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Station Hill Reading (Phase 1)

Document Reference: SHR-RMB-XX-XX-RP-C-91-000021 Block E and F, Station Hill - Planning Conditions 27(b) & 27(ii).

The document referenced above is submitted to Reading Borough Council for approval to

Discharge planning condition Block E OPP 27(b) & Block F OPP 27(ii) (Remediation Strategy) prior to residential occupation

Planning condition 27(b) & 27(ii) requires the following:

Block E & F

(b) No part of the development hereby approved shall be first occupied until a verification report has been submitted to and approved in writing by the Local Planning Authority demonstrating that the works set out in the remediation strategy in (a) are complete and identifying any requirements for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action.

(c) In the event that contamination not previously identified is found at any time when carrying out the approved development, development shall be halted on that part of the site and shall be reported in writing to the Local Planning Authority.

Following that an assessment of the nature and extent of contamination shall be undertaken and where remediation is necessary a remediation scheme, together with a timetable for its implementation, shall be submitted to and approved in writing by the Local Planning Authority. The measures in the approved remediation scheme shall be implemented in accordance with the approved timetable. Following completion of measures identified in the approved remediation scheme, a validation report shall be submitted to and approved in writing by the Local Planning Authority.

The development shall thereafter only be undertaken in accordance with the approved details in (a)-(c) above, as relevant, save to the extent that the Local Planning Authority approves any variation(s) to the approved details.

The following report has been prepared to satisfy Plot E Condition 27(b) and Plot F Condition 27(ii)

SHR-RMB-XX-XX-RP-C-91-000021 Block E and F

This document outlines the assessment has been carried out in accordance with the requirements of Phase 1 Development.

Intended for
Lincoln MGT

Date
February 2023

Report Number
SHR-RMB-XX-XX-RP-C-91-000021

STATION HILL, READING, PHASE 1, SOUTH SITE REMEDIATION STRATEGY

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1. INTRODUCTION

Ramboll UK Limited (herein referred to as "Ramboll") was commissioned by Lincoln MGT (the "Client") to produce a remediation strategy for Station Hill South Site, Reading, RG1 1NR (the "Site").

The remediation strategy follows a number of assessments that are typically undertaken to evaluate the contamination status of a site. Previous assessments have included a desk study, ground investigation, conceptual site model, human health and controlled waters risk assessments and a foundation works risk assessment.

This remediation strategy covers the Phase 1 of the wider Station Hill Master Plan, known as Station Hill South Site.

1.1 Planning

Reading Borough Council has granted Outline Planning Permission for the proposed development subject to the conditions outlined in Planning Application Number 130436, dated 9th January 2015. Land contamination matters are dealt with under Condition 27 of the Planning Consent including condition 27(c):

"The results of the site investigation and detailed risk assessment referred to in (b) and, based on these, an options appraisal and remediation strategy giving full details of the remediation measures required and how they are to be undertaken. The strategy must include all works to be undertaken, proposed remediation objectives and remediation criteria, an appraisal of remedial options, and proposal of the preferred option(s), and a timetable of works and site management procedures. The strategy must ensure that the site will not qualify as contamination land under Part 2A of the Environmental Protection Act 1990 in relation to the intended use of the land under remediation."

1.2 Proposed Development

The proposed development consists of the demolition of the existing buildings on the Station Hill South Site, and the construction of two residential buildings (Plots E and F); a 6-12-storey building and a 11-12-storey building with a split single/ double-storey basement and a podium to bridge the two buildings.

The proposed buildings comprise primarily residential accommodation, with a combination of residential, retail, amenity spaces and bicycle parking at podium level. Below podium level there is a split-level car park of 1-2 storeys, which also houses plant rooms, cycle parking, water tanks and storage. The roof is split across the several levels and houses plant, amenity space and green roof areas. The proposed basement covers the extent of the building footprints with the exception of three residential units in the south of Block E and one residential unit in the south of Block F.

A drawing of the proposed development is shown below as Figure 1, the South Site and area covered within this report is shown in grey. Phases 2 and 3, shown in red and blue, comprise the Station Hill North Site and are discussed in a separate report.

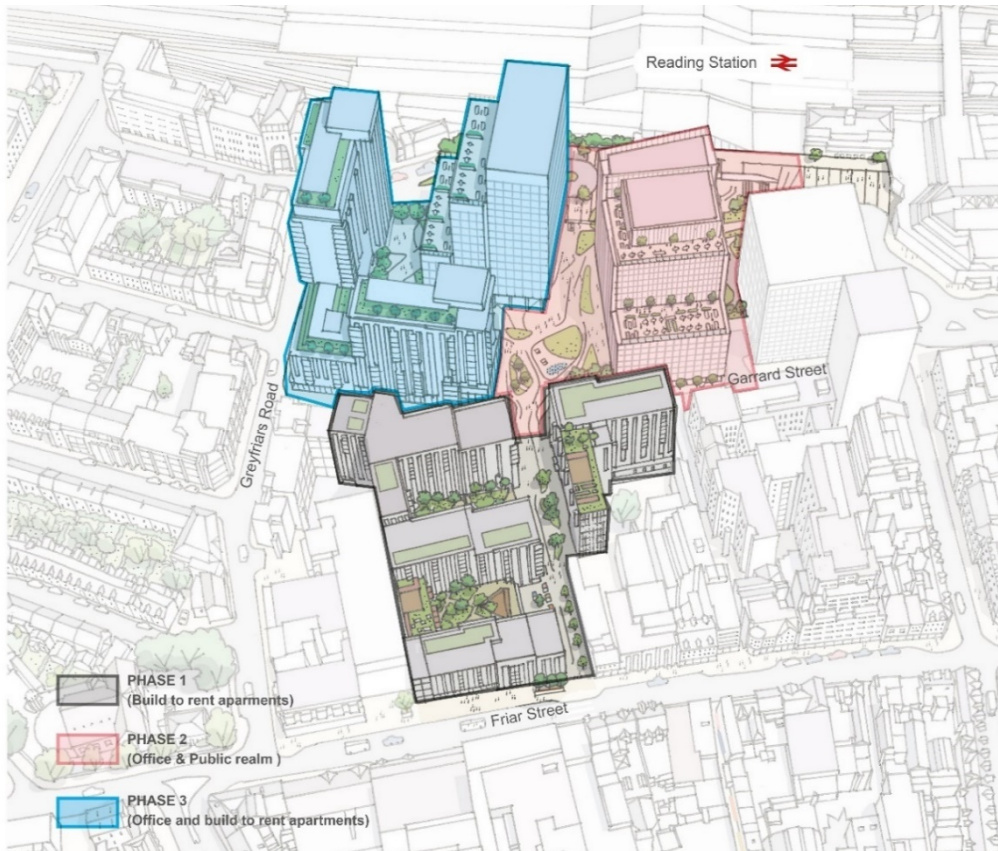


Figure 1: A Drawing of the Proposed Development (Source: MGT)

1.3 Constraints and Limitations

This report has been prepared for the exclusive use of Lincoln MGT and should not be used in whole or in part by any third parties without the express permission of Ramboll in writing.

The remediation strategy is designed to support the proposed mixed residential and commercial development of the site. This remediation strategy for the South Site has been produced based predominantly upon the findings of Ramboll's 2020 Ground Investigation Report, which was scoped and undertaken taking into account the findings of previous third-party site assessment information.

2. SITE DESCRIPTION

2.1 Site Location

The Station Hill South Site is located off Garrard Street in central Reading, RG1 1NR, south of Reading train station. The site is bounded by Garrard Street to the north, Merchants Place to the east, Friars Street to the south, and Greyfriars Road to the west. The site is centred on National Grid Reference 471370, 173710. A red line boundary for the site is shown below as Figure 2.

Prior to the commencement of enabling works, the South Site was occupied by Telecoms House in the west of the site, and most of the remainder of the site was occupied by Friars Walk Shopping Centre in the east. Demolition of these buildings was undertaken in 2019.

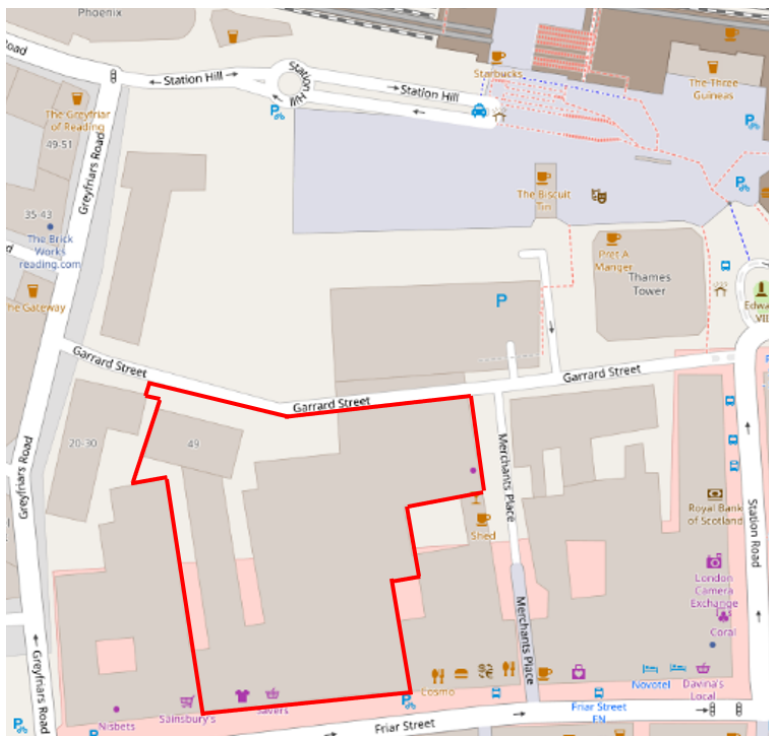


Figure 2: Station Hill South Site shown by Red Line Boundary (Source: Open Street Maps)

2.2 Topography

The ground level varies by over 6m across the site, from +39.0m above ordnance datum (AOD) along Garrard Street, to +45.7m along Friar Street. This has therefore required a podium structure across the site at +45.7m which effectively forms the ground floor level of the buildings. Beneath the podium there is a split-level car park of 1 to 2 levels, the lowest level of which is in the north of the site along Garrard Street and at which is the location of the entrance to the car park.

2.3 Site History

Historical Ordnance Survey maps were reviewed as part of Ramboll's Phase I Desk Study Report (ref. 1620004716-SHR-RAM-GE-002-Desk Study, October 2018) and have been summarised below.

The earliest historical maps dated 1879 shows the wider Station Hill site to be occupied by terraced housing, a Malt House, a Timber Yard and a Coal Yard. The remaining northeast section of the site is shown as open fields and woodland. During the 1900s, the site is shown to have become further developed with a large building marked in the centre of the site by 1931. From the 1940s onward, a

factory is marked in the northwest corner of the site in 1957, with the central building annotated as a garage. A number of depositories and warehouses were then built on the site, with a carpark present by the 1960s. By the late 1960s, a ballroom had been constructed on the western portion of the car park along with a bus station. A coal yard was present in the south of the site, and Western Tower and its adjoining office block had been built along the northern boundary of the site. The garage, houses and factory were all eventually demolished sometime before 1980 to make way for a multi-storey car park in the centre, an office building in the west and Friar's Walk Shopping Centre in the south, which included a rooftop car park.

Enabling works on the South Site commenced in 2021 following the demolition of all buildings on site by McGees in 2019.

2.4 Geology

Details of the geology encountered during Ramboll's 2018 investigation can be found in the Ramboll Ground Investigation Report, Station Hill Reading (ref: SHR-RAM-SB-XX-RP-S-000016, February 2020). A summary is provided in Table 2.1 below.

Table 2-1: Sequence of Strata Encountered on Site			
Stratum	Level at Top of Stratum (m AOD)	Thickness Range (m)	Typical Description
Made Ground	+39.2 - +45.7	0.40 - 1.9	Concrete hardstanding is located across the entire site and is underlain by Made Ground which is variable but is generally described as dark bluish grey angular medium and coarse sandy crystalline gravel and light brown slightly silty sandy subangular to rounded fine and medium brick, concrete, flint, and chalk gravel. There are also clay units which have brick, chalk, and flint gravels.
Alluvium	+37.2 - +38.8	0.3 - 0.8	The Alluvium and Taplow Gravels are discontinuous across the site with the Alluvium only being encountered in 4no. exploratory holes with an average thickness of 0.5m. The Alluvium is generally described as stiff light brown slightly sandy gravelly silty clay, with gravel being subangular to rounded fine to coarse flint and chalk.
Taplow Gravels	+37.6 - +45.2	0.3 - 2.5	The Taplow Gravels are encountered in 6no. window samples. Each borehole also found a layer of silty gravelly chalk which due to the destructive nature of using shell and auger drilling techniques at this depth, could have included a layer of gravel which has been subsumed by the chalk. The Taplow Gravels have an average thickness of 0.7m and are generally described as orangish brown clayey sandy subangular to subrounded fine to coarse flint and rare chalk gravel.
Upper Chalk (Structureless)	+35.4 - +44.9	4.4 - 6.8	The structureless chalk has a CIRIA grade of Dm or Dc. With a typical description consisting of; structureless chalk composed of white

Table 2-1: Sequence of Strata Encountered on Site

			slightly gravelly Silt. Gravel is subangular and subrounded fine to coarse very weak medium density white with frequent black specks chalk, rarely angular fine to coarse flint.
Upper Chalk (Structured)	+30.9 - +31.2	>16.6 (Unproven)	The structured chalk was only encountered in the boreholes (thickness unproven). The CIRIA grade of the chalk included B5, B4, B3, A5, A4, A3. Two fracture sets are present with one predominantly sub horizontal to 30°, and the second set between predominantly 45° and 70°. Thin layers (5mm) of cobbled sized black nodular flint were encountered. The typical description consists of very weak medium density white CHALK with frequent black specks and yellowish orange staining.

2.5 Hydrogeology

According to the Environment Agency (EA), the Alluvium and Taplow Gravel formations are classified as Secondary 'A' Aquifers and the Upper Chalk Formation is classified as a Principal Aquifer (identified as a layer of rock or drift deposits which have a high intergranular permeability, and as such they usually provide a high level of water storage).

The site is not located within an EA designated Source Protection Zone. There are 12 licensed groundwater abstractions within 1km of the site, the closest of which is located 0.16km to the southwest which is in use for drinking, cooking, sanitary and washing (small garden) purposes.

Overall, the site is considered to be located within a low-moderate sensitivity setting in terms of groundwater receptors.

During the Ground Investigation, groundwater strikes were encountered within the Upper Chalk Formation at depths ranging between +36.05 to +36.7m Ordnance Datum (OD).

2.6 Hydrology

The nearest surface water feature is a drainage network 320m northwest of the site, associated with the railway line. The River Thames which, at its closest point, is 420m northeast of the site. The River Kennet is located approximately 500m southeast of the Site and also flows in an easterly direction.

Overall, the site is considered to be of low environmental sensitivity in terms of surface water receptors.

3. GROUND INVESTIGATION SUMMARY

Ramboll completed a Ground Investigation Report for the Station Hill South Site development in February 2020 (ref: SHR-RAM-SB-XX-RP-G-000016). This report provides full details of the site description, previous reports, nature of historical land uses, geotechnical parameters and contamination identified at the site, as well as land contamination risk assessments.

A summary of the identified contamination from the site investigation is provided below. An exploratory plan is presented in Appendix 1.

3.1 Visual and Olfactory Evidence of Contamination

Visual and olfactory contamination was noted at one location during the ground investigation in WS304 at 2.90 to 3.95m below ground level (bgl) at the top of the structureless chalk. This comprised abundant dark grey with frequent pockets of greenish brown staining (possible contamination) with a strong hydrocarbon odour.

3.2 Soil Contamination

As part of the Ground Investigation undertaken in 2018, thirty-four soil samples were tested for a wide range of typical industrial contaminants (including metals, hydrocarbons, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and polychlorinated biphenyls (PCBs)). Seventeen Made Ground samples were also tested for asbestos.

The soil samples were screened against Ramboll's generic assessment criteria (GAC) for a residential without plant uptake end use. Arguably the conceptual site model is more akin to a commercial use with near complete building cover and hardstanding with only localised soft landscaping areas, that will comprise imported topsoil materials. A review of the data was also therefore undertaken against commercial screening GAC. The exceedances of the chemical analysis are discussed below, and full details are provided in Ramboll's Ground Investigation Report (Ramboll, 2020).

Exceedances of soil samples were limited to heavy end aromatic TPHs and benzo(a)pyrene. Benzo(a)pyrene was detected in one location (WS301 at 0.2m) at a maximum concentration of 32mg/kg (the GAC for residential without plant uptake is 5.3mg/kg). However, this did not exceed the GAC for commercial use which is 76mg/kg.

Elevated TPH results were reported in two locations (WS301 at 0.2m and BH301 at 0.2m). The maximum concentration detected was 2,600mg/kg (GAC for residential without plant uptake is 1,900mg/kg). However, these concentrations did not exceed the GAC for commercial end use which is 29,000mg/kg.

There were no visual observations of asbestos noted during the site investigation. Asbestos screening of Made Ground samples identified asbestos in one sample (BH303 at 0.2m) which underwent subsequent asbestos quantification and reported a weight/weight concentration of <0.001%.

3.3 Controlled Waters Contamination Assessment

Groundwater sampling and subsequent screening assessment undertaken as part of the Ground Conditions Report (Ramboll, 2019) did not identify contaminants above the relevant GAC.

3.4 Ground Gas Risk Assessment Summary

Six rounds of ground gas monitoring were undertaken as part of the ground investigation. A detailed review of the ground gas monitoring and assessment is included within the Ground Conditions Report (Ramboll, 2019).

On the basis of the conceptual site model and the ground gas monitoring results, the site has been classified in line with CIRIA C665 as Characteristic Situation 1 (CS1 Very Low Risk).

3.5 Obstructions

Numerous below ground obstructions were encountered during the Ramboll 2019 Ground Investigation. Obstructions were largely found to comprise a second layer of concrete slab(s) at five exploratory holes (BH301, BH303, BH304, WS305a and WS316). This second layer may represent existing foundations, or historical structures present on site.

3.6 Contamination Summary

Ramboll's ground investigation identified minor residual impacts via potential complete pollutant linkages between contamination and sensitive receptors, which are summarised along with a summary of additional actions in Table 3-1 below. It should be noted that this ground investigation was limited due to access restrictions and buildings and concrete slabs being in situ at the time of drilling, therefore further shallow environmental ground investigation post-demolition has been recommended to investigate the site.

Table 3-1: Significant Pollutant Linkages Identified	
Pollutant	Additional Actions Required
Asbestos	Low levels of asbestos were identified in shallow Made Ground soils at the site and due to the nature of asbestos, previously unidentified asbestos cannot be discounted. Risk management measures are therefore required to address potential risks to human health during construction including both worker health and safety aspects and public protection aspects. An asbestos management plan may be required.
Hydrocarbons	Exceedances of benzo(a)pyrene and heavy end aromatic total petroleum hydrocarbons were identified. Risks to construction workers and future site users should be managed as per the risk assessment recommendations but principally in accordance with health and safety legislation. Precautions against underground services i.e. barrier pipe should also be considered for buried plastic water pipes. The development will comprise impermeable hard standing over the majority of the site thus reducing leaching potential further from the unsaturated soils. An assessment of water supply pipes suitable for ground contamination may be required by the Mains Water supplier in accordance with UKWIR report 10/WM/03/21 Guidance for the Selection of Water Supply Pipes to be used in brownfield sites, 2010.

The Conceptual Site Model and Remedial Measures are detailed in the following section.

4. CONCEPTUAL SITE MODEL AND REMEDIAL OPTIONS

4.1 Pollutant Linkages

A full risk assessment and conceptual site model is presented in Ramboll's Ground Investigation Report (February 2020). A summary of the pollutant linkages that are considered 'active' for the site and require remedial measure are presented below.

A remediation options appraisal has not been undertaken for this strategy as the majority of pollutant linkages will be removed through the design of the future development.

Table 4-1: Qualitative Source-Pathway-Receptor Risk Assessment

Potential Contaminant Linkage	Contaminants	Pathways	Receptors	Discussion	Risk Rating
PCL1	Contaminants in soils	Dermal contact. Ingestion and inhalation of soil derived particulates and dust. Inhalation of vapours.	Future site users Construction workers.	Current/Future Site Users The investigation identified heavy end aromatic TPH and BaP but <u>none of which exceeded the commercial use screening criteria.</u> Asbestos (chrysotile) was detected in one sample out of seventeen samples screened, at a quantification level below <0.001%. The levels of asbestos present within the Made Ground is therefore considered to be low. The hydrocarbon and PAH contaminant detections have not been identified to exceed commercial GAC (which includes indoor and outdoor air inhalation pathways), furthermore the detectable hydrocarbons were heavy end fractions (i.e. of low volatility) and the BaP, although the more volatile of the PAHs are still not particularly volatile. Staining and contaminant odours were only noted in one location at a depth of approximately 2.90 to 3.95m bgl and therefore considered to be too deep to be of significance for vapour migration.	Low

Table 4-1: Qualitative Source-Pathway-Receptor Risk Assessment

Potential Contaminant Linkage	Contaminants	Pathways	Receptors	Discussion	Risk Rating
				No direct contact pathways from soils to future site users are considered to exist by virtue of the development scheme which comprise complete building cover and hard surfacing. No landscaped areas are proposed at ground level. The contaminants identified were either heavy end hydrocarbons or PAHs, which are not particularly volatile. When compared against commercial screening criteria, no exceedances were identified. Construction Workers There is potential for site maintenance workers to come into contact with contaminated soils, including asbestos during the earthworks. The use of appropriate risk assessment and working procedures, such as hygiene measures and PPE, will mitigate risks to workers.	
PCL2	Contaminants in soils	Leaching of contaminants in the shallow soils to potential groundwater.	Localised perched shallow groundwater.	The site will be entirely surfaced in building cover and hardstanding; leaching mechanisms will therefore be inhibited by the future development. Analysis of groundwater did not identify any contaminants exceeding the relevant GACs and therefore the risks from the potential for leaching of contaminants in the shallow soils to groundwater is considered low.	Low
PCL3	Contaminants in groundwater	Lateral migration of groundwater	Off-site third-party land and its users. Off-site surface water features.		Low

Table 4-1: Qualitative Source-Pathway-Receptor Risk Assessment

Potential Contaminant Linkage	Contaminants	Pathways	Receptors	Discussion	Risk Rating
PCL4	Ground Gas.	Lateral and vertical migration	Future site users and built environment	The environmental site setting, and the history of the site is not considered to have significant land gas potential. Furthermore, the development scheme will comprise a large area of car parking with ventilation for vehicle emissions or commercial/amenity spaces at ground level. The ground conditions observed, coupled with the results of six rounds of gas monitoring have not identified elevated gas concentrations. The results of the ground gas assessment conclude that the site is classified as CIRIA Characteristic Situation 1 (CS1, Very Low Risk). No further ground gas monitoring or gas assessment is deemed necessary.	Low

5. SPECIFIC REMEDIATION ACTIVITIES

The key elements of the remediation strategy are presented below. The vast majority of pollutant linkages that have been identified can be mitigated by a development led approach of mitigation applied or established as part of the construction of the development.

As part of the site enabling works, basement excavations will be undertaken across the extent of the two building footprints, except for three residential units to the south of Block E and one residential unit to the south of Block F. Based on the risk assessment previously undertaken for the development, the plausible pollutant linkages relate predominantly to direct contact pathways with the shallow soils (i.e. ingestion, dermal and inhalation of dust). Elevated contaminant concentrations (including PAHs, TPH and asbestos) were identified in shallow soils in various parts of the site, however, none of which exceeded the GAC for commercial end use. Where concentrations were found to exceed the GAC for residential end use, these are within proposed basement excavations (within Block E in the north west of the site). The basement excavations will result in the removal of Made Ground, possible Alluvium and Taplow Gravel, and as such will remove previously identified contaminated soils.

The proposed development also includes for at least 3m of existing ground to be excavated in the south of Block F during the foundation works and backfilled with clean materials, further removing any potential risk of contaminated soils.

The proposed development is to comprise near complete building cover and hardstanding with only localised soft landscaping areas that are likely to be constructed in raised planters with imported topsoil. The presence of a capping system on site will mitigate the risk of potential contaminants in the ground to future site users.

Development led mitigation works:

- Piling Risk Assessment / Foundation Works Risk Assessment.
- Earthworks and Basement Excavation
- Water Supply Pipe / Service Corridors.
- Capping System.

5.1 Excavation of Contaminated Soils

As part of the development and site enabling works, basement excavations are proposed across the footprints of the buildings, except for beneath three residential units to the south of Block E and one residential unit to the south of Block F, although it is understood that at least 3m of existing ground will be excavated in the south of Block F during foundation works. The basement excavations will involve the excavation of Made Ground, possible Alluvium and Taplow Gravels, and as a result the removal of previously identified contamination in shallow soils across the site.

Enabling works occurring where asbestos containing materials have previously been identified (albeit limited based on the ground investigation data) should be undertaken in accordance with relevant guidance and legal requirements. There is also a potential for similarly impacted materials in areas not investigated across the site. All materials that are to be disposed off-site will require waste classification and should be managed under the appropriate waste management regulations and duty of care or under a Materials Management Plan where materials are intended to be reused.

The Contractor shall take all practicable measures to ensure water does not enter excavations. In the event of water entering excavations the Contractor shall take suitable measures to ensure it

does not become contaminated. Any water entering excavations shall be disposed of in a suitable manner, with appropriate permissions and record keeping.

Should excavations reveal soils which are identified as potentially contaminated through visual or olfactory indicators such as black staining or hydrocarbon odours, the materials will be stockpiled separately. Refer to Section 7 Unexpected Contamination.

5.2 Removal of Obstructions and Existing Foundations

Obstructions were encountered at five exploratory holes (BH301, BH303, BH304, WS305a and WS316) and were largely found to comprise a second layer of concrete slab(s), possibly representing existing foundations, or historic structures present on site.

Excavation and removal of in situ obstructions has the potential to expose previously unidentified contamination in the ground and mobilise contaminants within the soil e.g., although not anticipated, underground storage tanks or ACMs cannot be ruled out.

5.3 Capping System

Based on the elevated concentrations of contaminants encountered during the ground investigation, a clean capping layer will be required as part of the development, in any proposed soft landscaped areas. The proposed development comprises predominantly hardstanding with some localised areas of communal soft landscaping in the form of raised planters, imported topsoil and some areas of sedum roof. No private gardens are proposed.

The following provides general rules for each common type of capping that will need to be tailored to the site. The two main types are:

- Hard capping (buildings, paving); and,
- Soft Landscaped Areas.

5.3.1 Hard Capping Layers

Future buildings and other areas of hardstanding (walkways, external paved areas, access roads, and hard landscaping) will provide a physical barrier to prevent site users coming into contact with the soil. No further remedial action is considered necessary in these areas in terms of human health risks. The hard-capping system for the site will principally rely on a barrier being created by the development preventing site users being exposed to soil beneath the site.

However, it should be noted that in areas where permeable pavements will be laid it may not be possible to lay the paving directly onto the existing ground where this would not fully prevent direct contact or exposure to the underlying soils. In such areas, consideration will need to be given as to the depth of clean material that will underlie the pavement, which should take account of the permeability of the pavement and how likely it would be that exposure to soils would take place. This should be agreed with Reading Council's Environmental Health Officer (EHO).

5.3.2 Soft Landscaped Areas

Within proposed soft landscaped areas, a "clean" cap of 600mm of imported topsoil is required. No site won materials were deemed suitable for use within soft landscaped areas.

It is understood that the proposed development comprises no private gardens and therefore no soft landscaping areas for food growing is proposed for the South Site. Soft landscaping will comprise raised planters at ground level with imported topsoil and some areas of sedum roof. Import testing requirements are described in Section 5.5.4.

5.3.3 General Requirements

The clean cap thicknesses above require agreement with the Local Authority and should be treated as draft until such time as they are agreed in writing.

Where excavation into the existing ground level takes place, the contractor will be required to have in place a watching brief presence to ensure unforeseen contamination is dealt with appropriately if encountered. A typical watching brief procedure is provided in Section 8.

Imported materials used within the clean cap construction of communal soft landscaped areas (including that for the cover system) shall be analysed chemically to ensure it is suitable for use (import chemical criteria is shown in Appendix 2). This should be undertaken prior to importing any such material onto the site.

Whilst not strictly part of the capping system material imported for use in service corridors or as general fill (if required) should also be sampled and verified as suitable for use.

Documentation on the source, quantity, and testing results of imported clean topsoil shall be retained onsite for inspection and subsequent inclusion in the verification report. The contractor shall retain records on the location, depth of excavations and how/where any imported material is placed.

Furthermore, any water features included within the external spaces and that are to be sunk into the existing ground will need to be appropriately sealed and documentation provided of such sealing.

5.3.4 Import Testing Requirements

Where it is necessary to import materials, for example recycled aggregates or clean soil for soft landscaping/ raised planters, the materials will be tested and where applicable follow appropriate protocols such as the Waste Protocols project or WRAP. In addition, all imported material will be inspected by the development contractor for any visible signs of contamination including, but not limited to, unusual discolouration, non-specified anthropogenic material, hydrocarbon staining or odours.

Imported materials will also require testing prior to import to site and once emplaced in the ground for contaminants to ensure that they are appropriate for the intended use (e.g. soil to be used in soft landscaping). The risk-based import soil verification criteria are presented in Appendix 2.

Sampling of material should be undertaken at the following frequency with testing both prior to import and once emplaced in the ground:

- One sample per 500m³ of soil to be used in soft landscaped areas; and,
- One sample for every 750m³ of imported materials to be used for general fill beneath building or hardstanding (i.e. not landscaped areas).

All samples will be analysed at an MCERTS accredited laboratory.

5.4 Ground Gas/ Vapour Mitigation

On the basis of plot specific ground gas monitoring undertaken by Ramboll in 2019, the site has been classified as a CIRIA C665 Characteristic Situation of 1 (Very Low Risk). No ground gas protection is therefore required for the proposed development.

Should ground gas/ vapour protection measures be incorporated into the design of the buildings, this will need to be documented by the contractor.

5.5 Water Supply Pipes

Ramboll's site investigation identified elevated concentrations of hydrocarbons in shallow soils. These can pose a risk to buried potable plastic water pipes and therefore for any proposed pipes, protection measures shall need to be considered. New water supply pipes will require specification and installation in accordance with the requirements of the local water authority and further assessment of the ground investigation data may be required to support the appropriate selection of water supply pipe materials.

The contractor shall ensure installed water supply pipes are in accordance with the local water authority requirements.

5.6 Foundation Works Risk Assessment

The FWRA report provides the detail of the risks which need to be addressed relating to the foundation works and piling at the site with regard to the proposed development. The proposed foundation scheme comprises deep piled foundations with piles spaced at a minimum of three times the pile diameter to fully attain the base resistance of the structured upper chalk. The current proposal is to use CFA piles as these are financially more effective than bored piles, produce the least amount of vibration and noise and limit the possible spread of contamination, if present, from the shallow strata to the chalk aquifer. Piling works will be subject to liaison with the Environment Agency. A specialist piling contractor has been consulted with regards to the types of piles that are suitable for the site conditions and for the detailed design of the piles.

During piling works arisings will be stockpiled in discrete stockpiles dependant on the nature of the material. Prior to off-site disposal, the arisings should be further chemically analysed to ascertain their suitability for reuse or disposal.

6. GENERAL SITE ENVIRONMENTAL CONTROLS

The following provides a summary of the expected general controls that will be in place during works on the site. As the works will largely be undertaken by contractors on behalf of JRL Group (Principal Contractor) the requirements are provided on the basis that contractors working on the project will adhere to these requirements (where relevant to the works being undertaken).

6.1 Permits and Licences

The contractors involved in the remedial works will be required to obtain and provide as evidence to the Client all relevant licences, exemptions, consents and deployment forms relevant to the remediation works being completed prior to works commencing. If necessary, the contractor shall comply with and give all notices required by any regulation or by-law applicable to the works, including the reuse of material on-site.

If required, the contractor will obtain the necessary permits for all equipment in terms of potential nuisance (e.g. noise and odour) and agree these with the relevant regulatory authorities (e.g. Environment Agency, Local Authority).

6.2 Environmental Management

Environmental management issues throughout the life of the works are to be governed or guided by a number of 'standards' including:

- those contained in legislation;
- those established by industry codes of practice; and
- those that are specific to commitments made in surveys, commitments made during regulatory consultation and measures as may be set out in conditions/ contract or in other licences and consents.

During the site works, the appointed contractors will implement procedures from published guidance documents for working on contaminated sites, in accordance with relevant construction industry practices, EA guidance, industry-accepted standards of 'good working practice' and relevant legislation.

Specifically in relation to environmental management the contractor will implement procedures in accordance with the Control of Water Pollution from Construction Sites CIRIA C532 guidelines (CIRIA 2001) and the CIRIA Guide to Good Practice on Site during the developments of Contaminated Land, as well as relevant Environment Agency Pollution Prevention Guidelines.

6.3 Environmental Monitoring

6.3.1 Dust, Odour and Vapour

The contractors will be required to consider the need for dust, odour, hydrocarbon vapour, and asphyxiant gas controls and to provide details of any appropriate environmental controls and monitoring to prove its effectiveness during the works. This will include agreeing monitoring criteria with the regulatory authorities (if considered necessary).

6.3.2 Noise

Good practice will apply to potentially noisy operations. In particular:

- Plant and equipment used for the works will be properly maintained, silenced where appropriate, and operated to prevent excessive noise. Plant should be certified to meet any relevant EC Directives/UK/BS5228 standards.

- Guidance in relevant British Standards will be applied.
- Static construction plant (e.g. compressors and generators, if required) will be installed and appropriately enclosed or screened unless the location can be shown not to require it.
- Items of plant operating on the site in intermittent use will be shut down in the intervening periods between uses.

6.3.3 Vehicle Cleanliness

The contractors will take all reasonable measures to prevent, as far as is practically possible, the deposit or tracking of mud or debris arising from the remediation areas onto other areas of the site and onto public areas outside of the site (this will include public highways and areas of public access).

The following procedures will be put in place by the contractors working on the site:

- all vehicles shall be inspected prior to departure and where necessary loose material removed and wheels washed;
- drivers will inspect their vehicles prior to leaving the site and ensure that their loads are secure; and
- any loads of spoil or fill shall be adequately sheeted to prevent spillage on public roads or on the site premises.

6.3.4 Fuel and Hazardous Substances Storage

All liquids and solids of a potentially hazardous nature (e.g. diesel fuel, oils, solvents) will be stored in dedicated hard surfaced areas agreed with the client, including secondary containment (e.g. bunding) in accordance with current guidance and statutory requirements.

The contractor will establish within the site an area for the refuelling of plant and vehicles away from any water courses or site drainage. The fuelling area shall be kept clean at all times. Any spillages or leaks of fuel or other hazardous substances will be cleaned up immediately by the contractor. No refuelling will be carried out outside the refuelling area and the contractor will have in place contingency arrangements for dealing with spillages.

All equipment containing fuel/ oils (e.g. pumps and generators) will be placed on drip trays and these will be maintained by the contractor to remove standing water as appropriate to their correct operation and containment of the plant in question.

6.4 Soil Stockpiling

The contractor will stockpile excavated 'uncontaminated' soils and excavated 'impacted soils' separately. If required, imported 'uncontaminated' soils will also be stockpiled separately. The contractor is required to prevent mixing of 'uncontaminated' soils from soils excavated in other areas of the site to ensure that 'uncontaminated' soils are available to backfill the excavations which they were derived from.

Stockpiled materials will be stored and handled by the contractor in consideration of the nature of the materials and the potential to impact the surrounding environment (e.g. the control of surface water run-off, leachate, and dusts). This will include stockpiling excavated soils in designated areas of hardstanding (to be identified by the contractor on a plan). In addition, 'contaminated' stockpiles will be required to be placed on impermeable sheeting. The contractor should also make arrangements to suitably cover the stockpiles to minimise rainwater ingress. Arrangements will also be required to handle and appropriately dispose of rainwater and

contaminated water run-off from stockpiles and remediation areas. Stockpile design and management will be the responsibility of the contractor.

6.5 Waste Disposal

6.5.1 Solid Waste

All material removed and disposed of off-site will be undertaken in accordance with the Duty of Care requirements of the Environmental Protection Act 1990, including the Waste (England and Wales) Regulations 2011. This includes any general waste (e.g. timber pallets, impermeable sheeting, office waste, absorbent pads) arising from the remedial works.

If impacted soils require off-site disposal the contractor will be responsible for sorting and segregating the waste soil into appropriate waste classification streams, supported by relevant chemical testing and Duty of Care documentation. The contractor will classify the waste and ensure it is disposed to a landfill or treatment facility licensed to accept that waste. The contractor will be required to segregate material in order that 'uncontaminated' overburden may be disposed of under a lesser waste classification if off-site disposal is required.

The contractor will provide a valid copy of the waste transfer certificate/ consignment note for each load of material which exits the site for off-site disposal during the works, including proof of receipt of the material at the landfill or other disposal site.

Loading of vehicles by the contractor shall be performed in an organised manner so as to prevent the escape of contaminants and materials. All vehicles will be appropriately designed to hold the waste without release during transit, sheeted, and cleaned externally, prior to leaving site. The contractor will take all reasonable and applicable measures to prevent the escape of material during loading and transportation. The contractor will be responsible for determining the need for and implementing compliance with transportation regulations for hazardous wastes, as applicable.

Identification of hazardous materials including for example asbestos containing materials (if encountered), will be subject to site contingency plans, health & safety and risk assessment/ method statement procedures for their identification, handling, removal and disposal.

6.5.2 Liquid Waste

The contractor shall put in place a strategy to practicably ensure that the pollution of groundwater is prevented.

The Contractor shall ensure that any discharges are only made to drains with the appropriate discharge consents. It is the Contractor's responsibility to obtain the required discharge consents from the Environment Agency and the Water Authority.

Water generated on site that is unsuitable to be discharged to drains shall be pumped into a tanker and taken off site for disposal.

The Contractor shall ensure regular inspection of all discharge points and associated pipe work, drainage systems, collection ditches, lagoons, oil separator (and drip-trays) and watercourses to check that these are in good order.

Regular site monitoring and audits are to be undertaken to ensure that pollution of groundwater is not being caused and risks of such an occurrence are minimised. Such work shall be carried out by a suitably qualified specialist at the expense of the Contractor.

Where required, the Contractor shall be responsible for obtaining any consents from the Environment Agency for discharges to the ground or surface water drains and the water authority

for discharges to foul and combined sewers. Only clean rainwater run-off may be discharged to any existing soakaways. Any waste surface water arising from the Works including water pumped from excavations shall be collected and discharged via a settlement tank. The Contractor shall comply with BS 6031:1981, Code of Practice regarding the general control of site drainage.

Free phase hydrocarbons, if encountered, will require disposal off-site in accordance with the Duty of Care requirements and handling requirements detailed above. If the contractor proposes to remove groundwater this will need to be disposed of appropriately. No free phase product was encountered on site during the investigation.

6.6 Materials Management and Re-use of Materials

The re-use of materials on-site should be undertaken under the CL: AIRE Development Industry Code of Practice (CoP) and will include the preparation of a Materials Management Plan (MMP). The MMP will provide a robust and auditable trail to monitor where the materials originate from through to their final destination, including temporary storage or stockpiling as necessary. The contractor will be required to prepare an MMP that can be novated to the Client for use in future works (if required).

Site won materials should only be used in areas of proposed hard standing or below 600 mm in landscaped areas (unless proven otherwise by detailed sampling and validation by the contractor and approved by the Environmental Consultant and Council).

Materials with significant visual/ olfactory evidence of contamination should be managed in accordance with the procedures for unexpected contamination (detailed in Section 7) and depending on their suitability may either conclude to be appropriate for re-use on-site subject to the requirements of the MMP or otherwise disposed of, off-site to an appropriately licensed facility.

The MMP should include:

- roles and responsibilities of construction parties, regulators and consultants;
- description of the construction work including a site plan indicating areas of excavation and subsequent reuse;
- classification of waste types involved (inert, hazardous or non-hazardous, EWC codes);
- estimated quantity of materials for re-use (cubic metres or tonnes);
- management methods to be employed, documenting amounts re-used on or off site, treated on or off site, sent for another form of recovery, sent to landfill, or otherwise disposed of; and
- both the client and the Principal Contractor must declare that all waste will be dealt with in accordance with waste legislation, the Duty of Care Regulations and that materials will be handled efficiently, and waste managed appropriately.

The chemical criteria for re-use materials is shown in Appendix 2.

6.7 Health and Safety

The contractor will be responsible for ensuring the works are undertaken in accordance with applicable Health and Safety legislation and for ensuring that all necessary measures are put in place during the works, including:

- access and egress;
- site accommodation and welfare;
- site working hours;

- utility services and buried services (including drawings of underground services);
- site security;
- contractor induction requirements;
- CDM 2015 roles and requirements;
- Health and Safety document provision, including the provision of with method statements and risk assessments for the various activities associated with the works; and
- site security arrangements.

6.7.1 Utilities

The contractor will be required to make its own arrangements for a self-sufficient operation (for example its own provision of mobile generators and bowser water supplies).

Particular care shall be exercised for any work close to drainage (including surface water, trade effluent and foul) water systems and measures shall be put in place by the contractor to intercept contaminated run-off (if generated) during the remediation works.

The contractor will be responsible for locating, marking out and avoiding all underground and above ground services within the remediation areas. The integrity of the services (with the exception of the strip drain and sump, which will require removal) is required to be maintained during the works or reinstated following the works.

6.7.2 Remediation Contractor's Method Statements

Prior to undertaking any of the elements of the remedial strategy the contractor undertaking the works shall supply to the Client/ Ramboll Method Statement(s) and associated Risk Assessments for each activity of the works. This shall include, but not be limited to, removal of hardstanding, associated concrete obstructions in the ground, soil excavation, soil disposal routes, free phase product removal, groundwater disposal, details of all temporary works, specialist contractors, including waste operators and landfill operators, sourcing backfill material, backfilling excavations, sampling and chemical analysis and any other supporting documentation required to undertake the ground remediation works.

7. UNFORESEEN CONTAMINATION PROTOCOL

Potentially contaminated materials may be encountered during earthworks on-site that through visual or olfactory evidence may be suspected to be contaminated (i.e. the presence of staining, odours or deleterious materials).

For contractors undertaking works on-site that will create excavations into the ground each will be required to have in place a method statement that documents their own unforeseen contamination protocol based around the specific activities that each contractor will be performing. Should a source of contamination be found during the development works, such as free phase product, 'blue billy' or other similar contamination sources, a contractor would be expected to remediate the source. The environmental consultant will advise on the assessment of such contamination and the remediation measures needed.

The unforeseen contamination protocols are likely to include:

- The contractor stopping work in that area and immediately informing the Client or their representative and Ramboll to discuss the proposed action;
- The contractor liaising with the statutory authorities including the Environment Agency and Reading Borough Council to agree proposals for dealing with this material;
- If required based on consultation with the Client/ Ramboll the implementation of measures to remove grossly contaminated materials (where feasible) for segregation, storage or stockpiling (of soils) within a bunded and polythene covered area whilst testing is undertaken. Contaminated liquids should be stored in suitable containers;
- A record should be made of the volume of material removed and the extent of any required excavation;
- The full extent of the contaminated material must be excavated and furthermore validated by a suitably qualified engineer;
- Undertake laboratory testing of representative samples from the base and sides of the excavation (minimum of 1 sample per 10m length of sides and 1 per 100m² base) and testing of the material for a suitable suite of contaminants. The suite and chemical criteria for verification are to be defined in consultation with Ramboll and the regulatory authorities based on the nature of the contamination encountered;
- If the material fails comparison against the re-use thresholds this material should be excluded from the re-use strategy and alternative scenarios should be sought for re-use. The last option should be disposal off-site in accordance with current waste regulations. Records including laboratory analytical certificates, waste transfer notes, consignment notes and volumes requiring removal should be retained by the contractor; and
- If the material passes comparison with re-use thresholds (and is geotechnically suitable), the contractor should determine and record the location for placement of the material.

It will be necessary to retain all records relating to testing, quantity, depth and location of the material identified. Where such material is re-used, it will be necessary to demonstrate suitability through appropriate chemical testing and to retain records on where this material was placed.

If this material is removed off-site, then in addition to records on the source area outlined above, it will also be necessary to retain duty of care records relating to waste transfer notes, quantities and the receiving site.

8. VALIDATION AND DOCUMENTATION

The following sets out the expected validation data that will be generated by the contractors to confirm that the works have been completed successfully.

8.1 Verification Plan and Reporting

A Verification Plan shall be prepared by the Contractor which sets out monitoring and data gathering requirements, including frequency, format, accreditation requirements and information distribution requirements.

A Verification Report will be required by the Contractor upon completion of the earthworks.

Information contained within the verification report shall include, but not be limited to:

- photographic evidence of reuse of soil with associated as built drawing showing where material came from and where it was ultimately used;
- a material tracking sheet to document where materials have been sourced from on-site and their final destination;
- details of any material taken off-site, together with waste transfer notes or consignment notes, including the removal of the pile of 6F2 crush material currently located within Phase 3 and results of WAC testing for material classified as either hazardous or inert;
- details of any materials imported onto site, including as-built drawing showing where the material was used and the results of soil analysis showing its suitability for use on-site; and
- details of how previously unidentified contaminated material, if encountered, was addressed on-site. Site records and photographic evidence of excavation works in areas of unanticipated contamination with watching brief by an appropriately qualified Environmental Consultant.

Verification watching brief visits will be carried out by the Project Environmental Consultant on a part time basis with particular emphasis during excavation in the north east of the site (limited previous investigation) and beneath proposed residential areas.

During the site works the Contractor will be responsible for obtaining and maintaining a record of information required for the Verification Report. These records will be checked during part-time Environmental Watching Brief visits carried out by Ramboll. The Contractor is required to liaise directly with Ramboll to ensure that the visits to be undertaken by Ramboll are programmed in when most suitable. The Contractor will need to provide a copy of waste transfer notes and relevant paperwork on completion of the ground works to the Project Environmental Consultant and address with any queries arising from the verification process.

8.2 Additional Requirements

Where applicable to the works being undertaken the contractors undertaking works on-site that form part of the remediation strategy will be responsible for producing:

- Detailed plans and photographic evidence of the capping layers being placed at the site;
- Details of the composition of the capping layer, chemical testing (pre-import and when emplaced);
- Details of the watching brief in place during excavation works into the existing ground (including photographic records of the residual ground conditions);
- Details and validation of the gas/ vapour membrane installed in the buildings including photographic records of the install and written records that the membrane installation has been completed and approved by a specialist contractor;

- Details of consents for sewerage discharge for dewatering and (if applicable) any exemptions/ permits for the development;
- Copies of licenses and exemptions held with the regulators, and waste duty of care;
- information (including total amount of waste disposed of any waste sampling results, waste transfer notes and applicable site and carriers' licenses);
- Plans showing location and description of unexpected contamination encountered and remediation undertaken (if any);
- Plans showing the depth of excavation and final site levels prior to commencement of construction; and
- Brief site diary describing the excavations and any observations of contamination.

8.3 Record Keeping

The Contractor will provide the Ramboll with the following information, for use within Ramboll's verification report:

- a report on any environmental controls required during excavation works (e.g., dust monitoring and noise monitoring);
- plans showing the location and depth of excavations and verification samples, sub-surface voids and obstructions (if encountered), location and description of unexpected contamination (if encountered);
- 'as-dug' plans of where backfill materials have been placed at the site, including the thicknesses and types of backfill and the final site levels;
- results of laboratory analysis (laboratory analytical certificates in PDF format and compiled laboratory results in Excel format);
- details of consents, exemptions and permits for the works;
- waste duty of care information (including the types and amounts of waste disposed of, waste classification and WAC analysis, waste transfer and consignment notes and applicable site and carriers' licenses;
- documentation obtained from the producer of any imported recycled aggregate and topsoil;
- delivery notes for imported materials (where applicable); and
- the completed MMP for the works.

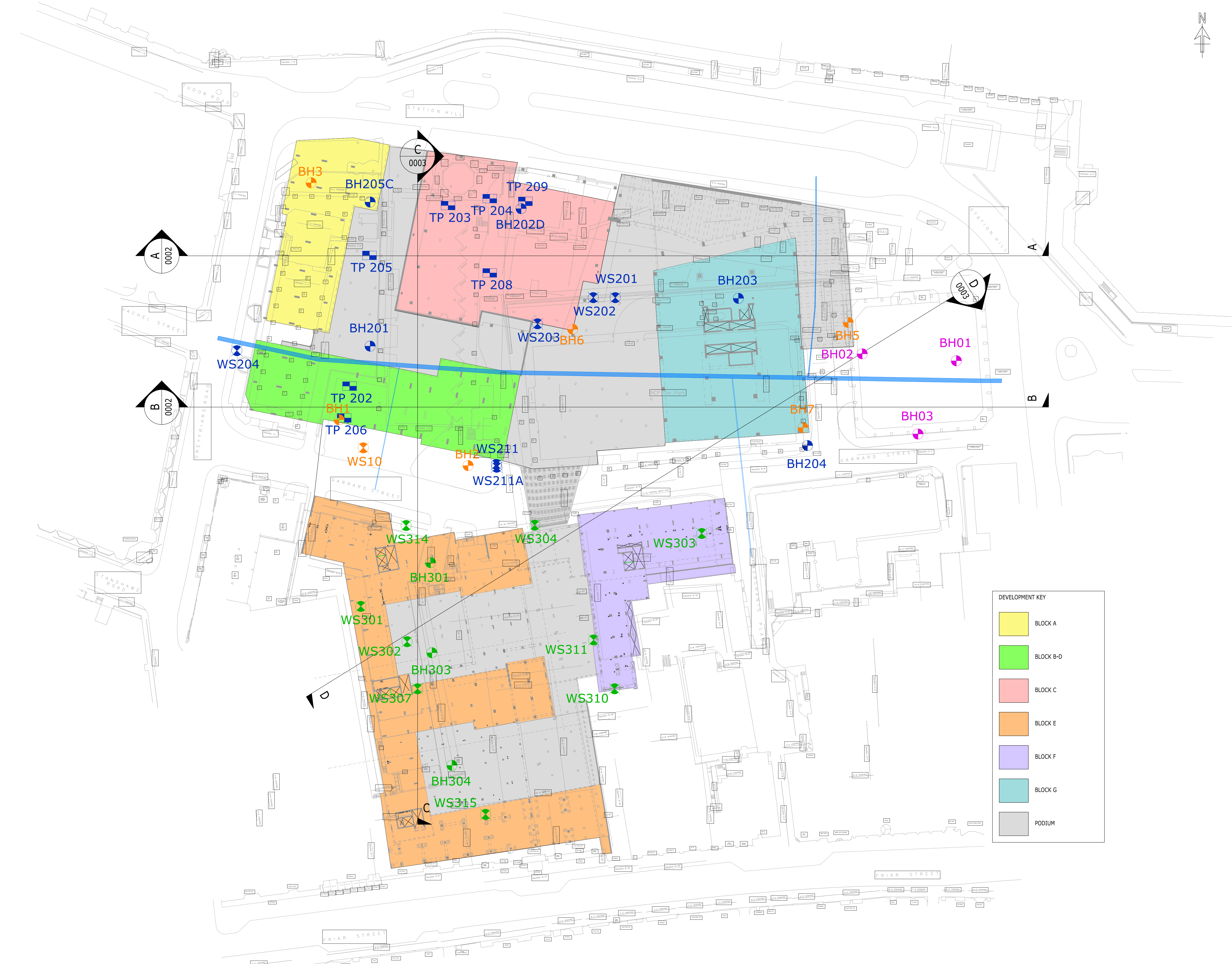
8.4 Ramboll Verification Report

On completion of the remediation, Ramboll will prepare a remediation Verification Report (ref: SHR-RMB-XX-XX-RP-C-91-000022), which will include the following information, in accordance with current guidance on verification:

- the details and roles of Contractor/ sub-contractors involved in the remediation work;
- a summary of the original site conditions, with reference to the original site investigations and assessments;
- the remediation objectives and criteria, together with the basis on which the criteria were to be achieved (i.e. by reference to the remediation strategy);
- the Conceptual Site Model for the remediation and reference to the lines of evidence which demonstrate that the pollutant linkages have been broken;
- a description of the remedial activities with reference to relevant design reports including the remediation method statement, detailed designs, permits, phasing etc.;

- a photographic record of the remediation works, together with plans indicating the dates and locations of remediation activities;
- a clear description of the verification plan, including the methods used for data collection and interpretation;
- a summary of progress data such as excavation records and groundwater monitoring data, waste consignment notes, imported fill records, any variations;
- details of communications held with regulators during the remediation works;
- reference to the Health and Safety file;
- a clear statement that the remedial objectives have been completed; and
- supporting documents, to include where appropriate analytical results, monitoring data, health and safety documentation and quality management documentation.

APPENDIX 1 FIGURES



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- Notes
- DO NOT SCALE FROM THIS DRAWING.
 - ALL DIMENSIONS ARE MILLIMETRES U.N.O.
 - ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM U.N.O.
 - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
 - BH01, BH02, AND BH03 CO-ORDINATES HAVE BEEN INFERRED FROM CONCEPT 2012 GROUND INVESTIGATION REPORTING. THEREFORE THEIR RELEVANT POSITIONS SHOULD BE CONSIDERED INDICATIVE ONLY.
 - WS302 - WS303, WS305, WS305A, WS306 - WS3013, WS3015 & WS3016 FROM GEL 2018 GI LOCATIONS ARE ALSO INDICATIVE ONLY.
 - THAMES WATER SEWER LEVELS ARE SHOWN INDICATIVELY, BASED ON HISTORIC CCTV SURVEY REPORTING NOTES.
 - GROUND WATER DESIGN LEVELS ARE INFERRED BASED ON MAXIMUM RECORDED GROUND WATER LEVELS RECORDED DURING MONITORING VISITS UNDERTAKEN BETWEEN 28TH JUNE & 26TH JULY 2019.

LOCATION PLAN KEY:

- EXPLORATORY BOREHOLE (GEL 2019)
- BH204
- WINDOWLESS SAMPLE (GEL 2019)
- WS201
- TRIAL PIT (GEL 2019)
- TP 209
- EXPLORATORY BOREHOLE (GEL 2018)
- BH303
- WINDOWLESS SAMPLE (GEL 2018)
- WS304
- EXPLORATORY BOREHOLE (ST CONSULT 2014)
- BH1
- WINDOWLESS SAMPLE (ST CONSULT 2014)
- WS10
- EXPLORATORY BOREHOLE (CONCEPT 2012)
- BH03
- SECTION MARK
- THAMES WATER SEWER

DEVELOPMENT KEY

- BLOCK A
- BLOCK B-D
- BLOCK C
- BLOCK E
- BLOCK F
- BLOCK G
- PODIUM

IO1	FOR INFORMATION	06/08/19	DH	SP
Rev	Description	Date	By	App
			Chk	

FOR INFORMATION

STATION HILL
READING

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EXPLORATORY HOLE
LOCATION PLAN

Project No:	Scale (@A1):	Drawn:	Date:
1620004716	1.500	DH	AUG.2019
Drawing No:		Rev:	
SHRN-RAM-SW-ZZ-DR-S-0070			IO1

APPENDIX 2

CHEMICAL CRITERIA FOR REUSE AND IMPORTED MATERIALS

Determinand	Chemical Criteria for imported material to be used below hardstanding	Chemical Criteria for imported material to be used within the brown/green roof area
Inorganics		
Arsenic	640	40
Cadmium	410	150
Chromium (III)	8600	910
Chromium (VI)	49	21
Copper	68000	7100
Lead	2300	310
Mercury	1100	56
Nickel	980	180
Selenium	12000	430
Vanadium	9000	1200
Zinc	73000	40000
Free Cyanide	49	49
PAHs		
Acenaphthene	75000	2000
Acenaphthylene	76000	2000
Anthracene	520000	30000
Benzo(a)anthracene	170	12
Benzo(a)pyrene	76	5.3
Benzo(b)fluoranthene	45	4
Benzo(ghi)perylene	3900	360
Benzo(k)fluoranthene	1200	110
Chrysene	350	30
Dibenzo(a,h)anthracene	3.5	0.31
Fluoranthene	23000	1500
Fluorene	60000	2200
Indeno(123-cd)pyrene	510	45
Naphthalene	110	0.99
Phenanthrene	22000	1300
Pyrene	54000	3700
BTEX		
Benzene	15	0.37
Ethylbenzene	3200	34
Toluene	33000	370
Xylene –m	3400	34
Xylene –o	3700	37

Determinand	Chemical Criteria for imported material to be used below hardstanding	Chemical Criteria for imported material to be used within the brown/green roof area
Xylene -p	3300	33
TPHs		
TPH Aliphatic C5-6	2400	24
TPH Aliphatic C6-8	5300	53
TPH Aliphatic C8-10	1300	13
TPH Aliphatic C10-12	6100	62
TPH Aliphatic C12-16	43000	510
TPH Aliphatic C16-35	1000000	42000
TPH Aliphatic C35-44	1000000	42000
TPH Aromatic EC5-7 (benzene)	26000	370
TPH Aromatic EC7-8 (toluene)	56000	860
TPH Aromatic EC8-10	2200	22
TPH Aromatic EC10-12	11000	120
TPH Aromatic EC12-16	35000	1100
TPH Aromatic EC16-21	29000	1900
TPH Aromatic EC21-35	29000	1900
TPH Aromatic EC35-44	29000	1900
TPH Aliphatic and Aromatic EC44-70	28000	1900
Other		
Asbestos	Absent	Absent