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HEDNESFORD HILLS,
CANNOCK CHASE, STAFFORDSHIRE

Land Quality Statement
for Part IIA Appraisal

For

Cannock Chase Council

Project No: 10734_01

March 2014

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EXECUTIVE SUMMARY

Site Location	The site is known as 'Hednesford Hills' and is located in Hednesford, Cannock Chase district, WS12 1TD. The site is centred on an OS GR of 400638^{E}, 312809^{N} and comprises an area of 17.23 hectares.
Environmental Setting	The site is set in an area of overall **Medium – High** environmental sensitivity based upon the following: • **Medium - High Sensitivity** with regards to hydrogeological receptors primarily due to the underlying Principal (Bedrock) Aquifer and Source Protection Zone 3 (Total Catchment); • **Low - Medium Sensitivity** for hydrological receptors primarily due to the underlying culverted stream; and, • **High Sensitivity** with regards to Ecological Receptors due to the onsite Site of Special Scientific Interest (SSSI) and surrounding Hednesford Hills
Current Use and History	The site currently comprises: residential housing in the north of the site (adjacent to Rugeley Road (A460); Cannock Chase Museum which is in the central portion and has associated buildings and car parking areas; and, open heathland which is open to the public via rights of way in the south. Historically, the site was used for coal mining from as early as 1874 when it was known as *Pool Pit*, before being called *Valley Colliery*. The site was subsequently used as a training facility to train miners before they first went underground. Following the decline of coal mining in the area, the site was partially developed as landfill in the 1940s and then subsequently for residential housing in the north from 1978. In addition, former colliery buildings have been redeveloped to a heritage museum.
Contamination Issues	An intrusive investigation has been undertaken comprising windowless sample holes and hand augured locations. Ground gas monitoring has been carried out including both spot and high frequency monitoring. The contaminant concentrations were generally below the Category 4 Screening Levels or generic screening criteria, as appropriate, that were used as simple screening thresholds. Although 'hot spots' of contaminant concentrations were detected these are assumed to be isolated and not representative of the general sample population. The lack of any significant contaminant source indicates that the underlying groundwater is unlikely to be at significant risk of pollution. Elevated concentrations of carbon dioxide were detected but flow rates were nominal. Given the lack of an evident organic load associated with the soils and the lack of flow the risk of harm to current users is not likely to be significant.
Conclusions/ Recommendations	Based on the above information, and in line with current Statutory Guidance: • the site is generally considered to be Category 4; • It is not considered that the site would be determined as Contaminated Land under Part 2A, although this decision is the responsibility of Cannock Chase Council; and, • Further intrusive works and/or assessment may be required in the event of the site being subject to development.

1.0 INTRODUCTION

Terms of Reference

1.1. This report has been produced by Campbell Reith Hill LLP (CampbellReith) on behalf of Cannock Chase District Council ('the Client'), in order to provide a Part 2A appraisal of Hednesford Hills, Cannock Chase (hereafter referred to as 'the site'). Collectively, the site comprises 182 properties and the *Museum of Cannock Chase* as summarised below:

- N$^{O.}$ 7 Heather Valley;
- N$^{O.}$ 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252 Rugeley Road;
- N$^{O.}$ 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27 Valley Road;
- N$^{O.}$ 1 - 19 Glendene Road;
- N$^{O.}$ 1 - 8, 17 – 19, 21 – 26, 31 – 40 Beverly Hill;
- N$^{O.}$ 1 – 16 Stevens Drive;
- N$^{O.}$ 1 – 4, 6, 8 – 10, 12, 14 Heather Valley;
- N$^{O.}$ 1 – 30, 32, 34, 36, 38, 40, 42, 44, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92 Greenslade Grove;
- N$^{O.}$ 1 – 3 Pavillion View;
- N$^{O.}$ 1 – 14 The Sidings; and.
- The *Museum of Cannock Chase*, Valley Heritage Centre.

1.2. All properties were constructed prior to 1994 and the implementation of the National Planning Policy Framework and the preceding PPS23[1]. As such, contamination appraisals and any necessary remedial measures are unlikely to have been addressed under planning.

Purpose

1.3. This report has been specifically produced to assist in the delivery of the Client's obligations under Part 2A of the Environmental Protection Act 1990. Specifically, the site is known by the Local Authority to be potentially affected by contaminative historical uses, and as such, has been highlighted as a **priority site**[2] for further appraisal in line with their Contaminated Land Strategy, June 2001. The purpose of this report is to:

[1] Office of the Deputy Prime Minister, *Planning Policy Statement 23: Planning and Pollution Control*, 2004.

[2] Priority Sites are determined by the Local Authority where an 'unacceptable risk' to Human Health may be present (as oppose to sites where a risk to Controlled Waters or Ecological Receptors may be present).

- provide a *Geoenvironmental Desktop Study*, including a summary of the site's environmental setting, historical development and current Conceptual Site Model in accordance with CLR 11[3];
- report on the intrusive investigation that have been carried out and undertake a Tier 2 *Quantitative Risk Assessment* to determine the likelihood of whether the site may satisfy the legal definition of '*Contaminated Land*' as provided in Section 78A(2) of the Environmental Protection Act 1990[4] and further detailed in statutory guidance[5]; and,
- where a risk of potential significant harm is identified, provide an assessment of the factors that will influence whether there is a significant probability of such harm and, where appropriate, provide recommendations for further works.

Sources of Information

1.4. This report has been primarily based upon the following sources of information, as summarised under Table 1.1. A desk top study has already been produced by CampbellReith (as detailed below), the findings of which are provided in sections 2.0 – 5.0.

TABLE 1.1: SUMMARY OF DESKTOP INFORMATION

Ref	Document	Document Reference	Date	Appendix
[1]	GroundSure EnviroInsight, GeoInsight and MapInsight reports.	EMS_127424_174677	May. 2011	C
[2]	British Geological Survey records obtained via www.bgs.ac.uk	SK 01SW/14	Unknown	N/A
[3]	Environment Agency website, www.environment-agency.gov.uk	No Reference	Apr. 2011	N/A
[4]	Multi Agency Geographical Information for the Countryside (MAGIC) website, www.magic.gov.uk	No Reference	Apr. 2011	N/A
[5]	Culture 24, *Cannock Chase Museum*, www.culture24.org.uk/WM000056, 2011.	No Reference	Feb. 2011	N/A
[6]	Cannock Chase Heritage Trails Summary of Cannock Chase Museum, www.cannockchasedc.gov.uk/site/heritagetrail/museum_cannock.html, 2011.	No Reference	Feb. 2011	N/A

[3] Department for Food, Environment and Rural Affairs (Defra) & Environment Agency, *Contaminated Land Report (CLR) 11: Model Procedures for the Management of Land Contamination*, 2004.

[4] The legal definition of contaminated land is provided in Section 78A(2) of Part 2A of the Environmental Protection Act 1990. Contaminated Land is any land which appears to the Local Authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that: (a) *Significant Harm* is being caused or there is a significant possibility of such harm being caused; or (b) pollution of controlled waters is being, or is likely to be caused. It is noted that the Statutory Guidance relating to Contaminated Land is currently in the process of revision. The regulations require local authorities, such as Cannock Chase District Council, to inspect land in its District for contamination and this process is detailed under the Cannock Chase Contaminated Land Strategy (June 2001).

[5] Defra: Environmental protection Act 1990:Part 2A, Contaminated Land Statutory Guidance, April 2012.

Ref	Document	Document Reference	Date	Appendix
[7]	Cannock Chase Mining Historical Society, www.ccmhs.co.uk/homepage.htm, 2011.	No Reference	Feb. 2011	N/A
[8]	Natural England Website, www.natureonthemap.naturalengland.org.uk	No Reference	May 2011	N/A
[9]	CampbellReith Geoenvironmental Desktop and Part 2A Appraisal	RWtt10734_02-010512-DTS	May 2012	N?A

2.0 SITE DESCRIPTION

Site Location

2.1. The site is located off Valley Road in the village of Hednesford, Cannock Chase district. The site is centred on an OS GR of 400638^{E}, 312809^{N} and comprises an area of 17.23 hectares. Site location and layout plans are presented as Figures 1 and 2 respectively (Appendix A).

2.2. The site area has been delineated by the Client's prioritisation exercise and resembles the extents of the former Colliery workings and railway sidings (see Section 4.0 for Historical Development).

Site Description

2.3. A site walkover was undertaken by a representative of CampbellReith on Wednesday 11th May 2011 and forms the basis of the following site description. In the interim to this report, the Local Environmental Health Officer has confirmed that there are no known significant incidences to have occurred onsite. The *Annotated Site Layout Plan* (Figure 2, Appendix A) should be read in conjunction with the following text. Where referenced, photographs are provided under Appendix B.

Site Layout

2.4. The site can be broadly sub-categorised into three distinct portions as follows:

PORTION 1: Current residential areas comprising Heather Valley, Glendene Road & Rugeley Road (A460) (Photographs 1 – 3**), Greenslade Grove, The Sidings and Stevens Drive; and, *The Museum of Cannock Chase*** which form the northern portion of the site. It is understood that the Glendene Road Estate (to the east of the A460) was constructed during the early 1970s; with the remainder of the housing believed to have been constructed during the late 1980s. It is noted that a number of dwellings only have their gardens located within the site (with the housing itself situated offsite). During the site walkover no evidence of sub floor/slab ventilation was noted.

The Museum of Cannock Chase is located off Valley Road and is situated where the Valley Colliery once stood. Information obtained from online sources [References 5 – 7] indicates that the museum itself occupies the former corn store, where pit ponies' feed was kept.

PORTION 2: Museum Buildings and Car Parking on Valley Road (Photograph 6) **& Open Fields/Parkland** which comprise the central and southern portions of the site, and at the time of the site visit, did not appear to be commercial / crop producing. In addition, Coach Car Parking is provided in the central area of the site. No obvious areas of 'dieback' or signs of vegetative stress were noted during the site walkover, and in general, vegetation appeared to be healthy (Photographs 7 & 8). The museum area includes an interactive 'open mine' display which is known to be used predominantly by children and which therefore exposures visitors to soils.

PORTION 3: Hednesford Hills Common (Photographs 4 & 5) which is known to comprise numerous former colliery workings in the southern portion of the site including mine shafts associated with the period of coal extraction on site.

2.5. Information provided by the Local Authority indicates that parcels of the open land onsite are currently in use for the rearing of cattle. This has subsequently been considered under the Conceptual Site Model and Risk Assessments (Sections 5.0, 6.0 and 8.0) as a *Statutory Receptor*.

Site Topography

2.6. The site slopes towards the west (approximately 160m OD) from the eastern portion of the site (approximately 190m OD)[6]. Where surface runoff may be generated, this is likely to fall down-gradient towards Rugeley Road (if not intercepted by surface water drainage infrastructure).

Site Access & Car Parking

2.7. The site is accessed off Rugeley Road (A460) with Valley Road providing access along the length of the site. Car parking is available at the central portion of the site (Museum Coach Parking). The site is crossed by a number of footpaths / public rights of way.

Surrounding Land-Use

2.8. The site is situated in a general area of residential housing and open countryside comprising *Hednesford Hills* which surround the site to the north, east and south. The west of the site is formed by a railway line, beyond which lies residential housing. Taking into account a 250m buffer around the site, 677 properties are noted to be present within the immediate site surrounds.

[6] Site levels data has been obtained from Google Earth Pro.

3.0 ENVIRONMENTAL SETTING

Geology

3.1. The site geology is summarised under Table 3.1 below. The associated references are presented under Table 1.1.

TABLE 3.1: SUMMARY OF GEOLOGY

Type	Description	Depth to Base	Ref
Made Ground	A variable thickness of Made Ground should be anticipated in parts of the site which have been formerly developed. In addition, the northern most portion of the site is known to be partially underlain by a former landfill which continuous to the south. In this area, a significant thickness should be anticipated.	Unknown	[1]
Superficial Deposits	**Glacial Till** comprising 'gravel and soft sand, gravel' is indicated to be present onsite by BGS boreholes sunk on the *Valley Heritage Centre*. These are referred to as *Glaciofluvial Deposits* under Reference [1] and are only indicated to be present on the northwest portion of the site; contradictory to the BGS borehole data. **Alluvium** is indicated to be present along the north-western site boundary.	c. 4.5m bgl Unknown	[2] [1]
Solid Deposits	The site is indicated to be underlain by the **Kidderminster Formation** comprising inter-bedded Sandstone and Conglomerate.	Unknown	[1]
Ground Workings			
The entire site is indicated to have been affected by **Historic Surface Ground Workings** from as early as 1882. Typically, these entries relate to: **Cuttings**; **Reservoir**; **Unspecified Heaps**; **Colliery**; **Refuse Heap**; **Unspecified Pit**; and, **Unspecified Ground Workings**. In addition, the site is indicated to have been affected by **Historic Underground Workings** including: **Colliery**; **Air Shaft**; and, **Unspecified Mine**.			[1]

Hydrogeology

3.2. The site hydrogeology is summarised in Table 3.2 and the associated references under Table 1.1. A *Site Hydrogeological Constraints Plan* is presented as Figure 3 (Appendix A) and should be read in conjunction with the following summary.

TABLE 3.2: SUMMARY OF HYDROGEOLOGY

Type	Distance / Direction	Description	Ref
Superficial Aquifers	Onsite	A narrow **Superficial Secondary 'A' Aquifer** is present on the northernmost tip of the site. These aquifers comprise permeable layers capable of supporting water supplied at a local rather than strategic scale, and in some cases, forming an important source of base flow to rivers. These are generally aquifers formerly classified as 'Minor Aquifers'.	[3]
Bedrock Aquifers	Onsite	The site is underlain by a **Principal Bedrock Aquifer** (Waterbody ID: GB40401G300500) known as the *Staffordshire Trent Valley – PT Sandstone Staffordshire*. The aquifer is recorded as having a current quantitative and chemical quality of 'Poor' and is 'at Risk' of failing to meet the objectives of the Water Framework Directive[7] by 2015. These are layers of rock which have a high inter-granular and/or fracture permeability – meaning they usually provide a high level of water storage and may support water supply and/or river base flow on a strategic scale. In most cases, these aquifers were formerly designated as 'Major Aquifers'. Based upon the current understanding of ground conditions on site, the aquifer is likely to be unconfined and sensitive to surface / shallow contamination.	[3]
Source Protection Zone	Onsite	The majority of the site (with the exception of the northernmost tip) is underlain by a SPZ 3. These are areas around which all groundwater recharge is presumed to be discharged at the source. The outer extents of Zone 1 and Zone 2 of the SPZ are located approximately 2.5km and 20km north east of the site respectively.	[1] & [3]
Groundwater Abstractions	>1km	No abstractions – potable or otherwise - have been identified within 1km of the site. For reference, no potable abstractions are present within 2km of the site.	[1]

3.3. Based upon the above information, and based upon the definitions provided in NHBC R&D66[8], as amended to include the requirements of the Water Framework Directive and the EA's River Basin Catchment Plans, the site is considered to have a **'Medium - High**' sensitivity with respect to hydrogeology.

Hydrology

3.4. The site hydrological setting is summarised under Table 3.3 below.

[7] The Water Framework Directive (WFD) 2000/60/EC.

[8] Guidance for the Safe Development of Housing on Land Affected by Contamination R&D66: 2008 Volume 1 (Environment Agency, NHBC and CIEH)

TABLE 3.3: SUMMARY OF HYDROLOGICAL SETTING

Type	Distance / Direction	Description	Ref
Rivers	Onsite	Information provided by the Local Authority indicates that a **Culverted Stream** runs through a section of the north of the site. Reference to available OS mapping suggests that flow direction is likely to be towards the north. No records could be found with respect to its use or quality and it is not listed in the EA's River Basin Management Plan (RBMP) that incorporates the site (Humber RBMP)	-
Other Surface Water Features	180m / N	**Hednesford Quarry**, an artificial pond, is located 180m north of the site.	[1]
	280m / N	**Bentley Brook** is recorded as a *Secondary River* which is intermittently culverted. This is not listed in the EA's RBMP and is not currently monitored for quality. As such, the sensitivity of this water feature is limited.	[1]
	570m / S	**Ridings Brook** is recorded as a *Secondary River* which is intermittently designated as a *Tertiary River*. This is not listed in the EA's RBMP) and is not currently monitored for quality. As such, the sensitivity of this water feature is limited.	[1]
Environment Agency Generic Quality Assessment	>1.5km	No data has been identified within 1.5km of the site, which accords with the absence of records of the surface water features in the EA's RBMP, as detailed above.	[1]

3.5. Based upon the guidance detailed for the hydrogeological assessment above the site is considered to have a **'Low - Medium'** sensitivity with respect to hydrological receptors, given the unknown construction of the culverted stream.

Ecological Setting & Statutory Receptors

3.6. *Ecological Receptors* within Part 2A are listed in Table 1 of the Statutory Guidance. In summary, these comprise any ecological system, or living organism forming part of such as system, within a location which is:

- a Site of Special Scientific Interest (SSSI) notified under section 28 of the Wildlife and Countryside Act 1981;
- a National Nature Reserve (declared under section 35 of the above act);
- a Marine Nature Reserve (designated under section 36 of the above act);
- an area of special protection for birds (under section 3 of the above act);
- a "European site" within the meaning of regulation 8 of the Conservation of Habitats and Species Regulations 2010;

- any habitat or site afforded policy protection under paragraph 6 of Planning Policy Statement 9 (PPS 9) on nature conservation (i.e. candidate Special Areas of Conservation, potential Special Protection Areas and listed Ramsar sites); or,
- any nature reserve established under section 21 of the National Parks and Access to the Countryside Act 1949.

3.7. Identified *Ecological Receptors* are summarised under Table 3.4 below and are shown under Figure 4, *Site Ecological Constraints Plan* (Appendix A).

TABLE 3.4: SUMMARY OF ECOLOGICAL RECEPTORS

Designation	Distance	Citation	Description	Reference
Site of Special Scientific Interest (SSSI)	Onsite	2000693	Chasewater and the Southern Staffordshire Coalfield Heaths (Unit 1). The unit is particularly noted for its *Dwarf Shrub Heath – Lowland*. Believed to relate to *Hednesford Heath*.	[4] & [8]

3.8. In addition, *Hednesford Heath* (onsite) is designated a Local Nature Reserve (LNR) and *Cannock Chase* (140m to the north of the site) is designated an Area of Outstanding Natural Beauty (AONB); however, these does not constitute an '*Ecological Receptor'* for the purposes of Part 2A.

3.9. Based upon the above information, the site is considered to be of '**High**' sensitivity with regards to Ecological Receptors.

Summary

3.10. Overall, the site is considered to be of '**Medium**' environmental sensitivity.

4.0 SITE HISTORY AND INDUSTRIAL SETTING

Site History

4.1. The following description of the site's historical development has been primarily derived by reference to Ordnance Survey mapping contained within Reference [1] (Appendix C) dated 1884 – 2011 of 1:2,500, 1:10,000 and 1:10,560 scales. A *Historical Composite Plan* is presented under Appendix A (Figure 5) and should be read in conjunction with the following description.

TABLE 4.1: SITE HISTORY

Date	Development	Ref
1874 - 1954	*Valley Colliery* is believed to have been opened, originally called *Pool Pit*, after the pool which once covered nearby Hednesford Park. Earliest available mapping dated 1884 indicates a number of features and ancillary structures to have been constructed onsite, including: a **Mineral Railway** which ran along the entire length of the site; a number of **Air Shafts** which are presumably related to underground workings; a **Magazine** which is believed to have housed the explosives required for blasting within the mines; and, a **Reservoir**. In addition to the above, a relatively small number of terraced housing was located along the present day *Rugeley Road*. By 1917, a number of **Tanks** were illustrated onsite, possibly indicating the use of fuelled machinery coinciding with general industrialisation during the early 1900's. During 1946, Valley Colliery was re-used as the *Coal Mining Training Centre* for the Cannock Chase, Shropshire and South Staffordshire coalfields. The training centre is recorded as having opened just before new legislation was introduced requiring miners to have training prior to going underground. The colliery corn store (now the museum's main building) was converted for training. New recruits were also trained in five Nissan huts from World War II, which stood beside the museum. Near to what is now the main car park (in the centre of the site), surface training facilities that replicated underground conditions were built.	[5] [1] [1] [1] [5] – [7]
1960 - 1969	By 1960, a **chimney** is indicated to have been present onsite; however, the general number of buildings appears to be reduced. This generally coincides with anecdotal information provided by Reference [6] that coal extraction from nearby Wimblebury Colliery ended in 1962, and at that time, on site colliery buildings were used for training only. This is supported by historical mapping dated 1968 – 1969 which indicated the colliery as **Valley Training Centre (N.C.B.)**. At around the same time, the Mineral Railway is indicated to have been removed. A series of **Tank** and **Drains** appear on the northern portion of the site; although these appear to have been constructed within a bund-like structure.	[1] [6] [1] [1]

Cont….\

TABLE 4.1: SITE HISTORY (Cont.)

Date	Development	Ref
1978	By 1978, the **Residential Estates** forming the northwestern portion of the site are indicated to have been constructed along *Valley Road*, *Glendene Road* and *Beverley Hill*. The *Mining Rescue Station* moved to site during 1972 and remained until the service was relocated out of the district in 1991. Prior to this, it is understood that the station had been re-used as a *Public House*, but was later pulled down after most of it was destroyed by a fire (arson). This period is not covered within the available mapping.	[1] [6]
1991	The **Valley Heritage Centre** is indicated to have been constructed c.1991 and the site has remained relatively unchanged since.	[1]

4.2. Notable and / or potentially contaminative historical adjacent land uses are summarised under Table 4.2 below.

TABLE 4.2: ADJACENT LAND HISTORY (≤ 250M FROM SITE)

Date	Distance / Direction	Development
c.1900 - 1975	200m / SW	A **Gas Works (Disused)** is indicated to have been present, which by 1921, is indicated to be a **Storage Station (Gas)**. The storage station no longer appears on mapping after c.1975.

Current Industrial Setting

4.3. The sites current industrial setting and potentially contaminating incidents / activities are summarised under Table 4.3 below.

TABLE 4.3: CURRENT INDUSTRIAL FEATURES & CONTAMINATIVE RECORDS OFFSITE

Category	Comment / Description	Significance	Ref
Contemporary Trade Records	A total of three Contemporary Trade Records have been identified within 250m of the site, two of which relate to ***Electricity Sub Stations*** which are present on Beverly Hill and adjacent to Glendene and Rugeley Road. The third entry is for a business premises registered to *Classic Stairlift Services*. No petrol or fuel sites or underground high pressure oil and gas pipelines have been identified within 250m of the site.	Medium	[1]
Waste Operations	**Hednesford Park** (Onsite) An area of land in the northwest of the site is a registered **Environment Agency Historic Landfill** known as *Hednesford Park*, Site Reference CANNOCK AREA 32 9999/9582 and Environment Agency Reference EAHLD25205 & EAHLD23176.	High	[1]

Cont…\

TABLE 4.3: CURRENT INDUSTRIAL FEATURES & CONTAMINATIVE RECORDS OFFSITE

Category	Comment / Description	Significance	Ref
Waste Operations (Cont.)	Available records indicated that the landfill was operational between December 1945 and December 1948. During this period, the landfill is believed to have received **household waste**. As illustrated in Figure 5, the landfill slightly encroaches on to the northern portion of the site and continues parallel to A460 to the south of the site. In addition, it is noted that the landfill has not been identified on historical mapping. **Refuse Tip, *Greenslade Grove*** (Onsite) A **Local Authority Landfill** is recorded on Greenslade Grove as having been used as a **Refuse Tip**, as indicated on 1968 mapping. However, this feature does not appear on the mapping currently available. **Hednesford Quarry** (250m North) Hednesford Quarry is an **Environment Agency Registered Historic Landfill**, reference EAHLD23204, which is recorded to have been operational from August 1984; however, a 'last waste received' date is not recorded. Similarly, no details of wastes received are recorded. **Hednesford Gravel Pit** (350m North) Hednesford Gravel Landfill is located directly to the north of Hednesford Quarry and is recorded to have been used for disposal of **Industrial** and **Liquid / Sludge Wastes** between 1972 and 1984. **EA Registered Waste Transfer** (75m North) An Environment Agency Registered Waste Transfer **Station** is located approximately 75m to the north of the site, registered to Bestmoor Industrial, Unit 8/12, Station Road, Hednesford. The license is for **Household**, **Commercial** & **Industrial** wastes at a rate of ≥75,000 tonnes/annum (actual volume recorded as 156,000 tonnes). The earliest licence was first issued 06/03/1998. The license has since been reissued on 04/12/2009 for a reduced tonnage of <25,000 tonnes / annum.	Medium	[1] [1] [3] [3] [1]
Part A(2) and Part B Activities and Enforcements	**Fives Garage Cannock Chase Enterprise** (X 400865 Y 314206) Part B permit for Waste Oil Burning Process registered 250m northwest of the site to *Fives Garages Autobody Repairs* and is currently ongoing. It is noted that the original permit co-ordinates provided under Reference [1] are erroneous. This is confirmed with the Local Authority.	Low	[1]
Pollution Incidents	A single Environment Agency Recorded Pollution Incident (List 2) has been identified, located 250m to the southwest of the site. The incident is recorded as having occurred on 15/11/2001 (identification reference 42964) involving '**inorganic chemicals / products**' resulting in a 'minor' (Category 3) impact to land.	Low	[1]

4.4. In addition to the above information, desktop research did not uncover any records of the following within 250m of site: historic IPC (Integrated Pollution Control) authorisations; Part A(1) and IPPC (Integrated Pollution Prevention and Control) authorised activities; water industry referrals; Red List discharge consents (potentially harmful discharges to Controlled Waters); List 1 or List 2 dangerous substances inventory sites; records of Category 3 or 4 Radioactive Substances licences; licensed Discharge Consents; records of Planning Hazardous Substance Consents and Enforcements; Dangerous or Hazardous Sites (COMAH & NIHHS entries); List 1 Environment Agency recorded pollution incidents; or, sites determined as 'Contaminated Land' under Section 78R of the Environmental Protection Act 1990.

4.5. The Local Authority has received a formal complaint from a resident that his health has been adversely affected since moving to the area.

5.0 INITIAL CONCEPTUAL SITE MODEL

5.1. Current practice for land contamination evaluation involves the development of a Conceptual Site Model (CSM) to appraise contaminant source-pathway-receptor pollutant linkages. The CSM is summarised below, based upon information presented herein, and the preliminary Part 2A assessment is presented in Section 6.0. A *Conceptual Site Model & Risk Assessment* drawing is presented as Figure 7, Appendix A.

Potential Sources of Contamination

5.2. Table 5.1 summarises the primary potential contamination sources that have been identified on or near the site. These are illustrated on Figure 6, *Potential Contamination Constraints Plan*.

TABLE 5.1: PRIMARY POTENTIAL SOURCES OF CONTAMINATION

Feature on or near site	Description & Potential Contaminants
General **Made Ground** Associated with Former Site Development and Mining of Coal and Lignite. It is noted that numerous spoil heaps have been identified from historical mapping. Interactive 'open mine' display which exposures visitors, including children, to soils	The entire site is known to have been previously effected by mining, and as such, there is a potential for a variable thickness of Made Ground to be present on site. Where present, Made Ground may contain anthropogenic components such as **ash**, **clinker** and **demolition arisings**, and as such, may contain the following contaminants: **metals**; **hydrocarbon compounds**; and/or, **asbestos containing materials (ACM)**. In addition, Made Ground may contain degradable material associated with spoil from the former mining activities (lignite), which has the potential to generate significant volumes of **ground gases** (primarily **methane** and **carbon dioxide**).
Ancillary Structures associated with the operation of the Colliery including **tanks** and **chimney** in the north of the site (1960).	A number of **tanks** have been recorded onsite associated with mining activities and training. It is likely that these tanks were used to hold **fuels;** however, the majority of these are thought to have been bunded and the remaining units were removed by 1917. The early layout of the colliery included a **magazine** which is believed to have housed **explosives** required for blast mining. There is considered to be a remote possibility that soils in the vicinity of the former magazine may be impacted with explosives.
Current **car parking areas** (including a Coach Car Park) associated with the museum.	Areas of the site used for frequent car parking may have been contaminated via **fuel spillages** and general vehicle leakages. Typical contaminants may comprise **fuel oils** and **lubricating oils**.
Former **Mineral Railway** which was present across the site c.1874 – 1968.	A mineral railway is known to have run along the entire length of the site for the transportation of coal and lignite. Reference to the Industry Profile[9], together with in-house knowledge, indicates the potential contaminants to include: **fuel oils**, **lubricating oils** and **greases** which may have leaked from train related operations; and, potential **ash ballast** (possibly containing **metals**, **phenols**, **sulphates** and **polycyclic aromatic hydrocarbons** (PAHs)). General contamination may also have occurred due to spillages of cargoes.

[9] Department of the Environment Industry Profile, *Railway Land*, 1995.

Cont…\

TABLE 5.1: PRIMARY POTENTIAL SOURCES OF CONTAMINATION (Cont.)

Feature on or near site	Description & Potential Contaminants
Historic Landfills *Hednesford Park Landfill*, *Greenslade Grove Refuse Tip, Hednesford Quarry Landfill* and *Hednesford Gravel Pit Landfill* (see Table 4.3)	**Hednesford Park** and **Hednesford Quarry Historical Landfills** are present on, and within 250m of the site, respectively. Hednesford Park is known to have received household waste from as early as 1945. Reference to the Industry Profile[10] indicates that prior to the 1970's, the majority of landfill sites had little or no engineering control of wastes beyond that provided by the local geology and topography. As such, there is a potential for the site to be affected by landfill leachate. Given the age of the landfill, leachate would be likely to primarily comprise ammonia and possibly iron. Whilst the age of the landfilled materials suggests that the period of peak gas production has passed[11], the potential for elevated levels (above safe levels) to be currently generated cannot be discounted. Details of received wastes are not recorded for Hednesford Quarry Landfill; it is known, however, that it first started operating c.1984. It has been closed for less than 30 years and therefore the generation potential is considered Moderate to Very High and lateral migration risk is Moderate to Very High. Hednesford Gravel Pit Landfill is located directly to the north of Hednesford Quarry and was used for disposal of Industrial and Liquid/Sludge wastes between 1972 and 1984. It is noted that in addition to 'bulk landfill gases', additional constituents such as **hydrogen sulphide**, **organosulphur compounds**, **aliphatic hydrocarbons** and **halogenated hydrocarbons** may be generated.
Gas Works located 200m to the southwest of the site c.1900 – 1921.	Coal gas manufacturing may have resulted in contamination (and subsequent migration to site) of groundwaters. Typical contaminants include: **coal tar constituents**; **cyanides**; and, **PAH**.

Receptors

5.3. Based upon the current site usage and environmental setting, potential receptors have been summarised under Table 5.2 below.

TABLE 5.2: POTENTIAL RECEPTORS

Receptor	Description
Human Health **High Sensitivity**	The most sensitive human health receptors comprise the residents of the housing estates to the immediate west and east of the A460 and off site properties in the immediate surrounds. Areas of private gardens on site represent areas of elevated sensitivity, particularly where these may be used for the production of home grown consumable crops. Given the age of the residential developments it is reasonable to assume that the garden areas were not provided with cover materials in accordance with current environmental standards (as governed by the planning regime) and may also overlay potentially contaminated soils.

[10] Department of the Environment Industry Profile, *Waste recycling, treatment and disposal sites: landfills and other waste treatment or waste disposal sites.*

[11] Wilson, Card, Haines, *Ground Gas Handbook*. Whittles Publishing, 2009

Cont….\

TABLE 5.2: POTENTIAL RECEPTORS (Cont.)

Receptor	Description
Human Health **High Sensitivity** (Cont.)	Secondary receptors include staff and visitors to the Museum Centre, and to a lesser extent, recreational users to the site and surrounding Hednesford Hills. Visitors to the museum are also exposed to the soils via the open mine display area which is particularly used by children.
Hydrogeological **Medium - High Sensitivity**	The primary hydrological receptor comprises the underlying Principal Aquifer comprising the *Staffordshire Trent – PT Sandstone* which is also situated with a Source Protection Zone 3, *Total Catchment*.
Hydrological **Low - Medium Sensitivity**	A culverted stream runs through the north of the site, possibly joining either *Bentley Brook* to the north or *Ridings Brook* to the south. Two large ponds are located approximately 180m to the north of the site, which coincide with the location of the former Hednesford Quarry Landfill. It is noted that Bentley Brook runs adjacent to one of these ponds and feeds directly into the other. These features are not monitored by the EA and are not present on the list of water features that are required to be maintained from a quality perspective
Ecological **High Sensitivity**	The *Chasewater and the Southern Staffordshire Coalfield Heaths (Unit 1)* SSSI has been identified onsite. The unit is particularly noted for its *Dwarf Shrub Heath – Lowland*. This SSSI is believed to relate to *Hednesford Heath*. In addition, *Hednesford Heath* (onsite) is designated a Local Nature Reserve (LNR) and *Cannock Chase* (140m to the north of the site) is designated an Area of Outstanding Natural Beauty (AONB); however, these does not constitute an '*Ecological Receptor*' for the purposes of Part 2A.
Animals / Livestock **High Sensitivity**	Information provided by the Local Authority indicates that the site is currently partly in use for the rearing of cattle.
Buildings **Medium – High Sensitivity**	Residential buildings on the north of the site are known to have been constructed during 1970 – 1980. As such, it is uncertain as to the scope of requirements of building regulations imposed at the time; and in particular, the specification of any Damp Proof or (in an ideal case) Gas Protection Membranes that may have been installed. Furthermore, it is unclear whether garden areas have been constructed using suitable materials and to a specification appropriate for the separation of potentially contaminated underlying soils – particularly in relation to the area of former landfill. Given the age of the residential developments it is reasonable to assume that the buildings are either not fitted with a suitable membrane or the membrane has since been compromised / not installed to the required specification. Further research on this matter in due course may demonstrate otherwise.

Pathways

5.4. In the context of the current site use, the potential pathways presented in Table 5.3 are considered applicable and have been considered in the further qualitative risk assessment.

TABLE 5.3: EXPOSURE PATHWAYS

Pathway		Receptor
Ingestion of soil/dust particles generated from on-site surface soils / exposed ground.	Outdoor	HH / A
	Indoor	HH
Inhalation of soil/dust particles generated from on-site surface soils / exposed ground.	Outdoor	HH / A
	Indoor	HH
Inhalation of vapour from soil / groundwater based volatile contaminants.	Outdoor	HH / A
	Indoor	HH
Dermal contact with soil and / or dust particles.	Outdoor	HH / A
	Indoor	HH
Consumption of home grown vegetables / plants.		HH
Migration of soil gasses on- and off-site. There is the potential for a preferential migration pathway due to the presence of the culvert which extends through the site and northwards to the general vicinity of the former Hednesford Quarry Landfill.		HH / B / E *
Downward and lateral migration of water borne contaminants through permeable soils and as dissolved contamination within shallow groundwater.		HG / H / E
Leaching of contamination from Made Ground and subsequent lateral and downward migration as water borne contamination.		HG / H / E
Direct contact between soils and groundwater based contaminants and service infrastructure pipework (including potable water supplies).		HH / B
Uptake of groundwater and soil based contamination by flora / fauna.		E / A

Notes: **HH** Human Health; **HG** Hydrogeological; **H** Hydrological; **E** Ecological; **B** Buildings & Infrastructure. **A** Animals / Livestock.

* build-up of ground gas is usually associated with the presence of confined spaces in terms of risk but gassing landfills can also present a risk to ecological systems.

6.0 PART 2A PRELIMINARY RISK ASSESSMENT

Statutory & Technical Framework

6.1. Section 78A (2) of Part 2A of the Environmental Protection Act[12], and the Statutory Guidance[13], define "*contaminated Land"* as "*any land which appears to the local authority in whose area the land is situated to be in such a condition, by reason of substances in, on or under the land, that (a) significant harm is being caused or there is a significant possibility of such harm being caused; or (b) significant pollution of controlled waters is being caused, or there is a significant possibility of such pollution being caused*".

6.2. The Statutory Guidance broadly describes what is meant by *significant harm* and forms the basis of the following risk assessment. The aim of these definitions is to isolate cases of *problematic land*. In order to achieve this, Part 2A does not:

- apply to sites where low and/or background levels of contaminants (natural or anthropogenic) are present (as is the case on the majority of sites) and where there is no appreciable risk present; or,
- define *Contaminated Land* based solely on concentration thresholds of contaminants. The resultant risk is based on other factors such as the sensitivity of receptors, potential pathways and exposure frequency. As such, a *risk based* approach is required.

TABLE 6.1: SUMMARY OF POTENTIAL AFFECTS OF SIGNIFICANT HARM

Statutory Receptor	Description of Harm to Receptor that is to be Regarded as *Significant*
Human Beings	Death; life threatening diseases (e.g. cancers); other diseases likely to have serious impacts on health; serious injury; birth defects; and impairment of reproductive functions. Serious injury in relation to significant harm would include injury caused by chemical and biochemical properties of substances, such as injury resulting from explosive or asphyxiating properties of gases. It would not extend to injury caused by only physical properties of substances, such as injury caused by falling onto sharp or hard objects made of relevant substances. Other health effects may be considered by the local authority via assessment of the seriousness of the harm in question: including the impact on the health, and quality of life, of any person suffering the harm; and the scale of the harm.
Controlled Water	Section 78A (9) defines the pollution of Controlled Waters as "*the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter*". Significant pollution is defined as: Pollution equivalent to "environmental damage" to surface water or groundwater as defined by The Environmental Damage (Prevention and Remediation) Regulations 2009; Pollution equivalent to "environmental damage" to surface water or groundwater as defined by The Environmental Damage (Prevention and Remediation) Regulations 2009; a breach of a statutory surface water Environment Quality Standard; and/or, Input of a substance into groundwater

[12] "Part 2A" was inserted into the 1990 Act by Section 57 of the Environment Act 1995.

[13] Department for Environment, Food and Rural Affairs (Defra), *Environmental Protection Act 1990: Part 2A, Contaminated Land Statutory Guidance*, April 2012.

Statutory Receptor	Description of Harm to Receptor that is to be Regarded as *Significant*
	resulting in a significant and sustained upward trend in concentration of contaminants (as defined in Article 2(3) of the Groundwater Daughter Directive (2006/118/EC). Land **should not** be designated as *Contaminated Land* where: (a) a substance is already present in Controlled Waters; (b) entry into Controlled Waters of that substance from the land has ceased; and, (c) it is not likely that further entry will take place.
Ecological Receptors	For any protected location: harm which results in an irreversible adverse change, or in some other substantial adverse change, in the functioning of the ecological system within any part of that location; or, harm which affects any species of special interest within that location and which endangers the long-term maintenance of the population of that species at that location. In the case of European sites, harm should also be considered to be significant harm if it endangers the favourable conservation status of natural habitats at such locations or species typically found there.
Property	For crops, a substantial diminution in yield or other substantial loss in their value resulting from death, disease or other physical damage. For domestic pets, death, serious disease or serious physical damage. For other property in this category, a substantial loss in its value resulting from death, disease or other serious physical damage. The local authority should regard a substantial loss in value as occurring only when a substantial proportion of the animals or crops are dead or otherwise no longer fit for their intended purpose. Food should be regarded as being no longer fit for purpose when it fails to comply with the provisions of the Food Safety Act 1990. Where a diminution in yield or loss in value is caused by a contaminant linkage, a 20% diminution or loss should be regarded as a benchmark for what constitutes a substantial diminution or loss. For buildings, significant harm is defined as structural failure, substantial damage or substantial interference with any right of occupation. The local authority should regard substantial damage or substantial interference as occurring when any part of the building ceases to be capable of being used for the purpose for which it is or was intended. Damage to plant/machinery and/or services is not included.

Part 2A Qualitative (Preliminary) Risk Assessment

6.3. In deciding whether or not a *significant possibility of significant harm* to human health exists, the local authority should first understand the possibility of significant harm from the relevant contaminant linkage(s) and the levels of uncertainty attached to that understanding, before it goes on to decide whether or not the possibility of significant harm is significant.

6.4. The term "possibility of significant harm" as it applies to human health, for the purposes of this guidance, means the risk posed by one or more relevant contaminant linkage(s) relating to the land. It comprises:

(a) the estimated likelihood that significant harm might occur to an identified receptor, taking account of the current use of the land in question.

(b) the estimated impact if the significant harm did occur i.e. the nature of the harm, the seriousness of the harm to any person who might suffer it, and (where relevant) the extent of the harm in terms of how many people might suffer it.

6.5. In estimating the likelihood that a specific form of significant harm might occur the local authority should, among other things, consider:

(a) the estimated probability that the significant harm might occur: (i) if the land continues to be used as it is currently being used; and, (ii) where relevant, if the land were to be used in a different way (or ways) in the future having regard to the guidance on "current use" under Section 3 of the Statutory Guidance.

(b) the strength of evidence underlying the risk estimate. It should also consider the key assumptions on which the estimate of likelihood is based, and the level of uncertainty underlying the estimate.

Definition of *Significant Possibility* of Significant Harm to Human Health

6.6. In deciding whether or not land is contaminated land on grounds of significant possibility of significant harm to human health, the local authority should use the categorisations described in paragraphs 4.19 – 4.30 of the Statutory Guidance, as summarised under Table 6.2 below. Categories 1 and 2 would encompass land which is capable of being determined as contaminated land on the grounds of significant possibility of significant harm to human health. Categories 3 and 4 would encompass land which is not capable of being determined on such grounds.

TABLE 6.2: CATEGORISATION OF HUMAN HEALTH RISKS UNDER PART 2A

Risk Category	Description
Category 1	The local authority **should assume** that a significant possibility of significant harm exists in any case where it considers there is an unacceptably high probability, supported by robust science-based evidence, that significant harm would occur is no action is taken to stop it. For the purposes of the Statutory Guidance, these are referred to as "Category 1: Human Health" cases. Land should be deemed to be a Category 1: Human Health case where: (a) the authority is aware that similar land or situations are known, or are strongly suspected on the basis of robust evidence, to have caused such harm before in the United Kingdom or elsewhere; (b) the authority is aware that similar degrees of exposure (via any medium) to the contaminant(s) in question are known, or strongly suspected on the basis of robust evidence, to have caused such harm before in the United Kingdom or elsewhere; (c) the authority considers that significant harm may already have been caused by contaminants *in*, *on* or *under* the land, and that there is an unacceptable risk that it might continue or occur again if no action is taken. Among other things, the authority may decide to determine the land on these grounds if it considers either: (i) that there is insufficient evidence to be sure of meeting the "balance of probability" test for demonstrating that significant harm is being caused; or (ii) that the time needed to demonstrate such a level of probability would cause unreasonable delay, cost, or disruption and stress to affected people particularly in cases involving residential properties.

Cont…\

TABLE 6.2: CATEGORISATION OF HUMAN HEALTH RISKS UNDER PART 2A (Cont.)

Risk Category	Description
Category 2	"Category 2: Human Health" should be considered if the authority concludes, on the basis that there is a strong case for considering that the risks from the land are of sufficient concern, that the land poses a significant possibility of significant harm, with all that this might involve . This may include land where there is **little or no direct evidence** that similar land, situations or levels of exposure have caused harm before, but nonetheless the authority considers on the basis of the available evidence, including expert opinion, that there is a strong case for taking action under Part2A on a **precautionary basis**.
Category 3	"Category 3: Human Health" should be considered if the authority concludes that a strong case does not exist, and therefore the legal test for significant possibility of significant harm is not met. Category 3 may include land where the risks are not low, but nonetheless the authority considers that regulatory intervention under Part2A is not warranted. This recognises that placing land in Category 3 would not stop others, such as the owner or occupier of the land, from taking action to reduce risks outside of the Part 2A regime if they choose. The authority should consider making available the results of its inspection and risk assessment to the owners/ occupiers of Category 3 land.
Category 4	The local authority **should not** assume that land poses a significant possibility of significant harm if it considers that there is no risk or that the level of risk posed is **low**. For the purposes of the Statutory Guidance, such land is referred to as a "Category 4: Human Health" case. The authority may decide that the land is a Category 4: Human Health case as soon as it considers it has evidence to this effect, and this may happen at any stage during risk assessment **including the early stages**. The local authority should consider that the following types of land should be placed into Category 4: Human Health: (a) land where no relevant contaminant linkage has been established. (b) land where there are only normal levels of contaminants in soil[14]. (c) land that has been excluded from the need for further inspection and assessment and assessment because contaminant levels do not exceed relevant generic assessment criteria in accordance with Section 3 of the Statutory Guidance, or relevant technical tools or advice that may be developed in accordance with paragraph 3.30 of the Statutory Guidance. (d) land where estimated levels of exposure to contaminants in soil are likely to form only a small proportion of what a receptor might be exposed to anyway through other sources of environmental exposure (e.g. in relation to average estimated national levels of exposure to substances commonly found in the environment, to which receptors are likely to be exposed in the normal course of their lives).

Definition of *Significant Possibility* of Significant Harm to Controlled Waters

6.7. In deciding whether significant pollution of controlled waters is being caused, the local authority should consider that this test is only met where it is satisfied that the substances in question are

[14] **"Normal" presence of contaminants**: The Part2A regime was introduced to help identify and deal with land which poses unacceptable levels of risk. It is not intended to apply to land with levels of contaminants in soil that are commonplace and widespread throughout England or parts of it, and for which in the very large majority of cases there is no reason to consider that there is an unacceptable risk.

continuing to enter controlled waters; or that they have already entered the waters and are likely to do so again in such a manner that past and likely future entry in effect constitutes on-going pollution. For these purposes, the local authority should:

(a) regard substances as having entered controlled waters where they are dissolved or suspended in those waters, or (if they are immiscible with water) they have direct contact with those waters on or beneath the surface of the water.

(b) take the term "continuing to enter" to mean any measurable entry of substance(s) into controlled waters additional to any which has already occurred.

(c) take the term "likely to do so again" to mean more likely than not to occur again.

6.8. Land should not be determined as contaminated land on grounds that significant pollution of controlled waters is being caused where: (a) the relevant substance(s) are already present in controlled waters; (b) entry into controlled waters of the substance(s) from land has ceased; and, (c) it is not likely that further entry will take place.

6.9. The Statutory Guidance sets out four categories, similar to those for human health, summarised under Table 6.3.

TABLE 6.3: CATEGORISATION OF CONTROLLED WATERS RISKS UNDER PART 2A

Category	Description
Category 1 (Water)	This covers land where the authority considers that there is a strong and compelling case for considering that a significant possibility of significant pollution of controlled waters exists. In particular, this would include cases where there is robust science-based evidence for considering that it is likely that high impact pollution would occur if nothing were done to stop it.
Category 2 (Water)	This covers land where: (i) the authority considers that the strength of evidence to put the land into Category 1 does not exist; but (ii) nonetheless, on the basis of the available scientific evidence and expert opinion, the authority considers that the risks posed by the land are of sufficient concern that the land should be considered to pose a significant possibility of significant pollution of controlled waters on a precautionary basis, with all that this might involve (e.g. likely remediation requirements, and the benefits, costs and other impacts of regulatory intervention). Among other things, this category might include land where there is a relatively low likelihood that the most serious types of significant pollution might occur.
Category 3 (Water)	This covers land where the authority concludes that the risks are such that (Whilst the authority and others might prefer they did not exist) the tests set out in Categories 1 and 2 above are not met, and therefore regulatory intervention under Part2A is not warranted. This category should include land where the authority considers that it is very unlikely that serious pollution would occur; or where there is a low likelihood that less serious types of significant pollutions might occur.
Category 4 (Waters)	This covers land where the authority concludes that there is no risk, or that the level of risk posed is low. In particular, the authority should consider that this is the case where: (a) no contaminant linkage has been established in which controlled waters are the receptor in the linkage; or (b) the possibility only relates to types of pollution other than 'significant'; or, (c) the possibility of water pollution similar to that which might be caused by "background" contamination.

Definition of *Significant Possibility* of Significant Harm to Ecological Systems

6.10. Conditions would exist for considering that a significant possibility of significant harm exists to a relevant ecological receptor where the local authority considers that:

(a) significant harm of that description is more likely than not to result from the contaminant linkage in question; or,

(b) there is a reasonable possibility of significant harm of that description being caused, and if that harm were to occur, it would result in such a degree of damage to features of special interest at the location in question that they would be beyond any practicable possibility of restoration.

6.11. Any assessment made for these purposes should take into account relevant information for that type of contaminant linkage, particularly in relation to the ecotoxicological effects of the contaminants,

Definition of *Significant Possibility* of Significant Harm to Property

6.12. The following definition of *Significant Possibility of Significant Harm* have been applied:

(a) For **property in the form of: crops, including timber; produce grown domestically, or on allotments, for consumption; livestock; other owned or domesticated animals; and, wild animals which are the subject of shooting or fishing rights**: Conditions would exist for considering that a significant possibility of significant harm exists to the relevant types of receptor where the local authority considers that significant harm is more likely than not to result from the contaminant linkage in question, taking into account relevant information for that type of contaminant linkage, particularly in relation to the ecotoxicological effects of the contaminant.

(b) For **property in the form of buildings, meaning any structure or erection, and any part of a building including any part below ground level, but does not include plant or machinery comprised in a building, or buried services such as sewers, water pipes or electricity cables**: Conditions would exist for considering that a significant possibility of significant harm exists to the relevant types of receptor where the local authority considers that significant harm is more likely than not to result than not from the contaminant linkage in question during the expected economic life of the building (or in the case of a scheduled Ancient Monument the foreseeable future), taking into account relevant information for that type of contaminant linkage.

Part 2A Qualitative (Preliminary) Risk Assessment

6.13. In accordance with the Statutory Guidance, the Local Authority should – before making any determination – have identified one or more **significant contaminant linkage(s)**[15], and carried out a robust, appropriate, scientific and technical assessment of all the relevant and available evidence.

6.14. The relevant risk assessments for the site are summarised in Tables 6.5 - 6.11. These detail the potential contaminants, pollutant linkages and receptors that have been considered at the site. For the purpose of this assessment, the descriptions of risk listed below have been utilised, which take into account the magnitude of the potential source contamination identified, likelihood of exposure via a pathway and significance of harm likely to result on the given receptor[16], in the context of Part 2A.

TABLE 6.4: SUMMARY OF QUALITATIVE RISK CLASSIFICATIONS

Risk		Description	
High		Pollutant linkage is likely to exist and poses a *Significant Possibility of Significant Harm*. This equates to **at least one of the following**: a Category 1: Human Health (see Table 6.2); Category 1: Controlled Waters (see Table 6.3); harm to Ecological Systems as described under Section 6.10 and 6.11; or, harm to Property as described under Section 6.12).	
Medium		On the basis of the scientific evidence available, the risks posed by the land are of sufficient concern that the land should be considered to pose a significant possibility of significant harm on a precautionary basis. This equates to **at least one of the following**: Category 2: Human Health (see Table 6.2); Category 2: Controlled Waters (see Table 6.3); and harm to Ecological Systems and Property as described above.	
Low		Category 3: Human Health Category 3: Waters	This risk classification is used where there is insufficient evidence to suggest that a *Significant Possibility of Significant Harm* is present on the land, with respect to any of the statutory receptors described under the Statutory Guidance.
		Category 4: Human Health Category 4: Waters	

[15] The Statutory Guidance requires that before the Local Authority can make the judgement that any land appears to be *Contaminated Land* on the basis that *Significant Harm* is being caused, or that there is a *Significant Possibility of Significant Harm (SPOSH)* of such harm being caused, the authority must identify a *Significant Pollutant Linkage*.

[16] IEH 'Guidelines for Environmental Risk Assessment and Management' and CIRIA 552 'Contaminated Land Risk Assessment, Guide to Good Practice'. Section 6 of CIRIA 552 presents matrices for risk assessment. These have been simplified herein.

TABLE 6.5: RISK ASSESSMENT: HUMAN HEALTH – RESIDENTIAL OCCUPANTS

Pathway	Risk	Description / Comment
Ingestion of soil/dust particles generated from on-site surface soils / exposed ground.	Medium	Based on the desktop information available, there is considered to be the potential for contamination to be present within shallow soils (<1m bgl) on site primarily as a result of: • contaminated Made Ground generated from former coal mining and associated processes across the site; • the presence of landfilled materials on the northern tip of the site; • the presence of tanks (near Valley Road) and existing electricity sub-stations; and, • landfill beneath Greenslade Grove.
Inhalation of soil/dust particles generated from on-site surface soils / exposed ground.	Medium	
Inhalation of vapour from soil / groundwater based volatile contaminants.	Medium	
Dermal contact with soil and / or dust particles.	Medium – High	
Consumption of home grown vegetables / plants.	Medium	
Direct contact between soils and service infrastructure pipework (including potable water supplies) resulting in contamination of potable water supplies.	Medium	Where organic contaminants may be present on site and in contact with potable water supply pipework, drinking water quality may become impaired. It is noted that pipework is not a receptor in its own right under part 2A.
Inhalation of hazardous gases following migration and ingress within confined spaces.	High	Landfilled materials are known to be present on the northern portion of the site and in the immediate surround as summarised under Table 4.3. Given the age of the buildings onsite, it is considered unlikely that suitable gas protection measures have been installed, if any at all – this is confirmed by initial site walkover observations. There is the potential for a preferential migration pathway due to the presence of the culvert which extends through the site and northwards to the general vicinity of the former Hednesford Quarry Landfill and therefore an increased possibility of ground gas migration from this source to the residential houses on site.
OVERALL **(default to worst case risk rating)**	**Medium - High**	There is the potential for SPOSH at the site, due to the risk from elevated ground gas concentrations and potential for waste to underlie properties and gardens of Greenslade Grove.

TABLE 6.6: RISK ASSESSMENT: HUMAN HEALTH –STAFF OF THE MUSEUM

Pathway	Risk	Description / Comment
Ingestion of soil/dust particles generated from on-site surface soils / exposed ground.	Low - Medium	Based on the desktop information available, there is considered to be the potential for contamination to be present within shallow soils (<1m bgl) on site primarily as a result of: • contaminated Made Ground generated from former coal mining and associated processes across the site; • and, • the presence of landfilled materials on the northern tip of the site
Inhalation of soil/dust particles generated from on-site surface soils / exposed ground.	Low - Medium	
Inhalation of vapour from soil / groundwater based volatile contaminants.	Low - Medium	
Dermal contact with soil and / or dust particles.	Low -Medium	
Direct contact between soils and service infrastructure pipework (including potable water supplies).	Low	Where organic contaminants may be present on site and in contact with potable water supply pipework, drinking water quality may become impaired. It is noted that pipework is not a receptor in its own right under part 2A.
Inhalation of hazardous gases following migration and ingress within confined spaces. In addition, hazardous ground gases present a physical risk where concentrations build to within Explosive Limits.	Medium - High	Landfilled materials are known to be present on the northern portion of the site and in the immediate surround as summarised under Table 4.3. Given the age of the buildings onsite, it is considered unlikely that suitable gas protection measures have been installed, if any at all. There is the potential for a preferential migration pathway due to the presence of the culvert which extends through the site and northwards to the general vicinity of the former Hednesford Quarry Landfill and therefore an increased possibility of ground gas migration from this source to the residential houses on site.
OVERALL **(default to worst case risk rating)**	**Low - Medium**	Although a linkage has been identified it is considered unlikely that there is the potential for SPOSH specifically in relation to museum staff receptors.

TABLE 6.7: RISK ASSESSMENT: HUMAN HEALTH – VISITORS TO MUSEUM AND PARK AREA

Pathway	Risk	Description / Comment
Ingestion of soil/dust particles generated from on-site surface soils / exposed ground.	Medium-High	Based on the desktop information available, there is considered to be the potential for contamination to be present within shallow soils (<1m bgl) on site primarily as a result of: • contaminated Made Ground generated from former coal mining and associated processes across the site; • there is an interactive 'open mine' display, used predominantly by children which increases exposure to potentially soils; and, • the presence of landfilled materials on the northern tip of the site
Inhalation of soil/dust particles generated from on-site surface soils / exposed ground.	Medium-High	
Inhalation of vapour from soil / groundwater based volatile contaminants.	Medium	
Dermal contact with soil and / or dust particles.	Medium-High	
Direct contact between soils and service infrastructure pipework (including potable water supplies).	Low	Where organic contaminants may be present on site and in contact with potable water supply pipework, drinking water quality may become impaired. It is noted that pipework is not a receptor in its own right under part 2A.
Inhalation of hazardous gases following migration and ingress within confined spaces. In addition, hazardous ground gases present a physical risk where concentrations build to within Explosive Limits.	Low - Medium	Landfilled materials are known to be present on the northern portion of the site and in the immediate surround as summarised under Table 4.3. Given the age of the buildings onsite, it is considered unlikely that suitable gas protection measures have been installed, if any at all. There is the potential for a preferential migration pathway due to the presence of the culvert which extends through the site and northwards to the general vicinity of the former Hednesford Quarry Landfill and therefore an increased possibility of ground gas migration from this source to the residential houses on site.
OVERALL **(default to worst case risk rating)**	**Medium - High**	Although a linkage has been identified it is considered unlikely that there is the potential for SPOSH specifically in relation to museum visitors.

TABLE 6.8: RISK ASSESSMENT: CONTROLLED WATERS (HYDROGEOLOGICAL & HYDROLOGICAL COMBINED)

Pathway	Risk	Description / Comment
Leaching of contamination from Made Ground/landfill materials and subsequent migration to Principal Aquifer.	High	Given the site history there is the potential for point source contamination to be present (e.g. former tanks / impacted soils due to former mining operations and/or landfilled soils) which may dissolve / leach from soils and be entering groundwater. Due to the open soft landscaping across the potentially affected parts of the site, infiltration driven leaching of contaminants is possible, and if so, migration via the underlying sands is likely.
Downward and lateral migration of water borne contaminants through permeable soils and as dissolved contamination within shallow groundwater.	Medium	
Lateral migration of water borne contaminants, via Principal Aquifer, to culverted stream; Bentley Brook; ponds; and, the assumed abstraction associated with the Source Protection Zone (SPZ).	Medium	
OVERALL (default to worst case risk rating)	**Medium - High**	It is possible that leaching of any potential contaminants may still be occurring, and if so, this may constitute SPOSH.

TABLE 6.9: ECOLOGICAL RECEPTORS

Pathway	Risk	Description / Comment
Downward and lateral migration of water borne contaminants through permeable soils and as dissolved contamination within shallow groundwater.	Low - Medium	Given the current condition of the Ecological Receptors and in view that topography / surface run-off (and inferred groundwater) flow are to the west i.e. away from the receptors, a significant pollutant linkage is unlikely to be present. In addition, it is likely that any potential contamination present in the surface soils will have leached over time and observations made during the site walkover did not indicate any undue signs of stress to the vegetation. In determining what constitutes *Significant Ecological Harm*, the Local Authority should have regard to the advice of Natural England and to the requirements of the Conservation (Natural Habitats etc.) Regulations 1994.
Uptake of soil contamination by the flora of the park/SSSI.	Low - Medium	
OVERALL (default to worst case risk rating)	**Low - Medium**	Significant Harm is unlikely to be occurring as a result of on-site contamination.

TABLE 6.10: LIVESTOCK (CATTLE REARING ONSITE)

Pathway	Risk	Description / Comment
Outdoor ingestion of soil/dust particles generated from on-site surface soils / exposed ground.	Medium	Potential contaminants may be present within the grazing fields, potentially associated with any Made Ground or otherwise dispersed contamination.
Outdoor inhalation of soil/dust particles generated from on-site surface soils / exposed ground.	Medium	
Outdoor inhalation of vapour from soil / groundwater based volatile contaminants.	Medium	
Dermal contact with soil and / or dust particles.	Medium	
Uptake of groundwater and soil based contamination by flora / fauna.	Low	
OVERALL (default to worst case risk rating)	**Low - Medium**	There is the potential for SPOSH at the site, however this does not appear to be occurring at present.

TABLE 6.11: BUILDINGS

Pathway	Risk	Description / Comment
Migration of soil gasses to confined spaces / structures on- and off-site.	Medium - High	The northern portion of the site, which comprises residential housing, lies adjacent to the northern extent of the former landfill which is recorded to have received household waste. The potential risks are further increased due to the fact that: • given the age of the landfill, it is unlikely to have been lined and the final capping once complete may be of an inadequate specification; • the underlying geology comprises permeable sands which may help facilitate the migration of ground gas; and, • the existing housing is unlikely to have been fitted with suitably robust gas protection measures.
OVERALL (default to worst case risk rating)	**Medium - High**	There is the potential for SPOSH at the site, due to the risk from elevated ground gas concentrations.

7.0 SITE INVESTIGATION

Summary of Investigation

Scope of Works

7.1. The intrusive site investigation works have been designed and implemented in general accordance with BS5930:1999+2:2010[17] and BS10175:2011+A:2013[18], in addition to Environment Agency non-statutory technical guidance[19]. Based upon the available information, the site investigation included the installation of ten windowless sample holes, with gas monitoring installations and subsequent monitoring, and nineteen hand dug pits.

7.2. The rationale for the works is given in Table 7.1 and exploratory hole locations are provided in Figures 8a and 8b.

TABLE 7.1: SCOPE OF INVESTIGATION

7.5 The intrusive investigation works, including the majority of the monitoring, were carried out by Harrison Environmental Group. The continuous gas monitoring work was carried out by Ground Gas Solutions Limited (GGS) using GasClams.

7.6 The ground conditions encountered during drilling/excavations and details of the installed monitoring wells are summarised in Table 7.1. The exploratory hole logs are presented in Appendix D.

TABLE 7.1: EXPLORATORY HOLE SUMMARY

Site Investigation Work	Purpose / Rationale
Completion of **10 Window Sample Locations**, installation of 7 **Groundwater & Ground Gas Monitoring Wells** (WS1, WS5 – WS10) and **3 GGS GasClam® Continuous Gas Monitoring Installations** (WS2 – WS4; WS2 replaced WS1 due to site specific observations). All Windowless Sampling locations to be completed to 6m bgl or refusal (whichever is greatest). The aim of the installations is to penetrate the full depth of Made Ground and into the underlying Till deposits. In order to improve cost efficiency and quality of data, each dual monitoring well will be installed with individual gas and groundwater installations i.e. two monitoring stand pipes per location. The GGS GasClam® locations have been positioned in proximity of the suspected areas of infill both onsite and on adjacent land. This will provide a cost effective method of collecting a robust data set to inform potential determination and represents leading field monitoring technology.	

[17] British Standard 5930, Code of Practice for Site Investigations.

[18] British Standard 10175, *Investigation of Potentially Contaminated Sites – Code of Practice*.

[19] Environment Agency, *Technical Aspects of Site Investigation (Volumes 1 & 2)*, Ref: TR P5-065/TR, 2002.

Site Investigation Work	Purpose / Rationale
WS1	Located within former refuse tip and fitted with a conventional installation to monitor ground gas generation from the Made Ground (the GasClam that had been originally proposed for this location was located elsewhere in response to site observations). Located within communal soft landscaped area; shallow soil sampled to be collected in order to determine suitability of cover materials.
WS2	Fitted with GasClam with response zone associated with the granular Till in order to monitor potential migration of ground gas from deeper areas of fill elsewhere on and off site. WS located adjacent to flat block within area of communal landscaping. Shallow soil sampled to be collected in order to determine suitability of cover materials
WS3	Located within former landfill (household waste) and fitted with a GasClam with response zone associated with the granular Till in order to monitor potential migration of ground gas from deeper areas of fill elsewhere on and off site. WS positioned in overgrown landscaped area. Shallow soil sampled to be collected in order to determine suitability of cover materials.
WS4	Located adjacent to landfill. CRH-WS4 fitted with GasClam (response zone in Made Ground and granular Till) and CRH-WS5 fitted with conventional installation (response zone in Till) in order to monitor potential ground gas migration to the east (onsite) towards the residential housing estates east of Rugeley Road. Shallow soil sampled to be collected in order to determine suitability of cover materials.
WS5	
WS6	Located within soft landscaped areas in central region of residential housing estate. Fitted with conventional installations in order to monitor ground gas concentrations (response zones in granular Till). Shallow soil sampled to be collected in order to determine suitability of cover materials.
WS7	
WS8	Located at the eastern end of the Heather Valley residential estate and fitted with conventional installation (response zone in Made Ground). Shallow soil sampled to be collected in order to determine suitability of cover materials.
WS9	Located adjacent to the houses associated with the Heritage Museum Centre. Conventional installation (response zone in Made ground) in order to obtain ground gas data for risk assessment purposes. Shallow soil sampled to be collected in order to determine suitability of cover materials.
WS10	Positioned in the southern site area coincident with the former mineral railway. Conventional installation (response zone in Made ground) in order to obtain ground gas data for risk assessment purposes. Shallow soil sampled to be collected in order to determine suitability of cover materials.
19 Hand dug pits as summarised below.	
HA1 – HS9	Hand dug pits locations positioned within areas of private and communal soft landscaping within the residential estates to allow collection of samples for analysis and subsequent risk assessment
HA10 – HA19	Locations were selected in order to provide general coverage within the main areas of the former colliery workings. Soil profiles will be used to provide an indication of typical Made Ground constituents (e.g. is ACM present) and allow sampling for subsequent analysis. Receptors include visitors (including children), ecological receptors and livestock.
Environmental sampling with appropriate sample preparation, storage and dispatching in accordance with MCERTs requirements. The data obtained shall be used to inform a Tier 2 (generic quantitative) risk assessment.	

Site Investigation Work	Purpose / Rationale
Soil Sampling	Soil sampling was undertaken at each exploratory hole location and as a minimum (subject to completed depths) comprised the following rate of sampling: 0 – 0.15m in topsoil or surface layer; at 0.25m into each soil layer beneath (revised to a central position when the soil layer was less than 0.4m thick); and, minimum of two sample within Made Ground at a maximum of 1.0m intervals.
Groundwater Sampling	Groundwater was not encountered during the intrusive works and monitoring indicated only shallow perched waters. Groundwater sampling was therefore not undertaken.
Laboratory Analysis - UKAS accredited facility with MCERTs methods adopted where available.	
37	General chemical soil suite included: inorganic metals; TPH (total and CWG banding); Polynuclear Aromatic Hydrocarbons (PAH); and, asbestos. Complete chemical listings are presented in Appendix D.
27	Asbestos identification in soil
12	TPHCWG suite in soil
20	Total Organic Carbon in soil
2	Bulk Gas analysis
Ground Gas Monitoring in accordance with CIRIA C665[20], C682[21] and BS8485[22].	
GGS GasClam® WS2 – WS4	The GasClam® was used to collect the following data on a 'constant' frequency over a period of three weeks: methane; carbon dioxide; oxygen; hydrogen sulphide; carbon monoxide; total volatile organic compounds; atmospheric pressure; borehole pressure; and, temperature. This ensures a greater opportunity for capturing low pressure weather systems.
WS1, WS5 – WS10 4 visits over 1 month (approximately weekly frequency)	Although the proposed frequency does not accord with the generally accepted monitoring frequency as detailed in C665[23]; this frequency was selected as a 'spot check' since the aim of the investigation was to identify if a significant possibility of significant harm existed at the site. In addition, further assessment was provided by the continuous data from the GasClam installations. It is noted that the first and fourth gas monitoring visits were undertaken in conjunction with the deployment and demobilisation of the GasClams.

* GasClam installed

7.7 The ground conditions encountered during the site investigations generally consisted of Made Ground to depths of between 0.50m bgl and 2.10m bgl. The Made Ground was generally found to comprise a clayey gravelly sand with gravels of coal, brick, sandstone quartz and, occasionally,

[20] Construction Industry Research and Information Association (CIRIA), *Assessing Risks Posed by Hazardous Ground Gases to Buildings*, Document Ref: C665, 2007.

[21] Construction Industry Research and Information Association (CIRIA), *VOCs Handbook: Investigating, Assessing and Managing Risks from Inhalation of VOCs at Land Affected by Contamination* , Document Ref: C682, 2009.

[22] British Standards Institute, *Code of Practice for the Characterisation and Remediation from Ground Gas in Affected Developments*, BS8485, 2007.

[23] CIRIA C665 recommends twenty-four visits over twelve months for developments of a 'High' sensitivity (Residential with Gardens) and sites of a 'High' generation potential. This would be reduced to twelve visits should the site be considered as 'Moderate' in terms of gas generation potential.

clinker. At WS1 the Made Ground was present to 4.90m bgl and this was the only location where deeper Made Ground was observed. This location is in the north western portion of the site and coincident with the Local Authority landfill. Made Ground was absent at WS10, which was located within the nature reserve.

7.8 In the north western portion of the site, to the west of Rugeley Road, the exploratory logs at WS1 and WS3 indicate the presence of superficial Glacial Till Deposits below the Made Ground, although the absence of geotechnical data makes confirmation of this difficult. It is possible that the Till Deposits at WS3 are actually reworked soils. In all other holes the logs indicate the absence of superficial deposits with weathered bedrock (Kidderminster Formation) generally indicated as a slightly clayey gravelly sand.

7.9 Groundwater was encountered at three locations during the installation works and was associated with the Made Ground (WS1) and the weathered bedrock. During the subsequent groundwater monitoring it was repeatedly encountered at two locations (WS6 and WS9).

7.10 The groundwater level data indicate that the groundwater encountered is unlikely to be indicative of a continuous water body. The groundwater encountered at WS1 is likely to be associated with the top of the sandy Till but it was not encountered at WS3 even though this location is known to be at a slightly lower elevation and the installation extended to 6.0m bgl.

7.11 Olfactory and visual evidence of potential contamination was restricted to occasional observations of coal fragments and very occasional clinker in the Made Ground. Pockets of carboniferous material were noted between 3.10 and 6.00m at WS3. Other than these observations, the Made Ground did not indicate the potential for any significant organic load and therefore the potential for degradation of organic materials and the generation of ground gas would appear to be low.

7.12 Monitoring visits were generally made on a weekly basis between 06th and 27th February 2014 to monitor gas and groundwater within all the monitoring installations. The first and fourth visits were undertaken by GGS to install and remove the GasClam monitoring equipment. On these occasions GGS also undertook spot monitoring of all other installations. The remaining gas monitoring was undertaken by Harrisons.

8.0 PART 2A REVISED RISK ASSESSMENT

8.1 Human Health – Soils

Assessment Framework

8.1.1 It is necessary to interpret the analytical data and site records in order to establish whether a *Significant Possibility of Significant Harm* (or *Significant Possibility of Significant Pollution to Controlled Waters*, if applicable) is present. However, as an initial screening exercise the results from the soil sampling have, in the first instance, been screened against the Category 4 Screening Levels (C4SLs), as detailed in Defra's SP1010[24] or, where not available, Tier 2 Generic Assessment Criteria (GAC's) developed by CampbellReith, predominantly based upon CLEA Model version 1.06.

8.1.2 These values have been established to evaluate the risk from contamination to long term human health. These values are conservative. Exceedance of the C4SLs would indicate that the site is unlikely to be classified as Category 4 with respect to human health and that a low risk to residents cannot be automatically assumed. It does not, however, automatically indicate that the site would be determined as Part 2A; instead, it merely indicates the requirement for further assessment to determine if the site is Category 3 (unlikely to require determination, based on the balance of probabilities) or Category 2 (likely to require determination, based on the balance of probabilities).

8.1.3 The choice of C4SLs was made based on the assumptions listed below. It is noted that the values for B(a)P are currently draft and comments are due back from the Committee on Toxicity on the toxicological assumptions made in the report.

- Lead - the action level of 5 ug/dL set by the US Centre for Disease and Protection (CDC) was selected and the selected C4SL was derived following amendments to the exposure parameters as detailed in Appendix H of SP1010.
- Arsenic - the selected C4SL was derived following amendments to the exposure parameters and LLTC (Low Level of Toxicological Concern) as detailed in Appendix C of SP1010.
- Benzo(a)pyrene (B(a)P) - the selected C4SL was derived following amendments to the exposure parameters and LLTC (Low Level of Toxicological Concern) as detailed in Appendix E of SP1010. It is noted that although assumptions are based on 6% SOM,

[24] Defra Research Project SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination, 20 December 2013

which is not present on site, SP1010 states that SOM has a negligible influence on C4SLs for B(a)P.

8.1.4 The use of GACs for those contaminants that do not have C4SLs is considered reasonable as a useful preliminary screening tool, and reflects a 'suitable for use' threshold for new development in accord with the National Planning Policy Framework.

8.1.5 The use of GACs as a screening method is considered to be an efficient use of resources since a human health detailed quantitative risk assessment (HHDQRA) is therefore only carried out if it is demonstrated to be required following the initial screening exercise, and even then, only for those contaminants of concern that are identified as requiring further assessment. In addition, this approach has the additional benefit for Cannock Chase Council of demonstrating, where appropriate, those soils which pose a low risk since the initial screening exercise is effectively that which would be carried out under the planning regime. As such this will identify where further works may be needed as part of any future developments.

8.1.6 It is noted that, in accordance with the Statutory Guidance, background concentrations of contaminants have been reviewed since contaminant concentrations cannot be considered as significant, with respect to Part 2A, if they are of the same order as local background concentrations, i.e. 'normal'. Background concentrations have been obtained from the BGS and all are lower than the respective GACs and as such cannot be used further in this assessment.

8.1.7 The results are shown in Tables 8.2 – 8.6 against the appropriate Tier 2 Screening Values. For assessment purposes the site has been divided into the following areas, given the different exposure frequencies that will be associated with each of these areas:

1 residential properties with private back gardens and opportunity to grow food produce;
2 communal garden areas and residential open space without the opportunity to grow food produce; and,
3 open space associated within the nature reserve.

8.1.8 The results have been compared to Tier 2 Screening Values for the following CLEA defined end uses: residential with (Area 1); and, without, plant uptake (Areas 2 and 3). It is acknowledged that, even without the assessment under Part 2A rather than just 'suitable for use', the screening values for Area 3 are very conservative because of the exposure frequencies of the users. The locations associated with these areas are given in Table 8.1, together with the Soil Organic Matter (SOM) content that has been used in each of the assessments, based on site derived data.

TABLE 8.1: EXPLORATORY HOLE LOCATIONS PER ASSESSMENT AREA

	AREA 1: PRIVATE GARDENS	AREA 2: COMMUNAL GARDENS	AREA 3: OPEN PARK SPACE
	HA2	WS1	WS10
	HA3	WS2	HA10
	HA4	WS3	HA11
	HA5	WS4	HA12
	HA6	WS5	HA13
	HA9	WS6	HA14
		WS7	HA15
		WS8	HA16
		WS9	HA17
		HA1	HA18
		HA7	HA19
		HA8	
MEAN S.O.M %	2.57	3.03	2.37
S.O.M. USED %	1.00	3.00	1.00

Statistical Analysis of Soil Analytical Results

8.1.9 The statistics associated with soil analysis are summarised in Table 8.2 - 8.4. Statistics have been undertaken in accordance with CL:AIRE / CIEH document *Guidance on Comparing Soil Contamination Data with a Critical Concentration.*

8.1.10 For each of the three assessment areas, the data have been reviewed to identify any obvious demarcation of the soil results, as informed by the site's conceptual model. The soil descriptions of the Made Ground for Areas 1 and 2 do not indicate any significant differences. In addition, the data do not indicate any significant differences in the concentrations between the two areas. As such, these two areas have been assessed as one averaging area. The soil descriptions and conceptual model for Area 3 indicate that the results from these soils will be of a different sample population to those of the residential development (Areas 1 and 2) and therefore these have been assessed as a separate averaging area.

AREAS 1 (PRIVATE GARDEN AREAS) AND 2 (COMMUNAL GARDEN AREAS AND RESIDENTIAL OPEN SPACE WITHOUT THE OPPORTUNITY TO GROW FOOD PRODUCE)

8.1.11 For Area 1 all samples were obtained from the upper 0.25m of Made Ground; for Area 2 the samples that were assessed were from between 0.05 and 0.56m bgl of the Made Ground. All soils were analysed for the general suite of contaminants given in Table 7.1. A review of the data

indicates only six elevated concentrations compared against the Tier 2 Screening Values. These are detailed in Table 8.2.

TABLE 8.2: SUMMARY OF ELEVATED CONCENTRATIONS IN AREAS 1 and 2

Contaminant	Location	Area	Depth m bgl	Concentration mg/kg	Screening Concentration mg/kg
Lead	HA2	1	0.25	1100	210[A]
	HA6	1	0.25	580	
Arsenic	WS1	2	0.10	42	40[B]
	WS2	2	0.50	43	
Benzo(a)pyrene	WS5	2	0.50	5.60	5.30[B]
Lead	HA1	2	0.25	640	330[C]

[A] C4SL for residential with plant uptake based on LLTC of 5 ug/dL; [B] C4SL for residential without plant uptake; [C] C4SL for residential without plant uptake based on LLTC of 5 ug/dL.

8.1.12 A summary of the statistical assessment of the data for these contaminants is provided in table 8.3.

TABLE 8.3: SUMMARY OF STATISTICAL ASSESSMENT OF AREAS 1 and 2

Contaminant	Units	Exceeding	Max	Outliers	Mean *
Arsenic	mg/kg	2/ 26	**43**	Yes	nr
Lead	mg/kg	3/ 26	**1100**	No	158
Benzo(a)pyrene	mg/kg	1/ 26	**5.60**	Yes	nr

* Following removal of outliers where present; nr – not required following removal of outliers since all remaining data are below the screening concentration.

Lead

8.1.13 In order to check for statistical outliers the data was log transformed following which the data is approximately normally distributed. Statistical analysis using the outlier test (Grubbs test) indicates there are no outliers and the resultant mean concentration is below the initial screening concentration for both the residential with, and without, plant uptake end uses. As such, the lower confidence level (lower 95th percentile) must be below the screening concentrations and therefore the Null Hypothesis cannot be rejected and the land should not be determined as Contaminated Land.

8.1.14 It was noted, however, that, although the data appears approximately normally distributed the three concentrations listed in Table 8.2 do indicate a skewing of the data. Therefore, in order to

provide additional confirmation and provide an assessment of each of the gardens as separate averaging areas, the three samples that returned elevated concentrations were sub sampled and additional analysis was carried out to provide five additional results for each original sample. A summary of the results is provided in Table 8.4.

TABLE 8.4: SUB-SAMPLING OF ELEVATED LEAD CONCENTRATIONS

Sample Location	Garden Area	Original Conc^{n} mg/kg	Sub sample range mg/kg	Mean mg/kg	Screening Concentration mg/kg
HA1	Communal	640	1700 – 2100	**1657**	330
HA2	Private	1100	82 – 92	89 *	210
HA6	Private	580	290 - 440	**367**	210

* following removal of statistical outlier

8.1.15 The concentrations from HA1 indicate that the soils associated with this sample do contain elevated lead concentrations and require further consideration.

8.1.16 The concentrations from HA2 are low and indicate the original result is a statistical outlier. The results from HA6 indicate the soil associated with this sample contains concentrations which are slightly above the screening concentration.

8.1.17 A review of the results indicates that the lead concentrations are generally of low risk to site residents with occasional hot spots which exceed the screening concentrations. A review of the soil descriptions for the affected location and the wider garden and communal areas of the site indicates no obvious differences in the soils. Given this and the proximity of the affected location, HA1, to the two nearest locations, WS3 and WS1 (25m and 35m respectively), together with the layout of the properties, it is considered reasonable to assume that the soils across this region of the site are likely to be from the same source and therefore contaminant concentrations will be of the same order across the area. As such it is considered unlikely that the elevated concentrations detected are spread across any significant area and are more likely restricted to very discrete and localised portions.

8.1.18 As such, on the balance of probabilities, it is considered unlikely that the elevated concentrations detected in the sample at HA1 and HA6 are present across the soils of the affected properties and it is more likely that if the soils were sampled across the wider communal grassed area then the mean concentration would be less that the screening concentration, as originally indicated by the statistics given in Table 8.3.

Arsenic

8.1.19 Removal of the two statistical outliers from the data left concentrations that were all below the screening concentration and therefore it can be concluded that the soils are generally not a risk to the residents and therefore no requirement of Part 2A is required with respect to arsenic. The two outliers are only nominally above the screening concentration but in order to provide additional confirmation an assessment of each of the affected communal garden areas was carried out by sub sampling and additional analysis of the two affected samples to provide five additional results for each original sample. A summary of the results is provided in Table 8.5.

TABLE 8.5: SUB-SAMPLING OF ELEVATED ARSENIC CONCENTRATIONS

Sample Location	Garden Area	Original Conc^{n} mg/kg	Sub sample range mg/kg	Mean mg/kg	Screening Concentration mg/kg
WS1	Communal	42	30 - 35	33	40
WS2	Communal	43	36 - 40	37	40

8.1.20 The mean concentrations for these two locations are below the screening concentration and therefore any potential risk is low.

Benzo(a)pyrene (B(a)P)

8.1.21 Removal of the statistical outlier from the data leaves concentrations that were all below the screening concentration and therefore it can be concluded that the soils are generally not a risk to the residents with respect to B(a)P. The outlier is only nominally above the screening concentration but in order to provide additional confirmation an assessment of the affected communal garden areas was carried out by sub sampling and additional analysis of to provide five additional results for the original sample. A summary of the results is provided in Table 8.6.

TABLE 8.6: SUB-SAMPLING OF ELEVATED B(a)P CONCENTRATIONS

Sample Location	Garden Area	Original Conc^{n} mg/kg	Sub sample range mg/kg	Mean mg/kg	Screening Concentration mg/kg
WS5	Communal	5.60	0.90 – 1.20	1.03 *	5.30

* produced following removal of statistical outlier

8.1.22 Generally, the results show that the B(a)P concentrations are below the screening concentration. The statistical outlier is likely to be due to an inclusion of ash and/or clinker and is only nominally above the screening concentration. As such it is not a risk. As noted for the elevated lead

concentrations, the soil descriptions and contaminant concentrations across the garden and communal areas of the site indicate that the B(a)P concentrations of the soils across the majority of the areas associated with WS5 are likely to be of the same order as those for the general garden/communal areas, i.e. below the screening concentration.

AREA 3: OPEN PARK SPACE

8.1.23 For Area 3, all samples were obtained from the upper 0.25m of Made Ground. All soils were analysed for the general suite of contaminants given in Table 7.1. A review of the data indicates that there were no exceedances of the respective screening values and therefore the soils do not present a risk to the current users of the open space/nature reserve.

8.1.24 The soil concentrations also indicate a lack of risk to grazing animals and the local flora, including that associated with the SSSI. It is further noted that there have been no reported ill health effects associated with the cattle and no significant areas of dieback noted. As such, there is no potential for Part 2A determination with respect to the soils of the open park space area of the site.

Miscellaneous

8.1.25 No potential risk was identified from any other contaminants, including asbestos, across the site as a whole.

8.2 Groundwater

8.2.1 Groundwater was encountered in three of the exploratory holes but this appears to represent perched waters rather than a continuous body. The original conceptual model has assumed that the landfilling across parts of the site may have impacted groundwater quality; however, following a review of the exploratory hole logs and the soil results it is considered that the risk to groundwater receptors was lower than had been anticipated. Any risk would therefore be very unlikely to constitute significant pollution and so groundwater sampling was not carried out.

8.3 Ground Gas

8.3.1 Ground gas monitoring installations were provided in all ten of the windowless sample holes. The response zones are detailed in Table 7.2. In summary, one response zone was located within the Made Ground; one was located within the Till; six were located in the weathered; and, two crossed both the Made Ground and the weathered bedrock.

8.3.2 Monitoring visits were made on a weekly basis between 06 and 27 February 2014 to monitor ground gas concentrations in all the installations. The first and fourth visits were undertaken by GGS, which coincided with the installation and removal of the GasClam monitoring equipment in WS2 – WS4. During the mobilisation and decommissioning of the GasClams GGS also undertook spot monitoring of all other installations. The remaining gas monitoring was undertaken by Harrisons. The ground gas data is contained within the factual report which is attached as Appendix D.

8.3.3 The GasClam takes hourly measurements of the bulk ground gas concentrations thereby providing high-frequency data. These data can therefore assist in the identification of the dominant ground-gas driving processes occurring on the site and add confidence to the spot sampling results.

8.3.4 As a screening exercise, the notable pre-purge results, where carbon dioxide exceeded 1.5%, methane 1% and/or oxygen fell below 18%, are summarised in Table 8.7. It is noted that the gas clam installations (WS2 – WS4) were not monitored during the spot monitoring by Harrison due to the specialist nature of the equipment.

TABLE 8.7: SUMMARY GAS CONCENTRATIONS

Borehole	Date	Gas Concentration (%)		
		CO_2	CH_4	O_2
WS1	06/02/14	5.4	-	7.9
	12/02/14	7.2	-	6.2
	20/02/14	9.3 (7.8)	-	4.2 (5.9)
	27/02/14	7.8	-	10.2
WS5	06/02/14	3.2	-	-
	27/02/14	7.1	-	15.4
WS6	06/02/14	2.3	-	16.6
	12/02/14	3.1	-	17.1
	20/02/14	2.0	-	-
	27/02/14	2.1	-	-
WS7	12/02/14	2.1	-	-
	20/02/14	2.6	-	-
	27/02/14	2.4	-	-
WS8	06/02/14	6.8	-	11.2
	12/02/14	8.7	-	11.1
	20/02/14	8.2 (7.5)	-	11.6 (12.6)
	27/02/14	9.7	-	11.9
WS9	27/02/14	2.1	-	-

All percentage figures are by measurement of volume. '-' Results do not exceed thresholds. Figures in parentheses are the laboratory concentrations from the gas samples analysed.

8.3.5 The high frequency monitoring of WS2 – WS4 did not detect any notable results (as defined above). It is noted that the gas concentrations at these locations were not particularly elevated with a maximum peak carbon dioxide concentration of 1.7% detected at WS2.

8.3.6 During the spot monitoring, methane was only detected on one occasion: 0.2% v/v, WS7, 06 February; this concentration is below the screening concentration and only just above the limit of detection of the instrument used.

8.3.7 Carbon dioxide was detected above the screening concentration at six of the ten locations and on most of the monitoring visits. Results of gas sampling indicates that the site concentrations are representative with laboratory concentrations measured between 83 – 91% lower than the site measurements. Concentrations at both WS1 and WS8 were regularly above 5.0%, to a maximum of 9.7% v/v. The response zone for WS1 was associated with the Made Ground and that of WS8 with the granular bedrock (to monitor the potential for gas migration from off-site sources).

8.3.8 Purge recovery tests were carried out on the installations with Gas Clams. The results show very low recovery rates for each installation thus indicating low bulk gas generation at these locations.

8.3.9 Flow rates were generally low, with a maximum positive flow of 0.2 l/hour and a maximum negative rate of -0.3 l/hour. A flow rate of 7.6 l/hour was recorded at WS10 on one occasion but this is remote from the residential development and ground conditions not representative of those of the area of housing. This flow rate was not repeated and it is uncertain whether it is representative or anomalous.

8.3.10 It is noted that atmospheric pressures were low during each of the monitoring visits (956mb – 997mb) and two of the visits were undertaken during periods of falling atmospheric pressure: the pressure of 956mb on 12 February had fallen from 992mb during the preceding 24 hours.

8.3.11 Carbon monoxide was detected up to 11ppm but this was on the first monitoring visit and slightly elevated concentrations are not uncommon following borehole installation works. On the repeat visits carbon monoxide was detected up to 4ppm which is not a risk.

8.3.12 Volatile organic compounds (VOCs) were detected but all concentrations were below 1ppm and therefore there is no significant risk from vapour inhalation, particularly given the attenuation processes that are likely to exist between source and receptor.

8.3.13 Although elevated carbon dioxide concentrations have been detected the exploratory hole logs do not indicate soils of significant organic content. Eight Total Organic Carbon (TOC) concentrations were obtained from the Made Ground soils of Area 1 and Area 2. These generally

ranged between 0.56% and 1.6%, with one outlier at 4.0% recorded at 4.0m at WS1. Two other TOC concentrations were obtained from WS1 and these were recorded at 0.5% and 1.5%.

8.3.14 The BSI guidance on investigations for ground gas[25] states that Made Ground with TOC up to 6% is likely to be a low risk with respect to ground gas generation (if consistent with the general site conceptual model)

8.3.15 The Made Ground was generally recorded to depths of between 0.50m bgl and 2.10m bgl, although at WS1 it was encountered to 4.90m bgl. This location is in the north west corner of the site and may be coincident with the known local authority landfill in this area. Evidence of degradable/organic material was generally limited to observations of gravels of coal, with observations of carboniferous material noted between 3.10 and 6.00m at WS3. Other than these observations, the Made Ground did not indicate the potential for any significant organic load and therefore the potential for degradation of organic materials and the generation of ground gas would appear to be low.

8.3.16 Consideration of these matters therefore indicates that Part 2A is very unlikely to apply with respect to ground gas. Applying the guidance in CIRIA C665[26] the gas screening value for the site is calculated as 0.0291 l/hr (assuming a maximum concentration of 9.7% v/v carbon dioxide and a flow of -0.3 l/hr). Assuming, for conservatism, that the houses do not conform to the 'conventional low-rise housing' definition given in the guidance then the gas screening value initially conforms to a CIRIA characteristic situation 1 although the elevated carbon dioxide concentration require further consideration. Although carbon dioxide has been detected above 5% v/v the lack of flow and general absence of an organic source indicates that the classification is unlikely to require upgrading.

[25] BS8576:2013, Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs)
[26] CIRIA. 2007. Assessing Risks Posed by Hazardous Ground Gases to Buildings

9.0 REVISED CONCEPTUAL MODEL

9.1 Current guidance for contaminated land advocates the assessment of risk by determining the presence of pollutant linkages and weighting the likelihood of harm occurring with the potential severity of that harm. The framework is set out in various publications by the DETR, Environment Agency, Institute for Environment and Health and CIRIA.

9.2 Tables 5.1 - 5.3 indicate the potential contaminants, pollutant linkages and receptors that have been considered at the site. Following the investigation of these, a revised Conceptual Site Model is presented below in Tables 9.1 – 9.6 for each of the viable pollutant linkages and particular receptors. For the purpose of this assessment, the following descriptions of risk have been utilised, which take into account the magnitude of the source contamination identified, likelihood of exposure via a pathway and significance of harm likely to result on the given receptor[27]:

- **High Risk.** Pollutant linkage is likely to exist and be causing significant harm.
- **Medium Risk.** Pollutant linkage is likely to exist but significant harm is unlikely.
- **Low Risk.** Pollutant linkage may exist but any harm is likely to be mild.

TABLE 9.1: SITE USERS – RESIDENTS

PATHWAY	RISK	COMMENT
Ingestion of home grown produce and associated soils	Low	Isolated instances of elevated lead, aresenic and B(a)P concentrations have been encountered in soils associated with the residential developments. However, these are likely to be isolated in nature, rather than representative of significant volumes of soil and the mean concentrations of these contaminants are likely to be below generic screeing criteria which are conservative and indicative of a low risk.
Ingestion of soil/dust	Low	
Inhalation of soil/dust	Low	
Inhalation of vapour from soil / dust / water	Low	
Dermal contact with soil / dust / water	Low	
Accumulation/Inhalation of ground gases (potential for explosion and/or asphyxiation	Low	Elevated ground gas concentrations have been detected but these are not associated with significant sources of gas generation and flow rates are nominal. No significant organic source has been identified and monitoring verifies the lack of significant migration of gas from the nearby historical landfills and the lack of significant ground gas generation on site.

[27] IEH 'Guidelines for Environmental Risk Assessment and Management' and CIRIA 552 'Contaminated Land Risk Assessment, Guide to Good Practice'. Section 6 of CIRIA 552 presents matrices for risk assessment. These have been simplified herein.

PATHWAY	RISK	COMMENT
Leaching of contamination from Made Ground	Low	No on site source has been identified and the near surface groundwater encountered does not appear to form a continuous body beneath the site and therefore migration is unlikely.
Migration of water borne contaminants (both to and from site)	Low	

TABLE 9.2: MAINTENANCE WORKERS

PATHWAY	RISK	COMMENT
Ingestion of soil/dust	Low	Isolated instances of elevated contaminant concentrations have been encountered in soils and elevated concentrations of carbon dioxide have been encountered at one location at the site. The risk can be mitigated by basic health and safety procedures.
Inhalation of soil/dust	Low	
Inhalation of vapour from soil / dust / water	Low	
Dermal contact with soil / dust / water	Low	
Migration of soil gases to confined spaces	Low - Medium	
Migration of water borne contaminants	Low	
Leaching of contamination from Made ground	Low	

TABLE 9.3: HYDROGEOLOGY

PATHWAY	RISK	COMMENT
Migration of water borne contaminants	Low	Although the site overlays a Principal Aquifer, associated with the bedrock, no significant site source of contamination has been identified.
Leaching of contamination from Made Ground	Low	

TABLE 9.4: HYDROLOGY

PATHWAY	RISK	COMMENT
Migration of water borne contaminants	Low	The culverted stream beneath the site is unlikely to be in hydraulic continuity with the groundwater and the nearby rivers are not part of the EA's River Basin Management Plan. In addition, no significant site source of contamination has been identified.
Leaching of contamination from Made Ground	Low	

TABLE 9.5: BUILDINGS

PATHWAY	RISK	COMMENT
Migration and accumulation of flammable gases beneath building footprints.	Low	No significant organic source has been identified and monitoring verifies the lack of significant migration of gas from the adjacent landfill. Methane concentrations are low and flow rates are nominal.

TABLE 9.6: ECOLOGICAL RECEPTORS

PATHWAY	RISK	COMMENT
Uptake of contaminated soils by flora and/or fauna associated with the SSSI	Low	Contaminant soil concentrations were low in the nature reserve and no evidence of dieback or similar was observed.

10.0 CONCLUSIONS AND RECOMMENDATIONS

10.1 The site investigation commissioned by CampbellReith incorporated contamination testing of soils and the monitoring of ground gas across the site.

10.2 The site is considered to lie in an area of **Medium – High** sensitivity with respect to hydrogeology due to its location over a Principal Aquifer associated with the bedrock. It is of **Low – Medium** sensitivity with respect to hydrology due to the culverted watercourse beneath the site and the lack of status afforded the local water courses by the Environment Agency. The site is of **High** ecological sensitivity since part of the local nature reserve is designated as a SSSI.

10.3 Prior to the development of the site for residential use, a Heritage Centre and nature reserve part of the site was in use as a colliery and localised landfilling has taken place both on and off-site.

10.4 The intrusive investigation works comprised ten windowless sample holes and nineteen hand augured holes. These were located in selected private garden areas, communal garden and open space areas and the nature reserve. Soil samples were analysed and four rounds of ground gas monitoring were undertaken. In addition, two of the locations were used for high frequency monitoring.

10.5 A review of the exploratory logs soil descriptions indicates that potential visual sources of 'contamination' are restricted to gravels of coal and clinker and the organic load potential was identified as low.

10.6 Although groundwater was encountered at a number of locations this appears to be localised water and not representative of a continuous water body.

Site Users

10.7 The results of the chemical analysis of soil samples were compared against Category 4 screening levels (C4SLs), where available. Where these were not available generic assessment criteria were used. This was carried out as a simple screening exercise in advance of any more detailed risk assessment works that may subsequently have been required. Except for isolated hot spots of elevated lead concentrations the assessment of the soils data has not identified the presence of significant ground contamination.

10.8 A review of the data, conceptual model and the soil descriptions indicates that the elevated lead concentrations are unlikely to be representative of widespread contamination and are more likely

to be very discrete incidents which, when assessed with data from the surrounding soils, are not indicative of the potential for significant harm.

Controlled Waters

10.9 The lack of any identified source of contamination indicates that the underlying groundwater is unlikely to be significantly polluted.

Ground Gas

10.10 No elevated concentrations of methane were detected. Elevated concentrations of carbon dioxide were detected but gas flow rates were nominal and the gas screening value indicates a CIRIA 1 characteristic situation. Although the elevated concentrations, up to 9.7%, suggest that consideration should be given to increasing the classification, the lack of flow and the lack of an evident organic load, as shown by the exploratory hole descriptions and TOC concentrations, indicate that this is not required.

Part 2A Determination Potential

10.11 Following the investigation works carried out, the site is generally considered to be Category 4, as defined in the Statutory Guidance, with respect to each of the identified receptors. As such, it would not be determined as contaminated land under Part 2A.

10.12 The assessment of a sites potential to be determined as contaminated land under Part 2A is the responsibility of the local authority, since other factors, such as socio-economic considerations, must also be appraised. This report should therefore be used as guidance in this regard.

10.13. It is noted that the intrusive works carried out across the site conformed to an exploratory investigation, as defined under current guidance. Further works may be required in the event of the site being subject to a planning development, the responsibility for which will be Cannock Chase Council.

Limitations

This report provides available factual data for the site obtained only from the sources described in the text and related to the site on the basis of the location information provided by the Client.

Where any data or information supplied by the Client or other external source, including that from previous desk studies or reports, has been used, it has been assumed that the information is correct. No responsibility can be accepted by CampbellReith for inaccuracies within this data or information. In relation to historic maps it should be recognised that the accuracy of maps cannot be guaranteed and it should be recognised that different conditions on site may have existed between and subsequent to the various map surveys.

This report is limited to those aspects of historical land use and enquiries related to environmental matters reported on and no liability is accepted for any other aspects. The opinions expressed cannot be absolute due to the limit of time and resources implicit within the agreed brief and the possibility of unrecorded previous uses of the site and adjacent land.

The material encountered and samples obtained during on-site investigations represent only a small proportion of the materials present on the site. There may be other conditions prevailing at the site which have not been revealed and which have therefore not been taken into account in this report. These risks can be minimised and reduced by additional investigations. If significant variations become evident, additional specialist advice should be sought to assess the implications of these few findings

The generalised soil conditions described in the text are intended to convey trends in subsurface conditions. The boundaries between strata are approximate and have been developed on interpretations of the exploration locations and samples collected.

Water level and soil gas readings have been taken at times and under conditions stated on the exploration logs. It must be noted that fluctuations in the level of groundwater or soil gas may occur due to a variety of factors which may differ from those prevailing at the time the measurements were taken.

The findings and opinions expressed are relevant to those dates of the reported enquiries and site work and should not be relied upon to represent conditions at substantially later dates.

Please note that CampbellReith cannot accept any liability for observations or opinions expressed regarding the absence or presence of asbestos or on any product or waste that may contain asbestos. We recommend that an asbestos specialist, with appropriate professional indemnity insurance, is employed directly by the client in every case where asbestos may be present on the site or within the buildings or installations. Any comments made in this report with respect to asbestos, or asbestos containing materials, are only included to assist the client with the initial appraisal of the project and should not be relied upon in any way.

This report is produced solely for the benefit of the Client and no liability is accepted for any reliance placed upon it by any other party unless specifically agreed in writing.

APPENDICES

Appendix A Figures

Figure 1 *Site Location Plan*

Figure 2 *Annotated Site Layout Plan*

Figure 3 *Site Hydrogeological Setting*

Figure 4 *Site Ecological Constraints*

Figure 5 *Historical Composite Plan*

Figure 6 *Potential Contamination Constraints Plan*

Figure 7 *Conceptual Site Model & Risk Assessment*

Figures 8a & 8b *Exploratory Hole Location Plans*

Appendix B Site Photographs

Appendix C Desktop Information (CD)

GroundSure EnviroInsight, GeoInsight and MapInsight reports ref: EMS_127424_174677 dated May 2011

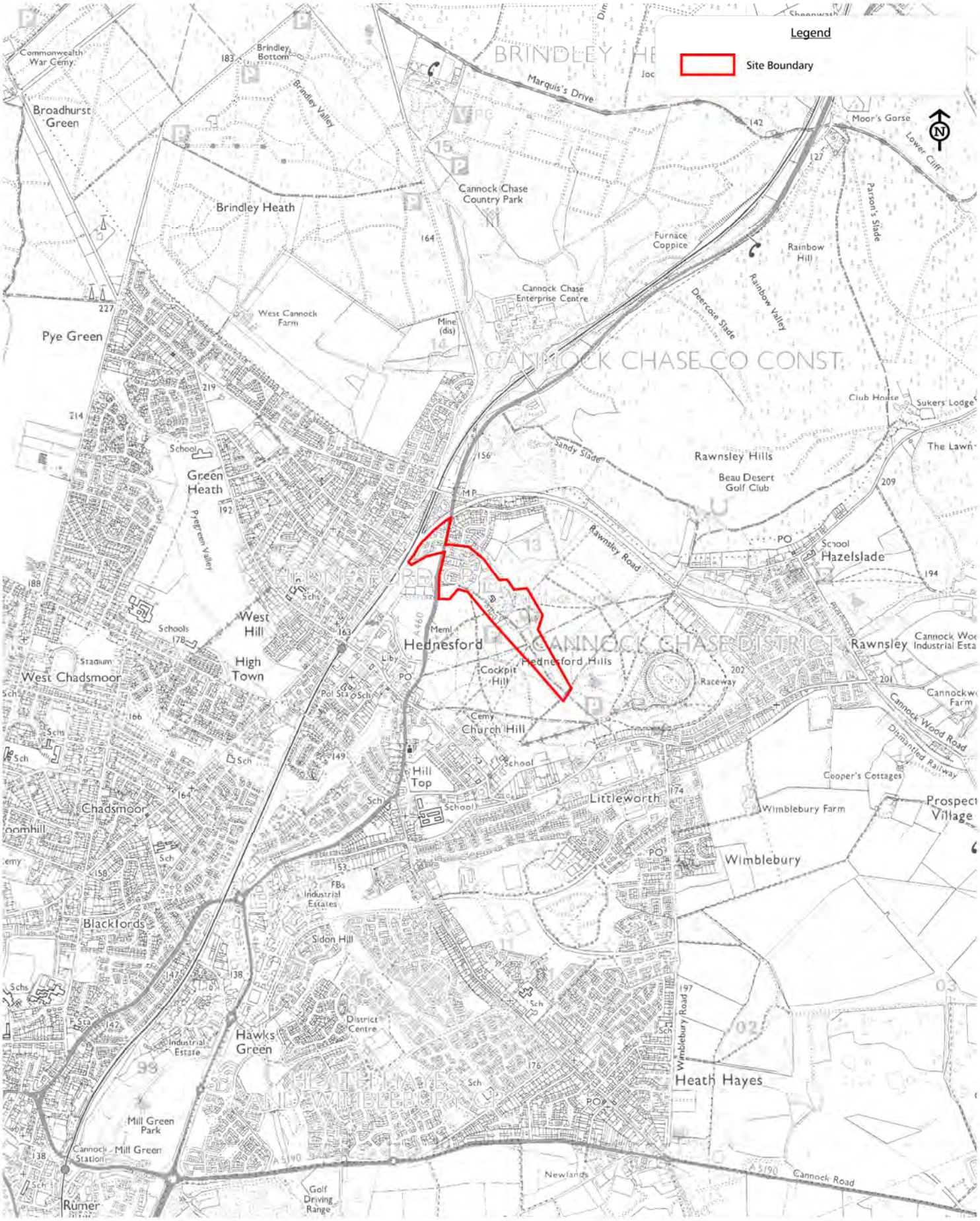
Appendix D Site Investigation Reports (CD)

Harrison Group Environmental Ltd Intrusive Investigation Factual Report

GGS GasClam® Monitoring Factual Report

APPENDIX A

FIGURES



Cannock Chase Council

Hednesford Hills
Cannock Chase, Staffordshire

Figure 1:
Site Location Plan

Job Number:	10734/02
Date:	23/05/2011
Drawn by:	SC
Checked By:	RW
Drg No:	GIS009
Status/Revision:	A
File location:	O:\10500 - 10749\10734 - HCA Cannock Chase\Hednesford Hills\Workspaces
Revision History:	A, First Issue, 23/05/11, SC

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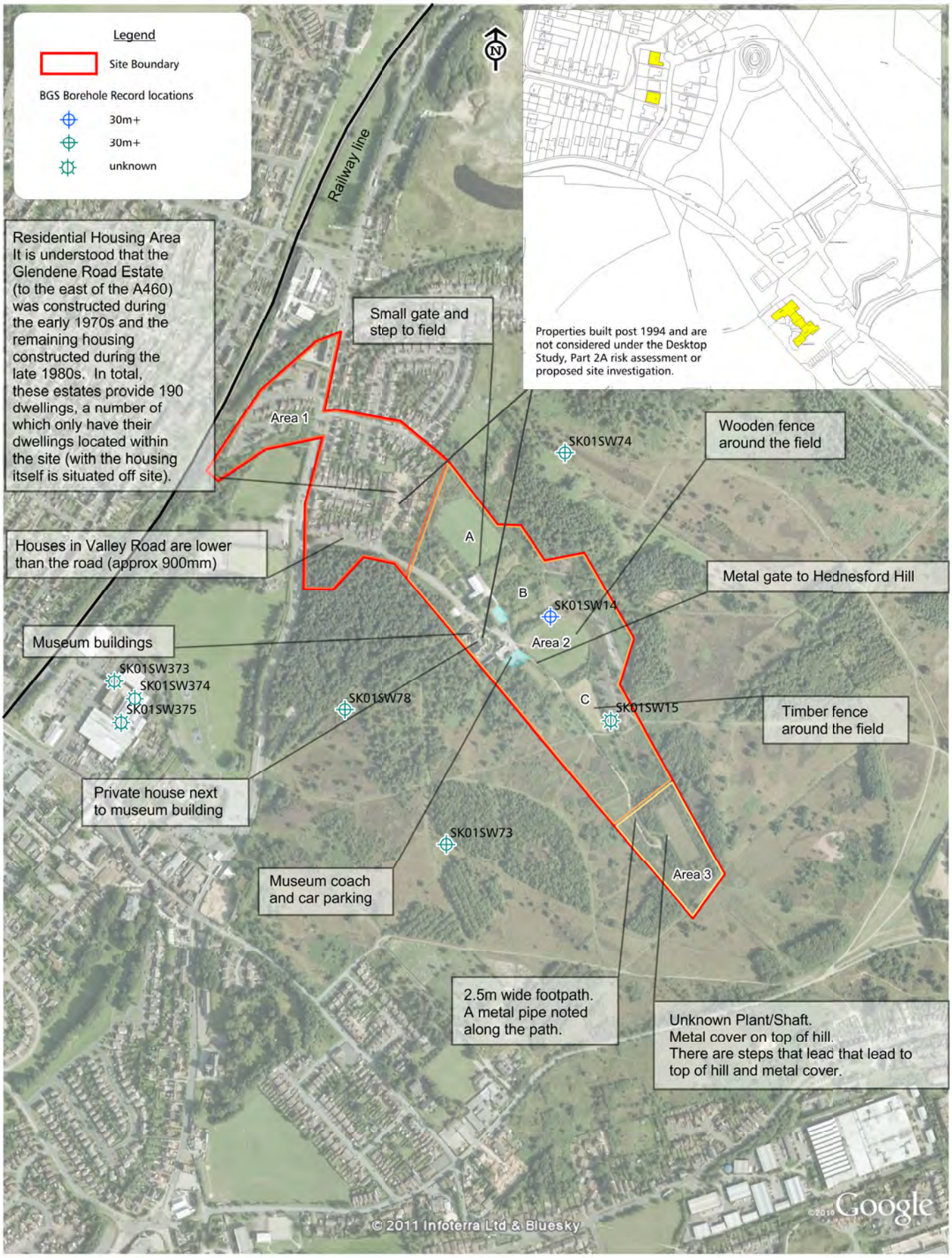

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Cannock Chase, Staffordshire

Figure 2:
Annotated Site Layout

Job Number: 10734/02
Date: 23/05/2011
Drawn by: SC
Checked by: RW
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Site Boundary

250m Buffer

Source Catchment Zone (SPZ 3) (see note (1))*

Secondary (A) Superficial Aquifer (see note (2))*

Principal Bedrock Aquifer (see note (3))*

Secondary (A) Bedrock Aquifer (see note (2))

* Note: these extents are approximate

(1) This area around a source within which all groundwater recharge is presumed to be discharged at the source.
(2) These aquifers comprise permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified and 'Minor Aquifers'.
(3) These are layers of rock that have a high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage, they may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as 'Major Aquifers'.

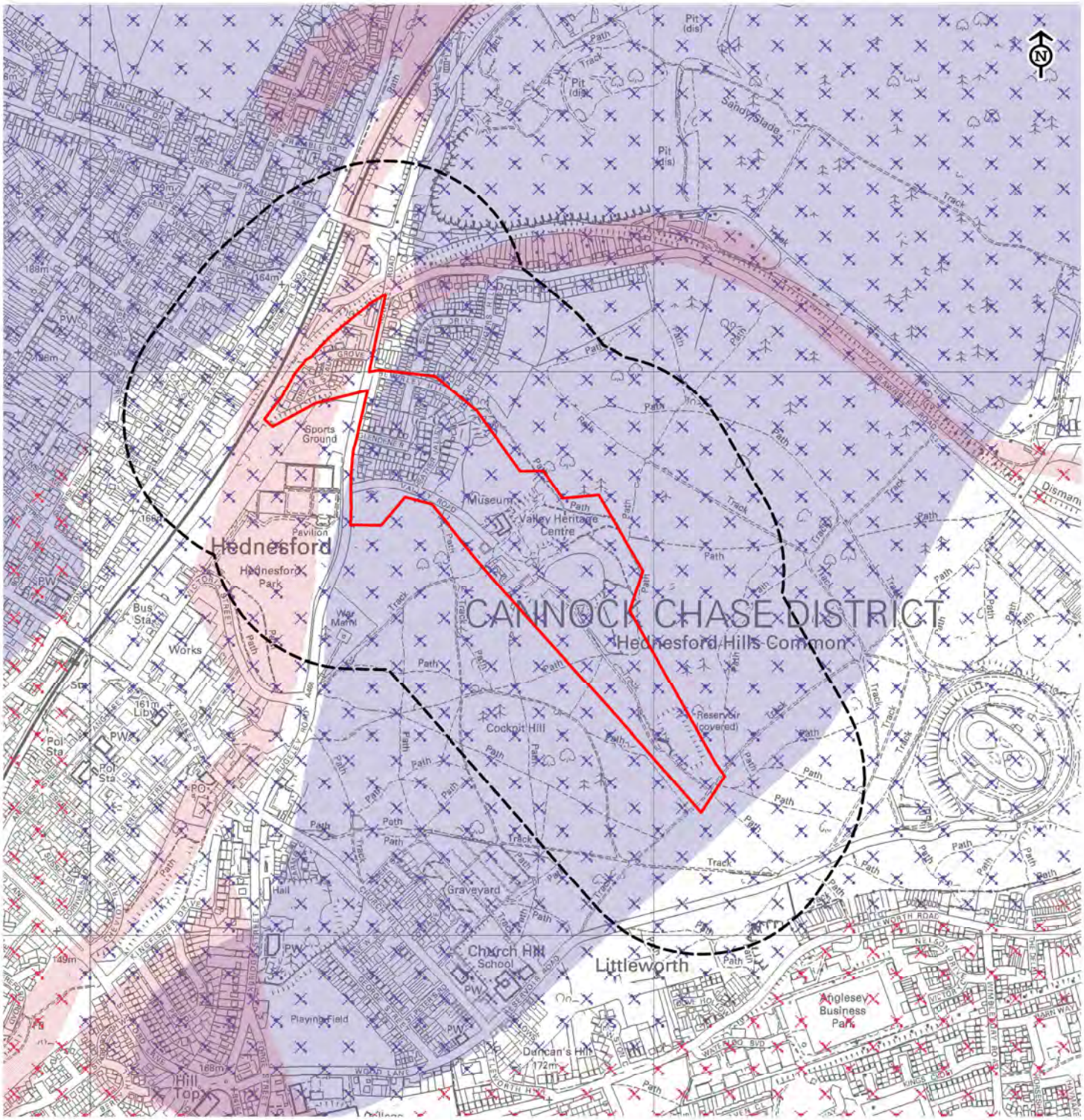

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Figure 3:
Site Hydrogeological Setting

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Date:	23/05/2011
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Status/Revision:	A
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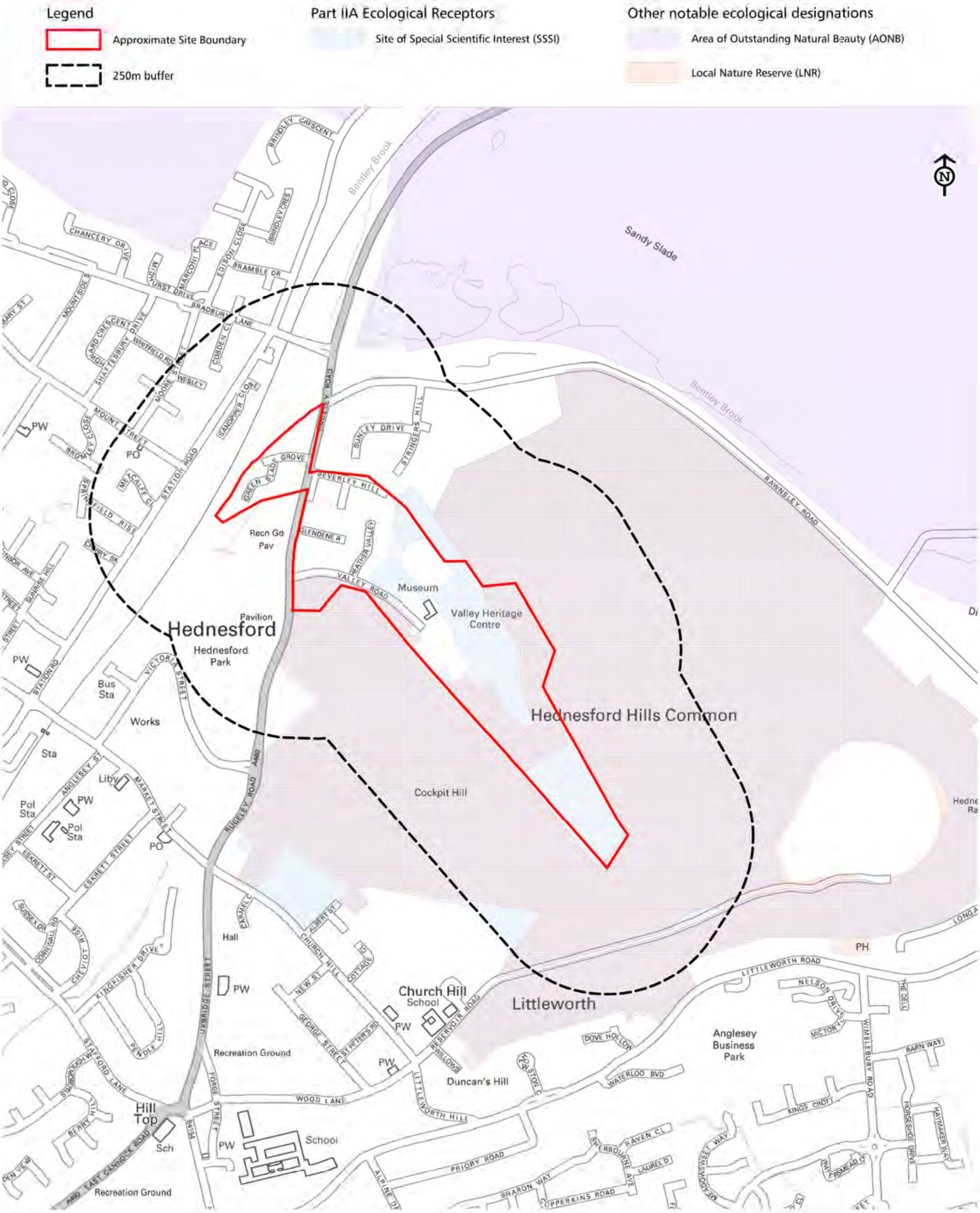

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Cannock Chase, Staffordshire

Figure 4:
Site Ecological Constraints

Job Number: 10734/02
Date: 23/05/2011
Drawn by: SC
Checked by: PV
Drg No: GIS016
Status/Revision: A
File location: O:\10500 - 10749\10734 - HCA Cannock Chase\Hednesford Hills\Workspaces
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Legend

Site Boundary

Year in which feature first appears on historical map
(approximate location of point, line or region feature)

1883-84
1900-02
1917-21
1949-60
1968-75
1981-2002

Works
Foundry
Gravel Pit
Waterbody
Gravel Pit
Brickworks
Embankment
Unspecified pit
Sinks
Embankment
Unspecified pit/embankment
Air Shaft
Air Shaft (approx)
Cannock & Rugeley Colliery
Air Shaft
Air Shaft
Chimney
Shaft (approx)
Magazine
Embankment
Railway and embankment
Hednesford
Gravel Pit
Works
Gas Works
Station
Works
Goods shed
Railway and embankment
Reservoir (covered)
Works
Sand pit
Sand pit
Smithy
Church Hill School
Littleworth
Gravel pit
Works
Brick & Tile Works
Railway and embankment

CANNOCK CHASE DISTRICT
Hednesford Hills Common

Embankment
Embankment
Embankment
Sinks
Unspecified pit
Tanks
Issues
Embankment
Railway
Railway
Embanked area
Embankment
Air Shaft
Unspecified pit/embankment
Colliery building
Shaft
Reservoir
Air Shaft (approx)
W
Railway
Tanks
Embankment
Chimney
Overflow
Mine Building
Colliery building
Embankment
Air Shaft
Air Shaft
Colliery building
Cannock & Rugeley Colliery
Mine Buildings
Embanked areas
Colliery buildings
Railway including embankment
Colliery buildings
Mine Building
Unspecified pit
Embankment
Shaft (approx)
Colliery building
Magazine
Colliery buildings
Embankment
Colliery building
Mine Buildings
Embankment
Colliery building

Path
Track

Hednesford Hills
Cannock Chase, Staffordshire

Figure 5:
Historical Composite Plan

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Ordnance Survey (100019754)

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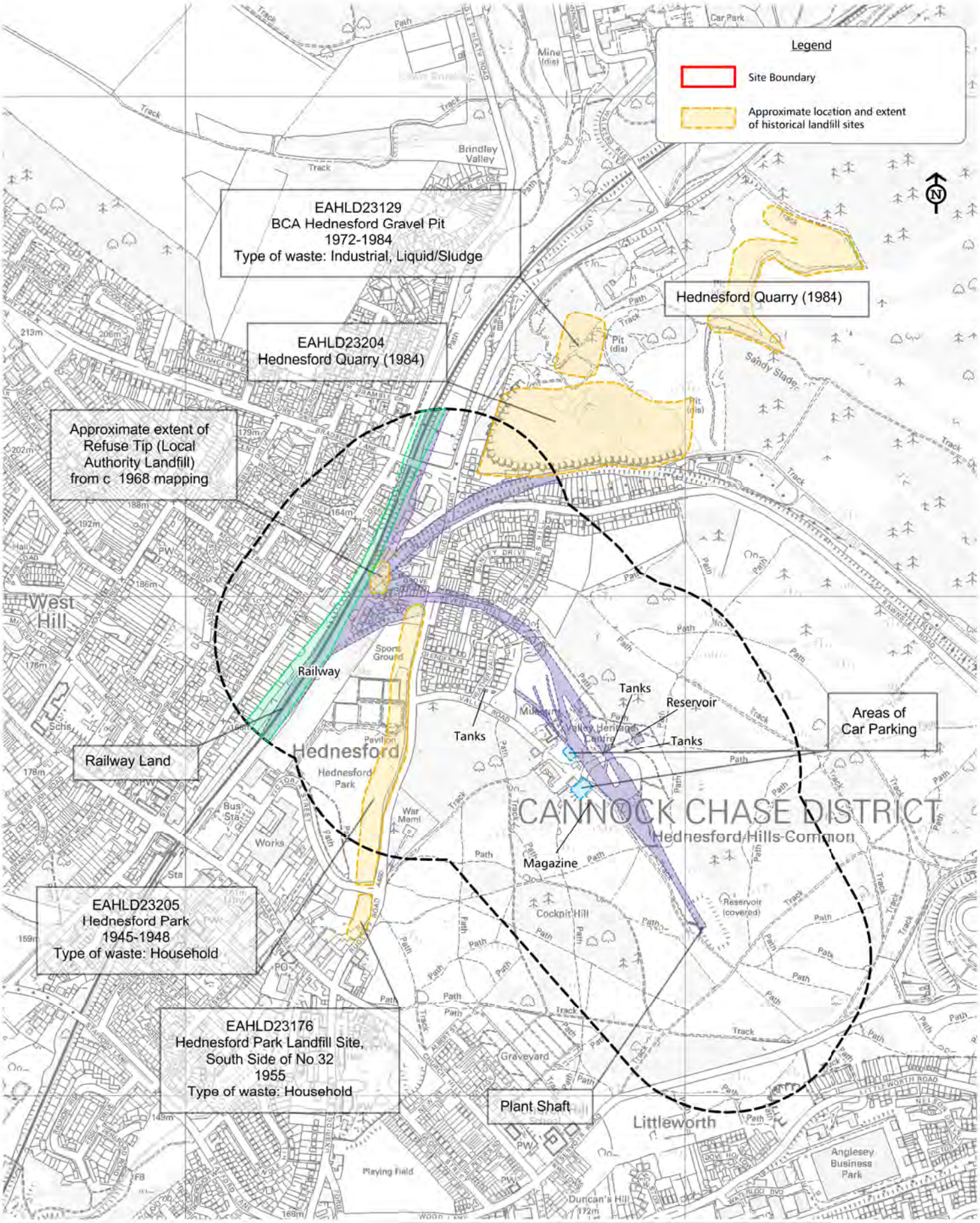

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Cannock Chase, Staffordshire

Figure 6:
Potential Contamination Constraints Plan

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Ordnance Survey (100019754)

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Source

- Railway land
- Car Parking areas
- Historical landfill sites

Potential sources requiring further research

- Unknown plant/shaft
- Unknown location of fill on site c.1995

Pathway

A Pollutant Linkage Assessment and risk assessment are provided under Section 6.0 of the report.
High Risk pathways are illustrated on the plan below.
In summary, the current risk assessment has identified the following:

- Medium - High Risk to Human Health;
- Medium - High Risk to Controlled Waters;
- Low - Medium Risk to Ecological Receptors; and,
- Medium - High Risk to Buildings.

Receptor

- Ecological Designation - SSSI
- Residential housing
- Museum staff
- Museum visitors
- Controlled waters (groundwater not shown on plan) but present under site
- Culverted stream (location unknown)

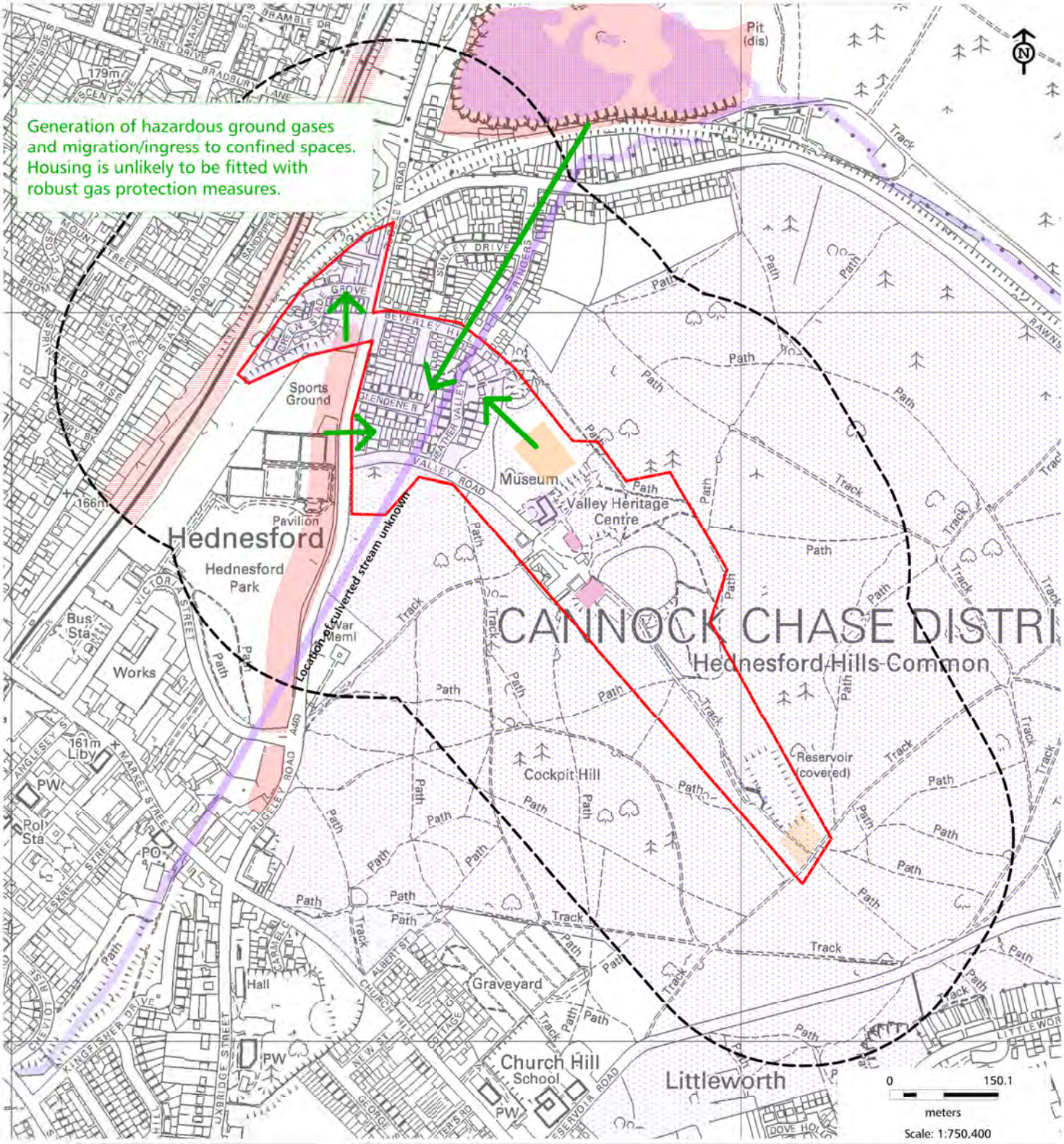

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Figure 7:
Conceptual Site Model
and Risk Assessment

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Date:	23/05/2011
Drawn by:	SC
Checked By:	RW
Drg No:	GIS014
Status/Revision:	A
File location:	O:\10500 - 10749\10734 - HCA Cannock Chase\Hednesford Hills\Workspaces
Revision History:	A, First Issue, 23/05/11, SC

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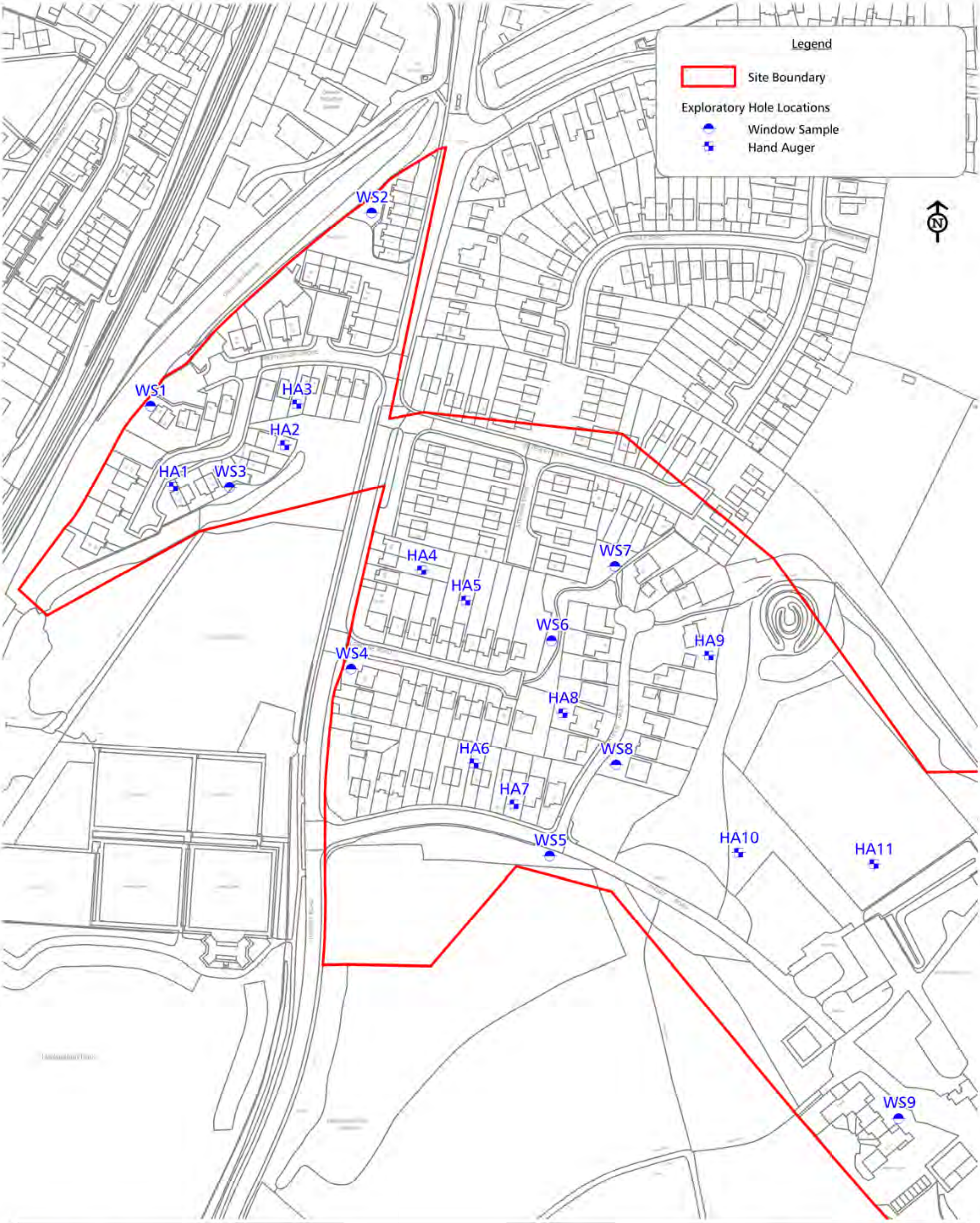

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Figure 8a: Exploratory Hole Location Plan

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Status/Revision: A
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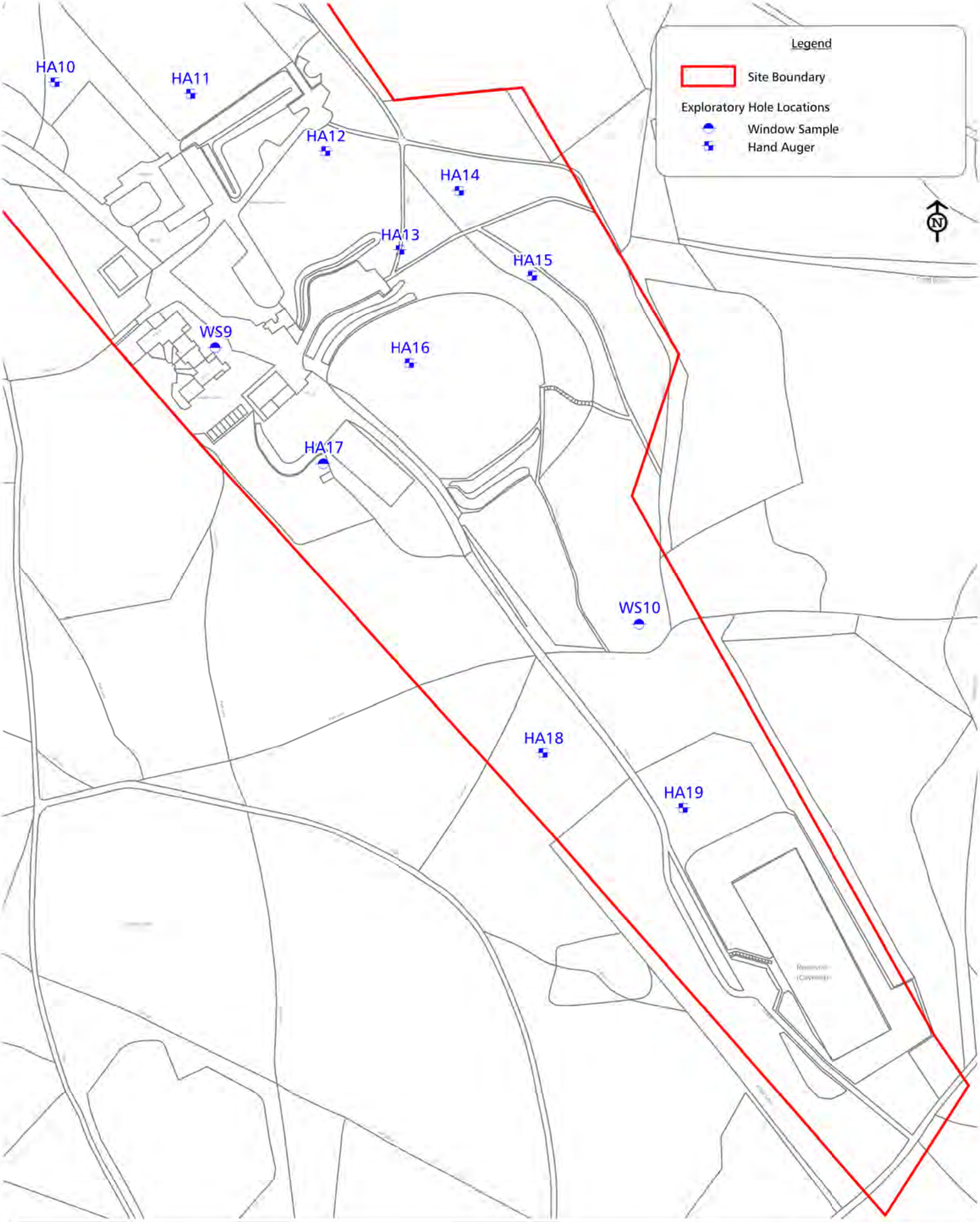

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Figure 8b:
Exploratory Hole Location Plan

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Status/Revision:	A
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APPENDIX B

SITE PHOTOGRAPHS

Photograph1: Beverley Hill Residential Estate which is believed to have been constructed c.1980 adjacent to a former landfill.

Photographs 2 - 3: Housing appears to be in a good state of repair with no visual signs of structural damage / instability.

In addition, road pavings and other general hardstanding areas do not appear to be suffering from differential settlements.

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Job Title
Cannock Chase, Staffordshire

Client
Cannock Chase Council

Site Photographs
1 - 3

Job No.	Scale	Date	Drawn by	Checked
999140	NTS	Feb 2011	SC	RW

Diag No.	File loc.	Status/Rev.
GIS001	O:\999140\999143 - Environmental\999143 Cannock Chase	A

Photograph 4: Unknown metal coverings, most likely associated with the former coal mining entry points / shafts or training facilities which once took place on site.

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Job Title	
Cannock Chase, Staffordshire	
Client	
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Site Photograph 4

Job No.	Scale	Date	Drawn by	Checked
999140	NTS	Feb 2011	SC	RW

Diag No.	File loc.	Status/Rev.
GIS001	O:\999140\999143 - Environmental\999143 Cannock Chase	A

Photograph 5: Unknown plant storage / mining shaft entry point. The feature is securely locked and is no longer in use.

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Job Title				
Cannock Chase, Staffordshire				
Client: Cannock Chase Council				
Site Photograph 5				
Job No. 999140	Scale NTS	Date Feb 2011	Drawn by SC	Checked RW
Diag No. GIS001		File loc.		Status/Rev. A

Photograph 6: Coach and general car parking area in the central portion of the site. Hardstanding appears to be in a good state of repair and no oil / fuel staining was noted during the walkover.

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Job Title	
Cannock Chase, Staffordshire	
Client	
Cannock Chase Council	

Site Photograph 6

Job No.	Scale	Date	Drawn by	Checked
999140	NTS	Feb 2011	SC	RW

Diag No.	File loc.	Status/Rev.
GIS001	O:\999140\999143 - Environmental\999143 Cannock Chase	A

Photographs 7 & 8: General view of open fields and vegetation. No signs of 'dieback' or other vegetative stress was recorded.

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REDHILL 01737 784 500 • BIRMINGHAM 0121 766 8009
BRISTOL 0117 916 1066 • www.campbellreith.com

Job Title
Cannock Chase, Staffordshire

Client
Cannock Chase Council

Site Photographs
7 - 8

Job No.	Scale	Date	Drawn by	Checked
999140	NTS	Feb 2011	SC	RW

Diag No.	File loc.	Status/Rev.
GIS001	O:\999140\999143 - Environmental\999143 Cannock Chase	A

APPENDIX C

DESKTOP INFORMATION (CD)

EmapSite
Masdar House,
Eversley, RG27 0RP

GroundSure Reference:	S EMS-127424_174677
Your Reference:	EMS_127424_174677
Report Date	May 12, 2011
Report Delivery Method:	Email - pdf

GroundSure GeoInsight

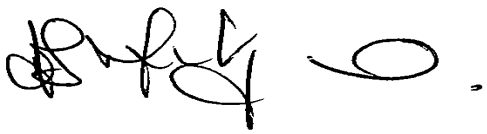
Address: Hednesford Hills

Dear Sir/Madam,

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

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above GroundSure reference number.

Yours faithfully,



Managing Director
Groundsure Limited

Enc.
GroundSure GeoInsight

GroundSure GeoInsight

Address: Hednesford Hills

Date: May 12, 2011

GroundSure Reference: S EMS-127424_174677

Your Reference: EMS_127424_174677

Brought to you by GroundSure

Aerial Photograph of Study Site

NW N NE

W E

SW S SE

Site Name: Hednesford Hills
Grid Reference: 400733,312723
Size of Site: 8.89 ha

Overview of Findings

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

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

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

Report Section	Number of records found within (X) m of the study site boundary
1. Geology	**Description**
1.1 Artificial Ground,	
1.1.1 Is there any Artificial Ground /Made Ground present beneath the study site?*	No
1.1.2 Are there any records relating to permeability of artificial ground within the study site* boundary?	No
1.2 Superficial Geology & Landslips	
1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	No
1.2.2 Are there any records relating to permeability of superficial geology within the study site* boundary?	No
1.2.3 Are there any records of landslip within 500m of the study site boundary?	No
1.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No
1.3 Bedrock, Solid Geology & Faults	
1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
1.3.2 Are there any records relating to permeability of bedrock within the study site* boundary?	Yes
1.3.3 Are there any records of faults within 500m of the study site boundary?	No
1.3.4 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level
1.3.5 Is the property in an area where Radon Protection Measures are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary

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

Source:Scale 1:50,000 BGS Sheet No:154

2. Ground Workings	on-site	0-50	51-250	251-500	501-1000
2.1 Historical Surface Ground Working Features from Small Scale Mapping	42	3	10	-	-
2.2 Historical Underground Workings Features from Small Scale Mapping	9	0	0	0	16
2.3 Current Ground Workings	1	0	0	2	13

3. Mining, Extraction & Natural Cavities	on-site	0-50	51-250	251-500	501-1000
3.1 Historical Mining	9	0	0	0	16
3.2 Coal Mining	1	0	0	0	0
3.3 Johnson Poole and Bloomer Mining Area	1	0	3	0	5
3.4 Non-Coal Mining*	0	0	0	0	4
3.5 Non–Coal Mining Cavities	0	0	0	0	0
3.6 Natural Cavities	0	0	0	0	0
3.7 Brine Extraction	0	0	0	0	0
3.8 Gypsum Extraction	0	0	0	0	0
3.9 Tin Mining	0	0	0	0	0
3.10 Clay Mining	0	0	0	0	0

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

4. Natural Ground Subsidence	on-site*	0-50	51-250	251-500	501-1000
4.1 Shrink-Swell Clay	Negligible	-	-	-	-
4.2 Landslides	Very Low	-	-	-	-
4.3 Ground Dissolution of Soluble Rocks	Negligible	-	-	-	-
4.4 Compressible Deposits	Negligible	-	-	-	-
4.5 Collapsible Deposits	Very Low	-	-	-	-
4.6 Running Sand	Negligible	-	-	-	-

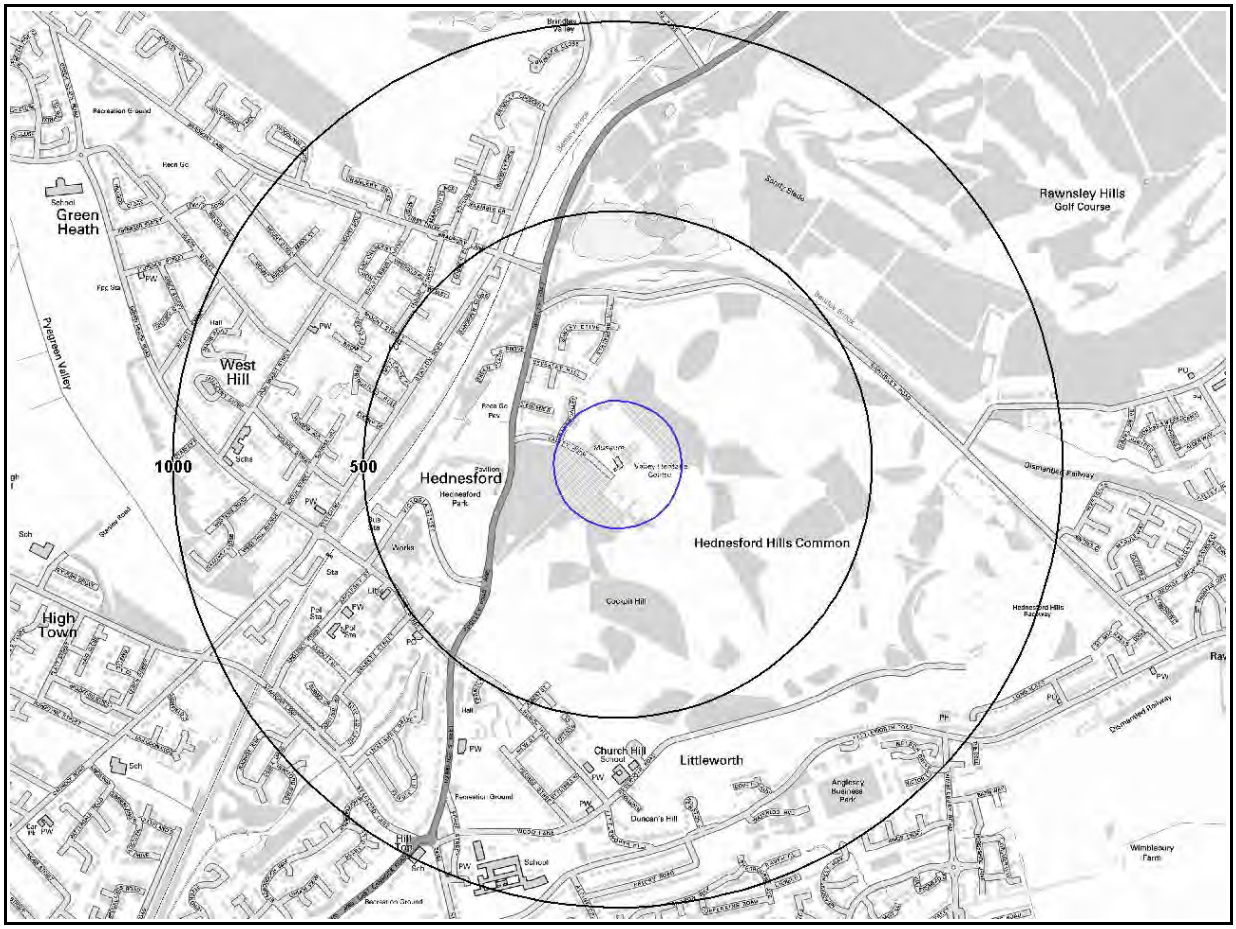
* This includes an automatically generated 50m buffer zone around the site

5. Borehole Records	on-site	0-50	51-250	251-500	501-1000
5.1 BGS Recorded Boreholes	1	1	3	-	-

6. Estimated Background Soil Chemistry	on-site	0-50	51-250	251-500	501-1000
6.1 Records of Background Soil Chemistry	1	0	0	-	-

1.1 Artificial Ground Map

NW N NE



W E

SW S SE

Artificial Ground Legend

Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Worked Ground (undivided)

Infilled Ground

Disturbed Ground (undivided)

Landscaped Ground (undivided)

Reclaimed Ground

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

1.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:154

1.1.1 Artificial/Made Ground

Are there any records of Artificial/Made Ground within 500m of the study site boundary? **No**

Database searched and no data found.

1.1.2 Permeability of Artificial Ground

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

Database searched and no data found.

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

1.2 Superficial Deposits and Landslips Map

NW N NE

W E

SW S SE

Superficial and Landslips Legend

Site Outline

500
1000
Search Buffers (m)

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

1.2Superficial Deposits and Landslips

1.2.1 Superficial Deposits/Drift Geology

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

ID	Distance (m)	Direction	Lex Code	Description	Rock Description
1	118.0	W	GFDUD-SAGR	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL
2	124.0	W	ALV-CSSG	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
3	289.0	W	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
4	351.0	SW	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

1.2.2 Permeability of Superficial Ground

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

Database searched and no data found.

1.2.3 Landslip

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

Database searched and no data found.

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

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

1.2.4 Landslip Permeability

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

Database searched and no data found.

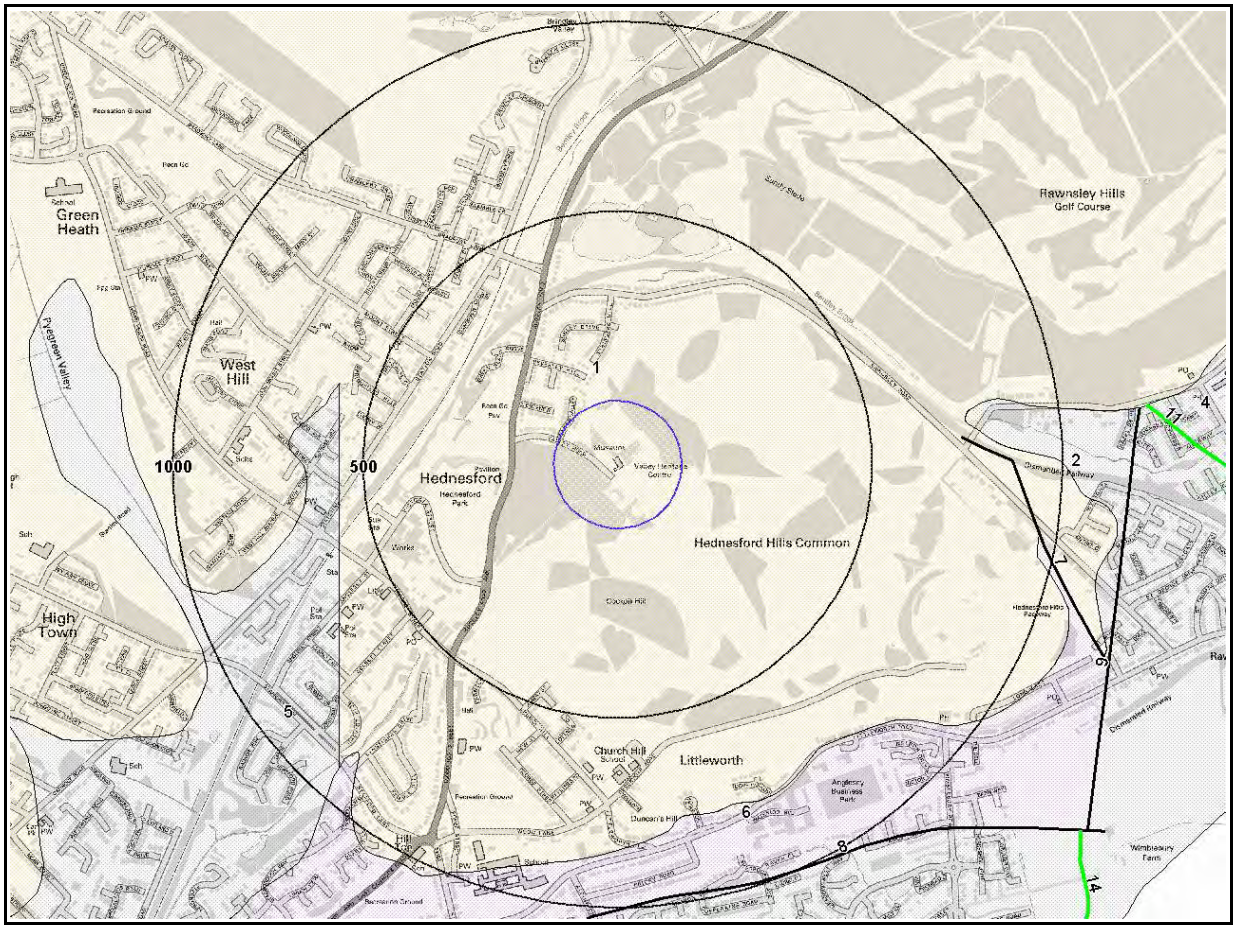
*This includes an automatically generated 50m buffer zone around the site.

1.3 Bedrock and Faults Map

NW N NE

W E

SW S SE



Bedrock & Faults Deposits Legend

Enabled by Ordnance Survey

Site Outline

500
1000
Search Buffers (m)

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

1.3Bedrock, Solid Geology & Faults

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:154

1.3.1 Bedrock/Solid Geology

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

ID	Distance (m)	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	KDM-SCON	Kidderminster Formation - Interbedded Sandstone And Conglomerate	Scythian

1.3.2 Permeability of Bedrock Ground

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

Distance (m)	Direction	Flow type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	High	Moderate

1.3.3 Faults

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

Database searched and no data found.

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

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

1.3.4 Radon Affected Areas

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

The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level

1.3.5 Radon Protection

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

No radon protective measures are necessary

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

2. Ground Workings Map

NW N NE

W E

SW S SE

Ground Workings Legend

Site Outline

125
250
Search Buffers (m)

Historic Surface Ground Workings

Historic Underground Workings

Current Ground Workings

2. Ground Workings

2.1 Historical Surface Ground Working Features derived from Historical Mapping

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

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

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

ID	Distance (m)	Direction	NGR	Use	Date
1A	0.0	On Site	400680,312945	Cuttings	1921
2C	0.0	On Site	400683,312918	Cuttings	1975
3B	0.0	On Site	400902,312723	Reservoir	1921
4A	0.0	On Site	400669,312935	Cuttings	1921
5B	0.0	On Site	400902,312723	Reservoir	1921
6C	0.0	On Site	400666,312930	Cuttings	1900
7B	0.0	On Site	400902,312723	Reservoir	1900
8D	0.0	On Site	400756,312685	Unspecified Heap	1882
9G	0.0	On Site	400762,312615	Unspecified Heap	1882
10 F	0.0	On Site	400867,312708	Unspecified Heap	1921
11 E	0.0	On Site	400677,312791	Unspecified Heaps	1921
12 D	0.0	On Site	400773,312689	Unspecified Heap	1921
13 E	0.0	On Site	400663,312788	Unspecified Heaps	1921
14	0.0	On Site	400649,312780	Refuse Heap	1900
15I	0.0	On Site	400862,312598	Colliery	1921
16J	0.0	On Site	400835,312617	Colliery	1883
17 F	0.0	On Site	400867,312708	Unspecified Heap	1900
18 F	0.0	On Site	400867,312708	Unspecified Heap	1921
19 D	0.0	On Site	400757,312686	Unspecified Heap	1921
20 G	0.0	On Site	400761,312616	Unspecified Heap	1921
21 G	0.0	On Site	400776,312619	Unspecified Heap	1921
22 H	0.0	On Site	400657,312792	Unspecified Heap	1883
23 D	0.0	On Site	400751,312685	Unspecified Heap	1883
24 H	0.0	On Site	400648,312791	Unspecified Heaps	1882
25I	0.0	On Site	400844,312596	Colliery	1921
26 G	0.0	On Site	400767,312621	Refuse Heap	1900
27 D	0.0	On Site	400761,312687	Refuse Heap	1900
28 O	0.0	On Site	400826,312613	Colliery	1900
29J	0.0	On Site	400835,312617	Colliery	1882
30 N	0.0	On Site	400829,312751	Unspecified Pit	1921
31	0.0	On Site	400646,312829	Unspecified Ground Workings	1900
32	0.0	On Site	400711,312835	Unspecified Ground Workings	1900
33	0.0	On Site	400813,312791	Unspecified Pit	1968
34	0.0	On Site	400781,312780	Unspecified Pits	1949
35	0.0	On Site	400708,312903	Unspecified Pit	1985
36 A	0.0	On Site	400683,312918	Cuttings	1968
37 C	0.0	On Site	400691,312902	Cuttings	1949
38 F	0.0	On Site	400893,312716	Reservoir	1949

39 B	0.0	On Site	400900,312721	Reservoir	1883
40 B	0.0	On Site	400900,312721	Reservoir	1882
41 A	0.0	On Site	400701,312902	Cuttings	1882
42 A	0.0	On Site	400701,312902	Cuttings	1883
43 K	36.0	SE	400964,312452	Cuttings	1900
44 K	36.0	SE	400964,312452	Unspecified Pit	1921
45 K	49.0	SE	400963,312444	Unspecified Pit	1921
46	56.0	SE	400921,312513	Cuttings	1882
47	93.0	W	400435,312630	Gravel Pit	1883
48	123.0	SE	400987,312413	Cuttings	1968
49 L	150.0	SE	400990,312396	Cuttings	1949
50	209.0	NW	400423,313021	Refuse Heap	1900
51 M	209.0	NW	400471,313046	Unspecified Pit	1968
52 L	219.0	SE	401000,312394	Cuttings	1882
53	239.0	SE	401012,312358	Unspecified Pit	1883
54 M	246.0	NW	400456,313052	Pond	1900
55	249.0	NW	400434,313044	Pond	1883

2.2 Historical Underground Workings Features derived from Historical Mapping

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

Are there any Historical Underground Working Features within 1000m of the study site boundary? Yes

The following Historical Underground Working Features are provided by GroundSure:

ID	Distance (m)	Direction	NGR	Use	Date
56J	0.0	On Site	400835,312617	Colliery	1883
57J	0.0	On Site	400835,312617	Colliery	1882
58	0.0	On Site	400838,312664	Air Shaft	1883
59N	0.0	On Site	400828,312753	Air Shaft	1883
60P	0.0	On Site	400803,312698	Air Shaft	1883
61J	0.0	On Site	400844,312596	Colliery	1921
62O	0.0	On Site	400826,312613	Colliery	1900
63P	0.0	On Site	400800,312695	Unspecified Mine	1968
64I	0.0	On Site	400862,312598	Colliery	1921
Not shown	838.0	N	400719,314240	Colliery	1921
Not shown	846.0	N	400784,314218	Unspecified Mine	1968
Not shown	881.0	N	400728,313810	Colliery	1921
Not shown	882.0	N	400745,314164	Colliery	1882
Not shown	895.0	SW	399859,311593	Colliery	1949
Not shown	904.0	SW	399486,312376	Colliery	1921
Not shown	905.0	S	401196,311600	Unspecified Mine	1968
Not shown	911.0	S	401186,311630	Unspecified Mine	1949

Not shown	924.0	SW	399474,312379	Colliery	1921
Not shown	927.0	SE	401380,311744	Unspecified Mine	1882
Not shown	927.0	SE	401376,311741	Colliery	1883
Not shown	927.0	S	401337,311659	Unspecified Mine	1921
Not shown	956.0	S	401377,311707	Colliery	1900
Not shown	956.0	S	401377,311707	Unspecified Mine	1921
Not shown	960.0	N	400786,314076	Unspecified Mine	1975
Not shown	984.0	S	400964,311310	Colliery	1949

2.3 Current Ground Workings

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

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

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

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
81	0.0	On Site	400835, 312700	Coal, Deep	Cannock & Rugely Colliery Pool Pits	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun' Ee' - Scots)	Ceased
Not shown	391.0	NE	401038, 313192	Sand & Gravel	Denmark Villas	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	498.0	NE	401334, 313012	Sand & Gravel	Hazelslade	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	608.0	W	399978, 312900	Clay & Shale	Hednesford Brick Works	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	708.0	SE	401335, 312085	Sand	Littleworth (Sand)	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	711.0	SE	401205, 311980	Sand	Littleworth (Sand)	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	750.0	SE	401150, 311905	Sand	Littleworth (Sand)	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	780.0	N	400990, 313635	Sand & Gravel	Wood End	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	816.0	S	400702, 311739	Sand & Gravel	Chuch Hill	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	841.0	SE	401230, 311845	Clay & Shale	Littleworth (Marl)	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

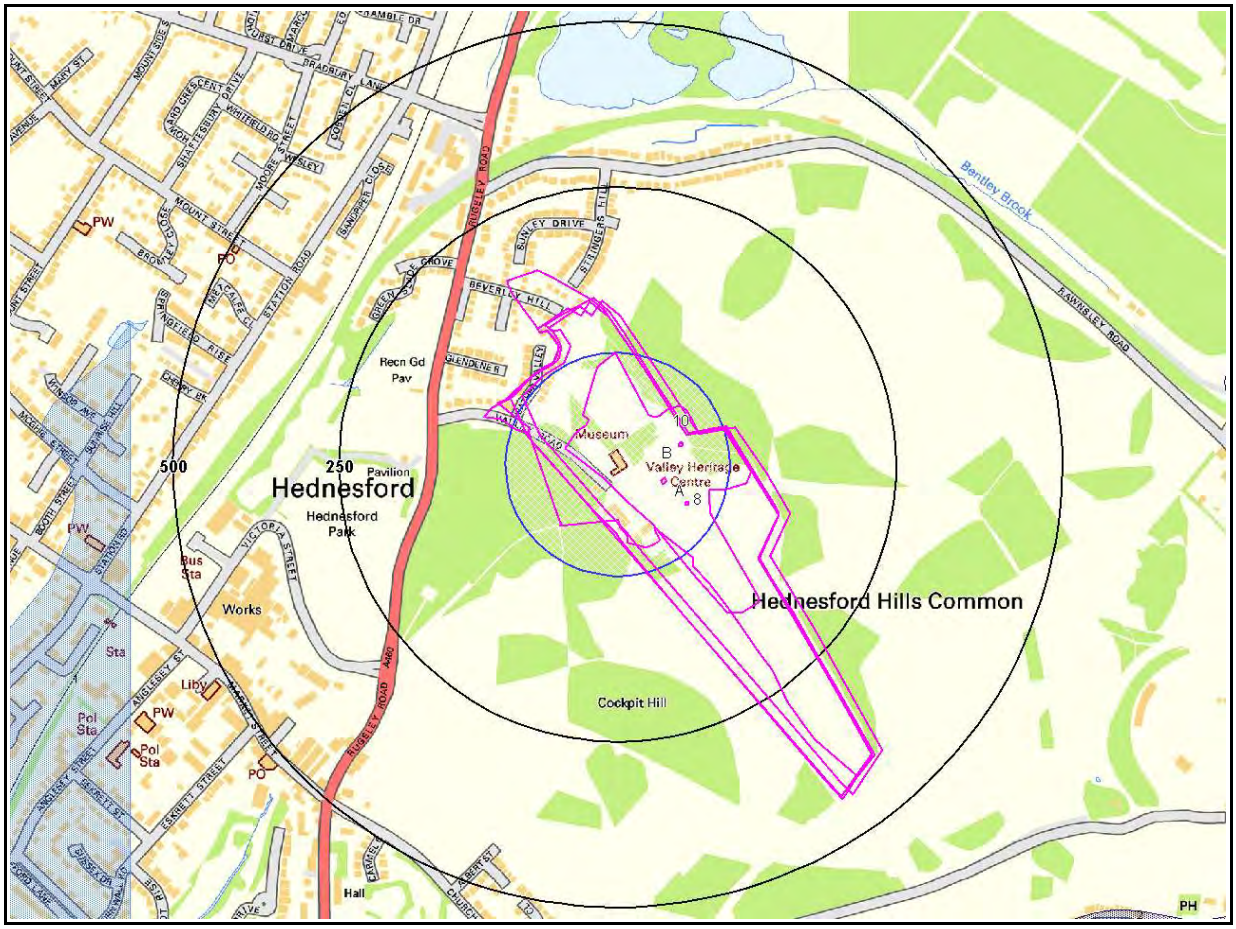
Not shown	847.0	S	400661, 311710	Sand & Gravel	Chuch Hill	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	860.0	S	401000, 311730	Clay & Shale	Littleworth (Marl)	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	863.0	N	400956, 313730	Sand & Gravel	Sandy Slade	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	903.0	E	401791, 312551	Sand	Hazelslade	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	940.0	N	400638, 313827	Sand & Gravel	Lower Brindley Pool	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	958.0	S	401056, 311643	Clay & Shale	Littleworth Brick Kilns	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

3. Mining, Extraction & Natural Cavities Map

NW N NE

W E

SW S SE



Mining, Extraction & Natural Cavities Legend

Enabled by Ordnance Survey

Site Outline

250
500
Search Buffers (m)

Historical Mining

Non-Coal Mining Cavities

Natural Cavities

Non-Coal Mining

Highly likely

Likely

Unlikely

Highly unlikely

Rare

3.Mining, Extraction & Natural Cavities

3.1 Historical Mining

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

Are there any Historical Mining areas within 1000m of the study site boundary? **Yes**

The following Historical Mining information is provided by Groundsure :

ID	Distance (m)	Direction	NGR	Details	Date
5A	0.0	On Site	400835,312617	Colliery	1883
6A	0.0	On Site	400835,312617	Colliery	1882
7B	0.0	On Site	400800,312695	Unspecified Mine	1968
8	0.0	On Site	400862,312598	Colliery	1921
9A	0.0	On Site	400838,312664	Air Shaft	1883
10	0.0	On Site	400828,312753	Air Shaft	1883
11B	0.0	On Site	400803,312698	Air Shaft	1883
12A	0.0	On Site	400844,312596	Colliery	1921
13A	0.0	On Site	400826,312613	Colliery	1900
Not shown	838.0	N	400719,314240	Colliery	1921
Not shown	846.0	N	400784,314218	Unspecified Mine	1968
Not shown	881.0	N	400728,313810	Colliery	1921
Not shown	882.0	N	400745,314164	Colliery	1882
Not shown	895.0	SW	399859,311593	Colliery	1949
Not shown	904.0	SW	399486,312376	Colliery	1921
Not shown	905.0	S	401196,311600	Unspecified Mine	1968
Not shown	911.0	S	401186,311630	Unspecified Mine	1949
Not shown	924.0	SW	399474,312379	Colliery	1921
Not shown	927.0	SE	401380,311744	Unspecified Mine	1882
Not shown	927.0	SE	401376,311741	Colliery	1883
Not shown	927.0	S	401337,311659	Unspecified Mine	1921
Not shown	956.0	S	401377,311707	Colliery	1900
Not shown	956.0	S	401377,311707	Unspecified Mine	1921
Not shown	960.0	N	400786,314076	Unspecified Mine	1975
Not shown	984.0	S	400964,311310	Colliery	1949

3.2 Coal Mining

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

Are there any Coal Mining areas within 1000m of the study site boundary? **Yes**

The following Coal Mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0.0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

3.3 Johnson Poole and Bloomer

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

Are there any JPB Mining areas within 1000m of the study site boundary? **Yes**

The following information provided by JPB is not represented on Mapping:

In addition to being located inside an area where The Coal Authority have information on coal mining activities, Johnson Poole & Bloomer (JPB) have information such as mining plans and maps held within their archive of mining activities that have occurred within 1km of this property which may supplement this information. Further details and a quote for services can be obtained by emailing this report to enquiries.gs@jpb.co.uk.

3.4 Non – Coal Mining

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

Are there any Non-Coal Mining areas within 1000m of the study site boundary? **Yes**

The following non-coal mining information is provided by the BGS:

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	565.0	W	Not given	Vein Mineral \ Iron ore	Highly Unlikely - Localised small scale mining may have occurred but restricted in extent.
2	747.0	SE	Not given	Vein Mineral	Rare - Infrequent minor mining may have occurred but restricted in extent.
3	752.0	E	Not given	Vein Mineral	Rare - Infrequent minor mining may have occurred but restricted in extent.
Not shown	754.0	E	Not given	Vein Mineral \ Iron ore	Highly Unlikely - Localised small scale mining may have occurred but restricted in extent.

3.5 Non – Coal Mining Cavities

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

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

Database searched and no data found.

3.6 Natural Cavities

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

Are there any Natural Cavities within 1000m of the study site boundary? **No**

Database searched and no data found.

3.7 Brine Extraction

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

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

Database searched and no data found.

3.8 Gypsum Extraction

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

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

Database searched and no data found.

3.9 Tin Mining

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

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

Database searched and no data found.

3.10 Clay Mining

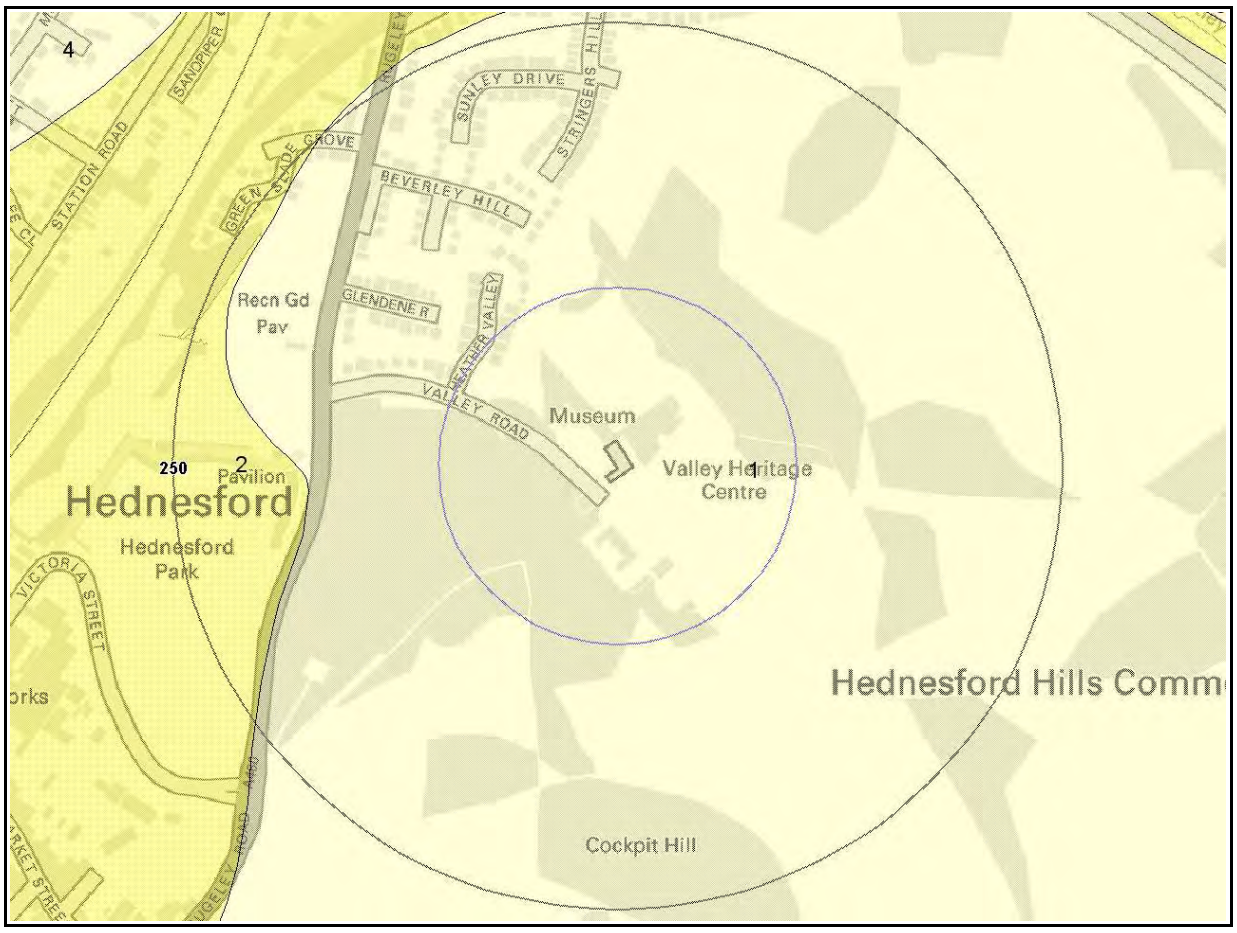
This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

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

Database searched and no data found.

4. Natural Ground Subsidence
4.1 Shrink-Swell Clay Map

NW N NE



W E

SW S SE

Shrink-Swell Clay Legend

Site Outline

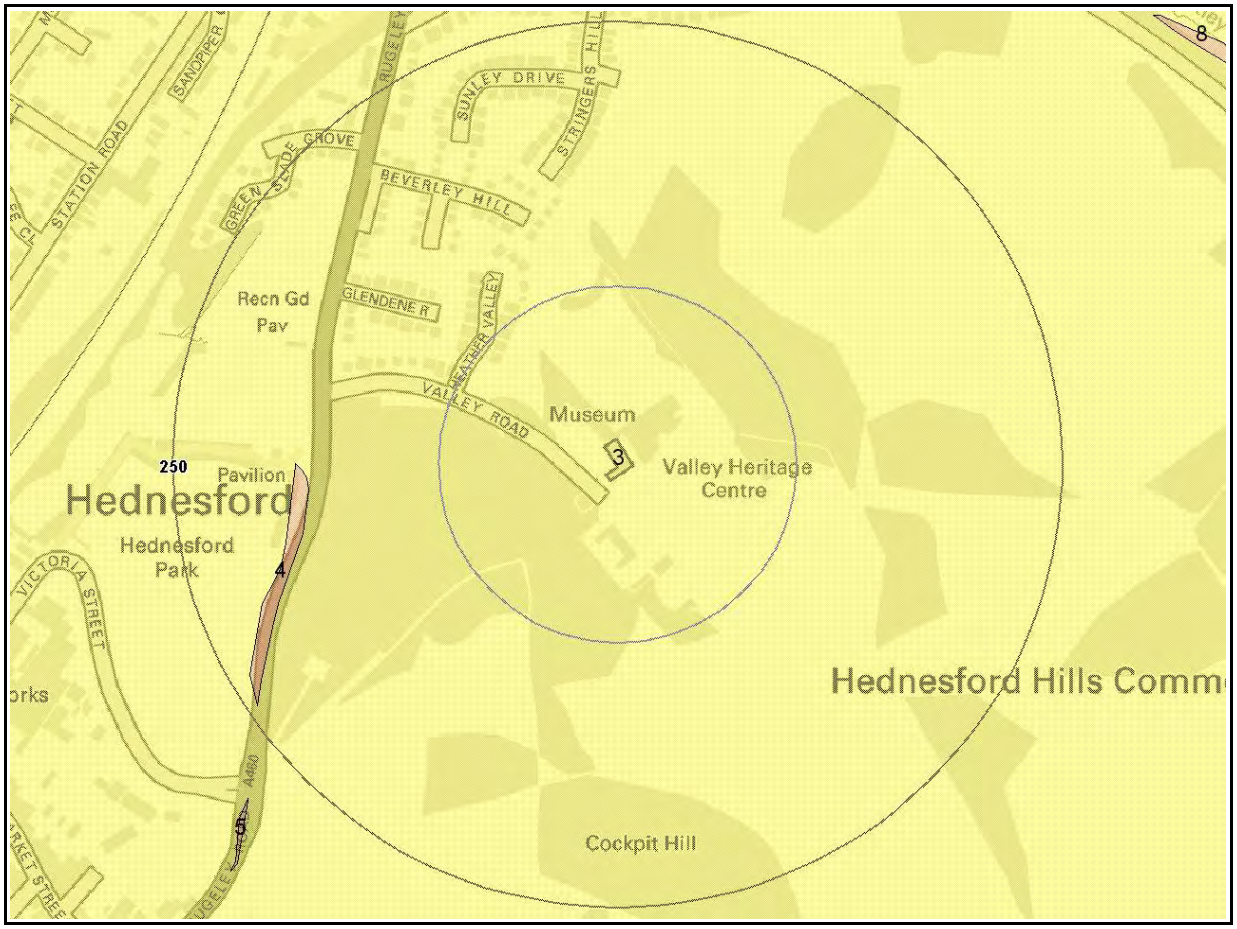
125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

4.2 Landslides Map

NW N NE



W E

SW S SE

Landslides Legend

Enabled by Ordnance Survey

Site Outline

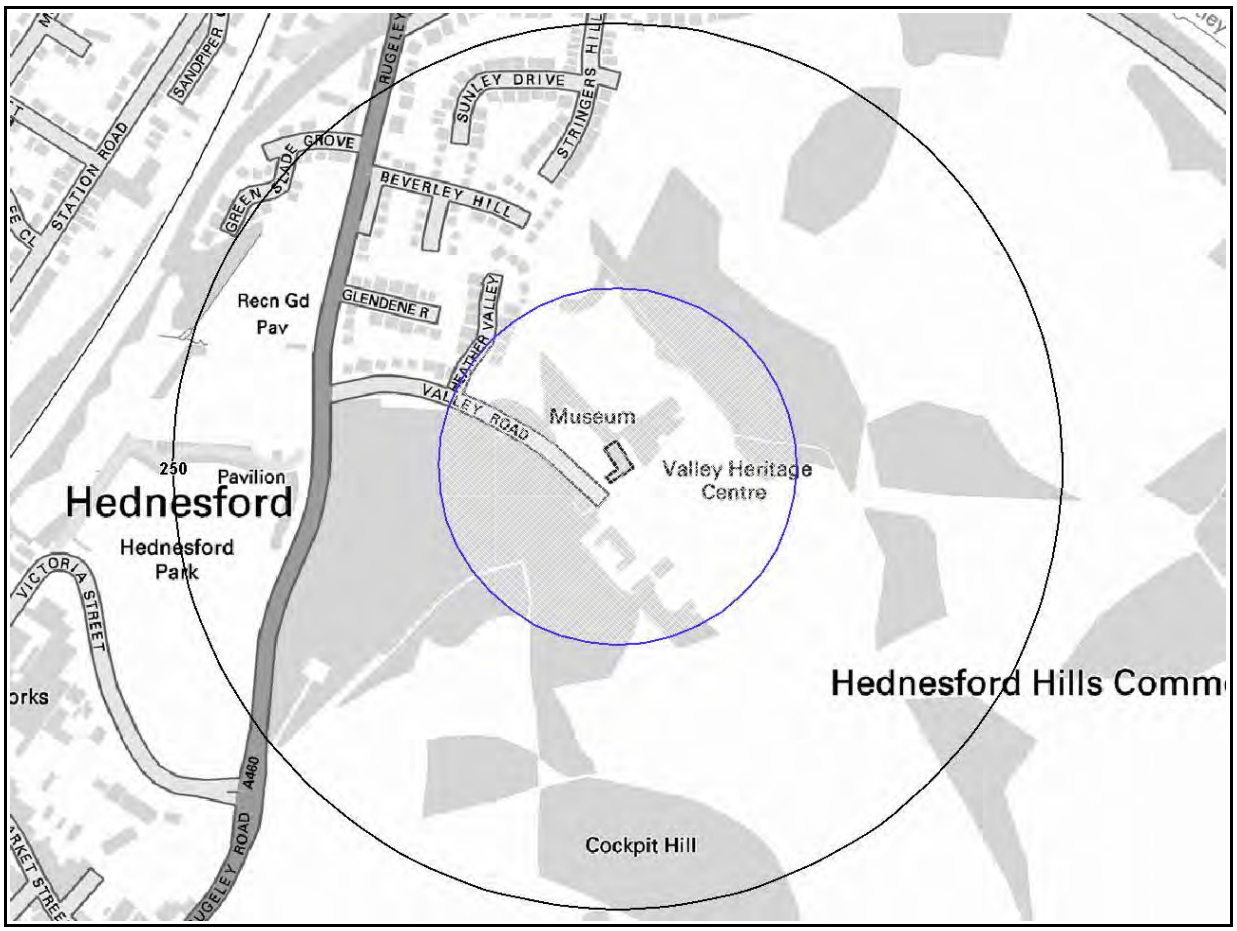
125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

4.3 Ground Dissolution Soluble Rocks Map

NW N NE



W E

SW S SE

Ground Dissolution Soluble Rocks
Legend

Enabled by Ordnance Survey

Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

4.4 Compressible Deposits Map

NW N NE

W E

SW S SE

Compressible Deposits Legend

Site Outline

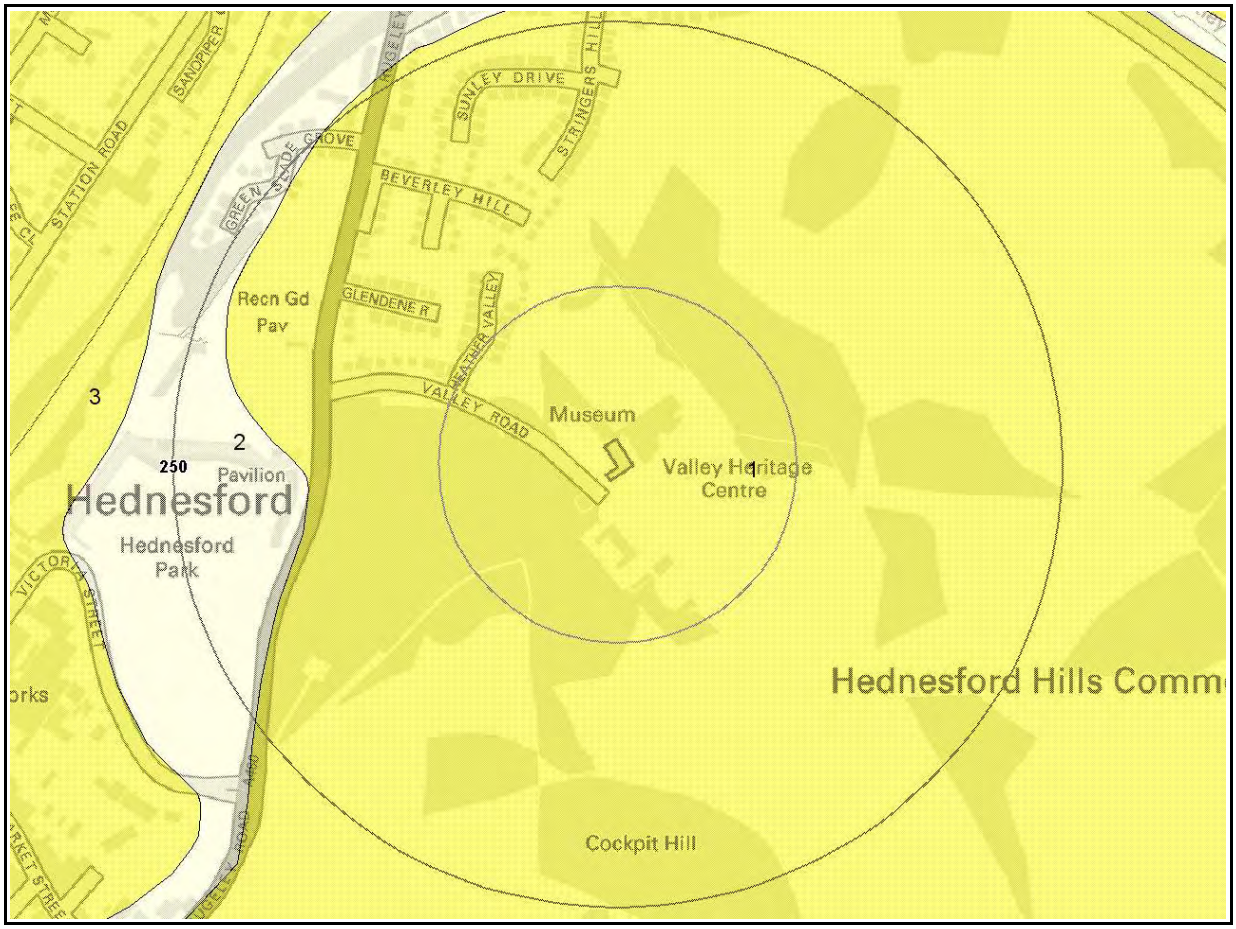
125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

4.5 Collapsible Deposits Map

NW N NE



W E

SW S SE

Collapsible Deposits Legend

Site Outline

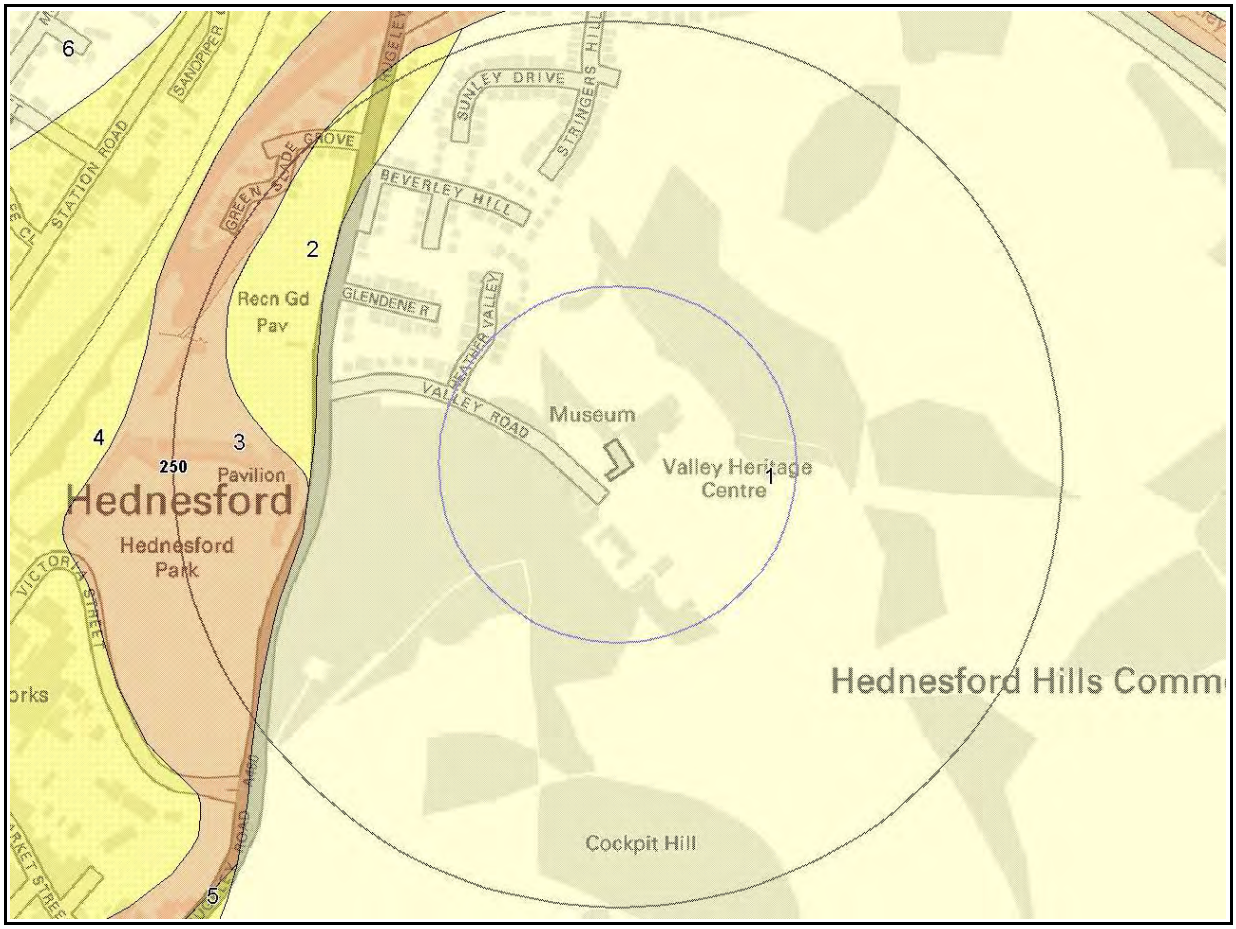
125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

4.6 Running Sand Map

NW N NE



W E

SW S SE

Running Sand Legend

Enabled by Ordnance Survey

Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

4.Natural Ground Subsidence

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

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

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

4.1 Shrink – Swell Clays

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

ID	Distance (m)*	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.

4.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)*	Direction	Hazard Rating	Details
3	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

4.3 Ground Dissolution of Soluble Rocks

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

Distance (m)*	Direction	Hazard Rating	Details
0.0	On site	Null-Negligible	Soluble rocks are not present in the search area. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

4.4 Compressible Deposits

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

ID	Distance (m)*	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

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

4.5 Collapsible Deposits

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

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

4.6 Running Sands

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

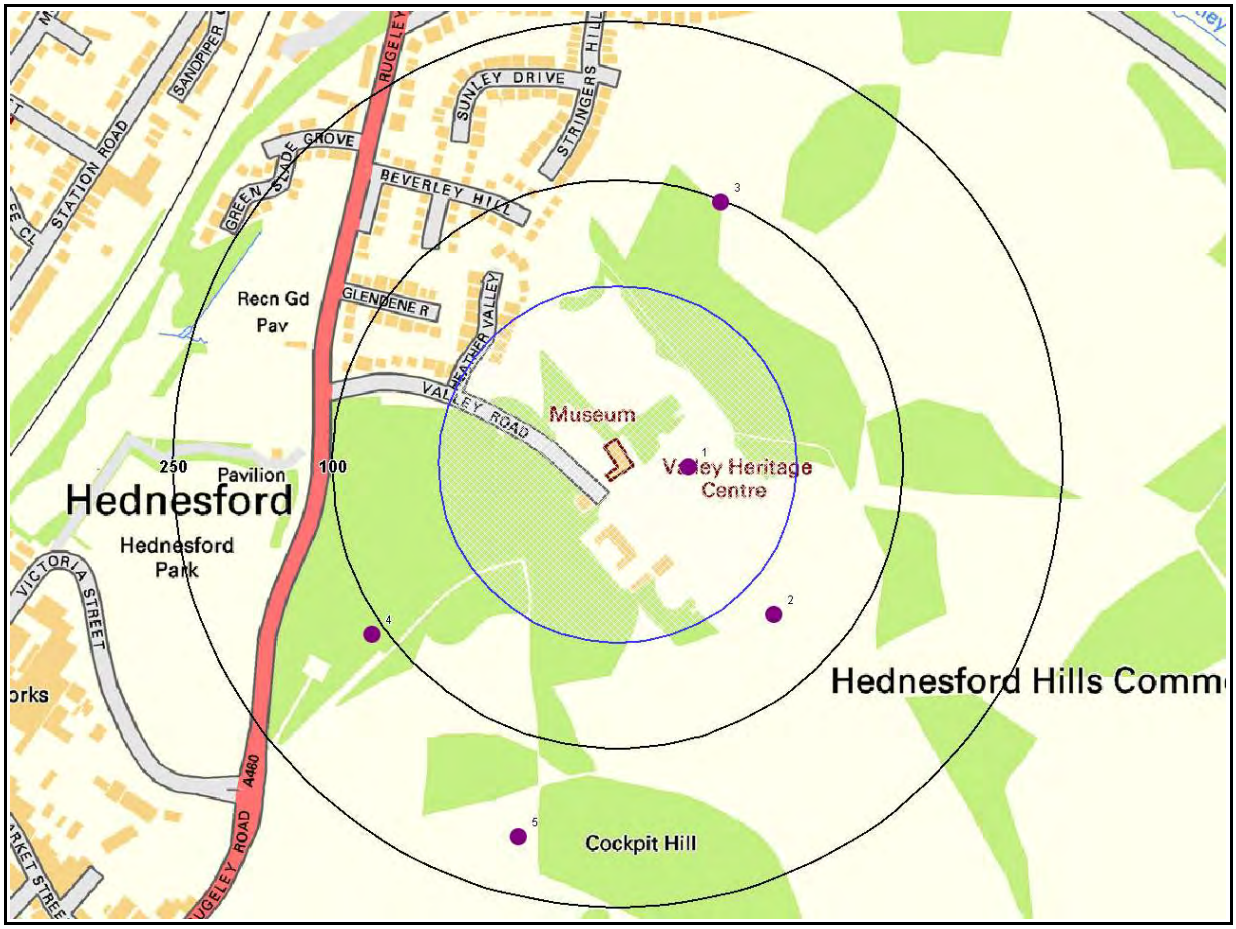
ID	Distance (m)*	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

5. Borehole Records Map

NW N NE

W E

SW S SE



Borehole Records Legend

Site Outline

Borehole Locations

125
250
Search Buffers (m)

5.Borehole Records

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

Records of boreholes within 250m of the study site boundary: **5**

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length (m)	Borehole Name
1	0.0	On Site	400800,312720	SK01SW14	353.26	CANNOCK & RUGELEY COLL NO.1 HEDNESFORD
2	36.0	SE	400880,312580	SK01SW15	-1.0	CANNOCK & RUGELEY COLL NO.2 HEDNESFORD
3	98.0	N	400830,312970	SK01SW74	96.92	POOL PIT NO.4 HEDNESFORD
4	113.0	SW	400502,312562	SK01SW78	74.67	HEDNESFORD HILLS 4
5	197.0	S	400640,312370	SK01SW73	74.67	POOL PIT NO.3 HEDNESFORD

6.Estimated Background Soil Chemistry

Records of background estimated soil chemistry within 250m of the study site boundary: 1

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

			Estimated Geometric Mean Soil Concentrations (mg/kg)				
Distance (m)*	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	40 - 60 mg/kg	<15 mg/kg	<150 mg/kg

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

7. Contacts

GroundSure Helpline
Telephone: 08444 159 000
info @ groundsure.com

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

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

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

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

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

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

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

Acknowledgements

Standard Terms and Conditions

1 Definitions

In these conditions unless the context otherwise requires:

"Beneficiary"means the Client or the customer of the Client for whom the Client has procured the Services.

"Commercial"means any building which is not Residential.

"Commission"means an order for Consultancy Services submitted by a Client.

"Consultancy Services" mean consultancy services provided by GroundSure including, without limitation, carrying out interpretation of third party and in-house environmental data, provision of environmental consultancy advice, undertaking environmental audits and assessments, Site investigation, Site monitoring and related items.

"Content" means any data, database or other information contained in a Report or Mapping which is provided to GroundSure by a Data Provider.

"Contract" means the contract between GroundSure and the Client for the performance of the Services which arises upon GroundSure's acceptance of an Order or Commission and which shall incorporate these conditions, the relevant GroundSure User Guide, proposal by GroundSure and the content of any subsequent report, and any agreed amendments in accordance with clause 11.

"Client" means the party that submits an Orderor Commission.

"Data Provider" means any third party providing Content to GroundSure.

"Data Report" means reports comprising factual data with no professional interpretation in respect ofthe level of likely risk and/or liability available from GroundSure.

"GroundSure" means GroundSure Limited, a company registered in England and Wales under number 03421028 and whose registered office is at Greater London House, Hampstead Road, London NW1 7EJ.

"Intellectual Property" means any patent, copyright, design rights, service marks, moral rights, data protection rights, know-how, trademark or any other intellectual property rights.

"Mapping" an historical map or a combination of historical maps of various ages, time periods and scales available from GroundSure.

"Order" means an order form submitted by the Client requiring Services from GroundSure in respect of a specified Site.

"Order Website" means online platform via which Orders may be placed.

"Report" means a Risk Screening Report or Data Report for commercial or residential property available from GroundSure relating to the Site prepared in accordance with the specifications set out in the relevant User Guide.

"Residential" means any building used as or suitable for use as an individual dwelling.

"Risk Screening Report" means one of GroundSure's risk screening reports, comprising factual data with interpretation in respect ofthe level of likely risk and/or liability, excluding **"Consultancy Services"**.

"Services" means the provision of any Report, Mapping or Consultancy Services which GroundSure has agreed to carry out for the Client/Beneficiary on these terms and conditions in respect of the Site.

"Site"means the landsite in respect of which GroundSure provides the Services.

"User Guide" means the relevant current version of the user guide, available upon request from GroundSure.

2 Scope of Services

2.1 GroundSure agrees to carry out the Services in accordance with the Contract and to the extent set out therein.

2.2 GroundSure shall exercise all the reasonable skill, care and diligence to be expected of experienced environmental consultants in the performance of the Services.

2.3 The Client acknowledges that it has not relied on any statement or representation made by or on behalf of GroundSure which is not set out and expressly agreed in the Contract.

2.4 Terms and conditions appearing on a Client's order form, printed stationery or other communication, including invoices, to GroundSure, its employees, servants, agents or other representatives or any terms implied by custom, practice or course of dealing shall be of no effect and these terms and conditions shall prevail over all others.

2.5 In the event that a Client/Beneficiary opts to take out insurance in conjunction with or as a result of the Services, such insurance shall be subject solely to the terms of any policy issued to it in that respect and GroundSure will have no liability therefore.

2.6 GroundSure's quotations/proposals are valid for a period of 30 days only. GroundSure reserves the right to withdraw any quotation at any time before GroundSure accepts an Order or Commission. GroundSure's acceptance of an Order or Commission shall be effective only where such acceptance is in writing and signed by GroundSure's authorised representative or where accepted via GroundSure's Order Website.

3 The Client's obligations

3.1 The Client shall ensure the Beneficiary complies with and is bound by the terms and conditions set out in the Contract and shall provide that Groundsure may in its own right enforce such terms and conditions against the Beneficiary pursuant to the Contracts (Rights of Third parties) Act 1999. The Client shall be liable for all breaches of the Contract by the Beneficiary as if they were breaches by the Client. The Client shall be solely responsible for ensuring that the Report/Mapping ordered is appropriate and suitable for the Beneficiary's needs.

3.2 The Client shall (or shall procure that the Beneficiary shall) supply to GroundSure as soon as practicable and without charge all information necessary and accurate relevant data including any specific and/or unusual environmental information relating to the Site known to the Client/Beneficiary which may pertain to the Services and shall give such assistance as GroundSure shall reasonably require in the performance of the Services (including, without limitation, access to a Site, facilities and equipment as agreed in the Contract).

3.3 Where Client/Beneficiary approval or decision is required, such approval or decision shall be given or procured in reasonable time as not to delay or disrupt the performance of any other part of the Services.

3.4 The Client shall not and shall not knowingly permit the Beneficiary to, save as expressly permitted by these terms and conditions, re-sell, alter, add to, amend or use out of context the content of any Report, Mapping or, in respect of any Services, information given by GroundSure. For the avoidance of doubt, the Client and Beneficiary may make the Report, Mapping or GroundSure's findings available to a third party who is considering acquiring the whole or part of the Site, or providing funding in relation to the Site, but such third party cannot rely on the same unless expressly permitted under clause 4.

3.5 The Client is responsible for maintaining the confidentiality of its user name and password if using GroundSure's internet ordering service and accepts responsibility for all activity that occurs under such account and password.

4 Reliance

4.1 Upon full payment of all relevant fees and subject to the provisions of these terms and conditions, the Client and Beneficiary are granted an irrevocable royalty-free licence to access the information contained in a Report, Mapping or in a report prepared by GroundSure in respect of or arising out of Consultancy Services. The Services may only be used for the benefit of the Client and those persons listed in clauses 4.2 and 4.3.

4.2 In relation to Data Reports, Mapping and Risk Screening Reports, the Client shall be entitled to make Reports available to (i) the Beneficiary, (ii) the Beneficiary's professional advisers, (iii) any person providing funding to the Beneficiary in relation to the Site (whether directly or as part of a lending syndicate), (iv) the first purchaser or first tenant of the Site (v) the professional advisers and lenders of the first purchaser or tenant of the Site. Accordingly GroundSure shall have the same duties and obligations to those persons in respect of the Services as it has to the Client and those persons shall have the benefit of any of the Client's rights under the Contract as if those persons were parties to the Contract. For the avoidance of doubt, the limitations of GroundSure's liability as set out in clauses 7 and 11.6 shall apply.

4.3 In relation to Consultancy Services, reliance shall be limited to the Client, Beneficiary and named parties on the Report.

4.4 Save as set out in clauses 4.2 and 4.3 and unless otherwise agreed in writing with GroundSure, any other party considering the information supplied by GroundSure as part of the Services, including (but not limited to) insurance underwriters, does so at their own risk and GroundSure has no legal obligations to such party unless otherwise agreed in writing.

4.5 The Client shall not and shall not knowingly permit any person (including the Beneficiary) who is provided with a copy of any Report, (except as permitted herein or by separate agreement with GroundSure) to,: (a) remove, suppress or modify any trade mark, copyright or other proprietary marking from the Report or Mapping; (b) create any product which is derived directly or indirectly from the data contained in the Report or Mapping; (c) combine the Report or Mapping with, or incorporate the Report or Mapping into any other information data or service; or (d) re-format or otherwise change (whether by modification, addition or enhancement) data or images contained in the Report or Mapping.

4.6 Notwithstanding clause 4.5, if the Client acts in a professional capacity, it may make reasonable use of a Report and/or findings made as a result of Consultancy Services to advise Beneficiaries. However, GroundSure shall have no liability in respect of any opinion or report given to such Beneficiaries by the Client or a third party.

5 Fees and Disbursements

5.1 GroundSure shall charge the Client fees at the rate and frequency specified in the Contract together, in the case of Consultancy Services, with all proper disbursements incurred by GroundSure in performing the Services. For the avoidance of doubt, the fees payable for the Services are as set out in GroundSure's written proposal, Order Website or Order acknowledgement form. The Client shall in addition pay all value added tax or other tax payable on such fees and disbursements in relation to the provision of the Services.

5.2 Unless GroundSure requires prepayment, the Client shall promptly pay all fees disbursements and other monies due to GroundSure in full without deduction, counterclaim or set off together with such value added tax or other tax as may be required within 30 days from the date of GroundSure's invoice or such other period as may be agreed in writing between GroundSure and the Client (**"Payment Date"**). GroundSure reserves the right to charge interest which shall accrue on a daily basis from 30 days after the date of Payment Date until the date of payment (whether before or after judgment) at the rate of five per cent per annum above the Bank of England base rate from time to time.

5.3 In the event that the Client disputes the amount payable in respect of GroundSure's invoice it shall notify GroundSure no later than 28 days after the date thereof that it is in dispute. In default of such notification the Client shall be deemed to have agreed the amount thereof. As soon as reasonably practicable following receipt of a notification in respect of any disputed invoice, a member of the management team at GroundSure shall contact the Client and the parties shall use all reasonable endeavours to resolve the dispute.

6 Intellectual Property

6.1 Subject to the provisions of clause 4.1, the Client and the Beneficiary hereby acknowledge that all Intellectual Property in the Services and Content are and shall remain owned by either GroundSure or the Data Providers and nothing in these terms purports to transfer or assign any rights to the Client or the Beneficiary in respect of the Intellectual Property.

6.2 The Client shall acknowledge the ownership of the Content where such Content is incorporated or used in the Client's own documents, reports, systems or services whether or not these are supplied to a third party.

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

6.4 The Client acknowledges that the proprietary rights subsisting in copyright, database rights and any other intellectual property rights in respect of any data and information contained in any Report are and shall remain (subject to clause 11.1) the property of GroundSure and/or any third party that has supplied data or information used to create a Report, and that these conditions do not purport to grant, assign or transfer any such rights in respect thereof to a Client and/or a Beneficiary.

6.5 The Client and each of the parties set out in clause 4.2 are permitted to make up to 8 (commercial) or 2 (residential) printed copies of the Report only. Further copies of the Report may not be made in whole or in part without the prior written permission of GroundSure who shall be entitled to make a charge for each additional copy.

6.6 The Client shall (and shall procure that any recipients of the Report as permitted under clause 4.2 shall):

(i) not remove, suppress or modify any trademark, copyright or other proprietary marking belonging to GroundSure or any third party from the Services;

(ii) use the information obtained as part of the Services in respect of the subject Site only, and shall not store or reuse any information obtained as part of the Services provided in respect of adjacent or nearby sites;

(iii) not create any product or report which is derived directly or indirectly from the data contained in the Services (save that those acting in a professional capacity to the Beneficiary may provide advice based upon the Services);
(iv) not combine the Services with or incorporate such Services into any other information data or service; and
(v) not reformat or otherwise change (whether by modification, addition or enhancement), data contained in the Services (save that those acting in a professional capacity to the Beneficiary shall not be in breach of this clause 6.6(v) where such reformatting is in the normal course of providing advice based upon the Services),
in each case of parts (iii) to (v) inclusive, whether or not such product or report is produced for commercial profit or not.
6.7 The Client and/or Beneficiary shall and shall procure that any party to whom the Services are made available shall notify GroundSure of any request or requirement to disclose, publish or disseminate any information contained in the Services in accordance with the Freedom of Information Act 2000, the Environmental Information Regulations 2004 or any associated legislation or regulations in force from time to time.

7. Liability

7.1 Nothing in these terms and conditions shall limit GroundSure's liability for causing death or personal injury through negligence or willful default.
7.2 Save as otherwise set out in these conditions, any information provided by one party ("**Disclosing Party**") to the other party ("**Receiving Party**") shall be treated as confidential except so far as authorised by the Disclosing Party to provide such information in whole or in part to a third party.
7.3 Nothing in these conditions shall affect the statutory rights of a consumer under the applicable consumer protection legislation from time to time.
7.4 In relation to Data Reports, Mapping and Risk Screening Reports, GroundSure's liability under the Contract shall cease upon the expiry of six years from the date when the Beneficiary became aware that it may have a claim against GroundSure in respect of the Services provided always that there shall be no liability at the expiration of twelve years from the completion of the Contract. For the avoidance of doubt, any claims in respect of which proceedings are notified to GroundSure in writing prior to the expiry of the time periods referred to in this clause shall survive the expiry of those time periods provided any such claim is actually commenced within six months of notification.
7.5 In relation to Consultancy Services GroundSure's liability under the Contract shall cease upon the expiry of six years from the date the Services were completed.
7.6 GroundSure shall not be liable to the Client or any person to whom the Client provides a copy of a Data Report, Mapping or Risk Screening Report in any circumstances whatsoever unless arising out of a breach on its part of the obligations set out in the Contract.
7.7 GroundSure shall not be liable if the Data Reports, Mapping or Risk Screening Report are used otherwise than as provided or referred to in these conditions and the relevant User Guide.
7.8 Subject to the provisions of clause 7.3, GroundSure makes no representation, warranties, express or implied, as to the accuracy, reliability, completeness, validity or fitness for purpose of any Content and shall not be liable for any omission, error or inaccuracy in relation thereto unless GroundSure should reasonably have been alerted to any omission, error or inaccuracy in the Content.
7.9 Subject to the provisions of clause 7.1 and irrespective of whether multiple parties make use of the same Services the total liability of GroundSure under or in connection with the Contract, whether in contract in tort for breach of statutory duty or otherwise shall not exceed £10 million per claim or series of connected claims,
7.10 Whilst GroundSure will use all reasonable endeavours to maintain operability of its internet ordering service it will not be liable for any loss or damages caused by a delay or loss of use of such service. The Client shall use GroundSure's internet ordering service at its own risk. GroundSure shall not be responsible for any damage to a Client or permitted assignee's computer, software, modem, telephone or other property resulting from the use of GroundSure's internet ordering service.
7.11 The Client accepts, and shall use all reasonable endeavours to procure that anyone who is provided with a copy of the Report accepts, that it has no claim or recourse to any Data Provider or to GroundSure in respect of the acts or omissions of such Data Providers including Content supplied by them.
7.12 GroundSure shall provide the Services using reasonable skill and care, however, GroundSure shall not be liable for any inaccurate statement or risk rating in a Report which resulted from a reasonable interpretation of the Content.
7.13 Subject to clause 7.1, GroundSure shall not be liable to the Client, the Beneficiary or any third party in contract, tort (including, without limitation, negligence) or for misrepresentation or breach of statutory duty or otherwise in respect of any loss of profits, goodwill, revenue or opportunity, or any indirect or consequential loss (even if such loss was reasonably foreseeable).
7.14 GroundSure undertakes for the duration of the liability periods referred to in clauses 7.4 and 7.5 to maintain professional indemnity insurance in respect of its liabilities under this Contract. GroundSure shall produce evidence of such insurance if requested by the Client. A greater level of cover may be available upon request and agreement with the Client.

8 GroundSure right to suspend or terminate

8.1 In the event that GroundSure reasonably believes that the Client or Beneficiary as applicable has not provided the information or assistance required to enable the proper performance of the Services, GroundSure shall be entitled on fourteen days written notice to suspend all further performance of the Services until such time as any such deficiency has been made good.
8.2 GroundSure may additionally terminate the Contract immediately on written notice in the event that:
(i) the Client shall fail to pay any sum due to GroundSure within 28 days of the Payment Date; or
(ii) the Client (being an individual) has a bankruptcy order made against him or (being a company) shall enter into liquidation whether compulsory or voluntary or have an Administration Order made against it or if a Receiver shall be appointed over the whole or any part of its property assets or undertaking or if the Client is struck off the Register of Companies or dissolved; or
(iii) the Client being a company is unable to pay its debts within the meaning of Section 123 of the Insolvency Act 1986 or being an individual appears unable to pay his debts within the meaning of Section 268 of the Insolvency Act 1986 or if the Client shall enter into a composition or arrangement with the Client's creditors or shall suffer distress or execution to be levied on his goods; or
(iv) the Client or the Beneficiary breaches any material term of the Contract (including, but not limited to, the obligations in clause 4) incapable of remedy or if remediable, is not remedied within 14 days of notice of the breach.

9. Client's Right to Terminate and Suspend

9.1 Subject to clause 10.2, the Client may at any time after commencement of the Services by notice in writing to GroundSure require GroundSure to terminate or suspend immediately performance of all or any of the Services.
9.2 The Client waives all and any right of cancellation it may have under the Consumer Protection (Distance Selling) Regulations 2000 (as amended) in respect of the Order of a Report/Mapping. This does not affect the Beneficiary's statutory rights.

10 Consequences of Withdrawal, Termination or Suspension

10.1 Upon termination or any suspension of the Services, GroundSure shall take steps to bring to an end the Services in an orderly manner, vacate any Site with all reasonable speed and shall deliver to the Client/Beneficiary any property of the Client/ Beneficiary in GroundSure's possession or control.
10.2 In the event of termination/suspension of the Contract under clauses 8 or 9, the Client shall pay to GroundSure all and any fees payable in respect of the performance of the Services up to the date of termination/suspension. In respect of any Consultancy Services provided, the Client shall also pay GroundSure any additional costs incurred in relation to the termination/suspension of the Contract.

11 General

11.1 The mapping contained in the Services is protected by Crown copyright and must not be used for any purpose outside the context of the Services or as specifically provided in these terms.
11.2 GroundSure reserves the right to amend these terms and conditions. No variation to these terms shall be valid unless signed by an authorised representative of GroundSure.
11.3 No failure on the part of GroundSure to exercise and no delay in exercising, any right, power or provision under these terms and conditions shall operate as a waiver thereof.
11.4 Save as expressly provided in clauses 4.2, 4.3, 6.3 and 11.5, no person other than the persons set out therein shall have any right under the Contract (Rights of Third Parties) Act 1999 to enforce any terms of the Contract.
11.5 The Secretary of State for Communities and Local Government acting through Ordnance Survey may enforce breach of clause 6.1 of these terms and conditions against the Client in accordance with the provisions of the Contracts (Rights of Third Parties) Act 1999.
11.6 GroundSure shall not be liable to the Client if the provision of the Services is delayed or prevented by one or more of the following circumstances:
(i) the Client or Beneficiary's failure to provide facilities, access or information;
(ii) fire, storm, flood, tempest or epidemic;
(iii) Acts of God or the public enemy;
(iv) riot, civil commotion or war;
(v) strikes, labour disputes or industrial action;
(vi) acts or regulations of any governmental or other agency;
(vii) suspension or delay of services at public registries by Data Providers; or
(viii) changes in law.
11.7 Any notice provided shall be in writing and shall be deemed to be properly given if delivered by hand or sent by first class post, facsimile or by email to the address, facsimile number or email address of the relevant party as may have been notified by each party to the other for such purpose or in the absence of such notification the last known address.
11.8 Such notice shall be deemed to have been received on the day of delivery if delivered by hand, facsimile or email and on the second working day after the day of posting if sent by first class post.
11.9 The Contract constitutes the entire contract between the parties and shall supersede all previous arrangements between the parties.
11.10 Each of the provisions of the Contract is severable and distinct from the others and if one or more provisions is or should become invalid, illegal or unenforceable, the validity and enforceability of the remaining provisionsshall not in any way be tainted or impaired.
11.11 These terms and conditions shall be governed by and construed in accordance with English law and any proceedings arising out of or connected with these terms and conditions shall be subject to the exclusive jurisdiction of the English courts.
11.12 If the Client or Beneficiary has a complaint about the Services, notice can be given in any format eg writing, phone, email to the Compliance Officer at GroundSure who will respond in a timely manner.

EmapSite
Masdar House,
Eversley, RG27 0RP

GroundSure Reference:	S EMS-127424_174678
Your Reference:	EMS_127424_174678
Report Date:	May 12, 2011
Report Delivery Method:	**xml**
Client Email:	sales@emapsite.com

GroundSure EnviroInsight

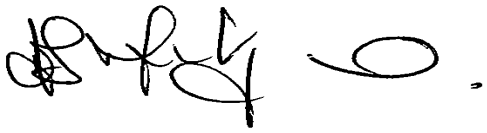
Address: Hednesford Hills

Dear Sir/Madam,

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

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above GroundSure reference number.

Yours faithfully,



Managing Director
Groundsure Limited

Enc.
GroundSure EnviroInsight

GroundSure EnviroInsight

Address: Hednesford Hills

Date: May 12, 2011

GroundSure Reference: S EMS-127424_174678

Your Reference: EMS_127424_174678

Client: EmapSite

Brought to you by GroundSure

Aerial Photograph of Study Site

Site Name: Hednesford Hills
Grid Reference: 400733,312723
Size of Site: 8.89 ha

Overview of Findings

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

Report Section	Number of records found within (X) m of the study site boundary					
1. Environmental Permits, Incidents and Registers	on-site	0-50	51-250	251-500	501-1000	1000-1500
1.1 Industrial Sites Holding Environmental Permits and/or Authorisations						
Records of historic IPC Authorisations	0	0	0	0	-	-
Records of Part A(1) and IPPC Authorised Activities	0	0	0	0	-	-
Records of Water Industry Referrals (potentially harmful discharges to the public sewer)	0	0	0	0	-	-
Records of Red List Discharge Consents (potentially harmful discharges to controlled waters)	0	0	0	0	-	-
Records of List 1 Dangerous Substances Inventory sites	0	0	0	0	-	-
Records of List 2 Dangerous Substances Inventory sites	0	0	0	0	-	-
Records of Part A(2) and Part B Activities and Enforcements	1	0	0	3	-	-
Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0	-	-
Records of Licensed Discharge Consents	0	0	0	2	-	-
Records of Planning Hazardous Substance Consents and Enforcements	0	0	0	0		
1.2 Records of COMAH and NIHHS sites	0	0	0	0	-	-
1.3 Environment Agency Recorded Pollution Incidents						
National Incidents Recording System, List 2	0	0	1	-	-	-
National Incidents Recording System, List 1	0	0	0	-	-	-
1.4 Sites Determined as Contaminated Land under Part IIA EPA 1990	0	0	0	0	-	-

2. Landfill and Other Waste Sites	on-site	0-50	51-250	251-500	501-1000	1000-1500
2.1 Landfill Sites						
Environment Agency Registered Landfill Sites	0	0	0	0	0	-
Landfill Data – Operational Landfill Sites	0	0	0	0	1	-
Environment Agency Historic Landfill Sites	0	0	1	2	7	8
Landfill Data – Non-Operational Landfill Sites	0	0	0	0	2	-
BGS/DoE Landfill Site Survey	0	0	0	0	0	0
GroundSure Local Authority Landfill Sites Data	0	0	0	4	3	2
2.2 Landfill and Other Waste Sites Findings						
Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	1	-	-
Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	-	-
Environment Agency Licensed Waste Sites	0	0	0	3	2	1

3. Current Land Uses	on-site	0-50	51-250	251-500	501-1000	1000-1500
3.1 Current Industrial Sites Data	0	0	3	-	-	-
3.2 Records of Petrol and Fuel Sites	0	0	0	1	-	-
3.3 Underground High Pressure Oil and Gas Pipelines	0	0	0	0	-	-

4. Geology	Description
4.1 Are there any records of Artificial Ground and Made Ground present beneath the study site? *	No
4.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site? *	No
4.3 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
Source: Scale: 1:50,000 BGS Sheet 154	

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

5. Hydrogeology and Hydrology	on-site	0-50	51-250	251-500	501-1000	1001-2000
5.1 Are there any records of Productive Strata in the Superficial Geology within 500m of the study site?				Yes		
5.2 Are there any records of Productive Strata in the Bedrock Geology within 500m of the study site?				Yes		
5.3 Groundwater Abstraction Licences (within 1000m of the study site).	0	0	0	0	0	-
5.4 Surface Water Abstraction Licences (within 1000m of the study site).	0	0	0	0	0	-
5.5 Potable Water Abstraction Licences (within 2000m of the study site).	0	0	0	0	0	0
5.6 Are there any Source Protection Zones within 500m of the study site?					Yes	

5.7 River Quality	on-site	0-50	51-250	251-500	501-1000	1001-1500
Is there any Environment Agency information on river quality within 1500m of the study site?	No	No	No	No	No	No
5.8 Detailed River Network entries within 500m of the site	0	0	0	8	-	-
5.9 Surface water features within 250m of the study site	No	No	Yes	-	-	-

6. Flooding	
6.1 Are there any Environment Agency indicative Zone 2 floodplains within 250m of the study site?	No
6.2 Are there any Environment Agency indicative Zone 3 floodplains within 250m of the study site?	No
6.3 Are there any Flood Defences within 250m of the study site?	No
6.4 Are there any areas benefiting from Flood Defences within 250m of the study site?	No
6.5 Are there any areas used for Flood Storage within 250m of the study site?	No
6.6 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Very Low
6.7 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	Low

7. Designated Environmentally Sensitive Sites	on-site	0-50	51-250	251-500	501-1000	1001-1500
7.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	-	-
7.2 Records of National Nature Reserves (NNR)	0	0	0	0	-	-

7.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	-	-
7.3 Records of Local Nature Reserves (LNR)	1	0	0	0	-	-
7.4 Records of Special Areas of Conservation (SAC)	0	0	0	0	-	-
7.5 Records of Special Protection Areas (SPA)	0	0	0	0	-	-
7.6 Records of Ramsar sites	0	0	0	0	-	-
7.7 Records of World Heritage Sites	0	0	0	0	-	-
7.8 Records of Environmentally Sensitive Areas	0	0	0	0	-	-
7.9 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	1	-	-
7.10 Records of National Parks	0	0	0	0	-	-
7.11 Records of Nitrate Sensitive Areas	0	0	0	0	-	-
7.12 Records of Nitrate Vulnerable Zones	1	0	0	0	-	-

8. Natural Hazards

8.1 What is the maximum risk of natural ground subsidence?	Very Low

9. Mining

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

Using this Report

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

1. Environmental Permits, Incidents and Registers

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

2. Landfills and Other Waste Sites

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

3. Current Land Uses

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

4. Geology

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

5. Hydrogeology and Hydrology

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

6. Flooding

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

7. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites. These searches are conducted using radii of up to 500m.

8. Natural Hazards

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

9. Mining

Provides information on areas of coal and shallow mining.

10. Contacts

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

Note: Maps

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

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

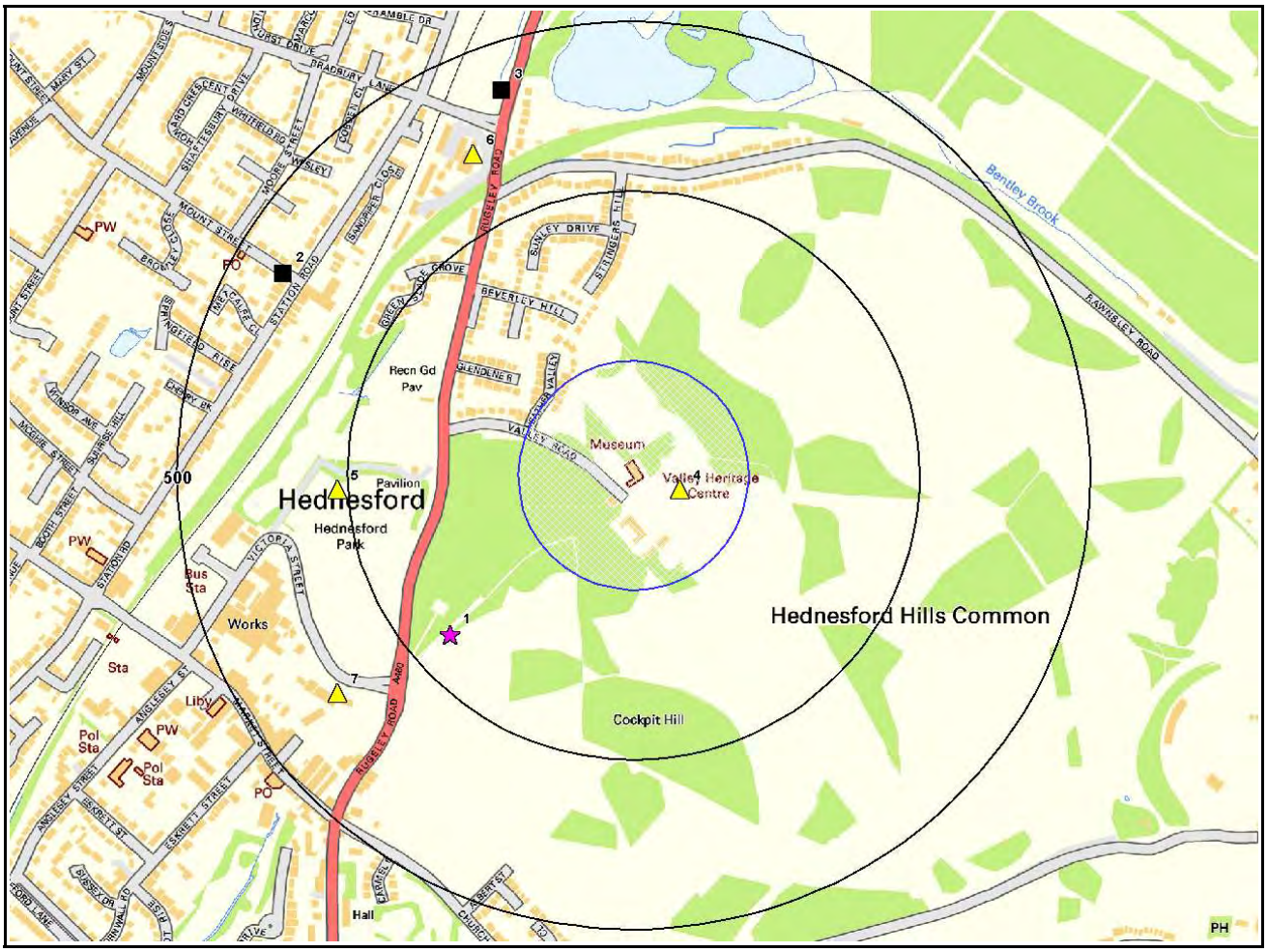
All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Environmental Permits, Incidents and Registers Map

NW ▲ N NE

◄W E►

SW ▼ S SE



Authorisations,Incidents and Registers Legend

Enabled by Ordnance Survey

- Site Outline
- Search Buffers (m) — 250 — 500
- Recorded Pollution Incident
- Dangerous Substances (List 1)
- Dangerous Substances (List 2)
- Water Industry Referrals
- Licenced Discharge Consents
- Red List Discharge Consents
- RAS 3 & 4 Authorisations
- Part A(1) Authorised Processes and Historic IPC Authorisations
- Part A(2) and Part B Authorised Processes
- COMAH / NIHHS Sites
- Sites Determined as Contaminated Land
- Hazardous Substance Consents and Enforcements

1.Environmental Permits, Incidents and Registers

1.1 Industrial Sites Holding Licences and/or Authorisations

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

Records of historic IPC Authorisations within 500m of the study site: **0**

Database searched and no data found.

Records of Part A(1) and IPPC Authorised Activities within 500m of the study site: **0**

Database searched and no data found.

Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site: **0**

Database searched and no data found.

Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site: **0**

Database searched and no data found.

Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site: **0**

Database searched and no data found.

Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site: **0**

Database searched and no data found.

Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site: **4**

The following Part A(2) and Part B Activities are represented as points on the Authorisations, Incidents and Registers map:

ID	Distance	Direction	NGR	Details	
4	0.0	On Site	400800, 312700	Address: Fives Gge Cannock Chase Enterprise Centre, Rugeley Rd,ws12 5qu Process: Waste Oil Burning Process Status: Unknown Permit Type: Part B	Enforcement: Data requested, not received. Date of Enforcement: Data requested, not received. Comment: Data requested, not received.

5	266.0	W	400300, 312700	Address: Marshalls Mono Ltd Cannock Wood Ind Est, Ws12 5pl Process: Cement/lime/mortar Process Status: Unknown Permit Type: Part B	Enforcement: Data requested, not received. Date of Enforcement: Data requested, not received. Comment: Data requested, not received.
6	358.0	NW	400498, 313194	Address: Fives Garage Autobody Repairs, Unit 501, Cnk Chase Ent Cnt Rug. Rd, Hford, Ws12 5qu Process: Waste Oil Burners Status: Not Given Permit Type: Part B	Enforcement: Data requested, not received. Date of Enforcement: Data requested, not received. Comment: Data requested, not received.
7	372.0	SW	400300, 312400	Address: Atp Automotive Transmissions Ltd Victoria St, Ws12 5bu Process: Waste Oil Burning Process Status: Unknown Permit Type: Part B	Enforcement: Data requested, not received. Date of Enforcement: Data requested, not received. Comment: Data requested, not received.

Records of Category 3 or 4 Radioactive Substance Licences within 500m of the study site: **0**

Database searched and no data found.

Records of Licensed Discharge Consents within 500m of the study site: **2**

The following Licensed Discharge Consents records are represented as points on the Authorisations, Incidents and Registers map:

ID	Distance	Direction	NGR	Details	
2	425.0	NW	400220, 313021	Address: Mount Street Cso., ., ., WS12 4UA Effluent Type: Sewage Discharges - Sewer Storm Overflow - Water Company Permit Number: TSC1326 Permit Version: 1	Receiving Water: Trib Of Bentley Brook Status: Appeal By Applicant, Revised By Sec.of State (section 39) Issue date: 14/4/2009 Effective Date: 14/4/2009 Revocation Date: -
3	430.0	N	400540, 313290	Address: Station Road, Hednesford Effluent Type: Sewage Discharges - Sewer Storm Overflow - Water Company Permit Number: T/05/21307/O Permit Version: 1	Receiving Water: Rising Brook Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: 17/3/1992 Effective Date: 17/3/1992 Revocation Date: -

Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site: **0**

Database searched and no data found.

1.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: **0**

Database searched and no data found.

1.3 Environment Agency Recorded Pollution Incidents

Records of National Incidents Recording System, List 2 within 250m of the study site: **1**

The following NIRS List 2 records are represented as points on the Authorisations, Incidents and Registers Map:

ID	Distance	Direction	NGR	Details	
1	189.0	SW	400464, 312489	Incident Date: 15/11/2001 Incident Identification: 42964 Pollutant: Inorganic Chemicals/Products Pollutant Description: Other Inorganic Chemical or Product	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

Records of National Incidents Recording System, List 1 within 250m of the study site: **0**

Database searched and no data found.

1.4 Sites Determined as Contaminated Land under Part IIA EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site? **0**

Database searched and no data found.

2. Landfill and Other Waste Sites Map

NW ▲ N NE

◄W E►

SW ▼ S SE

Landfill & Other Waste Sites Legend

- Site Outline
- 250 / 500 Search Buffers (m)
- E.A. Active Landfill
- E.A. Historic Landfill (Area Data)
- E.A. Historic Landfill (Point Data)
- BGS / DoE Survey Landfill
- Local Authority Landfill (Area Data)
- Local Authority Landfill (Point Data)
- Operational Waste Treatment Licence
- Closed Waste Treatment Licence
- REGIS Waste Licence
- Operational Landfill
- Closed Landfill

2. Landfill and Other Waste Sites

2.1 Landfill Sites

Records from Environment Agency landfill data within 1000m of the study site: **0**

Database searched and no data found.

Records of operational landfill sites sourced from Landmark within 1000m of the study site: **1**

The following landfill records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance	Direction	NGR	Details	
Not shown	957.0	NE	401300, 313695	Site Address: Hednesford Quarry, Rugeley Road, Hednesford, CANNOCK, Staffordshire, Agency Reference: EAWML40720 Waste Type: Inert Waste Description: Inert Landfill Known Restrictions: No known restriction on source of waste	Record Date: 01-Jun-1995 Transfer Date: Modification Date: 01-Nov-1999 Status: Operational as far as is known Category: LANDFILL Regulator: EA - Midlands Region - Upper Trent Area (Staffs Fradley) Size: Very Large (>250,000 tonnes/year)

Records of Environment Agency historic landfill sites within 1500m of the study site: **18**

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance	Direction	NGR	Details	
5	119.0	W	400400, 312600	Site Address: Hednesford Park, Hednesford, Cannock, Staffordshire Waste Licence: - Site Reference: CANNOCK AREA 32, 9999/9582 Waste Type: , Household Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -
6	315.0	SW	400300, 312300	Site Address: Hednesford Park Landfill Site, South Side of No 32, Hednesford, Cannock, Staffordshire Waste Licence: - Site Reference: CANNOCK AREA 33, 9999/9612 Waste Type: , Household Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -
7	349.0	N	400900, 313400	Site Address: Hednesford Quarry, Hednesford Quarry, Cannock, Staffordshire Waste Licence: Yes Site Reference: 7/A/84/0248, 9999/9687 Waste Type: - Regis Reference: BD1/L/INT001	Licence Issue: 16/08/1984 Licence Surrendered: - Licence Hold Address: - Operator: -
Not shown	553.0	N	400700, 313500	Site Address: BCA Hednesford Gravel Pit, Hednesford , Near Cannock, Staffordshire Waste Licence: Yes Site Reference: 7/D/77/0108, WDL/B96, B12b, 9999/9686 Waste Type: , Industrial, Liquid sludge Regis Reference: -	Licence Issue: 04/10/1977 Licence Surrendered: 17/03/1993 Licence Hold Address: Portland House, Stag Place, London Operator: -
Not shown	664.0	SE	401200, 311900	Site Address: Land Between 241 and 301 Littleworth Road, Littleworth Road, Hednesford, Cannock, Staffordshire Waste Licence: - Site Reference: CANNOCK AREA 26, 9999/9584 Waste Type: , Household Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -

Not shown	675.0	SW	400400, 311800	Site Address: Playing Field, Wood Lane, Off Wood Lane, Littleworth, Cannock, Staffordshire Waste Licence: - Site Reference: CANNOCK AREA 59, 9999/9558 Waste Type: , Household Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -
Not shown	824.0	S	400900, 311700	Site Address: South Of Littleworth Road, South Of Littleworth Road, Hednesford, Cannock, Staffordshire Waste Licence: - Site Reference: CANNOCK AREA 25, 9999/9618 Waste Type: , Household Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -
Not shown	906.0	SW	399900, 311800	Site Address: Landfill Site Off Stafford Lane, Corner of Site No 66, Off Stafford Lane, Hednesford, Cannock, Staffordshire Waste Licence: - Site Reference: CANNOCK AREA 39, 9999/9576 Waste Type: , Household Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -
Not shown	907.0	SW	399800, 311600	Site Address: Landfill Site Off East Cannock Road, East Cannock Road, West Of Littleworth, Cannock, Staffordshire Waste Licence: - Site Reference: CANNOCK AREA 66, 9999/9551 Waste Type: , Waste unknown Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -
Not shown	914.0	SW	399700, 312200	Site Address: Land At Junction Of Cannock Road and Stafford Lane, Cannock Road and Stafford Lane, Hednesford, Cannock, Staffordshire Waste Licence: - Site Reference: CANNOCK AREA 79, 9999/9607 Waste Type: Inert, Industrial Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -
Not shown	1012.0	SW	399500, 311900	Site Address: Landfill To The South East Of High Town, 2 Sites Alongside Railway off Stafford Lane, Adjacent To Cannock Road, Hednesford, Cannock, Staffordshire Waste Licence: - Site Reference: CANNOCK AREA 38, 9999/9577 Waste Type: - Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -
Not shown	1055.0	S	400900, 311200	Site Address: Hednesford Brickworks, Off Sharon Way And Hill Street, Hednesford, Cannock, Staffordshire Waste Licence: - Site Reference: CANNOCK AREA 68, 9999/9549 Waste Type: , Industrial, Household Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -
Not shown	1083.0	E	402100, 312500	Site Address: Landfill Site North Of Rawnsley, Rawnsley, Cannock, Staffordshire Waste Licence: - Site Reference: CANNOCK AREA 65, 9999/9552 Waste Type: - Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -
Not shown	1147.0	SE	401300, 311400	Site Address: Landfill Site Off Arthur Street, Off Arthur Street, Wimblebury, Cannock, Staffordshire Waste Licence: - Site Reference: CANNOCK AREA 71, 9999/9546 Waste Type: , Household Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -

Not shown	1246.0	W	399300, 312200	Site Address: Haig Close Landfill Site, Haig Close, High Town, Cannock, Staffordshire Waste Licence: - Site Reference: CANNOCK AREA 67, 9999/9550 Waste Type: - Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -
Not shown	1308.0	SE	401300, 311300	Site Address: Landfill Site Off Biggott Street, Off Biggott Street, Wimblebury, Cannock, Staffordshire Waste Licence: - Site Reference: CANNOCK AREA 34, 9999/9581 Waste Type: - Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -
Not shown	1324.0	NW	399300, 313600	Site Address: Off Green Heath Road Landfill Site, Green Heath Road, Hednesford, Cannock, Staffordshire Waste Licence: - Site Reference: CANNOCK AREA 24, 9999/9585 Waste Type: , Household Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -
Not shown	1461.0	W	399100, 312100	Site Address: Land Fronting John Street And Moreton Street, John Street / Moreton Street, Chadsmoor, Cannock, Staffordshire Waste Licence: - Site Reference: CANNOCK AREA 37, 9999/9578 Waste Type: Inert, Household Regis Reference: -	Licence Issue: - Licence Surrendered: - Licence Hold Address: - Operator: -

Records of non-operational landfill sites sourced from Landmark within 1000m of the study site: 2

The following landfill records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance	Direction	NGR	Details	
Not shown	610.0	N	400700, 313500	Site Address: Hednesford Gravel Pit, CANNOCK, Staffordshire, Landfill Licence: 380AFRAL Agency Reference: Waste Type: Inert Waste Description: Inert Landfill Known Restrictions: No known restriction on source of waste	Record Date: 01-Oct-1977 Transfer Date: Modification Date: 01-Mar-1983 Status: Licence lapsed/cancelled/defunct/not applicable/surrendered Category: LANDFILL Regulator: EA - Midlands Region - Upper Trent Area (Staffs Fradley) Size: Very Small (<10,000 tonnes/year)
Not shown	961.0	NE	401300, 313700	Site Address: Hednesford Quarry, Rugeley Road, Hednesford, CANNOCK, Staffordshire, Landfill Licence: 380AJFAL Agency Reference: Waste Type: Inert Waste Description: Inert Landfill Known Restrictions: No known restriction on source of waste	Record Date: 01-Aug-1984 Transfer Date: Modification Date: Status: Record superseded Category: LANDFILL Regulator: EA - Midlands Region - Upper Trent Area (Staffs Fradley) Size: Very Large (>250,000 tonnes/year)

Records of BGS/DoE non-operational landfill sites within 1500m of the study site: 0

Database searched and no data found.

Records of Local Authority landfill sites within 1500m of the study site: 9

The following landfill records are represented as points or polygons on the Landfill and Other Waste Sites map:

ID	Distance	Direction	Site Address	Source	Data Type

29B	252.0	NW	Refuse Tip	1968 mapping	Polygon
30B	252.0	NW	Refuse Tip	1968 mapping	Polygon
31B	260.0	NW	Refuse Tip	1969 mapping	Polygon
32B	260.0	NW	Refuse Tip	1968 mapping	Polygon
Not shown	691.0	SE	Refuse Tip	1968 mapping	Polygon
Not shown	692.0	SE	Refuse Tip	1968 mapping	Polygon
Not shown	958.0	SW	Stagborough Way/Berry HillSwallowfield Drive, Hednesford, Cannock, WS12 1UB	Cannock Chase Council	Polygon
Not shown	1126.0	SW	75-79, 93-103 Stagborough Way/100-108 Stafford Lane, Open space to North-West	Cannock Chase Council	Point
Not shown	1127.0	SW	Playing field opp Wood Lane, Hednesford	Cannock Chase Council	Point

2.2 Other Waste Sites

Records of operational waste treatment, transfer or disposal sites within 500m of the study site: 1

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance	Direction	NGR	Details	
4	373.0	NW	400457, 313188	Site Address: Unit 8/11 Bestmoor Industrial Estate, Station Road, Hednesford, CANNOCK, Staffordshire, Landfill Licence: B31ABFAL EA Reference: EAWML42803 Waste Type: Putrescible Rating: Putrescible Transfer Known Restrictions: No known restriction on source of waste	Record Date: 01-Mar-1998 Transfer Date: Modification Date: Status: Operational as far as is known Category: TRANSFER Regulator: EA - Midlands Region - Upper Trent Area (Staffs Fradley) Size: Large (< 250,000 tonnes/year)

Records of non-operational waste treatment, transfer or disposal sites within 500m of the study site: 0

Database searched and no data found.

Records of Environment Agency licensed waste sites within 1500m of the study site: 6

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance	Direction	NGR	Details	
23A	339.0	NW	400466, 313153	Site Address: Bestmoor Industrial Estate, Unit 8/12, Station Road, Hednesford, Walsall, Staffordshire, WS12 5QU Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Regis Licence Number: WIL002 EPR reference: - Operator: Willets Mr A J Waste Management licence No: 42803 Annual Tonnage: 156000.0	Issue Date: 06/03/1998 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Alda Skip Hire Correspondence Address: -, 11, Westbourne Avenue, Cannock, Staffordshire, WS11 2AN
24A	339.0	NW	400466, 313153	Site Address: Units 8/12 Bestmoor Ind Est, Station Road, Hednesford, Cannock, Staffordshire, WS12 5QS Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Regis Licence Number: ALD001 EPR reference: GP3097FE/T003 Operator: Alda Skip Hire Ltd Waste Management licence No: 42803 Annual Tonnage: 156000.0	Issue Date: 06/03/1998 Effective Date: 12/01/2007 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired Site Name: Alda Skip Hire Correspondence Address: -, -

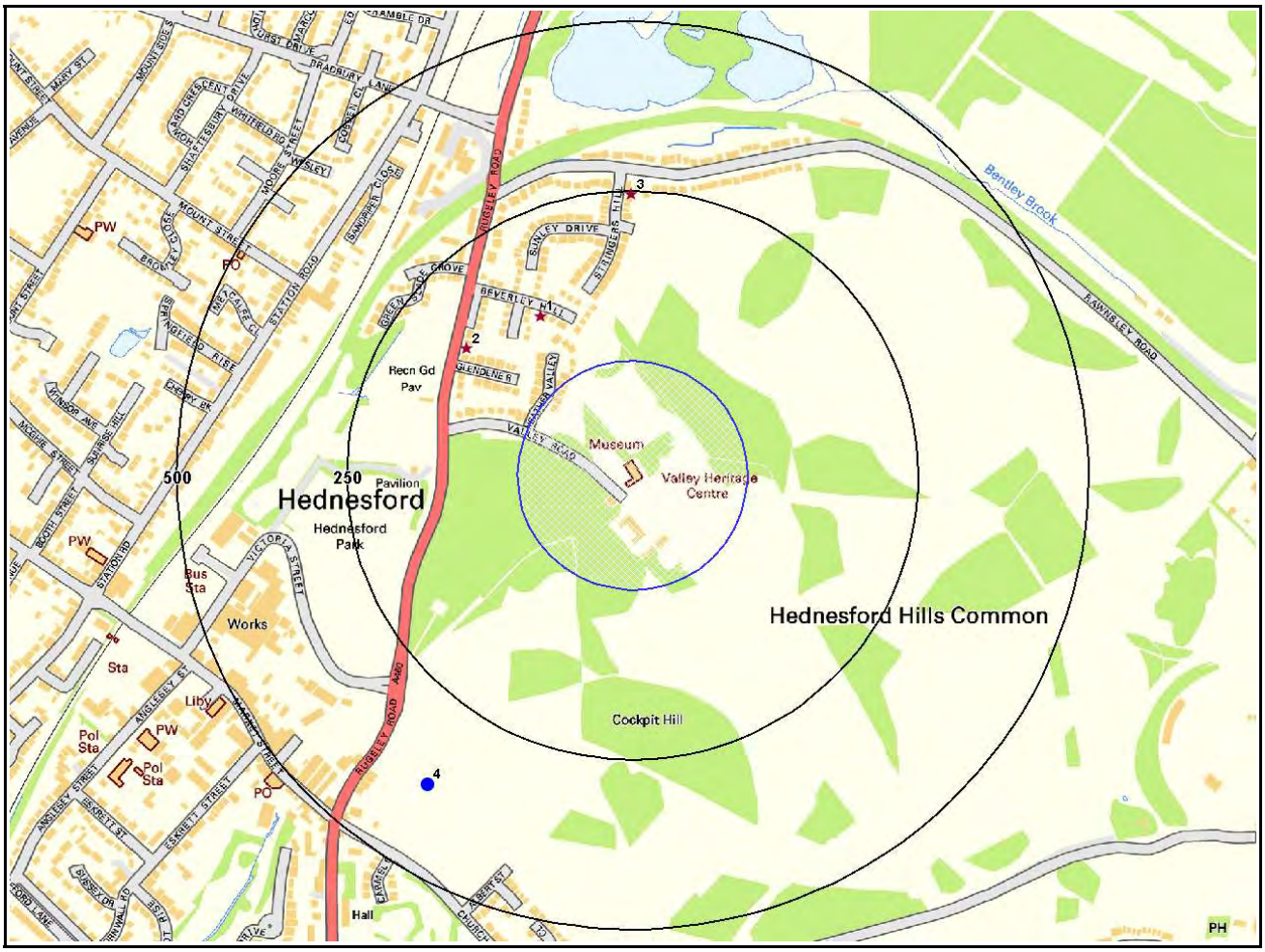
25	360.0	NW	400442, 313163	Site Address: Unit 8 - 12 Bestmore Works, Station Road, Hednesford, Staffs, WS12 0QS Type: HCI Waste Transfer Station Size: < 25000 tonnes Regis Licence Number: WDC002 EPR reference: EP3590LE/A001 Operator: W D Cooper Recycling Ltd Waste Management licence No: 101131 Annual Tonnage: 0.0	Issue Date: 04/12/2009 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Bestmore Works Transfer Station Correspondence Address: -, -
Not shown	603.0	N	400789, 313492	Site Address: Hednesford Quarry, Rugeley Road, Hednesford, Cannock, Staffordshire, WS12 0QZ Type: Landfill taking other wastes Size: >= 75000 tonnes Regis Licence Number: INT001 EPR reference: GP3496FY/V002 Operator: Interay Ltd Waste Management licence No: 41415 Annual Tonnage: 436800.0	Issue Date: 16/08/1984 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired Site Name: Cannock Tippping Ltd - Hednesford Quarry Correspondence Address: -, -
Not shown	995.0	W	399570, 312743	Site Address: Stanley Road, Hednesford, Cannock, Staffordshire, WS12 4AX Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Regis Licence Number: JKS001 EPR reference: NP3996FN/S002 Operator: J & K Supplies Waste Management licence No: 42121 Annual Tonnage: 3600.0	Issue Date: 22/06/1992 Effective Date: - Modified: - Surrendered Date: 12/08/2005 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: J & K Supplies Correspondence Address: -, -
Not shown	1341.0	N	400793, 314231	Site Address: Cannock Chase Enterprise Centre, Unit 606, Rugeley Road, Walkers Rise, Hednesford, Staffordshire, WS12 5QU Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Regis Licence Number: WIL001 EPR reference: WP3596FE/A001 Operator: Willetts Mr Alan John Waste Management licence No: 42166 Annual Tonnage: 24960.0	Issue Date: 28/10/1991 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Alda Skip Hire Correspondence Address: -, -

3. Current Land Use Map

NW N NE

◄W E►

SW S SE



Current Land Use Legend

Enabled by Ordnance Survey

Site Outline

250
500
Search Buffers (m)

Current Industrial Sites

Petrol & Fuel Sites

Underground High Pressure Oil & Fuel Pipelines

3. Current Land Uses

3.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: **3**

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

ID	Distance	Direction	Company	Address	Activity	Category
1	103.0	NW	Classic Stairlift Services	40, Beverley Hill, Hednesford, Cannock, WS12 1QL	Disability and Mobility Equipment	Consumer Products
2	139.0	NW	Electricity Sub Station	WS12	Electrical Features	Infrastructure and Facilities
3	246.0	N	Electricity Sub Station	WS12	Electrical Features	Infrastructure and Facilities

3.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: **1**

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

ID	Distance	Direction	NGR	Company	Address	LPG	Status
4	378.0	SW	400432, 312268	Obsolete	Park Filling Station, Uxbridge Street, Uxbridge Street, Hednesford, Cannock, Staffordshire, WS12 1QW	Not Applicable	Obsolete

3.3 Underground High Pressure Oil and Gas Pipelines

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

Database searched and no data found.

4. Geology

4.1 Artificial Ground and Made Ground

Database searched and no data found.

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

4.2 Superficial Ground and Drift Geology

Database searched and no data found.
The database has been searched on site, including a 50m buffer.

4.3 Bedrock and Solid Geology

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

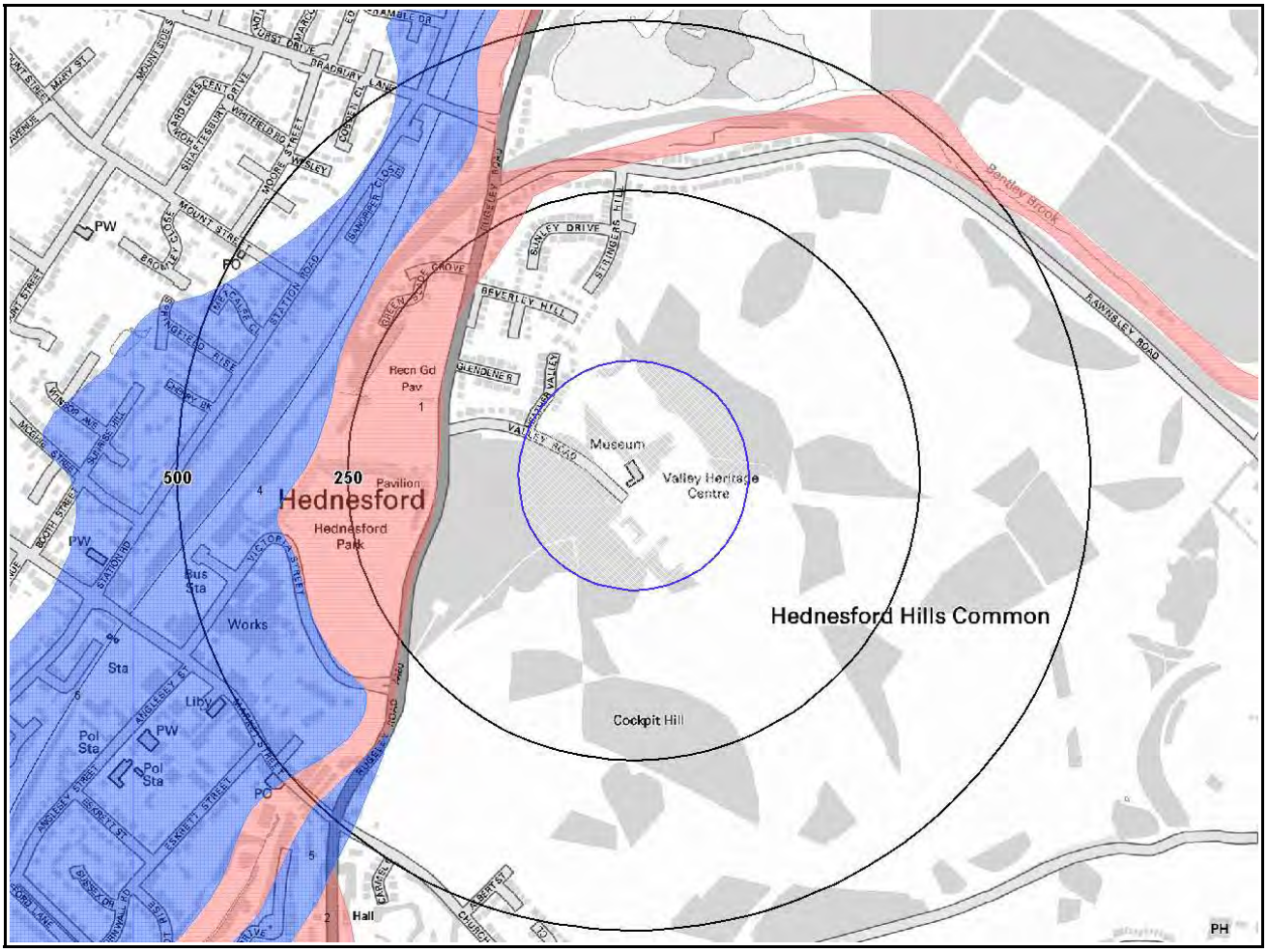
LEX Code	Description	Rock Type
KDM-SCON	KIDDERMINSTER FORMATION	INTERBEDDED SANDSTONE AND CONGLOMERATE

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

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

5a. Hydrogeology - Aquifer Within Superficial Geology

NW N NE



W E

SW S SE

Aquifer Within Superficial Geology Legend

Enabled by Ordnance Survey

Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

5b. Hydrogeology - Aquifer Within Bedrock Geology and Abstraction Licenses

NW N NE

W E

SW S SE

Aquifer Within Bedrock Geology Legend

Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

Groundwater Abstraction Licence

Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

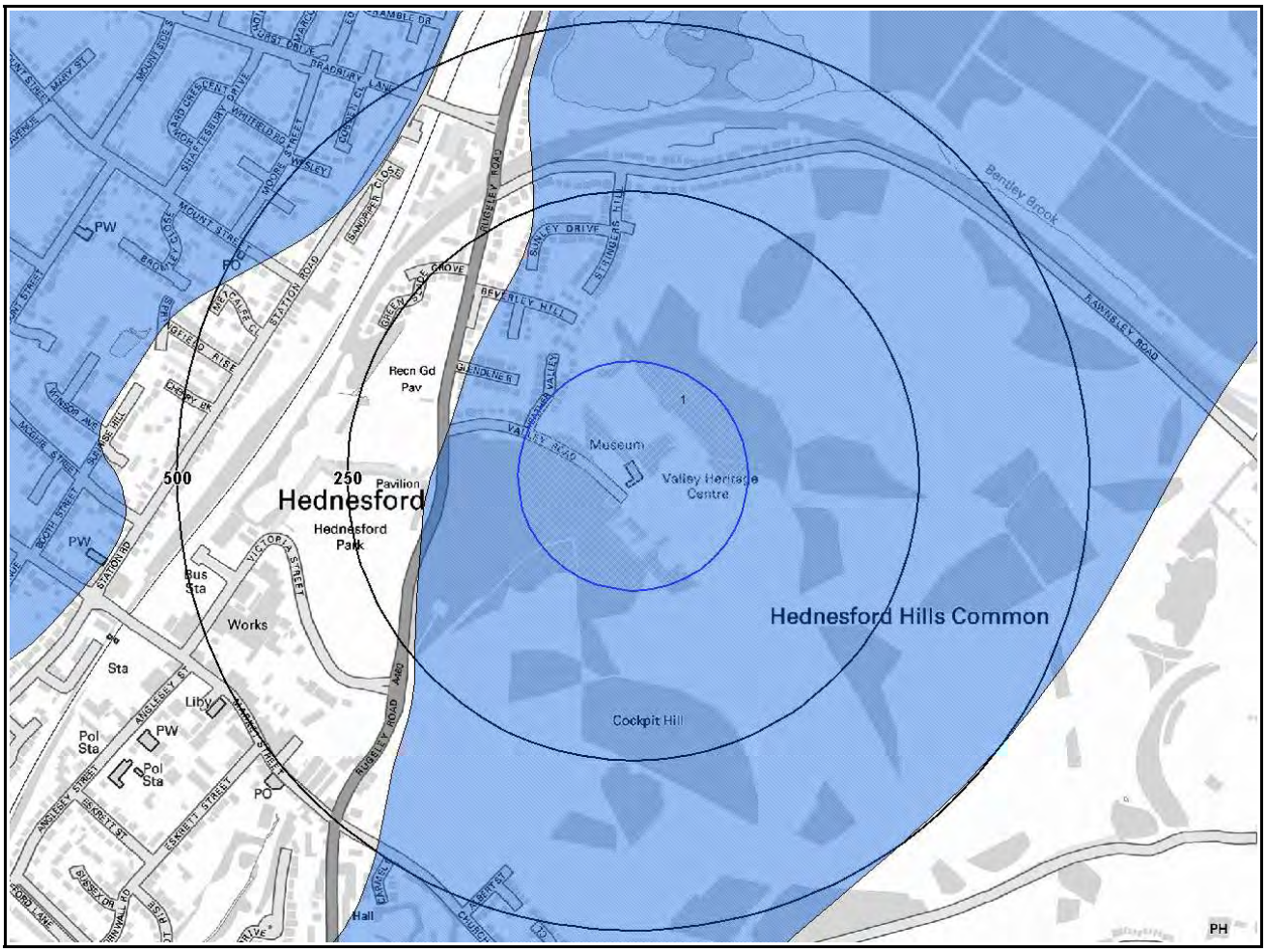
Surface Water Abstraction Licence

5c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses

NW N NE

W E

SW S SE



SPZ and Potable Water Abstraction Licenses
Legend

Site Outline

250
500
Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2 - Outer Catchment

Source Protection Zone 3 - Total Catchment

Source Protection Zone 4 - Zone of Special Interest

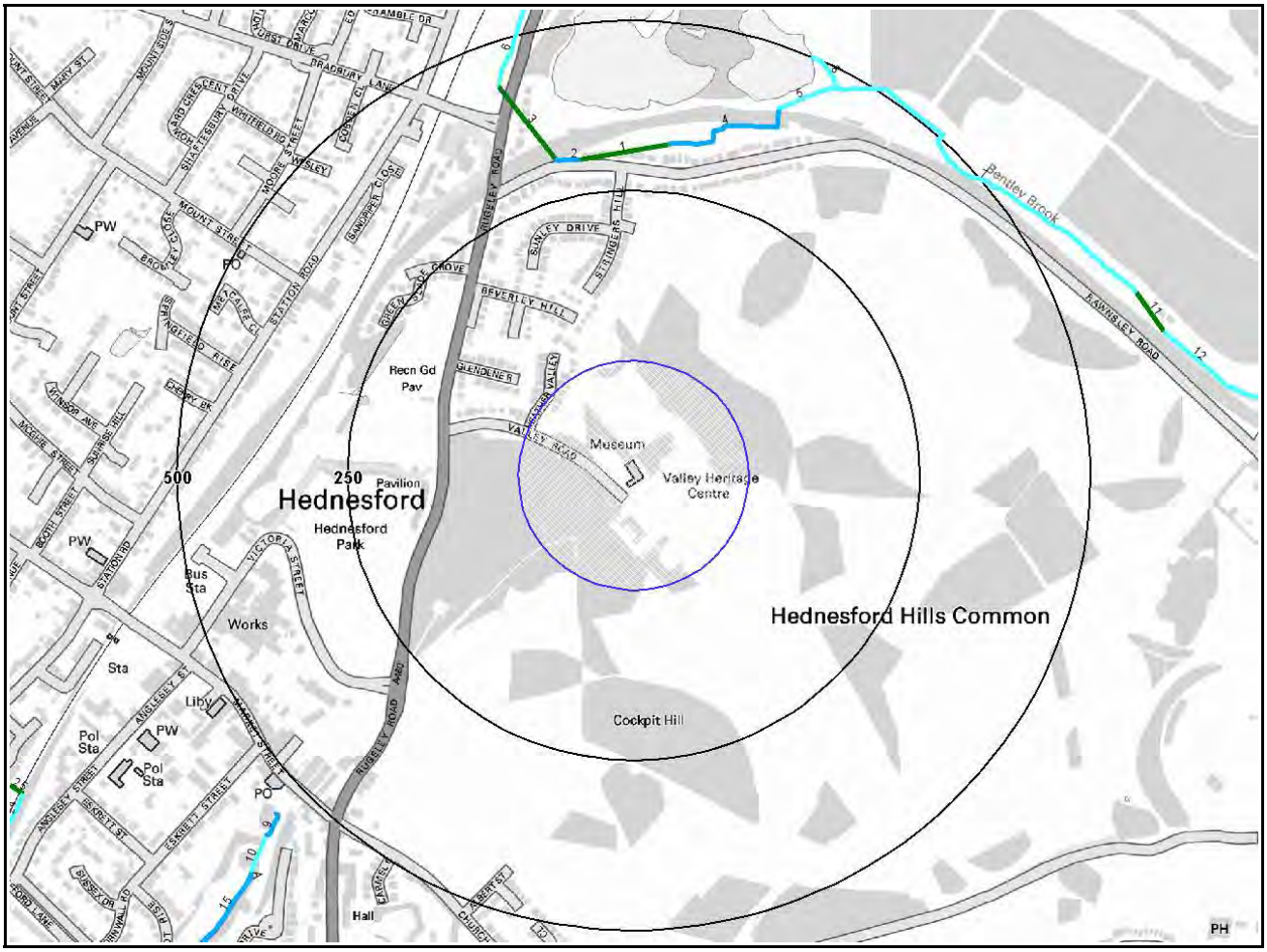
Potable Water Abstraction Licence

5d. Hydrology – Detailed River Network and River Quality

NW N NE

W E

SW S SE



Hydrology Legend

Site Outline

250
500
Search Buffers (m)

Primary River
Secondary River
Tertiary River
Lake/Reservoir
Underground River (inferred)
General Quality Assessment: Chemistry

Canal
Canal Tunnel
Extended Culvert (greater than 50m)
D/S of High Water Mark
D/S seaward extension
General Quality Assessment: Biology

5.Hydrogeology and Hydrology

5.1 Aquifer within Superficial Deposits

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

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

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

ID	Distance [m]	Direction	Designation	Description
1	118.0	W	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
4	289.0	W	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
5	351.0	SW	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

5.2 Aquifer within Bedrock Deposits

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

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

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

ID	Distance [m]	Direction	Designation	Description
1	0.0	On Site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

5.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 1000m of the study site? No

Database searched and no data found.

5.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 1000m of the study site? No

Database searched and no data found.

5.5 Potable Water Abstraction Licences

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

Database searched and no data found.

5.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site? **Yes**

The following Source Protection Zones records are represented on the SPZ and Potable Water Abstraction Map (5c):

ID	Distance	Direction	Type	Description
1	0.0	On Site	3	Total Catchment

5.7 River Quality

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

Biological Quality:

Database searched and no data found.

Chemical Quality:

Database searched and no data found.

5.8 Detailed River Network

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

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

ID	Distance	Direction		Details
1	302.0	N	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Extended Culvert (greater than 50m) Catchment: - Drain: NO Main River Status: Currently Undefined
2	302.0	N	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Catchment: - Drain: NO Main River Status: Currently Undefined
3	312.0	N	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Extended Culvert (greater than 50m) Catchment: - Drain: NO Main River Status: Currently Undefined
4	321.0	N	River Name: Bentley Brook Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Catchment: - Drain: NO Main River Status: Currently Undefined

5	410.0	N	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
6	436.0	N	River Name: Rising Brook Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
7	472.0	NE	River Name: Bentley Brook Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
8	472.0	NE	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined

5.9 Surface Water Features

Are there any surface water features within 250m of the study site? **Yes**

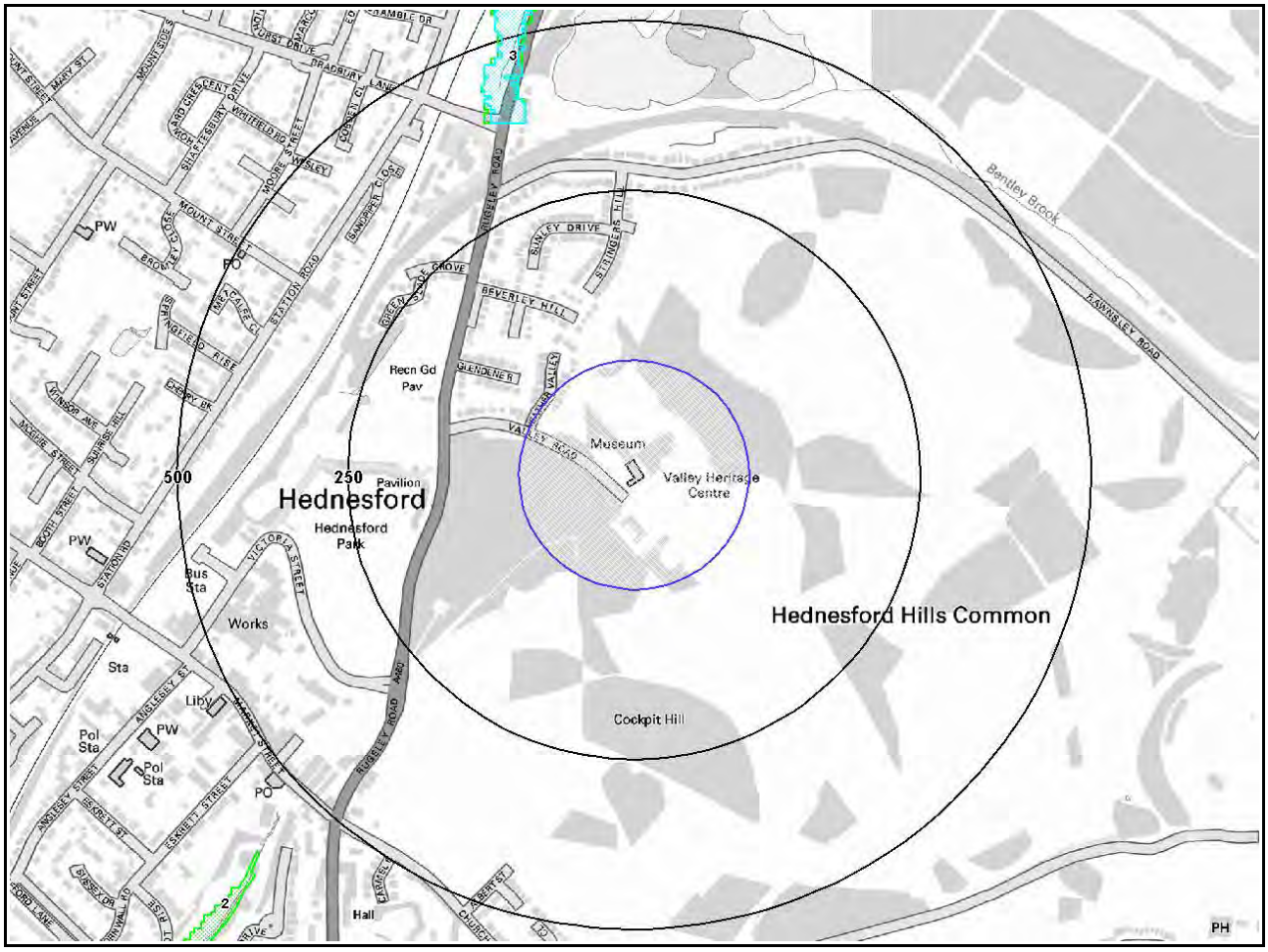
The following surface water records are not represented on mapping:

Distance to Surface Water (m)	on-site	0-50	51-250
Surface water features within 250m of the study site	No	No	Yes

6. Environment Agency Flood Map

NW ▲ N NE

◄W



E► SW ▼ S SE

Environment Agency Flood Legend

Site Outline

250
500
Search Buffers (m)

Zone 2 Floodplain

Zone 3 Floodplain

Flood Storage Area

Area Benefiting from Flood Defences

Flood Defences

6. Flooding

6.1 Zone 2 Flooding

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

Is the site within 250m of an Environment Agency indicative Zone 2 floodplain? **No**

Database searched and no data found.

6.2 Zone 3 Flooding

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

Is the site within 250m of an Environment Agency indicative Zone 3 floodplain? **No**

Database searched and no data found.

6.3 Flood Defences

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

6.4 Areas benefiting from Flood Defences

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

6.5 Areas used for Flood Storage

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

6.6 Groundwater Flooding Susceptibility Areas

Are there any British Geological Survey groundwater flooding susceptibility flood areas within 50m of the boundary of the study site? **Yes**

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

6.7 Groundwater Flooding Confidence Areas

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

Notes:

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

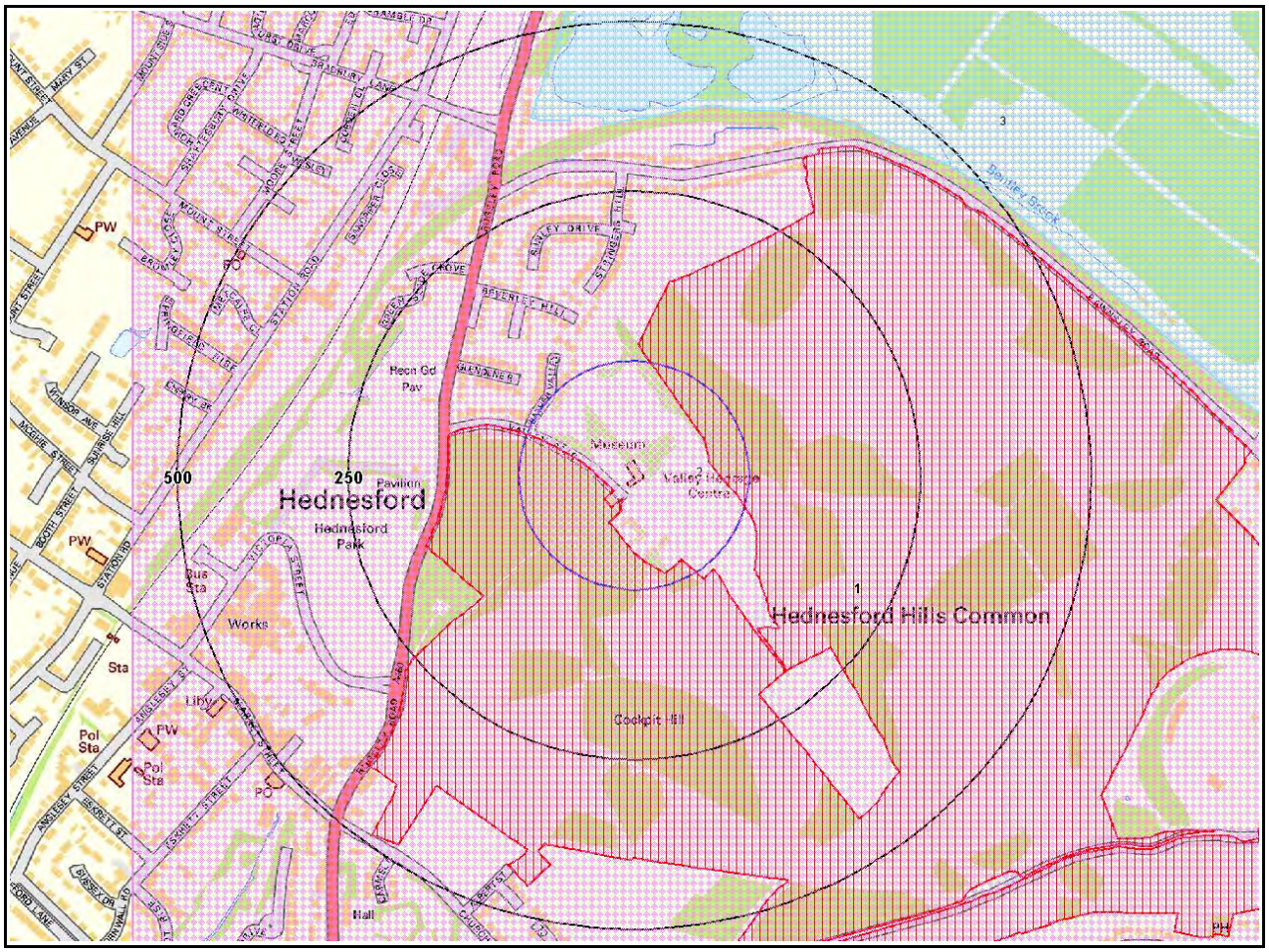
The **confidence rating** is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with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

7.Designated Environmentally Sensitive Sites Map

NW ▲ N NE

◄W E►

SW ▼ S SE



Designated Environmentally Sensitive Sites Legend

- Site Outline
- Search Buffers (m) — 250 — 500
- SAC
- SSSI
- NNR
- World Heritage Sites
- SPA
- Ramsar
- LNR
- Environmentally Sensitive Areas
- Areas of Outstanding Natural Beauty
- Nitrate Sensitive Areas
- National Parks

7.Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 500m of the study site? **Yes**

Records of Sites of Special Scientific Interest (SSSI) within 500m of the study site: **0**

Database searched and no data found.

Records of National Nature Reserves (NNR) within 500m of the study site: **0**

Database searched and no data found.

Records of Special Areas of Conservation (SAC) within 500m of the study site: **0**

Database searched and no data found.

Records of Special Protection Areas (SPA) within 500m of the study site: **0**

Database searched and no data found.

Records of Ramsar sites within 500m of the study site: **0**

Database searched and no data found.

Records of Local Nature Reserves (LNR) within 500m of the study site: **1**

The following Local Nature Reserve (LNR) records provided by Natural England/Countryside Council for Wales and Scottish Natural Heritage are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance	Direction	LNR Name	Data Source
1	0.0	On Site	Hednesford Hills Common	Natural England

Records of World Heritage Sites within 500m of the study site: **0**

Database searched and no data found.

Records of Environmentally Sensitive Areas within 500m of the study site: **0**

Database searched and no data found.

Records of Areas of Outstanding Natural Beauty (AONB) within 500m of the study site: **1**

The following Area of Outstanding Natural Beauty (AONB) records and Scottish National Scenic Area (NSA) records provided by Natural England/Countryside Council for Wales/Scottish Government are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance	Direction	AONB/NSA Name	Data Source
3	350.0	N	Cannock Chase	Natural England

Records of National Parks (NP) within 500m of the study site: 0

Database searched and no data found.

Records of Nitrate Sensitive Areas within 500m of the study site: 0

Database searched and no data found.

Records of Nitrate Vulnerable Zones within 500m of the study site: 1

The following Nitrate Vulnerable Zone records produced by DEFRA are not represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance	Direction	NVZ Name	Data Source
2	0.0	On Site	No place name provided	DEFRA

8. Natural Hazards Findings

8.1 Detailed BGS GeoSure Data

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

8.1.1 Shrink Swell

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

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

Hazard
Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.

8.1.2 Landslides

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

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

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

8.1.3 Soluble Rocks

What is the maximum Soluble Rocks* hazard rating identified on the study site? **Null - Negligible**

Soluble rocks are not present in the search area. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

8.1.4 Compressible Ground

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

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

Hazard
No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

8.1.5 Collapsible Rocks

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

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

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

8.1.6Running Sand

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

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

Hazard
No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

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

9.Mining

9.1 Coal Mining

Are there any coal mining areas within 75m of the study site? **Yes**

The following coal mining information provided by the Coal Authority is not represented on Mapping:

Distance	Direction	Details
0.0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

9.2 Shallow Mining

What is the subsidence hazard relating to shallow mining on-site*? **Negligible**

*Please note this data is searched with a 150m buffer.

9.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site? **No**

Database searched and no data found.

10.Contacts

GroundSure Helpline
Telephone: 08444 159 000
info @ groundsure.com

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

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

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

The Coal Authority
200 Lichfield Lane, Mansfield, Notts NG18 4RG
Tel: 0845 762 6848. DX 716176 Mansfield 5
www.coal-authority.co.uk
Coal mining reports and related enquiries

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

Local Authority
Authority: Cannock Chase District Council
Phone: 01543 462621
Web: www.cannockchasedc.gov.uk
Address: PO Box 28, Beecroft Road, Cannock, Staffordshire, WS11 1BG

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

Standard Terms and Conditions

1 Definitions

In these conditions unless the context otherwise requires:

"Beneficiary"means the Client or the customer of the Client for whom the Client has procured the Services.

"Commercial"means any building which is not Residential.

"Commission"means an order for Consultancy Services submitted by a Client.

"Consultancy Services" mean consultancy services provided by GroundSure including, without limitation, carrying out interpretation of third party and in-house environmental data, provision of environmental consultancy advice, undertaking environmental audits and assessments, Site investigation, Site monitoring and related items.

"Content" means any data, database or other information contained in a Report or Mapping which is provided to GroundSure by a Data Provider.

"Contract" means the contract between GroundSure and the Client for the performance of the Services which arises upon GroundSure's acceptance of an Order or Commission and which shall incorporate these conditions, the relevant GroundSure User Guide, proposal by GroundSure and the content of any subsequent report, and any agreed amendments in accordance with clause 11.

"Client" means the party that submits an Orderor Commission.

"Data Provider" means any third party providing Content to GroundSure.

"Data Report" means reports comprising factual data with no professional interpretation in respect ofthe level of likely risk and/or liability available from GroundSure.

"GroundSure" means GroundSure Limited, a company registered in England and Wales under number 03421028 and whose registered office is at Greater London House, Hampstead Road, London NW1 7EJ.

"Intellectual Property" means any patent, copyright, design rights, service marks, moral rights, data protection rights, know-how, trademark or any other intellectual property rights.

"Mapping" an historical map or a combination of historical maps of various ages, time periods and scales available from GroundSure.

"Order" means an order form submitted by the Client requiring Services from GroundSure in respect of a specified Site.

"Order Website" means online platform via which Orders may be placed.

"Report" means a Risk Screening Report or Data Report for commercial or residential property available from GroundSure relating to the Site prepared in accordance with the specifications set out in the relevant User Guide.

"Residential" means any building used as or suitable for use as an individual dwelling.

"Risk Screening Report" means one of GroundSure's risk screening reports, comprising factual data with interpretation in respect ofthe level of likely risk and/or liability, excluding **"Consultancy Services"**.

"Services" means the provision of any Report, Mapping or Consultancy Services which GroundSure has agreed to carry out for the Client/Beneficiary on these terms and conditions in respect of the Site.

"Site"means the landsite in respect of which GroundSure provides the Services.

"User Guide" means the relevant current version of the user guide, available upon request from GroundSure.

2 Scope of Services

2.1 GroundSure agrees to carry out the Services in accordance with the Contract and to the extent set out therein.

2.2 GroundSure shall exercise all the reasonable skill, care and diligence to be expected of experienced environmental consultants in the performance of the Services.

2.3 The Client acknowledges that it has not relied on any statement or representation made by or on behalf of GroundSure which is not set out and expressly agreed in the Contract.

2.4 Terms and conditions appearing on a Client's order form, printed stationery or other communication, including invoices, to GroundSure, its employees, servants, agents or other representatives or any terms implied by custom, practice or course of dealing shall be of no effect and these terms and conditions shall prevail over all others.

2.5 In the event that a Client/Beneficiary opts to take out insurance in conjunction with or as a result of the Services, such insurance shall be subject solely to the terms of any policy issued to it in that respect and GroundSure will have no liability therefore.

2.6 GroundSure's quotations/proposals are valid for a period of 30 days only. GroundSure reserves the right to withdraw any quotation at any time before GroundSure accepts an Order or Commission. GroundSure's acceptance of an Order or Commission shall be effective only where such acceptance is in writing and signed by GroundSure's authorised representative or where accepted via GroundSure's Order Website.

3 The Client's obligations

3.1 The Client shall ensure the Beneficiary complies with and is bound by the terms and conditions set out in the Contract and shall provide that Groundsure may in its own right enforce such terms and conditions against the Beneficiary pursuant to the Contracts (Rights of Third parties) Act 1999. The Client shall be liable for all breaches of the Contract by the Beneficiary as if they were breaches by the Client. The Client shall be solely responsible for ensuring that the Report/Mapping ordered is appropriate and suitable for the Beneficiary's needs.

3.2 The Client shall (or shall procure that the Beneficiary shall) supply to GroundSure as soon as practicable and without charge all information necessary and accurate relevant data including any specific and/or unusual environmental information relating to the Site known to the Client/Beneficiary which may pertain to the Services and shall give such assistance as GroundSure shall reasonably require in the performance of the Services (including, without limitation, access to a Site, facilities and equipment as agreed in the Contract).

3.3 Where Client/Beneficiary approval or decision is required, such approval or decision shall be given or procured in reasonable time as not to delay or disrupt the performance of any other part of the Services.

3.4 The Client shall not and shall not knowingly permit the Beneficiary to, save as expressly permitted by these terms and conditions, re-sell, alter, add to, amend or use out of context the content of any Report, Mapping or, in respect of any Services, information given by GroundSure. For the avoidance of doubt, the Client and Beneficiary may make the Report, Mapping or GroundSure's findings available to a third party who is considering acquiring the whole or part of the Site, or providing funding in relation to the Site, but such third party cannot rely on the same unless expressly permitted under clause 4.

3.5 The Client is responsible for maintaining the confidentiality of its user name and password if using GroundSure's internet ordering service and accepts responsibility for all activity that occurs under such account and password.

4 Reliance

4.1 Upon full payment of all relevant fees and subject to the provisions of these terms and conditions, the Client and Beneficiary are granted an irrevocable royalty-free licence to access the information contained in a Report, Mapping or in a report prepared by GroundSure in respect of or arising out of Consultancy Services. The Services may only be used for the benefit of the Client and those persons listed in clauses 4.2 and 4.3.

4.2 In relation to Data Reports, Mapping and Risk Screening Reports, the Client shall be entitled to make Reports available to (i) the Beneficiary, (ii) the Beneficiary's professional advisers, (iii) any person providing funding to the Beneficiary in relation to the Site (whether directly or as part of a lending syndicate), (iv) the first purchaser or first tenant of the Site (v) the professional advisers and lenders of the first purchaser or tenant of the Site. Accordingly GroundSure shall have the same duties and obligations to those persons in respect of the Services as it has to the Client and those persons shall have the benefit of any of the Client's rights under the Contract as if those persons were parties to the Contract. For the avoidance of doubt, the limitations of GroundSure's liability as set out in clauses 7 and 11.6 shall apply.

4.3 In relation to Consultancy Services, reliance shall be limited to the Client, Beneficiary and named parties on the Report.

4.4 Save as set out in clauses 4.2 and 4.3 and unless otherwise agreed in writing with GroundSure, any other party considering the information supplied by GroundSure as part of the Services, including (but not limited to) insurance underwriters, does so at their own risk and GroundSure has no legal obligations to such party unless otherwise agreed in writing.

4.5 The Client shall not and shall not knowingly permit any person (including the Beneficiary) who is provided with a copy of any Report, (except as permitted herein or by separate agreement with GroundSure) to,: (a) remove, suppress or modify any trade mark, copyright or other proprietary marking from the Report or Mapping; (b) create any product which is derived directly or indirectly from the data contained in the Report or Mapping; (c) combine the Report or Mapping with, or incorporate the Report or Mapping into any other information data or service; or (d) re-format or otherwise change (whether by modification, addition or enhancement) data or images contained in the Report or Mapping.

4.6 Notwithstanding clause 4.5, if the Client acts in a professional capacity, it may make reasonable use of a Report and/or findings made as a result of Consultancy Services to advise Beneficiaries. However, GroundSure shall have no liability in respect of any opinion or report given to such Beneficiaries by the Client or a third party.

5 Fees and Disbursements

5.1 GroundSure shall charge the Client fees at the rate and frequency specified in the Contract together, in the case of Consultancy Services, with all proper disbursements incurred by GroundSure in performing the Services. For the avoidance of doubt, the fees payable for the Services are as set out in GroundSure's written proposal, Order Website or Order acknowledgement form. The Client shall in addition pay all value added tax or other tax payable on such fees and disbursements in relation to the provision of the Services.

5.2 Unless GroundSure requires prepayment, the Client shall promptly pay all fees disbursements and other monies due to GroundSure in full without deduction, counterclaim or set off together with such value added tax or other tax as may be required within 30 days from the date of GroundSure's invoice or such other period as may be agreed in writing between GroundSure and the Client (**"Payment Date"**). GroundSure reserves the right to charge interest which shall accrue on a daily basis from 30 days after the date of Payment Date until the date of payment (whether before or after judgment) at the rate of five per cent per annum above the Bank of England base rate from time to time.

5.3 In the event that the Client disputes the amount payable in respect of GroundSure's invoice it shall notify GroundSure no later than 28 days after the date thereof that it is in dispute. In default of such notification the Client shall be deemed to have agreed the amount thereof. As soon as reasonably practicable following receipt of a notification in respect of any disputed invoice, a member of the management team at GroundSure shall contact the Client and the parties shall use all reasonable endeavours to resolve the dispute.

6 Intellectual Property

6.1 Subject to the provisions of clause 4.1, the Client and the Beneficiary hereby acknowledge that all Intellectual Property in the Services and Content are and shall remain owned by either GroundSure or the Data Providers and nothing in these terms purports to transfer or assign any rights to the Client or the Beneficiary in respect of the Intellectual Property.

6.2 The Client shall acknowledge the ownership of the Content where such Content is incorporated or used in the Client's own documents, reports, systems or services whether or not these are supplied to a third party.

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

6.4 The Client acknowledges that the proprietary rights subsisting in copyright, database rights and any other intellectual property rights in respect of any data and information contained in any Report are and shall remain (subject to clause 11.1) the property of GroundSure and/or any third party that has supplied data or information used to create a Report, and that these conditions do not purport to grant, assign or transfer any such rights in respect thereof to a Client and/or a Beneficiary.

6.5 The Client and each of the parties set out in clause 4.2 are permitted to make up to 8 (commercial) or 2 (residential) printed copies of the Report only. Further copies of the Report may not be made in whole or in part without the prior written permission of GroundSure who shall be entitled to make a charge for each additional copy.

6.6 The Client shall (and shall procure that any recipients of the Report as permitted under clause 4.2 shall):

(i) not remove, suppress or modify any trademark, copyright or other proprietary marking belonging to GroundSure or any third party from the Services;

(ii) use the information obtained as part of the Services in respect of the subject Site only, and shall not store or reuse any information obtained as part of the Services provided in respect of adjacent or nearby sites;

(iii) not create any product or report which is derived directly or indirectly from the data contained in the Services (save that those acting in a professional capacity to the Beneficiary may provide advice based upon the Services);
(iv) not combine the Services with or incorporate such Services into any other information data or service; and
(v) not reformat or otherwise change (whether by modification, addition or enhancement), data contained in the Services (save that those acting in a professional capacity to the Beneficiary shall not be in breach of this clause 6.6(v) where such reformatting is in the normal course of providing advice based upon the Services),
in each case of parts (iii) to (v) inclusive, whether or not such product or report is produced for commercial profit or not.
6.7 The Client and/or Beneficiary shall and shall procure that any party to whom the Services are made available shall notify GroundSure of any request or requirement to disclose, publish or disseminate any information contained in the Services in accordance with the Freedom of Information Act 2000, the Environmental Information Regulations 2004 or any associated legislation or regulations in force from time to time.

7. Liability

7.1 Nothing in these terms and conditions shall limit GroundSure's liability for causing death or personal injury through negligence or willful default.
7.2 Save as otherwise set out in these conditions, any information provided by one party ("**Disclosing Party**") to the other party ("**Receiving Party**") shall be treated as confidential except so far as authorised by the Disclosing Party to provide such information in whole or in part to a third party.
7.3 Nothing in these conditions shall affect the statutory rights of a consumer under the applicable consumer protection legislation from time to time.
7.4 In relation to Data Reports, Mapping and Risk Screening Reports, GroundSure's liability under the Contract shall cease upon the expiry of six years from the date when the Beneficiary became aware that it may have a claim against GroundSure in respect of the Services provided always that there shall be no liability at the expiration of twelve years from the completion of the Contract. For the avoidance of doubt, any claims in respect of which proceedings are notified to GroundSure in writing prior to the expiry of the time periods referred to in this clause shall survive the expiry of those time periods provided any such claim is actually commenced within six months of notification.
7.5 In relation to Consultancy Services GroundSure's liability under the Contract shall cease upon the expiry of six years from the date the Services were completed.
7.6 GroundSure shall not be liable to the Client or any person to whom the Client provides a copy of a Data Report, Mapping or Risk Screening Report in any circumstances whatsoever unless arising out of a breach on its part of the obligations set out in the Contract.
7.7 GroundSure shall not be liable if the Data Reports, Mapping or Risk Screening Report are used otherwise than as provided or referred to in these conditions and the relevant User Guide.
7.8 Subject to the provisions of clause 7.3, GroundSure makes no representation, warranties, express or implied, as to the accuracy, reliability, completeness, validity or fitness for purpose of any Content and shall not be liable for any omission, error or inaccuracy in relation thereto unless GroundSure should reasonably have been alerted to any omission, error or inaccuracy in the Content.
7.9 Subject to the provisions of clause 7.1 and irrespective of whether multiple parties make use of the same Services the total liability of GroundSure under or in connection with the Contract, whether in contract in tort for breach of statutory duty or otherwise shall not exceed £10 million per claim or series of connected claims,
7.10 Whilst GroundSure will use all reasonable endeavours to maintain operability of its internet ordering service it will not be liable for any loss or damages caused by a delay or loss of use of such service. The Client shall use GroundSure's internet ordering service at its own risk. GroundSure shall not be responsible for any damage to a Client or permitted assignee's computer, software, modem, telephone or other property resulting from the use of GroundSure's internet ordering service.
7.11 The Client accepts, and shall use all reasonable endeavours to procure that anyone who is provided with a copy of the Report accepts, that it has no claim or recourse to any Data Provider or to GroundSure in respect of the acts or omissions of such Data Providers including Content supplied by them.
7.12 GroundSure shall provide the Services using reasonable skill and care, however, GroundSure shall not be liable for any inaccurate statement or risk rating in a Report which resulted from a reasonable interpretation of the Content.
7.13 Subject to clause 7.1, GroundSure shall not be liable to the Client, the Beneficiary or any third party in contract, tort (including, without limitation, negligence) or for misrepresentation or breach of statutory duty or otherwise in respect of any loss of profits, goodwill, revenue or opportunity, or any indirect or consequential loss (even if such loss was reasonably foreseeable).
7.14 GroundSure undertakes for the duration of the liability periods referred to in clauses 7.4 and 7.5 to maintain professional indemnity insurance in respect of its liabilities under this Contract. GroundSure shall produce evidence of such insurance if requested by the Client. A greater level of cover may be available upon request and agreement with the Client.

8 GroundSure right to suspend or terminate

8.1 In the event that GroundSure reasonably believes that the Client or Beneficiary as applicable has not provided the information or assistance required to enable the proper performance of the Services, GroundSure shall be entitled on fourteen days written notice to suspend all further performance of the Services until such time as any such deficiency has been made good.
8.2 GroundSure may additionally terminate the Contract immediately on written notice in the event that:
(i) the Client shall fail to pay any sum due to GroundSure within 28 days of the Payment Date; or
(ii) the Client (being an individual) has a bankruptcy order made against him or (being a company) shall enter into liquidation whether compulsory or voluntary or have an Administration Order made against it or if a Receiver shall be appointed over the whole or any part of its property assets or undertaking or if the Client is struck off the Register of Companies or dissolved; or
(iii) the Client being a company is unable to pay its debts within the meaning of Section 123 of the Insolvency Act 1986 or being an individual appears unable to pay his debts within the meaning of Section 268 of the Insolvency Act 1986 or if the Client shall enter into a composition or arrangement with the Client's creditors or shall suffer distress or execution to be levied on his goods; or
(iv) the Client or the Beneficiary breaches any material term of the Contract (including, but not limited to, the obligations in clause 4) incapable of remedy or if remediable, is not remedied within 14 days of notice of the breach.

9. Client's Right to Terminate and Suspend

9.1 Subject to clause 10.2, the Client may at any time after commencement of the Services by notice in writing to GroundSure require GroundSure to terminate or suspend immediately performance of all or any of the Services.
9.2 The Client waives all and any right of cancellation it may have under the Consumer Protection (Distance Selling) Regulations 2000 (as amended) in respect of the Order of a Report/Mapping. This does not affect the Beneficiary's statutory rights.

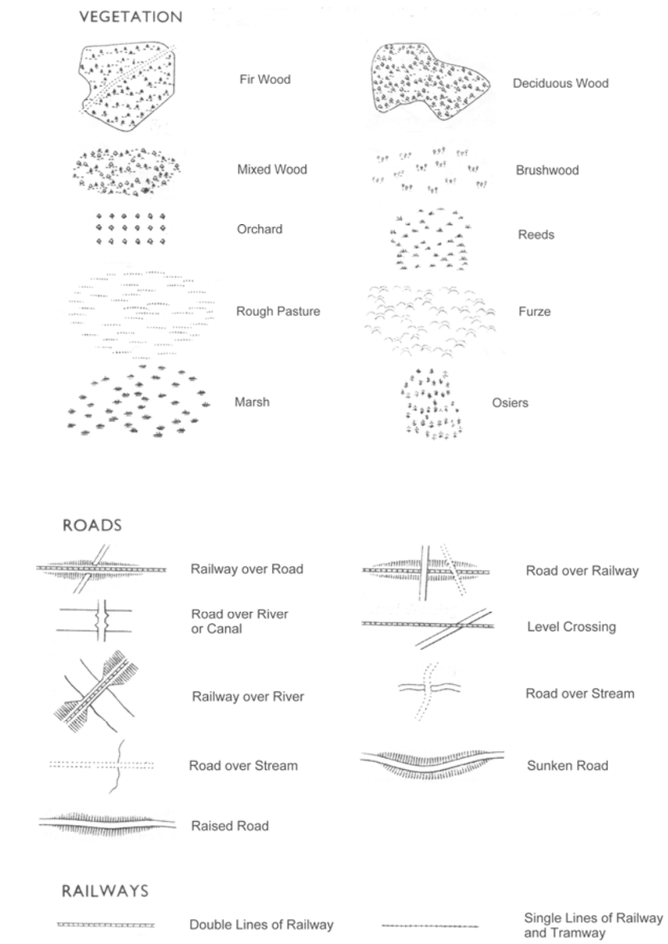
10 Consequences of Withdrawal, Termination or Suspension

10.1 Upon termination or any suspension of the Services, GroundSure shall take steps to bring to an end the Services in an orderly manner, vacate any Site with all reasonable speed and shall deliver to the Client/Beneficiary any property of the Client/ Beneficiary in GroundSure's possession or control.
10.2 In the event of termination/suspension of the Contract under clauses 8 or 9, the Client shall pay to GroundSure all and any fees payable in respect of the performance of the Services up to the date of termination/suspension. In respect of any Consultancy Services provided, the Client shall also pay GroundSure any additional costs incurred in relation to the termination/suspension of the Contract.

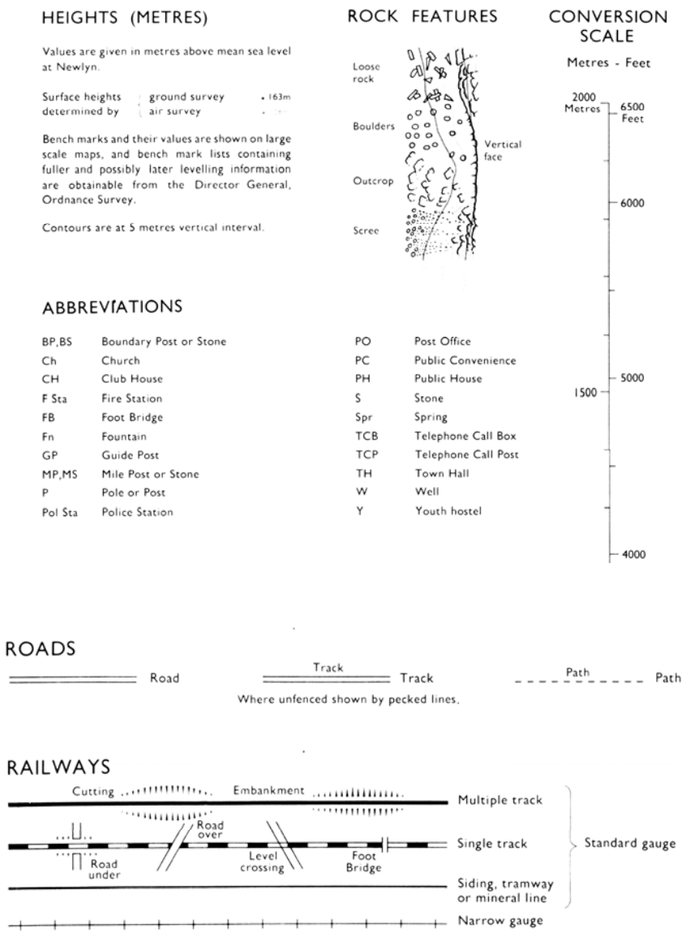
11 General

11.1 The mapping contained in the Services is protected by Crown copyright and must not be used for any purpose outside the context of the Services or as specifically provided in these terms.
11.2 GroundSure reserves the right to amend these terms and conditions. No variation to these terms shall be valid unless signed by an authorised representative of GroundSure.
11.3 No failure on the part of GroundSure to exercise and no delay in exercising, any right, power or provision under these terms and conditions shall operate as a waiver thereof.
11.4 Save as expressly provided in clauses 4.2, 4.3, 6.3 and 11.5, no person other than the persons set out therein shall have any right under the Contract (Rights of Third Parties) Act 1999 to enforce any terms of the Contract.
11.5 The Secretary of State for Communities and Local Government acting through Ordnance Survey may enforce breach of clause 6.1 of these terms and conditions against the Client in accordance with the provisions of the Contracts (Rights of Third Parties) Act 1999.
11.6 GroundSure shall not be liable to the Client if the provision of the Services is delayed or prevented by one or more of the following circumstances:
(i) the Client or Beneficiary's failure to provide facilities, access or information;
(ii) fire, storm, flood, tempest or epidemic;
(iii) Acts of God or the public enemy;
(iv) riot, civil commotion or war;
(v) strikes, labour disputes or industrial action;
(vi) acts or regulations of any governmental or other agency;
(vii) suspension or delay of services at public registries by Data Providers; or
(viii) changes in law.
11.7 Any notice provided shall be in writing and shall be deemed to be properly given if delivered by hand or sent by first class post, facsimile or by email to the address, facsimile number or email address of the relevant party as may have been notified by each party to the other for such purpose or in the absence of such notification the last known address.
11.8 Such notice shall be deemed to have been received on the day of delivery if delivered by hand, facsimile or email and on the second working day after the day of posting if sent by first class post.
11.9 The Contract constitutes the entire contract between the parties and shall supersede all previous arrangements between the parties.
11.10 Each of the provisions of the Contract is severable and distinct from the others and if one or more provisions is or should become invalid, illegal or unenforceable, the validity and enforceability of the remaining provisionsshall not in any way be tainted or impaired.
11.11 These terms and conditions shall be governed by and construed in accordance with English law and any proceedings arising out of or connected with these terms and conditions shall be subject to the exclusive jurisdiction of the English courts.
11.12 If the Client or Beneficiary has a complaint about the Services, notice can be given in any format eg writing, phone, email to the Compliance Officer at GroundSure who will respond in a timely manner.

County Series 1:10,560 scale



National Grid 1:10,000 scale



GroundSure

Historical Map Pack Legend

County Series & National Grid

1:10,560 scale & 1:10,000 scale

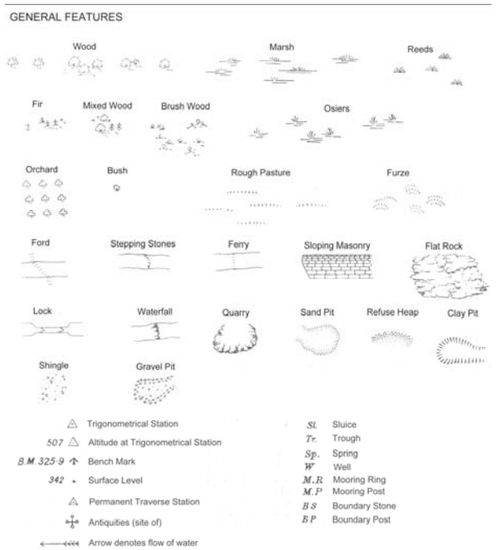
Information present on these legends is sourced from the same Ordnance Survey mapping as the maps used in this product.

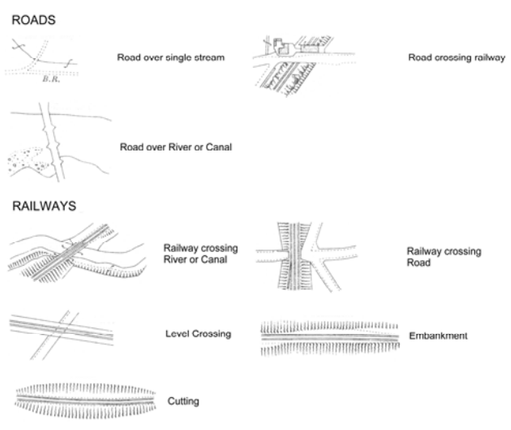
If you have a query regarding any of the maps provided please contact GroundSure's technical helpline. We will endeavour to answer any queries you may have.

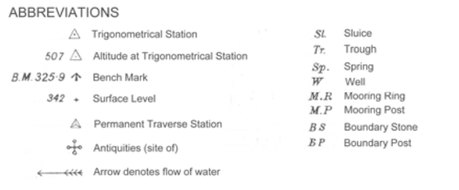
Technical Helpline

Tel:01273 819 700
maps&data@groundsure.com
www.groundsure.com

County Series 1:2,500 scale







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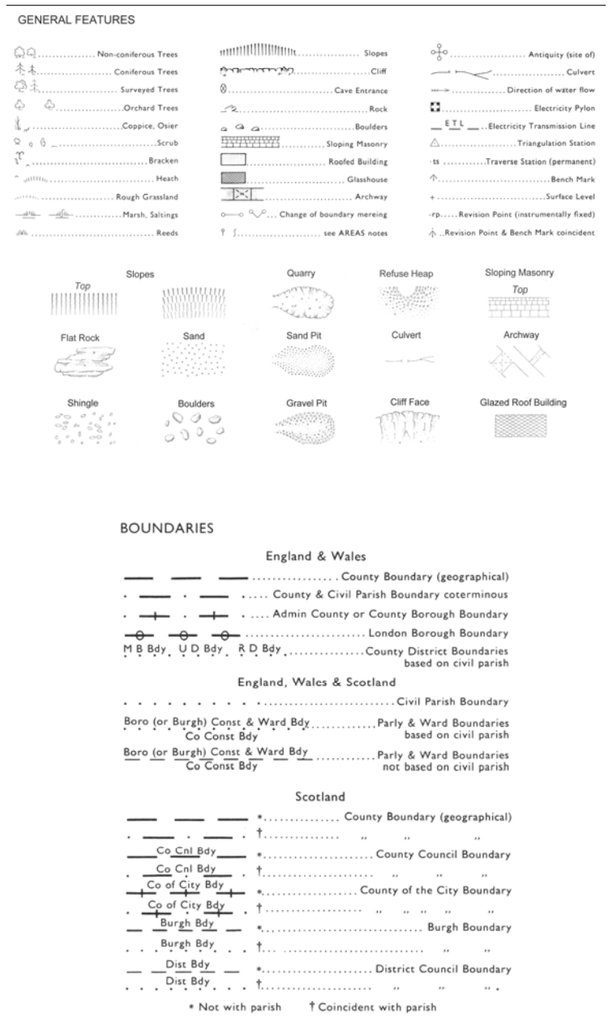

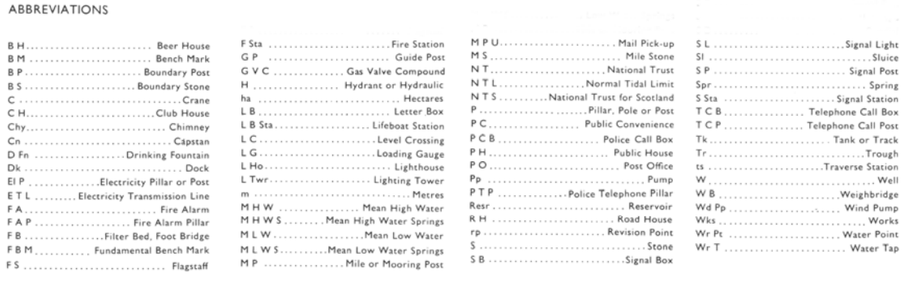

Historical Map Pack Legend

County Series

1:1,250 scale

~

County Series & National Grid

1:2,500 scale

Information present on these legends is sourced from the same Ordnance Survey mapping as the maps used in this product.

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

Technical Helpline:

Tel:01273 819 700
maps&data@groundsure.com
www.groundsure.com

emapsite™

Site Details:

Hednesford Hills

Client Ref: EMS_127424_174676
Report Ref: S EMS-127424_174676
Grid Ref: 400733, 312723

Map Name: MasterMap

Map date: **2011**

Scale: 1:2,500

Printed at: 1:2,500

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GroundSure

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GroundSure Environmental Insight
www.groundsure.com

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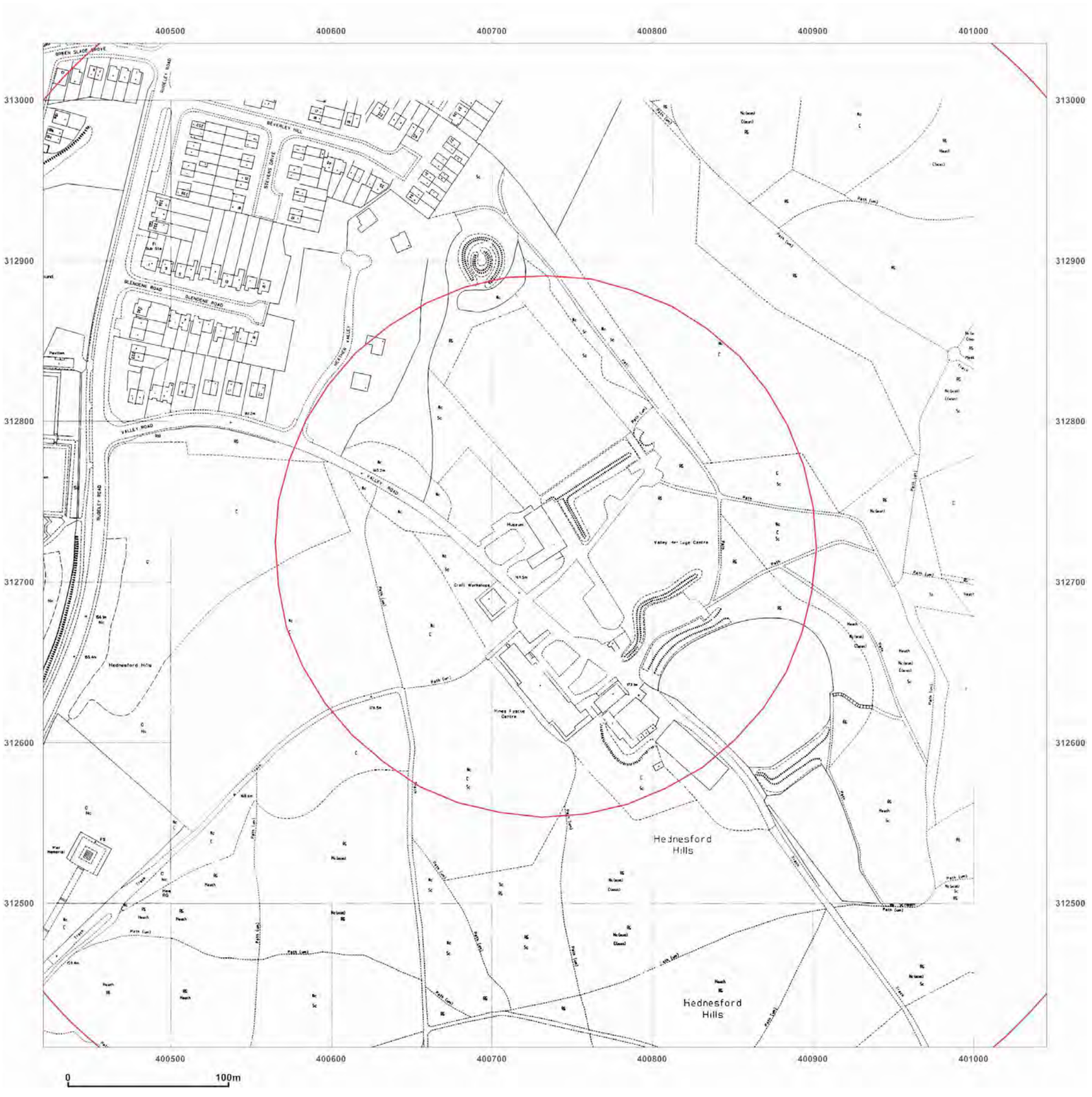
Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 12 May 2011

To view map legend click here *Legend*



emapsite™

Site Details:

Hednesford Hills

Client Ref: EMS_127424_174676
Report Ref: S EMS-127424_174676
Grid Ref: 400733, 312723

Map Name: National Grid

Map date: **1993-1994**

Scale: 1:1,250

Printed at: 1:2,500

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
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Production date: 12 May 2011

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Site Details:

Hednesford Hills

Client Ref: EMS_127424_174676
Report Ref: S EMS-127424_174676
Grid Ref: 400733, 312723

Map Name: National Grid

Map date: **1991-1993**

Scale: 1:1,250

Printed at: 1:2,500

N
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Surveyed 1991 Revised 1991 Edition N/A Copyright 1991 Levelled N/A	Surveyed N/A Revised N/A Edition N/A Copyright 1993 Levelled N/A
Surveyed N/A Revised N/A Edition N/A Copyright 1993 Levelled N/A	Surveyed 1960 Revised 1968 Edition N/A Copyright 1992 Levelled N/A
Surveyed N/A Revised N/A Edition N/A Copyright 1993 Levelled N/A	Surveyed 1960 Revised 1968 Edition N/A Copyright 1992 Levelled N/A

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Production date: 12 May 2011

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Site Details:

Hednesford Hills

Client Ref: EMS_127424_174676
Report Ref: S EMS-127424_174676
Grid Ref: 400733, 312723

Map Name: National Grid

Map date: **1982-1986**

Scale: 1:2,500

Printed at: 1:2,500

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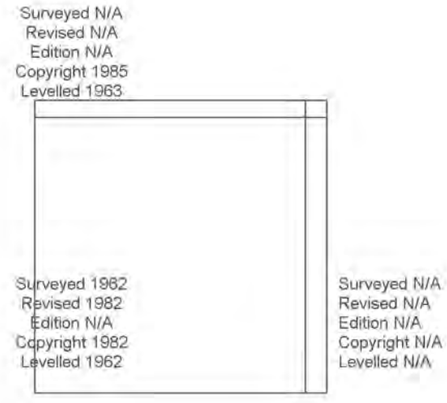

GroundSure

Ordnance Survey Licensed Partner

Produced by
GroundSure Environmental Insight
www.groundsure.com

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 12 May 2011

To view map legend click here *Legend*

emapsite™

Site Details:

Hednesford Hills

Client Ref: EMS_127424_174676
Report Ref: S EMS-127424_174676
Grid Ref: 400733, 312723

Map Name: National Grid

Map date: **1978**

Scale: 1:2,500

Printed at: 1:2,500

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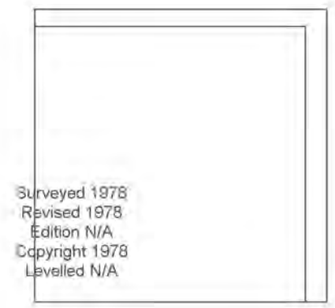

GroundSure

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www.groundsure.com

Ordnance Survey Licensed Partner

Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 12 May 2011

To view map legend click here *Legend*

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Site Details:

Hednesford Hills

Client Ref: EMS_127424_174676
Report Ref: S EMS-127424_174676
Grid Ref: 400733, 312723

Map Name: National Grid

Map date: **1968-1969**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1968
Revised 1969
Edition N/A
Copyright 1971
Levelled 1963

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1970
Levelled 1963

GroundSure

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GroundSure Environmental Insight
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Supplied by:
www.emapsite.com
sales@emapsite.com

Production date: 12 May 2011

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Site Details:

Hednesford Hills

Client Ref: EMS_127424_174676
Report Ref: S EMS-127424_174676
Grid Ref: 400733, 312723

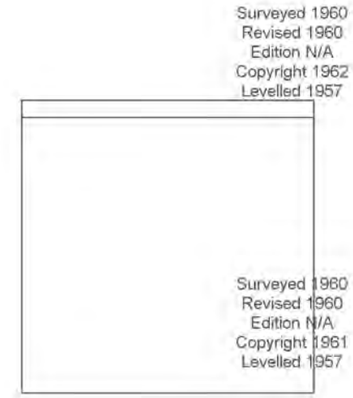
Map Name: National Grid

Map date: **1960**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



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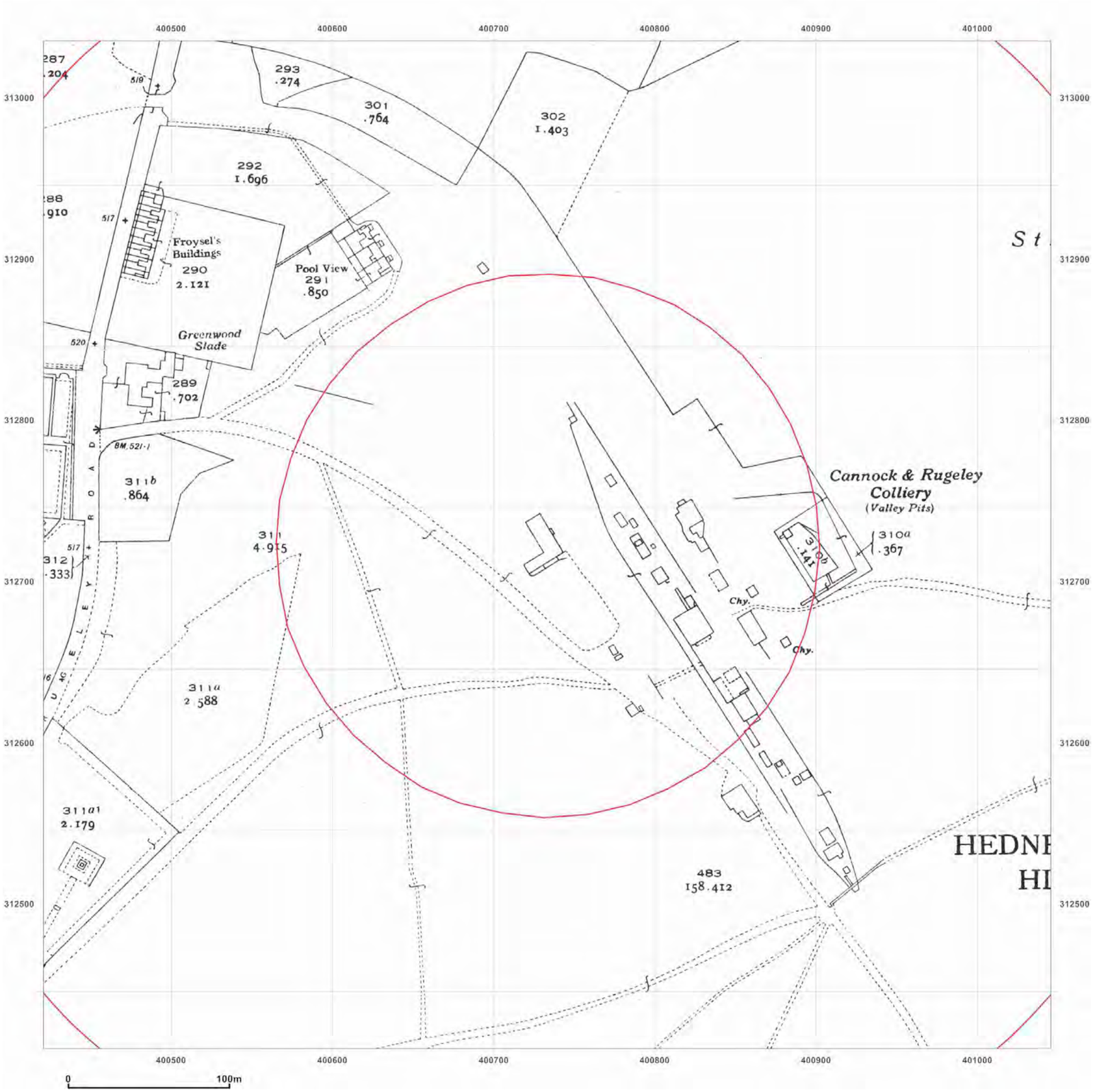

emapsite™

Site Details:

Hednesford Hills

Client Ref: EMS_127424_174676
Report Ref: S EMS-127424_174676
Grid Ref: 400733, 312723

Map Name: County Series

Map date: **1938**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1938
Revised 1938
Edition NA
Copyright NA
Levelled NA

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Production date: 12 May 2011

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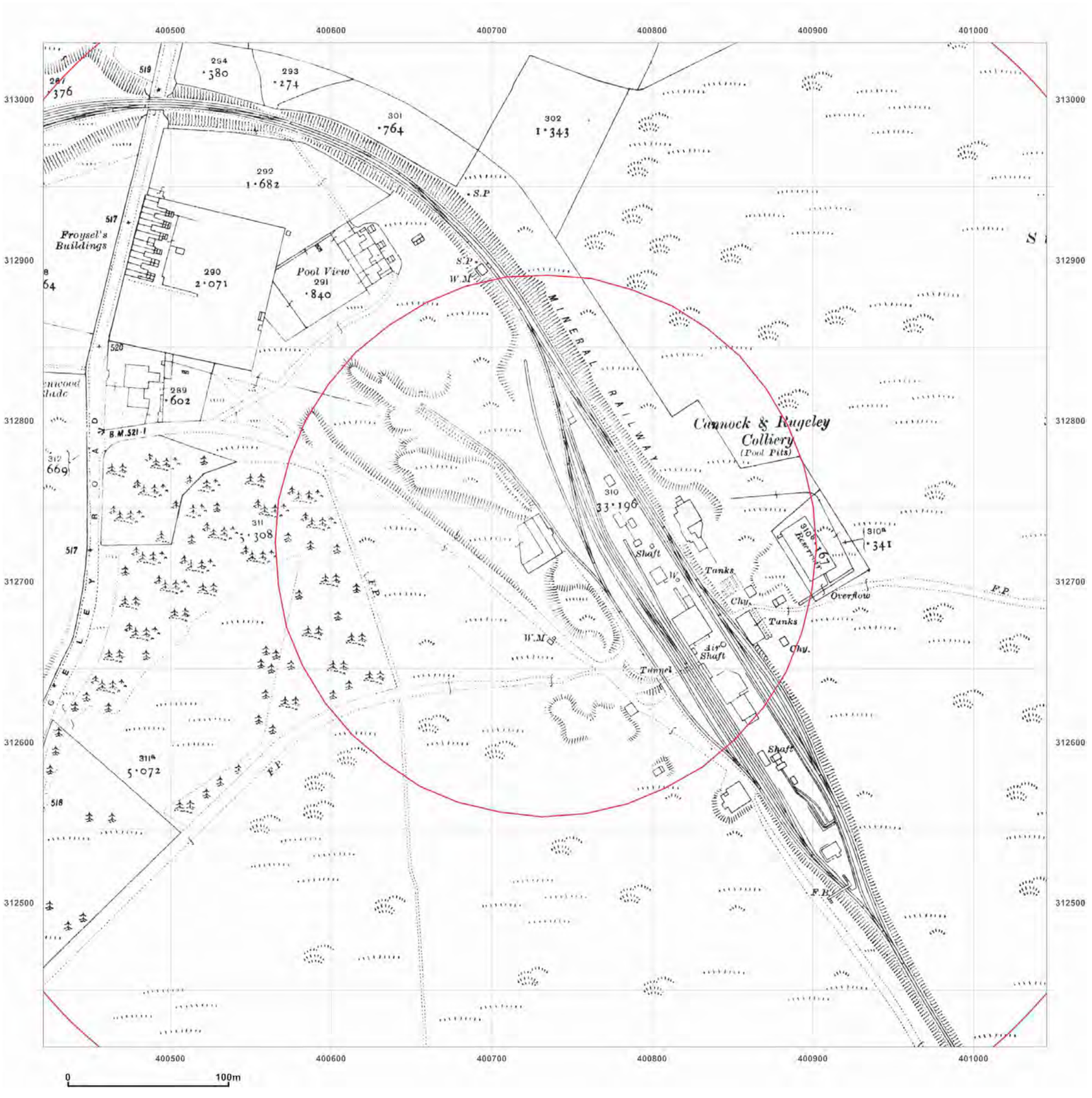

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Site Details:

Hednesford Hills

Client Ref: EMS_127424_174676
Report Ref: S EMS-127424_174676
Grid Ref: 400733, 312723

Map Name: County Series

Map date: **1932**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1932
Revised 1932
Edition NA
Copyright NA
Levelled NA

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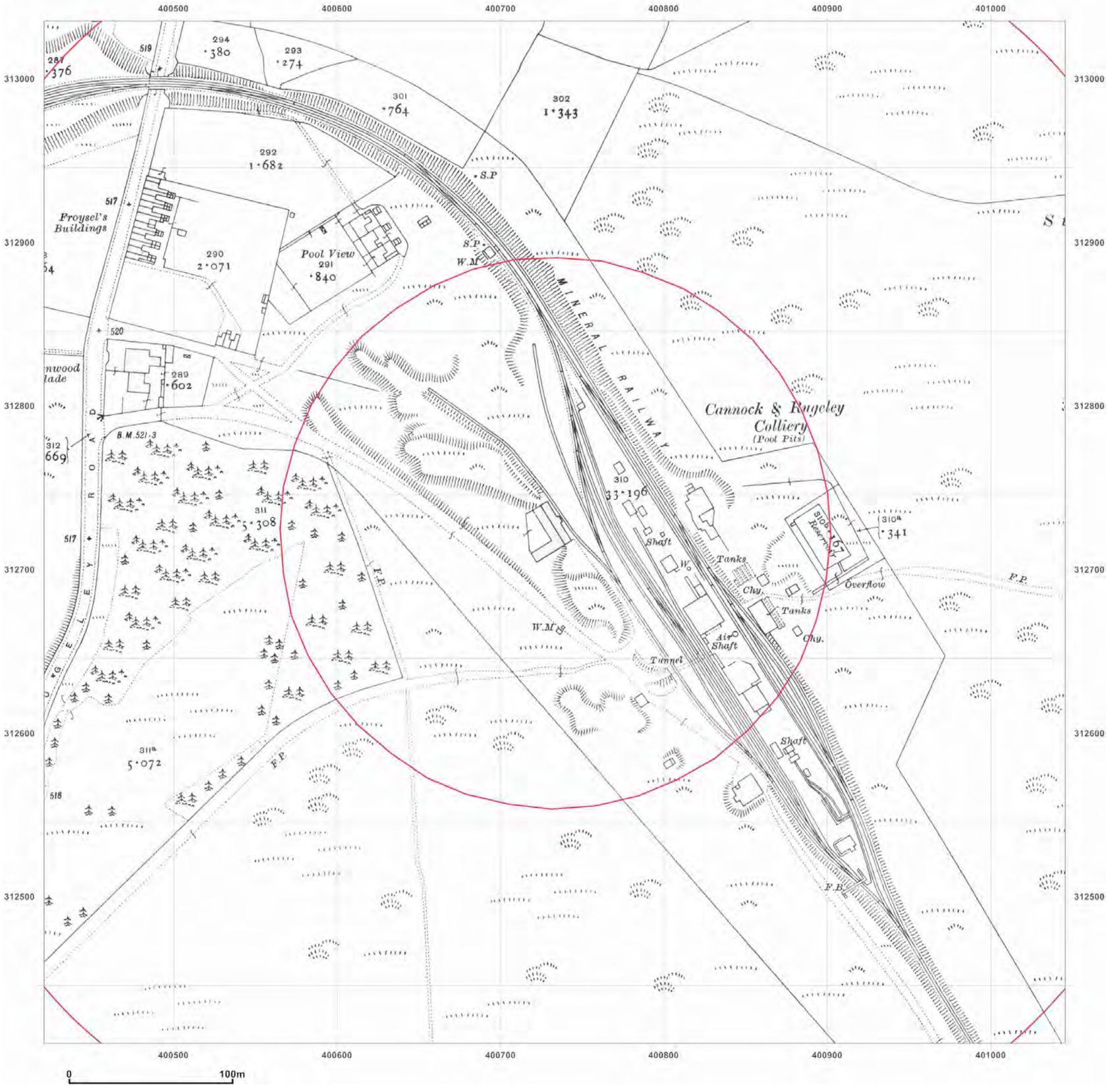
Production date: 12 May 2011

To view map legend click here *Legend*



emapsite™

Site Details:

Hednesford Hills

Client Ref: EMS_127424_174676
Report Ref: S EMS-127424_174676
Grid Ref: 400733, 312723

Map Name: County Series

Map date: **1917**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1917
Revised 1917
Edition NA
Copyright NA
Levelled NA

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Production date: 12 May 2011

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