

GEO-ENVIRONMENTAL AUDIT

PHASE 1 PRELIMINARY RISK ASSESSMENT

PROPOSED RESIDENTIAL DEVELOPMENT

PLATTING LANE
ROCHDALE
OL11 2JT

Author: Daniel Slattery
Client: B&L Homes Ltd
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0	July 2024	Original for planning application validation.

T J Booth Associates.
20A Eastgate St,
Rochdale,
Lancs,
OL16 1DH.
Tel: 01706 868288.
Email: office@tjba.co.uk

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1. PHASE 1 - PRELIMINARY RISK ASSESSMENT.

1.1. Introduction.

T. J. Booth Associates have been appointed by B & L Homes Ltd to undertake a Phase 1 Preliminary risk assessment in order to validate a planning application for residential development.

The Application Site is a vacant plot of land, formerly a garage site in a residential area, and adjacent Sudden Brook.

A planning application for the development of 3 terraced residential dwellings is proposed.

This report provides a desk-based study based on current UK guidance for environmental investigation within the construction industry. Principal to the assessment is the potential for contamination pollutant linkages via the CLR-11 source-pathway-receptor methodology. Assessment of potential pollution linkages is primarily undertaken in strict accordance with BS 5930:2015, BS 10175:2011+A2:2017, CIRIA C665, and BS 8485:2015+A1:2019 et al.

1.2. Proposed Development.

The proposed development is for the development of 3No. terraced residential dwellings with associated parking and rear soft landscaped garden areas.

1.3. Historic Maps.

DATE	ON-SITE	OFF-SITE/SURROUNDING AREA
c1851	Buildings noted to the full extent of the site boundaries.	Sudden Brook forms the east boundary. Surrounding area primarily made up of agricultural fields, with other buildings of residential size, chapels etc noted on Platting Lane. Some unnamed mills/works gasometers etc noted over 100m from the Application Site.
c1893	Smaller scale maps suggest the buildings are residential, built around a central courtyard.	Much of the local area comprises residential dwellings as well as local amenities such as schools, chapels. Green Mill (woollen) & Eagle Mill (cotton), noted approx 75m northwest & 125m west respectively.
c1911	No change.	No overall change.
c1930	No change.	No overall change.
c1956-58	Buildings to the south side of the site are noted as "Green Cottages". Buildings to the north side of the Site also have house numbers.	Further construction of housing estates in the wider area.

c1962-73	Green Cottages by now demolished. The south half of the Site is now taken up by garages. Dwellings to the north side remain standing.	Further construction of housing estates in the wider area.
c1985	Dwellings to the north side now demolished. Three garages noted central to the site.	Many of the mills in the wider area now demolished or dramatically reduced in size.
c1988	Two garages noted central to the site & one to the southeast corner.	Much of the wider area formerly taken up by industrial mills is now shown as vacant land. The former quarries are now shown as a park.
1992	No change.	Wider area much as in the present day.

1.4. Present Day Maps.

Site boundaries, outlines of structures and buildings:	Present day maps show an open plot of land fronting Platting Lane, bound by footpaths to the north and south boundaries, and Sudden Brook to the east. The existing site plan & digital maps show a structure to the centre of the Site (garage slab) and a garage to the southeast corner.
Ground contours, natural drainage features:	No topographic survey has yet been undertaken. Contours suggest the Site is relatively level with a gentle fall to the north.
Water courses:	Sudden Brook to the rear.
Below ground obstructions:	None noted on current maps/plans.

1.5. BGS Geology.

Bedrock geology:	Pennine Lower Coal Measures Formation - Mudstone, siltstone and sandstone. Sedimentary bedrock formed between 319 and 318 million years ago during the Carboniferous period.
Superficial geology:	Hummocky (moundy) Glacial Deposits, Devensian - Diamicton. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period.
Coal seams:	No coal seams underlie the Application Site at shallow depth.
Radon Maps:	Updated current radon maps indicate the maximum radon potential to be 1-3% based upon the worst case in a 1km grid square.

1.6. Boreholes Records.

Borehole records in the local area suggest the hummocky deposits beneath the Application Site and local area comprise CLAY with layers of silty SAND & GRAVEL to a minimum depth of 10m bGL.

1.7. Planning Data.

No past planning applications were noted that are pertinent to the environmental assessment.

1.8. Landmark Environmental Data.

1.8.1. Agency & Hydrological.

Discharge consents:	None noted within a 250m Site radius.
Pollution incidents to controlled waters:	None noted within a 250m Site radius.

Prosecutions relating to controlled waters:	None noted within a 250m Site radius.
Local Authority pollution prevention & controls:	2No. records noted within a 250m Site radius, related to air pollution control 190m northwest & 241m southwest.
Water abstractions:	2No. records noted within a 250m Site radius, both related to commercial boiler feeds 159m northwest.
Bedrock aquifer:	Secondary Aquifer – A. Secondary A aquifers comprise permeable layers that can support local water supplies, and may form an important source of base flow to rivers.
Superficial aquifer:	Secondary Aquifer – A.
Source protection zone:	Not within a Source Protection Zone.

1.8.2. Waste.

BGS recorded landfill sites:	None noted within a 250m radius.
Historic landfill sites:	None noted within a 250m radius.
Registered landfill sites:	None noted within a 250m radius.

1.8.3. Hazardous Substances.

Planning hazardous substance consents:	No records within a 250m radius of the Site.
Planning hazardous substance enforcements:	No records within a 250m radius of the Site.

1.8.4. Geological.

Coal mining affected areas:	Site is within a coal mining area.
CBSCB compensation district:	Not within the CBSCB brine district.
Potential for collapsible ground stability hazards:	Very low risk.
Potential for compressible ground stability hazards:	No hazard.
Potential for ground dissolution stability hazards:	No hazard.
Potential for landslide ground stability hazards:	Very low risk.
Potential for running sand ground stability hazards:	Very low risk.
Potential for shrinking or swelling clay ground stability hazards:	Low risk.
Radon potential - radon affected areas:	The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). The level of accuracy is based upon a much more refined grid square analysis, giving Site specific risk analysis.
Radon potential - radon protection measures:	No radon protection measures are required.

1.9. Environment Agency Data.

Flood Zone:	Site is in flood zone 2.
Drinking Water Protected Area (Surface Water):	Not in area.

Drinking Water Safeguard Zone (Surface Water):	Not in area.
Drinking Water Safeguard Zone (Groundwater):	Not in area.
Source Protection Zone:	Not in area.

1.10. Coal Authority.

Mine Shafts, Pits, Adits/Entries:	No coal entries within 20m of the site boundaries
Past Recorded Underground Mining.	No recorded workings noted beneath the Site.
Present/Future Underground Mining.	Not known to be a risk.
Unrecorded Probable/Potential Shallow Underground Workings:	No probable coal workings locally.
Past/Present/Future Surface Mining/Opencast:	None noted locally.
Mining Geology and Subsidence:	Not noted.
Hazards and Mine Gas:	Unknown.
Development High Risk Area:	The Site is NOT within a Development High Risk Area.
Abandonment Plan Data:	No data available.

1.11. Industry Profiles.

N/A.

1.12. Site Reconnaissance.

Details of existing structures:	The Application Site was accessed from Platting Lane. The Site was relatively level with land elevation gently falling to the north. The boundary was open, and the site comprised a grass surface with trees/vegetation along the perimeter with Sudden Brook. The only other structures were a former garage slab nominally central to the site, and a macadam access drive to a dilapidated garage to the southeast corner. The garage to the southeast corner was full of household rubbish/tipping.
Adjacent properties:	Terraces along Clough Street to the south. Car park to the north. Footpaths immediately bounded the north and south Site boundaries.
Water levels, directions of flow and rates in rivers:	Sudden Brook was noted to the east boundary, flowing north. It was approximately 1.9m below Site level at its central point.
Old mine or quarry workings:	None noted.
Obvious/immediate hazards to health/safety:	None noted.
Areas of discoloured soil, polluted water, vegetation, and significant odours:	Minor inclusions of brick and glass noted in topsoils.

1.13. Identification of Source-Pathway-Receptor.

1.13.1. Potential Contaminant Sources.

CURRENT SOURCE/S	ORIGINAL ASSOCIATED SOURCE	CONTAMINANT/S
Existing Site soil, minor areas of made ground.	Former construction & demolition of historic dwellings, and associated made ground.	Metals, PAHs, sulphates, asbestos.
	Garages & storage of fuels/oils.	Hydrocarbons.

1.13.2. Potential Pathways.

The potential pathways to/from the Development Site include (not an exhaustive list but a summary of the main points):

PATHWAY	MEDIA
Soil and dust ingestion	Soil and indoor dust
Consumption of home-grown fruit and vegetables	Produce
Skin contact (indoors)	Indoor dust
Skin contact (outdoors)	Soil
Inhalation of dust (indoors)	Air
Inhalation of dust (outdoors)	Air
Vapours (indoors)	Air
Vapours (outdoors)	Air

1.13.3. Potential Receptors

Receptors mainly comprise workers in the construction phase, and workforce for the proposed end use.

Controlled waters: River.

1.14. Preliminary Conceptual Model.

POLLUTANT RISK IDENTIFIER	SOURCE	CONTAMINANT TYPE	PATHWAY	RECEPTOR	POLLUTION LINKAGE	CONSEQUENCE	PROBABILITY	RISK
PL1	General contaminants in upper site soil/made ground, and effects on humans/animals /ecology as a receptor.	Metals, PAHs, inorganics, organics/hydrocarbons, asbestos.	Direct ingestion, aerial ingestion, dermal contact, drinking water. Crops.	Primarily human - Site construction operatives & future residential Site occupants. Pets. Ecological systems.	There is a potential pollutant linkage with minor areas of made ground expected which are a likely source of metals, PAH, sulphates, and asbestos. The former buildings may have had cellars, and thus made ground in parts may be in excess of 2m deep. Although the Site has a former use as a garage Site, the likelihood of significant hydrocarbon contamination is low.	Medium.	Likely.	Moderate risk.
PL2	Potential for mortars/plasters and associated effects on concrete.	Sulphates.	Contact with underground structures.	Building structures /concrete.	Limited potential across the Site. Only minor areas of made ground expected (if any), and limited thickness of topsoil expected.	Medium.	Likely.	Moderate risk.
PL3	Potential historic use of hazardous PSRA chemicals & effects on PE water pipes.	Hydrocarbons, BTEX & MTBE, VOCs/SVOCs, phenols, cresols and chlorinated phenols.	Contact with water pipes/services.	Water pipes/services & human/pet end users.	Potential to affect potable water pipes.	Mild.	Low likelihood.	Low risk.
PL4	Hydrocarbon contaminants in upper site soil/made ground, and effects on groundwater or watercourses as a receptor.	Potential hydrocarbons from garages.	Groundwater via potential leaching and transport of potential contaminants.	Underlying aquifer or watercourse as a receptor.	Underlying aquifer is Secondary A, moderately productive aquifer, where flow is virtually all through fractures and other discontinuities which mainly provides baseflow to rivers etc. However, due to the adjacent watercourse, and the associated groundwater table (river level), the watercourse will be the primary receptor. It is unlikely that significant contamination will be found on site, and subsequently the risk is low – although there is a pollutant linkage.	Mild.	Low likelihood.	Low risk.
PL5	Geological ground gas from coal seams/workings.	CH ₄ , CO ₂ , other trace gases.	Diffusion through soil, substructures, aerial inhalation.	Human - future residential Site occupants. Explosion, suffocation.	No shallow coal mines or seams. Source missing, no pollutant linkage.	Mild.	Unlikely.	Very low risk.



PL6	Geological ground gas, radon sources in Namurian deposits.	Rn.	Diffusion through soil, substructures, aerial inhalation.	Human - future Site residential occupants.	The landmark data report is based on a refined site-specific risk analysis which has identified that the property is within a lower probability radon area (<1% of homes estimated to be at or above the action level). No radon protection measures are required.	Mild.	Unlikely.	Low risk.
PL7	Anthropogenic ground gas from historic/present landfill.	CH ₄ , CO ₂ , other trace gases.	Diffusion through soil, substructures, aerial inhalation.	Human - future Site residential occupants. Explosion, suffocation.	No landfill sites noted within a 250m radius of the Application Site. Source missing, no pollutant linkage.	Mild.	Unlikely.	Low risk.
PL8	Anthropogenic ground gas sources from alluvium.	CH ₄ , CO ₂ .	Diffusion through soil, substructures, aerial inhalation.	Human - future Site residential occupants. Explosion, suffocation.	No alluvial deposits noted beneath the Site. Source missing, no pollutant linkage.	Mild.	Unlikely.	Low risk.

1.15. Preliminary Risk Assessment.

1.15.1. Human Health Risk.

1.15.1.1. Shallow soil contamination.

There is a potential pollutant linkage relating to metals, PAH, sulphates & inorganics from past construction & demolition.

There is also a potential pollutant linkage relating to the former use as a garage site, and the storage of oils/fuels etc; although the amount of this will likely have been minimal on a residential garage site.

Both will now be recorded in the made ground profile.

Soil sampling should be undertaken to assess the risk.

Due to the unlikely spillage of significant hydrocarbon historically, hydrocarbon testing should only be assessed if suspected on site investigations.

1.15.1.2. Ground Gas.

1.15.1.2.1. Historic landfill Sites.

No pollutant linkage and low risk.

1.15.1.2.2. On-site refuse tips/infilled ponds/infilled land.

No pollutant linkage and low risk.

1.15.1.2.3. Radon.

Site designated as low risk – no protection required.

1.15.1.2.4. Alluvium.

No alluvial material projected from the BGS maps. Risk remains low.

1.15.1.3. Buildings & Services.

1.15.1.3.1. Water pipes.

There is potential for organic contamination albeit low risk, and therefore a potential risk to PE pipelines. Any sampling regime should include a test for PSRAS contaminants.

1.15.1.3.2. Sulphate.

Sulphate is often noted in paints & plasters, so may be noted in the soil profile.

1.15.2. Controlled Waters Risk.

1.15.2.1. Regional groundwater/bedrock aquifers.

Regional groundwater in aquifers will not be affected by any potential site contamination.

Bedrock is estimated at >10m depth, and the superficial aquifer is only capable of providing baseflow to rivers etc, suggesting little transmission of surface water between the superficial and bedrock aquifers.

Mobile contamination is not expected.

1.15.2.2. Local groundwater/superficial aquifers.

It is unlikely that significant & mobile contamination will be found on site, and subsequently the risk to the local groundwater table/superficial aquifer is low.

In addition to this, the proximity of the Site to the watercourse suggests that minor contamination would affect the watercourse directly.

1.15.2.3. Watercourses.

It is unlikely that significant & mobile contamination will be found on site, and subsequently the risk is low – although there is a weak potential pollutant linkage associated with hydrocarbon contamination. This risk will be better understood and can be confirmed to exist only IF suspected on site investigations.

2. SITE INVESTIGATION STATEMENT

2.1. Conceptual Model (Preliminary), Relevant Pollution Linkages & Remedial Objectives.

To assess the Site the following pollutant linkages have been identified all associated with past site uses but now potentially within the existing site soil/made ground:

- PL1: General contaminants in site soils/made ground, and effects on humans/animals/ecology as a receptor.
- PL2: Potential for mortars/plasters and associated effects on concrete.
- PL3: Potential historic use of hazardous PSRA chemicals & effects on PE water pipes.
- PL4: Hydrocarbon contaminants in site soils/made ground, and effects on groundwater or watercourses as a receptor.

The risk is specific to the end use, and required to ensure Site soils are safe for the end user/environment.

2.2. Recommended Site Investigation.

To assess the risk from the Site, it is proposed to undertake a series of trial holes and soil samples.

Due to the size of the Site nominally 4 trial holes will be considered sufficient, nominally at equidistant points, to each site corner.

This would also enable the subsoil to be sampled at nominally 8-15m centres, enough to comply with residential sampling centres of up to 25m sample points.

4No. soil samples should be tested for metals, speciated PAH, inorganics & sulphates, SOM, and asbestos screening.

****Hydrocarbon testing should only be undertaken if suspected on site investigations.****

1No. soil sample should be tested for PSRAS contaminants (hydrocarbons, BTEX & MTBE, VOCs/SVOCs, phenols, cresols and chlorinated phenols)

Soil sample should be analysed against Defra Category 4 Screening Levels (C4SLs) where available, and then to the LQM/CIEH (S4ULs), for use in a residential end use setting.

2.3. Other Recommendations.

This report should be submitted as part of the planning application package to the RMBC Contaminated Land Officer.



Signed.....

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D.S. Slattery BSc (Hons).

T J Booth Associates.

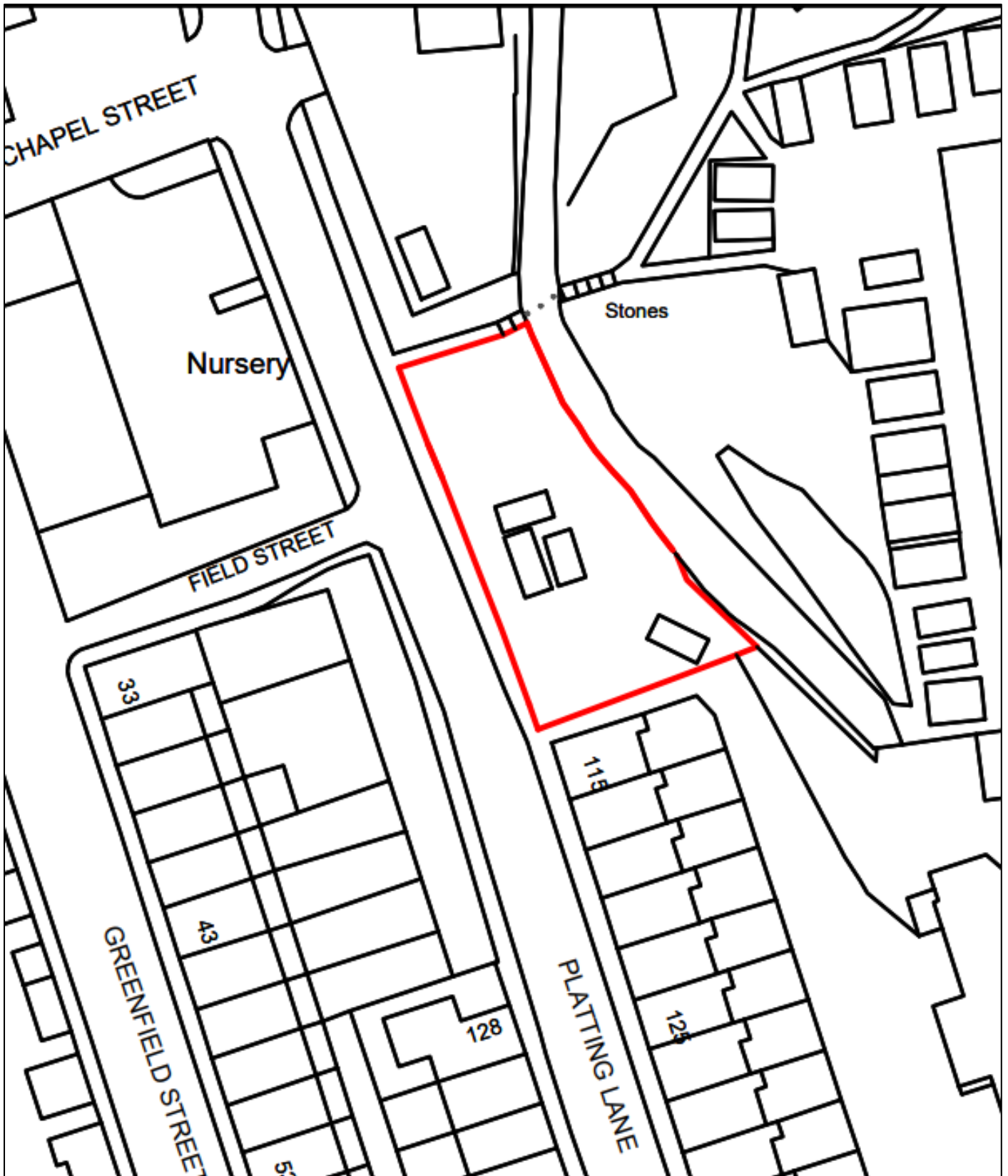
Authorised...

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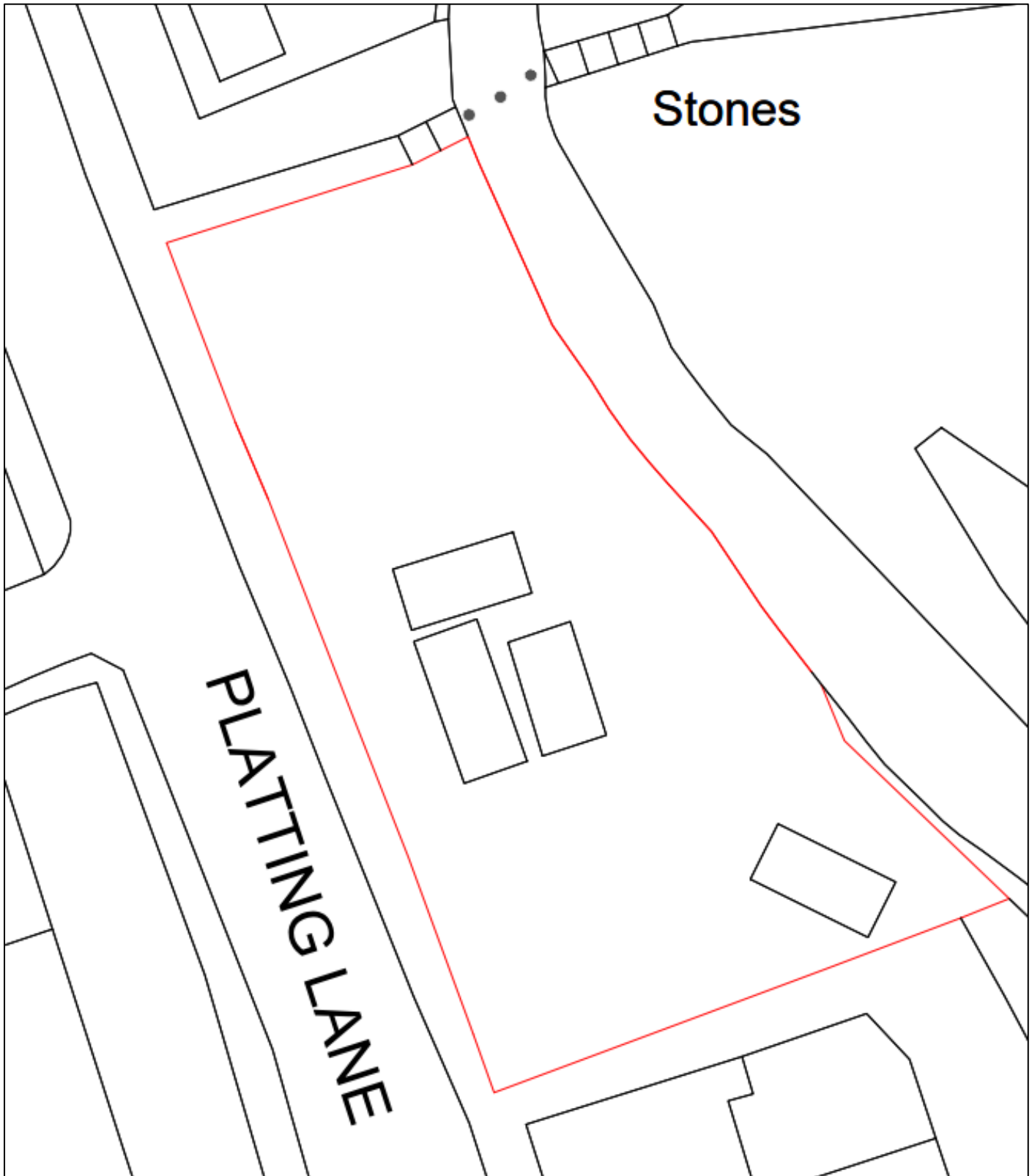
T J Booth BSc (Hons), C. Eng. C. Env. MICE.

T J Booth Associates.

3.1. Location Plan



3.2. Ex Site Plan/Topographic Survey





3.3. Proposed Development



3.4. Site Investigation Plan

N/A – Phase 1 only at this stage.

3.5. Trial Hole Logs

N/A – Phase 1 only at this stage.

3.6. TJBA Soil Analysis

N/A – Phase 1 only at this stage.

3.7. Envirolab Ltd Certificates

N/A – Phase 1 only at this stage.

4. APPENDIX B: PHOTOS



View towards northeast corner, 12.07.2024.



View towards southeast corner, 12.07.2024.



View towards northeast corner, 12.07.2024.



View from central west boundary towards Sudden Brook, 12.07.2024.



View towards southeast corner, 12.07.2024.



View from northeast corner towards Sudden Brook, 12.07.2024.

5. APPENDIX C: LANDMARK ENVIROCHECK

