CONTAMINATED LAND RISK ASSESSMENT

Proposed Phase 2 Site Investigation Strategy

Site Address
96A George V Avenue,
Worthing,
BN11 5RP

Date
01/09/2023



Site Location – 96A George V Avenue, Worthing, BN11 5RP
Planning Ref: NOTICE/0024/22

This Phase 2 Site Investigation Strategy is required to support the discharge of Condition 2(2) of Planning Permission NOTICE/0024/22 for the *"Application for permitted development for prior approval for change of use from use Class E at ground floor to 1no. one-Bedroom flat (use Class C3)".* A copy of the decision notice is available in Appendix 1.

The condition states:

*"(2) **A site investigation scheme**, based on (1) above to provide information for a detailed assessment of the risk to all receptors that may be affected, including those off site."*

Summary of Findings of Phase 1 Desk Study

A Phase 1 Desk Study was produced for the site by STM Environmental in August 2022.

The site is located at 96A George V Avenue, Worthing, BN11 5RP and is centred at national grid reference 512570, 102690. The site has an area of approximately 0.03 ha.

Examination of Ordnance Survey historic maps revealed that the site has not been subject to on-site potentially contaminative land uses (PCLUs) while off site PCLUs include Dry Cleaners (23m NE) and Garages (30m E).

A conceptual site risk model was developed and a qualitative risk assessment undertaken. The conclusions of the risk assessment are presented in **Error! Reference source not found.** below.

Potential Receptor	Potential Pathway	Potential Hazard	PSPPL?	Risk
On-Site Human Health (Future Occupiers)	Ingestion/Absorption Inhalation	Adverse health Injury/Death	**Yes**	**Low to Moderate**
	Buildup of Methane/ VOCs in confined spaces	Explosion/ Fire Injury/Death	**No**	**Low**
On-Site Human Health (Construction Workers)	Ingestion/Absorption Inhalation	Adverse health Injury/Death	**No**	**Low**
	Buildup of Methane/ VOCs in confined spaces	Explosion/ Fire Injury/Death	**No**	**Low**
Off-Site Human Health	Ingestion/Absorption Inhalation	Adverse health Injury/Death	**No**	**Low**
	Buildup of Methane/ VOCs in confined spaces	Explosion/ Fire Injury/Death	**No**	**Low**

Potential Receptor	Potential Pathway	Potential Hazard	PSPPL?	Risk
Groundwater	Percolation/Leaching	Adverse groundwater quality	**No**	**Very Low**
Surface Water	Lateral Migration Groundwater baseflow	Adverse Surface water quality	**No**	**Very Low**
Ecology	Ingestion/Absorption	Adverse health Injury/Death	**No**	**Very Low**
Property	Physical Contact/Absorption	Damage to building and services	**Yes**	**Low to Moderate**
	Buildup of Methane/ VOCs in confined spaces	Explosion/ Fire Damage to building	**No**	**Very Low**

Potentially significant potential pollutant linkages were identified in respect of:

- Human Health Receptors (i.e. Future Occupiers/Users) - via inhalation (indoors and outdoors);
- Property Receptors - Damage to buildings and services due to exposure to aggressive chemicals in the soil.

Proposed Scope of Works for Phase 2 Investigation

As required by Condition 2(2), we propose the following scope of works for the Phase 2 site investigation.

Soil Sampling and Testing

The investigation will involve drilling 3no. boreholes to a maximum depth of 1-2 meters below ground level by means of a dynamic window sampler rig. The purpose of the investigation is to investigate shallow soils which could potentially affect human health and property receptors and deeper potentially contaminated soils, which could potentially impact groundwater receptors. The rationale for the depth of the boreholes is to therefore assess the potential impacts on these receptors.

The boreholes will be in semi-targeted locations in order to achieve a good coverage of the site. A proposed borehole location plan can be seen in Appendix 2. It should be noted that sample locations may deviate depending on any obstructions etc. not previously accounted for.

6no. soil samples (2no. from each borehole) will be taken during the site investigation. The samples will be collected and sent to a UKAS/MCERTS accredited laboratory and analysed for the following contaminants:

- Heavy Metals – Arsenic, Boron, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Zinc;
- Petroleum Hydrocarbons (TPHCWG);
- Total Phenols - Total Phenols (monohydric);

- Monoaromatics – Benzene, Toluene, Ethylbenzene, p & m-xylene, o-xylene, MTBE (Methyl Tertiary Butyl Ether);
- Speciated PAHs – Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(ghi)perylene;
- Asbestos Screening and Quantification;
- Inorganics - pH – Automated, Total Cyanide, Water Soluble Sulphate, Sulphide, Total Organic Carbon (TOC);
- SVOCs.

The results of the soil sample analysis will be compared to the GAC for a residential without homegrown produce land use scenario. The GAC used are a combination of the Category 4 Screening Levels using S4ULs produced by Land Quality Management with the C4SLs produced by DEFRA.

Onsite testing/PID Screening

Soil from each borehole will be screened on site for volatile organic compounds (VOCs) using a hand held Minirae photo-ionisation detector (PID) with a 10.6eV 1/2" Lamp which has a detection limit of 0.1 parts per billion (ppb). The PID will be calibrated in the field prior to use using a gas of known concentration (isobutylene gas – 100ppm). It is anticipated that no other field measurements will be taken.

Ground Gas and VapourMonitoring

Should observations during the site investigation indicate that the site could be impacted by ground gases or vapours, we will install ground gas and vapour monitoring wells as additional works. These additional works and the rationale will be agreed with Environmental Health prior to any further work taking place.

Sample Collection and Transport

All samples will be put into sample containers (jars and tubs) that will be tightly sealed with minimal headspace. The sample containers used for each sample will be determined by the determinants for which they will be analysed. The sample containers will be put into a cooler box immediately on collection and kept cool until analysis is undertaken at the laboratory.

Reporting

The findings of the site investigation will be collated in a Phase 2 report written to meet the requirements of the Planning Authority and specifications outlined in the British Standard BS 10175:2015 Code of Practice for the Investigation of potentially contaminated sites.

The Phase 2 report will include the following key information:

- A generic quantitative risk assessment using the soil sample analysis results. Contaminant concentrations will be compared to generic assessment criteria (guideline values) for the proposed residential without homegrown produce land use;
- Revised conceptual site risk model;
- Recommendations for further investigation beyond what is set out in this document if necessary;
- Proposal for remedial action if necessary;
- Full outline of the ground conditions encountered during the investigation;
- Photographs of the boreholes and soils encountered;
- Borehole logs in accordance with BS5930.

Quality Control

All site investigation works will be carried out in accordance with the following guidance:

- Land Contamination Risk Management (LCRM) guidance – DEFRA;
- BS 10175 - Code of practice for the Investigation of potentially contaminated sites British Standard Institution;
- BS 10176:2020 - Taking soil samples for determination of volatile organic compounds (VOCs);
- BS5930:2020 Code of Practice for Ground Investigation
- BS 8485: 2019 - Code of practice for the Characterisation and remediation from Ground Gas in Affected Developments. British Standard Institution;
- BS8576:2013, Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs).
- C665, 2007 - Assessing Risks posed by Hazardous Ground Gases to Buildings CIRIA.

Health and Safety Methodology

The site investigation work will be undertaken in accordance with our health and safety policy, the Construction (Design and Management) Regulations 2015 and a method statement specifically designed for the site.

Watching Brief

It is recommended that a “watching brief” is kept at all times during the development. Should any unexpected contamination or potential indicators of contamination be encountered then the discovery strategy outlined below should be followed.

Discovery Strategy

Descriptions of potential indicators of contamination include the following:

Evidence	Description
Visual	▪ Fuel or oil like substances mixed in with or smeared on the soil or floating on perched, groundwater or surface waters; ▪ Waste materials (refuse, barrels, industrial wastes, ash, tar, etc.) buried at specific location or across the site; ▪ Marked variation in colour. For example, red, orange, yellow, green, light or dark blue, etc. may indicate contamination from a variety of contaminants; ▪ Soils including large amounts of ash and clinker where such contamination of soils wasn't expected; ▪ Evidence of Asbestos or fibrous material.
Olfactory	▪ Fuel, oil and chemical type odours; ▪ Unusual odours such as sweet odours or fishy odours.
Wellbeing	▪ Light headedness and/or nausea when in excavations, at the working face of an excavation, when visual or olfactory evidence of contamination exists, etc.; ▪ Burning of nasal passages, throat, lungs or skin; ▪ Blistering or reddening of skin due to contact with soil.

It should be noted that the above list is not exhaustive. All contractors and groundworkers should be aware of the abovementioned potential indicators of contamination.

If, during development, contamination not previously identified is found to be present at the site the Council is to be informed immediately and no further development (unless otherwise agreed in writing by the Council) shall be carried out until a report indicating the nature of the contamination and how it is to be dealt with is submitted to, and agreed in writing by, the Council. Moreover, the following actions will be taken:

- Works should be halted if any suspicious ground conditions are identified by groundworkers;
- The Contractor should assess the need for any immediate health and safety or environmental management control measures. If control measures are considered to be required, they should be implemented;
- The Contractor should notify the Client's Environmental Consultant and the Local Planning Authority;
- The Environmental Consultant should attend the site to record the extent of 'contamination' and if necessary, to collect samples.
- If remedial action is considered necessary then the proposed works should be agreed with the Local Planning Authority prior to implementation;
- Once remediation is complete, the Environmental Consultant should collate evidence of work carried out for inclusion in a Remediation Verification Report which should be submitted to the Local Planning Authority.

Health and Safety

The following measures will be undertaken as a minimum for the protection of the health and safety of site workers:

- Provision of appropriate Personal Protective Equipment (PPE) including protective clothing, footwear, gloves and dust masks to all groundworkers on-site. These should not be removed from site, and advice should be given on when and how they are to be used;
- Minimising the amount of dust and mud generated on-site;
- Good practices relating to personal hygiene (i.e. washing and changing procedures) should be adhered to on-site, i.e. food and drink should only be consumed within designated areas on the site and smoking should be prohibited in all working areas.
- Provision of welfare facilities on the site;
- Health and Safety Inductions and daily briefings.

All site works will be carried out in accordance with Health and Safety Executive regulations and guidelines and the Contractor's Construction Health and Safety Plan. Particular should be made to the Health and Safety Executive (HSE) document "Protection of Workers and the General Public during the Development of Contaminated Land".

Where further investigation, beyond what is set out in this strategy, is required, this will be undertaken to clarify risks on site prior to completing the quantitative risk assessment. If further works are deemed necessary, then the Local Planning Authority/Pollution Regulatory Team will be notified of the scope of works prior to commencement.

I trust the above is satisfactory. Please do not hesitate to contact me via the information below should you have any queries.

Yours faithfully,

Rebecca Andrew (MSci)
Environmental Consultant
rebecca@stmenvironmental.co.uk
07900448053

Appendix 1 – Decision Notice

WORTHING BOROUGH COUNCIL

Miss Victoria Bennion
Rapleys
66 St James's Street
London
SW1A 1NE

PLANNING PERMISSION

TOWN AND COUNTRY PLANNING ACT 1990
TOWN AND COUNTRY PLANNING (GENERAL PERMITTED DEVELOPMENT) (AMENDMENT) (ENGLAND) ORDER 2015
Schedule 2, Part 3 Class MA

APPLICATION NUMBER: NOTICE/0024/22

Details of Development
APPLICATION FOR PERMITTED DEVELOPMENT FOR PRIOR APPROVAL FOR CHANGE OF USE FROM USE CLASS E AT GROUND FLOOR TO 1NO. ONE-BEDROOM FLAT (USE CLASS C3).

Location of Development
96 GEORGE V AVENUE WORTHING WEST SUSSEX BN11 5RP

In pursuance of their powers under the above-mentioned Act and Order the Council hereby notify that PRIOR APPROVAL IS REQUIRED for the above development from the Local Planning Authority and hereby GRANTED, in accordance with the application and information registered on 6th September 2022.

This is subject to compliance with the conditions specified overleaf.

G Peck

Gary Peck
Planning Services Manager
15/11/2022

Worthing Borough Council, Development Management, Economy Directorate,
Portland House, 44 Richmond Road, Worthing, West Sussex, BN11 1HS
Tel: 01903 221065 Email: planning@adur-worthing.gov.uk
Web: www.adur-worthing.gov.uk

SCHEDULE

Conditions

01. The development hereby permitted shall be carried out in accordance with the following approved plans unless specified otherwise in a subsequent condition imposed on this decision notice:-

Reference/Drawing Number	Version	Date Rec
BLOCK PLAN	BP01a	06.09.2022
EXISTING & PROPOSED ELEVATIONS	EP03a	06.09.2022
EXISTING & PROPOSED SOUTH ELEVATIONS	EP04a	06.09.2022
EXISTING & PROPOSED NORTH ELEVATIONS	EP05a	06.09.2022
SITE LOCATION PLAN	SLP01a	06.09.2022
TECHNICAL NOTE		06.09.2022
EXISTING & PROPOSED GROUND FLOOR PLANS	EP01b	11.10.2022
EXISTING & PROPOSED WEST ELEVATION	EP02b	11.10.2022

Reason: *For the avoidance of doubt and in the interests of proper planning.*

02. Prior to the commencement of development works (or such other date or stage in development as may be agreed in writing with the Local Planning Authority), the following components of a scheme to deal with the risks associated with contamination of the site shall each be submitted to and approved in writing by the Local Planning Authority:-

(1) A preliminary risk assessment which has identified:-

- all previous uses;
- potential contaminants associated with those uses;
- a conceptual model of the site indicating sources, pathways and receptors; and
- potentially unacceptable risks arising from contamination at the site.

(2) A site investigation scheme, based on (1) above to provide information for a detailed assessment of the risk to all receptors that may be affected, including those off site.

(3) The site investigation results and the detailed risk assessment (2) 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.

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(4) A verification plan providing details of the data that will be collected in order to demonstrate that the works set out in (3) are complete and identifying any requirements for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action.

Any changes to these components require the express consent of the Local Planning Authority.

The scheme shall be implemented as approved above and, prior to commencement of any construction work (or such other date or stage in development as may be agreed in writing with the Local Planning Authority), a Verification Report demonstrating completion of the works set out in the approved remediation strategy and the effectiveness of the remediation shall be submitted to and approved in writing by the Local Planning Authority. The report shall include results of sampling and monitoring carried out in accordance with the approved verification plan to demonstrate that the site remediation criteria have been met. It shall also include any plan (a 'long-term monitoring and maintenance plan') for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action, as identified in the verification plan, and for the reporting of this to the Local Planning Authority.

Reason: *To prevent pollution of groundwater and in the interests of environmental protection and public health and safety, in compliance with the National Planning Policy Framework and saved policy RES9 of the Worthing Local Plan and policy DM22 of the Submission Draft Worthing Local Plan (as modified).*

03. Details of the siting of provision for storage of refuse and re-cycling shall be submitted to and approved in writing by the Local Planning Authority and shall thereafter be provided prior to first occupation of the residential accommodation hereby approved.

Reason: *In the interests of amenity and the environment having regard to policy 16 of the Worthing Core Strategy and policy DM5 of the Submission Draft Worthing Local Plan (as modified).*

04. Details of the siting of the proposed Sheffield cycle stand within the rear external area shall be submitted to and approved in writing by the Local Planning Authority and shall thereafter be provided prior to first occupation of the residential accommodation hereby approved.

Reason: *Having regard to the traffic impacts of the development and to comply with the submitted Technical Note Ref: 2021/5995/TN01 Dated June 2021.*

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Informatives / Notes to Applicant

01. SOUTHERN WATER ADVICE

Southern Water has supplied an extract from records showing the approximate position of a SW sewer in the vicinity of the development site. SW advise that the exact position of the public asset(s) must be determined on site by the Applicant in consultation with Southern Water before the layout of the proposed development is finalised. The Applicant is advised:-

- The public foul sewer requires a clearance of 3 metres on either side of the public foul sewer to protect it from construction works and to allow for future maintenance access.
- No new development or tree planting should be carried out within 3 metres of the external edge of the public foul sewer without consent from Southern Water.
- No new soakaways, swales, ponds, watercourses or any other surface water retaining or conveying features should be located within 5 metres of a public foul sewer.
- All existing infrastructure should be protected during the course of construction works.

It is possible that a sewer now deemed to be public could be crossing the development site. Therefore, should any sewer be found during construction works, an investigation of the sewer will be required to ascertain its ownership before any further works commence on site.

Southern Water requires a formal application for a connection to the public foul and surface water sewer to be made by the applicant or developer.

In situations where surface water is being considered for discharge to the SW network Southern Water require the below hierarchy to be followed which is reflected in Part H3 of Building Regulations. Whilst reuse does not strictly form part of this hierarchy Southern Water would encourage the consideration of reuse for new developments:-

- Reuse
- Infiltration
- Watercourse
- Storm Sewer
- Combined Sewer.

02. The Applicant is advised as follows:-

Works of construction or demolition, including the use of plant and machinery, necessary for implementation of this prior approval should be limited to the following times:
Monday - Friday 08:00 - 18:00 Hours
Saturday 09:00 - 13:00 Hours
Sundays and Bank Holidays no work permitted.

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This is in order to safeguard the amenities of the occupiers of neighbouring properties having regard to saved policy RES7 of the Worthing Local Plan and policy DM22 of the Submission Draft Worthing Local Plan (as modified).

Ref: NOTICE/0024/22

TOWN AND COUNTRY PLANNING ACT 1990
TOWN AND COUNTRY PLANNING (GENERAL PERMITTED DEVELOPMENT) (AMENDMENT) (ENGLAND) ORDER 2015 Schedule 2, Part 3, Class MA

YOUR ATTENTION IS DIRECTED TO THE FOLLOWING NOTES FROM THE ABOVE ORDER. THEY ARE FOR INFORMATION ONLY AND DO NOT PRETEND TO SET OUT THE WHOLE OF THE LAW ON THE SUBJECT. IT WOULD BE WELL FOR YOU TO CONSULT YOUR SOLICITOR IF YOU ARE IN ANY DOUBT

Appeals to the Secretary of State

1. If you are aggrieved by the decision of your local planning authority to refuse permission for the proposed development or to grant it subject to conditions, then you can appeal to the Secretary of State under section 78 of the Town and Country Planning Act 1990.

2. If the decision relates to a householder application, and you want to appeal, then you must do so within 12 weeks of the date of this notice. If the decision relates to a non-householder application, an appeal must be lodged within 6 months of the date of the decision notice. Appeals must be made using a form which you can get from the Secretary of State at Temple Quay House, 2 The Square, Temple Quay, Bristol BS1 6PN (Tel: 0303 444 5000) or online at https://acp.planninginspectorate.gov.uk.

3. The Secretary of State can allow a longer period for giving notice of an appeal, but he will not normally be prepared to use this power unless there are special circumstances which excuse the delay in giving notice of appeal.

4. The Secretary of State need not consider an appeal if it seems to him that the local planning authority could not have granted planning permission for the proposed development or could not have granted it without the conditions they imposed, having regard to the statutory requirements to the provisions of any development order and to any directions given under a development order.

5. In practice, the Secretary of State does not refuse to consider appeals solely because the local planning authority based their decision on a direction given by him.

Purchase Notices

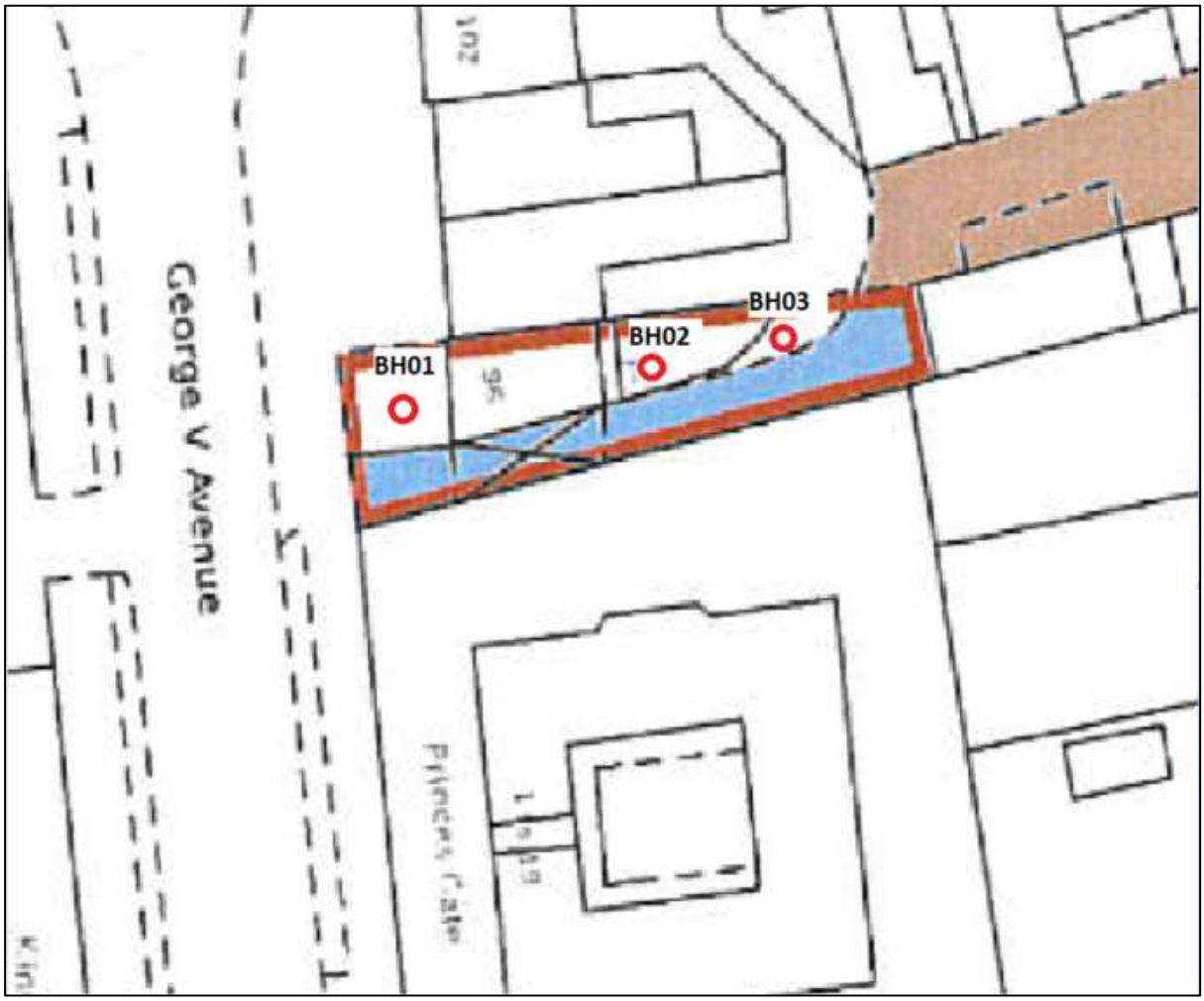
6. If either the local planning authority or the Secretary of State refuses permission to develop land or grants it subject to conditions, the owner may claim that he can neither put the land to a reasonably beneficial use in its existing state nor render the land capable of a reasonably beneficial use by the carrying out of any development which has been or would be permitted. In these circumstances, the owner may serve a purchase notice on the District Council in whose area the land is situated. This notice will require the Council to purchase his interest in the land in accordance with the provisions of Part VI of the Town and Planning Act 1990.

7. Where this notice conveys approval or permission, conditional or unconditional, please note that the decision given does not purport to convey any consent or approval which may be required under the Building Act and Building Regulations, or any other legislation.

Reduced time for making a planning appeal where enforcement action is being taken

Where an enforcement notice has been served on the same, or substantially the same, development as in the householder application within 2 years of the date the application was made, the period for receiving an appeal is within 28 days of the date on the decision notice or of the date by which the LPA should have decided the application. Where an enforcement notice was served after the decision notice was issued or after the end of the period the LPA had to determine the application, the period for receiving an appeal is within 28 days of the date the enforcement notice was served (unless this extends the normal 12 weeks deadline).

Appendix 2 – Proposed Borehole Location Plan



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