a close-up of gravel, a pressure gauge, a red excavator, a red truck, and a worker handling a container.

Remediation Strategy and Verification Plan

Project Name: Brunel Walk

Location: South Tottenham, London, N15 5HQ

Client: Selsdon Building Contractors Limited

Project ID: J15658 (RS & VP)

Report Date: 13 March 2024

Report Issue: 1

SUMMARY

The site, which extends to 0.38ha comprises a vacant area of land, which prior to recent demolition works contained four blocks of two-storey flats and a single detached house. The existing (pre-demolition) site layout is indicated on Figure 2 within Appendix A.

It is proposed to redevelop the site with 45No. new council rent homes in four buildings ranging from 3 to 4-storeys high including; 39No. apartments and 6No. maisonettes, with the provision of associated amenity and play space, cycle and refuse/recycling stores and 4No. wheelchair parking spaces. The proposed site layout is indicated on Figure 3 within Appendix A.

A single phase of intrusive investigation was carried out.

The shallow, Made Ground, soils found across the site were not considered chemically contaminated with respect to the protection of human health. However, they are considered physically and aesthetically unsuitable to be retained within the proposed garden and soft landscaped areas across the site. It was therefore recommended that a capping layer of certified clean soils be provided in all private gardens and areas of communal soft landscaping.

It was also recommended that during removal of the floor slabs to the former buildings, and throughout construction works, a careful watch should be kept for any suspected asbestos containing materials. Where such material is identified this should be subject to laboratory analysis. Any ACMs and/or asbestos containing soils should be disposed of off-site at an appropriate facility.

An elevated concentration of organic contaminants (petroleum hydrocarbons) was found in one location. Such contaminants can affect plastic underground service pipes, such as the types used by water and gas supply companies. Guidance should be sought from the relevant companies regarding any proposed plant in the affected area. Many water supply companies now require higher specification pipe on contaminated sites, even following remediation.

A Remediation Strategy comprising the removal of the Made Ground/provision of a capping layer within all private garden and soft landscaped areas is proposed, along with a watching brief for any suspected asbestos containing materials, subject to approval by regulatory authorities.

A Verification Plan and Discovery Strategy are also included.

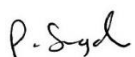
The contamination screening values used are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based upon them. Their validity should be confirmed at the time of site development.

The recommendations contained in this report are made in respect of the particular development proposals as described in the report and may not be appropriate to alternative development schemes.

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The findings and opinions conveyed via this report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Limited believes are reliable. Nevertheless, Southern Testing Laboratories Limited cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

This report should be considered in its entirety and Southern Testing Laboratories Ltd accepts no responsibility for and excludes liability in respect of any omission or alteration made by others, and any use of the report for any purpose other than that for which it was produced.

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For and on behalf of Southern Testing Laboratories Limited

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TABLE OF CONTENTS

A	INTRODUCTION	1
1	Authority	1
2	Location	1
3	Proposed Construction	1
4	Scope	1
B	BACKGROUND INFORMATION	1
5	Site Investigation Works	1
6	Site History	2
7	Summary of Findings of Intrusive Site Investigation Works	2
8	Relevant Pollutant Linkages	3
C	REMEDIAL OBJECTIVES AND OPTIONS	3
9	Remedial Objectives	3
10	Options Appraisal	3
D	REMEDICATION STRATEGY	3
11	Remediation Methods	3
12	Assessment Criteria	4
E	VERIFICATION PLAN	4
13	Data Collection	4
14	Reporting	4
15	Discovery Strategy	4
16	General Guidance	5

TABLE OF APPENDICES

APPENDIX A

Site Plans

APPENDIX B

Verification Criteria

A INTRODUCTION

1 Authority

Our authority for carrying out this work is contained in a Purchase Order (ref. PO-053-011) dated 15th February 2024 from Selsdon Building Contractors Limited.

2 Location

The site is located 100m to the south of West Green Road, and 400m to the northwest of Seven Sisters overground railway station, in South Tottenham, London. The approximate National Grid Reference of the site is TQ 33116 89016. The site location is indicated on Figure 1 within Appendix A.

3 Proposed Construction

It is proposed to redevelop the site with 45No. new council rent homes in four buildings ranging from 3 to 4-storeys high including; 39No. apartments and 6No. maisonettes, with the provision of associated amenity and play space, cycle and refuse/recycling stores and 4No. wheelchair parking spaces. The proposed site layout is indicated on Figure 3 within Appendix A.

For the purposes of the contamination risk assessment, the proposed development land use is classified as both Residential with consumption of Homegrown Produce and Public Open Space (residential) CLEA Model Ref [1] / C4SL Report Ref [2].

4 Scope

This report presents our Remediation Options Appraisal, Remediation Strategy, and Verification Plan for the proposed remedial works at the site.

As with any site there may be differences in soil conditions between exploratory hole positions.

The findings and opinions conveyed via this investigation report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Limited believes are reliable. Nevertheless, Southern Testing Laboratories Limited cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

This report has been prepared for the sole internal use and reliance of Selsdon Building Contractors Limited and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Southern Testing Laboratories Limited. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

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The contamination screening values used are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based upon them. Their validity should be confirmed at the time of site development.

B BACKGROUND INFORMATION

5 Site Investigation Works

The site has been the subject of a site investigation report, as listed below.

Ref	Date	Author	Ref No	Title / Subject
1	08/03/2024	Southern Testing	J15658	Desk Study, Site Investigation & Risk Assessment Report

This report provides good coverage and characterisation of the site and information derived from this report is discussed below. The reader is referred to the original report for supporting detail if needed. This report is referred to below by the number given in the left hand column of the above table.

6 Site History

The Desk Study, detailed in report ref. 1 above, indicates that the site has a history of undeveloped land until circa 1896, when the site was occupied by part of the Alexandra Park Branch railway line. The site then remained unchanged until the early 1970's, at which time the railway line was labelled as disused. The site appears to have been developed as existing, as Brunel Walk, by 1979.

Development of the surrounding area commenced in the 1800's, predominantly for residential use, which continued until around the mid 1960's, by which time the surrounding area had been extensively developed.

7 Summary of Findings of Intrusive Site Investigation Works

A2 Site Investigation undertook an intrusive site investigation in January 2022, with the information obtained from these works presented in their Factual Report (ref. 12621-A2SI-XX-XX-RP-X-0001-00 dated 18th January 2022). The report ref. 1 above provided a summary of the information provided in A2 Site Investigation report, along with interpretation of the geoenvironmental laboratory test results, gas and groundwater monitoring. The reader is referred to A2 Site Investigation report (a copy of which is provided in the Southern Testing report) for further information.

It is understood that Selsdon Building Contractors Limited have reliance A2 Site Investigation's report. Southern Testing Laboratories Ltd. cannot and does not guarantee the authenticity or reliability of the information contained within the report.

The intrusive investigation undertaken by A2 Site Investigation comprised 8No. dynamic windowless sampler boreholes, 3No. cable percussive boreholes and 12No. hand dug trial pits.

The soils found consisted of a covering Made Ground to depths of between 0.7m – 1.7mbgl. over London Clay.

Evidence of possible contamination in the form of Made Ground was recorded in all of the trial hole locations. Chrysotile (white) asbestos containing material (ACM) was noted in the trial hole log for TP08 at 0.06 – 1.3m bgl, within the Made Ground. No further information on the product type was given.

With the exception of TP06, in which water was encountered at the base of the pit (at 0.5m bgl), groundwater was not observed in any of the exploratory holes.

On the basis of the laboratory analysis undertaken, the Made Ground would not be considered contaminated, as all of the concentrations of potential contaminants are below the tier 1 screening value for a residential with home-grown produce consumption land use.

No ACM or loose asbestos fibres were detected in the eight samples of Made Ground subject to laboratory analysis.

A piece of vinyl floor tile, taken from one of the concrete floor slabs on site, was subject to laboratory analysis for potential asbestos. This confirmed that the floor tile did not contain asbestos.

With the exception of one sample (taken from WS06@1.2m which was located on the south of the site), no significant concentrations of petroleum hydrocarbons were found in the samples subject to laboratory analysis. The concentrations measured in WS06 would not be considered elevated with respect to human health. However it did exceed the UKWIR threshold(s) for the use of plastic water supply pipes and British Plastics Federation Pipes Group thresholds for drainage and sewage pipes.

Ground gas monitoring was undertaken, with four monitoring wells installed across the site. On the basis of the information obtained as part of the Desk Study for the site, which did not reveal any potential on-site or off-site sources of ground gases, and the results of the above ground gas monitoring, there is not considered to be a risk to the site from the generation and/or migration of ground gases. Therefore, ground gas protection measures are not considered to be required on the site.

8 Relevant Pollutant Linkages

Potential pollutant linkages for which remedial action may be required have been identified in the revised conceptual model, as follows.

Contaminant / Source	Pathways	Receptor
Asbestos Containing Materials (ACM) in Made Ground	Dust inhalation	Site/construction workers Future residents
Petroleum hydrocarbons in Made Ground	Direct contact	Services

In addition, the Made Ground is considered physically and aesthetically unsuitable to be retained within the proposed garden and soft landscaped areas across the site. It was therefore recommended that a capping layer of certified clean soils be provided in all private gardens and areas of communal soft landscaping.

C REMEDIAL OBJECTIVES AND OPTIONS

9 Remedial Objectives

The site is to be developed for residential end-use, including private gardens and areas of communal soft landscaping. In the absence of significant off-site risks, the principal objective of the remediation is to remove or reduce to an acceptable level the identified potential risks from on-site sources, to construction and future maintenance workers, future residents and end-users of the site. Additional objectives are to achieve the remediation goal in a cost effective and timely manner, whilst minimising impact from associated traffic movements, landfill and resource consumption.

10 Options Appraisal

Whilst the Made Ground across the site has not been found to be chemically contaminated, with respect to the protection of human health, it is considered physically and aesthetically unsuitable to be retained within the proposed garden and soft landscaped areas across the site. The Made Ground may also pose a risk to water pipes. Therefore, pending finished levels across the site (which it is anticipated will remain similar to existing), the only viable option for this material is removal, to allow the placement of a capping layer of clean soils, within the proposed garden and soft landscaped areas.

D REMEDIATION STRATEGY

11 Remediation Methods

The Remediation Strategy will comprise the following:

Location	Details
Entire site	Throughout construction works, and in particular during removal of the floor slabs to the former buildings, a careful watch should be kept for any suspected asbestos containing materials. Where such material is identified this should be subject to laboratory analysis. Any ACMs and/or asbestos containing soils should be disposed of off-site at an appropriate facility.
Private Gardens	Provision of a minimum thickness of 600mm of clean soils, including a minimum of 150mm of topsoil, above the Made Ground. Where natural soils are encountered at less than 600mm below finished level, only the Made Ground will be removed.

Location	Details
Communal soft landscaping	Provision of a minimum thickness of 300mm of clean soils, including a minimum of 150mm of topsoil, above the Made Ground. Where natural soils are encountered at less than 300mm below finished level, only the Made Ground will be removed.
Buried Services	Consultation with the utilities providers will also be required to determine the most appropriate materials for use in the laying of new services.

12 Assessment Criteria

The following assessment criteria values will be used in the verification process:

Imported soils shall be free from deleterious materials, weeds and contamination. The material to be used will be tested in accordance with the appropriate BS Specifications for Topsoil (BS 3882:2015) and Subsoil (BS 8601:2013) and the analysis shall also comply with the values given for Residential with home grown produce consumption in the table in Appendix B. These values are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based on them. Their validity should be confirmed at the time of site development.

Certificates for imported soils must include details of the source, description of the material, and dates of sampling and analysis, as well as the test results for potential contaminants. The date of sampling and analysis must relate to the material imported. Associated consignment notes must clearly identify the source material, and must correspond to the certified material.

E VERIFICATION PLAN

13 Data Collection

Location	Data	Responsible Party
Entire site	Watching brief for any suspected asbestos containing materials, during removal of the floor slabs to the former buildings and throughout the construction works.	Selsdon Building Contractors/ Groundworker
Private Gardens & Communal soft landscaping	Verification of the removal of the Made Ground to allow the required depth of clean soils to be placed.	Southern Testing
	Placement of certified clean soils to the required depth, including a minimum thickness of 150mm of topsoil.	Groundworks Contractor
	Transfer notes for imported soils, along with suppliers test certificates.	Groundworks Contractor
Buried Services	Consultation with the relevant utilities providers.	Selsdon Building Contractors

The proposed site layout showing the required remedial works, is indicated on Figure 3 within Appendix A.

14 Reporting

At the end of the remediation, a verification report will be produced by Southern Testing Laboratories Limited.

15 Discovery Strategy

As with any site, areas of contamination not identified during site investigation works may come to light in the course of redevelopment. Accordingly, a discovery strategy will be adopted to ensure that any hitherto unknown contamination is identified and dealt with in an appropriate manner, as follows:

- A close watch will be maintained during all demolition and excavation works.

- In the event that unexpected or malodorous soils or liquids are encountered, excavation work shall cease in the affected area.
- The affected area shall be made safe and fenced off to prevent unauthorised access.
- The Site Manager shall notify Southern Testing Laboratories Limited of the discovery, who will attend site to inspect the suspect materials, provide advice and take samples as necessary. Within Southern Testing Laboratories Limited, Sarah Toms shall be the first point of contact.
- The Site Manager shall notify Haringey Council of the discovery. Within Haringey Council, the Contaminated Land Officer shall be the first point of contact.

Any suspect excavated soil will be stockpiled separately on polythene sheeting, covered, and tested before being removed.

16 General Guidance

In general terms, the workforce and general public should be protected from contact with contaminated material. There is a range of relevant documents published by the Health and Safety Executive, and organisations such as CIRIA, and the BRE.

Some soils will require removal from site and disposal to suitably licensed landfills. Different guidelines and charges will apply to different waste classifications. As waste producers, the Developer holds responsibilities under the various governing regulations, including:-

- Ensuring that waste is characterised in accordance with current Technical Guidance.
- Ensuring that waste is disposed of at a facility appropriately licensed to receive the waste as classified.
- Keeping accurate records of all waste classification, transfer and a disposal log including information such as:
 - Date, Waste Classification, Carrier's Registration Number, Transfer Note Number, Ultimate Destination.
- Submitting full copies of those records for inclusion in validation/closure reports.

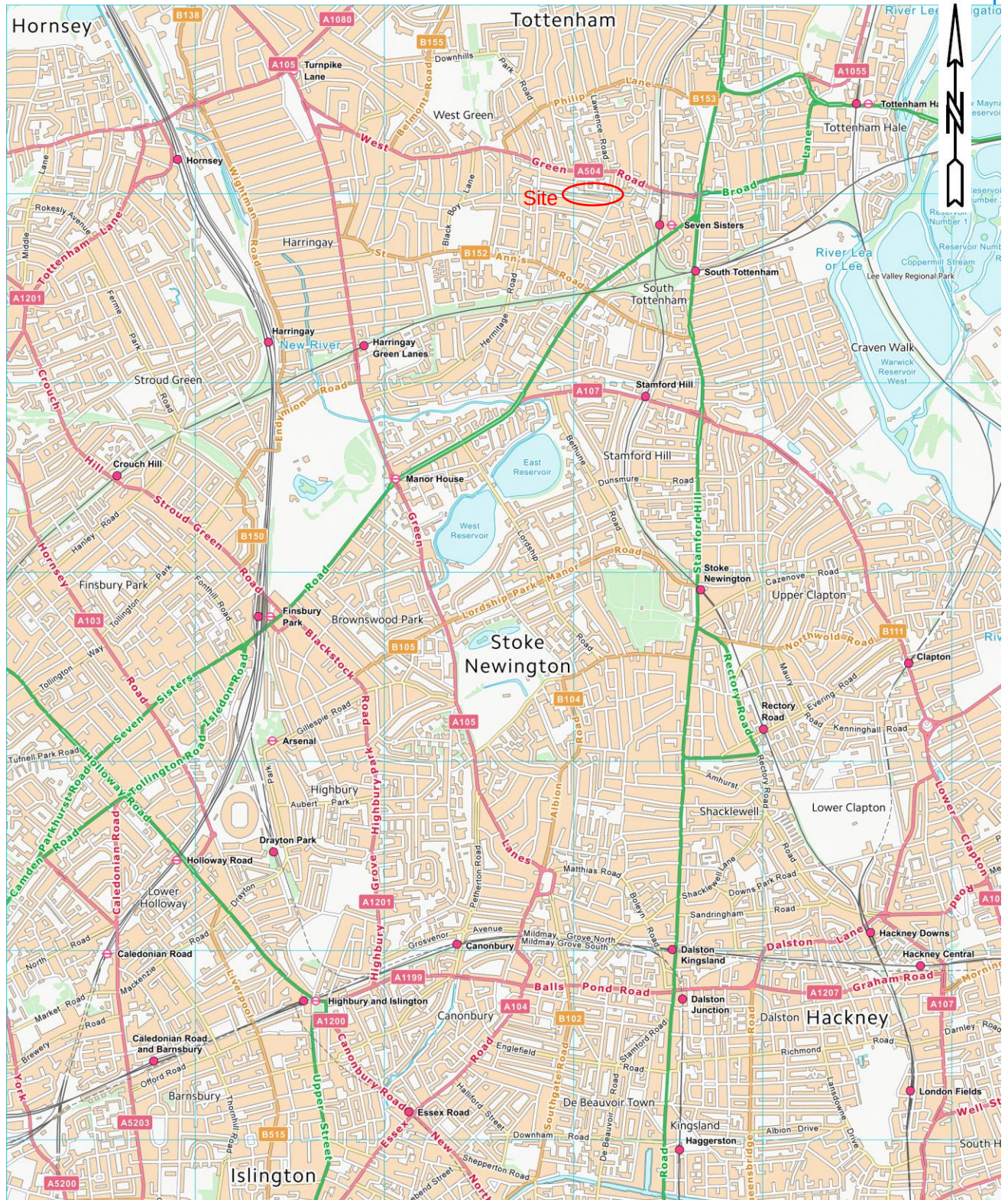
Maintaining those records for potential future regulatory inspection.

REFERENCES

- [1] Environment Agency, "Updated technical background to the CLEA model," 2009.
- [2] Contaminated Land: Applications in Real Environments (CL:AIRE), "Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination," 2014.
- [3] CIRIA, "C665 Assessing risks posed by hazardous ground gases to buildings," 2007.

APPENDIX A
Site Plans





Contains Ordnance Survey Data © Crown Copyright and Database Right 2020

Site:	Brunel Walk, Tottenham, London, N15 5HQ	Project ID	J15658 (RS & VP)
Figure 1	Site Location Plan	Date:	11/03/2024



Private Gardens: Provision of a minimum thickness of 600mm of clean soils, including a minimum of 150mm of topsoil, above the Made Ground.

Communal soft landscaping: Provision of a minimum thickness of 300mm of clean soils, including a minimum of 150mm of topsoil, above the Made Ground.

Client:
LB Haringey

DISCLAIMER
The drawings are prepared by the architect on the basis of the information provided by the client. The architect does not accept liability for any errors or omissions in the drawings, or for any consequences arising from the use of the drawings. The drawings are provided for information only and are not to be used for any other purpose without the written consent of the architect.

Notes:

FOR PLANNING

NO.	REVISION	DATE
1	ISSUED FOR PLANNING	04/03/2024

Project:
0552 - Brunel Walk
Drawing Title:
Proposed Site Plan - Full Site

Drawing Number:
PL_1000
Scale:
1 : 250
Paper Size:
A1
Revision:
N

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NB: Positions of exploratory holes / test positions are only indicative unless dimensioned.

Site:	Brunel Walk, Tottenham, London, N15 5HQ	Project ID	J15658 (RS & VP)
Figure 3	Proposed Site Layout Plan	Date:	04/03/2024



APPENDIX B

Verification Criteria



B

Contaminant Screening Values for Imported Soils

Contaminant	Units	Proposed Land Use					
		Residential with home grown produce consumption	Residential without home grown produce consumption	Open Space * (Residential)	Open Space * (Park)	Allotments	Commercial / Industrial
Arsenic (As) [2]	mg/kg	37	40	79	170	43	640
Cadmium (Cd) [2]	mg/kg	11	85	120	555	1.9	190
Trivalent Chromium (CrIII) [2]	mg/kg	910	910	1,500	33,000	18,000	8600
Hexavalent Chromium (CrVI) [2]	mg/kg	6	6	7.7	220	1.8	33
Lead (Pb) [3]	mg/kg	200	310	630	1300	80	2330
Mercury (Hg) [1,2,7]	mg/kg	7.6-11	9.2-15	40	68-71	6.0	29-320
Selenium (Se) [2]	mg/kg	250	430	1,100	1,800	88	12,000
Nickel (Ni) [2,4]	mg/kg			pH <6.0 pH 6.0 – 7.0 pH >7.0	60 75 110		
Copper (Cu) [2,4]	mg/kg			pH <6.0 pH 6.0 – 7.0 pH >7.0	100 135 200		
Zinc (Zn) [2,4]	mg/kg			pH <6.0 pH 6.0 – 7.0 pH >7.0	200 200 300		
Phenol [1,2]	mg/kg	120-380	440-1200	440-1300	440-1300	23-83	440-1300
Benzo[a]pyrene [1,5]	mg/kg	1.7-2.4	2.6	4.9	10	0.67-2.7	36
Naphthalene [1,2]	mg/kg	2.3-13	2.3-13	77-430*	77-430*	4.1-24	77-430*
Total Cyanide (CN) [6]	mg/kg	/	/	/	/	/	/
Free Cyanide [6]	mg/kg	/	/	/	/	/	/
Complex Cyanides [6]	mg/kg	/	/	/	/	/	/
Thiocyanate [6]	mg/kg	/	/	/	/	/	/

Notes:

* Open Space levels calculated on the basis of the exposure modelling developed in the C4SL research.

+ Screening values constrained to saturation limit. Higher values may be acceptable on a site specific basis.

[1] Where ranges of values are given for organic contaminants the screening value is dependent on the Soil +Organic Matter.

[2] LQM/CIEH S4UL (2014). Copyright Land Quality Management Ltd. reproduced with permission; Publication Number S4UL 3116. All rights reserved.

[3] C4SL (DEFRA 2014).

[4] Copper, Zinc and Nickel may have phototoxic effects at the given concentrations. Alternative criteria should be adopted for importation of Topsoil or other soils for cultivation. BS3882:2015 and BS8601:2013 suggest values of 200 to 300mg/kg for Zn, 100 to 200mg/kg for Cu, and 60 to 110mg/kg for Ni, for topsoil and subsoil, depending on pH.

[5] Based on the Surrogate Marker approach and modelled using the modified exposure parameters of C4SL but retaining 'minimal risk' HCV.

[6] Screening criteria derived on a site specific basis if test results indicate.

[7] S4UL for Methyl Mercury, higher concentrations may be tolerable if inorganic mercury is the only species present. Lower concentrations apply for elemental Mercury.



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