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# PHASE 3 REMEDIATION STRATEGY REPORT

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## Contents

			Page
1.		Introduction	1
2.		Remediation Strategy	2
	2.1	Remediation Objectives	1
	2.2	Development Requirements	2
3.		Scope	2
	3.1	Groundworks	2
	3.2	Construction	3
	3.3	Soft Landscaped Areas	3
	3.4	Fill Materials	3
4.		Verification Report	4
	4.1	Ground Works	5
	4.2	Imported Fill and Removal of Contaminated Topsoil	5

## Appendices

1.	Soil Screening Values
2.	Site Plan



## Phase 3: Remediation Statement

Location: **27 Moor Lane**  
Gomersal, Cleckheaton, West Yorkshire BD19 4LF

For: PPJ Developments Ltd

Report No. C5115/25/E/8329

Report date: August 2025

For and on behalf of **Rogers Geotechnical Services Ltd**

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Engineering Director

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### 1. Introduction

Further to the site-specific risk assessment provided within the Haigh Huddlestone geo-environmental ground investigation report (E22/7944/R002, August 2023) and Additional SI Works letter (E22/7944/MD/005, 19<sup>th</sup> February 2025), it is considered that some remediation will be required at this site. This report provides the strategy for that remediation.

From the geo-environmental investigations, it was considered that the topsoil present at the site was locally contaminated with respect to the intended residential with plant uptake end use. It was reasoned within the Haigh Huddlestone reports that a 'hot-spot' of contamination was present within the topsoil local to TP103. Additional metals testing within this particular area revealed that the topsoil surrounding the area of TP103 was suitable for the intended end use and as such a 6m by 4m area around the location of TP103 was delineated and represents the 'hot-spot'. In view of this, it was recommended that once the topsoil within this specific area was removed from site, any remaining topsoil on site could be scraped

It should be appreciated that at two locations within the geo-environmental ground investigation, arsenic concentrations within the topsoil were above the screening levels for a residential end use. However, bio-accessibility testing was undertaken, which revealed that 2.4% of the arsenic contamination was readily available for absorption. With this information, the contamination summary software utilised by Haigh Huddlestone calculated a revised SGV tier 1 trigger level of 85mg/kg for arsenic. As the maximum recorded value of 57mg/kg within the geo-environmental investigation falls below this revised trigger level, it was reasoned that the topsoil was suitable for the intended end use.

Therefore, it was recommended that the site be 'remediated' by removing the topsoil hot-spot, followed by an excavation and stockpiling exercise of the remaining topsoil across the site to reveal the natural weathered fraction of the rock below. Once the development reaches the final phases, the topsoil can then be redistributed appropriately.

The following remediation statement is issued on the basis that the findings of the Phase 2 investigations have been submitted to and accepted by the local authority.

## 2. Remediation Strategy

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### 2.1 Remediation Objectives

Based on the site specific risk assessment provided in the geo-environmental report and gas monitoring letter, the object of remediation at the site is as follows:

- To protect the site operatives during the construction process from the ingestion of soil or dust, dermal contact with the soil and inhalation of dust.
- To protect the end user and neighbours from the ingestion of soil or dust, dermal contact with the soil and inhalation of dust.
- To protect the garden plants from contaminated ground and to protect the end user from the ingestion of contaminated fruit and vegetables.

### 2.2 Development Requirements.

The site is to be developed by the construction of 10 residential properties with gardens and driveways. Therefore, it is considered that the site may be classified as being a residential with plant uptake development.

## 3. Scope

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In order to fulfill the objectives defined above the following remedial strategy will be utilised. A pragmatic approach will be undertaken, with observational techniques being employed at each stage of the work.

### 3.1 Groundworks

During the ground-works phase of the development, protection to the site operatives is required. The risk to site operatives is considered under the Health and Safety at Work Act 1974, together with regulations made under the act, which includes the Control of Substances Hazardous to Health (COSHH) regulations. Therefore the risks to site personnel will be considered under the Construction Design and Management (CDM) regulations at the planning stage and be included in the contractor's Health and Safety Plan and site specific Method Statements. These documents shall include the following main elements.

- Site operatives at all levels shall be made aware of the hazards of working with potentially contaminated soils and the hazards of working in an area where accumulations of bulk ground gasses (carbon dioxide or methane) could occur.
- Personal hygiene facilities, including washing and messing, will be provided and site operatives will be encouraged to use them.
- Where work is undertaken in dry weather the site will be dampened down to avoid dust. In addition, dust masks will be provided to all site operatives for use in dry weather.
- Where vehicles are transferring soil to the landfill site they will be covered to prevent contamination of the surrounding area by dust.
- Any stockpiles of contaminated soil on site will be sheeted over to prevent excessive amounts of airborne dust.

- Where work is undertaken in wet weather, vehicle and wheel washing facilities will be provided to ensure that the vehicles leaving the site do not transfer contamination to surrounding areas.
- Removals of the topsoil in a 6m by 4m area around location TP103 (SE20773 26774).

On completion of the ground-works a careful site inspection of the sub-grade will take place. RGS will be contacted to complete appropriate contamination testing to confirm the absence of elevated metals. Should visual or olfactory evidence of contamination be revealed, then suitably qualified specialists will be consulted. Further testing and updates to the site specific ground model, risk assessment, and remediation strategy will be undertaken where necessary

### 3.2 Construction

Appropriate radon barriers will need to be installed as the site falls within a radon affected area. This requirement should be discussed with building control.

### 3.3 Soft Landscaped Areas

It will be the responsibility of the developer to ensure that garden areas have an appropriate clean cover system. At least 600mm of clean soils will be required in soft landscaped areas. The topsoil excavation works should reveal natural soils at depths of less than 600mm. As such, garden areas will likely comprise subsoil comprising the natural soils beneath, with the stockpiled topsoil then distributed to provide a suitable topsoil and growing medium. At least 300mm of topsoil should be placed. Should insufficient site won topsoil be obtained during the groundworks phase, then suitably screened soils will need to be imported to ensure suitable thicknesses are achieved.

### 3.4 Fill Materials

Any materials to be used as fill at the site, will be subjected to the following assessment to determine its suitability.

Fill materials will be initially screened, by a suitably qualified engineer, for the following.

- It is a suitable growing medium where is to be employed as such, including compliance with BS3883 (2007)
- It is free from obvious contamination i.e. visual or olfactory evidence
- It has not come from areas where Japanese Knotweed or other invasive or injurious plants are suspected to be growing
- It is not a statutory nuisance, such as being odorous
- It is free from unsuitable material i.e. whole bricks, brick ties, timber or glass.

It should also be appreciated that any fill will be subjected to validation testing to assess its suitability. The following table has been taken from YALPAG<sup>1</sup> documentation and will be used in the first instance. Depending on the origin and nature of the material, not all fill will require the sampling frequency and testing indicated, although this will be in agreement with any regulatory bodies (such as the Local Authority).

<sup>1</sup> YALPAG *Technical Guidance for Developers, Landowners and Consultants – Verification Requirements for Cover Systems V4.1* Appendix 1a, June 2021.

**Table 1: Validation Sampling and Testing**

Fill Type	Frequency	Minimum Determinands
Virgin Quarried Material	1 or 2 depending on the type of stone (to confirm the inert nature of the material)	Standard metals/metalloids (should include as a minimum As, Cd, Cr, CrVI, Cu, Hg, Ni, Pb, Se, Zn)
Crushed Hardcore, Stone, Brick	Minimum 1 per 500m <sup>3</sup>	Standard metals/metalloids (as above), PAH (16 USEPA speciation), asbestos, Total TPH. Any additional analysis dependant on the history of the donor site (e.g. phenol, total cyanide, BTEX, MTBE).
Greenfield/ Manufactured Soils	Minimum 3  Dependent on source and receptor, between 1 per 50m <sup>3</sup> and 1 per 250m <sup>3</sup>	Standard metals/metalloids (as above), PAH (16 USEPA speciation), asbestos, pH and soil organic matter (SOM) (or calculated from total organic carbon (TOC)).
Brownfield/ Screened Soils	Minimum 6  Dependent on source and receptor, between 1 per 50m <sup>3</sup> and 1 per 100m <sup>3</sup>	Standard metals/ metalloids (as above), PAH (16 USEPA speciation), TPH (CWG banded), asbestos, pH and SOM (or calculated from TOC). Any additional analysis dependant on the history of the donor site (e.g. phenol, total cyanide, BTEX, MTBE).

It should be noted that screening values for the above regime have been included within Appendix 1 of this report. The screening values will need to be agreed with any regulatory bodies. It is anticipated, for example, that 1% SOM values will be employed for typical granular fill and 6% SOM for topsoil. However, organic matter testing will determine which screening values are appropriate for each material. Moreover, testing will comply with UKAS and MCERTS, where applicable, and undertaken by an accredited laboratory.

Where the material has been derived from a commercial company, certificates or other industry quality protocol compliance i.e. WRAP shall be obtained. However, it will be necessary to ensure that this documentation is specifically related to the material being imported, is no more than two months old and complies with the screening and frequency requirements given above.

Suitable fill materials will either be placed immediately or sufficiently quarantined to prevent cross-contamination. If it is necessary, the quarantined material will be placed on appropriate sheeting and covered to prevent it becoming mixed with contaminated soils or dust, or penetrated by mobile contaminants.

## 4. Verification Report

In order to demonstrate that the remediation has been sufficiently carried out and risks highlighted in the conceptual ground model are mitigated, a verification report will be produced and submitted to any statutory authorities.

The report will be produced by a suitably qualified engineer or engineers and will include the following:

#### 4.1 Ground Works

- A record of the measures taken to cap and seal any disused services.
- The methods used for handling and final destination of any contaminated soils removed from the site.

#### 4.2 Imported Fill and Removal of Contaminated Topsoil

- Photographic and logged evidence of the hot-spot removal. Waste transfer notes must be obtained to demonstrate appropriate disposal. Contamination (Metals) testing must be completed to confirm that the soils exposed below the topsoil are free of elevated metal concentrations.
- Photographs to show the thickness of topsoil placed in soft landscaped areas.
- Photographs shall include visual site references or reference boards to prove the location and date taken. A measurement reference shall be visible in the photographs to substantiate the thickness of material placed.
- If applicable, characterisation of the suitability of clean imported fill employed at the site including the derivation of the material, comments from a visual screen, the tests results of chemical screening, delivery tickets where appropriate and the conditions by which the clean material has been stored and handled on site.

A validation report will not need to include evidence of radon protections measures; this requirement should be validated by building control.

We trust that this information is of interest, clearly Rogers Geotechnical Services Ltd would be happy to offer advice with respect to the above and assist where necessary.



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## Appendix 1

### Screening Levels Summary Sheet

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# Rogers Geotechnical Services Ltd.

## Atkins ATRISK Soil Screening Values (SSVs) - Residential With Plant Uptake Landuse

Tox Data Report No.	Compound	Residential with Homegrown Produce Landuse (mg/kg)				Reference
		SOM: 1%		SOM: 6%		
<i>Metals</i>						
		SOM: 1%		SOM: 6%		
3	Cadmium	22.1		22.1		C
4	Chromium VI	3.62	20.5	3.63	20.5	B/C
	Copper	4730		4790		A+
7	Mercury	8.81		15.80		A/D
8	Nickel	136		136		A+
	Lead	200		200		C
	Zinc	20000		20300		A+
	Vanadium	136		138		A+
<i>Semi and Non Metals</i>						
1	Arsenic	37		37		C
10	Selenium	375		375		A
	Free Cyanide	34		34		A
9	Phenols (total)	267		1200		A
<i>Poly Aromatic Hydrocarbons</i>						
		Free product	No free product	Free product	No free product	
20	Napthalene	0.829		12.2		A+
	Acenaphthene	157	608	2760		A+
	Fluorene	735		2610		A+
	Anthracene	10200		26200		A+
	Fluoranthene	983		2980		A+
	Pyrene	668		2120		A+
	Benzo(a)anthracene	1.71	4.52			A
2	Chrysene	0.44	585			A
2	Benzo(b)fluoranthene	1.22	7.72			A
2	Benzo(k)fluoranthene	0.686	84.4			A
2	Benzo(a)pyrene	1.51	4.95	2.05	4.95	B/C
2	Dibenzo(a,h)anthracene	0.00393	0.838			A*
2	Indeno(1,2,3-cd)pyrene	0.0614	7.31			A
2	Benzo(g,h,i)perylene	0.0187	96.2			A
<i>Petroleum Hydrocarbons</i>						
	Aliphatic C5-C6	42.7		369		A+
	Aliphatic C6-C8	99.3		768	1240	A+
	Aliphatic C8-C10	13.9		204		A+
	Aliphatic C10-C12	49.9	81.7	297	1180	A+
	Aliphatic C12-C16	20.9	385	125	4130	A+
	Aliphatic C16-C21	210000		210100		A+
	Aliphatic C21-C35	210000		210100		A+
	Aromatic C5-C7 (Benzene)	0.137		0.871		A+
	Aromatic C7-C8 (Toluene)	113		780		A+
	Aromatic C8-C10	20.5		232		A+
	Aromatic C10-C12	70		468		A+
	Aromatic C12-C16	155	165	830		A+
	Aromatic C16-C21	319		1040		A+
	Aromatic C21-C35	1120		1710		A+
<i>Others</i>						
Asbestos Not Detected						
A+ = Values update June 2017.						
A* Atrisk's SSV is lower than Chemtest's detectable limit for this compound.						
B = Health Criterion Values (available from toxicological reviews published in the C4SL project methodology report).						
C = Category 4 Screening Levels (C4SLs).						
D = SSV provided is for Methyl Mercury.						



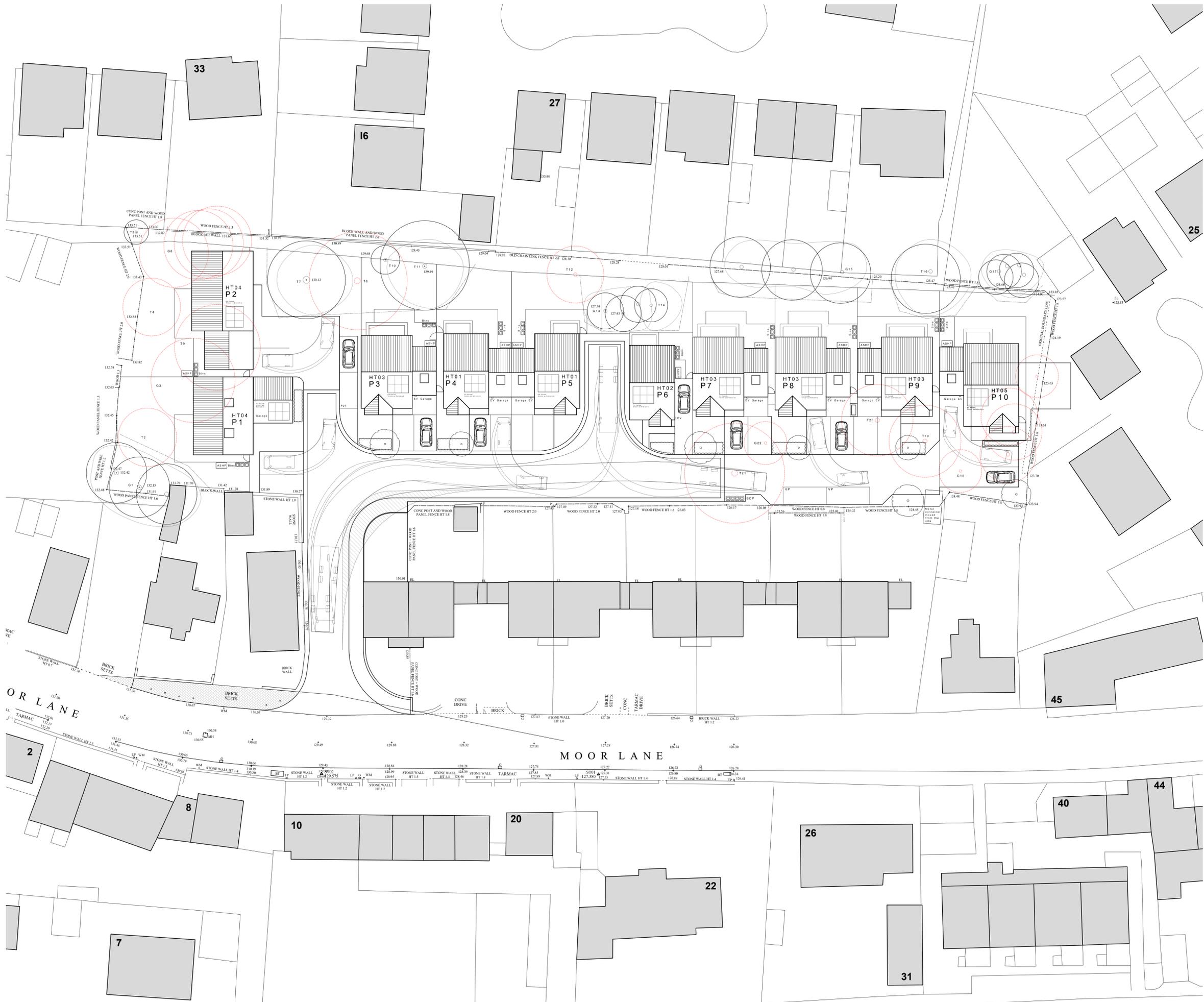
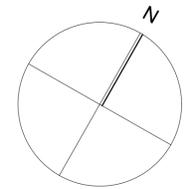
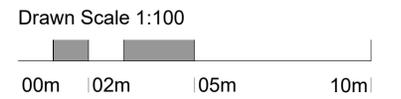
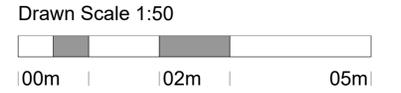
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## Appendix 2

### Site Plan

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**Issue Purpose: PLANNING APPLICATION**

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Client	PPJ Developments	Issued From	
Project	2539 - Moor Lane - Residential	Date	August 2025
Title	Proposed Site Plan	Scale	1:250 @ A1
Drawn	BH	Auth	BH
Revision			

2539 - D - 20 - 002