

#### Other screening values used by Lithos

Tier 1 risk assessment of **hazardous gas** is undertaken through reference to the following documents (and further information is presented in Generic Note No. 5 – Hazardous Gas):

- Approved Document C, Building Regulations 2000
- Boyle & Witherington (2007) – Guidance on evaluation on development proposals on sites where methane and carbon dioxide are present, incorporating “traffic lights”. Report Ref. 10627-R01-(02), for NHBC
- CIRIA C665 (2007) – Assessing risks posed by hazardous ground gases to buildings
- BS 8485:2015 – Code of Practice for the characterisation & remediation from ground gas in affected developments

With respect to the assessment of potential **phytotoxic effects** of contaminants, Lithos refer to “The Soil Code” (MAFF, 1998) for copper and zinc. The CLEA SGV is adopted for nickel due to its human health effects.

The potential risk to **building materials** is considered through reference to relevant BRE Digests, with particular emphasis on BRE Special Digest 1, ‘Concrete in aggressive ground’, 2005.

With respect to the interpretation of the **calorific values**, at present there are no accepted methods to assess whether a sample is combustible and under what circumstances it might smoulder. Some guidance is given in ICRC Note 61/84 “Notes on the fire hazards of contaminated land” which states that: “In general ... it seems likely that materials whose CV's exceed 10MJ/kg are almost certainly combustible, while those with values below 2MJ/kg are unlikely to burn”.

Tier 1 **groundwater** risk assessments are undertaken by comparing leachate or groundwater concentrations with the appropriate water quality standard. Tier 1 Screening Values have been discussed with the Environment Agency, and typically those in **bold** below are adopted.

| Analyte                | Source of Tier 1 Screening Value (µg/l)       |                               |                           |            |
|------------------------|-----------------------------------------------|-------------------------------|---------------------------|------------|
|                        | Surface water (Abstraction for drinking) 1996 | Water Supply Regulations 2000 | Water Framework Directive | EA Advice  |
| Arsenic                | 50                                            | 10                            | <b>50</b>                 |            |
| Selenium               | 10                                            | <b>10</b>                     |                           |            |
| Cadmium                | 5                                             | 5                             | <b>1.5</b>                |            |
| Chromium               | 50                                            | 50                            | <b>32</b>                 |            |
| Copper                 | 50                                            | 2,000                         | <b>28</b>                 |            |
| Lead                   | 50                                            | 10                            | <b>7.2</b>                |            |
| Nickel                 |                                               | 20                            | <b>20</b>                 |            |
| Zinc                   | 3,000                                         |                               | <b>125</b>                |            |
| Boron                  |                                               | <b>1,000</b>                  |                           |            |
| Mercury                | 1                                             | 1                             | <b>0.07</b>               |            |
| Petroleum Hydrocarbons |                                               |                               |                           | <b>10</b>  |
| 1,1,1-Trichloroethane  |                                               |                               | <b>100</b>                |            |
| 1,1 Dichloroethane     |                                               |                               |                           | <b>100</b> |
| 1,2-Dichloroethane     |                                               | 3                             | <b>10</b>                 |            |
| 1,1-Dichloroethene     |                                               |                               |                           | <b>100</b> |
| Benzene                |                                               | 1                             | <b>10</b>                 |            |
| Ethylbenzene           |                                               |                               |                           | <b>10</b>  |
| Tetrachloroethene      |                                               | 10                            | <b>10</b>                 |            |
| Toluene                |                                               |                               | <b>50</b>                 |            |
| Trichloroethene        |                                               | 10                            | <b>10</b>                 |            |
| Vinyl Chloride         |                                               | <b>0.5</b>                    |                           |            |
| Trichloromethane       |                                               |                               | <b>2.5</b>                |            |
| Xylenes                |                                               |                               | <b>30</b>                 |            |
| Chloroethane           |                                               |                               |                           | <b>100</b> |

#### Waste classification & WAC

In the context of waste soils generated by remediation and/or groundworks activities on brownfield sites, the following definitions (from the Landfill Regulations 2002) apply:

- Inert (e.g. uncontaminated ‘natural’ soil, bricks, concrete, tiles & ceramics)
- Non-Hazardous (e.g. soil excavated from a contaminated site which contains dangerous substances, but at concentrations below prescribed thresholds)
- Hazardous (e.g. soil excavated from a contaminated site which contains dangerous substances at concentrations above prescribed thresholds)

Dangerous substances include compounds containing a variety of determinants commonly found in contaminated soils on brownfield sites, for example arsenic, lead, chromium, benzene etc.

Landfill operators require Waste Acceptance Criteria (WAC) laboratory data, if soil waste is classified as **hazardous**, and such waste must have been subjected to pre-treatment. However, subject to WAC testing it may be possible to classify it as stable, non-reactive hazardous waste, which can be placed within a dedicated cell within the non-hazardous landfill.

Lithos typically only include WAC analysis in site investigation proposals and reports, if significant off-site disposal (of soil classified as hazardous waste) is anticipated, for example where redevelopment proposals include basement construction etc. If off-site disposal of soils classified as hazardous waste during redevelopment is anticipated, then WAC analysis should be scheduled at an early stage in the remediation programme. However, organic compounds (BTEX, TPH, PAH etc) are the most common contaminants that result in soils being classed as hazardous, and these contaminants can often be dealt with by alternative technologies (eg by bioremediation or stabilisation) and consequently retention on site is often possible.

It should be noted that **non-hazardous** soil waste can go to a non-hazardous landfill facility; no further testing (eg WAC) is required.

### Possible action in event of Tier 1 exceedance

Should any of the Tier 1 criteria detailed above be exceeded, then three potential courses of action are available. (The first is only applicable in terms of human health, but the second and third could also be applied to groundwater or landfill gas).

1. Undertake further statistical analysis following the approach set out in "*Guidance on Comparing Soil Contamination Data with a Critical Concentration - CL:AIRE and CIEH, May 2008*" in order to determine whether contaminant concentrations of inorganic contaminants within soil\fill actually present a risk (only applicable to assessing the risk to human health).
2. Carry out a more detailed quantitative risk assessment in order to determine whether contamination risks actually exist.
3. Based on a qualitative risk assessment, advocate an appropriate level of remediation to "break" the pollutant linkage - for example the removal of the contaminated materials or the provision of a clean cover.

Prior to undertaking any statistical analysis the issue of the **averaging area** requires further consideration. The CL:AIRE\CIEH document still refers to CLR 7, which suggests averaging area should reflect receptor behaviour and therefore might be a single garden, or an open area used by the local community as a play area. This approach to averaging areas is considered applicable within the context of Part IIA of the Environmental Protection Act (EPA) 1990, in terms of an existing residential development.

However, Lithos consider the concept of a single garden as an averaging area to be inappropriate with respect to brownfield redevelopment, which is regulated by the planning regime. In this context, contamination across the entire site needs to be characterised by reference to the Conceptual Site Model. Consequently, Lithos gather and analyse sample results by fill type, and \or by former use in a given sub-area of the site, before undertaking statistical analysis; ie the averaging area is associated with the extent of a particular fill type, or an area affected by spillage\leakage.

In terms of brownfield redevelopment, this is considered a more appropriate methodology which provides a more representative sample population for statistical analysis. As such the entire site is considered in terms of the proposed end use, be this residential with, or without gardens.

Analysis by soil\fill type is appropriate for essentially immobile contaminants associated with a particular fill type, for example arsenic in colliery spoil, metals in ash & clinker, sulphate in plaster-rich demolition rubble etc.

Analysis by former use is appropriate where more mobile contaminants have entered the ground, for example diesel associated with leakage from a former fuel tank, downward migration of leachable metals through granular materials, various soluble contaminants present in a wastewater leaking into the ground via a fractured sewer etc. In these circumstances, it may be appropriate to undertake statistical analysis of sample results from a variety of different soil\fill types. However, consideration would have to be given to factors such as porosity which might influence impregnation of a mobile contaminant into the soil mass, ie contamination would normally be more pervasive and significant in granular soils than cohesive soils

#### General

Hazardous gas is considered to be any mixture of potentially explosive, toxic or asphyxiating gases, most notably methane, carbon dioxide and oxygen (deficiency). In addition, radon, a naturally occurring radioactive gas is also considered. Further information about radon is included in Notes 01 – Environmental Setting.

Assessment of potential risks associated with hazardous gas are based on a review of data obtained from the Landmark Information Group, the Environment Agency and the Local Authority and the British Geological Survey. Reference is also made to historical OS plans, which are inspected for evidence of backfilled quarries, railway cuttings, colliery spoil tips etc.

Where landfilling has occurred within 250m of the site boundary, the Local Planning Authority may request a landfill gas investigation in accordance with the Town and Country Planning General Development Order, 1988.

#### Sources

Potential sources of hazardous gas include:

- Landfill sites
- Made ground, especially where significant depths are present
- Shallow mineworkings associated with coal extraction
- Geological strata, including peat, organic silts, coal and limestone (reaction with acidic waters), granite (radon)
- Groundwater can sometimes act as a "carrier" for hazardous gas
- Leakages from pipelines or storage tanks
- Sewers, septic tanks and cess pits

#### Generation

Wherever biodegradable material is deposited, landfill gas (principally a mixture of methane and carbon dioxide) is likely to be generated by microbial activity. Carbon dioxide is an asphyxiant and toxic; methane is flammable and a mixture containing between 5% and 15% methane by volume in air is explosive. Landfill gas in the ground is unlikely in itself to pose a significant risk, though it may damage vegetation. However, infiltration of landfill gas into confined spaces (e.g. cellars, services, etc) may give rise to considerable risk.

There is no typical figure for the length of time that landfill gas will be evolved, but at many sites significant gas generation continues for at least 15 years after the last deposit of waste.

#### Migration

Gas migration from a landfill site may occur in several ways. It may migrate through adjacent strata; the distance of migration being dependent on the pressure gradients, volume of gas and permeability of the strata. Where there are faults, cavities and fissures within the strata, gas may move considerable distances. Other migration pathways for gas include man-made features such as mine shafts, roadways and underground services.

Gas migration is influenced by a number of climatic factors, such as atmospheric pressure variations, water table level variations and the influence of a covering of snow or ice over the surface of the site and surrounding area.

#### Gas monitoring procedure

Lithos adopt a standard gas monitoring procedure, in accordance with CIRIA guidance. This procedure involves the measurement, in the following order of:

- Atmospheric temperature, pressure and ambient oxygen concentration
- Gas emission rate
- Methane, oxygen and carbon dioxide concentrations using an infra-red gas analyser
- Standing water level using a dipmeter.

In addition, ground conditions at each sampling location are recorded together with prevailing weather conditions and any other observations such as any vandalism. Where samples of gas are required for laboratory analysis, Gresham Tubes or multi-layer Tedlar / ALTEF sampling bags are used. Gas concentrations in the well are typically recorded immediately before and after retrieval of a sample.

#### Current guidance

CIRIA Report 151 (1995)<sup>i</sup> identified that there was inadequate guidance on trigger concentrations for ground gases. CIRIA concluded that the most important aspect of a gas regime below or adjacent to a site was the surface emission rate, i.e. how quickly the gas is coming out of the ground. The lower the surface emission rate the lower the risk. CIRIA Report C665 (2007)<sup>ii</sup> advocates two methodologies for characterising sites:

**A** – All developments except low rise housing. The advocated methodology is that proposed by Wilson & Card, 1999<sup>iii</sup>

**B** – Low rise housing. An alternative (traffic light) methodology, derived by Boyle and Witherington, 2006<sup>iv</sup> for NHBC

Both methodologies refer to Gas Screening Values (GSV); previously referred to as limiting borehole gas volume flow.

## A – All developments except low rise housing

(Wilson & Card, 1999)<sup>v</sup> revised Table 28 of CIRIA 149<sup>iv</sup> in terms of borehole gas volume flow rate (now GSV) in order to achieve a more consistent design of protection measures. This was done to reflect the importance of recognising the gas surface emission rate. Wilson & Card then developed a method for classifying gassing sites (Table 1 below), which took into account the combined gas concentration and GSV.

| Characteristic Situation | Gas Screening Value, CH <sub>4</sub> or CO <sub>2</sub> (l/hr) | Additional limiting factors                                                                       | Typical source of generation                                            |
|--------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| 1                        | <0.07                                                          | Methane not to exceed 1% v/v and carbon dioxide not to exceed 5% v/v                              | Natural soils with low organic content                                  |
| 2                        | <0.7                                                           | Borehole air flow rate not to exceed 70 litre/hr otherwise increase to Characteristic Situation 3 | Natural soil, high peat/organic content                                 |
| 3                        | <3.5                                                           |                                                                                                   | Old landfill, inert waste, mineworkings flooded.                        |
| 4                        | <15                                                            | Quantitative Risk Assessment required to evaluate scope of protection measures.                   | Mineworkings – susceptible to flooding, completed landfill, inert waste |
| 5                        | <70                                                            |                                                                                                   | Mineworkings unflooded, inactive                                        |
| 6                        | >70                                                            |                                                                                                   | Recent landfill site                                                    |

Notes: Borehole flow rate = volume of gas (regardless of composition) which is escaping from well (l/hr). Gas Screening Value (litre/hour) = gas concentration (%) / 100 x borehole flow rate (l/hr). To facilitate design implementation, the limiting values for both methane and carbon dioxide are identical.

## B – Low rise housing.

NHBC have developed a characterisation system similar to that of Wilson & Card above, but specific to low-rise housing development (Boyle and Witherington) (Table 8.7). This approach compares measured gas emission rates with generic "Traffic Lights". The Traffic Lights include "Typical Maximum Concentrations" for initial screening, and risk-based Gas Screening Values (GSVs) for consideration of situations where the Typical Maximum Concentrations are exceeded. Calculations are carried out for both methane and carbon dioxide and the worst case adopted in order to establish the appropriate protection measures.

Table 8.7 NHBC Traffic light system for 150 mm void

| Traffic Light Classification | Methane <sup>1</sup>                              |                                             | Carbon Dioxide <sup>1</sup>                       |                                               |
|------------------------------|---------------------------------------------------|---------------------------------------------|---------------------------------------------------|-----------------------------------------------|
|                              | Typical Maximum Concentration <sup>5</sup> (%v/v) | Gas Screening Value <sup>2,4,6</sup> (l/hr) | Typical Maximum Concentration <sup>5</sup> (%v/v) | Gas Screening Value <sup>2,3,4,6</sup> (l/hr) |
| Green                        | 1                                                 | 0.16                                        | 5                                                 | 0.78                                          |
| Amber 1                      | 5                                                 | 0.63                                        | 10                                                | 1.56                                          |
| Amber 2                      | 20                                                | 1.56                                        | 30                                                | 3.13                                          |
| Red                          |                                                   |                                             |                                                   |                                               |

### Notes:

- The worst gas-regime identified at the site, either methane or carbon dioxide, recorded from monitoring in the worst temporal conditions, will be the decider for which Traffic Light and GSV is allocated.
- Generic GSVs are based on guidance contained within "The Building Regulations: Approved Document C" (2004) and assume a sub-floor void of 150 mm thickness.
- A leak of gas from the sub-floor void into a small room (e.g. downstairs toilet with soil pipe potentially passing into sub-floor void) of dimensions 1.50m × 1.50m × 2.50m, with a total room volume of 5.63m<sup>3</sup> has been considered.
- The GSV, in litres per hour, is as defined in Wilson and Card (1999) as the borehole flow rate multiplied by the concentration in the air stream of the particular gas being considered.
- The Typical Maximum Concentrations can be exceeded in certain circumstances should the conceptual site model indicate it is safe to do so. This is where professional judgment will be required, based on a thorough understanding of the gas regime identified at the site where monitoring in the worst temporal conditions has occurred.
- The GSV thresholds should not generally be exceeded without completion of a detailed gas risk assessment taking into account site-specific conditions.

<sup>i</sup> Harries CR, Witherington PJ and McEntee JM (1995). Interpreting measurements of gas in the ground. CIRIA Report 151

<sup>ii</sup> CIRIA (2007) – Assessing risks posed by hazardous ground gases to buildings.

<sup>iii</sup> Wilson SA and Card GB (February 1999). Reliability and Risk in Gas Protection Design. Ground Engineering.

<sup>iv</sup> Boyle & Witherington (2006) – Guidance on evaluation on development proposals on sites where methane and carbon dioxide are present, incorporating "traffic lights". Report Ref. 10627-R01-02, for NHBC

<sup>v</sup> Wilson SA and Card GB (February 1999). Reliability and Risk in Gas Protection Design. Ground Engineering.

## Background

Soakaways have been the traditional way to dispose of stormwater from buildings and paved areas remote from a public sewer or watercourse. In recent years, soakaways have been used within urban, fully-sewered areas to limit the impact on discharge of new upstream building works, and to avoid costs of sewer up-grading outside a development.

Soakaways are increasingly seen as a more widely applicable option alongside other means of stormwater control and disposal. Soakaways must store the immediate stormwater run-off and allow for its efficient infiltration into the adjacent soil. They must discharge their stored water sufficiently quickly to provide the necessary capacity to receive run-off from a subsequent storm. The time taken for discharge depends upon the soakaway shape and size, and the surrounding soil's infiltration characteristics. Soakaways can be constructed in many different forms and from a range of materials.

**BRE Digest 365, DG365:** 1991 describes design and construction procedures, explains how to calculate rainfall design values and soil infiltration rates, and gives design examples. Further advice is provided in **NHBC Standards Chapter 5.3 (Section 9 & Appendix F), Building Regulations Section 3 of Approved Document H (Drainage & Waste Disposal)**, and Chapter 13 of **CIRIA's SUDS Manual (C753:2015)**.

Soakaways should generally be built on land lower than or sloping away from buildings and be sited **at least 5m** from the foundations of a building.

BRE365 states that '**Groundwater should not rise to the level of the base of the soakaway** during annual variations in the water table' this is further reinforced in Chapter 13 of CIRIA C753:2015 which states that: "*A minimum distance of 1m between the base of the infiltration system and the maximum likely groundwater level should always be adopted. This is to minimise the risk of groundwater rising into the infiltration component and reducing the available storage volume, to protect the functionality of the infiltration process by ensuring a sufficient depth of unsaturated material and to protect the groundwater from any contamination in the run-off*". There may be a requirement to install groundwater monitoring wells at a site in order to monitor seasonal variations in groundwater level at least over a wet winter period.

Soakaways should **not be sited on sloping sites**, an assessment should also be made to ensure that infiltrating water will not cause a rise in groundwater levels, waterlogging of downhill areas or springs, and that slopes are not made unstable.

**Made ground** (and ground within 5m of deep fill) is not generally regarded as suitable for soakaways, due to the potential for inundation settlement and the leaching of contaminants.

**Chalk:** CIRIA C574:2002 notes that concentrated ingress of water into the chalk can initiate dissolution, particularly in low-density chalk. For this reason, soakaways should be sited well away from foundations for structures, roads or railways:-

- in areas where dissolution features are known to be prevalent, soakaways should be avoided but, if unavoidable, should be sited at least 20m away from foundations etc
- where the chalk is of low density (weak), or where density is not known, soakaways should be sited at least 10m away from foundations
- where the chalk is of medium density, or higher (moderately weak), soakaways should be sited at least 5m away from foundations

## Test methodology

Lithos undertake soakaway tests in general accordance with BRE Digest 365 "Soakaway Design". The BRE Digest recommends that each soakaway pit is filled and allowed to drain three times to near empty; the three fillings to be on the same or consecutive days. However, each test can take over 2 hours to complete and therefore pits are often only filled and allowed to drain on one occasion, due to the time constraints imposed on the investigation

Three filling\drainage cycles are more important where drainage is primarily via fissures, most notably within a rock mass. Initial drainage within the rock mass may be high, as the fissures fill with water, giving the impression (if only one cycle is undertaken) that soakaways would be a suitable drainage solution. If infiltration through the matrix of the rock is low, then drainage from the test pit becomes slow as the fissures become saturated.

For non-fissile, granular soils infiltration is via the matrix, and consequently one filling\drainage cycle is generally considered sufficient. Soakaway pits are typically excavated to a depth of about 2.5m using a mechanical excavator equipped with a 0.3m wide bucket. The soakaway test pits are rapidly filled with water to the top of the test section. The fall in water level is then monitored at regular intervals.

## Infiltration rates

Infiltration rates for each soakaway test are calculated (where possible) in accordance with BRE Digest 365. This design takes into account the time of emptying the soakaway pit between 25% and 75% of its effective depth. The effective depth is calculated from the starting water level to the soakaway pit base. Where the water level did not fall to 25% effective depth, the data was interpolated in order to obtain a representative infiltration rate.

## Soakaway design

Soakaway design should be carried out by a suitably qualified and experienced Drainage Engineer, in accordance with BRE Digest 365 using the infiltration rates calculated from soakaway testing during a ground investigation.

It is generally assumed that soakaways become impracticable on residential developments when:

- A chamber type design requires a square pit with side length in excess of 1.8m, or an effective depth greater than 1.5m.
- A trench type design requires a length greater than about 10m, or an effective depth greater than 1.5m.

Increasing the soakaway effective depth might offer a solution, but consideration should be given to:

- Standing groundwater level
- Depth to base of permeable strata
- Cost of excavation

Soakaway percolation in some rock types is predominately via the vertical joints within the rock mass. The relatively small-scale soakaway test pits may not intercept such joints and this can result in variable test results. However, it is likely that the larger surface area of a completed soakaway within the development will intercept such joints.

## **Appendix B**

### **Drawings**



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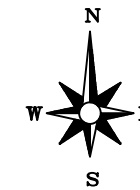
Tel 01937 545330

KEEPMOAT  
HOMES  
YORKSHIRE

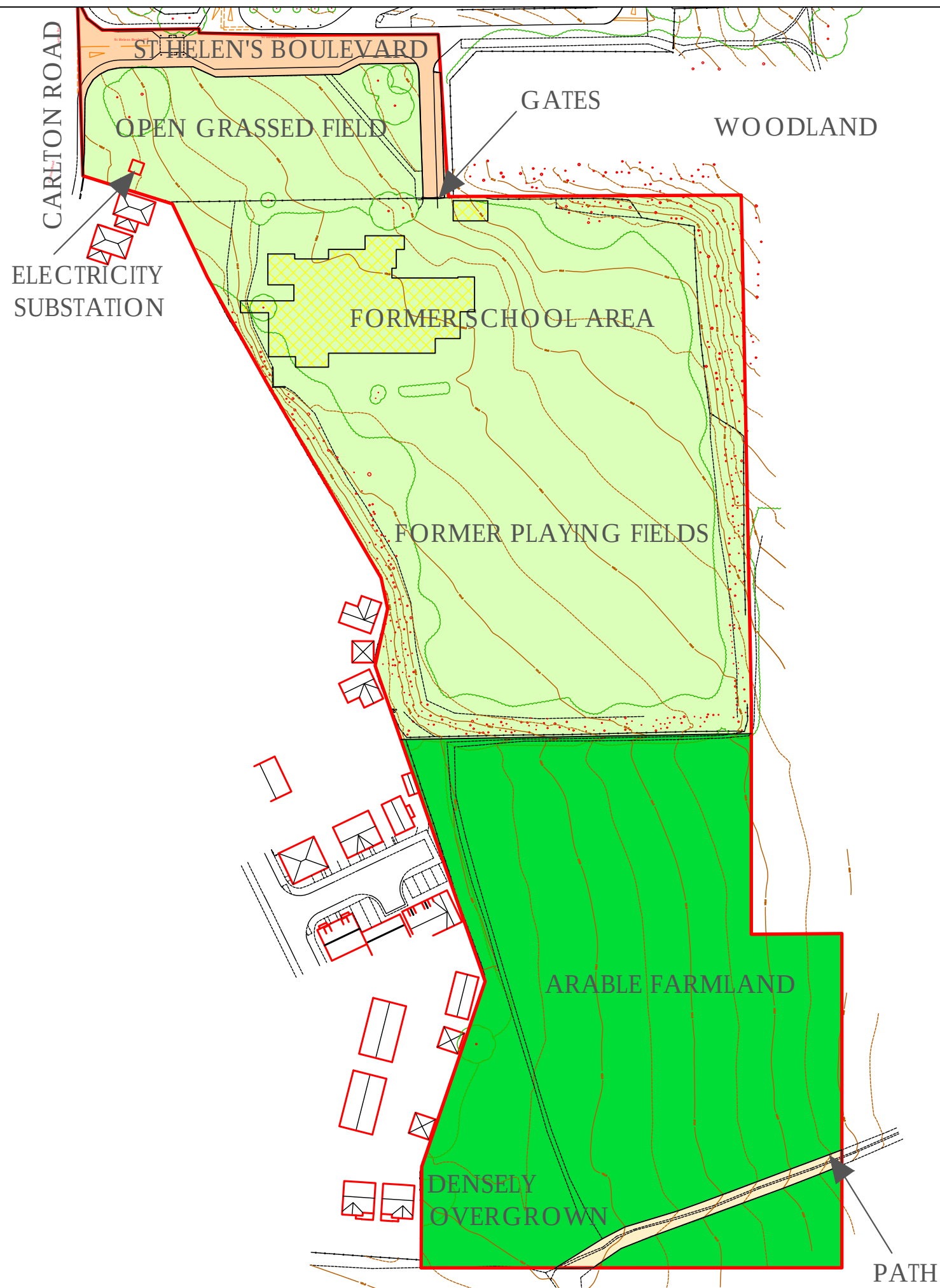
CARLTON ROAD,  
BARNESLEY

SITE LOCATION  
PLAN

|             |                                       |          |                                     |
|-------------|---------------------------------------|----------|-------------------------------------|
| DRAWN       | MAR                                   | DATE     | 16 05 17                            |
| CHECKED     | MJT                                   | DATE     | 16 05 17                            |
| STATUS      | FOR COMMENT <input type="checkbox"/>  | DRAFT    | <input type="checkbox"/>            |
|             | FOR APPROVAL <input type="checkbox"/> | FINAL    | <input checked="" type="checkbox"/> |
| SCALE       | 1:25,000                              | SHEET    | A4                                  |
| DRAWING NO. | 2551/1                                | REVISION |                                     |



| NOTES                                                                                                                                                            |             |                                           |          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------|----------|
| <p>— APPROXIMATE SITE BOUNDARY</p> <p>REPRODUCED FROM CHRIS GOTHARD<br/>ARCHITECTURAL DRAWING REFERENCE<br/>SK01, DATED MAY 2016</p>                             |             |                                           |          |
| REV.                                                                                                                                                             | DESCRIPTION | DATE                                      |          |
| <div><p>info@lithos.co.uk<br/>www.lithos.co.uk<br/>Tel 01937 545330</p></div> |             |                                           |          |
| CLIENT                                                                                                                                                           |             |                                           |          |
| KEEPMOAT<br>HOMES<br>YORKSHIRE                                                                                                                                   |             |                                           |          |
| JOB TITLE                                                                                                                                                        |             |                                           |          |
| CARLTON ROAD,<br>BARNSELY                                                                                                                                        |             |                                           |          |
| DRAWING TITLE                                                                                                                                                    |             |                                           |          |
| PROPOSED SITE LAYOUT                                                                                                                                             |             |                                           |          |
| DRAWN                                                                                                                                                            | DATE        | STATUS                                    |          |
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| CHECKED                                                                                                                                                          | DATE        | FOR APPROVAL <input type="checkbox"/>     |          |
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| SCALE                                                                                                                                                            | SHEET       | DRAWING NO.                               | REVISION |
| NTS                                                                                                                                                              | A3          | 2551/2                                    |          |



- NOTES
- GRASS & OVERGROWN AREAS
  - GRAVEL OR HARDCORE SURFACING
  - TARMAC HARDSTAND
  - FARMLAND
  - FORMER SCHOOL BUILDINGS FOOTPRINT (FROM 1973 OS PLAN)
  - APPROXIMATE SITE BOUNDARY

| REV. | DESCRIPTION | DATE |
|------|-------------|------|
|      |             |      |



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CLIENT

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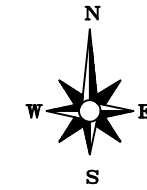
JOB TITLE

CARLTON ROAD,  
BARNSELY

DRAWING TITLE

SITE FEATURES

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| CHECKED | MJT    | DATE  | 17 07 17 | FOR APPROVAL | DRAFT       | <input type="checkbox"/>            |
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| SCALE   | 1:1250 | SHEET | A3       | DRAWING NO.  | 2551/3      | REVISION                            |



- NOTES
- GRASS & OVERGROWN AREAS
  - GRAVEL OR HARDCORE SURFACING
  - TARMAC HARDSTAND
  - FARMLAND
  - APPROXIMATE SITE BOUNDARY
  - LOCATION & ORIENTATION OF PHOTOGRAPH

| REV. | DESCRIPTION | DATE |
|------|-------------|------|
|      |             |      |



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www.lithos.co.uk  
Tel 01937 545330

CLIENT

KEEPMOAT  
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JOB TITLE

CARLTON ROAD,  
BARNSELY

DRAWING TITLE

SITE PHOTOGRAPHS

|         |     |      |          |              |             |                                     |
|---------|-----|------|----------|--------------|-------------|-------------------------------------|
| DRAWN   | MAR | DATE | 07 07 17 | STATUS       | FOR COMMENT | <input type="checkbox"/>            |
| CHECKED | MJT | DATE | 07 07 17 | FOR APPROVAL | DRAFT       | <input type="checkbox"/>            |
|         |     |      |          | FINAL        |             | <input checked="" type="checkbox"/> |

|       |              |       |    |             |        |          |  |
|-------|--------------|-------|----|-------------|--------|----------|--|
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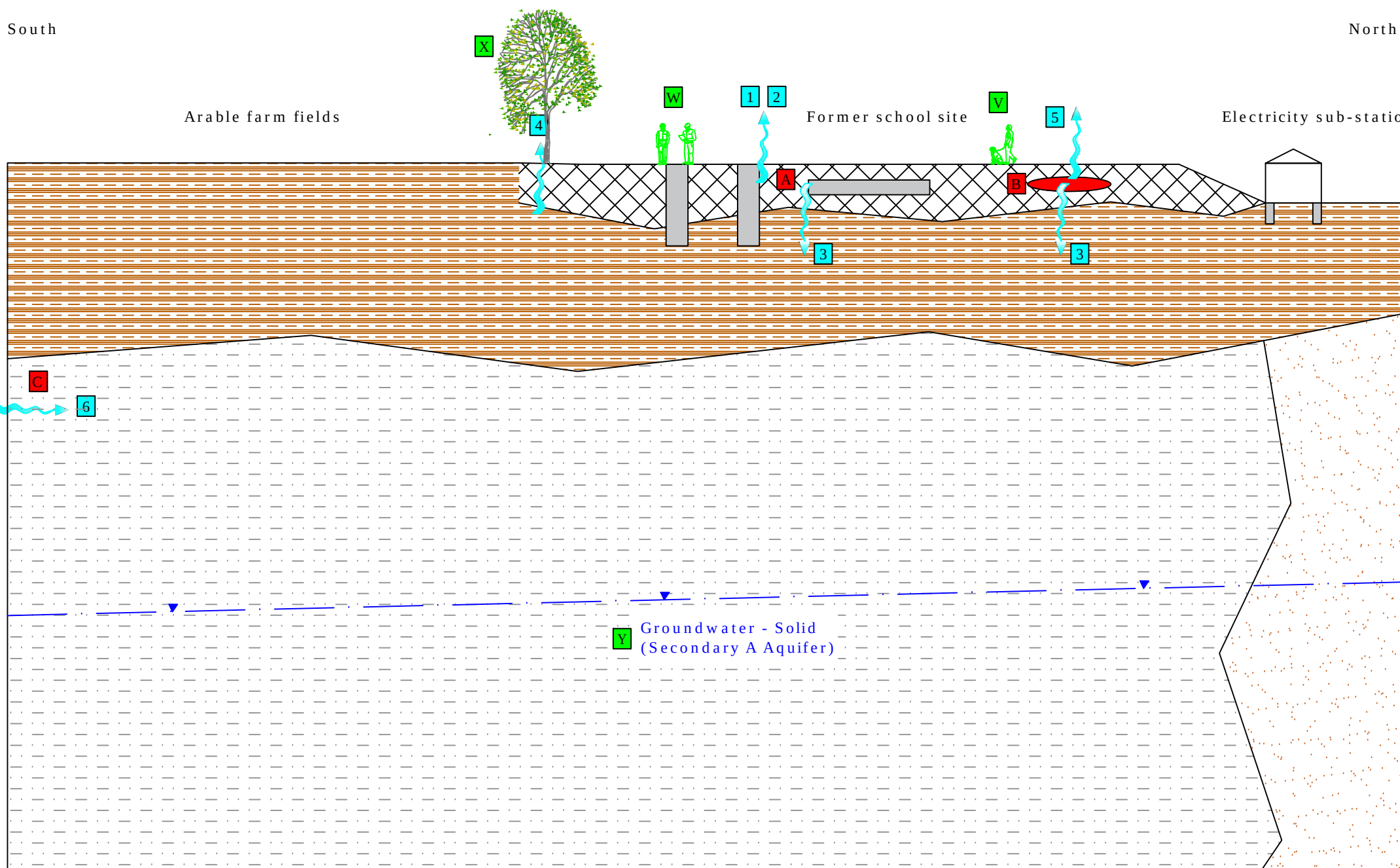
South

North

Arable farm fields

Former school site

Electricity sub-station



Groundwater - Solid  
(Secondary A Aquifer)

KEY

- MADE GROUND
- RESIDUAL SOILS  
(GRAVELLY CLAYS)
- OAK ROCK SANDSTONE
- PENNINE MIDDLE COAL  
MEASURES

SOURCES

- MADE GROUND (INORGANICS,  
ORGANICS, ASBESTOS &  
HAZARDOUS GAS)
- LEAKAGE/SPILLAGE (ORGANICS)
- OFF-SITE LANDFILL  
(HAZARDOUS GAS)

PATHWAYS

- DERMAL CONTACT
- INGESTION/INHALATION
- LEACHING OF CONTAMINANTS
- UPTAKE BY PLANTS
- VOLATILISATION
- MIGRATION OF GAS

RECEPTORS

- END USERS (RESIDENTS)
- SITE WORKERS
- VEGETATION
- GROUNDWATER

NOTES

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YORKSHIRE

JOB TITLE

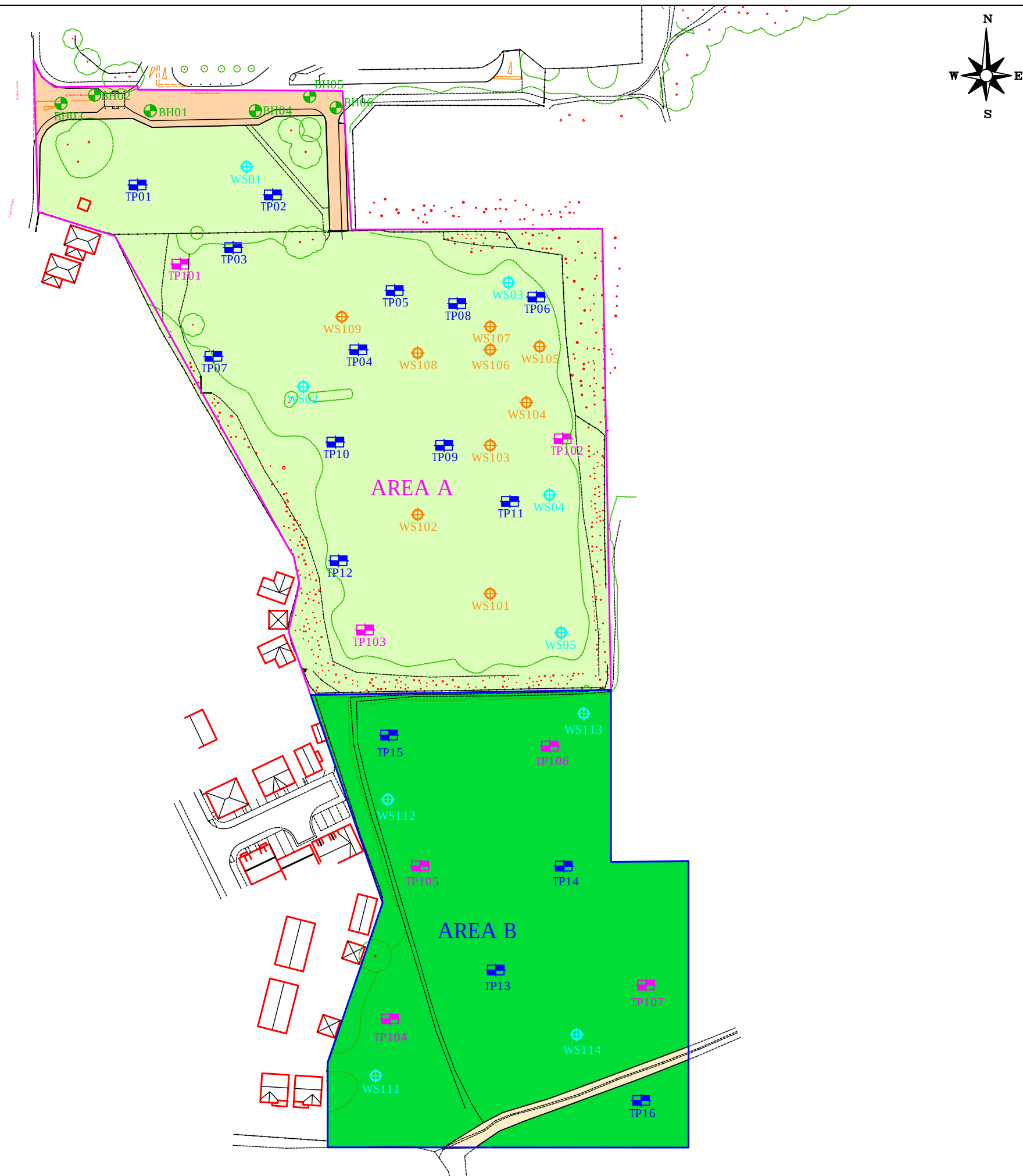
CARLTON ROAD,  
BARNSELY

DRAWING TITLE

PRELIMINARY CONCEPTUAL SITE  
MODEL

|         |     |      |          |              |             |                                     |
|---------|-----|------|----------|--------------|-------------|-------------------------------------|
| DRAWN   | MAR | DATE | 30 05 17 | STATUS       | FOR COMMENT | <input type="checkbox"/>            |
| CHECKED | MJT | DATE | 30 05 17 | FOR APPROVAL | DRAFT       | <input type="checkbox"/>            |
|         |     |      |          | FINAL        |             | <input checked="" type="checkbox"/> |

|       |              |       |    |             |        |          |  |
|-------|--------------|-------|----|-------------|--------|----------|--|
| SCALE | Not to scale | SHEET | A3 | DRAWING NO. | 2551/5 | REVISION |  |
|-------|--------------|-------|----|-------------|--------|----------|--|



NOTES

 TRIAL PIT LOCATION

 SOAKAWAY LOCATION

 DYNAMIC SAMPLE LOCATION

 DYNAMIC SAMPLE LOCATION  
(WITH INSTALLATION)

 ROAD CORE LOCATION

 AREA A BOUNDARY

 AREA B BOUNDARY

|      |                     |            |
|------|---------------------|------------|
| A    | TOPO UNDERLAIN      | 05/07/2017 |
| B    | PHASE 2 HOLES ADDED | 09/02/2018 |
| REV. | DESCRIPTION         | DATE       |

 AREA A BOUNDARY AREA B BOUNDARY

info@lithos.co.uk  
www.lithos.co.uk  
Tel 01937 545330

CLIENT

KEEPMOAT  
HOMES  
YORKSHIRE

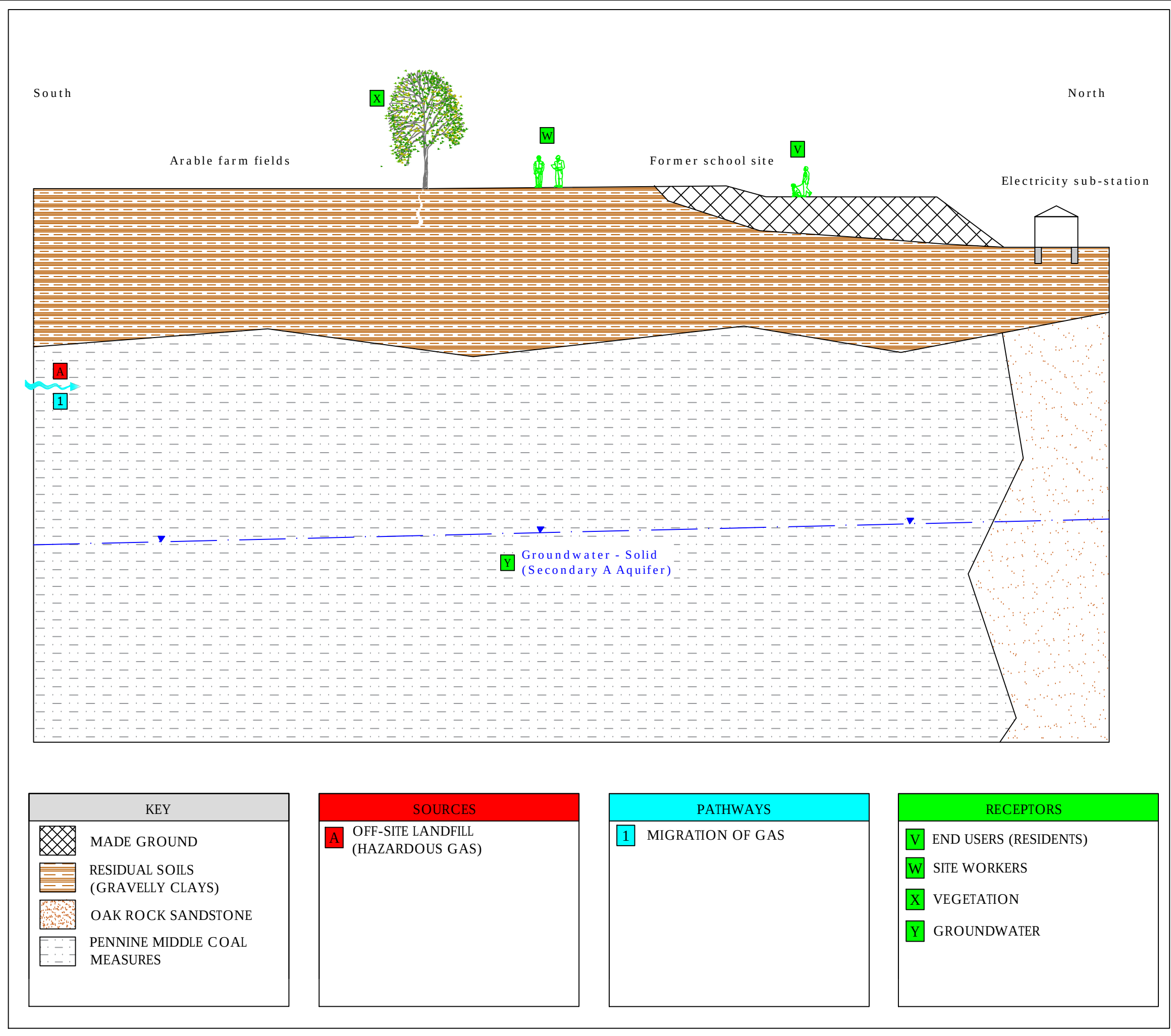
JOB TITLE

CARLTON ROAD,  
BARNSELY

DRAWING TITLE

EXPLORATORY HOLE LOCATIONS

|         |  |            |  |                                           |  |
|---------|--|------------|--|-------------------------------------------|--|
| DRAWN   |  | DATE       |  | STATUS                                    |  |
| LNA     |  | 09/02/2018 |  | FOR COMMENT <input type="checkbox"/>      |  |
| CHECKED |  | DATE       |  | FOR APPROVAL <input type="checkbox"/>     |  |
| MJT     |  | 09/02/2018 |  | DRAFT <input checked="" type="checkbox"/> |  |
|         |  |            |  | FINAL <input type="checkbox"/>            |  |
| SCALE   |  | SHEET      |  | DRAWING NO.                               |  |
| 1:1,500 |  | A3         |  | 2551/6                                    |  |
|         |  |            |  | REVISION                                  |  |
|         |  |            |  | B                                         |  |



| NOTES |             |      |
|-------|-------------|------|
|       |             |      |
| REV.  | DESCRIPTION | DATE |



info@lithos.co.uk  
www.lithos.co.uk  
Tel 01937 545330

CLIENT

KEEPMOAT  
HOMES  
YORKSHIRE

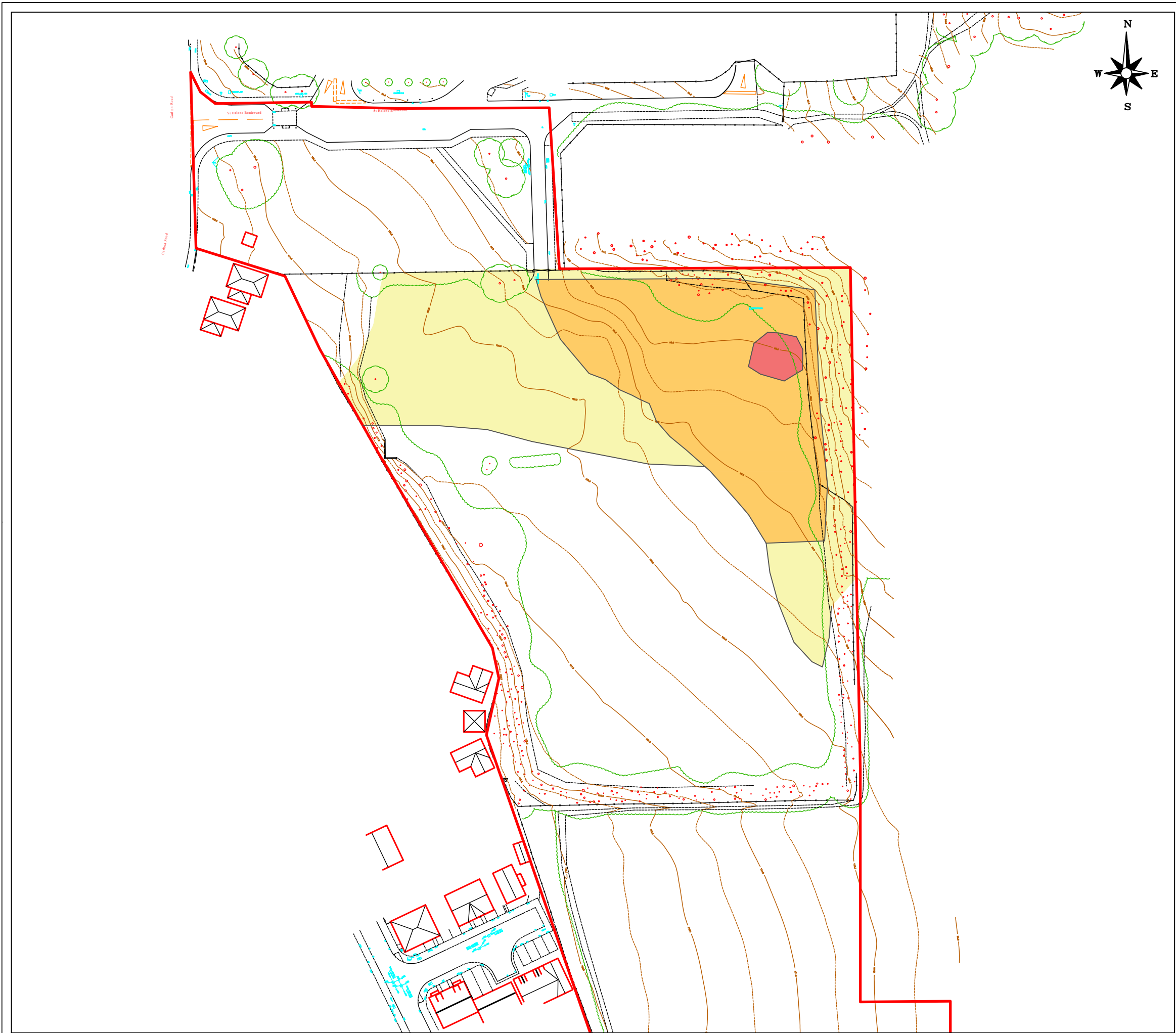
JOB TITLE

CARLTON ROAD,  
BARNSLEY

DRAWING TITLE

REVISED CONCEPTUAL SITE MODEL

|         |              |       |          |              |             |                          |
|---------|--------------|-------|----------|--------------|-------------|--------------------------|
| DRAWN   | MAR          | DATE  | 05 07 17 | STATUS       | FOR COMMENT | <input type="checkbox"/> |
| CHECKED | MJT          | DATE  | 05 07 17 | FOR APPROVAL | DRAFT       | <input type="checkbox"/> |
| SCALE   | Not to scale | SHEET | A3       | DRAWING NO.  | 2551/7      | REVISION                 |



- NOTES
- MADE GROUND 0m<1.5m THICK
  - MADE GROUND 1.5m<2.5m THICK
  - MADE GROUND 2.5m< THICK
  - APPROXIMATE SITE BOUNDARY
  - AREAS NOT SHADED HAVE HAD NO MADE GROUND IDENTIFIED

| REV. | DESCRIPTION | DATE |
|------|-------------|------|
|      |             |      |



info@lithos.co.uk  
www.lithos.co.uk  
Tel 01937 545330

CLIENT

KEEPMOAT  
HOMES  
YORKSHIRE

JOB TITLE

CARLTON ROAD,  
BARNSELY

DRAWING TITLE

MADE GROUND THICKNESSES

|         |        |       |          |              |             |                                     |
|---------|--------|-------|----------|--------------|-------------|-------------------------------------|
| DRAWN   | MAR    | DATE  | 05 07 17 | STATUS       | FOR COMMENT | <input type="checkbox"/>            |
| CHECKED | MJT    | DATE  | 05 07 17 | FOR APPROVAL | DRAFT       | <input type="checkbox"/>            |
|         |        |       |          | FINAL        |             | <input checked="" type="checkbox"/> |
| SCALE   | 1:1000 | SHEET | A3       | DRAWING NO.  | 2551/8      | REVISION                            |

## **Appendix C**

### **Commission**

002/2551/REG

15<sup>th</sup> August 2016



Registered in England 07068066

Parkhill  
Wetherby  
West Yorkshire  
LS22 5DZ

T 01937 545 330  
[www.lithos.co.uk](http://www.lithos.co.uk)

Mr P Rice  
Keepmoat Homes Yorkshire  
Callflex Business Park  
Golden Smithies Lane  
Wath upon Dearne  
Rotherham  
S63 7ER

Dear Peter

### Carlton Road, Barnsley

Further to your recent invitation, please find attached our proposal for undertaking a site investigation on the above land. We understand that your proposed development will include 111 traditional 2 storey domestic dwellings with associated gardens, POS and adoptable roads and sewers; a sketch layout has been provided.

Review of the information supplied suggests that the site consists of a single parcel of land of approximately 3.2 hectares immediately south of St. Helens Boulevard.

It is apparent from a brief site visit that former school buildings have been demolished and hardstand appears to have been grubbed-up. The site has been made secure with palisade fencing around the perimeter.

Brief review of Old Maps and Environment Agency data suggests the site:

- Appears to have remained undeveloped until the school was built by early 1970s;
- Rotherham Road landfill is located c. 50m to south west; and,
- Is not within a groundwater source protection zone.

Brief examination of SYMAS report suggests the site is directly underlain by the Oaks Rock Sandstone. This site is located within a Coal Mining Development Low Risk Area, therefore a mining report will be obtained (however, at this stage an intrusive mining investigation is considered unlikely to be required).

We will need a Promap or topo survey in CAD format, to provide a base plan for technical drawings etc. If you do not have one, we could obtain at cost plus £\*\*.

Our site investigation will be undertaken in accordance with UK good practice (as outlined in BS5930, BS10175, CLR11 etc). Our Report may not fully comply with Eurocode 7 (EC7) and will not purport to be a Ground Investigation Report, nor a Geotechnical Design Report as defined by EC7. Our ground appraisal is intended to assist others as they proceed with design of the proposed development.

This proposal allows for the following works:

**Desk study:** Environmental search data and historical maps (obtained from Landmark or Groundsure), will be reviewed in order to determine whether any past land uses have had any effect on the proposed development. In addition, published geological plans of the area will be examined. We will also visit site to undertake a walkover survey.



**Fieldwork:** We have allowed for two day's trial pitting and a day's window sampling using a mini percussion drilling rig, equipped with a concrete corer. All trial pits and boreholes will be supervised and logged by an experienced geoenvironmental engineer.

The boreholes are primarily intended to enable the installation of gas wells.

Soakaway testing will also be carried out in at least 5 pits in order to assess suitability of the ground for house and highway surface water drainage.

Representative soil samples of natural and man-made ground, including any contaminated samples, will be taken during the works. In-situ shear strengths of any cohesive soils encountered will be determined by the use of a hand-held shear vane.

The mechanical excavator will be equipped with a breaker to enable excavation through any buried concrete slabs and obstructions, and where necessary in bedrock (for soakaway tests).

We will make every effort to compact arisings and 'sweep' them over each pit. However, you should be aware that on completion of the investigation, "graves" of spoil (each about 3m long by 1m wide) unsuitable for trafficking, will be left up to 400mm proud at each trial pit location. At this stage, no allowance has been made for any further reinstatement such as removal of excess arisings, replacement of turf.

If the pitting encounters significant thicknesses of made ground or very soft/loose deposits (neither considered likely), boreholes may be required to obtain geotechnical data from greater depth. We will advise you of any need for boreholes within 2 days of completion of the pitting.

This investigation should yield sufficient data to enable a foundation zoning plan, and possibly a detailed Foundation Schedule. However, if ground conditions are found to be more variable than anticipated, a 'tighter' grid of pits will be necessary prior to preparation of a detailed Foundation Schedule. This proposal does not allow for the preparation of a detailed Foundation Schedule, but we will provide a quote on completion of the site investigation if requested.

Given the presence of Rotherham Road landfill is located c. 50m to south west, we have allowed for the installation of wells in 8 boreholes and monitoring for hazardous gas (and any shallow groundwater).

The generation potential of this gas source is considered likely to be Low. Therefore, in accordance with CIRIA Report C665, we have initially allowed for 9 visits over a 6 month period. A hazardous gas risk assessment will be issued on completion of monitoring.

**Soils testing:** This will comprise routine geotechnical soils analysis, including 9 moisture content & Atterberg limits, and 9 pH & water soluble sulphate.

This site is brownfield and therefore likely to be underlain by made ground which in turn is likely to be subject to re-engineering prior to the construction of new estate roads. Consequently, there is no merit in obtaining CBR values at this stage.

Appropriate chemical analyses, based on our knowledge of the site's history, have been allowed for; this will comprise 18 samples for a suite including heavy metals, speciated PAH, and banded TPH (with supplementary speciation as/where appropriate). In the event that ground contamination is more significant or different to that anticipated, it might be necessary to carry out additional chemical testing.

Within in our proposal we have allowed for the screening (ID) of 18 samples for asbestos. In the event that positive IDs are reported, it is likely that we will need to schedule further analysis (asbestos quantification), in order to determine the significance of the results. Asbestos quantification is currently a relatively expensive test and consequently we have not allowed for it at this stage. We will inform you immediately after receipt of results if we consider asbestos quantification is required.

**Reporting & timescales:** In order to provide you with sufficient information to enable assessment of abnormal costs at the earliest opportunity we will issue a concise overview report within 3 days of fieldwork completion.

On completion of the desk study, fieldwork and laboratory testing a comprehensive bound, factual and interpretative report will be issued. This will contain detailed engineering records, laboratory test results, copies of all relevant correspondence and drawings of the site. The report will include qualitative risk assessment with respect to both controlled waters and human health. The report will also include consideration of foundation types.

Fieldwork could be commenced within 3 weeks of receipt of your written instruction to proceed. Our comprehensive geoenvironmental appraisal report will be issued within 4 weeks of fieldwork completion. This report will comment on issues associated with hazardous gas, but the gas risk assessment will not be issued until monitoring is completed.

Given previous usage of this land, it is considered highly likely that a Remediation Strategy report will be required by the Local Authority, and our proposal allows for this.

It should be noted that a Remediation Strategy outlines the remediation objectives necessary to protect environmental receptors, and render a site suitable for the proposed end use. A Remediation Strategy is not the same as a Method Statement; the latter should be prepared subsequently, usually by a Contractor, in order to detail how the objectives will be achieved.

A copy of the final report will be issued to the relevant regulatory authorities on receipt of written instruction from yourselves.

**Invoicing:** The attached proposal provides a breakdown of the costs associated with this project. This breakdown is for information only and the proposal can be regarded as a lump sum price of £\*\*\*\*\* plus VAT. Variation will only occur in the event that a given item is not undertaken or that substantial additional works are recommended, in which case we will inform you immediately, provide costs for the required works, and seek your prior consent.

Our proposal allows for submission of the report to the Local Authority and NHBC, and for submission of a single piece of subsequent correspondence with each regulator to address any queries they may have. Any further meetings, correspondence etc, would be chargeable.

We will submit invoices for this project at the milestones defined below:

- 1<sup>st</sup> milestone invoice (Items A to D) within 5 days of fieldwork completion, with exploratory hole logs and an interim letter report outlining our initial findings
- 2<sup>nd</sup> milestone invoice (Items E to G) on issue of the final SI report
- 3<sup>rd</sup> and final invoice (Item H) after completion of the gas monitoring/issue of the supplementary letter report

**Health, safety & welfare:** The works outlined above will be carried out in accordance with Lithos' task- and site- specific Risk Assessments and Method Statements.

Details of welfare will be included within the Method Statements, however, this investigation is expected to be completed within 2 working days and therefore it is not considered reasonably practicable to provide formal welfare facilities, and our proposal makes no allowance for so doing.

Utility plans are required in order to protect operatives from the hazards associated with striking buried services and avoid potentially substantial disruption\repair costs. We will make every effort not to damage any services (including review of utility plans and use of a CAT detector). However, Lithos cannot accept liability for damage to any underground services that are not accurately marked on plans made available to us prior to commencement of our field investigation, or have not been accurately marked on the ground by a responsible third party (e.g. utility company, site owner).

Most developers have copies of the necessary utility plans (including electricity, gas, water, drainage & telecom), and it would be appreciated if you could forward these prior to the proposed fieldworks. However, if you do not have the necessary plans, Lithos will obtain them direct from each of the utility companies.

It is likely that the site is underlain by many "private" services and drains etc which will not been shown on statutory utility plans. Consequently, it would be appreciated if copies of plans showing these services could be made available to our field engineer, and/or someone with site knowledge could advise us with respect to safe locations for our exploratory holes.

Under the CDM Regulations 2015, Lithos must be provided with pre-construction information already in your possession, or information that can reasonably be obtained through sensible enquiry. This information must be relevant to the project, have an appropriate level of detail, and be proportionate to the nature of the risks.

**Terms & conditions:** This work will be undertaken in accordance with our Standard Terms and Conditions, a copy of which are enclosed.

It is hoped the above is sufficient for your present needs. However, should you require any further information, please contact the undersigned.

Yours sincerely

A handwritten signature in black ink, appearing to read "Mark Perrin".

Mark Perrin  
Director

**for and on behalf of**  
**LITHOS CONSULTING LIMITED**

DEFINITIONS AND INTERPRETATION

- 1.1 In this Agreement, unless the context otherwise requires, the following words and expressions have the following meanings:
- "Agreement" shall mean these Terms (entitled "Terms and Conditions for the Appointment of Lithos Consulting"), the Proposal, any document recording the Client's unequivocal acceptance of the Proposal and any other documents or parts of other documents expressly referred to in any of the foregoing;
- "Client" shall mean the party for whom the Services are being provided by Lithos;
- "Documents" shall mean all documents of any kind and includes plans, drawings, reports, programmes, specifications, Bills of Quantities, calculations, letters, e-mails, faxes, memoranda, films and photographs (including negatives), or any other form of record prepared or provided or received by, or on behalf of Lithos, and whether in paper form or stored electronically or on disk, or otherwise;
- "Lithos" shall mean Lithos Consulting Limited whose registered office is at Parkhill, Walton Road, Wetherby, West Yorkshire, LS22 5DZ.
- "Intellectual Property" includes all rights to, and any interests in, any patents, designs, trade marks, copyright, know-how, trade secrets and any other proprietary rights or forms of intellectual property (protectable by registration or not) in respect of any technology, concept, idea, data, programme or other software (including source and object codes), specification, plan, drawing, schedule, minutes, correspondence, scheme, programme, design, system, process logo, mark, style, or other matter or thing, existing or conceived, used, developed or produced by any person;
- "Parties" shall mean the Client and Lithos
- "Project" shall mean the project described in the Proposal and any enquiry from the Client on which Lithos has based its Proposal;
- "Proposal" means the offer document prepared by Lithos in response to an enquiry or otherwise, in connection with the proposed provision of the Services;
- "Services" means the work and services relating to the Project to be provided by Lithos pursuant to the Agreement and as set out in the Proposal and shall include any additions or amendments thereto made in accordance with these Terms;
- "Terms" means these terms entitled "Lithos Consulting Terms of Appointment".

- 1.2 Words importing the singular only shall also include the plural and vice versa, where the context requires.
- 1.3 Words importing persons or parties shall include firms, corporations and any organisation having legal capacity and vice versa, where the context requires; and words importing a particular gender include all genders.
- 1.4 The sub-headings to the clauses of these Terms are for convenience only and shall not affect the construction of the Agreement.
- 1.5 A reference to legislation includes that legislation as from time to time amended, re-enacted or substituted and any Orders in Council, orders, rules, regulations, schemes, warrants, by-laws, directives or codes of practice issued under any such legislation.
- 1.6 In the event of conflict between the documents forming part of the Agreement, the Proposal shall prevail, followed by the Terms.

2 APPOINTMENT

- 2.1 The Client agrees to engage Lithos and Lithos agrees to provide the Services in accordance with the provisions of the Agreement.

3 OBLIGATIONS OF LITHOS

- 3.1 Lithos shall perform the Services using the reasonable standard of skill and care normally exercised by similar professional Environmental firms in performing similar services under similar conditions.
- 3.2 Lithos shall use all reasonable endeavours to perform the Services in accordance with all relevant environmental and safety legislation.

4 OBLIGATIONS OF THE CLIENT

- 4.1 Throughout the period of this Agreement the Client shall afford to Lithos or procure the affording to Lithos of access to any site where access is required for the performance of the Services.
- 4.2 The Client accepts responsibility for ensuring that Lithos is notified in writing of all special site and/or plant conditions, including without prejudice to the generality of the foregoing, the existence and precise location of all underground services, cables, pipes, drains or underground buildings, constructions or any hazards known or suspected by the Client, which the Client shall clearly mark on the ground or identify on accurate location plans supplied to Lithos prior to the commencement of the Services. The Client shall also inform Lithos in writing of any relevant operating procedures including any site safe operating procedures and any other regulations relevant to the carrying out of the Services. The Client shall indemnify Lithos against all costs, claims, demands and expenses arising as a result of any non-disclosure in this respect, including but not limited to indemnification against any action brought by the owner of the land or otherwise.
- 4.3 If the Client discovers any conflict, defect or other fault in the information or designs provided by Lithos pursuant to the Agreement, he will advise Lithos in writing of such defect, conflict or other fault and Lithos shall have the right to rectify the same or where necessary, to design the solution for rectification of any works carried out by others pursuant the conflicting, defective or in any other way faulty information or designs.

5 INTELLECTUAL PROPERTY

- 5.1 The copyright in all Intellectual Property prepared by or on behalf of Lithos in connection with the Project for delivery to the Client shall remain vested in Lithos.
- 5.2 The Client shall have a non-exclusive licence to copy and use such Intellectual Property for purposes directly related to the Project. Such licence shall enable the Client to copy and use the Intellectual Property but solely for its own purposes in connection with the Project and such use shall not include any licence to reproduce any conceptual designs or professional opinions contained therein nor shall it include any licence to amend any drawing, design or other Intellectual Property produced by Lithos.
- 5.3 Should the Client wish to use such Intellectual Property in connection with any other works or for any other purpose not directly related to the Project or wish to pass any Intellectual Property to any third party, it must obtain the prior written consent of Lithos. The giving of such consent shall be at the discretion of Lithos and shall be upon such terms as may be required by Lithos. Lithos shall not be liable for the use by any person of such Intellectual Property for any purpose other than that for which the same were prepared by or on behalf of Lithos.
- 5.4 Ownership of any proposals submitted to the Client that are not subsequently confirmed as part of the Services to be provided for the Client remain with Lithos and such proposals must not be used as the basis for any future work undertaken by the Client or a third party and no liability can be accepted howsoever arising from such proposals.
- 5.5 In the event of the Client being in default of payment of any fees or other amounts due, Lithos may suspend further use of the licence on giving 2 days' notice of the intention to do so. Use of the licence may be resumed on receipt of the outstanding amounts.

6 TITLE

- 6.1 Lithos shall transfer only such title or rights in respect of the Documents as it has, and if any part is purchased from a third party Lithos shall transfer only such title or rights as that party had and has transferred to Lithos.
- 6.2 Title in the Documents shall remain with and shall not pass to the Client until the amount due under the invoice(s) (including interest and costs) has been paid in full.
- 6.3 Until title passes, the Client shall hold the Documents as bailee for Lithos and shall store or mark them so that they can at all times be identified as the property of Lithos.
- 6.4 At any time before title passes (save and except where payment is not due), but only after prior consultation with the Client, Lithos may without any liability to the Client repossess and use or sell all or any of part of the Documents and by doing so terminate the right of the Client to use, sell or otherwise deal in the Documents.
- 6.5 Lithos may maintain an action for the price of the Documents notwithstanding that title in them has not passed to the Client.

7 CONFIDENTIALITY

- 7.1 Lithos undertakes not to divulge or disclose to any third party without the written consent of the Client information which is designated confidential by the Client or which can reasonably be considered to be confidential and arises during the performance of the Services unless required to do so by law or necessary in the proper performance of its duties in relation to the Project, or in order to make full frank and proper disclosure to its insurers or intended insurers, or to obtain legal or accounting advice.
- 7.2 Subject to the above, Lithos shall be permitted to use information related to the Services it provides in connection with the Project for the purposes of marketing its services and in proposals for work of a similar type.

8 THIRD PARTIES

- 8.1 The Agreement or any part thereof or any benefit or interest thereunder may not be assigned by the Client without the prior written consent of Lithos. The giving of such consent shall be at the discretion of Lithos and Lithos will only agree to an assignment on its terms and in return for payment of a fee by the Client to Lithos to cover Lithos's legal and other costs associated with any assignment.
- 8.2 The Agreement shall not confer and shall not purport to confer on any third party any benefit or any right to enforce any term of this Agreement for the purposes of the Contracts (Rights of Third Parties) Act 1999 or otherwise.
- 8.3 Lithos will consider and may consent to any request from the Client for Lithos to enter a collateral warranty with a third party with regard to the Services provided under the Agreement. The giving of such consent shall be at the discretion of Lithos and Lithos will only enter a collateral warranty on its terms and in return for payment of a fee by the Client to Lithos to cover Lithos's legal and other costs associated with any collateral warranty.

9 INSURANCE

- 9.1 Lithos warrants to the Client that there is in force a policy of Professional Indemnity insurance covering its liabilities for negligence under this Agreement, with a limit of indemnity of £5,000,000 (FIVE MILLION POUNDS) any one claim, save for pollution and contamination claims and asbestos claims both of which carry £2,000,000 (TWO MILLION) in the aggregate cover. This policy is annually renewable and whilst renewal is not automatic, Lithos agrees to use reasonable endeavours to maintain such insurance at all times until six years from the date of the completion (or termination) of the Services under the Agreement, provided such insurance is available at commercially reasonable rates having regard, inter alia, to premiums required and policy terms obtainable.
- 9.2 If for any period such insurance is not available at commercially reasonable rates, Lithos shall forthwith inform the Client and shall obtain in respect of such period such reduced level of Professional Indemnity insurance as is available and as would be fair and reasonable in the circumstances for Lithos to obtain.

10 LIMITATIONS ON LIABILITY

- 10.1 Unless otherwise agreed in writing, Lithos's liability under or in connection with the Agreement whether in contract, tort, negligence, breach of statutory duty or otherwise (other than in respect of personal injury or death) shall be limited to and shall not exceed the lesser of either five million pounds in the aggregate (unless it is a pollution, contamination or asbestos claim in which case it is two million pounds in the aggregate) or 10 times the total value of invoices issued to the Client for consultancy work instructed under the Agreement.
- 10.2 No action or proceedings under or in respect of the Agreement whether in contract, tort, negligence, under statute or otherwise shall be commenced against Lithos after the expiry of a period of six years from the date of the completion (or termination) of the Services under the Agreement.
- 10.3 Whilst Lithos will scan all potential exploratory locations with a Cable Avoidance Tool, Lithos shall not be liable for any damage to underground services, cables, pipes, drains or underground buildings, constructions and the like which were either not marked on site or for which accurate plans were not provided.
- 10.4 Lithos shall not be liable for the cost of rectifying any defect, conflict or other fault in the information or designs provided by Lithos or for the cost of designing a solution for and rectifying any subsequent works carried out by others pursuant to the conflicting, defective or in any other way faulty information or designs, unless Lithos has been advised in writing of the same by the Client and has been given the opportunity to rectify the same or where necessary, to design the solution for rectification of any subsequent works carried out by others pursuant to the same.

11 PAYMENT

- 11.1 Invoices for services rendered will be submitted for payment in accordance with the Proposal.
- 11.2 The due date for payment is the date of the invoice and the final date for payment is 28 days from the date of the invoice.
- 11.3 If the Client disputes the amount included for payment in an invoice a written notice must be served on Lithos by the Client not later than 14 days before the final date for payment. If no notice is given the amount due shall be the amount stated in the invoice.
- 11.4 In the event of failure on the part of the Client to pay any monies in accordance with the foregoing payment provisions, Lithos will be entitled to charge interest on any monies owed to it by the Client, such interest to be at a rate of 8% above the base rate of a clearing bank from time to time calculated from the final date for payment to the date of actual payment on a compound basis.

12 DELAY

- 12.1 Lithos will comply with any timescale agreed for completion of the Services unless delayed or prevented by circumstances beyond its reasonable control and in the event of any such circumstances arising Lithos undertakes to complete the Services within a reasonable period, but will not be liable to the Client for any delay as a result.

13 TERMINATION

- 13.1 The Agreement may be determined by either party in the event of the other making a composition or arrangement with its creditors, becoming bankrupt, or being a company, making a proposal for a voluntary arrangement for a composition of debts, or has a provisional liquidator appointed, or has a winding-up order made, or passes a resolution for voluntary winding-up (except for the purposes of a bona fide scheme of amalgamation or reconstruction), or has an administrator or an administrative receiver appointed to the whole or any part of its assets. Notice of determination must be given to the party which is insolvent by the other party.
- 13.2 If for any reason the performance of the Services by Lithos is suspended for a period in excess of three calendar months then Lithos shall be entitled to determine its appointment in respect of the Services by seven days written notice to the Client.
- 13.3 If the Client shall fail to pay in full any sum due under the terms of the Agreement by the final date for payment for that sum and no effective notice of intention to withhold payment has been issued, Lithos may serve written notice on the Client demanding payment within 14 days of such notice. If the Client shall fail to comply with such notice, Lithos shall be entitled to terminate its employment under the Agreement forthwith.
- 13.4 Any determination of the appointment of Lithos howsoever caused shall be without prejudice to the right of Lithos to require payment for all services performed up to the date of such determination including but not limited to payment of a fair and reasonable proportion of any figure identified in the Proposal or otherwise for fees in respect of a particular service which Lithos has started, but not completed.

14 NOTICES

- 14.1 Any notice provided for in the Agreement shall be in writing and shall be deemed to be properly given if delivered by hand or sent by first class post to the address of the relevant party as may have been notified by each party to the other or, in the absence of notification, to the address of Lithos set out above or to the registered address of the Client.
- 14.2 Such notice shall be deemed to have been received on the day of delivery if delivered by hand or on the second working day after the day of posting if sent by first class post.

15 ENTIRE AGREEMENT

- 15.1 The Agreement constitutes the complete and entire agreement between the Client and Lithos with respect to the Services and supersedes any prior oral and/or written warranties, terms, conditions, communications and representations, whether express or implied and any claim against Lithos in respect of the Services can only be made in contract under the provisions of the Agreement and not otherwise under the law or tort or otherwise.
- 15.2 No amendments, modifications or variation of the Agreement shall be valid unless made in writing and agreed to by both the Client and Lithos; such agreement must be recorded in writing by at least one of the Parties.
- 15.3 Lithos will not be bound by any standard or printed terms or conditions furnished by the Client in any of its documents unless Lithos specifically states in writing separately from such documents that it intends such terms and conditions to apply.

16 DISPUTES AND GOVERNING LAW

- 16.1 The Agreement shall be governed by and construed in accordance with English law and the Parties irrevocably and unconditionally submit to the jurisdiction of the English Courts.
- 16.2 Where the Housing Grants, Construction and Regeneration Act 1996 applies, any dispute between the Parties may be referred to adjudication in accordance with The Scheme for Construction Contracts Regulations 1998 or any amendment or modification thereof being in force at the time of the dispute, as applicable to England, Wales, Scotland and Northern Ireland.

---

**From:** Matt Thompson  
**Sent:** 22 May 2017 15:23  
**To:** 'Andrew Bradley'  
**Subject:** RE: E1.11 Site Investigation appointment letter Carlton Road, Barnsley

Andrew,

Please find attached the two cost breakdowns, one for each parcel of the site. Essentially, I've split the costs where possible, but inevitably there are some extra expenses in doing the site in 2 hits. This is due to re-mobilisation of drilling rigs, diggers and tractor & bowers, plus added supervision time.

Costs are:

- School parcel – £\*\*\*
- Farmland parcel - £\*\*\*
- Total - £\*\*\*\*\* (cf. original price of £\*\*\*\*\*)

Please give me a call with any questions. I am on leave from tomorrow afternoon until the 31<sup>st</sup>, but Reg should be able to answer any queries.

Regards,

**Matt Thompson**  
**Lithos Consulting Ltd**

M 07814 436 247  
DD 01937 545 337

[www.lithos.co.uk](http://www.lithos.co.uk)



Our Ref E1.11

31.05.17

Lithos Consulting Ltd  
Parkhill  
Walton Road  
Wetherby Road  
LS22 5DZ

**For the attention of Mr Mark Perrin**

Dear Mark,

**Proposed Development at St Helens Boulevard, Carlton Road, Barnsley ( School Parcel Only ) – Site Investigation Appointment**

Further to our enquiry of the 10th August 2016\_ref E1.10 and your subsequent quotation of the 22nd May 2017 referenced 2551/2 in the sum of £ \*\*\*\*\* we are pleased to confirm your quotation meets with our approval. We hereby appoint you as our Geotechnical Engineers for the above project.

We confirm the Terms and Conditions of our contract will be set out in the following documentation:-

1. Your quotation reference 22.05.17 / 2551/2.
2. Keepmoat Homes Site Investigation brief dated 10th August 2016, Ref E1.10

Please provide a copy of your Professional Indemnity Cover for our records unless previously provided and note any policy restrictions or endorsements. The limit of indemnity should be a minimum of five million pounds (£5 million) for each and every claim.

We would also like to remind you of the duties of a Designer under the CDM15 regulations – a copy of the document “CDM15 Industry Guidance for Designers” can be viewed at <http://www.citb.co.uk/health-safety-and-other-topics/health-safety/construction-design-and-management-regulations/cdm-guidance-documents>. You should be aware that there are key duties that apply to you and you must ensure you comply with the requirements set out in the above document. Please ensure you work in accordance with these Industry Guidelines with particular reference to:

Section 2 – Eliminate, reduce and control risk through design – what you have to do

Section 3 – What information do you need?

Section 5 – What information you must provide?

Your invoice for the works should be returned to our accounts department at Keepmoat Homes Limited – Yorkshire Region, The Waterfront, Lakeside Boulevard, Doncaster, DN4 5PL. The invoice should clearly state the work undertaken, the site details and the name of the undersigned.

All your work shall be undertaken in strict confidence with no reference to any site proposals or our involvement. Please note all copyright shall be owned by Keepmoat Homes Limited

We trust that this is satisfactory but should you require any further information please get in touch.

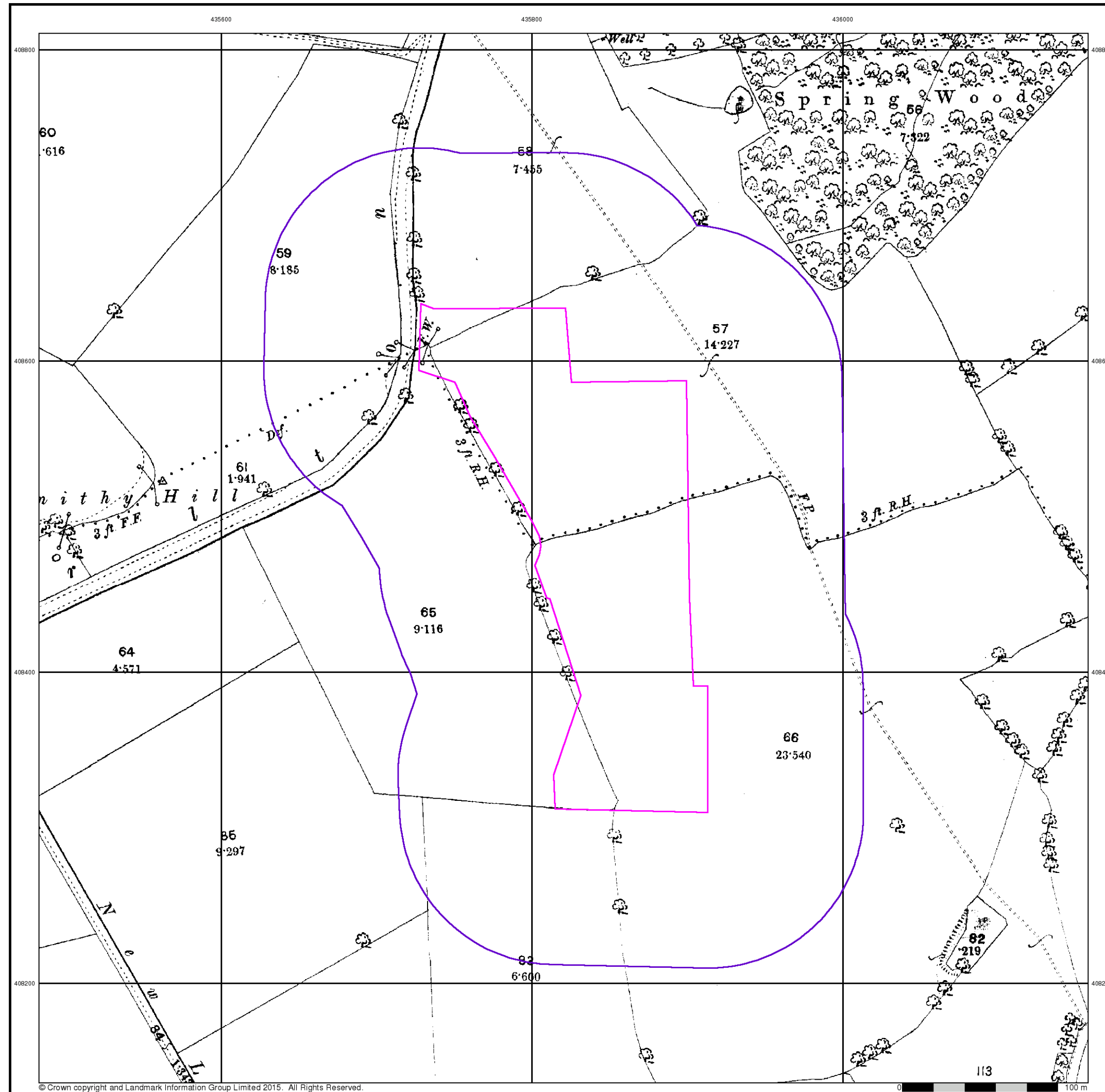
Yours sincerely,



Ahmed Dayel  
Trainee Engineer  
Ahmed.dayel@keepmoat.com

## **Appendix D**

### **Historical OS Plans**



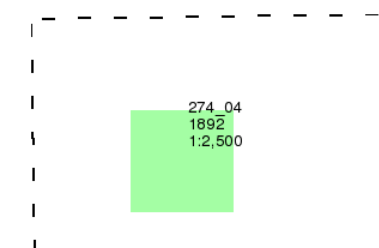
Yorkshire

Published 1892

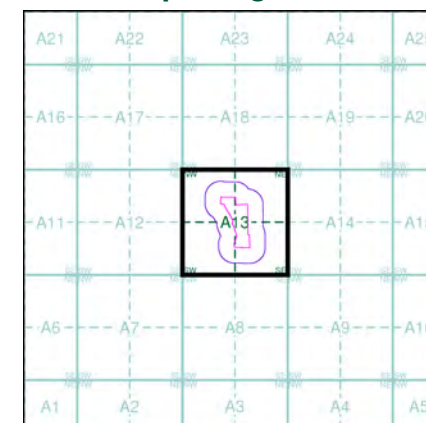
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

### Map Name(s) and Date(s)



### Historical Map - Segment A13



### Order Details

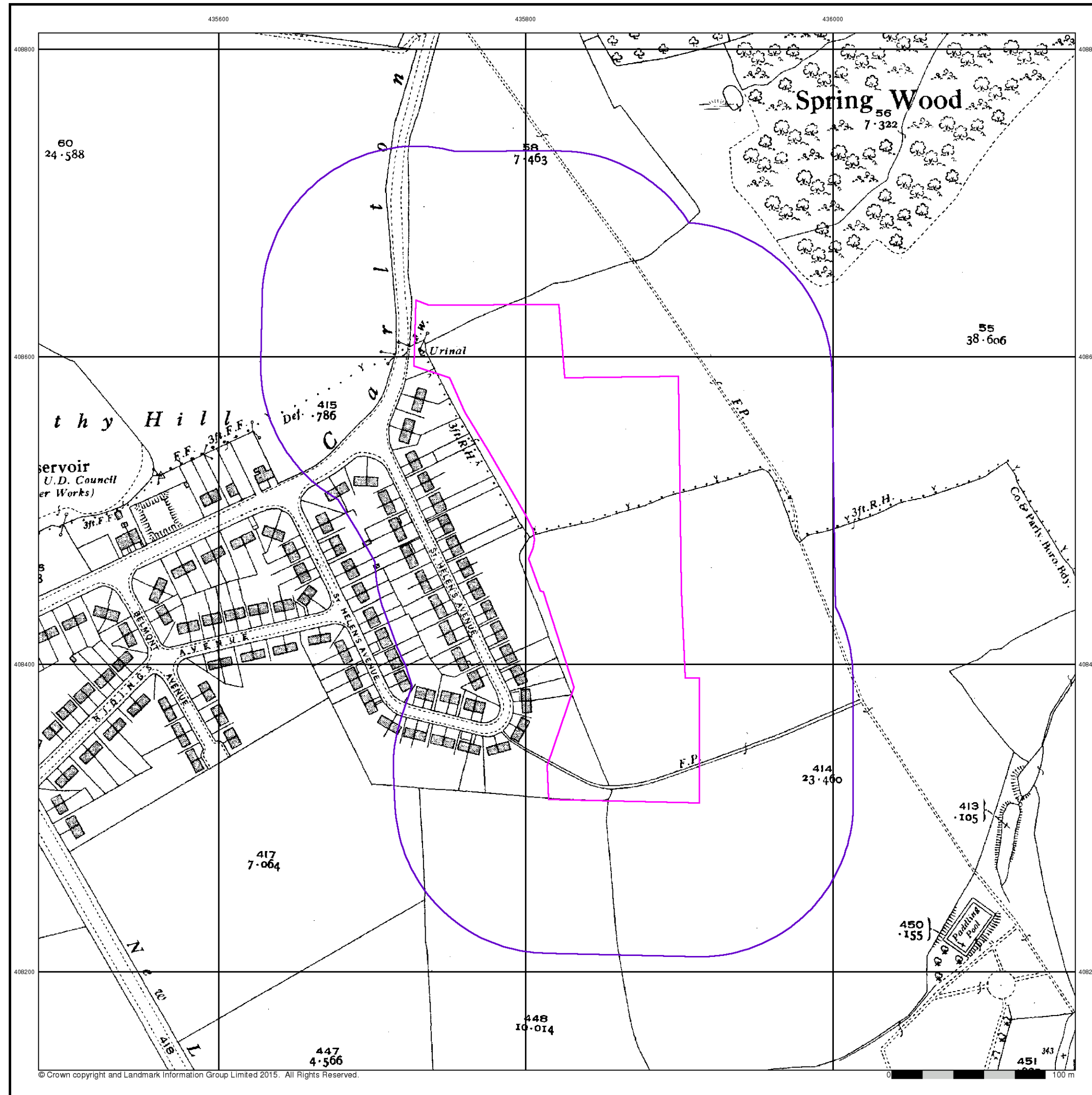
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Customer Ref: 2551  
National Grid Reference: 435830, 408480  
Slice: A  
Site Area (Ha): 3.26  
Search Buffer (m): 100

### Site Details

Former Holy Cross Deanery Church of England Pr ..., St  
Helens Boulevard, Athersley South, BARNSELY, S71 2AY



Tel: 0844 844 9952  
Fax: 0844 844 9951  
Web: www.envirocheck.co.uk



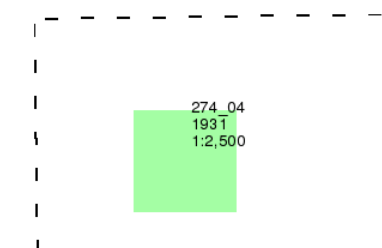
Yorkshire

Published 1931

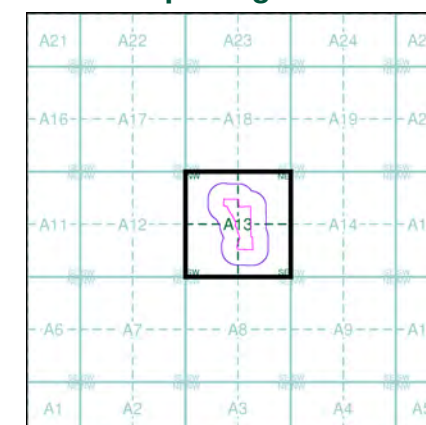
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

### Map Name(s) and Date(s)



### Historical Map - Segment A13



### Order Details

Order Number: 124349698\_1\_1  
Customer Ref: 2551  
National Grid Reference: 435830, 408480  
Slice: A  
Site Area (Ha): 3.26  
Search Buffer (m): 100

### Site Details

Former Holy Cross Deanery Church of England Pr ..., St Helens Boulevard, Athersley South, BARNSELY, S71 2AY



Tel: 0844 844 9952  
Fax: 0844 844 9951  
Web: www.envirocheck.co.uk



## Ordnance Survey Plan

Published 1965 - 1978

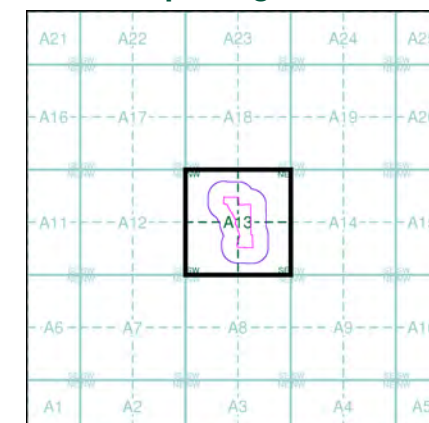
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

### Map Name(s) and Date(s)

|                             |                             |                             |
|-----------------------------|-----------------------------|-----------------------------|
| SE3508NW<br>1976<br>1:1,250 | SE3508NE<br>1973<br>1:1,250 |                             |
| SE3508SW<br>1978<br>1:1,250 | SE3508SE<br>1970<br>1:1,250 | SE3608SW<br>1965<br>1:1,250 |

### Historical Map - Segment A13



### Order Details

Order Number: 124349698\_1\_1  
Customer Ref: 2551  
National Grid Reference: 435830, 408480  
Slice: A  
Site Area (Ha): 3.26  
Search Buffer (m): 100

### Site Details

Former Holy Cross Deanery Church of England Pr ..., St Helens Boulevard, Athersley South, BARNSELEY, S71 2AY



Tel: 0844 844 9952  
Fax: 0844 844 9951  
Web: www.envirocheck.co.uk

## **Appendix E**

### **Search Responses**

# Envirocheck<sup>®</sup> Report:

## Datasheet

### Order Details:

**Order Number:**

124349698\_1\_1

**Customer Reference:**

2551

**National Grid Reference:**

435830, 408480

**Slice:**

A

**Site Area (Ha):**

3.26

**Search Buffer (m):**

1000

### Site Details:

Former Holy Cross Deanery Church of England

Pr ...

St Helens Boulevard

Athersley South

BARNSELY

S71 2AY

### Client Details:

Mr M Thompson

Lithos Consulting Ltd

Parkhill

Walton Road

Wetherby

LS22 5DZ

| Report Section        | Page Number |
|-----------------------|-------------|
| Summary               | -           |
| Agency & Hydrological | 1           |
| Waste                 | 12          |
| Hazardous Substances  | 21          |
| Geological            | 22          |
| Industrial Land Use   | 30          |
| Sensitive Land Use    | 56          |
| Data Currency         | 57          |
| Data Suppliers        | 62          |
| Useful Contacts       | 63          |

## Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination. For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.

In the attached datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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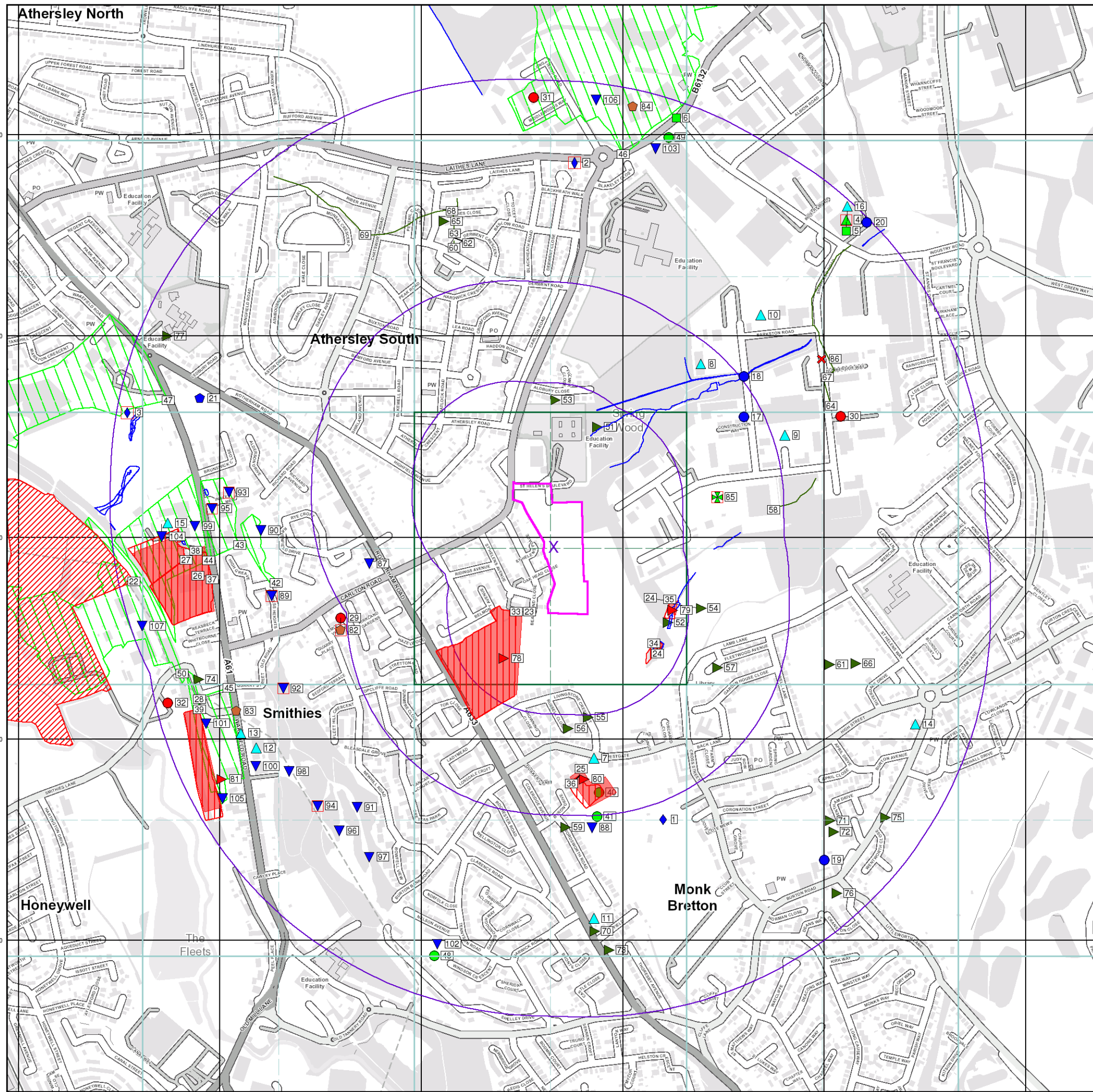
## Report Version v50.0

| Data Type                                                     | Page Number | On Site | 0 to 250m | 251 to 500m | 501 to 1000m (*up to 2000m) |
|---------------------------------------------------------------|-------------|---------|-----------|-------------|-----------------------------|
| <b>Agency &amp; Hydrological</b>                              |             |         |           |             |                             |
| BGS Groundwater Flooding Susceptibility                       | pg 1        | Yes     | Yes       | Yes         | n/a                         |
| Contaminated Land Register Entries and Notices                |             |         |           |             |                             |
| Discharge Consents                                            | pg 2        |         |           |             | 7                           |
| Prosecutions Relating to Controlled Waters                    |             |         | n/a       | n/a         | n/a                         |
| Enforcement and Prohibition Notices                           |             |         |           |             |                             |
| Integrated Pollution Controls                                 | pg 3        |         |           |             | 6                           |
| Integrated Pollution Prevention And Control                   | pg 4        |         |           |             | 2                           |
| Local Authority Integrated Pollution Prevention And Control   |             |         |           |             |                             |
| Local Authority Pollution Prevention and Controls             | pg 5        |         |           | 2           | 8                           |
| Local Authority Pollution Prevention and Control Enforcements |             |         |           |             |                             |
| Nearest Surface Water Feature                                 | pg 6        |         | Yes       |             |                             |
| Pollution Incidents to Controlled Waters                      | pg 7        |         |           | 1           | 3                           |
| Prosecutions Relating to Authorised Processes                 |             |         |           |             |                             |
| Registered Radioactive Substances                             |             |         |           |             |                             |
| River Quality                                                 |             |         |           |             |                             |
| River Quality Biology Sampling Points                         |             |         |           |             |                             |
| River Quality Chemistry Sampling Points                       |             |         |           |             |                             |
| Substantiated Pollution Incident Register                     | pg 7        |         |           |             | 1                           |
| Water Abstractions                                            | pg 8        |         |           |             | (*14)                       |
| Water Industry Act Referrals                                  |             |         |           |             |                             |
| Groundwater Vulnerability                                     | pg 11       | Yes     | n/a       | n/a         | n/a                         |
| Drift Deposits                                                |             |         | n/a       | n/a         | n/a                         |
| Bedrock Aquifer Designations                                  | pg 11       | Yes     | n/a       | n/a         | n/a                         |
| Superficial Aquifer Designations                              |             |         | n/a       | n/a         | n/a                         |
| Source Protection Zones                                       |             |         |           |             |                             |
| Extreme Flooding from Rivers or Sea without Defences          |             |         |           | n/a         | n/a                         |
| Flooding from Rivers or Sea without Defences                  |             |         |           | n/a         | n/a                         |
| Areas Benefiting from Flood Defences                          |             |         |           | n/a         | n/a                         |
| Flood Water Storage Areas                                     |             |         |           | n/a         | n/a                         |
| Flood Defences                                                |             |         |           | n/a         | n/a                         |

| Data Type                                                           | Page Number | On Site | 0 to 250m | 251 to 500m | 501 to 1000m (*up to 2000m) |
|---------------------------------------------------------------------|-------------|---------|-----------|-------------|-----------------------------|
| <b>Waste</b>                                                        |             |         |           |             |                             |
| BGS Recorded Landfill Sites                                         | pg 12       |         |           |             | 1                           |
| Historical Landfill Sites                                           | pg 12       |         | 2         | 1           | 3                           |
| Integrated Pollution Control Registered Waste Sites                 |             |         |           |             |                             |
| Licensed Waste Management Facilities (Landfill Boundaries)          |             |         |           |             |                             |
| Licensed Waste Management Facilities (Locations)                    | pg 13       |         |           |             | 4                           |
| Local Authority Landfill Coverage                                   | pg 14       | 1       | n/a       | n/a         | n/a                         |
| Local Authority Recorded Landfill Sites                             | pg 14       |         | 3         | 1           | 3                           |
| Potentially Infilled Land (Non-Water)                               | pg 15       |         |           | 1           | 10                          |
| Potentially Infilled Land (Water)                                   | pg 16       |         | 4         | 4           | 19                          |
| Registered Landfill Sites                                           | pg 17       |         | 2         | 1           | 1                           |
| Registered Waste Transfer Sites                                     | pg 19       |         |           |             | 5                           |
| Registered Waste Treatment or Disposal Sites                        |             |         |           |             |                             |
| <b>Hazardous Substances</b>                                         |             |         |           |             |                             |
| Control of Major Accident Hazards Sites (COMAH)                     | pg 21       |         |           | 2           |                             |
| Explosive Sites                                                     |             |         |           |             |                             |
| Notification of Installations Handling Hazardous Substances (NIHHS) |             |         |           |             |                             |
| Planning Hazardous Substance Consents                               | pg 21       |         |           |             | 1                           |
| Planning Hazardous Substance Enforcements                           |             |         |           |             |                             |

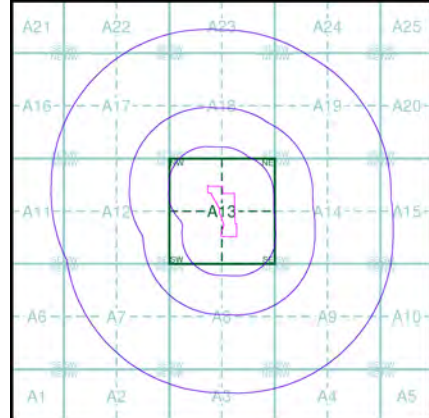
| Data Type                                                         | Page Number | On Site | 0 to 250m | 251 to 500m | 501 to 1000m (*up to 2000m) |
|-------------------------------------------------------------------|-------------|---------|-----------|-------------|-----------------------------|
| <b>Geological</b>                                                 |             |         |           |             |                             |
| BGS 1:625,000 Solid Geology                                       | pg 22       | Yes     | n/a       | n/a         | n/a                         |
| BGS Estimated Soil Chemistry                                      | pg 22       | Yes     |           | Yes         | Yes                         |
| BGS Recorded Mineral Sites                                        | pg 24       |         |           | 1           | 26                          |
| BGS Urban Soil Chemistry                                          |             |         |           |             |                             |
| BGS Urban Soil Chemistry Averages                                 |             |         |           |             |                             |
| CBSCB Compensation District                                       |             |         | n/a       | n/a         | n/a                         |
| Coal Mining Affected Areas                                        | pg 28       | Yes     | n/a       | n/a         | n/a                         |
| Mining Instability                                                | pg 28       | Yes     | n/a       | n/a         | n/a                         |
| Man-Made Mining Cavities                                          |             |         |           |             |                             |
| Natural Cavities                                                  |             |         |           |             |                             |
| Non Coal Mining Areas of Great Britain                            | pg 28       | Yes     |           | n/a         | n/a                         |
| Potential for Collapsible Ground Stability Hazards                | pg 28       | Yes     |           | n/a         | n/a                         |
| Potential for Compressible Ground Stability Hazards               | pg 29       | Yes     |           | n/a         | n/a                         |
| Potential for Ground Dissolution Stability Hazards                |             |         |           | n/a         | n/a                         |
| Potential for Landslide Ground Stability Hazards                  | pg 29       | Yes     | Yes       | n/a         | n/a                         |
| Potential for Running Sand Ground Stability Hazards               | pg 29       | Yes     |           | n/a         | n/a                         |
| Potential for Shrinking or Swelling Clay Ground Stability Hazards | pg 29       | Yes     |           | n/a         | n/a                         |
| Radon Potential - Radon Affected Areas                            | pg 29       | Yes     | n/a       | n/a         | n/a                         |
| Radon Potential - Radon Protection Measures                       |             |         | n/a       | n/a         | n/a                         |
| <b>Industrial Land Use</b>                                        |             |         |           |             |                             |
| Contemporary Trade Directory Entries                              | pg 30       |         | 11        | 22          | 145                         |
| Fuel Station Entries                                              | pg 46       |         |           |             | 3                           |
| Points of Interest - Commercial Services                          | pg 46       |         | 3         | 9           | 56                          |
| Points of Interest - Education and Health                         |             |         |           |             |                             |
| Points of Interest - Manufacturing and Production                 | pg 52       |         |           |             | 30                          |
| Points of Interest - Public Infrastructure                        | pg 54       |         |           | 3           | 12                          |
| Points of Interest - Recreational and Environmental               |             |         |           |             |                             |
| Gas Pipelines                                                     |             |         |           |             |                             |
| Underground Electrical Cables                                     |             |         |           |             |                             |

| Data Type                            | Page Number | On Site | 0 to 250m | 251 to 500m | 501 to 1000m (*up to 2000m) |
|--------------------------------------|-------------|---------|-----------|-------------|-----------------------------|
| <b>Sensitive Land Use</b>            |             |         |           |             |                             |
| Ancient Woodland                     |             |         |           |             |                             |
| Areas of Adopted Green Belt          | pg 56       |         |           |             | 1                           |
| Areas of Unadopted Green Belt        |             |         |           |             |                             |
| Areas of Outstanding Natural Beauty  |             |         |           |             |                             |
| Environmentally Sensitive Areas      |             |         |           |             |                             |
| Forest Parks                         |             |         |           |             |                             |
| Local Nature Reserves                |             |         |           |             |                             |
| Marine Nature Reserves               |             |         |           |             |                             |
| National Nature Reserves             |             |         |           |             |                             |
| National Parks                       |             |         |           |             |                             |
| Nitrate Sensitive Areas              |             |         |           |             |                             |
| Nitrate Vulnerable Zones             | pg 56       | 1       |           |             |                             |
| Ramsar Sites                         |             |         |           |             |                             |
| Sites of Special Scientific Interest |             |         |           |             |                             |
| Special Areas of Conservation        |             |         |           |             |                             |
| Special Protection Areas             |             |         |           |             |                             |
| World Heritage Sites                 |             |         |           |             |                             |



- General**
- Specified Site
  - Specified Buffer(s)
  - Bearing Reference Point
  - Map ID
  - Several of Type at Location
- Agency and Hydrological**
- Contaminated Land Register Entry or Notice (Location)
  - Contaminated Land Register Entry or Notice
  - Discharge Consent
  - Enforcement or Prohibition Notice
  - Integrated Pollution Control
  - Integrated Pollution Prevention Control
  - Local Authority Integrated Pollution Prevention and Control
  - Local Authority Pollution Prevention and Control
  - Local Authority Pollution Prevention and Control Enforcement
  - Pollution Incident to Controlled Waters
  - Prosecution Relating to Authorised Processes
  - Prosecution Relating to Controlled Waters
  - Registered Radioactive Substance
  - River Network or Water Feature
  - River Quality Sampling Point
  - Substantiated Pollution Incident Register
  - Water Abstraction
  - Water Industry Act Referral
- Hazardous Substances**
- COMAH Site
  - Explosive Site
  - NIHHS Site
  - Planning Hazardous Substance Consent
  - Planning Hazardous Substance Enforcement
  - BGS Recorded Mineral Site
- Waste**
- BGS Recorded Landfill Site (Location)
  - BGS Recorded Landfill Site
  - EA Historic Landfill (Buffered Point)
  - EA Historic Landfill (Polygon)
  - Integrated Pollution Control Registered Waste Site
  - Licensed Waste Management Facility (Landfill Boundary)
  - Licensed Waste Management Facility (Location)
  - Local Authority Recorded Landfill Site (Location)
  - Local Authority Recorded Landfill Site
  - Potentially Infilled Land (Non-water)
  - Potentially Infilled Land (Non-water)
  - Potentially Infilled Land (Non-water)
  - Potentially Infilled Land (Water)
  - Potentially Infilled Land (Water)
  - Potentially Infilled Land (Water)
  - Registered Landfill Site (Location)
  - Registered Landfill Site (Point Buffered to 100m)
  - Registered Landfill Site (Point Buffered to 250m)
  - Registered Waste Transfer Site (Location)
  - Registered Waste Transfer Site
  - Registered Waste Treatment or Disposal Site (Location)
  - Registered Waste Treatment or Disposal Site

### Site Sensitivity Map - Slice A



### Order Details

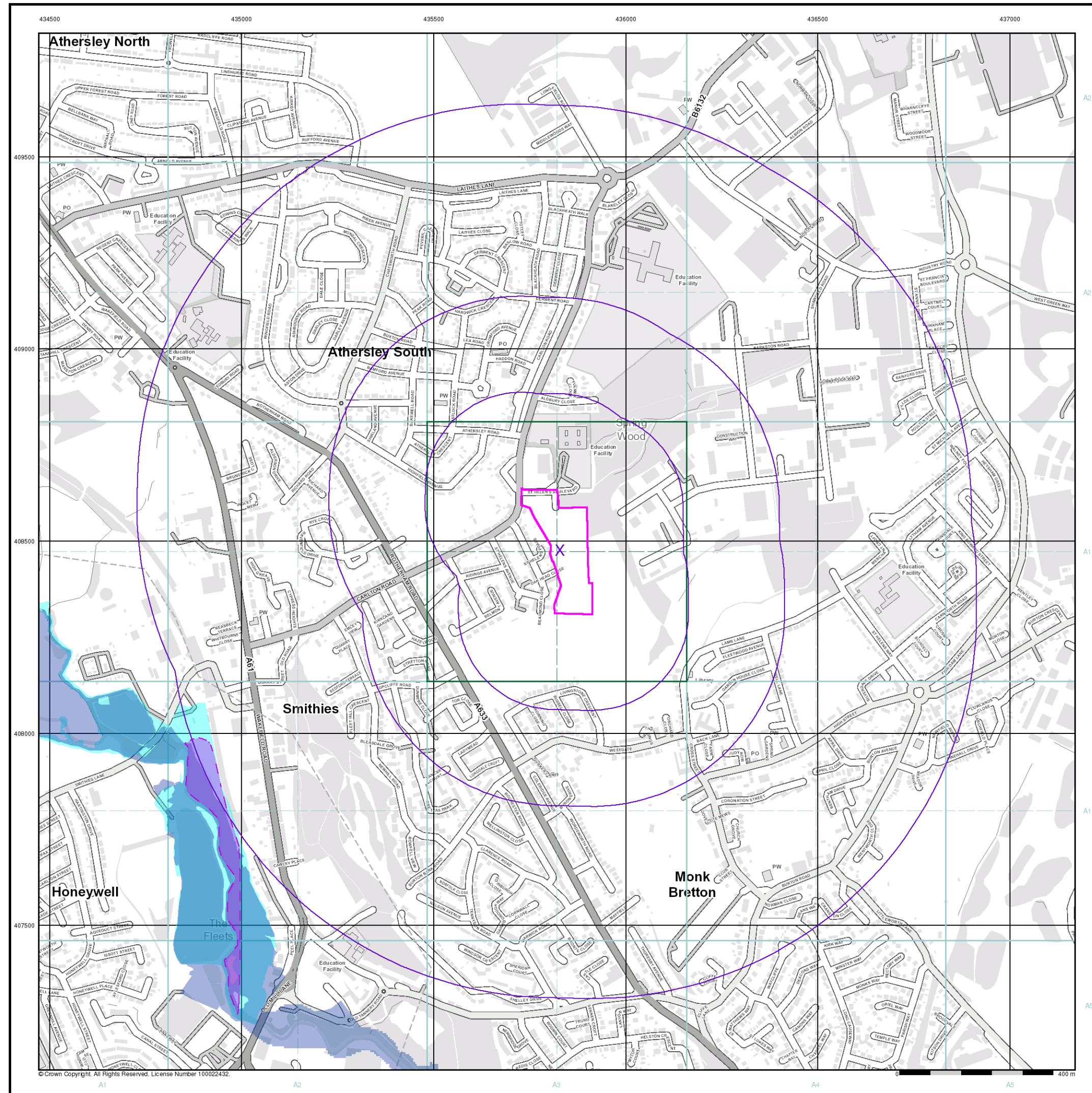
Order Number: 124349698\_1\_1  
 Customer Ref: 2551  
 National Grid Reference: 435830, 408480  
 Slice: A  
 Site Area (Ha): 3.26  
 Search Buffer (m): 1000

### Site Details

Former Holy Cross Deanery Church of England Pr ..., St Helens Boulevard, Athersley South, BARNSELY, S71 2AY



Tel: 0844 844 9952  
 Fax: 0844 844 9951  
 Web: www.envirocheck.co.uk



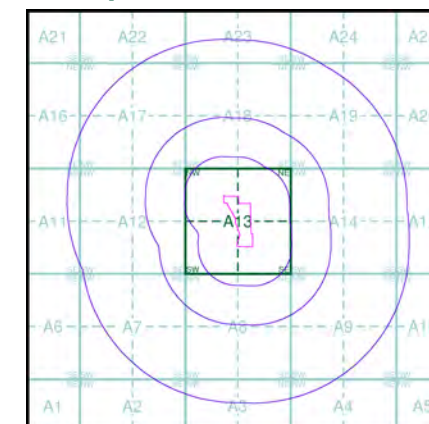
### General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

### Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

### Flood Map - Slice A



### Order Details

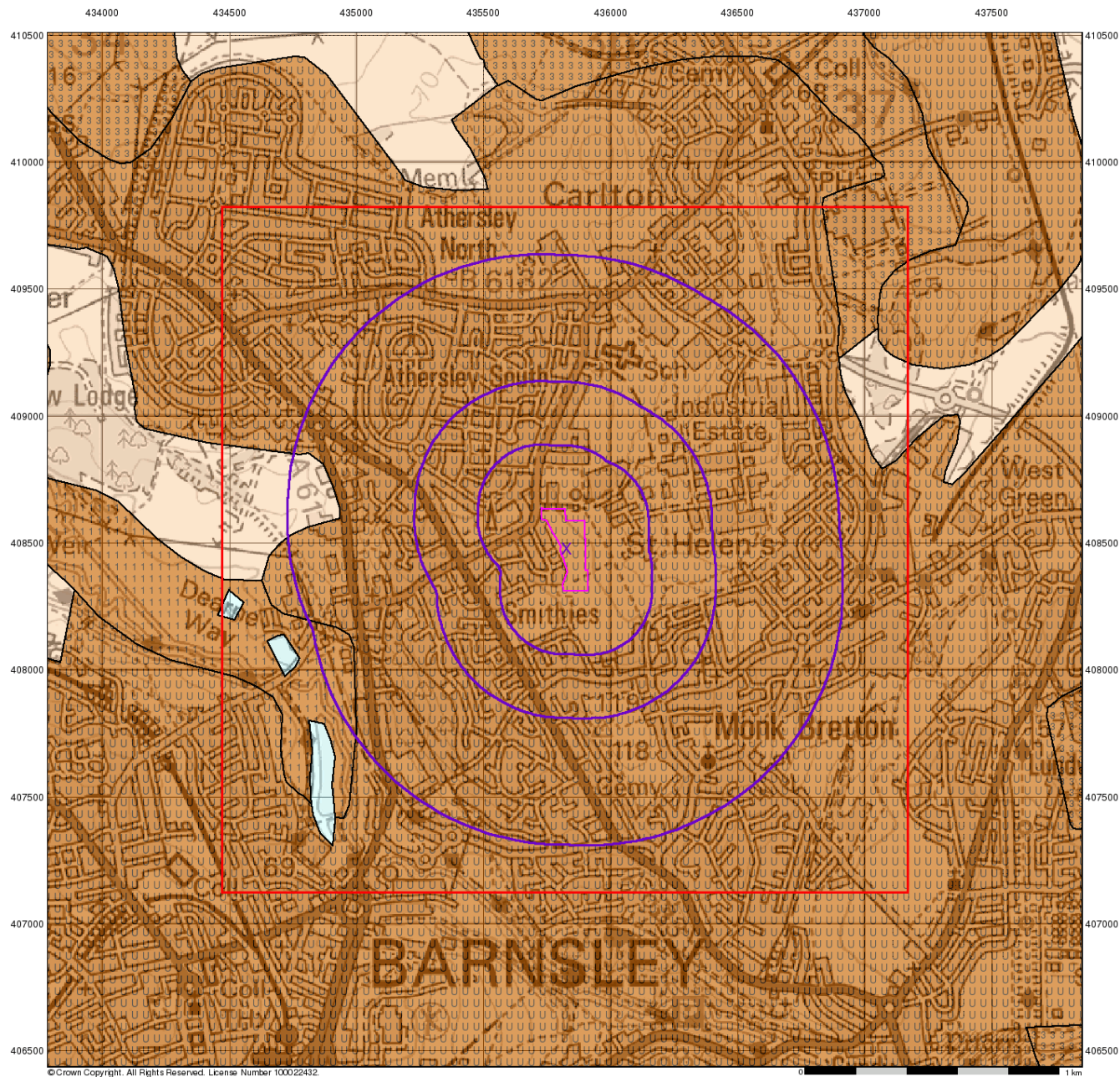
Order Number: 124349698\_1\_1  
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Search Buffer (m): 1000

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Tel: 0844 844 9952  
Fax: 0844 844 9951  
Web: www.envirocheck.co.uk



## Groundwater Vulnerability

### General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

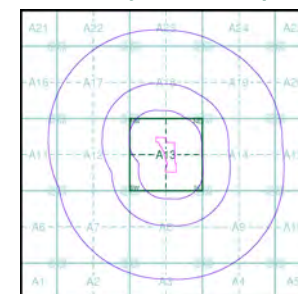
### Agency and Hydrological

#### Geological Classes

|                                               |  |                       |
|-----------------------------------------------|--|-----------------------|
| <b>Major Aquifer<br/>(Highly Permeable)</b>   |  | High (H) 1, 2, 3, U   |
|                                               |  | Intermediate (I) 1, 2 |
|                                               |  | Low                   |
| <b>Minor Aquifer<br/>(Variably Permeable)</b> |  | High (H) 1, 2, 3, U   |
|                                               |  | Intermediate (I) 1, 2 |
|                                               |  | Low                   |
| <b>Non Aquifer<br/>(Negligibly Permeable)</b> |  |                       |
| <b>Water or Sea</b>                           |  |                       |
| <b>Drift Deposit</b>                          |  |                       |

#### Soil Classes

### Site Sensitivity Context Map - Slice A



### Order Details

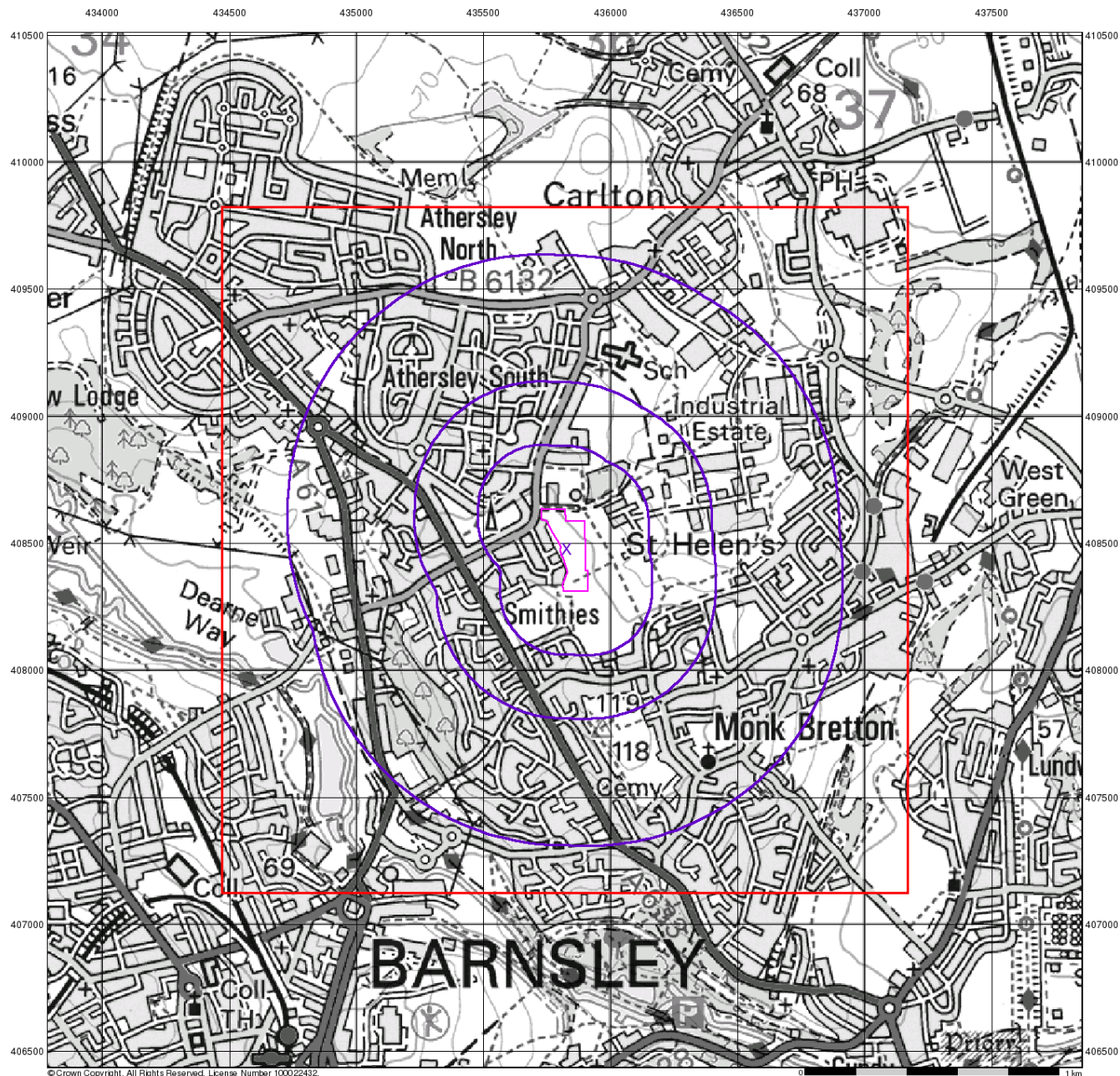
Order Number: 124349698\_1\_1  
 Customer Ref: 2551  
 National Grid Reference: 435830, 408480  
 Slice: A  
 Site Area (Ha): 3.26  
 Search Buffer (m): 1000

### Site Details

Former Holy Cross Deanery Church of England Pr ..., St Helens  
 Boulevard, Athersley South, BARNSELEY, S71 2AY



Tel: 0844 844 9952  
 Fax: 0844 844 9951  
 Web: www.envirocheck.co.uk



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## Source Protection Zones

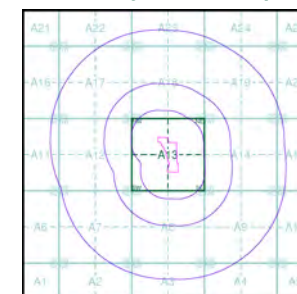
### General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

### Agency and Hydrological

- Inner zone (Zone 1)
- Inner zone - subsurface activity only (Zone 1c)
- Outer zone (Zone 2)
- Outer zone - subsurface activity only (Zone 2c)
- Total catchment (Zone 3)
- Total catchment - subsurface activity only (Zone 3c)
- Special interest (Zone 4)
- Source Protection Zone Borehole

## Site Sensitivity Context Map - Slice A



### Order Details

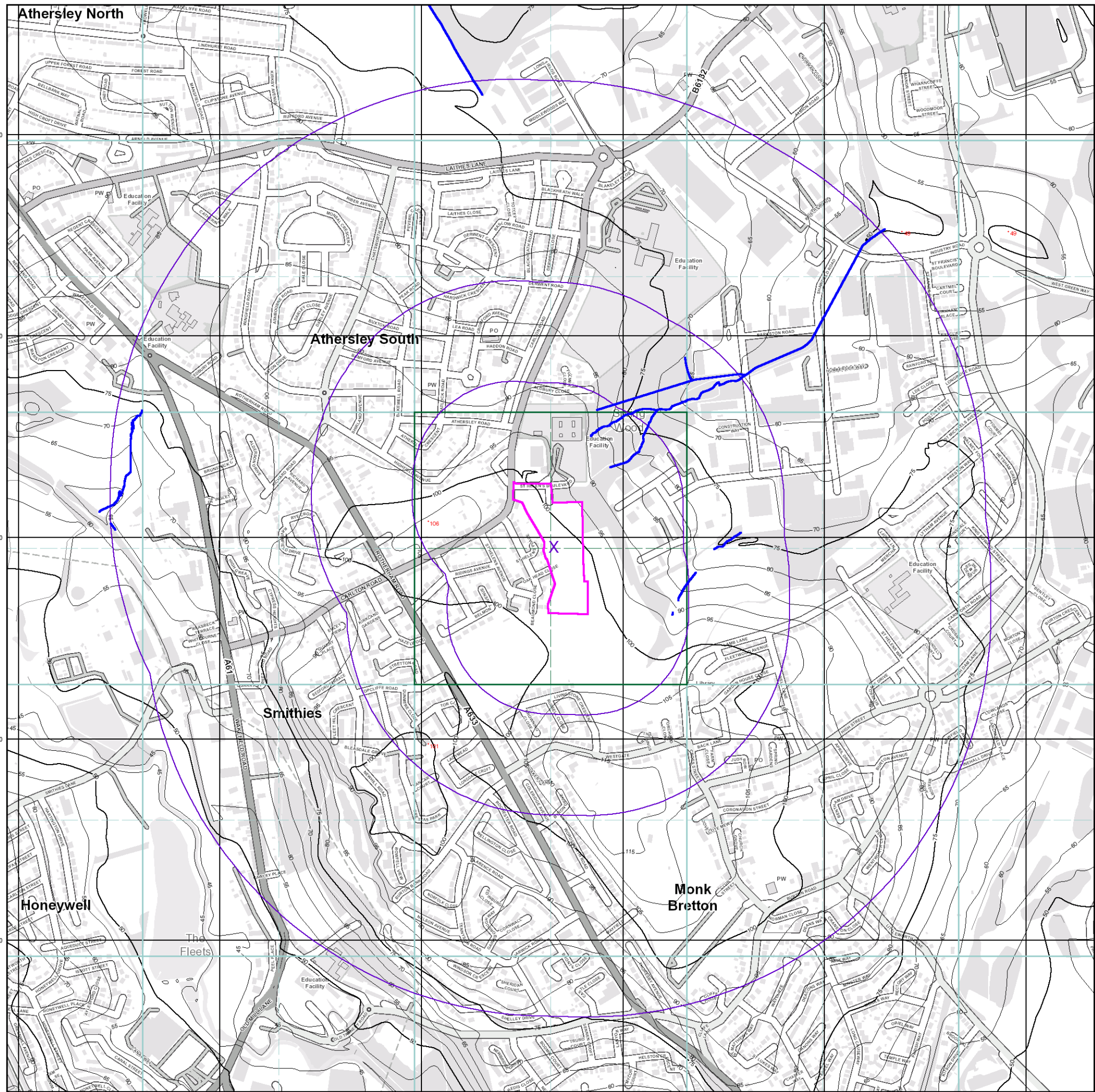
Order Number: 124349698\_1\_1  
 Customer Ref: 2551  
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 Site Area (Ha): 3.26  
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Tel: 0844 844 9952  
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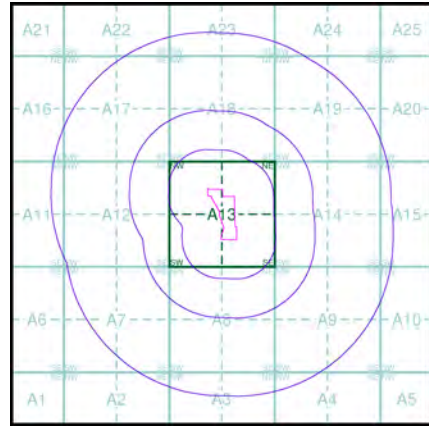


- General**
- Specified Site
  - Specified Buffer(s)
  - Bearing Reference Point

- OS Water Network Data**
- |              |                         |
|--------------|-------------------------|
| Canal        | Drain                   |
| Reservoir    | Other                   |
| Foreshore    | Lake                    |
| Marsh        | Transfer                |
| Tidal River  | Lock Or Flight Of Locks |
| Inland River | Sea                     |

- Contours (height in meters)**
- Standard Contour 105 100 95
- Master Contour
- Spot Height 167.3
- MLW Mean Low Water
- MHW Mean High Water

**OS Water Network Map - Slice A**



**Order Details**

Order Number: 126738548\_1\_1

Customer Ref: 2551

National Grid Reference: 435830, 408480

Slice: A

Site Area (Ha): 3.26

Search Buffer (m): 1000

**Site Details**

Former Holy Cross Deanery Church of England Pr ..., St Helens Boulevard, Athersley South, BARNSELY, S71 2AY



The Coal  
Authority

Resolving the **impacts** of mining

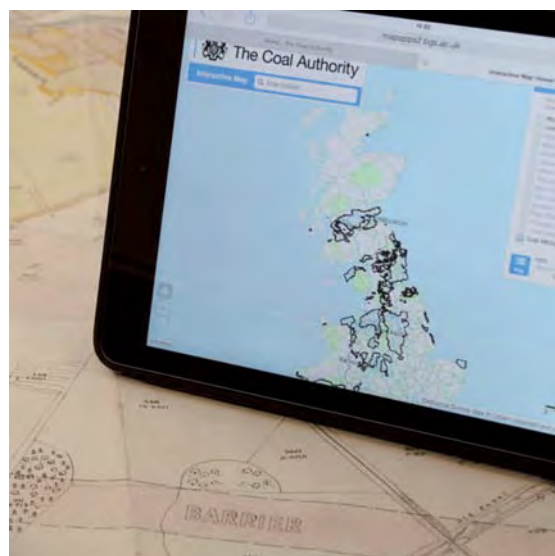
# CON29M Non-Residential Mining Report

FORMER HOLY CROSS DEANERY  
CHURCH OF ENGLAND PR ...  
ATHERSLEY SOUTH  
ST HELENS BOULEVARD BARNSELY  
SOUTH YORKSHIRE



|                        |             |
|------------------------|-------------|
| Date of enquiry:       | 11 May 2017 |
| Date enquiry received: | 11 May 2017 |
| Issue date:            | 11 May 2017 |

|                 |                |
|-----------------|----------------|
| Our reference:  | 51001466169001 |
| Your reference: | 124349698_2    |



# CON29M Non-Residential Mining Report

This report is based on, and limited to, the records held by the Coal Authority and the Cheshire Brine Subsidence Compensation Board's records, at the time we answer the search.

## Client name

LANDMARK INFORMATION GROUP LIMITED

## Enquiry address

FORMER HOLY CROSS DEANERY CHURCH OF  
ENGLAND PR ..., ATHERSLEY SOUTH, ST HELENS  
BOULEVARD, BARNSELY, SOUTH YORKSHIRE

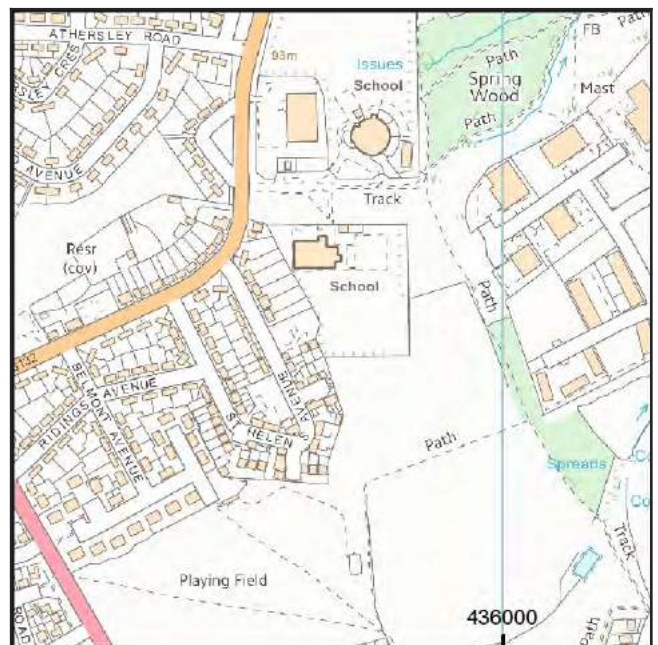
## How to contact us

0345 762 6848 (UK)  
+44 (0)1623 637 000 (International)

200 Lichfield Lane  
Mansfield  
Nottinghamshire  
NG18 4RG

[www.groundstability.com](http://www.groundstability.com)

 /company/the-coal-authority  
 /thecoalauthority  
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Approximate position of property



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# Summary

| Has the search report highlighted evidence or potential of |                                                                   |     |
|------------------------------------------------------------|-------------------------------------------------------------------|-----|
| 1                                                          | Past underground coal mining                                      | Yes |
| 2                                                          | Present underground coal mining                                   | No  |
| 3                                                          | Future underground coal mining                                    | Yes |
| 4                                                          | Mine entries                                                      | Yes |
| 5                                                          | Coal mining geology                                               | No  |
| 6                                                          | Past opencast coal mining                                         | No  |
| 7                                                          | Present opencast coal mining                                      | No  |
| 8                                                          | Future opencast coal mining                                       | No  |
| 9                                                          | Coal mining subsidence                                            | No  |
| 10                                                         | Mine gas                                                          | No  |
| 11                                                         | Hazards related to coal mining                                    | No  |
| 12                                                         | Withdrawal of support                                             | No  |
| 13                                                         | Working facilities order                                          | No  |
| 14                                                         | Payments to owners of former copyhold land                        | No  |
| 15                                                         | Information from the Cheshire Brine Subsidence Compensation Board | No  |

**For detailed findings, please go to page 4.**

# Detailed findings

## 1. Past underground coal mining

The property is in a surface area that could be affected by underground mining in 8 seams of coal at 70m to 400m depth, and last worked in 1965.

Any movement in the ground due to coal mining activity should have stopped.

## 2. Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

## 3. Future underground coal mining

The property is not in an area where the Coal Authority has plans to grant a licence to remove coal using underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

## 4. Mine entries

There are no known coal mine entries within, or within 20 metres of, the boundary of the property.

There may however be mine entries/additional mine entries in the local area which the Coal Authority has no knowledge of.

## 5. Coal mining geology

The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.

## **6. Past opencast coal mining**

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

## **7. Present opencast coal mining**

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

## **8. Future opencast coal mining**

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

## **9. Coal mining subsidence**

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

## **10. Mine gas**

The Coal Authority has no record of a mine gas emission requiring action.

## **11. Hazards related to coal mining**

The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

## **12. Withdrawal of support**

The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

## **13. Working facilities order**

The property is not in an area where an order has been made, under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

## **14. Payments to owners of former copyhold land**

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

#### **15. Information from the Cheshire Brine Subsidence Compensation Board**

The property lies outside the Cheshire Brine Compensation District.

## Additional remarks

Information provided by the Coal Authority in this report is compiled in response to the Law Society's Con29M Coal Mining and Brine Subsidence Claim enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL. Please note that Brine Subsidence Claim enquiries are only relevant for England and Wales. This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority and Cheshire Brine Board's Terms and Conditions applicable at the time the report was produced.

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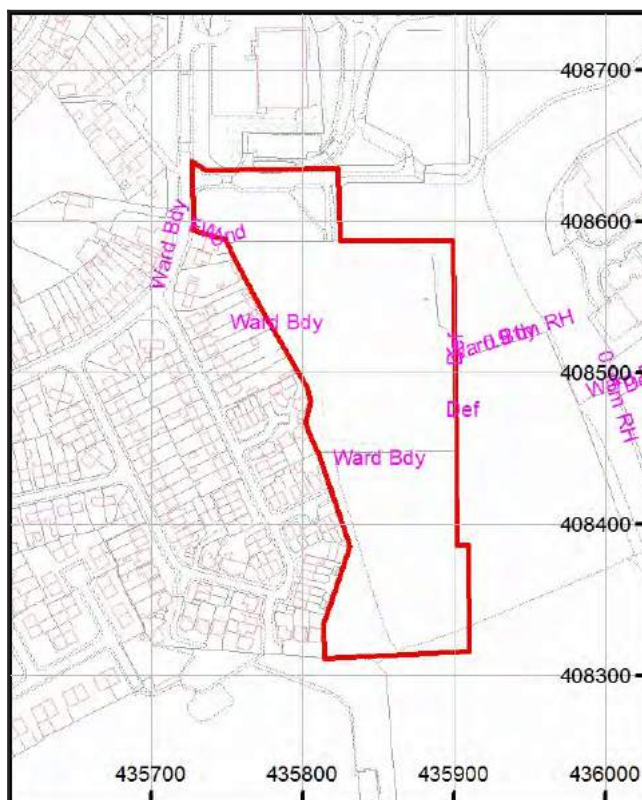
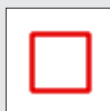
## Alternative formats

If you would like this report in an alternative format, please contact our communications team.

# Enquiry boundary

## Key

Approximate position of enquiry boundary shown



## How to contact us

0345 762 6848 (UK)  
+44 (0)1623 637 000 (International)

200 Lichfield Lane  
Mansfield  
Nottinghamshire  
NG18 4RG

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# MINERAL REPORT



15th October, 2015

Date:

PJ/M4313/5

My Ref:

## CONFIDENTIAL

### FORMER HOLY CROSS SCHOOL SITE, ST HELENS BOULEVARD, SMITHIES

#### SITUATION

The site under consideration for disposal by the council is shown edged orange on attached plan no. M4313/5A. This report provides a review of the geological and mining history of the site.

#### GEOLOGICAL INFORMATION

Geological records indicate that the site lies on mudstone, siltstone and Oaks Rock Sandstone of the Middle Coal Measures.

A north east – south west trending geological fault is conjectured 80m to the north east as illustrated on the attached drawing.

Although not recorded by the British Geological survey the poor quality Swinton Pottery coal may outcrop through the site.

#### MINING

Deep mining operations have taken place beneath the site in several seams of coal. The most recent workings were undertaken in the 1960's.

Any movement at the surface should have ceased decades ago and as the site now lies remote from the active coalfield the land will remain unaffected for the foreseeable future.

#### MINESHAFT

A disused mineshaft is shown to be located approximately 40m to the south of the site as illustrated on the attached drawing.  
SYMAS has no records regarding the depth and condition of the shaft.

#### FORMER LAND USES

The relevant Ordnance Survey plans have been checked for any evidence of past industrial land usage in the area.  
No such land uses were highlighted. The site was formerly occupied by Holy Cross School.

#### MADE GROUND

British geological survey maps indicate the presence of made ground on the site as illustrated in green on the attached drawing. The origin of the made ground is not known although it is likely to be the result of a cut and fill operation possibly undertaken when the former school was constructed.

#### LANDFILL

Landfill site number 94 (category 4) lies to the south west of the site as shown on the attached drawing. The site contains construction and demolition waste and was operated between 1985 – 1986 and then being restored as a playing field.

Tel: (01226)772689

Fax: (01226)772688

E-mail: [symas@barnsley.gov.uk](mailto:symas@barnsley.gov.uk)

Website: [www.barnsley.gov.uk/symas](http://www.barnsley.gov.uk/symas)



**BARNSLEY**  
Metropolitan Borough Council



**Doncaster**  
Metropolitan Borough Council



**Rotherham**  
Metropolitan Borough Council

# MINERAL REPORT



Continuation Sheet

## CONCLUSIONS

1. The site is considered stable from the deep mining subsidence aspect and should remain so in future years. The risk of the site being affected by mining legacy issues is considered as LOW to negligible.
2. The Swinton Pottery coal seam may outcrop through the site near the base of the Oaks Rock Sandstone. Where any coal is encountered foundations of new development should be formed on competent bedrock
3. Weak ground conditions may be associated with sandstone bedrock which may be fractured both naturally and mining induced. Where any fissuring or weak ground conditions are encountered the foundations of any new buildings should be designed accordingly.
4. Historical plan information shows no evidence of former industrial land use in the vicinity of the site which could cause contamination problems.

Made ground and remnant foundations/services may be present on site which should be investigated prior to any new development.

**THIS REPORT IS BASED ON AND LIMITED TO THE RECORDS IN THE POSSESSION OF SYMAS AT THE TIME THE ENQUIRY IS ANSWERED.**

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Report prepared by P. James 15th October, 2015.

A handwritten signature in black ink, appearing to be "P. James", is located below the text "Report prepared by P. James 15th October, 2015.".

P. James,  
Principal Mining Engineer

DRAWING TITLE

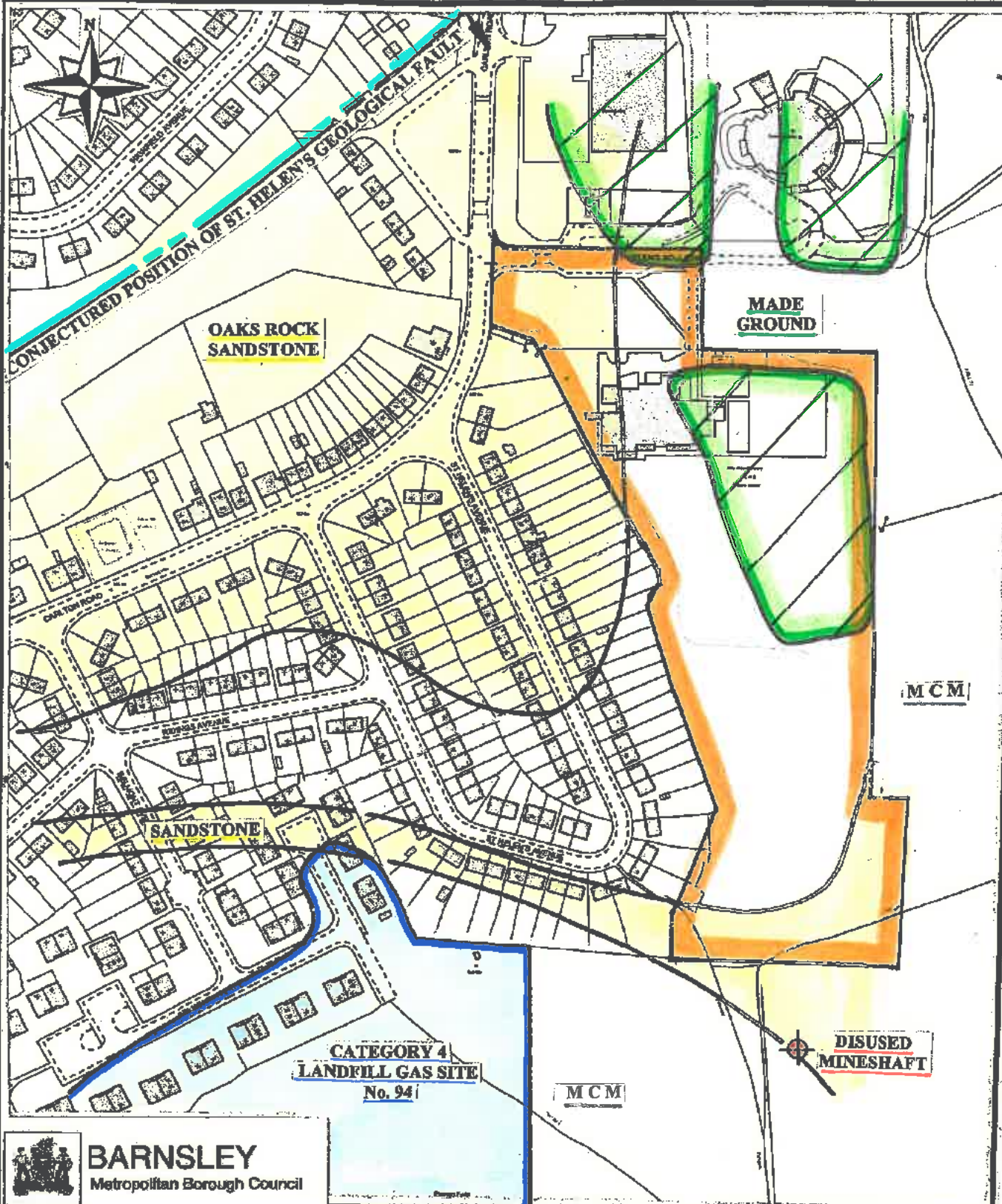
DRAWING NO.

**FORMER HOLY CROSS SCHOOL SITE  
ST HELENS BOULEVARD, SMITHIES - E00805**

M4313/5A

2012

BMBC Licence Number 100022284



**BARNESLEY**  
Metropolitan Borough Council

SCALE

1:2500

DATE

14.10.15

DRAWN BY

AS

CHECKED BY

**SOUTH YORKSHIRE MINING  
ADVISORY SERVICE**

O.S REFERENCE

SE 3805

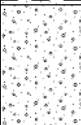
**P. JAMES BSc (Hons)  
PRINCIPAL MINING ENGINEER**

## **Appendix F**

### **Trial Pit Logs**

|                                                                                  |  |  |  |                                                    |  |                                                                                          |                                            |                    |  |
|----------------------------------------------------------------------------------|--|--|--|----------------------------------------------------|--|------------------------------------------------------------------------------------------|--------------------------------------------|--------------------|--|
|  |  |  |  | <h1 style="text-align: center;">Trial Pit Log</h1> |  |                                                                                          | Trialpit No<br><b>TP01</b><br>Sheet 1 of 1 |                    |  |
| Project Name: St Helens Boulevard, Carlton Road                                  |  |  |  | Project No.<br>2551                                |  | Co-ords: 435757.00 - 408602.00<br>Level:                                                 |                                            | Date<br>01/06/2017 |  |
| Location: Barnsley                                                               |  |  |  | Dimensions (m):                                    |  | <div style="border: 1px solid black; width: 100px; height: 30px; margin: 0 auto;"></div> |                                            | Scale<br>1:25      |  |
| Client: Keepmoat Homes                                                           |  |  |  | Depth<br>1.40                                      |  |                                                                                          |                                            | Logged<br>MAR      |  |

| Water Strike | Samples and In Situ Testing |      |         | Depth (m) | Level (m) | Legend                                                                            | Stratum Description                                                                        |   |  |
|--------------|-----------------------------|------|---------|-----------|-----------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---|--|
|              | Depth                       | Type | Results |           |           |                                                                                   |                                                                                            |   |  |
|              | 0.10                        | J&T  |         | 0.30      |           |  | Dark brown slightly gravelly sandy organic CLAY. Gravel is fine of brick. (TOPSOIL)        | 1 |  |
|              |                             |      |         |           |           |  | Stiff orange grey gleyed slightly sandy CLAY. (COHESIVE RESIDUAL SOIL)                     |   |  |
|              | 0.90                        | D    |         | 1.00      |           |  | Grey and orange sandy angular fine to coarse GRAVEL of sandstone. (GRANULAR RESIDUAL SOIL) |   |  |
|              | 1.20                        | D    |         | 1.40      |           | At 1.4m, excavation terminated on competent rock.<br>End of pit at 1.40 m         |                                                                                            |   |  |
|              |                             |      |         |           |           |                                                                                   |                                                                                            | 2 |  |
|              |                             |      |         |           |           |                                                                                   |                                                                                            | 3 |  |
|              |                             |      |         |           |           |                                                                                   |                                                                                            | 4 |  |
|              |                             |      |         |           |           |                                                                                   |                                                                                            | 5 |  |

|                                                                                                                                                                                                                                                                                                   |  |                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------|
| Remarks: 1. Prior to excavation a Cable Avoidance Tool (CAT) survey was carried out. 2. Groundwater was not apparent during excavation. 3. The sides of the trial pit remained stable during excavation. 4. Backfilled with materials arising upon completion. 5. Co-ordinates from handheld GPS. |  |  |
| Stability:                                                                                                                                                                                                                                                                                        |  |                                                                                       |