REPORT ON
GROUND INVESTIGATION
AT
REDWELL INFANTS
SCHOOL,
WELLINGBOROUGH
## REPORT STATUS SHEET

**Client:** Northamptonshire County Council  
**Report Title:** Report on Ground Investigation at Redwell Infants School, Wellingborough  
**Report Type:** Desk Study/Phase I Geoenvironmental Risk Assessment and Phase II Geotechnical/ Geoenvironmental Ground Investigation  
**Report Number:** AG1866-13-Q87  
**Report Status:** Validated Issue 1  
**Date:** August 2013

<table>
<thead>
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<th>One Copy Issued</th>
<th>Date</th>
<th>Signed for and on behalf of Applied Geology Limited</th>
</tr>
</thead>
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</tbody>
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APPENDIX B  DESK STUDY DATA
APPENDIX C  EXPLORATORY HOLE LOGS
APPENDIX D  FIELD MONITORING RESULTS
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1.0 INTRODUCTION

An area of land at Redwell Infants School, Wellingborough is being considered for development by Northamptonshire County Council, (the Client). The proposals for the site comprise of two extensions, one single storey and one two storey, to the existing school buildings, as shown on Drawing No 4052/010 P3, dated February 2013, prepared by pHp Architects. This report presents the results of a desk study/Phase I Geoenvironmental Risk Assessment and combined Phase II Geotechnical and Geoenvironmental Ground Investigation, undertaken on behalf of the Client.

The desk study/Phase I assessment and Phase II ground investigation were undertaken to:

- Permit formulation of an opinion, as to the potential for hazardous substances or conditions to exist on, at or near the site at levels or in a situation likely to warrant mitigation or consideration appropriate to the intended end use proposed by the Client and as stated above.

- Establish geological conditions and geotechnical parameters to permit safe and economic development design.

The terms of reference/brief for the works were mutually developed between BCAL Consulting (Engineer to the Client) and Applied Geology Limited and are outlined in our proposal ref: AG13-3927let001 and estimate ref: AG13-3927-01 of the 28th May 2013. Limitations and Exceptions of the report are presented in Section 11.

More specifically, the services provided are summarised below and detailed in the following Sections.

- A site inspection and walkover survey to identify indicators (as defined in later sections) of the existence of hazardous substances or conditions on and in the vicinity of the site.

- A review of the following sources to provide data on likely ground conditions, geohazards and features which may affect development and to obtain information about the potential for hazardous substances to exist at and in the vicinity of the site:
  - GroundSure – GeoInsight & EnvirolInsight environmental databases.
  - GroundSure – MapInsight historical maps.
  - British Geological Survey (BGS) - published information & on-line borehole database.
  - Multi-Agency Geographical Information for the Countryside (MAGIC) on-line database.
  - Environment Agency Web Site.

- Ground investigation together with sampling, monitoring and a programme of laboratory testing.

- Assessment and reporting of the results of the works.
Underground service plans and a topographic survey, presented as part of a proposed exploratory hole location plan reference GI-2013-06-17 Revision A, were provided by the Client.

2.0 SITE LOCATION AND DESCRIPTION

2.1 General

The site is roughly rectangular in shape and covers an area of approximately 1.18 hectares. The Ordnance Survey grid reference for the centre of the site is SP 880 692 as shown on the Site Location Plan in Appendix A.

The site comprises two areas within the Redwell Infants School grounds. The school occupies an approximately rectangular area some 120m x 60m (0.72 hectares) and falls to the east by approximately 1.5m over a distance of 120m. The topography of the surrounding area falls to the north and northeast/east.

2.2 Walkover Survey

A site walkover survey was carried out on 26th June 2013.

The site was bound to the north, south and west by a large residential development and to the east by Redwell Leisure Centre. In the centre and north the site were two large single storey buildings with tarmacadam play areas in the centre and to the southeast and a tarmacadam car park to the northwest. There were some areas of soft landscaping around the buildings and in the south and west the site comprised large open grassed playing fields with some mature/semi-mature trees.

The building in the west was raised with a sloping walkway to the north and a series of steep steps to the east dropping down to the same level as the central building/play area. The playing field to the south was raised with a retaining wall along its northern boundary and a small series of steps down to the level of the central building/play area.

No potentially contaminative sources or uses were identified on or within the immediate vicinity of the site.

It should be noted that Applied Geology Limited does not provide arboricultural surveys or specialist surveys for the detection of invasive plant species (such as Japanese Knotweed) or protected species of wildlife. Whilst no Japanese Knotweed or other controlled or invasive species was noted it is recommended that if required, separate investigation by specialists be undertaken to confirm this.

2.3 Proposed Development

The proposals for the site comprise two extensions, one two storey and one single storey, and alterations to the existing buildings, as shown on Drawing No 4052/010 P3, dated February 2013, prepared by pHp Architects a copy of which is presented in Appendix A.
3.0 DECK STUDY INFORMATION

3.1 Site History

Historical maps were obtained in order to determine any significant past activity or land usage. Copies of these maps are presented in Appendix B of this report and are described below:

Table 1 – Site History Summary

<table>
<thead>
<tr>
<th>Map Date</th>
<th>On The Site</th>
<th>In The Vicinity Of The Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>1884-1886</td>
<td>Site forms part of a larger field.</td>
<td>Immediate vicinity of the site dominated by a large field. Two lanes are present to the south and east of the site. Adjacent to the south is a small development, possibly a farmhouse. A small disused stone pit is marked approximately 70m southwest of the site. A quarry is marked approximately 280m southeast of the site with associated railway lines entering it. A water works/pumping house is marked 540m west of the site. A watercourse flowing southwest to northeast is located approximately 500m north of the site. The town of Wellingborough is located approximately 1.1km southeast of the site. There is a watercourse/ditch 300m to the south which flows east.</td>
</tr>
<tr>
<td>1899</td>
<td>No significant changes.</td>
<td>Disused stone pit no longer marked. Quarry to southeast now marked as old quarry. There is a pump within the farm buildings to the south. The watercourse to the south appears to terminate at two small buildings named Red Well. Approximately 100m to the northeast of here is a Mill Race and pumping house which seems to enter into a water course which flows north to the join the watercourse to the north of the site. To the northeast of</td>
</tr>
<tr>
<td>Year</td>
<td>Event</td>
<td>Details</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1992</td>
<td>Additional building complete.</td>
<td>New development adjacent to the site to the east marked as Redwell Leisure Centre. There is a well 400m to the south, just to the east of Red Well.</td>
</tr>
<tr>
<td>2002</td>
<td>No significant changes.</td>
<td>There is an ‘issues’ 700m to the south which flows north. The well and Red well to the south are disused.</td>
</tr>
<tr>
<td>2012</td>
<td>No significant changes.</td>
<td>No significant changes.</td>
</tr>
</tbody>
</table>

Summary:

From the earliest map editions the site formed part of a large field until 1924-1925 when an adjacent farm was expanded to the north slightly encroaching onto the site. Between 1975 and 1977 the site was redeveloped into Redwell Primary School, with further development taking place between 1986 and 1990.

The vicinity of the site was previously dominated by a large field with a quarry located to the southeast and a disused stone pit located to the southwest. From 1899 the quarry was disused and the disused stone pit was no longer marked. From 1973 the surrounding area underwent several phases of large scale residential development with the construction of a Leisure Centre adjacent to the east of the site.

3.2 Anticipated Geology

Reference to the British Geological Survey (BGS) on line lexicon indicates the site to be devoid of superficial deposits and directly underlain by the Great Oolite Group dipping approximately from northeast to southwest and comprising from southwest to northeast, the Blisworth Limestone Formation, the Rutland Formation and the Wellingborough Limestone Member of the Rutland Formation. To the east of the site is the underlying Northampton Sand Formation.

The Blisworth Limestone in the southwest of the site comprises interbedded limestones and mudstones and the Rutland Formation which is shown to outcrop across most of the remainder of the site, comprises grey mudstones and siltstones with subordinate sandstone beds higher in the sequence comprising typically shelly and shell-detrital marine limestones and calcareous mudstones. In Northamptonshire these limestone strata are the defined as the Wellingborough Limestone Member.

Reference to the 1:50 000 scale geology map ‘Wellingborough’ sheet 186 (1974) indicates the area to the east of the site, noted to be underlain by the Northampton Sand Formation, is denoted as an area worked out as open cast. The GroundSure report, which refers to the same map, although likely to be a later map edition, also indicates areas to the west of the site to have been infilled with Made Ground. These latter areas do not coincide with any quarries/pits shown on historic maps but with the Blisworth Limestone to the west of the site. It is therefore possible that these areas have been worked in the past to extract limestone and ironstone rock.

The BGS online archive was checked for records of any relevant archived boreholes within the vicinity of the site. There is a record for a water well in the south of the site however there is no geological information on this log and the depth to groundwater is not clear. There is a record for a borehole 40m to the northeast which recorded orange brown and yellow brown clays with fragments of
sandstone and bands of sand to 4m below ground level (bgl) where a stiff grey clay was recorded. It is possible the former strata represents the Wellingborough Member and the latter, the Rutland Formation. Other boreholes in the area relate to strata that is deeper in the geological sequence such as the Northampton Sandstone Formation to the east of the site and are therefore not considered relevant to the site.

3.3 **Mining History/Geological Cavities**

Consultation of the Coal Authority's/Law Society's Coal Mining Searches Directory indicates that the site lies in an area for which a standard mining report is not required for new development.

Reference to the GroundSure report indicates that the nearest natural cavity is 460m to the north of the site and relates to gulls in the underlying natural rock comprising the Great Oolite Formation, Northampton Sand Formation and Whitby Sand Formation. Gulls form in rock where it overlies weaker strata near a slope and the rock starts ‘toppling’, producing openings in the rock at the surface. Given the distance to the north of the site, these gulls will be associated with the slope of the valley adjacent to the River and are considered unlikely to affect the site.

Early historical maps indicate the presence of a former stone pits and quarry in the vicinity of the site.

3.4 **Radon**

The site lies within an area currently defined in BR211:2007 (Radon: Guidance on Protective Measures for New Buildings) as requiring a Geological Assessment to be carried out to consider whether basic Radon protection measures will be needed. Additional reference to the GroundSure report, which presents information and assessment from the BGS, indicates that basic radon protection measures are necessary. The GroundSure report also indicates that the school is in a Radon Affected Area as between 5% and 10% of properties are above the Action Level.

3.5 **Hydrology**

The nearest surface watercourse is a small secondary/tertiary tributary for the River Nene (2.75km to the east of the site) located approximately 450m southeast of the site and flows to the northeast, linking up with another tributary approximately 550m north of the site flowing to the east. There is no recorded Environment Agency General Quality Assessment (GQA) classification for this watercourse. Historic maps indicated a ditch some 300m south of the site which may have been associated with this tertiary water course but which was no longer indicated on maps from 1973. According to the GroundSure report there are no surface water abstractions within 2km of the site.

The Environment Agency Web site indicates that the site lies outside of any flood plain. However this report is not intended to be a full hydrological study and if a flood risk assessment is needed, additional analysis by others is recommended to confirm this aspect of the development.
3.6 **Hydrogeology**

According to the GroundSure report the Blisworth Formation underlying the west of the site is classified as a Principal Aquifer with a high level of water storage controlled by interangular and/or fracture permeability and may support water supply at a strategic scale. The Wellingborough Member and Rutland Formation underlying the site to the east are classified as Secondary A and Secondary B Aquifers respectively with a permeability ranging from high to low, capable of supplying water at a local scale. The site lies outside of any Source Protection Zone. There are no groundwater abstraction licences within 2km of the site boundary.

The topography of the area and the presence of surface water courses would suggest groundwater flow to the north or east, however, the dip of the underlying bedrock is to the southwest. Surface water courses in the area appear to flow north and as such groundwater from site is also likely to flow north.

3.7 **Ecology**

Information from environmental and ecological datasets was obtained from a review of the MAGIC (Multi-Agency Geographic Information for the Countryside) website undertaken on 28th June 2013.

There are no recorded protected species or habitats present on the site or within a 1km radius of the site. In addition, there are no non statutory designations associated with the site or within a 1km radius of the site.

If a full assessment of Environmental or Ecological aspects is required, it is recommended that other specialists are consulted.

3.8 **Environmental Searches**

Information pertaining to environmental issues was obtained from a Landmark Envirocheck report, commissioned by Applied Geology Limited on the 14th June 2013. This database contains sets of data corresponding to the databases held by a number of sources including the Environment Agency (EA), British Geological Survey (BGS), Health Protection Agency (HPA), Coal Authority (CA), Department for the Environment, Farming and Rural Affairs (DEFRA) and the Local Authorities (LAs). A copy of the report is included in Appendix B.

The GroundSure report indicates that there are no Landfills within 250m of the site, the only landfill noted being a Local Authority facility noted from their 1969 maps to be 472m west of the site. This is not indicated on the historic maps in the GroundSure report.

Whilst no landfills are identified in the searches, the Made Ground indicated on the geology maps is noted as are the pit and quarry shown 70m and 280m from the site on historic maps.

There are no discharge consents, pollution incidents or contamination issues within 250m of the site.
3.9 Contemporary Trade Directories

The following table summarises the contemporary Trade Directory (of currently operating businesses) entries within 250m of the site.

Table 2 – Summary of Contemporary Trade Directories

<table>
<thead>
<tr>
<th>Trade</th>
<th>Distance from site (m)</th>
<th>Principal Potential contaminants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle/industry, repair and servicing</td>
<td>48m N, 142m N, 157m N</td>
<td>Degreasing agents, hydrocarbons, solvents, metals</td>
</tr>
<tr>
<td>Electricity substation</td>
<td>134m W, 217m SE, 241m NW</td>
<td>Polychlorinated biphenols (Depending on age)</td>
</tr>
</tbody>
</table>

4.0 CONCEPTUAL MODEL

In developing a Conceptual Model for the site, pollutant linkages are determined by identifying likely sources of contamination from previous and current site uses, possible targets such as site users, neighbouring site users and Controlled Waters and linkages between them. These are discussed below together with a diagrammatic representation of the potential pollutant linkages for this site.

4.1 Summary of Site History

The site formed part of a field until around 1924-25 when a nearby adjacent farm was developed onto the southern portion of the site. From 1975-77 the site was redeveloped into Redwell Primary School, with a smaller extension constructed during the 1980s. The vicinity of the site was dominated by fields and several quarries, until the early 1900s when the quarries were backfilled and the area underwent multiple phases of residential development.

4.2 Summary of Anticipated Geology

A thin layer of Made Ground is anticipated to underlie the site, overlying the Great Oolite Series comprising the Blisworth Formation in the west and Rutland Formation to the east with a small area of the Wellingborough Member in the northeast.

4.3 Potential Source - Pathway – Receptor Pollutant Linkages

4.3.1 Sources

On-site

There are no obvious sources of contamination on the site other than the Made Ground due to the site development that may have resulted in soils with elevated concentrations of contaminants.

Radon may be naturally present in the underlying rocks and is a potential source.

There may be naturally elevated concentrations of sulphates in the Rutland Formation in particular.
Off-site

Backfilled quarries and pits in the vicinity of the site and the infilled Made Ground noted on the geology map represent areas of deeper Made Ground and could result in increased concentrations of ground gas.

There is the potential for localised impaction of soils from the nearby vehicle Repair and Servicing however these businesses are to the north and groundwater flow is considered likely to be to the north; as such impaction would not affect the site. The electricity substations are associated with the surrounding housing and are too remote from the site to be considered a viable source.

4.3.2 Pathways

End users and construction workers may be exposed to ground gas, vapours and mobile contamination via recognised pathways including inhalation (of fugitive dust), ingestion and dermal contact.

The site is anticipated to be underlain by a thin layer of Made Ground, which is a potential pathway for contaminants to migrate off or on site. The limestones of the Blisworth Limestone Formation and limestones and sandstones of the Wellingborough Member are potential pathways for contaminants to migrate on and off site. The Mudstones and Siltstones of the Rutland Formation are not considered to be a significant pathway although contaminants may still migrate via fractures in the rock, particularly in limestone bands. Underground services, backfilled service trenches and run off are also potential pathways.

Soils which may contain elevated sulphates and hydrocarbons can detrimentally affect buried concrete and underground services by direct contact.

4.3.3 Receptors

End Users

End users, may be at risk from ground gas in confined areas within buildings and contaminants in the soils in landscaped areas.

Controlled Waters

The underlying Principal Aquifer of the Blisworth Limestone and the Secondary B and A Aquifers of the Rutland Formation and Wellingborough Member are Controlled Waters and therefore potential receptors. The un-named tertiary river to the south is not considered a key receptor as groundwater flow is to the north.

Building materials

Concrete may be at risk from naturally occurring sulphates (selenite) in the natural soils of the Rutland Formation in particular. Plastic pipes and buried concrete may be at risk from hydrocarbons within the soils/groundwater (if present).
Construction Workers

Construction workers may be at risk from contaminated soils, ground gas, vapours and mobile contamination in a similar way to end users. However, it is considered modern Personal Protection Equipment, use of construction site welfare facilities and adopting good hygiene practises will mitigate any such risk.

4.3.4 Diagrammatic Representation:

The diagrammatic representation of the Conceptual Model described above is presented in Appendix A and summarise in Table 3 below.

Table 3 – Initial Conceptual Site Model

<table>
<thead>
<tr>
<th>Source</th>
<th>Pathway</th>
<th>Receptor</th>
<th>Risk*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential contaminants within Made or Disturbed Ground.</td>
<td>Inhalation, ingestion, dermal contact.</td>
<td>End users. Groundworkers</td>
<td>Low**</td>
</tr>
<tr>
<td></td>
<td>Leaching/Migration</td>
<td>Groundwater under site</td>
<td>Low</td>
</tr>
<tr>
<td>Potential contaminants within the groundwater</td>
<td>Migration</td>
<td>Principal and Secondary Aquifers underlying the site.</td>
<td>Low</td>
</tr>
<tr>
<td>Soil gas from Made Ground – both on site (general Made Ground) and off (backfilled pits, quarries and 'infill' Made Ground from historic maps) site sources (methane, carbon dioxide)</td>
<td>Migration into buildings and any excavations during construction, and remaining service duct and basement.</td>
<td>End users, adjacent residents, construction works</td>
<td>Low**</td>
</tr>
<tr>
<td>Radon gas</td>
<td>Inhalation</td>
<td>End users</td>
<td>Medium</td>
</tr>
<tr>
<td>Sulphates and hydrocarbons in the Made Ground and natural soils.</td>
<td>Direct contact.</td>
<td>Building materials Plastic pipes Buried Concrete</td>
<td>Low</td>
</tr>
</tbody>
</table>

* Definition of Risk Categories

Low Risk: Contaminants may be present but are unlikely to be at levels to have unacceptable impact on key receptors, or pathways are likely to be minimal.

Medium Risk: Contaminants are probably present and might have an unacceptable impact on key receptors.

** Assumes low exposure time, standard personal protective equipment and good hygiene practices on site

5.0 SITE WORK

5.1 General

Fieldwork was generally carried out, where relevant, in accordance with BS5930 (1999) “Code of Practice for Site Investigations”, BS10175 Investigation of Potentially Contaminated Sites, the Association of Geotechnical and Geoenvironmental Specialist Guidelines for Good Practice in Site Investigations (August 1998) and supervised by an Engineering Geologist.
The locations of the exploratory holes were selected by BCAL Consulting and set out on site by Applied Geology Limited. The sampling strategy for the exploratory hole locations was to best investigate the ground and contamination conditions across the site. The locations were constrained by the available access and known locations of underground services. The fieldwork was undertaken whilst the school was open.

Prior to commencement on site, statutory services plans provided by the Client. The exploratory holes were set out to avoid the locations of known services. Prior to excavation or drilling, locations were scanned with a cable avoidance tool (CAT) and service pits excavated at borehole positions, where possible. The positions of the exploratory holes were defined by taping from identifiable features on the proposed exploratory hole location plan reference GI-2013-06-17 by BCAL Consulting. Levels presented on exploratory holes logs are extrapolated from the topographic survey which this drawing is based on. An exploratory hole location plan drawing number AG1866-13-02 is presented in Appendix A.

Descriptions and depths of the various strata recovered are presented on the exploratory hole records, reproduced in Appendix C, together with sample depths, the results of in-situ testing, comments on groundwater inflows, pit stability and any other pertinent information. The strata descriptions are in accordance with BS5930:1999 incorporating Amendment No 2 (2010). Disturbed plastic pot and glass amber jar samples were recovered from the various strata and stored and transported in cool boxes, where relevant, for possible future chemical laboratory testing.

5.2 Foundation Inspection Pits

Two foundation inspection pits (FEP1 and FEP2) were excavated on the 26th June 2013 in order to assess the foundations of the current buildings on site. The pits were excavated to depths of 0.6m and 1.1m bgl.

5.3 Hand Excavated Pits

One hand excavated pit (HDP1) was excavated on the 26th June 2013 to a depth of 1.2m bgl at a specific location of the site to provide further information on ground conditions.

5.4 Tarmacadam Samples

At the request of the Engineer three tarmacadam samples were taken on the 26th June 2013 from tarmac broken out at the surface of BH1 and FEP2 with a further sample broken out at TS3. The purpose of the sampling and subsequent testing was to assess the suitability of the tarmacadam for reuse on site.

5.5 Driven Continuous Sampling Boreholes

Three Driven Continuous Sampling (DCS) boreholes (BH1 to BH3) were drilled at the site on the 26th June 2013 to depths of between 4.0m and 5.45m bgl, using a track mounted Global Sampling Rig.

Prior to drilling surface concrete/tarmac was broken out using a hydraulic breaker.
Samples of the deposits encountered were recovered in 1.00m long clear plastic liners, which were logged and sub-sampled on site by an Engineering Geologist.

The undrained shear strength of cohesive materials was determined where practical at selected intervals using a hand shear vane.

During the drilling process, in-situ Standard Penetration Tests (SPTs) were undertaken at selected depths to determine the in-situ strength of fine grained deposits by comparing the SPT "N" value results with published empirical data. Groundwater seepages were noted during drilling if encountered.

Details of the strata encountered, groundwater strikes, hand penetrometer/hand vane tests, samples taken and the SPT "N" values, (uncorrected for overburden pressure), together with any installation details, are presented on the individual exploratory hole records presented in Appendix C of this report.

5.6 Falling Head Permeability Test

Falling head permeability tests were carried out in BH2 and BH3 in general accordance with BS 5930, Clause 25.4.6. The tests were carried out in the installed boreholes with clean water from a container filling each borehole to ground level. The strata tested comprised the weathered Blisworth Limestone and Rutland Formation in BH2 and weathered Wellingborough Limestone Member and Rutland Formation in BH3.

The results of the falling head tests are presented in Appendix D.

5.7 Instrumentation

Standpipes were installed in selected boreholes as detailed in Table 4 in order to provide good site coverage to collect data relating to groundgas and groundwater level and permit the above reference permeability tests. A visual representation of the standpipes is presented on the relevant borehole logs.

<table>
<thead>
<tr>
<th>Borehole No</th>
<th>Depth To Base (m)</th>
<th>Response Zone (m bgl)</th>
<th>Strata monitored</th>
<th>Nominal Pipe Diameter (mm)</th>
<th>Gas Valve/Loc kable Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH 1</td>
<td>4.45</td>
<td>1.0-4.0</td>
<td>Weathered Blisworth Limestone and Rutland Formation</td>
<td>50</td>
<td>Yes</td>
</tr>
<tr>
<td>BH 2</td>
<td>4.0</td>
<td>1.0-4.0</td>
<td>Weathered Blisworth Limestone and Rutland Formation</td>
<td>50</td>
<td>Yes</td>
</tr>
<tr>
<td>BH 3</td>
<td>5.45</td>
<td>1.0-4.0</td>
<td>Weathered Wellingborough Limestone Member and Rutland Formation</td>
<td>50</td>
<td>Yes</td>
</tr>
</tbody>
</table>

5.8 Gas and Groundwater Monitoring

Return monitoring visits to the site were undertaken on four occasions between 4th July and 25th July 2013. Each borehole was monitored for the presence of:- Oxygen
Once the gas monitoring was complete the gas bung was removed and the groundwater level monitored using a dip meter. The monitoring visits were undertaken at atmospheric pressures ranging between 1002mb and 1018mb. Monitoring was undertaken during two periods of steady atmospheric pressure, one of rising and one of falling.

The results of the soil gas and groundwater monitoring works are presented in Appendix D.

6.0 LABORATORY TESTING

6.1 Geotechnical Testing

A programme of geotechnical laboratory testing was undertaken on samples selected from the natural ground.

The geotechnical testing was carried out in accordance with BS 1377:1990 Method of Tests for Soils for Civil Engineering Purposes and was undertaken by specialist laboratory (Terra Tek, UKAS Lab No 0126) and comprised three Atterberg limit and moisture content tests.

Additional analysis was carried out in accordance with BRE “Special Report 1 Concrete in Aggressive Ground - 2005” for a brownfield & pyritic/brownfield site in order to classify the standard of buried concrete for the site and was undertaken by specialist laboratory (Chemtest, UKAS Lab No 2183). The testing comprised:

- Two natural soil samples tested for soluble sulphate, total sulphate, total sulphur and pH with magnesium being scheduled as dependant options;
- One Made Ground soil sample tested for soluble sulphate and pH with chloride, nitrate and magnesium being scheduled as dependant options.

The results of the geotechnical testing are presented in Appendix E.

6.2 Chemical Testing

In the absence of any particular areas of concern identified in either the walkover survey or desk study, the Made Ground on the site was subject to a general suite of testing. The purpose of the testing was to determine the contamination potential of the Made Ground encountered on site and was carried out by specialist laboratory Chemtest (UKAS Lab No 2183).

Three samples from the Made Ground were tested for the following suite of contaminants:

- Selected metals suite [arsenic, boron (water soluble), cadmium, chromium (total), copper, mercury, nickel, lead, selenium, zinc];
- Speciated (to US 16) Polycyclic Aromatic Hydrocarbons (PAH);
- Soil organic matter (SOM);
Three samples of the tarmacadam were also analysed by Chemtest for speciated PAHs.

In addition two composite samples of the Great Oolite Series obtained from different locations were also submitted for inert Waste Acceptance Criteria (WAC) testing as requested by BCAL.

The number of samples tested was designed to be sufficient to form an initial assessment of the contamination potential of the site, taking into account its known history and the materials encountered in the investigation. Hence, it falls in line with the general requirements of BS10175 'Investigation of Potentially Contaminated Sites'.

MCERTS accredited methods, in accordance with Environment Agency recommendations, were specified where available.

The results of the chemical testing are presented in Appendix E.

7.0 GROUND CONDITIONS

7.1 General

Based on published geological information, it was anticipated that the ground conditions across the site would comprise Made Ground, overlying the Great Oolite Series comprising Blisworth Formation in the west, Rutland Formation in the central and eastern area of the site and the Wellingborough Member in the northeast.

The investigation has generally confirmed the published ground conditions with a variable thickness of Made Ground underlying the site, overlying the weathered Great Oolite Series.

The Blisworth Limestone Formation was represented by a soft to firm and stiff light creamish brown slightly sandy clay and occasional silt. The Rutland Formation comprised a firm to stiff and very stiff grey clay and the Wellingborough Limestone Member comprised a very stiff orange brown slightly gravelly clay with a sand band. The gravel comprised limestone and as such it has been defined as the Wellingborough Limestone Member. Descriptions of the various deposits present beneath the site are given in the following sections.

7.2 Made Ground

Made Ground and Topsoil/Made Ground was encountered in all of the exploratory holes from ground level to depths of between 0.35m to 1.1m bgl. The deeper Possible Made Ground in FEP2 is likely related to the backfilling associated with the current foundations, and represents a deeper pocket of Made Ground, not representative of the general site conditions.

The composition of Made Ground varied across the site depending upon the position of the exploratory locations with regards to hardstanding or soft standing. The Made Ground in BH3, BH2 and HDP1 located in areas of soft standing,
typically comprised stiff (occasionally friable) dark brown silty, slightly sandy, slightly gravelly clay. The gravel comprised fine to medium angular brick fragments, limestone and rounded flint. The Made Ground at BH1, FEP1 and FEP2 located in areas of hardstanding, comprised dark reddish brown silty gravelly fine to coarse sand or sandy gravel. The gravel comprised fine to coarse angular flint.

7.3 Great Oolite Series

The Great Oolite Series was encountered in five of the six exploratory locations at depths of between 0.35m and 0.7m bgl, the stratum was proven to a maximum depth of 5.45m bgl (the base of the strata was not proven).

It is difficult it accurately assign strata names to the soils of the within the Great Oolite Series due to the small and disturbed nature of the samples recorded. The Rutland Member was a distinctive grey clay encountered across the site underlying strata which may represent the Blisworth Limestone and/or the Wellingborough Member. These strata are discussed below.

A firm to stiff and very stiff light cream-brown/ dark orange-brown silty/slightly silty slightly sandy slightly gravelly clay/silt was encountered in all of the exploratory holes apart from FEP2 to depths of between1.9m and 2.95m bgl. The gravel comprised fine to coarse angular to subangular limestone and fine fossils. A soft to firm light cream-brown clayey slightly gravelly silt was encountered at depths between 0.5m and 1.3m bgl within BH1, while a thin band of silt (0.1m thick) was encountered at 1.8m bgl in BH2. These strata may represent the Blisworth Limestone and/or the Wellingborough Member.

The Rutland Formation was encountered across the site at depths of between 1.9 and 2.95m bgl, was deepest in BH3 in the northeast, and was proven to the base of the boreholes. The Rutland Formation comprised a stiff to very stiff dark grey-black with grey mottling slightly sandy clay with initially some orange/brown mottling.

The results of the three Atterberg limit tests carried out on two samples of the Blisworth Limestone/ Wellingborough Member indicated plasticity index values of between 24% and 36% (corrected to between 20% and 24% based on the percentage passing through the 425µm sieve), plastic limits of between 17% and 18% and liquid limits of between 42% and 53% with associated moisture contents of between 18% and 21%. The results of these tests indicate the material to be clay of medium shrinkage potential. Consistency index (Ic) values ranged between 0.89 and 1 (which suggest stiff) and liquidity indicies ranged between 0.11 and 0.0 (which suggest firm to stiff) broadly reflecting the consistencies recorded visually.

Standard penetration tests in the Blisworth Limestone gave values of between N=18 and N=23 (suggesting approximate undrained shear strengths of between 100kN/m² and 125kN/m², that is high strength, assuming an f₁ of 5.5 based on an average corrected plasticity index of 22%). Undrained shear strengths recorded using hand shear vales indicate values of between 14kN/m² and 62kN/m² (very low to medium strength) in silt bands in BH1 at 2.55m bgl and BH2 at 1.8m bgl. These low undrained shear strengths are likely to be due to the disturbed nature of the sample tested.

Standard penetration tests in the Wellingborough Member gave values of N=22 and N=33 (suggesting approximate undrained shear strengths of between 120kN/m²
and 181kN/m², that is high to very high strength, assuming an f₁ of 5.5, based on a corrected plasticity index of 22%).

Standard penetration tests in the underlying Rutland Formation gave values of between N=19 and N=26 (suggesting approximate undrained shear strengths of between 105kN/m² and 140kN/m², that is high strength assuming an assumed f₁ of 5.5). Hand shear vane readings carried out in the Blisworth Limestone generally gave values of between 62kN/m² and in excess of 240kN/m² (medium to very high strength). Hand shear vane values of between 156kN/m² and in excess of 240kN/m² (high to very high strength) were recorded in the Rutland Formation.

From the SPT 'N' value against depth plot in Appendix A, the SPT 'N' values do not appear to show any increase with depth.

7.4 Groundwater

Groundwater was only encountered in FEP2 at 1.0m bgl. Groundwater was not recorded in any of the exploratory holes during excavation/drilling or during subsequent monitoring visits to the site.

7.5 Hand Dug Foundation Inspection Pits

Two foundation inspection pits (FEP1 and FEP2) were excavated, the former exposing foundations for the older of the two buildings. Foundations for the older building were found to comprise a concrete footing which extended to 0.45m bgl and externally was 0.16m wide. The foundations exposed in FEP1 were founded on the clays of the weathered Blisworth Limestone Formation.

The base of the foundation for the newer building could not be established due to water ingress at 1.0m bgl however a concrete foundation was exposed between ground level and that depth. A firm to stiff dark grey clay was recorded in the hand dug pit of FEP2 between 0.5m and 1.1m bgl and it is possible that this represents the Rutland Formation although the base of the foundation and founding strata was not established; and these soils may present arisings placed around the foundation.

7.6 Contamination

No visual or olfactory evidence of any gross contamination was encountered in any of the excavations/boreholes.

7.7 Soil Gas

Four phases of ground gas monitoring were undertaken as part of this investigation, the results of which are included in Appendix D. Methane concentrations of less than 0.1% by volume were recorded during the various monitoring phases together with carbon dioxide concentrations of between <0.1% (detection limit of the equipment used) and 4.5%. Variable oxygen concentrations were recorded ranging from near atmospheric to marginally depleted 15.4%.

Gas flow was not found to exceed the detection limits of the equipment used.

The results indicate as gas screening value of 0.0045l/hour for carbon dioxide.
7.8 **Falling Head Test Results**

The results of the falling head tests indicate a permeability of $2.3 \times 10^{-5}$ m/s in BH2 and $2.2 \times 10^{-7}$ m/s in BH3. The variation is likely to be due to the presence of possible limestone bands and sand layers within the predominantly clay soils.

8.0 **RESULTS & SIGNIFICANCE OF LABORATORY TESTING FOR POTENTIAL CONTAMINANTS**

8.1 **Human Health Risk Assessment Methodology**

Suites of contamination testing on soil samples were carried out as described in Section 6.2. The results of this testing are presented in Appendix E of this report.

Where appropriate the contaminant concentrations have been assessed to ascertain whether there is an unacceptable risk to the identified human health receptors for the site.

Applied Geology Limited has followed the guidance given in the CLR 11 publication and other available guidance to assess the contaminant concentrations. Details of the methodology followed are briefly outlined below.

Risk to human health has been initially assessed by comparing soil results against various published non-statutory screening criteria. These have been sourced from the following, in order of preference:

- Environment Agency/Defra, Soil Guideline Values (SGV) published in 2009, using the new CLEA model;
- LQM/CIEH Generic Assessment Criteria (LQM GAC V2) Version 2, 2009;

Reference has also been made to the Soil Screening Values (SSV) derived by Atkins (ATRISKsoil) and updated and published on their website in March 2011. However, due to the difference in soil type used by Atkins to derive their screening values, Applied Geology has also generated their own screening criteria for various end-uses/SOM combinations but only using published toxicological data (from the above sources) to generate GAC using CLEA v1.06. Applied Geology GAC have therefore generally been used in preference to Atkins SSV as they are more comparable with the EA, LQM/CIEH and EIC/AGS screening values.

Screening values for an open space and more conservative residential without plant uptake end use have been selected on this site given the proposed continued end use as a school.

If contaminant concentrations exceed these generic screening values, then the results can be assessed in more detail by carrying out a quantitative risk assessment to derive site-specific screening values.

8.2 **Results of Human Health Risk Assessment**

None of the contaminants tested for were found to exceed the screening values for residential without plant uptake assuming 2.5% soil organic matter or Open Spaces
assumed 1% organic matter. As such the soils on site are considered to present a low risk to end users.

8.3 **Controlled Waters Risk Assessment**

Since no sources of contamination were evident in the desk study or ground investigation and in the absence of any groundwater samples to test and the presence of predominantly clay soils there is considered to be a negligible risk to controlled waters.

The results of the PAH testing undertaken on the tarmacadam have been assessed using a double ration plot of fluoranthene/pyrene vs benzo(a)anthracene/chrysene. A graph reproducing the results is presented in Appendix A and indicates the PAHs in the samples tested to be associated with coal. The concentrations of PAHs recorded are below the relevant screening values and as such present a low risk to end users.

9.0 **ASSESSMENT**

9.1 **General**

**Site Proposals**

The proposals for the site comprise two extensions, one two storey and one single storey, and alterations to the existing buildings, as shown on Drawing No 4052/010 P3, dated February 2013, prepared by pHp Architects and presented in Appendix A. No information regarding loads was available.

**Summary of Ground Conditions**

The near surface ground conditions generally comprised clay soils of the weathered Blisworth Limestone Formation and the weathered Wellingborough Member. These two strata overlay the Rutland Formation also comprising clay soils. Groundwater was not encountered apart from in a foundation inspection pit.

9.2 **Foundation Design**

The Great Oolite Series comprising the clay soils of the Blisworth Limestone, Rutland Formation and the Wellingborough Member of the Rutland Formation are considered suitable founding strata for conventional shallow foundations placed at 0.9m bgl (minimum) in order to place foundations outside the seasonal effects of heave and swelling. An allowable bearing pressure of 150kN/m² (90kN/m run) may be assumed for a 0.6m wide strip foundation placed at this depth. An allowable bearing pressure of 150kN/m² may be assumed for a 1.0m x 1.0m pad foundation placed at a similar depth. Less than 25mm total settlement is anticipated at this pressure.

Foundation calculations have been based on traditional industry standard methods such as those set out in Tomlinson 7th Edition using and undrained shear strength of 110kN/m² with a factor of safety of 3 against bearing capacity failure.
It is recommended that the formation is inspected by an Engineer to ensure the soils are suitable to support the proposed loads.

Within the zones of influence of trees or hedges, minimum foundations depths should initially be based on the depths given within the NHBC standards and assuming medium shrinkability soils. It should be recognised that in some cases, particularly where groups of trees exist, the potential zone of desiccation may be greater than that indicated by the NHBC Standards. Therefore all foundations should be inspected by a suitably qualified engineer to ensure footings are placed beneath any obvious evidence of desiccation or presence of tree roots and thereby place foundations within moisture stable conditions.

9.3 **Floor Slab**

Ground bearing floor slabs may be adopted where there is less than 600mm of Made Ground following proof rolling.

Suspended floor slabs should be adopted where there is in excess of 600mm of Made Ground and in all situations where heave can occur within the area bounded by the foundations. This includes where the foundation depth, derived in accordance with Clause D6 of NHBC Standards Chapter 4.2, is greater than 1.5m, based on the appropriate tree height unless the NHBC are satisfied that the soil is not desiccated or where the surface soils are seasonally desiccated.

9.4 **Excavations**

It should be possible to achieve the required depth for foundation excavations using traditional hydraulic plant. However, a breaker may be necessary to remove old foundations, walls and buried services.

Excavations are expected to be in mainly clay soils which are expected to remain stable for short periods. Vertically sided excavations in clays are liable to sudden collapse particularly where fissuring is present. Trench support or the angle of batter should be designed by an appropriately qualified engineer or competent person to suit the required depth and the ground and groundwater conditions.

Care should be taken when digging excavations to prevent undermining or causing loss of support to foundations of the adjacent buildings.

Groundwater ingress is not anticipated however if encountered may be controlled using sump pumping from the base of the trench.

Excavations should be inspected by a geotechnical engineer to check whether the ground conditions are as expected. Any loose or compressible materials present may need to be excavated and replaced with well compacted granular fill or lean mix concrete prior to placing foundation concrete or service pipes.

Where entry of personnel is necessary, a full risk assessment should be made and shoring or other support provided as necessary. Monitoring of gas levels may be necessary within excavations prior to and during entry where there is a risk of gas ingress or lack of oxygen, in accordance with procedures for working in confined spaces. Gas monitoring carried out suggests that hazardous ground gas conditions are unlikely.
Practical guidance on trench excavation is given in CIRIA Report 97 Trenching Practice. Guidance on groundwater control is given in CIRIA Report 113 Control of groundwater for temporary works. Temporary works should be designed by a suitably qualified engineer or a competent person particularly where personnel access is necessary, in accordance with the requirements of the Construction (Design and Management) (CDM) Regulations.

9.5 Pavement Design

On the basis of the plasticity index test results and with reference to IAN73/06 Revision 1 (2009), following proof rolling and removal of soft spots, a CBR of 4% may be assumed for the clays of the Blisworth Limestone and Wellingborough Member and less than 2.5% in the Made Ground.

The Made Ground should be considered frost susceptible on the basis of the visual description of these materials and as such should not be present within 450mm of surface pavement construction. The underlying reworked Blisworth Limestone and Wellingborough Member are not considered frost susceptible based on the results of the Atterberg limit results.

9.6 Soakaway Design

The results of the falling head tests indicate a permeability of $2.3 \times 10^{-5}$ m/s in BH2 and $2.2 \times 10^{-7}$ m/s in BH3. The variation is likely to be due to the presence of possible limestone bands and sand layers within the clay soils however given the predominance of cohesive soils it is considered unlikely that conventional soakaways will be suitable on this site. Consideration may however be given to carrying out trial pit soakaway tests in the proposed locations of the soakaways to confirm the presence of the low permeability clay soils.

9.7 Buried Concrete

The results of the sulphate tests carried out on two samples of natural ground and one of Made Ground as part of the geotechnical testing have identified:

- Characteristic water soluble sulphate of 0.02g/l
- Characteristic Total Potential Sulphate of 0.03%
- Characteristic pH of 6.9

The results indicate the Design Sulphate Class to be DS-1 and the Aggressive Chemical Environment for Concrete (ACEC) to be AC-1 for the site assuming mobile groundwater conditions as defined by the BRE Special Digest 1, Concrete Aggressive Ground 2005. Further reference should be made to BRE Special Digest 1 for requirements in respect of types of cement and aggregate to be used and variations in type of concrete construction.

9.8 Contamination Aspects

9.8.1 Soil

The results of the soil testing indicates the site presents a low risk to end users. As such no remedial measures are considered necessary.
With regard to the samples for tarmacadam tested, the low concentrations of PAHs suggest that there is not a significant concentration of bitumen present in the tarmacadam.

Any soil required to be imported to site must be certified as being "clean and inert" either by testing at source or by certificates provided by the supplier. This is particularly important should the material form part of any agreed cover system.

9.8.2 **Groundwater**

On the basis of the desk study, the existing site use and the results of the soil testing undertaken, it is considered that the site presents a low risk to controlled waters.

9.8.3 **Soil Gas**

Based on CIRIA C665 ‘Assessing risks posed by hazardous ground gases to buildings’, Table 8.1, the GSV would classify the site to be ‘Characteristic Situation 1: low risk’, where no specific gas protection measures would be considered to be required however basic gas protection measures with regard to radon are required.

It is recommended that the Local Authority is consulted regarding this gas risk assessment for their approval prior to commencing construction.

9.8.4 **Updated Conceptual Model**

The soils on site were found to present a low risk to end users and the risk presented by ground gas was also found to be low. Basic radon protection measures may however be required. On the basis of the results of the ground investigation, the conceptual site model has been updated.

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<th>Source</th>
<th>Pathway</th>
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<tr>
<td>Radon</td>
<td>Inhalation</td>
<td>End users</td>
<td>Basic protection measures</td>
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Within a previously used site it is important to accept that "hot spots" of contamination may exist and care and close vigilance should be part of any site work. Experienced environmental personnel should be available to visit the site and action any unusual material encountered. The information available on this site suggests the risk of any significantly impacted material requiring extensive remediation being found is considered "low".

9.8.5 **Disposal of Soil Arisings off-Site**

Any excavated soil material and excess spoil disposed of off-site should be treated as Waste and classified as Inert, Non-hazardous or Hazardous for off-site disposal.
prior to removal from site as required by the “Duty of Care” (Environmental Protection Act, 1990) legislation together with Annex II of Directive 1999/31/EC (“Landfill Directive”). All waste soils should be sorted to prevent mixtures of waste types. Where possible, any waste soil should be recycled and the volume of soil to be disposed of should be minimised. Initially, Basic Characterisation of the waste is required whereby the material should be described and its source of origin recorded (a site plan, exploratory hole records and the certificates of chemical analysis in this report should be included). This should also include data on its composition and leaching behaviour, its European Waste Catalogue (EWC) code, and where relevant any hazardous properties according to Annex III of Directive 91/689/EEC. This information should be provided to the licensed waste contractor.

The arisings from the natural soils at the site would fall within the Inert category under the EWC description “Soil and Stones”, EWC code 17 05 04 with restrictions excluding topsoil and peat. In this respect consideration may be given to reusing the soils on site. The results of the WAC testing indicate that it meets the inert waste criteria. Waste Acceptance Criteria (WAC) testing is required for all other Inert wastes and Hazardous Waste where relevant. WAC testing is not required for Non-hazardous Waste, however the receiving landfill site should be provided with data demonstrating its properties including results within this report.

9.9 Buried Services

Water supply pipework can be affected by contaminants or aggressive materials within the ground, hence the results of the contamination testing in relation to the possible effects on any supply pipes should be considered. To fully assess the possible effects on these items consultation should be undertaken with the local Water Authority and reference made to the following document:


This site investigation report is not intended to be used as a Site Assessment Report (SAR) as required by the above referenced document. However, the results of the desk study and chemical testing may provide useful information.

The results of the desk study and site investigation suggest that chemicals have not been used or stored on or next to the site and therefore there should be no chemical restriction on pipe material selection.

In respect of other buried services, the following documents may be of use:

- Department of the Environment (DoE) Report 2982(P), Effects of Organic Chemicals in Contaminated Land on Buried Services (DWQ 9025), July 1992

As well as assessing the possible aggressive affects of these contaminants on the various cables the possible ignition of combustible soils due to temperature rises in the cables and indeed the possible ageing affects of high temperatures within the
soils should also be considered. In addition as many of these cables are laid directly in the ground care should be taken that no large, sharp or heavy objects are left in the soil or within the soils used to backfill these trenches.

10.0 HEALTH & SAFETY

As outlined within the HSE publication ‘Successful Health and Safety Management - HSG65’ this report should inform your development of safe systems of work and information as an input into the safety management system.

When developing risk control systems we suggest making reference to the CIRIA report 132 "A guide for safe working on contaminated sites" and the HSE document "Protection of workers and the general public during the development of contaminated land – HSG66". All risk control measures should be in accordance with the guidelines laid down within the Management of Health and Safety at Work Regulations 1999.

The contents of this report may be used to supplement the contents of the Health and Safety File as required under the Construction Design and Management (CDM) Regulations 2007.
11.0 LIMITATIONS AND EXCEPTIONS OF ASSESSMENT

Northamptonshire County Council (the Client) has requested that a Phase I Geoenvironmental Risk Assessment and Phase II ground investigation be performed in order to ensure safe development of the site. The report is not a comprehensive site characterisation and should not be construed as such.

The investigation was conducted and this report has been prepared for the sole internal use and reliance of Northamptonshire County Council. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Applied Geology limited. If any unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

The findings and opinions conveyed via this report are based on information obtained from a variety of sources as detailed within this report, and which Applied Geology Limited believes are reliable. Nevertheless, Applied Geology Limited cannot and does not guarantee the authenticity or reliability of the information it has relied upon.

The report represents the findings and opinions of experienced geoenvironmental consultants. Applied Geology Limited does not provide legal advice and the advice of lawyers may also be required.

The opinions presented in this report are based on findings derived from a site inspection and walkover and offsite surveys, a review of records and historical sources, and comments made by interviewees. Applied Geology Limited has not found indicators that suggest that hazardous substances exist at the site at levels likely to warrant mitigation or consideration appropriate to the end use stated by Northampton City Council. Not finding such indicators does not mean that hazardous substances do not exist at the site.

The most recent site inspection/walkover survey was performed on 27th July 2013. Northamptonshire County Council is advised that the conditions observed by Applied Geology Limited are subject to change. Certain indicators of the presence of hazardous substances may have been latent at the time of the most recent site reconnaissance and may subsequently have become observable.

It is possible that Applied Geology Limited’s researches, while fully appropriate for a Phase I Geoenvironmental Risk Assessment, failed to indicate the existence of important information sources. Assuming such sources actually exist, their information could not have been considered in the formulation of Applied Geology Limited’s findings and opinions.
Similarly, the work carried out for the Phase II investigation carried out on 26th June 2013 can only investigate and monitor a small part of the subsurface conditions. Certain indicators or evidence of hazardous substances may have been, outside the very limited portion of the subsurface investigated or monitored, latent at the time of this work or only partially intercepted by the works and thus their full significance could not have been appreciated. Groundwater levels are particularly susceptible to variation. Accordingly, it is possible that Applied Geology Limited’s work whilst fully appropriate for a Phase II investigation failed to indicate the presence or significance of hazardous substances. Assuming such materials present a hazard, their presence could not have been considered in the formulation of Applied Geology Limited’s findings and opinions. The subsurface geological profiles and other plots are generalised by necessity and have been based on the information found at the locations of the exploratory holes and depths sampled and tested.

Applied Geology Limited believes that providing information about limitations is essential to help Northamptonshire County Council identify and thereby manage its risks. These risks can be mitigated - but they cannot be eliminated, through additional research. Applied Geology Limited will on request advise Northamptonshire County Council of the additional research opportunities available, their impact on risk, and their cost.

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August 2013
GENERAL NOTES

A) The assessment made in this report is based on the site terrain and ground conditions revealed by the various field investigations undertaken and also any other relevant data for the site including previous site investigation reports (if available) and desk study data. There may be special conditions appertaining to the site, however, which have not been revealed by the investigation and which have not, therefore, been taken into account in the report. The assessment may be subject to amendment in the light of additional information becoming available. It must be recognised that many of the Environmental Searches obtained during the course of the desk study are often lengthy. Applied Geology have, where appropriate and in the interests of simplicity, only reproduced the summary of the searches within the report. A full copy of all the search data is held at the Applied Geology office and is available for inspection if required.

B) Where any data supplied by the Client or other external source, including that from previous site investigations, has been used it has been assumed that the information is correct. No responsibility can be accepted by Applied Geology for inaccuracies within this data.

C) Whilst the report may express an opinion on possible configurations of strata between or beyond the exploratory locations, or on the possible presence of features based on either visual, verbal or published evidence this is for guidance only and no liability can be accepted for the accuracy.

D) Comments on groundwater (and landfill gas) conditions are based on observations made during the course of the present and past investigations or with reference to published data unless otherwise stated. It should be noted, however, that groundwater (and landfill gas) levels vary due to seasonal (or atmospheric conditions) or other effects.

E) The copyright of this report and other plans and documents prepared by Applied Geology is owned by Applied Geology and no such report, plan or document may be reproduced, published or adapted without the written consent of Applied Geology. Complete copies of the report may, however, be made and distributed by the Client as an expedient in dealing with matters related to its submission.

F) This report is prepared and written in the context of the proposals stated in the introduction to the report and should not be used in a differing context. Furthermore, new information, improved practices and legislation may necessitate an alteration to the report in whole or in part after its submission. Therefore with any change in circumstances or after the expiry of one year from the date of the report, the report should be referred to Applied Geology for re-assessment and if necessary, re-appraisal.

G) The survey was conducted and this report was prepared for the sole internal use and reliance of the Client. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Applied Geology. If an unauthorised third party comes into possession of this report they rely on it at their peril and Applied Geology owes them no duty of care and skill.

H) Ground conditions should be monitored during the construction of the works and the recommendations of the report re-evaluated in the light of this data by the supervising geotechnical engineers.

I) Unless specifically stated, the investigation has not taken into account the possible effects of mineral extraction.

J) The economic viability of the proposals referred to in the report, or of the solutions put forward to any problems encountered, depends on very many factors in addition to geotechnical considerations and hence its evaluation is outside the scope of this report.

K) Applied Geology operates as a Consultancy and does not operate it’s own laboratory for soil testing, this work being sub contracted to known and respected, generally UKAS accredited, laboratories. Applied Geology can therefore not be held responsible for the testing carried out. In a similar manner Applied Geology does not operate it’s own drilling crews and all drilling work is sub contracted under our control and direction.
# LIST OF REFERENCES COMMONLY USED BY APPLIED GEOLOGY IN REPORTS

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**DISPOSAL OF SOIL**

  - Department of the Environment

**BURIED SERVICES**

- Guidance for the Selection of Water Supply Pipes to be Used in Brownfield Sites. (10/WM/03/21). 2010
  - UK Water Industries Research
- Effects of Organic Chemicals in Contaminated Land on Buried Services (DWQ 9025, Report 2982(P)). 1992
  - Department of the Environment
- The Impact of Contaminated Land on Buried Electrical Cables (CONTAM-2.5AM). 1998
  - ERA Technology

**PAVEMENT DESIGN**

  - Highways Agency

**HEALTH & SAFETY ASPECTS**

  - CIRIA
- Protection of Workers and the General Public During the Development of Contaminated Land (HSG66)
  - Health & Safety Executive
- Construction (Design & Management) Regulations 2006 (CDM)
  - Health & Safety Executive
- Control of Substances Hazardous to Health Regulations 2002
  - Health & Safety Executive
- Workplace Exposure Limits. EH40/2005
  - Health & Safety Executive
- Trenching Practice. Guidance on Groundwater Control (Report 97)
  - CIRIA
- Control of Groundwater for Temporary Works (Report 113)
  - CIRIA

20/02/12
Site Location Plan

Site: Redwell Infants School, Wellingborough
Title: Taken from Ordnance Survey (1:50,000) 152, Northampton and Milton Keynes Area
NGR: SP 881 693  Project No: AG1866-13
GL - 0.40m  
Parking slabs overlying dark orange reddish brown gravelly fine to coarse SAND. Gravelly fine to coarse angular flint (HARDCORE/MADE GROUND).

0.40 - 0.80m  
Firm light creamish-orange-brown slightly silty slightly gravelly CLAY. Gravelly fine angular limestone (GREAT OOLITE SERIES).

End of Trial Pit at 0.80m

GL - 0.05m  
Tarmacadam (MADE GROUND).

0.05 - 0.25m  
Dark red-brown sandy GRAVEL. Gravel is fine to coarse angular flint (MADE GROUND).

0.25 - 0.50m  
Light orange-brown slightly clayey slightly sandy SILT (MADE GROUND / GREAT OOLITE SERIES).

0.50 - 1.10m  
Firm to stiff dark grey CLAY (MADE GROUND / POSSIBLE GREAT OOLITE SERIES).

End of Trial Pit at 1.10m
Undrained Shear Strength vs Depth Plot (hand shear vane)

Undrained shear strength (kN/m²)

Depth (m bgl)

Redwell Infants School, Wellingborough
Standard Penetration Test vs Depth Plot
Fluoranthene/Pyrene ratio vs Benzo[a]anthracene/Chrysene ratio

APPLIED GEOLOGY

AG1866-13
If you have a query regarding any of the maps provided please contact GroundSure’s technical helpline. We will endeavour to answer any queries you may have.

Technical Helpline
Tel:01273 819 700
maps&data@groundsure.com
www.groundsure.com
Information present on these legends is sourced from the same Ordnance Survey mapping as the maps used in this product.

If you have a query regarding any of the maps provided within this map pack, please contact GroundSure’s technical helpline. We will endeavour to answer any queries you may have.

Technical Helpline:
Tel: 01273 819 700
maps&data@groundsure.com
www.groundsure.com
Dear Sir/Madam,

Thank you for placing your order with GroundSure. Please find enclosed the **GroundSure GeoInsight** as requested.

If you would like further assistance regarding this report then please contact the emapsite customer services team on 0118 9736883 quoting the above report reference number.

Yours faithfully,

emapsite customer services team

Enc.
GroundSure GeoInsight
GroundSure
GeoInsight

Address:

Date: Jun 14, 2013

Report Reference: EMS-209024_274776

Your Reference: EMS_209024_274776

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Report Reference: EMS-209024_274776

If you would like any further assistance regarding this report then please contact emapsite on (T) 0118 9736883, (F) 0118 9730002 or email: sales@emapsite.com
Aerial Photograph of Study Site

Site Name:  
Grid Reference: 488073,269276  
Size of Site: 1.18 ha
Overview of Findings

The GroundSure GeoInsight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Shallow Mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and GroundSure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

<table>
<thead>
<tr>
<th>Report Section</th>
<th>Number of records found within (X) m of the study site boundary</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Geology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Artificial Ground,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1.1 Is there any Artificial Ground /Made Ground present beneath the study site?*</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>1.1.2 Are there any records relating to permeability of artificial ground within the study site* boundary?</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>1.2 Superficial Geology &amp; Landslips</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site*?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>1.2.2 Are there any records relating to permeability of superficial geology within the study site* boundary?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>1.2.3 Are there any records of landslip within 500m of the study site boundary?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>1.2.4 Are there any records relating to permeability of landslips within the study site* boundary?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>1.3 Bedrock, Solid Geology &amp; Faults</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>1.3.2 Are there any records relating to permeability of bedrock within the study site* boundary?</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>1.3.3 Are there any records of faults within 500m of the study site boundary?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>1.3.4 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?</td>
<td>The property is in a Radon Affected Area, as between 5 and 10% of properties are above the Action Level.</td>
<td></td>
</tr>
<tr>
<td>1.3.5 Is the property in an area where Radon Protection Measures are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?</td>
<td>Basic radon protective measures are necessary</td>
<td></td>
</tr>
</tbody>
</table>

* This includes an automatically generated 50m buffer zone around the site

Source:Scale 1:50,000 BGS Sheet No:186
2. Ground Workings

<table>
<thead>
<tr>
<th>Feature</th>
<th>on-site</th>
<th>0-50</th>
<th>51-250</th>
<th>251-500</th>
<th>501-1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Historical Surface Ground Working Features from Small Scale Mapping</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2.2 Historical Underground Workings Features from Small Scale Mapping</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.3 Current Ground Workings</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

3. Mining, Extraction & Natural Cavities

<table>
<thead>
<tr>
<th>Feature</th>
<th>on-site</th>
<th>0-50</th>
<th>51-250</th>
<th>251-500</th>
<th>501-1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Historical Mining</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.2 Coal Mining</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.3 Johnson Poole and Bloomer Mining Area</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>3.4 Non-Coal Mining*</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.5 Non–Coal Mining Cavities</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.6 Natural Cavities</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>3.7 Brine Extraction</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.8 Gypsum Extraction</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.9 Tin Mining</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.10 Clay Mining</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>*This includes an automatically generated 50m buffer zone around the site</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Natural Ground Subsidence

<table>
<thead>
<tr>
<th>Feature</th>
<th>on-site*</th>
<th>0-50</th>
<th>51-250</th>
<th>251-500</th>
<th>501-1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 Shrink-Swell Clay</td>
<td>Low</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.2 Landslides</td>
<td>Very Low</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.3 Ground Dissolution of Soluble Rocks</td>
<td>Very Low</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.4 Compressible Deposits</td>
<td>Moderate</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.5 Collapsible Deposits</td>
<td>Very Low</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.6 Running Sand</td>
<td>Very Low</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>* This includes an automatically generated 50m buffer zone around the site</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Borehole Records

<table>
<thead>
<tr>
<th>Feature</th>
<th>on-site</th>
<th>0-50</th>
<th>51-250</th>
<th>251-500</th>
<th>501-1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 BGS Recorded Boreholes</td>
<td>1</td>
<td>1</td>
<td>20</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

6. Estimated Background Soil Chemistry

<table>
<thead>
<tr>
<th>Feature</th>
<th>on-site</th>
<th>0-50</th>
<th>51-250</th>
<th>251-500</th>
<th>501-1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1 Records of Background Soil Chemistry</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
1.1 Artificial Ground Map

Artificial Ground Legend

Site Outline

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

Geological information represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.
1.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:186

1.1.1 Artificial/Made Ground

Are there any records of Artificial/Made Ground within 500m of the study site boundary?  Yes

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance (m)</th>
<th>Direction</th>
<th>LEX Code</th>
<th>Description</th>
<th>Rock Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>31.0</td>
<td>S</td>
<td>WMGR-MGRD</td>
<td>INFILLED GROUND</td>
<td>ARTIFICIAL DEPOSIT</td>
</tr>
<tr>
<td>2</td>
<td>38.0</td>
<td>N</td>
<td>WMGR-MGRD</td>
<td>INFILLED GROUND</td>
<td>ARTIFICIAL DEPOSIT</td>
</tr>
<tr>
<td>3</td>
<td>74.0</td>
<td>E</td>
<td>WMGR-MGRD</td>
<td>INFILLED GROUND</td>
<td>ARTIFICIAL DEPOSIT</td>
</tr>
<tr>
<td>4</td>
<td>82.0</td>
<td>W</td>
<td>WMGR-MGRD</td>
<td>INFILLED GROUND</td>
<td>ARTIFICIAL DEPOSIT</td>
</tr>
<tr>
<td>5</td>
<td>336.0</td>
<td>W</td>
<td>WMGR-MGRD</td>
<td>INFILLED GROUND</td>
<td>ARTIFICIAL DEPOSIT</td>
</tr>
</tbody>
</table>

1.1.2 Permeability of Artificial Ground

Are there any records relating to permeability of artificial ground within the study site* boundary?  Yes

<table>
<thead>
<tr>
<th>Distance (m)</th>
<th>Direction</th>
<th>Flow type</th>
<th>Maximum Permeability</th>
<th>Minimum Permeability</th>
</tr>
</thead>
<tbody>
<tr>
<td>31.0</td>
<td>S</td>
<td>Intergranular</td>
<td>Very High</td>
<td>Very Low</td>
</tr>
<tr>
<td>38.0</td>
<td>N</td>
<td>Intergranular</td>
<td>Very High</td>
<td>Very Low</td>
</tr>
</tbody>
</table>

* This includes an automatically generated 50m buffer zone around the site.

Report Reference: EMS-209024_274776

If you would like any further assistance regarding this report then please contact emapsite on (T) 0118 9736883, (F) 0118 9730002 or email: sales@emapsite.com
1.2 Superficial Deposits and Landslips Map

Geological information represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

Report Reference: EMS-209024_274776

If you would like any further assistance regarding this report then please contact emapsite on (T) 0118 9736883, (F) 0118 9730002 or email: sales@emapsite.com
1.2 Superficial Deposits and Landslips

1.2.1 Superficial Deposits/Drift Geology

Are there any records of Superficial Deposits/Drift Geology within 500m of the study site boundary?  Yes

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance (m)</th>
<th>Direction</th>
<th>Lex Code</th>
<th>Description</th>
<th>Rock Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>315.0</td>
<td>S</td>
<td>TUFA-CATU</td>
<td>TUFA</td>
<td>CALCAREOUS TUFA</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>341.0</td>
<td>W</td>
<td>BOZE-DMTN</td>
<td>BOZEAT TILL</td>
<td>DIAMICTON</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>373.0</td>
<td>W</td>
<td>ODT-DMTN</td>
<td>OADBY MEMBER</td>
<td>DIAMICTON</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>390.0</td>
<td>S</td>
<td>ALV-CLSI</td>
<td>ALLUVIUM</td>
<td>CLAY AND SILT</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>432.0</td>
<td>S</td>
<td>BOZE-DMTN</td>
<td>BOZEAT TILL</td>
<td>DIAMICTON</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>477.0</td>
<td>W</td>
<td>BOZE-DMTN</td>
<td>BOZEAT TILL</td>
<td>DIAMICTON</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>488.0</td>
<td>SE</td>
<td>ODT-DMTN</td>
<td>OADBY MEMBER</td>
<td>DIAMICTON</td>
<td></td>
</tr>
</tbody>
</table>

1.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site* boundary?  No

Database searched and no data found.

1.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary?  No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site* boundary?  No

Database searched and no data found.

*This includes an automatically generated 50m buffer zone around the site.

Report Reference: EMS-209024_274776

If you would like any further assistance regarding this report then please contact emapsite on (T) 0118 9736883, (F) 0118 9730002 or email: sales@emapsite.com
1.3 Bedrock and Faults Map

Bedrock & Faults Deposits Legend


Geological information represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.
1.3 Bedrock, Solid Geology & Faults

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:186

1.3.1 Bedrock/Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary:

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance (m)</th>
<th>Direction</th>
<th>LEX Code</th>
<th>Rock Description</th>
<th>Rock Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>On Site</td>
<td>WBRO-LSMD</td>
<td>Wellingborough Limestone Member - Interbedded Limestone And Mudstone</td>
<td>Bathonian</td>
</tr>
<tr>
<td>2</td>
<td>0.0</td>
<td>On Site</td>
<td>BWL-LMST</td>
<td>Blisworth Limestone Formation - Limestone</td>
<td>Bathonian</td>
</tr>
<tr>
<td>3</td>
<td>0.0</td>
<td>On Site</td>
<td>RLD-MDST</td>
<td>Rutland Formation - Mudstone</td>
<td>Bathonian / Bajocian</td>
</tr>
<tr>
<td>4</td>
<td>38.0</td>
<td>N</td>
<td>STAM-SDSL</td>
<td>Stamford Member - Sandstone And Siltstone, Interbedded</td>
<td>Bathonian / Bajocian</td>
</tr>
<tr>
<td>5</td>
<td>38.0</td>
<td>N</td>
<td>NS-OOLF</td>
<td>Northampton Sand Formation - Ooidal Ironstone</td>
<td>Aalenian</td>
</tr>
<tr>
<td>6A</td>
<td>57.0</td>
<td>N</td>
<td>STAM-SDSL</td>
<td>Stamford Member - Sandstone And Siltstone, Interbedded</td>
<td>Bathonian / Bajocian</td>
</tr>
<tr>
<td>7</td>
<td>162.0</td>
<td>S</td>
<td>STAM-SDSL</td>
<td>Stamford Member - Sandstone And Siltstone, Interbedded</td>
<td>Bathonian / Bajocian</td>
</tr>
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<td>8</td>
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<td>N</td>
<td>WHM-MDST</td>
<td>Whitby Mudstone Formation - Mudstone</td>
<td>Toarcian</td>
</tr>
<tr>
<td>9</td>
<td>498.0</td>
<td>E</td>
<td>NS-OOLF</td>
<td>Northampton Sand Formation - Ooidal Ironstone</td>
<td>Aalenian</td>
</tr>
</tbody>
</table>

1.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site* boundary?  Yes

<table>
<thead>
<tr>
<th>Distance (m)</th>
<th>Direction</th>
<th>Flow type</th>
<th>Maximum Permeability</th>
<th>Minimum Permeability</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>On Site</td>
<td>Fracture</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>0.0</td>
<td>On Site</td>
<td>Fracture</td>
<td>Very High</td>
<td>Very High</td>
</tr>
<tr>
<td>0.0</td>
<td>On Site</td>
<td>Fracture</td>
<td>Low</td>
<td>Very Low</td>
</tr>
<tr>
<td>38.0</td>
<td>N</td>
<td>Fracture</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>38.0</td>
<td>N</td>
<td>Mixed</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

1.3.3 Faults

Are there any records of Faults within 500m of the study site boundary?  No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as Faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.3.4 Radon Affected Areas

* This includes an automatically generated 50m buffer zone around the site.

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Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?

The property is in a Radon Affected Area, as between 5 and 10% of properties are above the Action Level.

1.3.5 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?

Basic radon protective measures are necessary.
2. Ground Workings Map

Ground Workings Legend

2. Ground Workings

2.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on GroundSure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping.

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

The following Historical Surface Ground Working Features are provided by GroundSure:

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance (m)</th>
<th>Direction</th>
<th>NGR</th>
<th>Use</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>248.0</td>
<td>NE</td>
<td>488333,269475</td>
<td>Cuttings</td>
<td>1884</td>
</tr>
</tbody>
</table>

2.2 Historical Underground Workings Features derived from Historical Mapping

This data is derived from the GroundSure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? No

Database searched and no data found.

2.3 Current Ground Workings

This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

The following Current Ground Workings information is provided by British Geological Society:

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance (m)</th>
<th>Direction</th>
<th>NGR</th>
<th>Commodity Produced</th>
<th>Pit Name</th>
<th>Type of working</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not</td>
<td>676.0</td>
<td>W</td>
<td>4873 68,26</td>
<td>Ironstone</td>
<td>Stanwell Spinney</td>
<td>A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site</td>
<td>Ceased</td>
</tr>
<tr>
<td>shown</td>
<td></td>
<td></td>
<td>9519</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not</td>
<td>849.0</td>
<td>SE</td>
<td>4888 50,26</td>
<td>Sand</td>
<td>Wellingborough</td>
<td>A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site</td>
<td>Ceased</td>
</tr>
<tr>
<td>shown</td>
<td></td>
<td></td>
<td>8760</td>
<td>Sand Workings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not shown</td>
<td>945.0</td>
<td>SE 4890 00,26 8825</td>
<td>Sand Wellingborough Sand Workings</td>
<td>A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site</td>
<td>Ceased</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>-------</td>
<td>------------------</td>
<td>----------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>--------</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Report Reference: EMS-209024_274776

If you would like any further assistance regarding this report then please contact emapsite on (T) 0118 9736883, (F) 0118 9730002 or email: sales@emapsite.com
3. Mining, Extraction & Natural Cavities Map
3. Mining, Extraction & Natural Cavities

3.1 Historical Mining

This dataset is derived from GroundSure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? No
Database searched and no data found.

3.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? No
Database searched and no data found.

3.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? No
The following information provided by JPB is not represented on Mapping:
Database searched. No results found.

3.4 Non – Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? No
Database searched and no data found.

3.5 Non – Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled “Review of mining instability in Great Britain, 1990” PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? No

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If you would like any further assistance regarding this report then please contact emapsite on (T) 0118 9736883, (F) 0118 9730002 or email: sales@emapsite.com
3.6 Natural Cavities

This dataset provides information based on Peter Brett Associates natural cavities database.

Are there any Natural Cavities within 1000m of the study site boundary? Yes

The following Natural Cavities information provided by Peter Brett Associates:

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance (m)</th>
<th>Direction</th>
<th>NGR</th>
<th>Superficial Deposits</th>
<th>Bedrock Deposits</th>
<th>Cavity Type and Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>466.0</td>
<td>N</td>
<td>SP</td>
<td>Glacial Till and morainic drift, Made Ground, River terrace deposits</td>
<td>Great Oolite Formation, Northampton Sand Formation, Whitby Mudstone Formation</td>
<td>Gulls/Fissures due to Cambering x 20</td>
</tr>
<tr>
<td>2</td>
<td>474.0</td>
<td>N</td>
<td>SP</td>
<td>Glacial Till and morainic drift, Made Ground, River terrace deposits</td>
<td>Great Oolite Formation, Northampton Sand Formation, Whitby Mudstone Formation</td>
<td>Gulls/Fissures due to Cambering x 20</td>
</tr>
</tbody>
</table>

3.7 Brine Extraction

This dataset provides information from the Brine Compensation Board which has been discontinued and is now covered by the Coal Authority.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

3.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

3.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level. More detailed information on potential Tin Mining may be found in Section 3.4 – Non-Coal Mining Hazards.

Are there any Tin Mining areas within 1000m of the study site boundary? No

Database searched and no data found.
3.10 Clay Mining

This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

Are there any Clay Mining areas within 1000m of the study site boundary?  No

Database searched and no data found.
4. Natural Ground Subsidence

4.1 Shrink-Swell Clay Map
4.2 Landslides Map

Landslides Legend

- Site Outline
- 125
- 250

- No Data / Null
- Low
- Negligible
- Moderate
- Very Low
- High

Report Reference: EMS-209024_274776

If you would like any further assistance regarding this report then please contact emapsite on (T) 0118 9736883, (F) 0118 9730002 or email: sales@emapsite.com
4.3 Ground Dissolution Soluble Rocks Map

Ground Dissolution Soluble Rocks
Legend

- Site Outline
- Search Buffers (m)

- No Data / Null
- Low
- Moderate
- High

4.4 Compressible Deposits Map

Report Reference: EMS-209024_274776

If you would like any further assistance regarding this report then please contact emapsite on (T) 0118 9736883, (F) 0118 9730002 or email: sales@emapsite.com
4.5 Collapsible Deposits Map

Collapsible Deposits Legend

- Site Outline
- No Data / Null
- Negligible
- Low
- Moderate
- Very Low
- High

4.6 Running Sand Map

Running Sand Legend

4. Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

**What is the maximum hazard rating of natural subsidence within the study site boundary?**  Moderate

### 4.1 Shrink – Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance (m)*</th>
<th>Direction</th>
<th>Hazard Rating</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>On Site</td>
<td>Negligible</td>
<td>Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.</td>
</tr>
<tr>
<td>2</td>
<td>0.0</td>
<td>On Site</td>
<td>Negligible</td>
<td>Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.</td>
</tr>
<tr>
<td>3</td>
<td>0.0</td>
<td>On Site</td>
<td>Low</td>
<td>Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.</td>
</tr>
</tbody>
</table>

### 4.2 Landslides

The following Landslides information provided by the British Geological Survey:

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance (m)*</th>
<th>Direction</th>
<th>Hazard Rating</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>On Site</td>
<td>Very Low</td>
<td>Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.</td>
</tr>
</tbody>
</table>

### 4.3 Ground Dissolution of Soluble Rocks

The following Soluble Rocks information provided by the British Geological Survey:

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance (m)*</th>
<th>Direction</th>
<th>Hazard Rating</th>
<th>Details</th>
</tr>
</thead>
</table>

---

*This includes an automatically generated 50m buffer zone around the study site boundary.

**Report Reference:** EMS-209024_274776

If you would like any further assistance regarding this report then please contact emapsite on (T) 0118 9736883, (F) 0118 9730002 or email: sales@emapsite.com
4.4 Compressible Deposits

The following Compressible Ground information provided by the British Geological Survey:

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance (m)</th>
<th>Direction</th>
<th>Hazard Rating</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>On Site</td>
<td>Negligible</td>
<td>No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.</td>
</tr>
<tr>
<td>2</td>
<td>31.0</td>
<td>S</td>
<td>Moderate</td>
<td>Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build - consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property - possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.</td>
</tr>
<tr>
<td>3</td>
<td>38.0</td>
<td>N</td>
<td>Moderate</td>
<td>Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build - consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property - possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.</td>
</tr>
</tbody>
</table>

4.5 Collapsible Deposits

The following Collapsible Rocks information is provided by the British Geological Survey:

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance (m)</th>
<th>Direction</th>
<th>Hazard Rating</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>On Site</td>
<td>Very Low</td>
<td>Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.</td>
</tr>
</tbody>
</table>

4.6 Running Sands

The following Running Sands information is provided by the British Geological Survey:

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance (m)</th>
<th>Direction</th>
<th>Hazard Rating</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>On Site</td>
<td>Negligible</td>
<td>No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.</td>
</tr>
<tr>
<td>2</td>
<td>31.0</td>
<td>S</td>
<td>Very Low</td>
<td>Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.</td>
</tr>
<tr>
<td>3</td>
<td>38.0</td>
<td>N</td>
<td>Very Low</td>
<td>Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.</td>
</tr>
</tbody>
</table>
5. Borehole Records Map

Borehole Records Legend

Site Outline

Search Buffers (m)

5. Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

**Records of boreholes within 250m of the study site boundary:**

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance (m)</th>
<th>Direction</th>
<th>NGR</th>
<th>BGS Reference</th>
<th>Drilled Length (m)</th>
<th>Borehole Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>On Site</td>
<td>488070,26 9240</td>
<td>SP86NE306</td>
<td>7.62</td>
<td>WATERWORKS FARM WELLINGBOROUGH</td>
</tr>
<tr>
<td>2</td>
<td>40.0</td>
<td>NE</td>
<td>488130,26 9370</td>
<td>SP86NE173</td>
<td>5.0</td>
<td>GLENEAGLES DRIVE WELLINGBOROUGH</td>
</tr>
<tr>
<td>3</td>
<td>82.0</td>
<td>NE</td>
<td>488160,26 9400</td>
<td>SP86NE172</td>
<td>5.0</td>
<td>GLENEAGLES DRIVE WELLINGBOROUGH</td>
</tr>
<tr>
<td>4</td>
<td>89.0</td>
<td>N</td>
<td>488090,26 9420</td>
<td>SP86NE179</td>
<td>5.0</td>
<td>GLENEAGLES DRIVE WELLINGBOROUGH</td>
</tr>
<tr>
<td>5</td>
<td>121.0</td>
<td>NE</td>
<td>488170,26 9440</td>
<td>SP86NE171</td>
<td>5.5</td>
<td>GLENEAGLES DRIVE WELLINGBOROUGH</td>
</tr>
<tr>
<td>6</td>
<td>147.0</td>
<td>E</td>
<td>488300,26 9220</td>
<td>SP86NE187</td>
<td>6.0</td>
<td>KILBURN RD BHC</td>
</tr>
<tr>
<td>7</td>
<td>147.0</td>
<td>SE</td>
<td>488280,26 9170</td>
<td>SP86NE192</td>
<td>6.0</td>
<td>KILBURN RD BHH</td>
</tr>
<tr>
<td>8</td>
<td>151.0</td>
<td>N</td>
<td>488070,26 9480</td>
<td>SP86NE178</td>
<td>5.0</td>
<td>GLENEAGLES DRIVE WELLINGBOROUGH</td>
</tr>
<tr>
<td>9</td>
<td>154.0</td>
<td>N</td>
<td>488160,26 9480</td>
<td>SP86NE170</td>
<td>3.25</td>
<td>GLENEAGLES DRIVE WELLINGBOROUGH</td>
</tr>
<tr>
<td>10</td>
<td>181.0</td>
<td>E</td>
<td>488330,26 9300</td>
<td>SP86NE193</td>
<td>5.0</td>
<td>KILBURN RD BHI</td>
</tr>
<tr>
<td>11</td>
<td>184.0</td>
<td>E</td>
<td>488340,26 9250</td>
<td>SP86NE188</td>
<td>6.1</td>
<td>KILBURN RD BHD</td>
</tr>
<tr>
<td>12</td>
<td>187.0</td>
<td>N</td>
<td>488130,26 9520</td>
<td>SP86NE169</td>
<td>5.0</td>
<td>GLENEAGLES DRIVE WELLINGBOROUGH</td>
</tr>
<tr>
<td>13</td>
<td>195.0</td>
<td>SE</td>
<td>488330,26 9160</td>
<td>SP86NE186</td>
<td>6.0</td>
<td>KILBURN RD BHB</td>
</tr>
<tr>
<td>14</td>
<td>199.0</td>
<td>N</td>
<td>488020,26 9520</td>
<td>SP86NE177</td>
<td>10.0</td>
<td>GLENEAGLES DRIVE WELLINGBOROUGH</td>
</tr>
<tr>
<td>15</td>
<td>206.0</td>
<td>N</td>
<td>488100,26 9540</td>
<td>SP86NE168</td>
<td>5.0</td>
<td>GLENEAGLES DRIVE WELLINGBOROUGH</td>
</tr>
<tr>
<td>16</td>
<td>218.0</td>
<td>N</td>
<td>487930,26 9520</td>
<td>SP86NE175</td>
<td>10.0</td>
<td>GLENEAGLES DRIVE WELLINGBOROUGH</td>
</tr>
<tr>
<td>17</td>
<td>222.0</td>
<td>N</td>
<td>488060,26 9550</td>
<td>SP86NE167</td>
<td>5.0</td>
<td>GLENEAGLES DRIVE WELLINGBOROUGH</td>
</tr>
<tr>
<td>18</td>
<td>223.0</td>
<td>SE</td>
<td>488330,26 9110</td>
<td>SP86NE191</td>
<td>3.0</td>
<td>KILBURN RD BHG</td>
</tr>
<tr>
<td>19</td>
<td>229.0</td>
<td>N</td>
<td>488020,26 9550</td>
<td>SP86NE166</td>
<td>5.0</td>
<td>GLENEAGLES DRIVE WELLINGBOROUGH</td>
</tr>
<tr>
<td>20</td>
<td>234.0</td>
<td>N</td>
<td>487980,26 9550</td>
<td>SP86NE165</td>
<td>5.0</td>
<td>GLENEAGLES DRIVE WELLINGBOROUGH</td>
</tr>
<tr>
<td>21</td>
<td>236.0</td>
<td>E</td>
<td>488390,26 9280</td>
<td>SP86NE189</td>
<td>5.0</td>
<td>KILBURN RD BHE</td>
</tr>
<tr>
<td>22</td>
<td>246.0</td>
<td>N</td>
<td>487930,26 9550</td>
<td>SP86NE164</td>
<td>5.0</td>
<td>GLENEAGLES DRIVE WELLINGBOROUGH</td>
</tr>
</tbody>
</table>

Additional online information is available for the following boreholes listed above:

#1: [http://scans.bgs.ac.uk/sobi_scans/boreholes/354600](http://scans.bgs.ac.uk/sobi_scans/boreholes/354600)
#2: [http://scans.bgs.ac.uk/sobi_scans/boreholes/354467](http://scans.bgs.ac.uk/sobi_scans/boreholes/354467)
#3: [http://scans.bgs.ac.uk/sobi_scans/boreholes/354466](http://scans.bgs.ac.uk/sobi_scans/boreholes/354466)
#4: [http://scans.bgs.ac.uk/sobi_scans/boreholes/354473](http://scans.bgs.ac.uk/sobi_scans/boreholes/354473)
#5: [http://scans.bgs.ac.uk/sobi_scans/boreholes/354465](http://scans.bgs.ac.uk/sobi_scans/boreholes/354465)
#6: [http://scans.bgs.ac.uk/sobi_scans/boreholes/354481](http://scans.bgs.ac.uk/sobi_scans/boreholes/354481)
#7: [http://scans.bgs.ac.uk/sobi_scans/boreholes/354486](http://scans.bgs.ac.uk/sobi_scans/boreholes/354486)
#8: [http://scans.bgs.ac.uk/sobi_scans/boreholes/354472](http://scans.bgs.ac.uk/sobi_scans/boreholes/354472)
#9: [http://scans.bgs.ac.uk/sobi_scans/boreholes/354464](http://scans.bgs.ac.uk/sobi_scans/boreholes/354464)
#10: [http://scans.bgs.ac.uk/sobi_scans/boreholes/354487](http://scans.bgs.ac.uk/sobi_scans/boreholes/354487)
#11: [http://scans.bgs.ac.uk/sobi_scans/boreholes/354482](http://scans.bgs.ac.uk/sobi_scans/boreholes/354482)
#12: [http://scans.bgs.ac.uk/sobi_scans/boreholes/354463](http://scans.bgs.ac.uk/sobi_scans/boreholes/354463)
#13: [http://scans.bgs.ac.uk/sobi_scans/boreholes/354480](http://scans.bgs.ac.uk/sobi_scans/boreholes/354480)
#14: [http://scans.bgs.ac.uk/sobi_scans/boreholes/354471](http://scans.bgs.ac.uk/sobi_scans/boreholes/354471)
#15: [http://scans.bgs.ac.uk/sobi_scans/boreholes/354462](http://scans.bgs.ac.uk/sobi_scans/boreholes/354462)

Report Reference: EMS-209024_274776

If you would like any further assistance regarding this report then please contact emapsite on (T) 0118 9736883, (F) 0118 9730002 or email: sales@emapsite.com
6. Estimated Background Soil Chemistry

Records of background estimated soil chemistry within 250m of the study site boundary:

For further information on how this data is calculated and limitations upon its use, please see the GroundSure GeoInsight User Guide, available on request.

<table>
<thead>
<tr>
<th>Distance (m)</th>
<th>Direction</th>
<th>Sample Type</th>
<th>Arsenic (As)</th>
<th>Cadmium (Cd)</th>
<th>Chromium (Cr)</th>
<th>Nickel (Ni)</th>
<th>Lead (Pb)</th>
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<tbody>
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<td>RuralSoil</td>
<td>15 - 25 mg/kg</td>
<td>&lt;1.8 mg/kg</td>
<td>60 - 90 mg/kg</td>
<td>30 - 45 mg/kg</td>
<td>&lt;150 mg/kg</td>
</tr>
<tr>
<td>0.0</td>
<td>On Site</td>
<td>RuralSoil</td>
<td>15 - 25 mg/kg</td>
<td>&lt;1.8 mg/kg</td>
<td>60 - 90 mg/kg</td>
<td>30 - 45 mg/kg</td>
<td>&lt;150 mg/kg</td>
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<td>0.0</td>
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<td>RuralSoil</td>
<td>15 - 25 mg/kg</td>
<td>&lt;1.8 mg/kg</td>
<td>60 - 90 mg/kg</td>
<td>15 - 30 mg/kg</td>
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<td>45 - 60 mg/kg</td>
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</tr>
</tbody>
</table>

*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.
7. Contacts

**EmapSite**
Telephone: 0118 9736883
sales@emapsite.com

**British Geological Survey Enquiries**
Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143. Fax: 0115 936 3276.
Email: enquiries@bgs.ac.uk
Web: www.bgs.ac.uk
BGS Geological Hazards Reports and general geological enquiries

**British Gypsum**
British Gypsum Ltd, East Leake, Loughborough, Leicestershire, LE12 6HX
Tel: www.british-gypsum.com

**The Coal Authority**
200 Lichfield Lane, Mansfield, Notts NG18 4RG
Tel: 0845 762 6848
DX 716176 Mansfield 5 www.coal.gov.uk

**Johnson Poole & Bloomer Limited**
Harris and Pearson Building, Brettel Lane, Brierley Hill, West Midlands DY5 3LH
Tel: +44 (0) 1384 262 000
Email: enquiries.gs@jpb.co.uk
Website: www.jpb.co.uk

**Ordnance Survey**
Romsey Road, Southampton SO16 4GU
Tel: 08456 050505

**Getmapping PLC**
Virginia Villas, High Street, Hartley Witney, Hampshire RG27 8NW
Tel: 01252 845444

**Peter Brett Associates**
Caversham Bridge House, Waterman Place, Reading Berkshire RG1 8DN
Tel: +44 (0)118 950 0761 E-mail: reading@pba.co.uk

Acknowledgements

PointX © Database Right/Copyright, Thomson Directories Limited © Copyright Link Interchange Network Limited © Database Right/Copyright and Ordnance Survey © Crown Copyright and/or Database Right. All Rights Reserved. Licence Number [03421028].

This report has been prepared in accordance with the GroundSure Ltd standard Terms and Conditions of business for work of this nature.
Standard Terms and Conditions

1 Definitions

In these terms and conditions unless the context otherwise requires:

“Beneficiary” means the person or entity for whose benefit the Client has obtained the Services.

“Client” means the party or parties entering into a Contract with GroundSure.

“Commercial” means any building or property which is not Residential.

“Confidential Information” means the contents of this Contract and all information received from the Client as a result of, or in connection with, this Contract other than

(i) information which the Client can prove was rightfully in its possession prior to disclosure by GroundSure and

(ii) any information which is in the public domain (other than by virtue of a breach of this Contract).

“Support Services” means Support Services provided by GroundSure including, without limitation, interpreting third party and in-house environmental data, providing environmental support advice, undertaking environmental audits and assessments, Site investigation, Site monitoring and related items.

“Order” means an electronic, written or other order form received by GroundSure which is not set out and expressly agreed in writing in the Contract and all such statements and representations are hereby excluded to the fullest extent permitted by law.

“Order Website” means the online platform through which Orders are requested GroundSure to provide the Services.

“Contract” means the contract between GroundSure and the Client for the provision of the Services, and which shall incorporate these terms and conditions, the Order, and the relevant User Guide.

“Third Party Data Provider” means any third party providing any third party providing Third Party Content, Data Reports, Mapping, and Risk Screening Reports.

“Intellectual Property” means any patent, copyright, design rights, trade or service mark, moral rights, data protection rights, know-how or trade mark in each case whether registered or not and including applications for the same or any other rights of a similar nature anywhere in the world.

“Mapping” means a map, map data or a combination of historical maps of various ages, time periods and scales.

“Order” means an electronic, written or other order form submitted by the Client requesting Services from GroundSure in respect of a specified Site.

“Ordnance Survey” means the Secretary of State for Business, Innovation and Skills, acting through Ordnance Survey, Adanac Drive, Southampton, SO16 0AS, UK.

“Order Website” means the online platform through which Orders may be placed by the Client and accepted by GroundSure.

“Report” means a Risk Screening Report or Data Report for Commercial or Residential property.

“Residential” means any building or property used as or intended to be used as a single dwelling.

“Risk Screening Report” means a risk screening report comprising factual data with an accompanying interpretation by GroundSure.

“Services” means any Report, Mapping and/or Support Services which GroundSure has agreed to provide by accepting an Order pursuant to clause 2.6.

“Site” means the area of land in respect of which the Client has requested GroundSure to provide the Services.

“Third Party Content” means data, database information or other information which is provided to GroundSure by a Third Party Data Provider.

“User Guide” means the user guide, as amended from time to time, available upon request from GroundSure and on the website (www.groundsure.com) and forming part of this Contract.

2 Scope of Services, terms and conditions, requests for insurance and quotations

2.1 GroundSure agrees to provide the Services in accordance with the Contract.

2.2 GroundSure shall exercise reasonable skill and care in the provision of the Services.

2.3 Subject to clause 7.3 the Client acknowledges that it has not relied on any statement or representation made by or on behalf of GroundSure which is not set out and expressly agreed in writing in the Contract and all such statements and representations are hereby excluded to the fullest extent permitted by law.

2.4 The Client acknowledges that terms and conditions appearing on the Client’s order form, printed stationery or other communication, or any terms or conditions implied by custom, practice or course of dealing shall be of no effect, and that this Contract shall prevail over all others in relation to the Order.

2.5 If the Client or Beneficiary requests insurance in conjunction with or as a result of the Services, GroundSure shall use reasonable endeavours to recommend such insurance, but makes no warranty that such insurance shall be available from insurers or that it will be offered on reasonable terms. Any insurance purchased by the Client or Beneficiary shall be subject solely to the terms of the policy issued by insurers and GroundSure will have no liability therefor. In addition you acknowledge and agree that GroundSure does not act as an agent or broker for any insurance providers. The Client should take (and ensure that the Beneficiary takes) independent advice to ensure that the insurance policy requested or offered is suitable for its requirements.

2.6 GroundSure’s quotations or proposals are valid for a period of 30 days only unless an alternative period of time is explicitly stipulated by GroundSure. GroundSure reserves the right to withdraw any quotation or proposal at any time before an Order is accepted by GroundSure. GroundSure’s acceptance of an Order shall be binding only when made in writing and signed by GroundSure’s authorised representative or when accepted through the Order Website.

3 The Client’s obligations

3.1 The Client shall comply with the terms of this Contract and

(i) procure that the Beneficiary or any third party relying on the Services complies with and acts as if it is bound by the Contract and

(ii) be liable to GroundSure for the acts and omissions of the Beneficiary or any third party relying on the Services as if such acts and omissions were those of the Client.

3.2 The Client shall be solely responsible for ensuring that the Services are appropriate and suitable for its and/or the Beneficiary’s needs.

3.3 The Client shall supply to GroundSure as soon as practicable and without charge all requisite information (and the Client warrants that such information is accurate, complete and appropriate), including without limitation any environmental information relating to the Site and shall give such assistance as GroundSure shall reasonably require in the provision of the Services including, without limitation, access to the Site, facilities and equipment.

3.4 Where the Client’s approval or decision is required to enable GroundSure to carry out work in order to provide the Services, such approval or decision shall be given or procured in reasonable time and so as not to delay or disrupt the performance of the Services.

3.5 Save as expressly permitted by this Contract the Client shall not, and shall procure that the Beneficiary shall not, re-sell, alter, add to, or amend the GroundSure Materials, or use the GroundSure Materials in a manner for which they were not intended. The Client may make the Groundsure Materials available to a third party who is considering acquiring some or all of, or providing funding in relation to, the Site, but such third party cannot rely on the same unless expressly permitted under clause 4.

3.6 The Client is responsible for maintaining the confidentiality of its user name and password if using the Order Website and the Client acknowledges that GroundSure accepts no liability of any kind for any loss or damage suffered by the Client as a consequence of using the Order Website.
4 Reliance

4.1 The Client acknowledges that the Services provided by GroundSure consist of the presentation and analysis of Third Party Content and other content and that information obtained from a Third Party Data Provider cannot be guaranteed or warranted by GroundSure to be reliable.

4.2 In respect of Data Reports, Mapping and Risk Screening Reports, the following classes of person and no other are entitled to rely on their contents;

(i) the Beneficiary,
(ii) the Beneficiary’s professional advisers, (iii) any person providing funding to the Beneficiary in relation to the Site (whether directly or as part of a lending syndicate),
(iv) the first purchaser or first tenant of the Site, and
(v) the professional advisers and lenders of the first purchaser or tenant of the Site.

4.3 In respect of Support Services, only the Client, Beneficiary and parties expressly named in a Report and no other parties are entitled to rely on its contents.

4.4 Save as set out in clauses 4.2 and 4.3 and unless otherwise expressly agreed in writing, no other person or entity of any kind is entitled to rely on any Services or Report issued or provided by GroundSure. Any party considering such Reports and Services does so at their own risk.

5 Fees and Disbursements

5.1 GroundSure shall charge and the Client shall pay fees at the rate and frequency specified in the written proposal, Order Website or Order acknowledgement form, plus (in the case of Support Services) all proper disbursements incurred by GroundSure. The Client shall in addition pay all value added tax or other tax payable on such fees and disbursements in relation to the provision of the Services (together “Fees”).

5.2 The Client shall pay all outstanding Fees to GroundSure in full without deduction, counterclaim or set off within 30 days of the date of GroundSure’s invoice or such other period as may be agreed in writing between GroundSure and the Client (“Payment Date”). Interest on late payments will accrue on a daily basis from the Payment Date until the date of payment (whether before or after judgment) at the rate of 8% per annum.

5.3 The Client shall be deemed to have agreed the amount of any invoice unless an objection is made in writing within 28 days of the date of the invoice. As soon as reasonably practicable after being notified of an objection, without prejudice to clause 5.2 a member of GroundSure’s management team will contact the Client and the parties shall then use all reasonable endeavours to resolve the dispute within 15 days.

6 Intellectual Property and Confidentiality

6.1 Subject to

(i) full payment of all relevant Fees and
(ii) compliance with this Contract, the Client is granted (and is permitted to sub-licence to the Beneficiary) a royalty-free, worldwide, non-assignable and (save to the extent set out in this Contract) non-transferable licence to make use of the GroundSure Materials.

6.2 All Intellectual Property in the GroundSure Materials are and shall remain owned by GroundSure or GroundSure’s licensors (including without limitation the Third Party Data Providers) the Client acknowledges, and shall procure acknowledgement by the Beneficiary of, such ownership. Nothing in this Contract purports to transfer or assign any rights to the Client or the Beneficiary in respect of such Intellectual Property.

6.3 Third Party Data Providers may enforce any breach of clauses 6.1 and 6.2 against the Client or Beneficiary.

6.4 The Client shall, and shall procure that any recipients of the GroundSure Materials shall

(i) not remove, suppress or modify any trade mark, copyright or other proprietary marking belonging to GroundSure or any third party from the Services;
(ii) use the information obtained as part of the Services in respect of the subject Site only, and shall not store or reuse any information obtained as part of the Services provided in respect of adjacent or nearby sites;
(iii) not create any product or report which is derived directly or indirectly from the Services (save that those acting in a professional capacity to the Beneficiary may provide advice based upon the Services);
(iv) not combine the Services with or incorporate such Services into any other information data or service;
(v) not reformat or otherwise change (whether by modification, addition or enhancement), the Services (save that those acting for the Beneficiary in a professional capacity shall not be in breach of this clause 6.4(v) where such reformatting is in the normal course of providing advice based upon the Services);
(vi) where a Report and/or Mapping contains material belonging to Ordnance Survey, acknowledge and agree that such content is protected by Crown Copyright and shall not use such content for any purpose outside of receiving the Services; and
(vii) not copy in whole or in part by any means any map prints or run-on copies containing content belonging to Ordnance Survey (other than that contained within Ordnance Survey’s OS Street Map) without first being in possession of a valid Paper Map Copying Licence from Ordnance Survey.

6.5 Notwithstanding clause 6.4, the Client may make reasonable use of the GroundSure Materials in order to advise the Beneficiary in a professional capacity. However, GroundSure shall have no liability in respect of any advice, opinion or report given or provided to Beneficiaries by the Client.

6.6 The Client shall procure that any person to whom the Services are made available shall notify GroundSure of any request or requirement to disclose, publish or disseminate any information contained in the Services in accordance with the Freedom of Information Act 2000, the Environmental Information Regulations 2004 or any associated legislation or regulations in force from time to time.

7 Liability: Particular Attention Should Be Paid To This Clause

7.1 This Clause 7 sets out the entire liability of GroundSure, including any liability for the acts or omissions of its employees, agents, consultants, subcontractors and Third Party Content, in respect of

(i) any breach of contract, including any deliberate breach of the Contract by GroundSure or its employees, agents or subcontractors;
(ii) any use made of the Reports, Services, Materials or any part of them; and
(iii) any representation, statement or tortious act or omission (including negligence) arising under or in connection with the Contract.

7.2 All warranties, conditions and other terms implied by statute or common law are, to the fullest extent permitted by law, excluded from the Contract.

7.3 Nothing in the Contract limits or excludes the liability of the Supplier for death or personal injury resulting from negligence, or for any damage or liability incurred by the Client or Beneficiary as a result of fraud or fraudulent misrepresentation.

7.4 GroundSure shall not be liable for

(i) loss of profits;
(ii) loss of business;
(iii) depletion of goodwill and/or similar losses;
(iv) loss of anticipated savings;
(v) loss of goods;
(vi) loss of contract;
(vii) loss of use;
(viii) loss of or corruption of data or information;
(ix) business interruption;
(x) any kind of special, indirect, consequential or pure economic loss, costs, damages, charges or expenses;
(xi) loss or damage that arise as a result of the use of all or part of the GroundSure Materials in breach of the Contract;
(xii) loss or damage arising as a result of any error, omission or inaccuracy in any part of the GroundSure Materials where such error, omission or inaccuracy is caused by any Third Party Content or any reasonable interpretation of Third Party Content;
(xiii) loss or damage to a computer, software, modem, telephone or other property; and
(xiv) loss or damage caused by a delay or loss of use of GroundSure’s internet ordering service.

7.5 GroundSure’s total liability in relation to or under the Contract shall be limited to £10 million for any claim or claims.

7.6 GroundSure shall procure that the Beneficiary shall be bound by limitations and exclusions of liability in favour of GroundSure which accord with those detailed in clauses 7.4 and 7.5 (subject to clause 7.7) in respect of all claims which the Beneficiary may bring against GroundSure in relation to the Services or other matters arising pursuant to the Contract.

8 GroundSure’s right to suspend or terminate
8.1 If GroundSure reasonably believes that the Client or Beneficiary has not provided the information or assistance required to enable the proper provision of the Services, GroundSure shall be entitled to suspend all further performance of the Services until such time as any such deficiency has been made good.

8.2 GroundSure shall be entitled to terminate the Contract immediately on written notice in the event that:
(i) the Client fails to pay any sum due to GroundSure within 30 days of the Payment Date; or
(ii) the Client (being an individual) has a bankruptcy order made against him or (being a company) shall enter into liquidation whether compulsory or voluntary or have an administration order made against it or if a receiver shall be appointed over the whole or any part of its property assets or undertaking or if the Client is struck off the Register of Companies or dissolved; or
(iii) the Client being a company is unable to pay its debts within the meaning of Section 123 of the Insolvency Act 1986 or being an individual appears unable to pay his debts within the meaning of Section 268 of the Insolvency Act 1986 or if the Client shall enter into a composition or arrangement with the Client’s creditors or shall suffer distress or execution to be levied on his goods; or
(iv) the Client or the Beneficiary breaches any term of the Contract (including, but not limited to, the obligations in clause 4) which is incapable of remedy or if remediable, is not remedied within five days of notice of the breach.

9. Client’s Right to Terminate and Suspend
9.1 Subject to clause 10.1, the Client may at any time upon written notice terminate or suspend the provision of all or any of the Services.

9.2 In any event, where the Client is a consumer (and not a business) he/she hereby expressly acknowledges and agrees that:
(i) the supply of Services under this Contract (and therefore the performance of this Contract) commences immediately upon GroundSure’s acceptance of the Order; and
(ii) the Reports and/or Mapping provided under this Contract are (a) supplied to the Client’s specification(s) and in any event (b) by their nature cannot be returned.

10 Consequences of Withdrawal, Termination or Suspension
10.1 Upon termination of the Contract:
(i) GroundSure shall take steps to bring to an end the Services in an orderly manner, vacate any Site with all reasonable speed and shall deliver to the Client and/or Beneficiary any property of the Client and/or Beneficiary in GroundSure’s possession or control; and
(ii) the Client shall pay to GroundSure all and any Fees payable in respect of the performance of the Services up to the date of termination or suspension. In respect of any Support Services provided, the Client shall also pay GroundSure any additional costs incurred in relation to the termination or suspension of the Contract. 11 Anti-Bribery
11.1 The Client warrants that it shall:
(i) comply with all applicable laws, statutes and regulations relating to anti-bribery and anti-corruption including but not limited to the Bribery Act 2010;
(ii) comply with such of GroundSure’s anti-bribery and anti-corruption policies as are notified to the Client from time to time; and
(iii) promptly report to GroundSure any request or demand for any undue financial or other advantage of any kind received by or on behalf of the Client in connection with the performance of this Contract.
11.2 Breach of this Clause 11 shall be deemed a material breach of this Contract.

12 General
12.1 The Mapping contained in the Services is protected by Crown copyright and must not be used for any purpose other than as part of the Services or as specifically provided in the Contract.
12.2 The Client shall be permitted to make one copy only of each Report or Mapping Order. Thereafter the Client shall be entitled to make unlimited copies of the Report or Mapping Order only in accordance with an Ordnance Survey paper map copy license available through GroundSure.
12.3 GroundSure reserves the right to amend or vary this Contract. No amendment or variation to this Contract shall be valid unless signed by an authorised representative of GroundSure.

12.4 No waiver on the part of GroundSure to exercise, and no delay in exercising, any right, power or provision under this Contract shall operate as a waiver thereof.

12.5 Save as expressly provided in this Contract, no person other than the persons set out therein shall have any right under the Contract (Rights of Third Parties) Act 1999 to enforce any terms of the Contract.

12.6 The Secretary of State for Business, Innovation and Skills (“BIS”) or BIS’ successor body, as the case may be, acting through Ordnance Survey may enforce a breach of clause 6.4(vi) and clause 6.4(vii) of these terms and conditions against the Client in accordance with the provisions of the Contracts (Rights of Third Parties) Act 1999.

12.7 GroundSure shall not be liable to the Client if the provision of the Services is delayed or prevented by one or more of the following circumstances:
(i) the Client or Beneficiary’s failure to provide facilities, access or information;
(ii) fire, storm, flood, tempest or epidemic;
(iii) Acts of God or the public enemy;
(iv) riot, civil commotion or war;
(v) strikes, labour disputes or industrial action;
(vi) acts or regulations of any governmental or other agency;
(vii) suspension or delay of services at public registries by Third Party Data Providers;
(viii) changes in law; or
(ix) any other reason beyond GroundSure’s reasonable control.

12.8 Any notice provided shall be in writing and shall be deemed to be properly given if delivered by hand or sent by first class post, facsimile or by email to the address, facsimile number or email address of the relevant party as may have been notified by each party to the other for such purpose or in the absence of such notification the last known address.

12.9 Such notice shall be deemed to have been received on the day of delivery if delivered by hand, facsimile or email (save to the extent such day is not a working day where it shall be deemed to have been delivered on the next working day) and on the second working day after the day of posting if sent by first class post.

12.10 The Contract constitutes the entire agreement between the parties and shall supersede all previous arrangements between the parties relating to the subject matter hereof.

12.11 Each of the provisions of the Contract is severable and distinct from the others and if one or more provisions is or should become invalid, illegal or unenforceable, the validity and enforceability of the remaining provisions shall not in any way be tainted or impaired.

12.12 This Contract shall be governed by and construed in accordance with English law and any proceedings arising out of or connected with this Contract shall be subject to the exclusive jurisdiction of the English courts.

12.13 GroundSure is an executive member of the Council of Property Search Organisation (CoPSO) and has signed up to the Search Code administered by the Property Codes Compliance Board (PCCB). All Risk Screening Reports shall be supplied in accordance with the provisions of the Search Code.

12.14 If the Client or Beneficiary has a complaint about the Services, written notice should be given to the Compliance Officer at GroundSure who will respond in a timely manner.

12.15 The Client agrees that it shall, and shall procure that each Beneficiary shall, treat in confidence all Confidential Information to the extent required by law.

© GroundSure Limited June 2013
Dear Sir/Madam,

Thank you for placing your order with emapsite. Please find enclosed the GroundSure EnviroInsight as requested.

If you would like further assistance regarding this report then please contact the emapsite customer services team on 0118 9736883 quoting the above report reference number.

Yours faithfully,

emapsite customer services team

Enc.
GroundSure EnviroInsight
Site Name:
Grid Reference: 488073,269276
Size of Site: 1.18 ha
Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

<table>
<thead>
<tr>
<th>Report Section</th>
<th>Number of records found within (X) m of the study site boundary</th>
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<tbody>
<tr>
<td><strong>1. Environmental Permits, Incidents and Registers</strong></td>
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<tr>
<td>1.1 Industrial Sites Holding Environmental Permits and/or Authorisations</td>
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<tr>
<td>Records of historic IPC Authorisations</td>
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<tr>
<td>Records of Part A(1) and IPPC Authorised Activities</td>
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<td>Records of Water Industry Referrals (potentially harmful discharges to the public sewer)</td>
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<tr>
<td>Records of Red List Discharge Consents (potentially harmful discharges to controlled waters)</td>
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<td>Records of List 1 Dangerous Substances Inventory sites</td>
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<td>Records of Category 3 or 4 Radioactive Substances Authorisations</td>
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<td>Records of Licensed Discharge Consents</td>
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<td>Records of Planning Hazardous Substance Consents and Enforcements</td>
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<td>1.2 Records of COMAH and NIHHS sites</td>
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<td>1.3 Environment Agency Recorded Pollution Incidents</td>
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<td>National Incidents Recording System, List 2</td>
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<td>National Incidents Recording System, List 1</td>
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<td>1.4 Sites Determined as Contaminated Land under Part IIA EPA 1990</td>
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<td><strong>2. Landfill and Other Waste Sites</strong></td>
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<td>2.1 Landfill Sites</td>
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<td>Environment Agency Registered Landfill Sites</td>
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<td>Landfill Data – Operational Landfill Sites</td>
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<td>Environment Agency Historic Landfill Sites</td>
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<td>Landfill Data – Non-Operational Landfill Sites</td>
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<td>2.2 Landfill and Other Waste Sites Findings</td>
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<td>Operational Waste Treatment, Transfer and Disposal Sites</td>
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<td>Non-Operational Waste Treatment, Transfer and Disposal Sites</td>
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<td>Environment Agency Licensed Waste Sites</td>
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Report Reference: EMS-209024_274777

If you would like any further assistance regarding this report then please contact emapsite on (T) 0118 9736883, (F) 0118 9730002 or email: sales@emapsite.com
3. Current Land Uses

<table>
<thead>
<tr>
<th>On-site</th>
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</tr>
<tr>
<td>3.3 Underground High Pressure Oil and Gas Pipelines</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

4. Geology

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?</td>
</tr>
<tr>
<td>4.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?</td>
</tr>
<tr>
<td>4.3 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>On-site</th>
<th>0-50</th>
<th>51-250</th>
<th>251-500</th>
<th>501-1000</th>
<th>1001-2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Hydrogeology and Hydrology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1 Are there any records of Productive Strata in the Superficial Geology within 500m of the study site?</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2 Are there any records of Productive Strata in the Bedrock Geology within 500m of the study site?</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.3 Groundwater Abstraction Licences (within 2000m of the study site).</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.4 Surface Water Abstraction Licences (within 2000m of the study site).</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.5 Potable Water Abstraction Licences (within 2000m of the study site).</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.6 Are there any Source Protection Zones within 500m of the study site?</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.7 River Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there any Environment Agency information on river quality within 1500m of the study site?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>5.8 Detailed River Network entries within 500m of the site</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>17</td>
<td>-</td>
</tr>
<tr>
<td>5.9 Surface water features within 250m of the study site</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

6. Flooding

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1 Are there any Environment Agency indicative Zone 2 floodplains within 250m of the study site?</td>
</tr>
<tr>
<td>6.2 Are there any Environment Agency indicative Zone 3 floodplains within 250m of the study site?</td>
</tr>
<tr>
<td>6.3 Are there any Flood Defences within 250m of the study site?</td>
</tr>
<tr>
<td>6.4 Are there any areas benefiting from Flood Defences within 250m of the study site?</td>
</tr>
<tr>
<td>6.5 Are there any areas used for Flood Storage within 250m of the study site?</td>
</tr>
<tr>
<td>6.6 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?</td>
</tr>
<tr>
<td>6.7 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?</td>
</tr>
</tbody>
</table>

7. Designated Environmentally Sensitive Sites

<table>
<thead>
<tr>
<th>On-site</th>
<th>0-50</th>
<th>51-250</th>
<th>251-500</th>
<th>501-1000</th>
<th>1001-2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1 Records of Sites of Special Scientific Interest (SSSI)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7.2 Records of National Nature Reserves (NNR)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Report Reference: EMS-209024_274777

If you would like any further assistance regarding this report then please contact emapsite on (T) 0118 9736883, (F) 0118 9730002 or email: sales@emapsite.com
7.1 Records of Sites of Special Scientific Interest (SSSI) 0 0 0 0 0 0
7.3 Records of Local Nature Reserves (LNR) 0 0 0 1 0 0
7.4 Records of Special Areas of Conservation (SAC) 0 0 0 0 0 0
7.5 Records of Special Protection Areas (SPA) 0 0 0 0 0 0
7.6 Records of Ramsar sites 0 0 0 0 0 0
7.7 Records of World Heritage Sites 0 0 0 0 0 0
7.8 Records of Environmentally Sensitive Areas 0 0 0 0 0 0
7.9 Records of Areas of Outstanding Natural Beauty (AONB) 0 0 0 0 0 0
7.10 Records of National Parks 0 0 0 0 0 0
7.11 Records of Nitrate Sensitive Areas 0 0 0 0 0 0
7.12 Records of Nitrate Vulnerable Zones 1 0 0 0 1 2
7.13 Records of Ancient Woodlands 0 0 0 0 0 0

8. Natural Hazards

8.1 What is the maximum risk of natural ground subsidence? Moderate

9. Mining

9.1 Are there any coal mining areas within 75m of the study site? No
9.2 What is the risk of subsidence relating to shallow mining within 150m of the study site? Negligible
9.3 Are there any brine affected areas within 75m of the study site? No
Using this Report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between GroundSure and the Client. The document contains the following sections:

1. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

2. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

3. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure underground oil and gas pipelines.

4. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

5. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

6. Flooding

Provides information on surface water flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

7. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

8. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence.

9. Mining

Provides information on areas of coal and shallow mining.

Report Reference: EMS-209024_274777

If you would like any further assistance regarding this report then please contact emapsite on (T) 0118 9736883, (F) 0118 9730002 or email: sales@emapsite.com
10. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, GroundSure provide a free Technical Helpline (08444 159000) for further information and guidance.

Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier “A” on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as “Not Shown”.

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.
1. Environmental Permits, Incidents and Registers Map

Authorisations, Incidents and Registers Legend

- Site Outline
- Recorded Pollution Incident
- Dangerous Substances (List 1)
- Dangerous Substances (List 2)
- Water Industry Referrals
- Licenced Discharge Consents
- Red List Discharge Consents


Report Reference: EMS-209024_274777
1. Environmental Permits, Incidents and Registers

1.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency and Local Authorities reveal the following information:

- **Records of historic IPC Authorisations within 500m of the study site:** 0
  Database searched and no data found.

- **Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:** 0
  Database searched and no data found.

- **Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:** 0
  Database searched and no data found.

- **Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:** 0
  Database searched and no data found.

- **Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:** 0
  Database searched and no data found.

- **Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:** 0
  Database searched and no data found.

- **Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:** 0
  Database searched and no data found.

- **Records of Category 3 or 4 Radioactive Substance Licences within 500m of the study site:** 0
  Database searched and no data found.

- **Records of Licensed Discharge Consents within 500m of the study site:** 3

**Report Reference: EMS-209024_274777**
The following Licensed Discharge Consents records are represented as points on the Authorisations, Incidents and Registers map:

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance</th>
<th>Direction</th>
<th>NGR</th>
<th>Details</th>
</tr>
</thead>
</table>
| 1  | 423.0    | E         | 488570, 269160 | Address: Kilbron Road, Kilborn Close, Wellingborough, NN8 5YA  
Effluent Type: Miscellaneous Discharges - Surface Water  
Permit Number: AW5NF568  
Permit Version: 1  
Receiving Water: Trib Harrowden Brook  
Status: Pre Nra Legislation Where Issue Date < 01-sep-89 (historic Only)  
Issue Date: -  
Effective Date: -  
Revocation Date: 26/6/1991 |
| 2  | 447.0    | E         | 488600, 269300 | Address: Thomas Harrison Farm, Harrowden Road, Wellingborough  
Effluent Type: Unspecified  
Permit Number: PR5NF2257  
Permit Version: 1  
Receiving Water: -  
Status: Pre Nra Legislation Where Issue Date < 01-sep-89 (historic Only)  
Issue date: 28/5/1963  
Effective Date: 28/5/1963  
Revocation Date: 10/6/1991 |
| 3  | 489.0    | SE        | 488390, 268820 | Address: Hardwick Road Housing Est., Hardwick Road, Wellingborough, NN8  
Effluent Type: Miscellaneous Discharges - Surface Water  
Permit Number: AW5NF496  
Permit Version: 1  
Receiving Water: Trib Harrowden Brook  
Status: Pre Nra Legislation Where Issue Date < 01-sep-89 (historic Only)  
Issue date: 19/9/1969  
Effective Date: 19/9/1969  
Revocation Date: 26/6/1991 |

Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site: 0  
Database searched and no data found.

1.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 0  
Database searched and no data found.

1.3 Environment Agency Recorded Pollution Incidents

Records of National Incidents Recording System, List 2 within 250m of the study site: 0  
Database searched and no data found.

Records of National Incidents Recording System, List 1 within 250m of the study site: 0  
Database searched and no data found.

1.4 Sites Determined as Contaminated Land under Part IIA EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site? 0  
Database searched and no data found.

Report Reference: EMS-209024_274777
2. Landfill and Other Waste Sites Map

Landfill & Other Waste Sites Legend

Report Reference: EMS-209024_274777
2. Landfill and Other Waste Sites

2.1 Landfill Sites

Records from Environment Agency landfill data within 1000m of the study site: 0
Database searched and no data found.

Records of operational landfill sites sourced from Landmark within 1000m of the study site: 0
Database searched and no data found.

Records of Environment Agency historic landfill sites within 1500m of the study site: 0
Database searched and no data found.

Records of non-operational landfill sites sourced from Landmark within 1000m of the study site: 0
Database searched and no data found.

Records of BGS/DoE non-operational landfill sites within 1500m of the study site: 0
Database searched and no data found.

Records of Local Authority landfill sites within 1500m of the study site: 1
The following landfill records are represented as points or polygons on the Landfill and Other Waste Sites map:

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance</th>
<th>Direction</th>
<th>Site Address</th>
<th>Source</th>
<th>Data Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>472.0</td>
<td>W</td>
<td>Disused Refuse Tip</td>
<td>1969 mapping</td>
<td>Polygon</td>
</tr>
</tbody>
</table>

2.2 Other Waste Sites

Records of operational waste treatment, transfer or disposal sites within 500m of the study site: 0
Database searched and no data found.

Records of non-operational waste treatment, transfer or disposal sites within 500m of the study site: 0
Database searched and no data found.

Records of Environment Agency licensed waste sites within 1500m of the study site: 0
Database searched and no data found.

Report Reference: EMS-209024_274777
3. Current Land Use Map
3. Current Land Uses

3.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 6

The following records are represented as points on the Current Land Uses map.

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance</th>
<th>Direction</th>
<th>Company</th>
<th>Address</th>
<th>Activity</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>48.0</td>
<td>N</td>
<td>Auto Tech</td>
<td>59, Ashby Close, Wellingborough, NN8 5FH</td>
<td>Vehicle Repair, Testing and Servicing</td>
<td>Repair and Servicing</td>
</tr>
<tr>
<td>2</td>
<td>134.0</td>
<td>W</td>
<td>Electricity Sub Station</td>
<td>NN8</td>
<td>Electrical Features</td>
<td>Infrastructure and Facilities</td>
</tr>
<tr>
<td>3</td>
<td>142.0</td>
<td>N</td>
<td>Vacserve Engineering</td>
<td>41, Ashby Close, Wellingborough, NN8 5FH</td>
<td>Industrial Repairs and Servicing</td>
<td>Repair and Servicing</td>
</tr>
<tr>
<td>4</td>
<td>157.0</td>
<td>N</td>
<td>Thepc-guy</td>
<td>33, Ashby Close, Wellingborough, NN8 5FH</td>
<td>Electrical Equipment Repair and Servicing</td>
<td>Repair and Servicing</td>
</tr>
<tr>
<td>5</td>
<td>217.0</td>
<td>SE</td>
<td>Electricity Sub Station</td>
<td>NN8</td>
<td>Electrical Features</td>
<td>Infrastructure and Facilities</td>
</tr>
<tr>
<td>6</td>
<td>241.0</td>
<td>NW</td>
<td>Electricity Sub Station</td>
<td>NN8</td>
<td>Electrical Features</td>
<td>Infrastructure and Facilities</td>
</tr>
</tbody>
</table>

3.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 0

Database searched and no data found.

3.3 Underground High Pressure Oil and Gas Pipelines

Records of high pressure underground pipelines within 500m of the study site: 0

Database searched and no data found.

Report Reference: EMS-209024_274777
4. Geology

4.1 Artificial Ground and Made Ground

The database has been searched on site, including a 50m buffer.

<table>
<thead>
<tr>
<th>LEX Code</th>
<th>Description</th>
<th>Rock Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>WMGR-MGRD</td>
<td>INFILLED GROUND</td>
<td>ARTIFICIAL DEPOSIT</td>
</tr>
<tr>
<td>WMGR-MGRD</td>
<td>INFILLED GROUND</td>
<td>ARTIFICIAL DEPOSIT</td>
</tr>
</tbody>
</table>

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

4.2 Superficial Ground and Drift Geology

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

4.3 Bedrock and Solid Geology

The database has been searched on site, including a 50m buffer.

<table>
<thead>
<tr>
<th>LEX Code</th>
<th>Description</th>
<th>Rock Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>RLD-MDST</td>
<td>RUTLAND FORMATION</td>
<td>MUDSTONE</td>
</tr>
<tr>
<td>BWL-LMST</td>
<td>BLISWORTH LIMESTONE FORMATION LIMESTONE</td>
<td></td>
</tr>
<tr>
<td>WBRO-LSMD</td>
<td>WELLINGBOROUGH LIMESTONE MEMBER</td>
<td>INTERBEDDED LIMESTONE AND MUDSTONE</td>
</tr>
<tr>
<td>STAM-SDSL</td>
<td>STAMFORD MEMBER</td>
<td>SANDSTONE AND SILTSTONE, INTERBEDDED</td>
</tr>
<tr>
<td>NS-OOLF</td>
<td>NORTHAMPTON SAND FORMATION</td>
<td>OOIDAL IRONSTONE</td>
</tr>
</tbody>
</table>

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

For more detailed geological and ground stability data please refer to the "GroundSure GeoInsight". Available from our website.

Report Reference: EMS-209024_274777
5a. Hydrogeology - Aquifer Within Superficial Geology

Aquifer Within Superficial Geology Legend

- Site Outline
- Principal Aquifer
- Secondary (A) Aquifer - Permeable Layers
- Secondary (B) Aquifer - Lower Permeability Layers
- Secondary Aquifer - Undifferentiated Layers
- Unproductive
- Unknown (lakes and landslip)

Report Reference: EMS-209024_274777
5b. Hydrogeology - Aquifer Within Bedrock
Geology and Abstraction Licenses

Aquifer Within Bedrock Geology Legend

- Principal Aquifer
- Secondary (A) Aquifer - Permeable Layers
- Secondary (B) Aquifer - Lower Permeability Layers
- Unproductive
- Unknown (tanks and landslip)
- Groundwater Abstraction Licence
- Surface Water Abstraction Licence

Report Reference: EMS-209024_274777
5c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses

SPZ and Potable Water Abstraction Licenses

Legend

- Site Outline
- Source Protection Zone 1 - Inner Catchment
- Source Protection Zone 2 - Outer Catchment
- Source Protection Zone 3 - Total Catchment
- Source Protection Zone 4 - Zone of Special Interest
- Potable Water Abstraction Licence

Report Reference: EMS-209024_274777
5d. Hydrology – Detailed River Network and River Quality

Hydrology Legend

- **Site Outline**
- **Primary River**
- **Secondary River**
- **Tertiary River**
- **Lake/Reservoir**
- **Underground River (inferred)**
- **Search Buffers (m)**
- **General Quality Assessment: Chemistry**
- **Canal**
- **Canal Tunnel**
- **Extended Culvert (greater than 50m)**
- **D/I of High Water Mark**
- **D/I seaward extension**
- **General Quality Assessment: Biology**

Report Reference: EMS-209024_274777
5. Hydrogeology and Hydrology

5.1 Aquifer within Superficial Deposits

Are there records of productive strata within the superficial geology at or in proximity to the property?  Yes

From 1 April 2010, the Environment Agency’s Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the GroundSure EnviroInsight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (5a):

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance [m]</th>
<th>Direction</th>
<th>Designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>315.0</td>
<td>S</td>
<td>Secondary A</td>
<td>Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers</td>
</tr>
<tr>
<td>4</td>
<td>341.0</td>
<td>W</td>
<td>Unproductive</td>
<td>These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow</td>
</tr>
<tr>
<td>5</td>
<td>488.0</td>
<td>SE</td>
<td>Unproductive</td>
<td>These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow</td>
</tr>
</tbody>
</table>

5.2 Aquifer within Bedrock Deposits

Are there records of productive strata within the bedrock geology at or in proximity to the property?  Yes

From 1 April 2010, the Environment Agency’s Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the GroundSure EnviroInsight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (5b):

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance [m]</th>
<th>Direction</th>
<th>Designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>On Site</td>
<td>Principal</td>
<td>Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers</td>
</tr>
<tr>
<td>4</td>
<td>0.0</td>
<td>On Site</td>
<td>Secondary A</td>
<td>Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers</td>
</tr>
<tr>
<td>6</td>
<td>0.0</td>
<td>On Site</td>
<td>Secondary B</td>
<td>Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers</td>
</tr>
<tr>
<td>9</td>
<td>167.0</td>
<td>N</td>
<td>Unproductive</td>
<td>These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow</td>
</tr>
</tbody>
</table>

5.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site?  No

Database searched and no data found.

Report Reference: EMS-209024_274777
5.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site? No

Database searched and no data found.

5.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site? No

Database searched and no data found.

5.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site? No

Database searched and no data found.

5.7 River Quality

Is there any Environment Agency information on river quality within 1500m of the study site? No

Biological Quality:

Database searched and no data found.

Chemical Quality:

Database searched and no data found.

5.8 Detailed River Network

Are there any Detailed River Network entries within 500m of the study site? Yes

The following Detailed River Network records are represented on the Hydrology Map (5d):

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance</th>
<th>Direction</th>
<th>River Name: -</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>407.0</td>
<td>SE</td>
<td>Water Course Name: -</td>
<td>River Type: Secondary River</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Welsh River Name: -</td>
<td>Catchment: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Alternative Name: -</td>
<td>Drain: NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Main River Status: Currently Undefined</td>
</tr>
</tbody>
</table>

Report Reference: EMS-209024_274777
5.9 Surface Water Features

Are there any surface water features within 250m of the study site? No

Database searched and no data found.

This information is taken from Ordnance Survey OpenData™, Contains Ordnance Survey data © Crown copyright and database right 2013.

Report Reference: EMS-209024_274777
6. Environment Agency Flood Map

Environment Agency Flood Legend


Report Reference: EMS-209024_274777
6. Flooding

6.1 Zone 2 Flooding
Zone 2 floodplain estimates the annual probability of flooding as one in one thousand (0.1%) or greater from rivers and the sea but less than 1% from rivers or 0.5% from the sea. Alternatively, where information is available they may show the highest known flood level.

Is the site within 250m of an Environment Agency indicative Zone 2 floodplain? No
Database searched and no data found.

6.2 Zone 3 Flooding
Zone 3 estimates the annual probability of flooding as one in one hundred (1%) or greater from rivers and a one in two hundred (0.5%) or greater from the sea. Alternatively, where information is available they may show the highest known flood level.

Is the site within 250m of an Environment Agency indicative Zone 3 floodplain? No
Database searched and no data found.

6.3 Flood Defences
Are there any Flood Defences within 250m of the study site? No

6.4 Areas benefiting from Flood Defences
Are there any areas benefiting from Flood Defences within 250m of the study site? No

6.5 Areas used for Flood Storage
Are there any areas used for Flood Storage within 250m of the study site? No

6.6 Groundwater Flooding Susceptibility Areas
Are there any British Geological Survey groundwater flooding susceptibility flood areas within 50m of the boundary of the study site? Yes

What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions? Moderate

Report Reference: EMS-209024_274777
6.7 Groundwater Flooding Confidence Areas

What is the British Geological Survey confidence rating in this result? High

Notes:

Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.
7. Designated Environmentally Sensitive Sites Map

Designated Environmentally Sensitive Sites Legend

- SAC
- SSSI
- NNR
- World Heritage Sites
- SPA
- Ramsar
- LNR
- Environmentally Sensitive Areas
- Areas of Outstanding Natural Beauty
- Nitrate Vulnerable Zones
- Nitrate Sensitive Areas
- National Parks
- Ancient Woodlands


Report Reference: EMS-209024_274777
7. Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site? Yes

Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site: 0
Database searched and no data found.

Records of National Nature Reserves (NNR) within 2000m of the study site: 0
Database searched and no data found.

Records of Special Areas of Conservation (SAC) within 2000m of the study site: 0
Database searched and no data found.

Records of Special Protection Areas (SPA) within 2000m of the study site: 0
Database searched and no data found.

Records of Ramsar sites within 2000m of the study site: 0
Database searched and no data found.

Records of Local Nature Reserves (LNR) within 2000m of the study site: 1
The following Local Nature Reserve (LNR) records provided by Natural England/Countryside Council for Wales and Scottish Natural Heritage are represented as polygons on the Designated Environmentally Sensitive Sites Map:

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance</th>
<th>Direction</th>
<th>LNR Name</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>433.0</td>
<td>SE</td>
<td>Glamis Meadow and Wood</td>
<td>Natural England</td>
</tr>
</tbody>
</table>

Records of World Heritage Sites within 2000m of the study site: 0
Database searched and no data found.

Records of Environmentally Sensitive Areas within 2000m of the study site: 0
Database searched and no data found.

Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site: 0
Database searched and no data found.

Report Reference: EMS-209024_274777
Records of National Parks (NP) within 2000m of the study site: 0
Records searched and no data found.

Records of Nitrate Sensitive Areas within 2000m of the study site: 0
Records searched and no data found.

Records of Nitrate Vulnerable Zones within 2000m of the study site: 4

The following Nitrate Vulnerable Zone records produced by DEFRA are represented as polygons on the Designated Environmentally Sensitive Sites Map:

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance</th>
<th>Direction</th>
<th>NVZ Type</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>666.0</td>
<td>N</td>
<td>NVZ Area</td>
<td>DEFRA</td>
</tr>
<tr>
<td>Not shown</td>
<td>1844.0</td>
<td>E</td>
<td>NVZ Area</td>
<td>DEFRA</td>
</tr>
<tr>
<td>Not shown</td>
<td>1991.0</td>
<td>E</td>
<td>NVZ Area</td>
<td>DEFRA</td>
</tr>
</tbody>
</table>

Records of Ancient Woodland within 2000m of the study site: 0
Records searched and no data found.

Report Reference: EMS-209024_274777
8. Natural Hazards Findings

8.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a GroundSure GeoInsight, available from our website. The following information has been found:

8.1.1 Shrink Swell

*What is the maximum Shrink-Swell hazard rating identified on the study site?*  
**Low**

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

<table>
<thead>
<tr>
<th>Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.</td>
</tr>
</tbody>
</table>

8.1.2 Landslides

*What is the maximum Landslide hazard rating identified on the study site?*  
**Very Low**

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

<table>
<thead>
<tr>
<th>Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.</td>
</tr>
</tbody>
</table>

8.1.3 Soluble Rocks

*What is the maximum Soluble Rocks hazard rating identified on the study site?*  
**Very Low**

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

<table>
<thead>
<tr>
<th>Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant soluble rocks are present. Problems unlikely except with considerable surface or subsurface water flow. No special actions required to avoid problems due to soluble rocks. No special ground investigation required or increased construction costs are likely. An increase in financial risk due to potential problems with soluble rocks is unlikely.</td>
</tr>
</tbody>
</table>

8.1.4 Compressible Ground

*What is the maximum Compressible Ground hazard rating identified on the study site?*  
**Moderate**

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

<table>
<thead>
<tr>
<th>Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Report Reference: EMS-209024_274777</td>
</tr>
</tbody>
</table>

Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.

8.1.5 Collapsible Rocks

**What is the maximum Collapsible Rocks* hazard rating identified on the study site?**  
Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

| Hazard | Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits. |

8.1.6 Running Sand

**What is the maximum Running Sand* hazard rating identified on the study site?**  
Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

| Hazard | Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand. |

* This indicates an automatically generated 50m buffer and site.
9. Mining

9.1 Coal Mining

Are there any coal mining areas within 75m of the study site?  No
Database searched and no data found.

9.2 Shallow Mining

What is the subsidence hazard relating to shallow mining on-site*?  Negligible
*Please note this data is searched with a 150m buffer.

9.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site?  No
Guidance: No Guidance Required.

Report Reference: EMS-209024_274777
10. Contacts

EmapSite
Telephone: 0118 9736883
sales@emapsite.com

British Geological Survey (England & Wales)
Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143. Fax: 0115 936 3276. Email: enquiries@bgs.ac.uk
Web: www.bgs.ac.uk
BGS Geological Hazards Reports and general geological enquiries

Environment Agency
National Customer Contact Centre
PO Box 544
Rotherham
S60 1BY
Tel: 08708 506 506
Web: www.environment-agency.gov.uk
Email: enquiries@environment-agency.gov.uk

Health Protection Agency
Chilton, Didcot, Oxon, OX11 0RQ
Tel: 01235 822622 www.hpa.org.uk/radiation
Radon measures and general radon information and guidance

The Coal Authority
200 Lichfield Lane, Mansfield, Notts NG18 4RG
Tel: 0845 762 6848
DX 716176 Mansfield 5
Web: www.groundstability.com

Ordnance Survey
Romsey Road
Southampton SO16 4GU
Tel: 08456 050505

Local Authority
Authority: Wellingborough Borough Council
Phone: 01933 231999
Web: www.wellingborough.gov.uk
Address: Swanspool House, Swanspool, Wellingborough,
Northamptonshire, NN8 1BP

Get Mapping PLC
Virginia Villas, High Street, Hartley Witney, Hampshire RG27 8NW
Tel: 01252 845444

Acknowledgements
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This report has been prepared in accordance with the GroundSure Ltd standard Terms and Conditions of business for work of this nature.

Report Reference: EMS-209024_274777
Standard Terms and Conditions

1 Definitions

In these terms and conditions unless the context otherwise requires:

“Beneficiary” means the person or entity for whose benefit the Client has obtained the Services.

“Client” means the party or parties entering into a Contract with GroundSure.

“Commercial” means any building or property which is not Residential.

“Confidential Information” means the contents of this Contract and all information received from the Client as a result of, or in connection with, this Contract other than
(i) information which the Client can prove was rightfully in its possession prior to disclosure by GroundSure and
(ii) any information which is in the public domain (other than by virtue of a breach of this Contract).

“Support Services” means Support Services provided by GroundSure including, without limitation, interpreting third party and in-house environmental data, providing environmental support advice, undertaking environmental audits and assessments, Site investigation, Site monitoring and related items.

“Contract” means the contract between GroundSure and the Client for the provision of the Services, and which shall incorporate these terms and conditions, the Order, and the relevant User Guide.

“Third Party Data Provider” means any third party providing Third Party Content to GroundSure.

“Data Reports” means reports comprising factual data with no accompanying interpretation.

“Fees” has the meaning set out in clause 5.1.

“GroundSure” means GroundSure Limited, a company registered in England and Wales under number 03421028.

“GroundSure Materials” means all materials prepared by GroundSure and provided as part of the Services, including but not limited to Third Party Content, Data Reports, Mapping, and Risk Screening Reports.

“Intellectual Property” means any patent, copyright, design rights, trade or service mark, moral rights, data protection rights, know-how or trade mark in each case whether registered or not and including applications for the same or any other rights of a similar nature anywhere in the world.

“Mapping” means a map, map data or a combination of historical maps of various ages, time periods and scales.

“Order” means an electronic, written or other order form submitted by the Client requesting Services from GroundSure in respect of a specified Site.

“Ordnance Survey” means the Secretary of State for Business, Innovation and Skills, acting through Ordnance Survey, Adanac Drive, Southampton, SO16 OAS, UK.

“Order Website” means the online platform through which Orders may be placed by the Client and accepted by GroundSure.

“Report” means a Risk Screening Report or Data Report for Commercial or Residential property.

“Residential” means any building or property used as or intended to be used as a single dwelling.

“Risk Screening Report” means a risk screening report comprising factual data with an accompanying interpretation by GroundSure.

“Services” means any Report, Mapping and/or Support Services which GroundSure has agreed to provide by accepting an Order pursuant to clause 2.6.

“Site” means the area of land in respect of which the Client has requested GroundSure to provide the Services.

“Third Party Content” means data, database information or other information which is provided to GroundSure by a Third Party Data Provider.

“User Guide” means the user guide, as amended from time to time, available upon request from GroundSure and on the website (www.groundsure.com) and forming part of this Contract.

2 Scope of Services, terms and conditions, requests for insurance and quotations

2.1 GroundSure agrees to provide the Services in accordance with the Contract.

2.2 GroundSure shall exercise reasonable skill and care in the provision of the Services.

2.3 Subject to clause 7.3 the Client acknowledges that it has not relied on any statement or representation made by or on behalf of GroundSure which is not set out and expressly agreed in writing in the Contract and all such statements and representations are hereby excluded to the fullest extent permitted by law.

2.4 The Client acknowledges that terms and conditions appearing on the Client’s order form, printed stationery or other communication, or any terms or conditions implied by custom, practice or course of dealing shall be of no effect, and that this Contract shall prevail over all others in relation to the Order.

2.5 If the Client or Beneficiary requests insurance in conjunction with or as a result of the Services, GroundSure shall use reasonable endeavours to recommend such insurance, but makes no warranty that such insurance shall be available from insurers or that it will be offered on reasonable terms. Any insurance purchased by the Client or Beneficiary shall be subject solely to the terms of the policy issued by insurers and GroundSure will have no liability therefor. In addition you acknowledge and agree that GroundSure does not act as an agent or broker for any insurance providers. The Client should take (and ensure that the Beneficiary takes) independent advice to ensure that the insurance policy requested or offered is suitable for its requirements.

2.6 GroundSure’s quotations or proposals are valid for a period of 30 days only unless an alternative period of time is explicitly stipulated by GroundSure. GroundSure reserves the right to withdraw any quotation or proposal at any time before an Order is accepted by GroundSure. GroundSure’s acceptance of an Order shall be binding only when made in writing and signed by GroundSure’s authorised representative or when accepted through the Order Website.

3 The Client’s obligations

3.1 The Client shall comply with the terms of this Contract and (i) procure that the Beneficiary or any third party relying on the Services complies with and acts as if it is bound by the Contract and
(ii) be liable to GroundSure for the acts and omissions of the Beneficiary or any third party relying on the Services as if such acts and omissions were those of the Client.

3.2 The Client shall be solely responsible for ensuring that the Services are appropriate and suitable for its and/or the Beneficiary’s needs.

3.3 The Client shall supply to GroundSure as soon as practicable and without charge all requisite information (and the Client warrants that such information is accurate, complete and appropriate), including without limitation any environmental information relating to the Site and shall give such assistance as GroundSure shall reasonably require in the provision of the Services including, without limitation, access to the Site, facilities and equipment.

3.4 Where the Client’s approval or decision is required to enable GroundSure to carry out work in order to provide the Services, such approval or decision shall be given or procured in reasonable time and so as not to delay or disrupt the performance of the Services.

3.5 Save as expressly permitted by this Contract the Client shall not, and shall procure that the Beneficiary shall not, re-sell, alter, add to, or amend the GroundSure Materials, or use the GroundSure Materials in a manner for which they were not intended. The Client may make the GroundSure Materials available to a third party who is considering acquiring some or all of, or providing funding in relation to, the Site, but such third party cannot rely on the same unless expressly permitted under clause 4.

3.6 The Client is responsible for maintaining the confidentiality of its user name and password if using the Order Website and the Client acknowledges that GroundSure accepts no liability of any kind for any loss or damage suffered by the Client as a consequence of using the Order Website.
4 Reliance

4.1 The Client acknowledges that the Services provided by GroundSure consist of the presentation and analysis of Third Party Content and other content and that information obtained from any Third Party Data Provider cannot be guaranteed or warranted by GroundSure to be reliable.

4.2 In respect of Data Reports, Mapping and Risk Screening Reports, the following classes of person and no other are entitled to rely on their contents:
(i) the Beneficiary,
(ii) the Beneficiary’s professional advisers, (iii) any person providing funding to the Beneficiary in relation to the Site (whether directly or as part of a lending syndicate),
(iv) the first purchaser or first tenant of the Site, and
(v) the professional advisers and lenders of the first purchaser or tenant of the Site.

4.3 In respect of Support Services, only the Client, Beneficiary and parties expressly named in a Report and no other parties are entitled to rely on its contents.

4.4 Save as set out in clauses 4.2 and 4.3 and unless otherwise expressly agreed in writing, no other person or entity of any kind is entitled to rely on any Services or Report issued or provided by GroundSure. Any party considering such Reports and Services does so at their own risk.

5 Fees and Disbursements

5.1 GroundSure shall charge and the Client shall pay fees at the rate and frequency specified in the written proposal, Order Website or Order acknowledgement form, plus (in the case of Support Services) all proper disbursements incurred by GroundSure. The Client shall in addition pay all value added tax or other tax payable on such fees and disbursements in relation to the provision of the Services (together “Fees”).

5.2 The Client shall pay all outstanding Fees to GroundSure in full without deduction, counterclaim or set off within 30 days of the date of GroundSure’s invoice or such other period as may be agreed in writing between GroundSure and the Client (“Payment Date”). Interest on late payments will accrue on a daily basis from the Payment Date until the date of payment (whether before or after judgment) at the rate of 8% per annum.

5.3 The Client shall be deemed to have agreed the amount of any invoice unless an objection is made in writing within 28 days of the date of the invoice. As soon as reasonably practicable after being notified of an objection, without prejudice to clause 5.2 a member of GroundSure’s management team will contact the Client and the parties shall then use all reasonable endeavours to resolve the dispute within 15 days.

6 Intellectual Property and Confidentiality

6.1 Subject to
(i) full payment of all relevant Fees and
(ii) compliance with this Contract, the Client is granted (and is permitted to sublicense to the Beneficiary) a royalty-free, worldwide, non-assignable and (save to the extent set out in this Contract) non-transferable licence to make use of the GroundSure Materials.

6.2 All Intellectual Property in the GroundSure Materials are and shall remain owned by GroundSure or GroundSure’s licensors (including without limitation the Third Party Data Providers) the Client acknowledges, and shall procure acknowledgement by the Beneficiary of, such ownership. Nothing in this Contract purports to transfer or assign any rights to the Client or the Beneficiary in respect of such Intellectual Property.

6.3 Third Party Data Providers may enforce any breach of clauses 6.1 and 6.2 against the Client or Beneficiary.

6.4 The Client shall, and shall procure that any recipients of the GroundSure Materials shall:
(i) not remove, suppress or modify any trade mark, copyright or other proprietary marking belonging to GroundSure or any third party from the Services;
(ii) use the information obtained as part of the Services in respect of the subject Site only, and shall not store or reuse any information obtained as part of the Services provided in respect of adjacent or nearby sites;
(iii) not create any product or report which is derived directly or indirectly from the Services (save that those acting in a professional capacity to the Beneficiary may provide advice based upon the Services);
(iv) not combine the Services with or incorporate such Services into any other information data or service;
(v) not reformat or otherwise change (whether by modification, addition or enhancement), the Services (save that those acting for the Beneficiary in a professional capacity shall not be in breach of this clause 6.4(v) where such reformatting is in the normal course of providing advice based upon the Services);
(vi) where a Report and/or Mapping contains material belonging to Ordnance Survey, acknowledge and agree that such content is protected by Crown Copyright and shall not use such content for any purpose outside of receiving the Services; and
(vii) not copy in whole or in part by any means any map prints or run-on copies containing content belonging to Ordnance Survey (other than that contained within Ordnance Survey’s OS Street Map) without first being in possession of a valid Paper Map Copying Licence from Ordnance Survey.

6.5 Notwithstanding clause 6.4, the Client may make reasonable use of the GroundSure Materials in order to advise the Beneficiary in a professional capacity. However, GroundSure shall have no liability in respect of any advice, opinion or report given or provided to Beneficiaries by the Client.

6.6 The Client shall procure that any person to whom the Services are made available shall notify GroundSure of any request or requirement to disclose, publish or disseminate any information contained in the Services in accordance with the Freedom of Information Act 2000, the Environmental Information Regulations 2004 or any associated legislation or regulations in force from time to time.

7 Liability: Particular Attention Should Be Paid To This Clause

7.1 This Clause 7 sets out the entire liability of GroundSure, including any liability for the acts or omissions of its employees, agents, consultants, subcontractors and Third Party Content, in respect of:
(i) any breach of contract, including any deliberate breach of the Contract by GroundSure or its employees, agents or subcontractors;
(ii) any use made of the Reports, Services, Materials or any part of them; and
(iii) any representation, statement or tortious act or omission (including negligence) arising under or in connection with the Contract.

7.2 All warranties, conditions and other terms implied by statute or common law are, to the fullest extent permitted by law, excluded from the Contract.

7.3 Nothing in the Contract limits or excludes the liability of the Supplier for death or personal injury resulting from negligence, or for any damage or liability incurred by the Client or Beneficiary as a result of fraud or fraudulent misrepresentation.

7.4 GroundSure shall not be liable for
(i) loss of profits;
(ii) loss of business;
(iii) depletion of goodwill and/or similar losses;
(iv) loss of anticipated savings;
(v) loss of goods;
(vi) loss of contract;
(vii) loss of use;
(viii) loss or corruption of data or information;
(ix) business interruption;
(x) any kind of special, indirect, consequential or pure economic loss, costs, damages, charges or expenses;
(xi) loss or damage that arise as a result of the use of all or part of the GroundSure Materials in breach of the Contract;
(xii) loss or damage arising as a result of any error, omission or inaccuracy in any part of the GroundSure Materials where such error, omission or inaccuracy is caused by any Third Party Content or any reasonable interpretation of Third Party Content;
(xiii) loss or damage to a computer, software, modem, telephone or other property; and
(xiv) loss or damage caused by a delay or loss of use of GroundSure’s internet ordering service.

7.5 GroundSure’s total liability in relation to or under the Contract shall be limited to £10 million for any claim or claims.

7.6 GroundSure shall procure that the Beneficiary shall be bound by limitations and exclusions of liability in favour of GroundSure which accord with those detailed in clauses 7.4 and 7.5 (subject to clause 7.2 in respect of all claims which the Beneficiary may bring against GroundSure in relation to the Services or other matters arising pursuant to the Contract.

8 GroundSure’s right to suspend or terminate
8.1 If GroundSure reasonably believes that the Client or Beneficiary has not provided the information or assistance required to enable the proper provision of the Services, GroundSure shall be entitled to suspend all further performance of the Services until such time as any such deficiency has been made good.

8.2 GroundSure shall be entitled to terminate the Contract immediately on written notice in the event that:

(i) the Client fails to pay any sum due to GroundSure within 30 days of the Payment Date; or
(ii) the Client (being an individual) has a bankruptcy order made against him or (being a company) shall enter into liquidation whether compulsory or voluntary or have an administration order made against it or if a receiver shall be appointed over the whole or any part of its property assets or undertaking or if the Client is struck off the Register of Companies or dissolved; or
(iii) the Client (being a company) is unable to pay its debts within the meaning of Section 238 of the Insolvency Act 1986 or being an individual appears unable to pay his debts within the meaning of Section 268 of the Insolvency Act 1986 or if the Client shall enter into a composition or arrangement with the Client’s creditors or shall suffer distress or execution to be levied on his goods; or
(iv) the Client or the Beneficiary breaches any term of the Contract (including, but not limited to, the obligations in clause 4) which is incapable of remedy or if remediable, is not remedied within five days of notice of the breach.

9. Client's Right to Terminate and Suspend

9.1 Subject to clause 10.1, the Client may at any time upon written notice terminate or suspend the provision of all or any of the Services.

9.2 In any event, where the Client is a consumer (and not a business) he/she hereby expressly acknowledges and agrees that:

(i) the supply of Services under this Contract (and therefore the performance of this Contract) commences immediately upon GroundSure's acceptance of the Order; and
(ii) the reports and/or Mapping provided under this Contract are (a) supplied to the Client's specification(s) and in any event (b) by their nature cannot be returned.

10 Consequences of Withdrawal, Termination or Suspension

10.1 Upon termination of the Contract:

(i) GroundSure shall take steps to bring to an end the Services in an orderly manner, vacate any Site with all reasonable speed and shall deliver to the Client and/or Beneficiary any property of the Client and/or Beneficiary in GroundSure's possession or control; and
(ii) the Client shall pay to GroundSure all and any Fees payable in respect of the performance of the Services up to the date of termination or suspension. In respect of any Support Services provided, the Client shall also pay GroundSure any additional costs incurred in relation to the termination or suspension of the Contract. 11 Anti-Bribery

11.1 The Client warrants that it shall:

(i) comply with all applicable laws, statutes and regulations relating to anti-bribery and anti-corruption including but not limited to the Bribery Act 2010;
(ii) comply with such of GroundSure's anti-bribery and anti-corruption policies as are notified to the Client from time to time; and
(iii) promptly report to GroundSure any request or demand for any undue financial or other advantage of any kind received by or on behalf of the Client in connection with the performance of this Contract.

11.2 Breach of this Clause 11 shall be deemed a material breach of this Contract.

12 General

12.1 The Mapping contained in the Services is protected by Crown copyright and must not be used for any purpose other than as part of the Services or as specifically provided in the Contract.

12.2 The Client shall be permitted to make one copy only of each Report or Mapping Order. Thereafter the Client shall be entitled to make unlimited copies of the Report or Mapping Order only in accordance with an Ordnance Survey paper map copy license available through GroundSure.

12.3 GroundSure reserves the right to amend or vary this Contract. No amendment or variation to this Contract shall be valid unless signed by an authorised representative of GroundSure.

12.4 No amendment on the part of GroundSure to exercise, and no delay in exercising, any right, power or provision under this Contract shall operate as a waiver thereof.

12.5 Save as expressly provided in this Contract, no person other than the persons set out therein shall have any right under the Contract (Rights of Third Parties) Act 1999 to enforce any terms of the Contract.

12.6 The Secretary of State for Business, Innovation and Skills ("BIS") or BIS' successor body, as the case may be, acting through Ordnance Survey may enforce a breach of clause 6.4(vii) and clause 6.4(viii) of these terms and conditions against the Client in accordance with the provisions of the Contracts (Rights of Third Parties) Act 1999.

12.7 GroundSure shall not be liable to the Client if the provision of the Services is delayed or prevented by one or more of the following circumstances:

(i) the Client or Beneficiary's failure to provide facilities, access or information;
(ii) fire, storm, flood, tempest or epidemic;
(iii) Acts of God or the public enemy;
(iv) riot, civil commotion or war;
(v) strikes, labour disputes or industrial action;
(vi) acts or regulations of any governmental or other agency;
(vii) suspension or delay of services at public registries by Third Party Data Providers;
(viii) changes in law; or
(ix) any other reason beyond GroundSure's reasonable control.

In the event that GroundSure is prevented from performing the Services (or any part thereof) in accordance with this clause 12.6 for a period of not less than 30 days then GroundSure shall be entitled to terminate this Contract immediately on written notice to the Client.

12.8 Any notice provided shall be in writing and shall be deemed to be properly given if delivered by hand or sent by first class post, facsimile or by email to the address, facsimile number or email address of the relevant party as may have been notified by each party to the other for such purpose or in the absence of such notification the last known address.

12.9 Such notice shall be deemed to have been received on the day of delivery if delivered by hand, facsimile or email (save to the extent such day is not a working day where it shall be deemed to have been delivered on the next working day and on the second working day after the day of posting if sent by first class post.

12.10 The Contract constitutes the entire agreement between the parties and shall supersede all previous arrangements between the parties relating to the subject matter hereof.

12.11 Each of the provisions of the Contract is severable and distinct from the others and if one or more provisions is or should become invalid, illegal or unenforceable, the validity and enforceability of the remaining provisions shall not in any way be tainted or impaired.

12.12 This Contract shall be governed by and construed in accordance with English law and any proceedings arising out of or connected with this Contract shall be subject to the exclusive jurisdiction of the English courts.

12.13 GroundSure is an executive member of the Council of Property Search Organisation (CoPSO) and has signed up to the Search Code administered by the Property Codes Compliance Board (PCCB). All Risk Screening Reports shall be supplied in accordance with the provisions of the Search Code.

12.14 If the Client or Beneficiary has a complaint about the Services, written notice should be given to the Compliance Officer at GroundSure who will respond in a timely manner.

12.15 The Client agrees that it shall, and shall procure that each Beneficiary shall, treat in confidence all Confidential Information and shall not, and shall procure that each Beneficiary shall not (i) disclose any Confidential Information to any third party other than in accordance with the terms of this Contract; and (ii) use Confidential Information for a purpose other than the exercise of its rights and obligations under this Contract. Subject to clause 6.6, nothing shall prevent the Client or any Beneficiary from disclosing Confidential Information to the extent required by law.
<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Sample Type</th>
<th>PID Type</th>
<th>PL/LL</th>
<th>Diameter (mm)</th>
<th>Description of Strata</th>
<th>O.D Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.05</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td>Tarmacadam. (MADE GROUND)</td>
<td>93.75</td>
</tr>
<tr>
<td>0.30</td>
<td>ES</td>
<td></td>
<td></td>
<td></td>
<td>Dark red-brown silty gravelly fine to coarse SAND. Gravel is fine to coarse angular flint. (MADE GROUND)</td>
<td>93.40</td>
</tr>
<tr>
<td>0.80</td>
<td>D</td>
<td>18/42</td>
<td>19.00</td>
<td></td>
<td>Firm to stiff light creamish-brown slightly gravelly CLAY. Gravel is fine to medium angular fossiliferous limestone. (GREAT OOLITE SERIES)</td>
<td></td>
</tr>
<tr>
<td>1.20</td>
<td>SPT</td>
<td>18N</td>
<td>18/300</td>
<td></td>
<td>Stiff thinly bedded light orange-white calcareous CLAY. Recovered as fine to coarse angular lithorelict gravel. (GREAT OOLITE SERIES)</td>
<td>92.60</td>
</tr>
<tr>
<td>1.50</td>
<td>D</td>
<td>17/53</td>
<td>21.00</td>
<td></td>
<td>Firm dark orange-brown slightly sandy gravelly CLAY. Gravel is fine angular fossils and limestone. (GREAT OOLITE SERIES)</td>
<td>91.95</td>
</tr>
<tr>
<td>1.90</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.00</td>
<td>SPT</td>
<td>13N</td>
<td>13/300</td>
<td></td>
<td></td>
<td>91.95</td>
</tr>
<tr>
<td>2.20</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.55</td>
<td>HV</td>
<td></td>
<td>14.0</td>
<td></td>
<td>Between 2.55m and 2.60m bgl: Silty with very soft pockets.</td>
<td></td>
</tr>
<tr>
<td>2.60</td>
<td>D</td>
<td></td>
<td>86.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.65</td>
<td>HV</td>
<td></td>
<td>178.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.80</td>
<td>HV</td>
<td></td>
<td>240.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.90</td>
<td>HV</td>
<td></td>
<td>240.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.00</td>
<td>D</td>
<td>SPT</td>
<td>20/300</td>
<td></td>
<td>Stiff to very stiff dark grey with dark black-grey mottling slightly sandy CLAY. (GREAT OOLITE SERIES) From 3.00m bgl: Becoming light grey.</td>
<td></td>
</tr>
<tr>
<td>3.30</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.80</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.00</td>
<td>SPT</td>
<td>26N</td>
<td>26/300</td>
<td></td>
<td></td>
<td>89.45</td>
</tr>
</tbody>
</table>

**GENERAL REMARKS:**
Hand dug service inspection pit excavated to 1.20m bgl. 50mm diameter standpipe installed to 4.00m bgl, plain pipe ground level to 1.00m with bentonite seal and slotted pipe 1.00m to 4.00m with gravel pack.

**GROUNDWATER**

<table>
<thead>
<tr>
<th>Struck</th>
<th>Cased</th>
<th>20 mins</th>
<th>Sealed</th>
<th>Date</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Groundwater Encountered</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Borehole Log Information

**Job No.:** AG1866-13  
**Site:** Redwell Infants School, Wellingborough  
**Client:** Northamptonshire County Council  
**Engineer:** BCAL Consulting

<table>
<thead>
<tr>
<th>Date</th>
<th>26/06/2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method</td>
<td>Driven Continuous Sampling</td>
</tr>
<tr>
<td>Diameter (mm)</td>
<td>101mm to 2.00m</td>
</tr>
<tr>
<td>Ground Level</td>
<td>93.74m AOD</td>
</tr>
<tr>
<td>Logged By</td>
<td>MW</td>
</tr>
<tr>
<td>Checked By</td>
<td>JLA</td>
</tr>
<tr>
<td>Scale</td>
<td>1:25</td>
</tr>
<tr>
<td>Co-ordinates</td>
<td>-</td>
</tr>
<tr>
<td>Ground Slope</td>
<td></td>
</tr>
<tr>
<td>Depth (m)</td>
<td>4.00</td>
</tr>
</tbody>
</table>

### Description of Strata

- **0.50 ES:** Grass onto stiff dark brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium angular brick, limestone and rounded flint. (TOPSOIL/MADE GROUND)
- **0.90 D:** Soft to firm occasionally stiff light creamish-brown slightly silty slightly sandy CLAY. (GREAT OOLITE SERIES)
- **1.20 SPT D 23N:** Firm to stiff dark grey slightly sandy CLAY. (GREAT OOLITE SERIES)  
  Soft light cream to orange-brown slightly silty CLAY. (GREAT OOLITE SERIES)  
  From 2.30m bgl: Very stiff.
- **1.60 HV D:** Stiff to very stiff dark grey to dark orange-brown slightly sandy CLAY. (GREAT OOLITE SERIES)
- **1.80 HV D:** Soft to firm occasionally stiff light creamish-brown slightly silty slightly sandy CLAY. (GREAT OOLITE SERIES)
- **1.85 HV D:** Soft to firm occasionally stiff light creamish-brown slightly silty slightly sandy CLAY. (GREAT OOLITE SERIES)
- **1.90 D:** Soft to firm occasionally stiff light creamish-brown slightly silty slightly sandy CLAY. (GREAT OOLITE SERIES)
- **2.00 HV SPT 19N 19/300:** Firm to stiff dark grey slightly sandy CLAY. (GREAT OOLITE SERIES)
- **2.20 D:** Soft to firm occasionally stiff light creamish-brown slightly silty slightly sandy CLAY. (GREAT OOLITE SERIES)
- **2.30 HV D:** Soft to firm occasionally stiff light creamish-brown slightly silty slightly sandy CLAY. (GREAT OOLITE SERIES)
- **2.60 HV D:** Soft to firm occasionally stiff light creamish-brown slightly silty slightly sandy CLAY. (GREAT OOLITE SERIES)
- **2.80 HV D:** Soft to firm occasionally stiff light creamish-brown slightly silty slightly sandy CLAY. (GREAT OOLITE SERIES)
- **3.00 SPT D 21N 21/300:** Firm to stiff dark grey slightly sandy CLAY. (GREAT OOLITE SERIES)
- **3.30 HV D:** Firm to stiff dark grey slightly sandy CLAY. (GREAT OOLITE SERIES)
- **3.80 HV D:** Firm to stiff dark grey slightly sandy CLAY. (GREAT OOLITE SERIES)
- **4.00 SPT D 5/20:** End of Borehole at 4.00 m

### General Remarks

Hand dug service inspection pit excavated to 1.20m bgl. 50mm diameter standpipe installed to 4.00m bgl, plain pipe ground level to 1.00m with bentonite seal and slotted pipe 1.00m to 4.00m with gravel pack.

### Groundwater

<table>
<thead>
<tr>
<th>Struck</th>
<th>Cased</th>
<th>20 mins</th>
<th>Sealed</th>
<th>Date</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Groundwater Encountered</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

End of Borehole at 4.00 m
### Borehole Log

#### General Information

- **Job No.**: AG1866-13
- **Site**: Redwell Infants School, Wellingborough
- **Client**: Northamptonshire County Council
- **Engineer**: BCAL Consulting

#### Site Details

- **Coordinate Method**: Driven Continuous Sampling
- **Date**: 26/06/2013
- **Diameter (mm)**

#### Co-ordinates

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Sample Type</th>
<th>PID (ppm)</th>
<th>SPT N or Cu</th>
<th>PL/ LL</th>
<th>Description of Strata</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.20</td>
<td>ES</td>
<td></td>
<td></td>
<td></td>
<td>Grass onto stiff friable dark brown silty slightly sandy slightly gravelly CLAY. Gravel is fine to medium angular brick fragments, charcoal, limestone and rounded quartzite. (TOPSOIL/MADE GROUND)</td>
</tr>
<tr>
<td>0.60</td>
<td>HV</td>
<td>192.0</td>
<td></td>
<td></td>
<td>Very stiff friable light creamish-brown silty slightly gravelly CLAY. Gravel is fine to medium angular fossiliferous limestone. (GREAT OOLITE SERIES)</td>
</tr>
<tr>
<td>0.90</td>
<td>HV</td>
<td>240.0</td>
<td>18/46</td>
<td>18.00</td>
<td>Very stiff light orange-brown slightly silty gravelly CLAY. Gravel is fine to medium angular limestone and fossils. (GREAT OOLITE SERIES)</td>
</tr>
<tr>
<td>1.20</td>
<td>SPT</td>
<td>22N</td>
<td></td>
<td></td>
<td>Dark orange-brown silty fine SAND. (GREAT OOLITE SERIES)</td>
</tr>
<tr>
<td>1.30</td>
<td>SPT</td>
<td>22/300</td>
<td></td>
<td></td>
<td>From 2.70m bgl: Becoming very silty.</td>
</tr>
<tr>
<td>1.60</td>
<td>HV</td>
<td>212.0</td>
<td></td>
<td></td>
<td>Stiff orange-brown with grey motting CLAY. (GREAT OOLITE SERIES)</td>
</tr>
<tr>
<td>1.80</td>
<td>HV</td>
<td>156.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.00</td>
<td>SPT</td>
<td>33N</td>
<td>33/300</td>
<td></td>
<td>Stiff to very stiff dark black-grey CLAY. (GREAT OOLITE SERIES)</td>
</tr>
<tr>
<td>2.70</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.00</td>
<td>SPT</td>
<td>17N</td>
<td>17/300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.80</td>
<td>HV</td>
<td>188.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.00</td>
<td>SPT</td>
<td>16N</td>
<td>16/300</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Groundwater

**Struck**: No Groundwater Encountered

**Cased**

**20 mins**

**Sealed**

**Date**

**Remarks**

**Hand dug service inspection pit excavated to 1.20m bgl. 50mm diameter standpipe installed to 4.00m bgl, plain pipe ground level to 1.00m with bentonite seal and slotted pipe 1.00m to 4.00m with gravel pack.**
**Borehole Log**

**AG1866-13**

**Site:** Redwell Infants School, Wellingborough  
**Client:** Northamptonshire County Council  
**Engineer:** BCAL Consulting

<table>
<thead>
<tr>
<th>Job No.</th>
<th>Date</th>
<th>Diameter (mm)</th>
<th>Ground Level</th>
<th>Logged By</th>
<th>Checked By</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH3</td>
<td>26/06/2013</td>
<td>101mm to 2.00m</td>
<td>93.08m AOD</td>
<td>MW</td>
<td>JLA</td>
<td>1:25</td>
</tr>
</tbody>
</table>

**Method:** Driven Continuous Sampling

**Ground Slope Co-ordinates:** 5.45

### GENERAL REMARKS:

Hand dug service inspection pit excavated to 1.20m bgl. 50mm diameter standpipe installed to 4.00m bgl, plain pipe ground level to 1.00m with bentonite seal and slotted pipe 1.00m to 4.00m with gravel pack.

**GROUNDWATER**

<table>
<thead>
<tr>
<th>Struck</th>
<th>Cased</th>
<th>20 mins</th>
<th>Sealed</th>
<th>Date</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Groundwater Encountered</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Trial Pit Log

<table>
<thead>
<tr>
<th>Method</th>
<th>Date</th>
<th>Logged By</th>
<th>Checked By</th>
<th>Co-ordinates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand dug</td>
<td>26/06/2013</td>
<td>MW</td>
<td>JLA</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length (m)</th>
<th>Breadth (m)</th>
<th>Depth (m)</th>
<th>Ground Level</th>
<th>Ground Slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.30</td>
<td>0.30</td>
<td>0.60</td>
<td>93.77 m AOD</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>SOIL SAMPLES/TESTS</th>
<th>Type</th>
<th>Strength</th>
<th>PID</th>
<th>PL/LL</th>
<th>M/C</th>
<th>Ease of Dig</th>
<th>Description of Strata</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Paving slab onto dark orange/reddish brown gravelly fine to coarse SAND. Gravel is coarse flint. (HARDCORE/MADE GROUND)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Firm light creamish-orange-brown slightly silty slightly gravelly CLAY. Gravel is angular limestone. (GREAT OOLITE SERIES)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>End of Trial Pit at 0.60 m</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>93.37 0.40</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>93.17 0.60</td>
</tr>
</tbody>
</table>

GROUNDWATER DETAILS:
- Groundwater not encountered.

STABILITY OF PIT WALLS:
- Stable.

GENERAL REMARKS:
- Trial pit backfilled with arisings on completion.

KEY
- SAMPLES: B = Bulk, D = Tub, W = Water
- CBR = CBR Test, SPT = Insitu Penetration Test
- SHEAR STRENGTH: V = Hand Vane, P = Hand Penetrometer
- GROUNDWATER: ▲ Entry, ▼ Standing Level
- Ease of Dig: E = Easy, M = Moderate, H = Hard, VH = Very Hard

Tel: 02476511822
Fax: 02476697682

AG1866-13

Site: Redwell Infants School, Wellingborough
Client: Northamptonshire County Council
Engineer: BCAL Consulting

Scale 1:25
**Trial Pit Log**

**Method**
- Hand dug

**Date**
- 26/06/2013

**Logged By**
- MW

**Checked By**
- JLA

**Scale**
- 1:25

### Site Details
- **Site:** Redwell Infants School, Wellingborough
- **Client:** Northamptonshire County Council
- **Engineer:** BCAL Consulting

### Job No.
- AG1866-13

<table>
<thead>
<tr>
<th>Length (m)</th>
<th>Breadth (m)</th>
<th>Orientation</th>
<th>Depth (m)</th>
<th>Ground Level</th>
<th>Ground Slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1.10</td>
<td>-</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Co-ordinates</th>
<th>-</th>
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</thead>
</table>

### Soil Samples/Tests

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Type</th>
<th>PID (ppm)</th>
<th>PL/LL</th>
<th>M/C</th>
<th>Ease of Dig</th>
<th>Description of Strata</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.05</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Tarmacadam. (MADE GROUND)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dark red-brown sandy GRAVEL. Gravel is fine to coarse angular flint. (HARDCORE)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Light orange-brown slightly clayey slightly sandy SILT. (MADE GROUND)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Firm to stiff dark grey CLAY. (GREAT OOLITE SERIES/POSSIBLE MADE GROUND)</td>
</tr>
</tbody>
</table>

**GROUNDWATER DETAILS:**
- Groundwater at 1.00m bgl. Stable.

**GROUNDWATER BACKFILL:**
- Trial pit backfilled with arisings on completion.

**STABILITY OF PIT WALLS:**
- Stable.

**GENERAL REMARKS:**
- Trial pit backfilled with arisings on completion.

### Key
- **GROUNDWATER:**
  - Entry
  - Standing Level
- **SHEAR STRENGTH:**
  - V=Hand Vane
  - P=Hand Penetrometer
- **GROUNDWATER:**
  - B = Bulk
  - D = Tub
  - W = Water
  - CBR = CBR Test
  - ES = Amber Glass Jar
- **Ease of Dig:**
  - E = Easy
  - M = Moderate
  - H = Hard
  - VH = Very Hard

**Legend:**
- B = Bulk
- D = Tub
- W = Water
- CBR = CBR Test
- ES = Amber Glass Jar
- V=Hand Vane
- P=Hand Penetrometer
- E = Easy
- M = Moderate
- H = Hard
- VH = Very Hard
## Trial Pit Log

<table>
<thead>
<tr>
<th>Method</th>
<th>Date</th>
<th>Logged By</th>
<th>Checked By</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand dug</td>
<td>26/06/2013</td>
<td>MW</td>
<td>JLA</td>
<td>1:25</td>
</tr>
</tbody>
</table>

### Site Information
- **Redwell Infants School, Wellingborough**
- **Northamptonshire County Council**
- **BCAL Consulting**

### Trial Pit Details
- **Job No.:** AG1866-13
- **Site:** Redwell Infants School, Wellingborough
- **Client:** Northamptonshire County Council
- **Engineer:** BCAL Consulting

### Method and Scale
- **Method:** Hand dug
- **Date:** 26/06/2013
- **Logged By:** MW
- **Checked By:** JLA
- **Scale:** 1:25

### Measurements
- **Length (m):** 0.40
- **Breadth (m):** 0.40
- **Depth (m):** 1.20
- **Ground Level:** 93.13m AOD
- **Orientation:** -
- **Co-ordinates:** -
- **Ground Slope:** -

### Soil Samples/Tests

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Type</th>
<th>Strength</th>
<th>PID (ppm %)</th>
<th>PL/LL %</th>
<th>M/C %</th>
<th>Ease of Dig</th>
<th>Description of Strata</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.30</td>
<td>ES</td>
<td>92.68</td>
<td>0.45</td>
<td></td>
<td></td>
<td></td>
<td>Grass onto firm to stiff dark brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium angular brick of charcoal, limestone and rounded quartzite. (TOPSOIL/MADE GROUND)</td>
</tr>
<tr>
<td>0.70</td>
<td>ES</td>
<td>92.23</td>
<td>0.90</td>
<td></td>
<td></td>
<td></td>
<td>Firm light creamish-brown silty slightly gravelly CLAY. Gravel is fine to medium rare angular brick fragments and fossiliferous limestone. (MADE GROUND) At 0.45m bgl: Brick.</td>
</tr>
<tr>
<td>1.10</td>
<td>V</td>
<td>240</td>
<td>91.93</td>
<td></td>
<td></td>
<td></td>
<td>Stiff to very stiff friable light creamish-brown slightly silty gravelly CLAY. Gravel is fine to coarse angular fossiliferous limestone. Occasional cobble sized firm clay pockets. (POSSIBLE WELLINGBOROUGH FORMATION)</td>
</tr>
</tbody>
</table>

**End of Trial Pit at 1.20 m**

### Groundwater Details
- **Groundwater not encountered.**

### Stabilty of Pit Walls
- **Stable.**

### General Remarks
- **Trial pit backfilled with arisings on completion.**

### Key
- **GROUNDWATER**
  - **ES** = Amber Glass Jar
  - **ES** = CBR Test
  - **V** = Hand Vane
  - **D** = Hand Penetrometer

- **Shear Strength (kN/m2)**
- **GROUNDWATER**
  - **D** = Standing Level
  - **S** = Entry
  - **P** = Hand Penetrometer

- **Ease of Dig**
  - **E** = Easy
  - **M** = Moderate
  - **H** = Hard
  - **VH** = Very Hard
APPENDIX D
## Gas Monitoring Equipment Specification and Accuracy Details

### Instrument Specifications

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Atmospheric Pressure Range</th>
<th>Temperature Range</th>
<th>Flow Range</th>
<th>Flow Resolution</th>
<th>Borehole Pressure Range</th>
<th>Test Time</th>
<th>Flow Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFM 430</td>
<td>800 to 1200 mbar +/- 1m bar</td>
<td>-10°C to + 40°C</td>
<td>-30 to +30 l/hr</td>
<td>0.1 l/hr</td>
<td>+1000 to - 1000 Pa</td>
<td>N/A</td>
<td>-</td>
</tr>
<tr>
<td>Mini Rae 2000</td>
<td>-</td>
<td>0 - 45°C</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Thermo PID 580 Series</td>
<td>-</td>
<td>0 - 45°C</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Instrument Accuracy

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Methane</th>
<th>Lower Explosive Limit</th>
<th>Carbon Dioxide</th>
<th>Oxygen</th>
<th>Volatile Organic Compounds</th>
<th>Hydrogen Sulphide</th>
<th>Carbon Monoxide</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFM 430</td>
<td>0-100%</td>
<td>0-100%</td>
<td>0-100%</td>
<td>0-25%</td>
<td>NA</td>
<td>1500ppm response 30 secs</td>
<td>1000ppm response 30 Secs</td>
</tr>
<tr>
<td></td>
<td>+/- 0.2% @ 5% 1.0% @30% 3.0% @ 100% Response 20 secs</td>
<td>+/-0.5% of LEL Response 20 secs</td>
<td>Accuracy 0.1% @ 10% 3.0% @ 40% 3% @ 100% Response 20 secs</td>
<td>+/-0.5% Response 20 secs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mini Rae 2000</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>0-99ppm - 0.1ppm 2 sec 100-1999 ppm 1.0ppm 2 sec 2000-10000 ppm 1.0 ppm 2 sec</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Thermo 580 Series</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>0-2000 ppm +/- 2ppm or 10% &gt;2000ppm +/- 20% reading (For Isobutylene 100ppm)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### Calibration Frequency

- Instruments are calibrated annually.

Details of the instrument calibration certificates and service records are available if required.

<table>
<thead>
<tr>
<th>Equipment Serial Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFM430 - (10071, 10072, 10347)</td>
</tr>
<tr>
<td>Mini Rae 2000 - (110-901200, 110-901321)</td>
</tr>
<tr>
<td>Thermo Series - (62952337, 75550380)</td>
</tr>
</tbody>
</table>
## Ground Gas Monitoring and Flow Results

<table>
<thead>
<tr>
<th>BH No.</th>
<th>Flow Range (litres/hr over 3 mins)</th>
<th>Differential Pressure (pa)</th>
<th>Methane % v/v</th>
<th>Methane % LEL</th>
<th>Carbon dioxide % v/v</th>
<th>Oxygen % v/v</th>
<th>Installed Depth (m bgl)</th>
<th>Diameter of installation (mm)</th>
<th>Water level (m bgl)</th>
<th>Base of installation check (m bgl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH1</td>
<td>&lt;0.1 &lt;0.1 &lt;0.1 &lt;0.1 &lt;1 &lt;0.1 &lt;0.1 &lt;0.1 &lt;0.1 &lt;0.1</td>
<td>20.8 20.8</td>
<td>DRY 3.81</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BH2</td>
<td>&lt;0.1 &lt;0.1 &lt;0.1 &lt;0.1 &lt;1 &lt;0.1 &lt;0.1 &lt;0.1 &lt;0.1 &lt;0.1</td>
<td>20.9 20.9</td>
<td>DRY 3.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BH3</td>
<td>&lt;0.1 &lt;0.1 &lt;0.1 &lt;0.1 &lt;1 &lt;0.1 &lt;0.1 &lt;0.1 0.5 0.5</td>
<td>20.4 20.4</td>
<td>DRY 3.97</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Meterological Data

- **Atmospheric Pressure (mb)**: 1009-1007
- **Pressure Rising or Falling**: FALLING
- **Weather Conditions**: OVERCAST/HUMID
- **Atmospheric Oxygen (% vol)**: 20.9
- **Wind Speed & Direction**: CALM
- **Ambient Air Temperature (°C)**: 22.0

### Site Data

- **Monitoring Personnel**: Mathew Walker
- **GPS Instrument**: GFM, PID, Flowmeter
- **Equipment Serial Number**: 10347
- **Ground Conditions (vegetation stress, visual contamination)**

**Instrument specification data and calibration information is provided on a separate data sheet**
# Ground Gas Monitoring and Flow Results

**Project/Site Name:** Redwell Infants School, Wellingborough  
**Project Number:** AG1866  
**Date and Time of Monitoring:** 09/07/2013 AT 1.30PM  
**Phase of Monitoring:** 2

<table>
<thead>
<tr>
<th>BH No.</th>
<th>Flow Range (litres/hr over 3 mins)</th>
<th>Differential Pressure (pa)</th>
<th>Methane % v/v</th>
<th>Methane % LEL</th>
<th>Carbon dioxide % v/v</th>
<th>Oxygen % v/v</th>
<th>Installed Depth (m bgl)</th>
<th>Diameter of installation (mm)</th>
<th>Water level (m bgl)</th>
<th>Base of installation check (m bgl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH1</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>&lt;1</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>0.4</td>
<td>0.3</td>
<td>20.4</td>
<td>20.5</td>
</tr>
<tr>
<td>BH2</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>&lt;1</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>0.7</td>
<td>0.7</td>
<td>20.2</td>
<td>20.6</td>
</tr>
<tr>
<td>BH3</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>&lt;1</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>4.5</td>
<td>4.4</td>
<td>15.4</td>
<td>15.6</td>
</tr>
</tbody>
</table>

**Meteorological Data**

- Atmospheric Pressure (mb): 1019-1019
- Pressure Rising or Falling: STEADY
- Weather Conditions: SUNNY
- Atmospheric Oxygen (% vol): 20.9
- Wind Speed & Direction: CALM
- Ambient Air Temperature (°C): NO PROBE

**Site Data**

- Monitoring Personnel: Dave Roberts
- GPS Instrument
- Equipment Used: GFM, PID, Flowmeter
- Equipment Serial Number: 10347, 10347
- Ground Conditions (vegetation stress, visual contamination)

**General Notes**

Instrument specification data and calibration information is provided on a separate data sheet.

---

**Issue 3**

01.12.11

AG-S-07
# Ground Gas Monitoring and Flow Results

**Project/Site Name:** Redwell Infants School, Wellingborough  
**Project Number:** AG1866  
**Date and Time of Monitoring:** 18/07/2013 AT 1.30PM  
**Phase of Monitoring:** 3

### Flow Range (litres/hr over 3 mins)

<table>
<thead>
<tr>
<th>BH No.</th>
<th>Max</th>
<th>Min</th>
<th>Avg</th>
<th>Differential Pressure (pa)</th>
<th>Methane % v/v Peak</th>
<th>Methane % LEL Peak</th>
<th>Carbon dioxide % v/v Min</th>
<th>Oxygen % v/v Steady</th>
<th>Installed Depth (m bgl)</th>
<th>Diameter of installation (mm)</th>
<th>Water level (m bgl)</th>
<th>Base of installation check (m bgl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH1</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>&lt;1</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>1.1</td>
<td>1.1</td>
<td>19.1</td>
<td>19.1</td>
<td>4.00</td>
<td>50.00</td>
</tr>
<tr>
<td>BH2</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>&lt;1</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>0.8</td>
<td>0.8</td>
<td>20.6</td>
<td>20.6</td>
<td>4.00</td>
<td>50.00</td>
</tr>
<tr>
<td>BH3</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>&lt;1</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>4.5</td>
<td>4.5</td>
<td>16.0</td>
<td>16.0</td>
<td>4.00</td>
<td>50.00</td>
</tr>
</tbody>
</table>

### Meterological Data

- **Atmospheric Pressure (mb):** 1017-1018
- **Pressure Rising or Falling:** RISING
- **Weather Conditions:** SUNNY
- **Atmospheric Oxygen (% vol):** 20.9
- **Wind Speed & Direction:** Calm
- **Ambient Air Temperature (°C):** 29

### Site Data

- **Monitoring Personnel:** Mathew Walker
- **GPS Instrument:**
- **Equipment Used:** GFM, PID, Flowmeter
- **Equipment Serial Number:** 10072, 10072
- **Ground Conditions (vegetation stress, visual contamination):**

### General Notes

Instrument specification data and calibration information is provided on a separate data sheet.

---

Issue 3  
01.12.11  
AG-S-07
**Ground Gas Monitoring and Flow Results**

**Project/Site Name**: Redwell Infants School, Wellingborough

**Project Number**: AG1866

**Date and Time of Monitoring**: 25/07/2013

**Phase of Monitoring**: 4

<table>
<thead>
<tr>
<th>BH No.</th>
<th>Flow Range (litres/hr over 3 mins)</th>
<th>Differential Pressure (pa)</th>
<th>Methane % v/v</th>
<th>Methane % LEL</th>
<th>Carbon dioxide % v/v</th>
<th>Oxygen % v/v</th>
<th>Installed Depth (m bgl)</th>
<th>Diameter of installation (mm)</th>
<th>Water level (m bgl)</th>
<th>Base of installation check (m bgl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH1</td>
<td>&lt;0.1  &lt;0.1 &lt;0.1 &lt;1</td>
<td>&lt;0.1 &lt;0.1 &lt;0.1 &lt;1</td>
<td>0.4</td>
<td>0.4</td>
<td>20.0</td>
<td>20.0</td>
<td>4.00</td>
<td>50.00</td>
<td>DRY</td>
<td>3.88</td>
</tr>
<tr>
<td>BH2</td>
<td>&lt;0.1  &lt;0.1 &lt;0.1 &lt;1</td>
<td>&lt;0.1 &lt;0.1 &lt;0.1 &lt;1</td>
<td>0.4</td>
<td>0.4</td>
<td>20.3</td>
<td>20.3</td>
<td>4.00</td>
<td>50.00</td>
<td>3.84</td>
<td>3.01</td>
</tr>
<tr>
<td>BH3</td>
<td>0.2   &lt;0.1 &lt;0.1 &lt;1</td>
<td>&lt;0.1 &lt;0.1 &lt;0.1 &lt;1</td>
<td>3.9</td>
<td>3.9</td>
<td>16.3</td>
<td>16.3</td>
<td>4.00</td>
<td>50.00</td>
<td>3.10</td>
<td>4.00</td>
</tr>
</tbody>
</table>

**Meterological Data**

- **Atmospheric Pressure (mb)**: 1002-1002
- **Ambient Air Temperature (°C)**: 24
- **Wind Speed & Direction**: Calm
- **Atmospheric Oxygen (% vol)**: 20.9
- **Pressure Rising or Falling**: STEADY
- **Weather Conditions**: SUNNY 0.25 CLOUD

**Site Data**

- **Monitoring Personnel**: Mathew Walker
- **Equipment Serial Number**: 10072
- **Equipment Used**: GFM, PID, Flowmeter

**General Notes**

- Instrument specification data and calibration information is provided on a separate data sheet.

**APPLIED GEOLOGY**
**Variable Head Permeability Test Data Sheet**

**Job Name**  Redwell Infants School, Wellingborough  
**Job Number**  AG1866-13  
**Borehole No**  BH2  

<table>
<thead>
<tr>
<th>Elapsed Time (t) (mins)</th>
<th>Depth to water from top of casing or standpipe (m)</th>
<th>Head (H) (m)</th>
<th>Head Ratio (H/H₀)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>0.00</td>
<td>4.00</td>
<td>1.000</td>
</tr>
<tr>
<td>0.50</td>
<td>1.42</td>
<td>2.58</td>
<td>0.645</td>
</tr>
<tr>
<td>0.75</td>
<td>2.45</td>
<td>1.55</td>
<td>0.388</td>
</tr>
<tr>
<td>0.90</td>
<td>3.05</td>
<td>0.95</td>
<td>0.238</td>
</tr>
<tr>
<td>1.08</td>
<td>3.45</td>
<td>0.55</td>
<td>0.138</td>
</tr>
<tr>
<td>1.25</td>
<td>3.68</td>
<td>0.32</td>
<td>0.080</td>
</tr>
<tr>
<td>1.50</td>
<td>3.77</td>
<td>0.23</td>
<td>0.058</td>
</tr>
</tbody>
</table>

**Permeability Results**

Does Plot of Time vs Head Ratio go below H/H₀ = 0.37?  
Yes  Use Basic Time Lag  
No  Use General Approach  

**Basic Time Lag Approach:**

\[ k = \frac{A}{FT} \]

Basic Time Lag \( T = 0.75 \) mins  
Permeability \( k = 2.30E-05 \) m/sec
Variable Head Permeability Test Data Sheet

Job Name: Redwell Infants School, Wellingborough
Job Number: AG1866-13
Borehole No: 3

Elapsed Time (t) (mins) | Depth to water from top of casing or standpipe (m) | Head (H) (m) | Head Ratio (H/H₀)
------------------------|-----------------------------------------------|-------------|-----------------
0.00                   | 0.00                                          | 4.00        | 1.000
0.01                   | 0.60                                          | 3.40        | 0.850
0.25                   | 0.76                                          | 3.24        | 0.810
0.42                   | 0.83                                          | 3.17        | 0.793
0.58                   | 0.87                                          | 3.13        | 0.783
1.00                   | 0.90                                          | 3.10        | 0.775
1.50                   | 0.96                                          | 3.04        | 0.760
2.00                   | 0.98                                          | 3.02        | 0.755
3.00                   | 1.05                                          | 2.95        | 0.738
5.00                   | 1.15                                          | 2.85        | 0.713
10.00                  | 1.37                                          | 2.63        | 0.658
15.00                  | 1.50                                          | 2.50        | 0.625
20.00                  | 1.63                                          | 2.37        | 0.593
30.00                  | 1.87                                          | 2.13        | 0.533
40.00                  | 2.07                                          | 1.93        | 0.483
52.00                  | 2.21                                          | 1.79        | 0.448
60.00                  | 2.34                                          | 1.66        | 0.415
70.00                  | 2.45                                          | 1.55        | 0.388
80.00                  | 2.54                                          | 1.46        | 0.365
90.00                  | 2.62                                          | 1.38        | 0.345

Permeability Results
Does Plot of Time vs Head Ratio go below H/_HIT = 0.37?
Yes Use Basic Time Lag
No Use General Approach

Basic Time Lag Approach:

\[ k = \frac{A}{FT} \]
Basic Time Lag T = 78 mins
Permeability k = 2.21E-07 m/sec

AG1866 - Variable Head Perm Test BH3
Please find enclosed the results as summarised below:

<table>
<thead>
<tr>
<th>Figure / Table</th>
<th>Test Quantity</th>
<th>Description</th>
<th>ISO 17025 Accredited</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>~</td>
<td>Geotechnical Test Summary</td>
<td>see table</td>
</tr>
<tr>
<td>2 to 4</td>
<td>3</td>
<td>Liquid &amp; Plastic Limits</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Remarks:

Issued by: J A Reynolds
Date of Issue: 08/07/2013

Key to symbols used in this report:
- S/C: Testing was sub-contracted

Unless we are notified to the contrary, samples will be disposed after a period of one month from this date.

The results reported relate to samples received in the laboratory only.

All results contained in this report are provisional unless signed by an approved signatory.

This report should not be reproduced except in full without the written approval of the laboratory.

Under multisite accreditation the testing contained in this report may have been performed at another Terra Tek laboratory.

The enclosed results remain the property of Terra Tek Limited and we reserve the right to withdraw our report if we have not received cleared funds in accordance with our standard terms and conditions.

Only those results indicated in this report are UKAS accredited and any opinions or interpretations expressed are outside the scope of UKAS accreditation.

Feedback on this report may be left via our website www.terratek.co.uk/contact-us
<table>
<thead>
<tr>
<th>Exploratory Hole</th>
<th>Depth (m)</th>
<th>Sample Ref</th>
<th>Sample Type</th>
<th>Sample ID</th>
<th>Moisture Content</th>
<th>Liquid Limit</th>
<th>Plastic Limit</th>
<th>Plasticity Index</th>
<th>Percentage retained</th>
<th>Atterberg Classification</th>
<th>Bulk Density</th>
<th>Dry Density</th>
<th>Apparent Cohesion C</th>
<th>Angle of Shearing Resistance ( \Phi )</th>
<th>Other Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH1</td>
<td>0.80</td>
<td>D</td>
<td>237436</td>
<td>Brown sandy CLAY.</td>
<td>19</td>
<td>42</td>
<td>18</td>
<td>24</td>
<td>0</td>
<td>CI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BH1</td>
<td>1.50</td>
<td>D</td>
<td>237435</td>
<td>Brown sandy CLAY with much gravel. Gravel is fine to coarse.</td>
<td>21</td>
<td>53</td>
<td>17</td>
<td>36</td>
<td>45</td>
<td>CH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BH3</td>
<td>0.90</td>
<td>D</td>
<td>237437</td>
<td>Brown sandy CLAY with some gravel. Gravel is fine to medium.</td>
<td>18</td>
<td>46</td>
<td>18</td>
<td>28</td>
<td>21</td>
<td>CI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SUMMARY OF GEOTECHNICAL TESTS**

Opinions and interpretations are outside the scope of UKAS accreditation.

Test details are given on the 'Notes on Laboratory Procedures' sheet.

See individual report sheets.
Non Engineering Description: Brown sandy CLAY.

Preparation: Sample as received

Results:
- As Received Moisture Content: (BS1377:Part 2:Clause 3:1990) 19%
- Percentage retained on 425μm sieve: 0%
- Liquid Limit: 42%
- Plastic Limit: 18%
- Plasticity Index: 24%
- Equivalent moisture content of material passing 425μm sieve: 19%
- Liquidity Index: 0.04

Liquid Limit (One Point Cone Penetrometer Method)
Plastic Limit, Plasticity Index & Liquidity Index

BS 1377:Part 2:Clause 4.4:1990
BS 1377:Part 2:Clause 5:1990
Site: REDWELL INFANTS SCHOOL, WELLINGBROUGH
Client: Applied Geology Ltd
Engineer:

Contract No.: AG1866-13
Hole ID: BH1
Sample Ref: D
Depth (m): 1.50
Sample Type: D

Non Engineering Description: Brown sandy CLAY with much gravel. Gravel is fine to coarse.

Preparation: Sample washed and air dried

<table>
<thead>
<tr>
<th>Plasticity Index</th>
<th>Liquid Limit (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>30</td>
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<tr>
<td>4</td>
<td>40</td>
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<tr>
<td>5</td>
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<tr>
<td>6</td>
<td>60</td>
</tr>
<tr>
<td>7</td>
<td>70</td>
</tr>
<tr>
<td>8</td>
<td>80</td>
</tr>
</tbody>
</table>

Results:

- As Received Moisture Content: (BS1377:Part 2:Clause 3:1990) 21%
- Percentage retained on 425µm sieve: 45%
- Liquid Limit: 53%
- Plastic Limit: 17%
- Plasticity Index: 36
- Equivalent moisture content of material passing 425µm sieve: 38%
- Liquidity Index: 0.58

BS 1377:Part 2:Clause 4.4:1990
BS 1377:Part 2:Clause 5:1990

Liquid Limit (One Point Cone Penetrometer Method) Plastic Limit, Plasticity Index & Liquidity Index

Figure 3

Version 045 - 25/10/2012

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B17518 : 08/07/2013 16:24:23
Sample ID 237435

Figure 3
Non Engineering Description: Brown sandy CLAY with some gravel. Gravel is fine to medium.

Preparation: Sample washed and air dried

Results:
- As Received Moisture Content: 18%
- Percentage retained on 425µm sieve: 21%
- Liquid Limit: 46%
- Plastic Limit: 18%
- Plasticity Index: 28
- Equivalent moisture content of material passing 425µm sieve: 23%
- Liquidity Index: 0.18

Liquid Limit (One Point Cone Penetrometer Method)
Plastic Limit, Plasticity Index & Liquidity Index

BS 1377:Part 2:Clause 4.4:1990
BS 1377:Part 2:Clause 5:1990
<table>
<thead>
<tr>
<th>Strata</th>
<th>Tarmac</th>
<th>Tarmac</th>
<th>Tarmac</th>
<th>MG</th>
<th>MG</th>
<th>MG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth (m)</td>
<td>0.50</td>
<td>0.20</td>
<td>0.30</td>
<td>0.20</td>
<td>0.30</td>
<td>0.20</td>
</tr>
<tr>
<td>Strata</td>
<td>Tarmac</td>
<td>Tarmac</td>
<td>Tarmac</td>
<td>MG</td>
<td>MG</td>
<td>MG</td>
</tr>
<tr>
<td>Depth (m)</td>
<td>0.50</td>
<td>0.20</td>
<td>0.30</td>
<td>0.20</td>
<td>0.30</td>
<td>0.20</td>
</tr>
<tr>
<td>Strata</td>
<td>Tarmac</td>
<td>Tarmac</td>
<td>Tarmac</td>
<td>MG</td>
<td>MG</td>
<td>MG</td>
</tr>
<tr>
<td>Depth (m)</td>
<td>0.50</td>
<td>0.20</td>
<td>0.30</td>
<td>0.20</td>
<td>0.30</td>
<td>0.20</td>
</tr>
</tbody>
</table>

**Soil Organic Matter (%)**
- Site: Redwell Infants School, Wellingborough
- Job No: AG1866-13
- Land Use: Residential without plant uptake and Open spaces
- Made Ground (MG) and Tarmacadam
- Soil Organic Matter (%): 2.5% (RWP) and 1% (OS)

**Exploratory Hole Reference**
- BH1 TS3 FEP2 BH2 BH3 HDP1

**Table:**

<table>
<thead>
<tr>
<th>Substance</th>
<th>BH1</th>
<th>TS3</th>
<th>FEP2</th>
<th>BH2</th>
<th>BH3</th>
<th>HDP1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth (m)</td>
<td>0.50</td>
<td>0.20</td>
<td>0.30</td>
<td>0.20</td>
<td>0.30</td>
<td>0.20</td>
</tr>
</tbody>
</table>

**Values in bold are reported at the laboratory limit of detection**

**Key:**
- Value within sample set exceeds Open Areas screening values
- Based on 6% SOM for RWP (Conservative)
- Based on 6% SOM for RWOP (Conservative)
Dear Mathew Walker/Jane Allum

Test Report Number 233779
Your Project Reference Redwell Primary School, Wellingborough (AG1866)

Please find enclosed the results of analysis for the samples received 1 July 2013.

All soil samples will be retained for a period of one month and all water samples will be retained for 7 days following the date of the test report. Should you require an extended retention period then please detail your requirements in an email to customerservices@chemtest.co.uk. Please be aware that charges may be applicable for extended sample storage.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely

Keith Jones, Technical Manager

Notes to accompany report:
- The sign < means 'less than'
- Tests marked 'U' hold UKAS accreditation
- Tests marked 'M' hold MCertS (and UKAS) accreditation
- Tests marked 'N' do not currently hold UKAS accreditation
- Tests marked 'S' were subcontracted to an approved laboratory
- n/e means 'not evaluated'
- i/s means 'insufficient sample'
- u/s means 'unsuitable sample'
- Comments or interpretations are beyond the scope of UKAS accreditation
- The results relate only to the items tested
- All results are expressed on a dry weight basis
- The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, phenols
- For all other tests the samples were dried at < 37°C prior to analysis
- Uncertainties of measurement for the determinands tested are available upon request
- None of the test results included in this report have been recovery corrected
## Solid Waste Analysis

<table>
<thead>
<tr>
<th>Determinand</th>
<th>SOP</th>
<th>Units</th>
<th>Limit Values for Compliance Leaching Test Using BS EN 12457-3 at L/S 10 l/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Organic Carbon</td>
<td>2625 M %</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Loss on Ignition</td>
<td>2610 N %</td>
<td>3.25</td>
<td></td>
</tr>
<tr>
<td>Total BTEX</td>
<td>2761 M mg kg⁻¹</td>
<td>&lt;0.005</td>
<td>6</td>
</tr>
<tr>
<td>Total PCBs (7 congeners)</td>
<td>2811 M mg kg⁻¹</td>
<td>&lt;1</td>
<td>1</td>
</tr>
<tr>
<td>TPH Total WAC</td>
<td>2670 M mg kg⁻¹</td>
<td>&lt;10</td>
<td>500</td>
</tr>
<tr>
<td>Total (of 17) PAHs</td>
<td>2700 N mg kg⁻¹</td>
<td>&lt;2</td>
<td>100</td>
</tr>
<tr>
<td>pH</td>
<td>2010 M</td>
<td>8.3</td>
<td></td>
</tr>
<tr>
<td>Acid Neutralisation Capacity</td>
<td>2015 N mol kg⁻¹</td>
<td>0.15</td>
<td></td>
</tr>
</tbody>
</table>

## Eluate Analysis

<table>
<thead>
<tr>
<th>Determinand</th>
<th>SOP</th>
<th>Units</th>
<th>2:1 Eluate mg l⁻¹</th>
<th>8:1 Eluate mg l⁻¹</th>
<th>2:1 Eluate mg kg⁻¹</th>
<th>Cumulative 10:1 Eluate mg kg⁻¹</th>
<th>Limit Values for Compliance Leaching Test Using BS EN 12457-3 at L/S 10 l/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>1450 U</td>
<td>0.002</td>
<td>0.001</td>
<td>&lt;0.05</td>
<td>&lt;0.05</td>
<td>0.5</td>
<td>2</td>
</tr>
<tr>
<td>Barium</td>
<td>1450 U</td>
<td>0.076</td>
<td>0.007</td>
<td>&lt;0.5</td>
<td>&lt;0.5</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>Cadmium</td>
<td>1450 U</td>
<td>&lt;0.0005</td>
<td>&lt;0.0005</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>0.04</td>
<td>1</td>
</tr>
<tr>
<td>Chromium</td>
<td>1450 U</td>
<td>0.01</td>
<td>0.01</td>
<td>&lt;0.05</td>
<td>&lt;0.05</td>
<td>0.5</td>
<td>10</td>
</tr>
<tr>
<td>Copper</td>
<td>1450 U</td>
<td>0.004</td>
<td>0.002</td>
<td>&lt;0.05</td>
<td>&lt;0.05</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Mercury</td>
<td>1450 U</td>
<td>&lt;0.0005</td>
<td>&lt;0.0005</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>0.01</td>
<td>0.2</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>1450 U</td>
<td>0.004</td>
<td>0.003</td>
<td>&lt;0.05</td>
<td>&lt;0.05</td>
<td>0.5</td>
<td>10</td>
</tr>
<tr>
<td>Nickel</td>
<td>1450 U</td>
<td>0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.05</td>
<td>&lt;0.05</td>
<td>0.4</td>
<td>10</td>
</tr>
<tr>
<td>Lead</td>
<td>1450 U</td>
<td>0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>0.06</td>
<td>0.7</td>
</tr>
<tr>
<td>Antimony</td>
<td>1450 U</td>
<td>0.002</td>
<td>&lt;0.001</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>0.06</td>
<td>0.7</td>
</tr>
<tr>
<td>Selenium</td>
<td>1450 U</td>
<td>0.004</td>
<td>0.003</td>
<td>0.01</td>
<td>0.03</td>
<td>0.1</td>
<td>0.5</td>
</tr>
<tr>
<td>Zinc</td>
<td>1450 U</td>
<td>0.005</td>
<td>0.002</td>
<td>&lt;0.5</td>
<td>&lt;0.5</td>
<td>4</td>
<td>50</td>
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<tr>
<td>Chloride</td>
<td>1220 U</td>
<td>2.8</td>
<td>0.8</td>
<td>5.6</td>
<td>9.13</td>
<td>800</td>
<td>15000</td>
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<tr>
<td>Fluoride</td>
<td>1220 U</td>
<td>0.68</td>
<td>0.62</td>
<td>1.36</td>
<td>6.23</td>
<td>10</td>
<td>150</td>
</tr>
<tr>
<td>Sulfate</td>
<td>1220 U</td>
<td>14</td>
<td>2.3</td>
<td>28</td>
<td>29.6</td>
<td>1000</td>
<td>20000</td>
</tr>
<tr>
<td>Total Dissolved Solids</td>
<td>1040 N</td>
<td>160</td>
<td>110</td>
<td>320</td>
<td>1130</td>
<td>4000</td>
<td>60000</td>
</tr>
<tr>
<td>Phenol Index</td>
<td>1920 N</td>
<td>&lt;0.030</td>
<td>&lt;0.030</td>
<td>&lt;0.5</td>
<td>&lt;0.5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Dissolved Organic Carbon</td>
<td>1610 N</td>
<td>28</td>
<td>16</td>
<td>56</td>
<td>167</td>
<td>500</td>
<td>800</td>
</tr>
</tbody>
</table>

## Solvent Information

<table>
<thead>
<tr>
<th>Determinand</th>
<th>SOP</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry mass of test portion/kg</td>
<td>0.175</td>
<td></td>
</tr>
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</table>

## Leach Test Information

<table>
<thead>
<tr>
<th>Determinand</th>
<th>SOP</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leachant volume 1st extract/l</td>
<td>0.32</td>
<td></td>
</tr>
<tr>
<td>Leachant volume 2nd extract/l</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Eluate recovered from 1st extract/l</td>
<td>0.0987</td>
<td></td>
</tr>
</tbody>
</table>

All tests undertaken between 2-Jul-2013 and 10-Jul-2013

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page.

LIMS sample ID range AI90537 to AI90540
# LABORATORY TEST REPORT

**CEN 10:1 CUMULATIVE TWO STAGE BATCH TEST**

Results of analysis of 4 samples received 2 July 2013

Report Date
10 July 2013

**Solid Waste Analysis**

<table>
<thead>
<tr>
<th>Determinand</th>
<th>SOP</th>
<th>Units</th>
<th>Limit Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Organic Carbon</td>
<td>2625</td>
<td>M %</td>
<td>3</td>
</tr>
<tr>
<td>Loss on Ignition</td>
<td>2610</td>
<td>N %</td>
<td>2.65</td>
</tr>
<tr>
<td>Total BTEX</td>
<td>2761</td>
<td>M mg kg⁻¹</td>
<td>&lt;0.005</td>
</tr>
<tr>
<td>Total PCBs (7 congeners)</td>
<td>2811</td>
<td>M mg kg⁻¹</td>
<td>&lt;1</td>
</tr>
<tr>
<td>TPH Total WAC</td>
<td>2760</td>
<td>M mg kg⁻¹</td>
<td>&lt;10</td>
</tr>
<tr>
<td>Total (of 17) PAHs</td>
<td>2700</td>
<td>N mg kg⁻¹</td>
<td>&lt;2</td>
</tr>
<tr>
<td>pH</td>
<td>2010</td>
<td>M</td>
<td>8.1</td>
</tr>
<tr>
<td>Acid Neutralisation Capacity</td>
<td>2015</td>
<td>N mol kg⁻¹</td>
<td>0.16</td>
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</tbody>
</table>

**Eluate Analysis**

<table>
<thead>
<tr>
<th>Determinand</th>
<th>SOP</th>
<th>Units</th>
<th>Limit Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>1450 U</td>
<td>mg l⁻¹</td>
<td>0.5</td>
</tr>
<tr>
<td>Barium</td>
<td>1450 U</td>
<td>mg l⁻¹</td>
<td>0.04</td>
</tr>
<tr>
<td>Cadmium</td>
<td>1450 U</td>
<td>mg l⁻¹</td>
<td>0.01</td>
</tr>
<tr>
<td>Chromium</td>
<td>1450 U</td>
<td>mg l⁻¹</td>
<td>0.25</td>
</tr>
<tr>
<td>Copper</td>
<td>1450 U</td>
<td>mg l⁻¹</td>
<td>0.01</td>
</tr>
<tr>
<td>Mercury</td>
<td>1450 U</td>
<td>mg l⁻¹</td>
<td>0.01</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>1450 U</td>
<td>mg l⁻¹</td>
<td>0.01</td>
</tr>
<tr>
<td>Nickel</td>
<td>1450 U</td>
<td>mg l⁻¹</td>
<td>0.06</td>
</tr>
<tr>
<td>Lead</td>
<td>1450 U</td>
<td>mg l⁻¹</td>
<td>0.01</td>
</tr>
<tr>
<td>Antimony</td>
<td>1450 U</td>
<td>mg l⁻¹</td>
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<td>Selenium</td>
<td>1450 U</td>
<td>mg l⁻¹</td>
<td>0.01</td>
</tr>
<tr>
<td>Zinc</td>
<td>1450 U</td>
<td>mg l⁻¹</td>
<td>0.01</td>
</tr>
<tr>
<td>Chloride</td>
<td>1220 U</td>
<td>mg l⁻¹</td>
<td>1000</td>
</tr>
<tr>
<td>Fluoride</td>
<td>1220 U</td>
<td>mg l⁻¹</td>
<td>10</td>
</tr>
<tr>
<td>Sulfate</td>
<td>1220 U</td>
<td>mg l⁻¹</td>
<td>10000</td>
</tr>
<tr>
<td>Total Dissolved Solids</td>
<td>1040 N</td>
<td>mg l⁻¹</td>
<td>4000</td>
</tr>
<tr>
<td>Phenol Index</td>
<td>1920 N</td>
<td>mg l⁻¹</td>
<td>1</td>
</tr>
<tr>
<td>Dissolved Organic Carbon</td>
<td>1610 N</td>
<td>mg l⁻¹</td>
<td>500</td>
</tr>
</tbody>
</table>

**Solid Information**

<table>
<thead>
<tr>
<th>Determinand</th>
<th>Units</th>
<th>Limit Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry mass of test portion/kg</td>
<td>0.175</td>
<td></td>
</tr>
</tbody>
</table>

**Leach Test Information**

<table>
<thead>
<tr>
<th>Leachant Volume</th>
<th>Eluate Recovered</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.32 l</td>
<td>0.0922 l</td>
</tr>
</tbody>
</table>

All tests undertaken between 2-Jul-2013 and 10-Jul-2013

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page.

Column page 1
Report Page 2 of 2

FAO Mathew Walker/Jane Allum
Dear Mathew Walker/Jane Allum

Test Report Number 233781

Your Project Reference Redwell Primary School, Wellingborough (AG1866)

Please find enclosed the results of analysis for the samples received 1 July 2013.

All soil samples will be retained for a period of one month and all water samples will be retained for 7 days following the date of the test report. Should you require an extended retention period then please detail your requirements in an email to customerservices@chemtest.co.uk. Please be aware that charges may be applicable for extended sample storage.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely

Phil Hellier, Director

Notes to accompany report:
- The sign < means ‘less than’
- Tests marked ‘U’ hold UKAS accreditation
- Tests marked ‘M’ hold MCertS (and UKAS) accreditation
- Tests marked ‘N’ do not currently hold UKAS accreditation
- Tests marked ‘S’ were subcontracted to an approved laboratory
- n/e means ‘not evaluated’
- i/s means ‘insufficient sample’
- u/s means ‘unsuitable sample’
- Comments or interpretations are outside of the scope of UKAS accreditation
- The results relate only to the items tested
- Stones represent the quantity of material removed prior to analysis
- All results are expressed on a dry weight basis
- The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, phenols
- For all other tests the samples were dried at < 37°C prior to analysis
- Uncertainties of measurement for the determinands tested are available upon request
- Soil descriptions, including colour and texture, are beyond the scope of MCertS accreditation
- None of the test results included in this report have been recovery corrected
## LABORATORY TEST REPORT

**Results of analysis of 9 samples**

**received 1 July 2013**

Redwell Primary School, Wellingborough (AG1866)

---

### Login Batch No

<table>
<thead>
<tr>
<th>Chemtest LIMS ID</th>
<th>Sample ID</th>
<th>Sample No</th>
<th>Sampling Date</th>
<th>Depth</th>
<th>Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.30m</td>
<td>2.20m</td>
</tr>
</tbody>
</table>

### All tests undertaken between 02/07/2013 and 09/07/2013

---

### FAO

Mathew Walker/Jane Allum

---

### Reported Date

09 July 2013

---

### CAS No

- **AI90545**
- **AI90546**
- **AI90549**
- **AI90550**
- **AI90553**
- **AI90554**

### Sample ID

- BH1
- BH1
- BH1
- BH2
- BH3
- BH3

---

### Sampling Date

|-----------|-----------|-----------|-----------|-----------|-----------|

### Depth

<table>
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<th>0.30m</th>
<th>2.20m</th>
<th>0.50m</th>
<th>3.80m</th>
<th>0.20m</th>
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### Matrix

- Tarmac

---

### Determinand

| 2030 Moisture |  | 2.18 | 14.6 | 10.2 | 16.6 | 11.4 |
| Stones content (>50mm) |  | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| 2040 Soil colour | M | brown | black | brown | brown | black |
| Soil texture | M | sand | sand | clay | clay | sand |
| Other material | M | stones | stones | none | roots | stones roots |
| 2010 pH | M | 9.0 | 8.2 | 8.2 | 6.9 | 8.2 |
| 2175 Sulfur (total TRL report 447) | % | M | 0.04 | 0.23 | 0.04 | 0.23 |
| 2625 Organic matter | % | M | 3.8 | 4.0 | 3.8 | 4.0 |
| 2220 Chloride (extractable) | g L⁻¹ | M | <0.010 | 0.02 | <0.010 | 0.02 |
| Nitrate (extractable) | g L⁻¹ | M | <0.010 | 0.02 | <0.010 | 0.02 |
| 2120 Sulfate (2:1 water soluble) as SO4 | g L⁻¹ | N | <0.01 | <0.01 | <0.01 | <0.01 |
| 2420 Magnesium (soluble) | g L⁻¹ | M | <0.01 | <0.01 | <0.01 | <0.01 |
| 2430 Sulfate (total BS1377 HCl extract) | % | M | <0.01 | <0.01 | <0.01 | <0.01 |
| 2450 Arsenic | mg kg⁻¹ | M | 22 | 21 | 22 | 21 |
| Cadmium | mg kg⁻¹ | M | 0.27 | 0.18 | 0.27 | 0.18 |
| Chromium | mg kg⁻¹ | M | 37 | 37 | 37 | 37 |
| Copper | mg kg⁻¹ | M | 32 | 28 | 32 | 28 |
| Mercury | mg kg⁻¹ | M | 0.16 | 0.15 | 0.16 | 0.15 |
| Nickel | mg kg⁻¹ | M | 31 | 30 | 31 | 30 |
| Lead | mg kg⁻¹ | M | 67 | 56 | 67 | 56 |
| Selenium | mg kg⁻¹ | M | <0.20 | <0.20 | <0.20 | <0.20 |
| Zinc | mg kg⁻¹ | M | 170 | 99 | 170 | 99 |
| 2700 Naphthalene | mg kg⁻¹ | M | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Acenaphthylene | mg kg⁻¹ | M | < 0.1 | < 0.1 | < 0.1 | < 0.1 |

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* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page.

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All tests undertaken between 02/07/2013 and 09/07/2013

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Report page 1 of 2

LIMS sample ID range AI90545 to AI90559

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* Column page 1
| Sample ID | Sample No | Sampling Date | Depth | Matrix | CAS No | Units  | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | 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SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinand | CAS No | Units | SOP | Determinant | \* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page.
LABORATORY TEST REPORT

Results of analysis of 9 samples
received 1 July 2013

Redwell Primary School, Wellingborough (AG1866)

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<th>A190549</th>
<th>A190550</th>
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<tbody>
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<td>Acenaphthene</td>
<td>83329 mg kg⁻¹ M</td>
<td>&lt; 0.1</td>
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<td>0.12</td>
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<td>Phenanthrene</td>
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<td>&lt; 0.1</td>
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<td>&lt; 0.1</td>
<td>&lt; 0.1</td>
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<td>&lt; 0.1</td>
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<tr>
<td>Fluoranthene</td>
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<td>&lt; 0.1</td>
<td>&lt; 0.1</td>
<td>&lt; 0.1</td>
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<tr>
<td>Benzo[k]fluoranthene</td>
<td>207089 mg kg⁻¹ M</td>
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<td>&lt; 0.1</td>
<td>&lt; 0.1</td>
<td>&lt; 0.1</td>
</tr>
<tr>
<td>Benzo[a]pyrene</td>
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<td>&lt; 0.1</td>
<td>&lt; 0.1</td>
<td>&lt; 0.1</td>
<td>&lt; 0.1</td>
</tr>
<tr>
<td>Dibenzo[a,h]anthracene</td>
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<td>&lt; 0.1</td>
<td>&lt; 0.1</td>
<td>&lt; 0.1</td>
<td>&lt; 0.1</td>
<td>&lt; 0.1</td>
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<td>Indeno[1,2,3-cd]pyrene</td>
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<td>&lt; 0.1</td>
<td>&lt; 0.1</td>
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<tr>
<td>Benzo[g,h,i]perylene</td>
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<td>&lt; 2</td>
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All tests undertaken between 02/07/2013 and 09/07/2013

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page.

Report page 2 of 2

LIMS sample ID range A190545 to A190559
### LABORATORY TEST REPORT

**Results of analysis of 9 samples**

**received 1 July 2013**

**Redwell Primary School, Wellingborough (AG1866)**

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Date</th>
<th>Location</th>
<th>Concentration (mg kg⁻¹ M)</th>
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<tbody>
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<td>26/6/2013</td>
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<td>&lt; 0.1</td>
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<table>
<thead>
<tr>
<th>Chemical</th>
<th>Concentration</th>
<th>Unit</th>
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<tbody>
<tr>
<td>Acenaphthene</td>
<td>83329</td>
<td>mg kg⁻¹ M</td>
</tr>
<tr>
<td>Fluorene</td>
<td>86737</td>
<td>mg kg⁻¹ M</td>
</tr>
<tr>
<td>Phenanthrene</td>
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<td>mg kg⁻¹ M</td>
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<tr>
<td>Anthracene</td>
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<tr>
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<tr>
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<tr>
<td>Benzo(a)pyrene</td>
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<td>Indeno[1,2,3-cd]pyrene</td>
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<td>mg kg⁻¹ M</td>
</tr>
<tr>
<td>Benzo[g,h,i]perylene</td>
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<td>mg kg⁻¹ M</td>
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**Total (of 16) PAHs**

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<th>Unit</th>
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</thead>
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<td>mg kg⁻¹ M</td>
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### Notes

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page.