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PROJECT No. RML 7403

REMEDIATION METHOD STATEMENT

AT
ALBION STREET, SOUTHWICK, BN42 4DN

ON BEHALF OF
ADUR DISTRICT COUNCIL

August 2020



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1.0 INTRODUCTION & BACKGROUND

1.1 This report has been prepared by Risk Management Limited (RML) under cover of the Client, Adur District Council's, Purchase Order No. PO1003059, dated 23rd July 2020.

1.2 The site under consideration is Nos. 11-21 Albion Street, Southwick, East Sussex BN42 4DN which have now been demolished.

1.3 The approximate six-figure grid reference for the centre of the site is 523760E, 105000N.

1.4 It is understood that the proposed development at this site will comprise two blocks of flats, one five-stories high and one six-stories high. The currently proposed development is indicated on the appended Messrs. Messrs. Liam Russell Architects Proposed Ground Floor Site Plan - Drawing No. 1538-PA-010 rev. D. The drawing includes plot No. 7 Albion Street which has a third proposed block of flats.

1.5 The current work was commissioned to assist in discharging parts of Condition 7 of the Planning Application for the above noted development, reference AWDM/0954/18, and comprises a Remediation Method Statement.

2.0 PREVIOUS REPORTS

Messrs. Land Science Limited's *"Phase I and Phase II Geo-Environmental Investigation"* dated April 2018.

2.1 This Report included a desk study, eight dynamically sampled boreholes to a maximum depth of 5.00m, installation of groundwater/ground gas monitoring wells in three locations and collection of soil and groundwater samples for laboratory analysis.

2.2 The historical maps found that the site was undeveloped land in 1873 with tracks or field boundaries dividing the site along the east to west and north to south axis. The site layout remained unchanged until circa 1912 when two semi-detached properties were located in the south-west portion of the site. Historical maps dated 1930 show a row of terraced properties occupying the eastern half of the site, with two undeveloped plots in the central part of the site. A historical map dated 1948 illustrates a single detached property occupying the central part of the site. The layout appears unchanged on historical maps from then until current day.

2.3 The Walkover Survey of 2018 found that :-

"the site was located in a predominantly residential area and was primarily surrounded by further dwellings to the west and north. The site fronted on to Albion Street to the south and was adjacent to a railway embankment to the immediate north. To the south of Albion Street was a Jet Ski sales office. To the immediate east of the site was an active garage and vehicle repair workshop, and to the south-east of the site was a cement manufacturer. No other potentially contaminative land uses were identified in the local vicinity."

2.4 The Desk Study concluded that:-

- *A cover system would be required in new soft landscaped areas and gardens. This is likely to comprise the removal of at least 600 mm of existing soil in private garden areas (450 mm in new soft landscaping), placement of a geotextile marker layer and placement of new subsoil/topsoil suitable for plant growth. We note that depths may be shallower provided the base can be proved suitable for use. Imported material should be tested at suitable frequency to confirm chemical suitability for the proposed end use.*

- *Confirmation on the potable water supply pipe design (barrier pipes such as "protectaline" can be considered) with the Water Services provider.*

- *Consideration for further gas monitoring or installation of gas protection measures commiserate with a GSV2 (low risk) in new buildings.*

- *Installation of a deeper borehole with standpipe to support geotechnical design of the basement* (proposed at the time) *to include waterproofing design.*

- *Installation of a groundwater level logger in the deeper borehole to confirm if the groundwater at the site is tidally influenced for gas protection design.*

Risk Management Limited Report No. RML 7338 *"Phase II, 'Intrusive' Geotechnical Site Investigation"* dated May 2020.

2.5 This Report included three cable percussion boreholes to between 20.00m and 25.00m depth, three mechanically excavated trial pits and in-situ MEXE Probe CBR testing, installation of groundwater/ground gas monitoring wells in three locations and collection of soil and groundwater samples for laboratory analysis.

2.6 Land-borne Gas Monitoring was undertaken as part of the Phase II Site Investigation and found that : -

"During the current three-return gas/groundwater monitoring visits and the previous two visits in 2019, a maximum Methane level of 0.2% was detected, together with a maximum level of Carbon Dioxide of 3.7%. Oxygen concentrations ranged between 11.5% and 21.7% and a maximum flow of 0.2 l/hr was recorded. The atmospheric pressure was recorded on each visit and ranged between 1008 and 1029 mb".

"***Therefore, no land borne gas remedial measures would be required at this site."***

2.7 Findings from the results of contamination testing in the Phase II, *Intrusive,* Site investigation were compared against ***Residential without the consumption of home-grown fruit and vegetables*** criteria and found that:-

*"No samples had determinands exceeding the CLEA Soil Guideline Values (SGV) for **Residential without consumption of home-grown fruit and vegetables** usage.*

*The sample from 0.50m depth in borehole BH3 had elevated levels of Lead and a number of PAH's when compared against the ATRISK Contaminated Land Screening Values (SSV) for **Residential without consumption of home-grown fruit and vegetables** usage.*

No asbestos was identified within the samples tested.

The results of the WAC tests tend to indicate that the sample from 0.50m depth in borehole BH1 would probably be classified as "Inert". However, the sample from 0.50m in borehole BH2 had elevated levels of Sulphate and Dissolved Solids which may class this as falling into the "Stable Non-Reactive" category".

2.8 The Report concluded that :-

"The elevated levels of Lead and PAH in the MADE GROUND in borehole BH3 should be noted although this was to the rear of the site away from the currently proposed block of flats themselves.

*Apart from the above, levels of contamination did not exceed the **Residential without consumption of home-grown fruit and vegetables** criteria.*

Notwithstanding this, the presence of elevated levels of PAH and Lead should be noted by Groundworkers and included within the main contractors site method statements and risk assessments.

Any material removed from site should be sent to a suitably licensed landfill in accordance with the WAC test results discussed above and waste tickets should be retained. In addition, any imported "clean" material and/or topsoil should be certified as 'clean' and suitable for use. The waste tickets and certification will need to form part of a final Verification Report for the site in due course.

In addition to any additional precautions regarding the presence of Lead and PAH, as noted above, we would recommend that standard Health and Safety precautions be taken with regard to ground workers at this site and these should include PPE equipment such as gloves, overalls etc. and normal washing facilities available on-site".

3.0 BASIC ENVIRONMENTAL SETTING AND CONCEPTUAL SITE MODEL

3.1 According to information published by the British Geological Survey (Sheet 318/333, Brighton and Worthing) the underlying geology at this site is shown as being Recent Brickearth and Head Deposits overlying Upper and Middle Chalk of the Cretaceous Period.

3.2 The Chalk Group is composed predominantly of chalk, a very fine-grained pure limestone. Up to 90% of the carbonate sediment is composed of minute calcite crystals a few microns across, derived from the disintegration of coccoliths which are the skeletons of algae that thrived in the Late Cretaceous seas.

3.3 Groundwater was encountered at 8.70m depth within borehole BH1 during boring, rising to 6.00m depth after 20 minutes.

3.4 Groundwater was encountered at 6.30m depth within borehole BH2 during boring, rising to 6.00m depth after 20 minutes.

3.5 Groundwater was encountered at 6.50m depth within borehole BH3 during boring, rising to 6.00m depth after 20 minutes.

3.6 During return monitoring visits, groundwater levels varied in each of the previous Standpipes A-C and the current borehole BH3 as follows;

Standpipe A	-	3.10m – 5.55m
Standpipe B	-	3.30m – 5.78m
Standpipe C	-	3.10m – 4.54m
Borehole BH3	-	3.70m – 4.88m

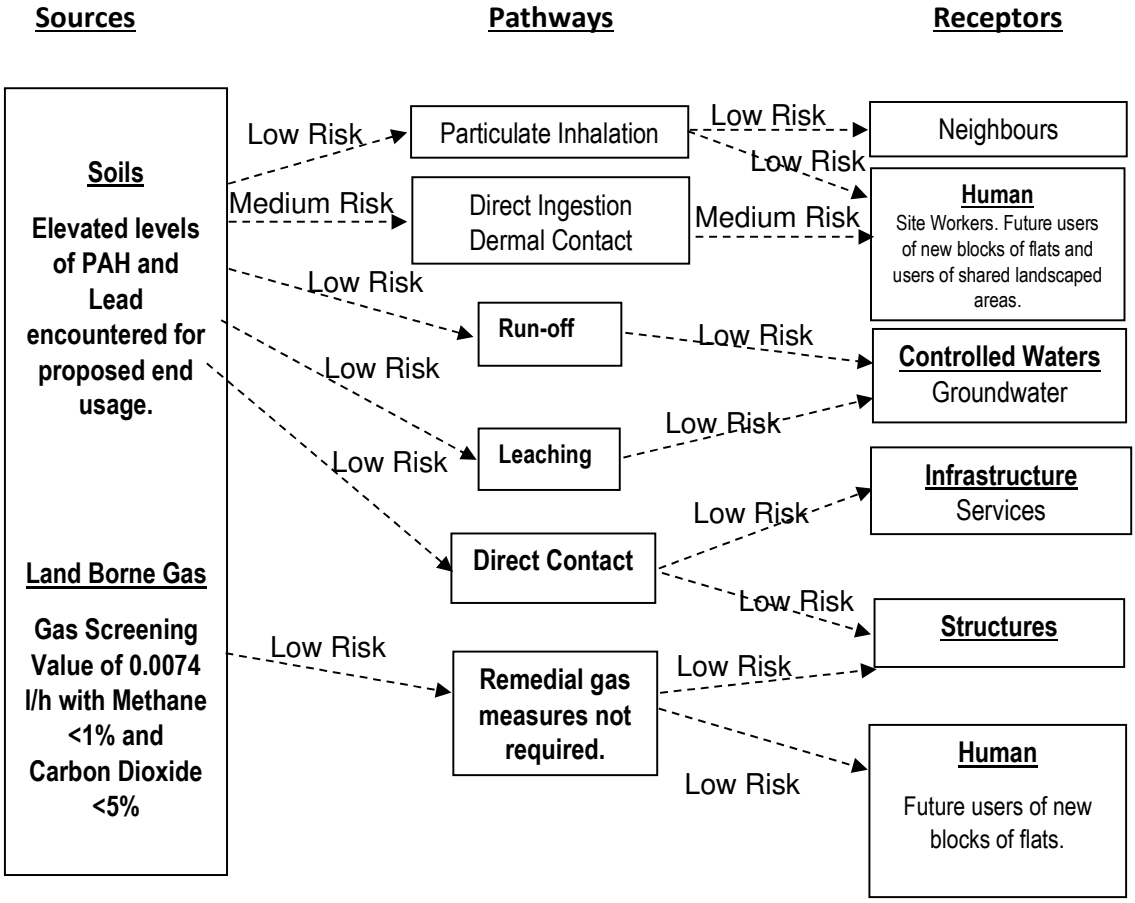
3.7 This would appear to confirm a small tidal influence on groundwater levels below the current site.

3.8 The Phase I Desk Study, Report, referenced above, found that no radon remedial measures would be required at this site. The site lies over a Principal Aquifer but does not lie over an Environment Agency Source Protection Zone (SPZ). The site does not lie within an area at risk of flooding from rivers or sea, but land immediately adjacent to the south and east of the site is identified as being at risk of flooding from rivers or seas without defences. A small area of the site in the northwest quadrant is identified as being at risk from surface water flooding (low risk). The site is identified as being at risk of groundwater flooding.

3.9 The Site Investigation Report No. RML 7338, referenced above, found that ground conditions comprised :-

"MADE GROUND, varying between 0.90m and 2.00m deep, overlying 'soft' to 'firm' silty CLAY to between 5.50m and 6.20m depth. Beneath these superficial deposits was a soft, saturated, CHALK layer to between 7.00m and 7.50m where the CHALK continued as structureless becoming rubbly with depth but still saturated to between 12.00m and 15.00m depth. Based on the in-situ SPT tests, the CHALK did not start to improve in consistency until deeper than 10.00m below existing ground level, becoming rubbly to blocky CHALK below 23.50m which was not penetrated at the maximum borehole termination depth of 25.00m below existing ground level.

3.10 The updated Conceptual Site Model (CSM) from Report reference RML 7338 is included below:-



4.0 REMEDIATION PROPOSALS

4.1 No remedial measures would be necessary beneath the new building footprints, or hardstanding areas.

4.2 The elevated levels of Lead and PAH's encountered within the MADE GROUND in parts of the site would only be relevant to proposed landscaped areas as the currently proposed new buildings, access roads and car parking cover the majority of the site footprint.

4.3 For any new planting areas or shared access landscaped areas, at ground level, we would recommend removal of any MADE GROUND, to a minimum depth of 450mm, and replacement with some 150mm-250mm of "clean" imported material overlain by 200mm-300mm of "clean" Topsoil as necessary.

4.4 The presence of elevated levels of Lead and PAH's in the MADE GROUND should be noted by Groundworkers and included within the main contractors site method statements and risk assessments.

4.5 Any material removed from site should be sent to a suitably licensed landfill and waste tickets should be retained. In addition, any imported "clean" material and/or topsoil should be certified as 'clean' and suitable for use. The waste tickets and certification will need to form part of a final Verification Report for the site in due course.

4.6 In addition, to any precautions regarding the presence of Lead and PAH's as noted above, we would recommend that standard Health and Safety precautions be taken with regard to ground workers at this site and these should include PPE equipment such as gloves,

4.7 In addition to chemical testing, Topsoil and subsoil should both be certified to be physically suitable in accordance with BS 3883: 2015 and BS 8601: 2013. The Local Authority normally expects 1 sample analysed per $100m^3$ from a greenfield source, and 1 in $50m^3$ from other sources.

4.8 In 2010, UK Water Industry Research published "Guidance of the Selection of Water Supply Pipes to be Used in Brownfield Sites". Discussions will need to take place with the local water company to ensure that suitable water supply piping is installed as necessary within the refurbished development, and that the pipework is compliant with recommendations provided in the above-noted Guidance.

4.9 The proposed re-development will effectively cover much of the site with building and hardstanding and, therefore, any 'pathway' to the underlying groundwater in these areas will effectively be 'cut-off'.

4.9 A Remediation Verification Report should be prepared at the end of the project which would include as-built drawings, material specifications and results of laboratory analysis of material re-used at the site. RML will be happy to provide the necessary independent verifications inspections and assessments, and preparation of the Remediation Verification Report at completion of redevelopment works.

5.0 GENERAL REMEDIATION STRATEGY

5.1 This remediation strategy is aimed at reducing the risks identified to date as well as providing a general approach for the on-going management of ground and groundwater quality issues at the site during groundworks and construction phases of this re-development. Although no gross, or widespread contamination, nor obvious significant mobile contamination has been encountered by RML within the footprint of the study sites to date, care will be taken in the handling and disposal of any excavated materials, and in the consideration of the evolving, and accumulation of any explosive, asphyxiating, and/or potentially toxic gases or vapours.

5.2 The site is not located very near to any potential groundwater or surface water receptors, although superficial 'perched' groundwater may be encountered during excavation works. The site is not considered to pose any immediate risk to any particularly sensitive aqueous receptors, although particular care will need to be taken in the management of groundwater, where encountered.

5.3 In 2010, UK Water Industry Research published "Guidance of the Selection of Water Supply Pipes to be Used in Brownfield Sites". Discussions will need to take place with the local water company to ensure that suitable water supply piping is installed as necessary within the refurbished development, and that the pipework is compliant with recommendations provided in the above-noted Guidance.

5.4 The site is not considered to pose an unacceptable risk to groundworkers, provided that the presence of Lead and PAH's are noted and appropriate health and safety protocols are employed. However, it is recommended that detailed method statements should be provided by the appointed groundworker contractor(s), prior to their work commencing.

5.5 The groundworks contractor should be informed of the potential for undetermined areas of contamination to be encountered the potential heterogeneous nature of the MADE GROUND should be borne in mind, particularly during the groundworks phase of the development works.

5.6 In the event that any obvious or significant visual or olfactory signs of contamination are encountered, this should be stockpiled and RML contacted immediately for advice, and a site inspection, if deemed necessary.

6.0 OUTLINE REMEDIATION METHODOLOGY

6.1 Prior to carrying out major site works, groundworks contractors should be informed that some isolated, slightly elevated concentrations of Lead and PAH, have been determined in the underlying MADE GROUND. Again, the potential heterogeneous nature of the materials present in the MADE GROUND at the site will need to be borne in mind particularly during the carrying out of any groundworks. Because of this, high levels of personal hygiene should be adopted by the contractors, who should also refrain from smoking whilst on site. In the event that any obvious, or significant visual, or olfactory signs of contamination are encountered, then RML should be contacted immediately for advice, and a site inspection, if deemed necessary. Contractors should comply with the recommendations presented in the HSE Guidance Document HS(G)66 'Protection of Workers and the General Public during the Development of Contaminated Land'. This should include the suitable fencing off of the areas where works are to take place.

6.2 As it is understood that removal of existing ground surfaces are required in certain areas of the site, care will need to be taken to ensure that dust generation is kept to a minimum and that dust suppression methods are deployed as necessary.

6.3 When excavation of materials is undertaken in order to enable the construction of the proposed new foundations and installation of new service runs etc., then these excavated soils will need to be separately stockpiled, under cover, or placed directly into haulage lorries, but allowing for the drainage of any surplus water (where present), which should be allowed to drain back into the excavations created. Excavated soils which are not proposed for on-site re-usage should be taken to local landfill sites for disposal/treatment. The haulage disposal/treatment dockets should be retained for inclusion in the Completion Report (see below).

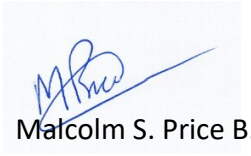
6.4 Where any soils are imported as part of these proposed works from an off-site source, to be utilised for example in any garden or soft landscape areas, then analysis of the quality of these soils should be carried out to ensure their suitability and approval by the local authority Environmental Health Department prior to placement. It is recommended that photographic evidence of the groundworks are obtained, in order to provide necessary details for input into the Completion (Verification) Report (see below).

7.0 COMPLETION REPORT

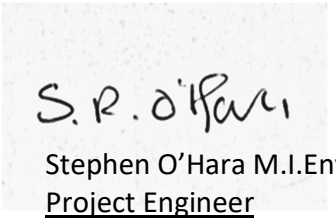
7.1 A Completion (Verification) Report will need to be prepared following completion of remedial/re-development works detailing:

- The remedial/re-development works undertaken.
- Areas where excavation and soil removal has taken place including photographs and logs (as appropriate).
- Waste transfer documentation including all waste management documentation showing the classification of waste, its treatment, movement and place of disposal or recovery for re-usage.
- Results of analyses of any validation samples recovered.
- Documentary and photographic evidence comprising photographs showing the depth of materials removed, along with photos of geotextile membranes, will be included within the Verification Report. Photographs will show the depth of topsoil (to validate depth of cover) by means of a tape measure in the side of the excavation.
- A plan showing the areas that were remediated will be included within the Verification Report.

7.2 The main Completion (Verification) Report can be prepared by RML in conjunction with the site manager at the end of the development works.

Prepared By : 

Malcolm S. Price B.Sc., M.Sc., M.I.C.E., C.Eng. M.I.Env.Sc
Director

Checked By : 

Stephen O'Hara M.I.Env.Sc.
Project Engineer

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PROPOSED

Only figured dimensions are to be used. All dimensions to be checked on site.

Please note: Refer to 'type' of drawing below; planning drawings should only be treated as such.

0m 5m 10m 15m 20m 25m

VISUAL SCALE 1:250 @A1

N

- BOUNDARY LINE
- BUILDING OVERHEAD
- CAR PARK DIRECTIONS
- TREES TO BE REMOVED
- SITE ENTRANCE
- TURNING POINT

KINGSTON LANE

VICTORIA ROAD

ALBION STREET

MONTGOMERY MOTORS

T1 T3 T4-PA T5 T6 T7 T8 T9-PA T10 T11 T12-PA T13 T14-PA T15 T16-PA T17 T18 T19 T20 T21 T22 T23 T24 T25-PA T26 T28 T29 T30

Disabled Parking

BIKE STORE

BIN STORE

PLANT ROOM

BUILDING OUTLINE OVERHEAD

High Level Window with Defensible Planting

Indicative Car Club Space with Electric Charging Point

Pedestrian access to Refurbished Dwellings (And off street bin & bike storage)

Pedestrian access

Set back line for future cycle route 1m from back of kerb

Vehicular access for all flats

Indicative bay for refuse collecting point

25m paths for refuse collection

Pedestrian access

Set back line for future cycle route 1.2m from back of kerb

Existing Vehicular Access

Existing Vehicular Exit

Vehicular Access to Sussex Marine Water Sports

Vehicular Access to Dudman / Southern Cement Ltd.

Rev	Description	Date	Drwn by	Chckd by
D	Plans & elevations updated to reflect moved flats & parking	25/11/19	JL	LRA
C	Additional ground floor flats added, plant room & bike store moved	22/10/19	JL	LRA
B	Updated elevations and plans following comments from WSCC and Planning Officer	11/10/18	JL	LRA
A	Updated plan for refuse collection	21/08/18	JL	LRA

APPLICATION FOR DETAILED

PLANNING CONSENT

Liam Russell Architects

architecture and development

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JOB: Albion Street	CHECKED: LRA
	DRAWN: JL/LGR
CLIENT: Adur Homes	DATE: 25/11/19
	SCALE @ A1: 1 : 250
DRAWING: PROPOSED GROUND FLOOR SITE PLAN	REVISION: D
	NUMBER: 1538_PA_010

DO NOT SCALE FROM THIS DRAWING. THIS DRAWING IS COPYRIGHT ©

+00 - GROUND FLOOR

1 : 250