enzygo
geo environmental

Remediation Method Statement

Ossett Lane, Dewsbury

Campbell Homes Developments Limited.

SHF.1888.002.GE.R.003.A

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Remediation Method Statement

Project:	Ossett Lane, Dewsbury
For:	Campbell Homes Limited
Status:	Revision A
Reference:	SHF.1888.002.GE.R.003.A
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Contents

Tables and Figures

Drawings and Appendices

1.0 INTRODUCTION

1.1 Background

1.1.1 Enzygo Geo-Environmental Limited (Enzygo) has been commissioned by Campbell Homes Limited (the Client) to prepare a Remediation Method Statement for a proposed residential development at Ossett Lane, Earlsheaton, Dewsbury, WF12 8LR.

1.2 Site Description

1.2.1 Access is off Ossett Lane at the western corner.

1.2.2 All historic buildings [dilapidated residential buildings and garages] have been demolished. The topography of the site is generally flat in the west with a dip from the centre of the site to the southwestern corner.

1.2.3 The site is bound by fencing, semi-mature trees and hedges, present around the site boundaries.

1.3 Proposed Development

1.3.1 The proposed residential development comprises five houses with associated hard and soft landscaping with a retaining wall to the southern boundary. The proposed development layout is shown on the Self Architects 'Concept Design' Drawing Number: 13125-SA-ZZ-DR-A201, dated January 2023, which is included in the Appendix 1.

1.4 Planning Consent

1.4.1 Outline Planning Consent [Ref: 2021/60/91695/E], dated 25 March 2025, as granted by Kirklees Council includes the following conditions/directives as set out in 'Condition 11,12 & 13,', which state the following [excluding related elements in condition already signed off].

> *11. Where site remediation is recommended in the Phase II Intrusive Site Investigation Report approved pursuant to condition 10, groundworks shall not commence until a Remediation Strategy has been submitted to and approved in writing by the Local Planning Authority. The Remediation Strategy shall include a timetable for the implementation and completion of the approved remediation measures. Reason: Having regard to environmental sustainability and to comply with policy LP53of the Kirklees Local Plan*
>
> *12. Remediation of the site shall be carried out and completed in accordance with the Remediation Strategy approved pursuant to condition 11. In the event that remediation is unable to proceed in accordance with the approved Remediation Strategy or contamination not previously considered [in either the Preliminary Risk Assessment or the Phase II Intrusive Site Investigation Report] is identified or encountered on site, all groundworks in the affected area (except for site investigation works) shall cease immediately and the Local Planning Authority shall be notified in writing within 2 working days. Works shall not recommence until proposed revisions to the Remediation Strategy have been submitted to and approved in writing by the Local Planning Authority. Remediation of the site shall thereafter be carried out in accordance with the approved revised Remediation Strategy. Reason: Having regard to environmental sustainability and to comply with policy LP53 of the Kirklees Local Plan*

13. Following completion of any measures identified in the approved Remediation Strategy or any approved revised Remediation Strategy a Validation Report shall be submitted to the Local Planning Authority. No part of the site shall be brought into use until such time as the remediation measures have been completed for (that part of) the site in accordance with the approved Remediation Strategy or the approved revised Remediation Strategy and a Validation Report in respect of those remediation measures has been approved in writing by the Local Planning Authority. Where validation has been submitted and approved in stages for different areas of the whole site, a Final Validation Summary Report shall be submitted to and approved in writing by the Local Planning Authority. Reason: Having regard to environmental sustainability and to comply with policy LP53 of the Kirklees Local Plan.

1.5 Exiting Information

1.5.1 All information made available to Enzygo is listed below.

- Enzygo Ltd, Preliminary Geo-Environmental Risk Assessment [Report Ref: SHF.1888.002.GE.R.001.C], dated March 2023.
- Enzygo Ltd, Ground Investigation Report [Report Ref: SHF.1888.002.GE.R.002.A], dated September 2023.

1.6 Objectives

1.6.1 The objectives of this report are to provide details of the proposed remedial method to allow safe development of the site in order discharge the related Planning Conditions specifically; the requirements under Condition 12 [Remediation Strategy].

1.6.2 The remediation must be undertaken in a way that is sustainable and proportionate in terms of economic and environmental costs. It is also important for the remediation to undertaken in an approach that is acceptable to stakeholders, including the local authority and the future residents of the site.

2.0 HISTORICAL GROUND INVESTIGATION

2.1 General

2.1.1 The Ground Investigation [GI] undertaken by Enzygo on 14th and 15th August 2023. The works comprised one cable percussive boreholes [BH1] and three dynamically sampled windowless boreholes [WS1 to WS3] to identify underlying ground conditions.

2.1.2 All exploratory hole positions are given on the exploratory holes are shown on the Enzygo 'Exploratory Hole Location Plan' [Drawing No: SHF1888002-ENZ-XX-XX-DR-Z-0003], dated September 2023, included within Appendix 1.

2.2 Summary of Encountered Ground and Groundwater Conditions

2.2.1 Generally ground conditions encountered granular Made Ground, encountered up to 0.50m thick, overlying the completely weathered Thornhill Rock [Clay & Gravel]. Groundwater was not encountered within any of the exploratory holes.

2.2.2 Assessment of the risks to human health has been undertaken by comparing the soil quality data with reference values obtained from the Contaminated Land Exposure Assessment (CLEA), Soil Guideline Values (SGV) and General Acceptance Criteria (GAC) published by LQM/CIEH. The LQM/CIEH S4ULs values are used and summary tables of the reference values are included in the Appendix 2 - Human Health Assessment Reference Values, for the proposed end-use (residential with plant uptake).

2.2.3 The proposed development is for a residential housing, the GAC values for residential use with plant up-take are considered suitable. The soil quality analysis shows exceedances of the GAC for the following soil samples only:

Table 2.2.3 Soil quality analysis exceedances

Soil Sample Location and Depth	Determinant	Concentration (mg/kg)	Threshold GAC Value (mg/kg)
CP01 – 0.10m begl	Dibenz(a,h)anthracene	0.3	0.24
WS1 – 0.10m begl	Benzo(b)fluoranthene	3.6	2.6
	Benzo(a)pyrene	2.9	2.2
	Dibenz(a,h)anthracene	0.38	0.24
	Lead	220	200
WS3 – 0.15m begl	Lead	210	200

2.2.4 Three soil samples of Made Ground [CP01, WS1 and WS3] have returned test results with exceedances of the Enzygo GAC values for residential end use with plant uptake, these exceedances were recorded for Polynuclear Aromatic Hydrocarbons (PAH's) from the samples obtained from CP01 and WS1, as well as an exceedance of Lead from the samples obtained from WS1 and WS3.

2.2.5 Further delineation works are not required as all Made Ground soils are proposed to be excavated and removed from site.

2.3 Asbestos

2.3.1 Two soils samples of Made Ground [CP01 and WS1] have tested positive for asbestos [chrysotile], likely associated with the demolition of the historic buildings on site.

2.3.2 Asbestos impacted soils are to be removed from site in accordance with the Remediation Method further detailed below. Consequently, there would be no complete source pathway receptor linkages for the end users of the site.

2.3.3 As along as the impacted soils are handled correctly, there would be no risk to the site construction works. These works should be assessed and validated by a suitably qualified person to confirm that the works are acceptable and carried out safely.

2.4 Volumes of contaminated soil soils

2.4.1 Bases upon the available information it is anticipated that the total area of potentially contaminated soils anticipated to be excavated is approximately 75m^2 [3no. 5m W x 5m L excavations]. The total volume of contaminated soil, assuming a typical depth of 0.50m, approximately totals to be 37.5m^3.

3.0 REMEDIATION METHOD

3.1 General

3.1.1 Presented below is a preliminary outline method for the proposed remedial works:

1. General site strip will be undertaken with soil stockpiled for disposal or re-use on site, where suitable.

2. The lead, PAH and asbestos contaminated soil will be machine excavated from the areas of anticipated contamination presented upon Enzygo drawing 'Exploratory Hole Location Plan' [Ref: SHF1888002-ENZ-XX-XX-DR-Z-0003], dated September 2023 and directed on-site by a suitably qualified Enzygo Geo-environmental Engineer.

3. Once excavated the sides and base of the excavation will be sampled to validate that the materials have been remediated. Sampling will be undertaken with a minimum of 1 sample per side and 1 for the base.

4. Soils from within the impacted area will be disposed off site.

5. A general site re-grade (removal of all Made Ground) will be undertaken to achieve final sub-formation level with all excavated soils to be stockpiled and disposed off site.

6. All stockpiled contaminated soils must be placed on an impermeable membrane. During periods of rainfall, the stockpile must be covered to minimise any potential leaching and run-off into the underlying soils.

7. Following completion of the earthworks regrading clean cover soils will be placed over areas of soft landscaping. The clean cover soils will comprise 600mm of clean cover soils to domestic gardens and 300mm in areas of communal landscape areas. Clean soils are to meet the GAC for residential use with plant up-take and will be paced on a geotextile no-dig barrier to address risks from potential residual contamination at sub-formation level.

4.0 POST REMEDIATION WORKS

4.1 General

4.1.1 A validation report will be prepared based on supervise works undertaken, which will include:

- The site observations and notes of any agreed changes to the remedial methodology;
- Any areas of unknown contamination encountered; and the remedial measures undertaken;
- Validation testing of the clean soil cover to soft landscape areas, which will be based on current NHBC guidelines.
- Waste disposal notes where appropriate;
- Confirmation that the works observed complied with the remedial methodology; and
- Details of any site won materials re-used on site together with the results of any chemical analysis.
- Validation sampling, analysis of chemical testing result and conclusions.

4.2 Remedial Targets Values

4.2.1 The GAC values for Residential Use (with plant uptake) Appendix 2.

5.0 PROPOSED GUIDANCE

5.1 Asbestos Management

5.1.1 Asbestos contaminated material has been identified during the GI. Asbestos remediation measures should be documented in an Asbestos Management Plan which will be incorporated into the Contractors Construction Stage Health and Safety Plan as required under the Construction Design and Management (CDM) Regulations to mitigate risk to construction works. The asbestos management plan should document measures to mitigate the risk of asbestos to construction workers and end users of the site. These measures should be provided by an appropriately qualified asbestos contractor and may include the following; however, may include additional measures deemed necessary by the asbestos contractor:

- Designing temporary works to minimise disturbance of the backfill material;
- Separating material and disposal of soils containing asbestos;
- Wetting down during excavation;
- Sheeting of stockpiles where asbestos is suspected;
- Testing of soils and off-site disposal of any soils found or suspected of containing asbestos;
- Preventing access to the construction site by members of the public;
- Use of good hygiene measures, including washing down of plant; and
- Use of appropriate PPE, including face masks.

5.2 Methodology for Handling of Cover Soils

5.2.1 Importation, stockpiling and placement of cover soils will be in accordance with British Standards BS3882: Specification for Topsoil. Topsoil is not to be stockpiled on site unless absolutely necessary in order to minimise multiple handling.

5.2.2 Topsoil and Subsoil are not to be mixed. Furthermore, care must be taken to prevent contamination of the Topsoil or Subsoil with stones, hard-core, rubbish or materials from demolition works.

5.2.3 Topsoil is not to be handled during driest conditions possible and is not to be handled during or after heavy rainfall or when wetter than the plastic limit as defined by BS3882, Annex N2.

5.2.4 Plant used for the placement and spreading of Topsoil and also Subsoil is to be selected based on minimising disturbance, trafficking and compaction. In order to retain a friable texture Topsoil is not to be compacted but shall be gently firmed.

5.2.5 Topsoil is to be tipped and graded to approximate levels in one operation with minimum of trafficking by plant.

5.3 Validation of Cover Soils

5.3.1 Given the proposed plan and the landscaping requirements across the site it is recommended that the thickness of the imported materials is verified. The works will comprise the following:

- Excavation of pits by hand, locations of which are yet to be determined. The number of pits and samples will be based on current NHBC guidance, which was developed in conjunction with the Environment Agency;
- Measure the thickness of the cover soils; and
- Photograph each pit with a measuring tape of staff used to show the thickness of the cover soils.

5.3.2 Soil samples will be collected from each pit from within the cover soils in appropriate containers provided by the analytical laboratory. At this stage it is anticipated that one sample will be collected from each hand pit within the garden areas of each plot [proposed five], in accordance with current NHBC guidance.

5.3.3 Samples will be stored in cool boxes prior to dispatch to the laboratory for analysis. All samples will be collected using appropriate sampling equipment that is cleaned at each sampling location and will be analysed at a laboratory which is UKAS and MCERTS accredited. Samples will be tested for the CLEA metal suite, pH, sulphate, cyanide, phenols, speciated Polycyclic Aromatic Hydrocarbons (PAH), organic carbon, Speciated Total Petroleum Hydrocarbon (TPH) and asbestos screen.

5.3.4 Should soils fail the GAC values these will be excavated and discarded off-site. Additional testing will be undertaken around the excavation to confirm that the adjacent soils are clean. Fresh soils will be imported and used to re-construct the cover soils.

5.4 Unforeseen Contamination: Discovery Strategy

5.4.1 If unforeseen contamination is encountered during construction works, outside the areas investigated a suitably qualified Enzygo consultant will be available on a 'call-out' basis to undertake an assessment of risk. If 'unforeseen contamination' is encountered the discovery strategy will be to remove the source as it is likely to be very limited in extent and the Local Planning Authority advised.

5.4.2 Based on the findings of the GI, including the desk study, it is considered that any unforeseen contamination will be localised. The proposed remedial approach is therefore:

- Excavate material showing visual or olfactory evidence of gross contamination;
- Stockpile the material prior to testing;
- Sample and test the exposed formation and the stockpiled material;
- Undertake an assessment of the risk associated with the soil concentrations measured: and
- Either remove the stockpiled material for off-site disposal or re-use if acceptable.

5.4.3 As a minimum, one sample will be collected from each side and the base of the excavation. In the unlikely event that contamination is more extensive further samples will be recovered for analysis, as considered necessary.

6.0 GENERAL LEGISLATIVE COMPLIANCE MEASURES

6.1 General

6.1.1 Prior to the commencement of the remedial works an Asbestos management plan, designers risk assessment and pre-tender health and safety plan will be prepared outlining the health and safety issues.

6.1.2 The appointed Contractor for the works will be required to provide an asbestos management plan, a Construction Stage Health and Safety Plan and comprehensive supporting Method Statement for the works.

6.1.3 As a general measure all working areas at the site will require fencing and appropriate signs to prevent access by unauthorised persons during the progression of deeper excavations or demolition works. Notwithstanding the above, the following health and safety measures are proposed to mitigate risks to construction workers and the general public, together with nuisance issues, during the remedial works.

6.2 Dust and Noise

6.2.1 Given the presence of asbestos and only once this asbestos has been removed disposed of and validated out all remaining site works are to be carried out under the following measures to monitor and control potential impacts on the offsite receptors. The asbestos management will be documented in the asbestos management plan referenced earlier in section 5 and the subsequent validation report prior to any remaining site works being undertaken. The remaining measures after asbestos validation are to include:

- Sheeting of vehicles to mitigate the risks from contaminated waste transportation.
- Covering, and were necessary wetting down, of formation and stockpiles to mitigate dust generation.
- Limitations on appropriate working hours and noise levels.

6.3 Odour

6.3.1 During the progression of the site remedial works the contractor will be responsible for ensuring that odours generated for the excavation of contaminated arisings are minimised. Where it is considered that odours are liable to pose a nuisance to surrounding landowners the contractor will employ suitable control measures in order to suppress and control the odour.

6.4 Protective Equipment and Mitigation

6.4.1 The following protective equipment is to be used, which will be supplemented by PPE as necessary:

- Separation of the remedial area from the site offices and mess facilities;
- Use of wetting down equipment, where necessary to reduce dust;
- Provision of impermeable plastic sheeting to underlay and cover stockpiles to reduce dust and leachate generation;
- Sheeting of Lorries to reduce dust;

- Reversing sirens used on plant;
- Provision of appropriate welfare facilities for site staff to utilise during the remedial works;
- The following Personnel Protective Equipment (PPE) is to be used, which will be replaced as necessary;
- Use of disposable overalls and gloves;
- Hard hats, ear defenders, boots, gloves and high visibility vests to be used;
- Use of dust masks for all site operatives coming in to contact with contaminated material. Vapour masks will be available should they be required; and
- Wheel washing facilities and site fencing;

6.4.2 Asbestos contaminated material has been identified during the GI and it is possible that further material could be encountered during construction works. Measures should be incorporated into the Contractors Construction Stage Health and Safety Plan as required under the Construction Design and Management (CDM) Regulations and their Asbestos Management Plan to mitigate risk to construction works. Measures may include:

- Designing temporary works to minimise disturbance of the Backfill material;
- Separating material and disposal of soils containing asbestos;
- Wetting down during excavation;
- Sheeting of stockpiles where asbestos is suspected;
- Testing of soils and off-site disposal of any soils found or suspected of containing asbestos;
- Preventing access to the construction site by members of the public;
- Use of good hygiene measures, including washing down of plant; and
- Use of appropriate PPE, including face masks.

6.4.3 Additional measures may be incorporated into the Asbestos Management Plan developed by the Contractor.

6.5 Emergency Procedures

6.5.1 Measures to address environmental and health and safety issues will be provided by the Contractor as part of the Construction Stage Health and Safety Plan and should include the following:

- Spill response kits are to be available on site in the event that any fuels or oil is spilt from the tank during the remedial works.
- Where excavations are to remain open awaiting laboratory, analysis results any water showing signs of significant contamination, such as free product, is to be removed. Where appropriate sheeting over the excavation may be considered to reduce de-watering requirements.

- Should significantly contaminated soil be stockpiled with the result that mobile contaminated leachate is being mobilised, then an impermeable bund shall be constructed around the stockpile to collect the leachate and allow it to be pumped off.

- Contaminated materials shall not be stockpiled adjacent to any water course or surface water drain not protected by an interceptor.

Appendix 1 - Drawings

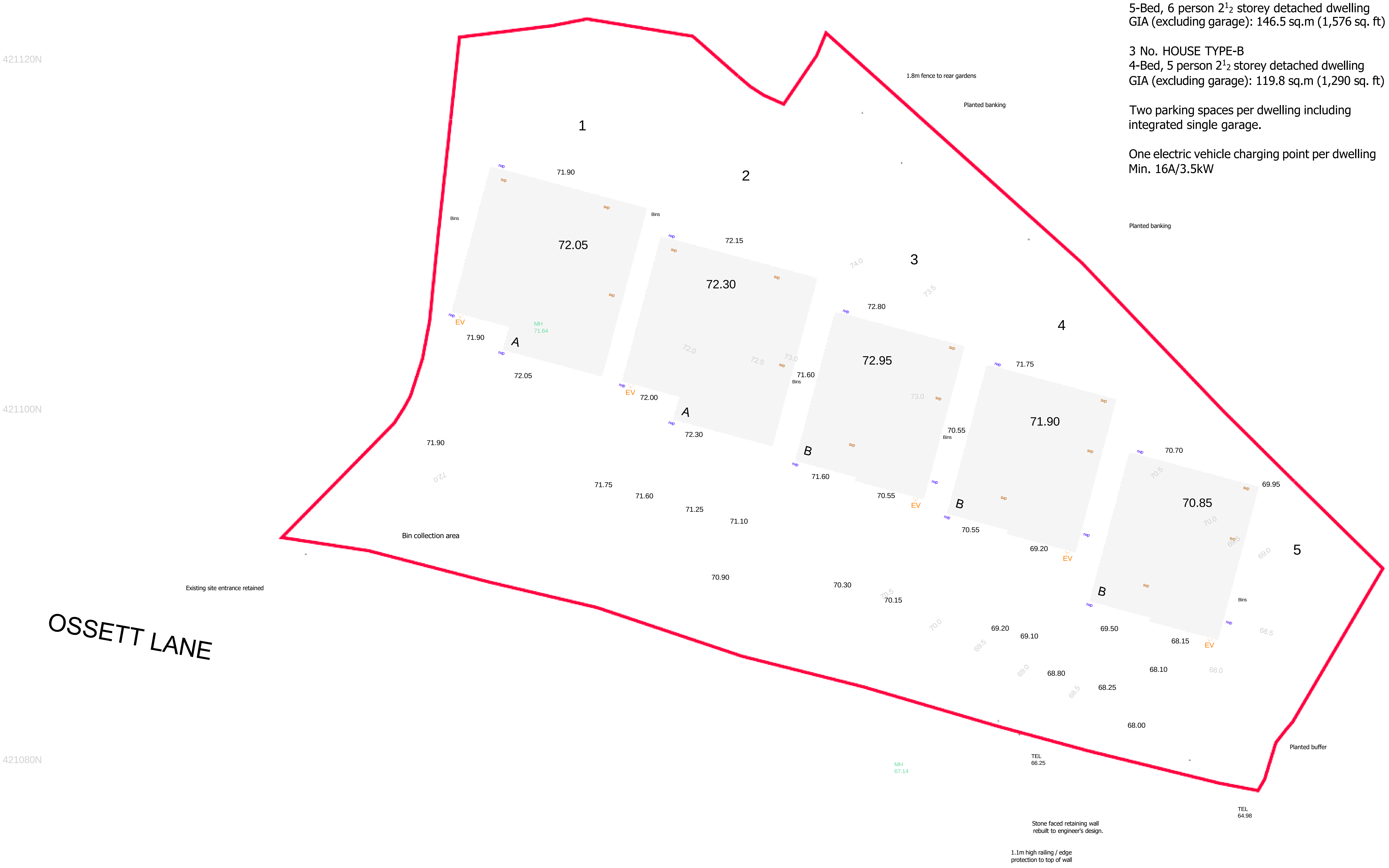
Site Area approx. 1,550 sq.m

2No. HOUSE TYPE-A
5-Bed, 6 person $2^1{}_2$ storey detached dwelling
GIA (excluding garage): 146.5 sq.m (1,576 sq. ft)

3 No. HOUSE TYPE-B
4-Bed, 5 person $2^1{}_2$ storey detached dwelling
GIA (excluding garage): 119.8 sq.m (1,290 sq. ft)

Two parking spaces per dwelling including integrated single garage.

One electric vehicle charging point per dwelling
Min. 16A/3.5kW



DRAFT

SITE LAYOUT PLAN

1:100 SCALE BAR

CONCEPT DESIGN

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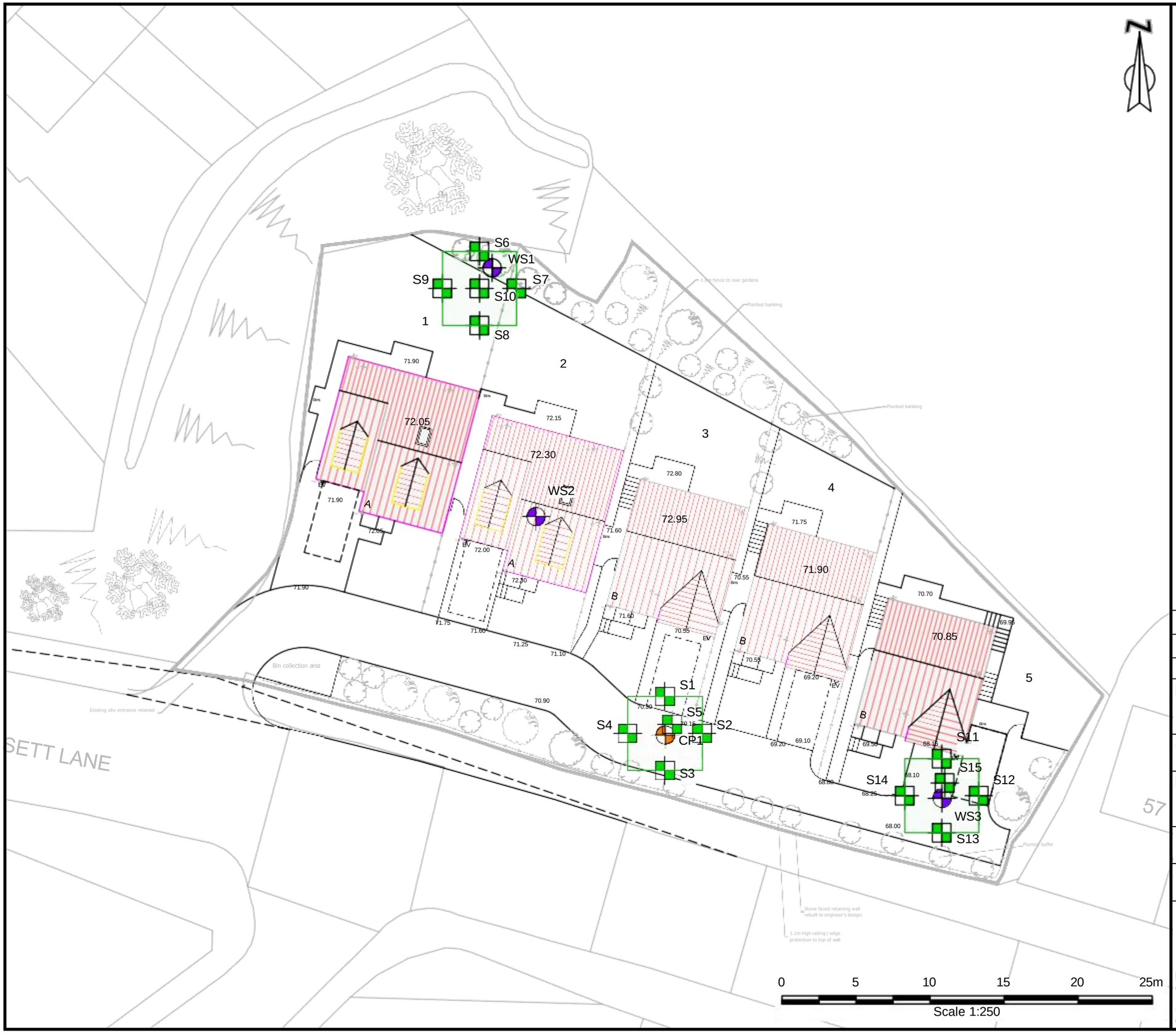
Client: Campbell Homes
Project: Residential Development at 5-7 Ossett Lane
Scales@A1: 1:100 | Drawn: SJ | Date: Jan 2023 | Checked:

13125-SA-ZZ-DR-A-201

Rev | Date | Drawn | Description



KEY:

- Site Boundary
- Cable Percussion Boreholes (CP)
- Window Sampler Borehole (WS)
- Soil Sampling Locations (S)
- Anticipated Extent of Impacted Soils

Notes:

- Do not scale from this drawing.
- All dimensions are in meters unless stated otherwise.
- This drawing is to be read in conjunction with all relevant drawings and documents associated with this project.
- All existing and proposed dimensions, levels and locations to be checked and verified by the main contractor on site prior to the commencement of the works and any anomalies reported to the engineer.

Rev	Date	Description	DRA	CHK	APP
P01	07.11.23	Issued for comment / approval	LW	NR	NR

Project
Ossett Lane, Dewsbury

Client
Campbell homes Limited

Drawing Title
Proposed Remediation

Scale	Date	Status
1:250 @ A3	07.09.23	Preliminary

DWG No. SHF1888002-ENZ-XX-XX-DR-Z-0003 **Revision** P01

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Appendix 2 - Human Health Assessment Reference Values

Determinant		Units	GAC Value Residential					
			With Plant Uptake			Without Plant Uptake		
Arsenic		mg/kg	37			40		
Cadmium		mg/kg	11			85		
Chromium		mg/kg	910			910		
Chromium VI		mg/kg	6			6		
Lead		mg/kg	200			310		
Mercury		mg/kg	40			56		
Nickel		mg/kg	130			180		
Selenium		mg/kg	250			430		
Copper		mg/kg	2400			7100		
Zinc		mg/kg	3700			40000		
Cyanide		mg/kg	791			800		
SOM		%	1	2.5	6	1	2.5	6
Phenol		mg/kg	280	550	1100	750	1300	2300
Napthalene		mg/kg	2.3	5.6	13	2.3	5.6	13
Acenaphtylene		mg/kg	170	420	920	2900	4600	6000
Acenaphthene		mg/kg	210	510	1100	3000	4700	6000
Flourene		mg/kg	170	400	860	2800	3800	4500
Phenanthrene		mg/kg	95	220	440	1300	1500	1500
Anthracene		mg/kg	2400	5400	11000	31000	35000	37000
Fluoranthene		mg/kg	280	560	890	1500	1600	1600
Pyrene		mg/kg	620	1200	2000	3700	3800	3800
Benzo(a)Anthracene		mg/kg	7.2	11	13	11	14	15
Chrysene		mg/kg	15	22	27	30	31	32
Benzo(b)Flouranthene		mg/kg	2.6	3.3	3.7	3.9	4.0	4.0
Benzo(k)Flouranthene		mg/kg	77	93	100	110	110	110
Benzo(a)Pyrene		mg/kg	2.2	2.7	3.0	3.2	3.2	3.2
Indeno(123-cd)Pyrene		mg/kg	27	36	41	45	46	46
Dibenzo(a,h)Anthracene		mg/kg	0.24	0.28	0.3	0.31	0.32	0.32
Benzo(ghi)Perylene		mg/kg	320	340	350	360	360	360
TPH C_5-C_6 Aliphatic		mg/kg	42	78	160	42	78	160
TPH C_6-C_8 Aliphatic		mg/kg	100	230	530	100	230	530
TPH C_8-C_{10} Aliphatic		mg/kg	27	65	150	27	65	150
TPH C_{10}-C_{12} Aliphatic		mg/kg	130	330	760	130	330	770
TPH C_{12}-C_{16} Aliphatic		mg/kg	1100	2400	4300	1100	2400	4400
TPH C_{16}-C_{35} Aliphatic		mg/kg	65000	92000	110000	65000	92000	110000
TPH C_{35}-C_{44} Aliphatic		mg/kg	65000	92000	110000	65000	92000	110000
TPH C_5-C_7 Aromatic		mg/kg	70	140	300	370	690	1400
TPH C_7-C_8 Aromatic		mg/kg	130	290	660	860	1800	3900
TPH C_8-C_{10} Aromatic		mg/kg	34	83	190	47	110	270
TPH C_{10}-C_{12} Aromatic		mg/kg	74	180	380	250	590	1200
TPH C_{12}-C_{16} Aromatic		mg/kg	140	330	660	1800	2300	2500
TPH C_{16}-C_{21} Aromatic		mg/kg	260	540	930	1900	1900	1900
TPH C_{21}-C_{35} Aromatic		mg/kg	1100	1500	1700	1900	1900	1900
TPH C_{35}-C_{44} Aromatic		mg/kg	1100	1500	1700	1900	1900	1900
Benzene		mg/kg	0.087	0.17	0.37	0.38	0.70	1.4
Toluene		mg/kg	130	290	660	880	1900	3900
Ethylebenzene		mg/kg	47	110	260	83	190	440
Xylene		mg/kg	56	130	310	79	180	430

Determinant	Units	GAC Value					
		Residential POS			Commercial		
Arsenic	mg/kg	79			640		
Cadmium	mg/kg	120			190		
Chromium	mg/kg	1500			8600		
Chromium VI	mg/kg	7.7			33		
Lead	mg/kg	630			2330		
Mercury	mg/kg	120			1100		
Nickel	mg/kg	230			980		
Selenium	mg/kg	1100			12000		
Copper	mg/kg	12000			68000		
Zinc	mg/kg	81000			730000		
Cyanide	mg/kg	N/A			16200		
SOM	%	1	2.5	6	1	2.5	6
Phenol	mg/kg	760	1500	3200	760	1500	3200
Napthalene	mg/kg	4900	4900	4900	190	460	1100
Acenaphtylene	mg/kg	15000	15000	15000	83000	97000	100000
Acenaphthene	mg/kg	15000	15000	15000	84000	97000	100000
Flourene	mg/kg	9900	9900	9900	63000	68000	71000
Phenanthrene	mg/kg	3100	3100	3100	22000	22000	23000
Anthracene	mg/kg	74000	74000	74000	520000	540000	540000
Fluoranthene	mg/kg	3100	3100	3100	23000	23000	23000
Pyrene	mg/kg	7400	7400	7400	54000	54000	54000
Benzo(a)Anthracene	mg/kg	29	29	29	170	170	180
Chrysene	mg/kg	57	57	57	350	350	350
Benzo(b)Flouranthene	mg/kg	7.1	7.2	7.2	44	44	45
Benzo(k)Flouranthene	mg/kg	190	190	190	1200	1200	1200
Benzo(a)Pyrene	mg/kg	5.7	5.7	5.7	35	35	36
Indeno(123-cd)Pyrene	mg/kg	82	82	82	500	510	510
Dibenzo(a,h)Anthracene	mg/kg	0.57	0.57	0.58	3.5	3.6	3.6
Benzo(ghi)Perylene	mg/kg	640	640	640	3900	4000	4000
TPH C_5-C_6 Aliphatic	mg/kg	570000	590000	600000	3200	5900	12000
TPH C_6-C_8 Aliphatic	mg/kg	600000	610000	620000	7800	17000	40000
TPH C_8-C_{10} Aliphatic	mg/kg	13000	13000	13000	2000	4800	11000
TPH C_{10}-C_{12} Aliphatic	mg/kg	13000	13000	13000	9700	23000	47000
TPH C_{12}-C_{16} Aliphatic	mg/kg	13000	13000	13000	59000	82000	90000
TPH C_{16}-C_{35} Aliphatic	mg/kg	250000	250000	250000	1600000	1700000	1800000
TPH C_{35}-C_{44} Aliphatic	mg/kg	250000	250000	250000	1600000	1700000	1800000
TPH C_5-C_7 Aromatic	mg/kg	56000	56000	56000	26000	46000	86000
TPH C_7-C_8 Aromatic	mg/kg	56000	56000	56000	56000	110000	180000
TPH C_8-C_{10} Aromatic	mg/kg	5000	5000	5000	3500	8100	17000
TPH C_{10}-C_{12} Aromatic	mg/kg	5000	5000	5000	16000	28000	34000
TPH C_{12}-C_{16} Aromatic	mg/kg	5100	5100	5000	36000	37000	38000
TPH C_{16}-C_{21} Aromatic	mg/kg	3800	3800	3800	28000	28000	28000
TPH C_{21}-C_{35} Aromatic	mg/kg	3800	3800	3800	28000	28000	28000
TPH C_{35}-C_{44} Aromatic	mg/kg	3800	3800	3800	28000	28000	28000
Benzene	mg/kg	72	72	73	27	47	90
Toluene	mg/kg	56000	56000	56000	56000	110000	180000
Ethylebenzene	mg/kg	24000	24000	25000	5700	13000	27000
Xylene	mg/kg	41000	42000	43000	5900	14000	30000

Determinant	Units	GAC Value					
		Park POS			Allotments		
Arsenic	mg/kg	170			43		
Cadmium	mg/kg	532			1.9		
Chromium	mg/kg	33000			18000		
Chromium VI	mg/kg	220			1.8		
Lead	mg/kg	1300			80		
Mercury	mg/kg	240			19		
Nickel	mg/kg	800			53		
Selenium	mg/kg	1800			88		
Copper	mg/kg	44000			520		
Zinc	mg/kg	170000			620		
Cyanide	mg/kg						
SOM	%	1	2.5	6	1	2.5	6
Phenol	mg/kg	760	1500	3200	66	140	280
Napthalene	mg/kg	1200	1900	3000	4.1	10	24
Acenaphtylene	mg/kg	29000	30000	30000	28	69	160
Acenaphthene	mg/kg	29000	30000	30000	34	85	200
Flourene	mg/kg	20000	20000	20000	27	67	160
Phenanthrene	mg/kg	6200	6200	6300	15	38	90
Anthracene	mg/kg	150000	150000	150000	380	950	2200
Fluoranthene	mg/kg	6300	6300	6400	52	130	290
Pyrene	mg/kg	15000	15000	15000	110	270	620
Benzo(a)Anthracene	mg/kg	49	56	62	2.9	6.5	13
Chrysene	mg/kg	93	110	120	4.1	9.4	19
Benzo(b)Flouranthene	mg/kg	13	15	16	0.99	2.1	3.9
Benzo(k)Flouranthene	mg/kg	370	410	440	37	75	130
Benzo(a)Pyrene	mg/kg	11	12	13	0.97	2.0	3.5
Indeno(123-cd)Pyrene	mg/kg	150	170	180	9.5	21	39
Dibenzo(a,h)Anthracene	mg/kg	1.1	1.3	1.4	0.14	0.27	0.43
Benzo(ghi)Perylene	mg/kg	1400	1500	1600	290	470	640
TPH C_5-C_6 Aliphatic	mg/kg	95000	130000	180000	730	1700	3900
TPH C_6-C_8 Aliphatic	mg/kg	150000	220000	320000	2300	5600	13000
TPH C_8-C_{10} Aliphatic	mg/kg	14000	18000	21000	320	770	1700
TPH C_{10}-C_{12} Aliphatic	mg/kg	21000	23000	24000	2200	4400	7300
TPH C_{12}-C_{16} Aliphatic	mg/kg	25000	25000	26000	11000	13000	13000
TPH C_{16}-C_{35} Aliphatic	mg/kg	450000	480000	490000	260000	270000	270000
TPH C_{35}-C_{44} Aliphatic	mg/kg	450000	480000	490000	260000	270000	270000
TPH C_5-C_7 Aromatic	mg/kg	**76000**	**84000**	**92000**	**13**	**27**	**57**
TPH C_7-C_8 Aromatic	mg/kg	**87000**	**95000**	**100000**	**22**	**51**	**120**
TPH C_8-C_{10} Aromatic	mg/kg	**7200**	**8500**	**9300**	**8.6**	**21**	**51**
TPH C_{10}-C_{12} Aromatic	mg/kg	**9200**	**9700**	**10000**	**13**	**31**	**74**
TPH C_{12}-C_{16} Aromatic	mg/kg	**10000**	**10000**	**10000**	**23**	**57**	**130**
TPH C_{16}-C_{21} Aromatic	mg/kg	**7600**	**7700**	**7800**	**46**	**110**	**260**
TPH C_{21}-C_{35} Aromatic	mg/kg	**7800**	**7800**	**7900**	**370**	**820**	**1600**
TPH C_{35}-C_{44} Aromatic	mg/kg	**7800**	**7800**	**7900**	**370**	**820**	**1600**
Benzene	mg/kg	90	100	110	0.017	0.034	0.075
Toluene	mg/kg	87000	95000	100000	22	51	120
Ethylebenzene	mg/kg	17000	22000	27000	16	39	91
Xylene	mg/kg	17000	23000	31000	28	67	160