REPORT C5362
JUNE 2013

GEOENVIRONMENTAL APPRAISAL

of land at the
FORMER PENISTONE GRAMMAR SCHOOL, PENISTONE

prepared for
BELLWAY HOMES LTD

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CONTENTS

EXECUTIVE SUMMARY

1. INTRODUCTION 1

2. SITE DETAILS AND DESCRIPTION 4

3. PREVIOUS INVESTIGATION FINDINGS 6
3.1. Eastwood's Phase 1 Desktop Report (October 2010) 6
3.2. Additional Information 8

4. PRELIMINARY CONCEPTUAL MODEL 11

5. FIELDWORK 12
5.1. Scope of Investigation 12
5.2. Strata Description 12
5.3. Exploratory Hole Locations 12
5.4. Access Constraints 13
5.5. Geotechnical Testing 14
5.6. Chemical Testing 14

6. GROUND CONDITIONS AND MATERIAL PROPERTIES 15
6.1. Strata Profile 15
6.2. Material Properties 17
6.3. Groundwater 20
6.4. Stability 20
6.5. Visual / Olfactory Evidence of Contamination 20
6.6. Obstructions/Relic Foundations/Culvert 21
6.7. Foundation Exposure Pits 21

7. RESULTS OF CHEMICAL TESTING 22
7.1. Assessment Methodology 22
7.2. Soil Analysis 22

7.3. Leachability Testing 27

8. REVISED CONCEPTUAL MODEL AND GENERIC QUANTITATIVE RISK ASSESSMENT OF POLLUTANT LINKAGES 30
8.1. Summary of Identified Pollutant Linkages 30

9. CONCLUSIONS AND RECOMMENDATIONS 31
9.1. General 31
9.2. Flood Risk/Surface Water Drainage 31
9.3. Geotechnical 32
9.4. Asbestos-Containing Materials 36
9.5. Soil and Groundwater Contamination 37
9.6. Ground Gas 39
9.7. Invasive Plants 40
9.8. Disposal of Soils 40

10. REGULATORY APPROVALS 41

11. FURTHER WORKS 42

TABLES

Table 2.1 Current Site Overview 4
Table 3.1 Summary of Environmental Setting 6
Table 5.1 Exploratory Hole Rationale 13
Table 6.1 Strata Profile 15
Table 7.1 Summary of Total Soil Concentrations (Reworked Topsoil) 22
Table 7.2 Summary of Total Soil Concentrations – Made Ground 24
Table 7.3 Summary of Leachate Analysis 28

APPENDICES

APPENDIX A FIGURES AND DRAWINGS

Drawing No.	Title	Scale
C5362/01	Site Location Plan	1:50,000
P / Site Layout	Planning Site Layout	1:500
C5362/02	Site Features	1:500
C5362/03	Preliminary Conceptual Site Model	NTS
C5362/04	Exploratory Hole Location Plan	1:500
C5362/05	Revised Conceptual Site Model	NTS
C5362/06	Exploratory Hole Location Plan/ Proposed Development Overlay	1:500

NTS: Not to Scale

APPENDIX B EASTWOOD & PARTNERS DESK STUDY REPORT (ON CD)

APPENDIX C ADDITIONAL SITE INFORMATION (ON CD)

APPENDIX D EXPLORATORY HOLE LOGS

APPENDIX E LABORATORY TEST RESULTS

APPENDIX F SIRIUS GENERIC ASSESSMENT CRITERIA

EXECUTIVE SUMMARY

Introduction	Sirius Geotechnical and Environmental Ltd were commissioned by Bellway Homes Ltd to undertake a Geoenvironmental Appraisal of land at the former Penistone Grammar School, Huddersfield Road, Penistone. It is understood that the site is to be redeveloped for a residential with gardens end use.
Site Details	The site is an irregular shaped plot of land with buildings associated with the former school located in the west, central and south eastern site areas, with a heavily vegetated area with numerous mature trees in the eastern parts. The natural topography of the site slopes downwards from the west to the east, with a level difference of approximately 16m, with steep slopes present in the westernmost parts of the site.
Site History	The site was undeveloped until the late 19th century, when a residential dwelling 'Weirfield House' and a stable block was constructed in the south eastern part. These buildings were later converted into part of Penistone Grammar School. The school later extended across the majority of the site, with the exception of the eastern part which has remained undeveloped. A well was historically located in the central site area. The surrounding area has been used only for either agricultural or residential usages.
Fieldwork	Fieldwork was undertaken from 23rd to 24th April 2013 and comprised the drilling of eight window sample boreholes; the mechanical excavation of ten trial pits, and the excavation by hand of a further two trial pits in areas of restricted access.
Ground Conditions	Heterogeneous made ground across the entire site, generally to depths of between 0.3m and 0.9m bgl. Deeper made ground (to 1.40m bgl) was encountered in the northern part of the site. The made ground is underlain by a variable sequence of weathered bedrock material, both granular and cohesive material. The residual soils typically comprise either firm and stiff, medium and high strength, variably sandy/silty, slightly gravelly clay; or medium dense/dense silty or clayey, sandy gravel of siltstone, sandstone and/or mudstone. Extremely or very weak bedrock (sandstone, siltstone or mudstone) is present beneath the residual soils at depths of between 1.00m and 3.50m bgl. No significant ingress of groundwater was encountered during the Sirius investigation.
Flood Risk	The site is not located in an area vulnerable to flooding from rivers.
Foundations and Floor Slabs	It is anticipated that based on final levels and the extent of re-profiling, shallow strip foundations and/or trench fill foundations, bearing onto the underlying medium/high strength, medium dense/dense residual soils or bedrock will be appropriate for future

	low rise residential properties across the majority of the site. It is anticipated that based on the future re-profiling of the site to enable the redevelopment, suspended floor slabs will be required. It is understood that a culvert, aligned north east – south west is located beneath the central site area. Depending on the finalised site layout, the culvert may require diverting, or alternatively foundations locally designed to span the culvert.
Ground Stability/ Groundwater Control	Excavations within granular soils should be assumed to be unstable and an allowance should be made for suitable temporary support. Significant inflows of groundwater into shallow excavations (<2.00m bgl) are not anticipated. Localised pumping from sumps should generally be adequate.
Sulphate Class	DS-1 and an ACEC Class of AC-1 for natural soils/rock. AC-2z where reworked topsoil is to remain, and DS-2 and AC-2 where black clinker is present.
Contamination	Elevated concentrations of arsenic, copper, lead, individual PAH species and locally TPH contamination within granular made ground and relic topsoil. Asbestos fibres (namely chrysotile) have also been identified within relic topsoil. Potentially combustible ash rich fill has been identified near surface. Elevated leachable chromium and individual PAH species have also been identified within granular made ground. Should the material be placed under areas of proposed hardstanding (i.e. buildings or roads), no further remedial action is considered necessary to protect end users. It is recommended that a minimum 100mm depth of 'clean' topsoil be provided in gardens and areas of public open space. Based on the results of testing undertaken as part of this investigation, reworked topsoil present on the site may be suitable for reuse. If made ground soils are to remain beneath future gardens/soft landscaping, a clean capping layer will be required. Based on the chemical testing undertaken as part of this investigation, a minimum 600mm clean capping layer will be required.
Gas Protection	No special precautions with regard to ground gas are considered necessary.
Other	Existing ACMs identified within the existing buildings' fabric and stockpiled ACMs located within the western part of the site will require removal by a licensed contractor and disposal from site to an appropriately licensed waste facility. The absence or otherwise of invasive plant species should be confirmed by a qualified consultant ecologist

The executive summary is an overview of the key findings and conclusions of the report. There may be other information contained in the body of the report which puts into context the findings of the executive summary. No reliance should be placed on the executive summary in isolation, particularly when deriving design detail/abnormal costs.

1. INTRODUCTION

Sirius Geotechnical and Environmental Ltd (Sirius) were commissioned by Bellway Homes Ltd (Bellway) to undertake a geoenvironmental appraisal of land at the former Penistone Grammar School, Huddersfield Road, Penistone (the "site").

At present the site is owned by Barnsley Metropolitan Borough Council (BMBC). At the time of the Sirius fieldwork, the buildings associated with the former school were disused and a new school had been constructed on land to the south of the site.

It is understood that Bellway are considering acquisition of the site, with a view to redeveloping the property for a low rise residential end-use. It is understood that the residential development is to comprise two and three storey detached dwellings and town houses with private gardens and associated areas of soft landscaping/public open space (POS) and estate roads. In addition it is understood that the former stable block and 'Weirfield House' are to be retained for residential usage.

A proposed development layout (Bellway Drawing No. P / Site Layout, dated April 2013) was provided to Sirius and is included within Appendix A of this report.

A Phase 1 Geotechnical and Geo-environmental Desktop Report was prepared for the site by Eastwood & Partners (Consulting Engineers) Ltd (Eastwood) on behalf of BMBC (Report Ref: 33275, dated 29th October 2010). The Eastwood's desk study, provided to Sirius by Bellway, includes an assessment of information provided by the Landmark Information Group (LIG) the British Geological Survey (BGS), and the Coal Authority (CA). The information contained within the Eastwood's desk study was used to inform the Sirius ground investigation.

This Geoenvironmental Appraisal report reviews and updates where appropriate the Eastwood's desk study, assesses additional information provided to Sirius by Bellway, details the results of the intrusive investigation undertaken by Sirius and makes recommendations relating to the proposed redevelopment.

The objectives of this appraisal were to:

- Review and update where appropriate the previous desk study undertaken for the site by Eastwood, in order to establish the environmental setting of the site and allow the derivation of a preliminary conceptual site model.

- Investigate near surface soil and groundwater (if encountered) conditions.
- Determine the potential risks posed by any ground contamination and provide recommendations on remedial measures to manage such risks.
- Establish the risks associated with hazardous ground gas.
- Determine whether past mining or other extractive industries could have an influence on the surface stability of the site.
- Provide advice relating to geotechnical issues associated with the site.
- Provide generalised recommendations for foundations, floor slab and highway/pavement design for the proposed development.

The desk study element of this investigation includes a review of the Eastwood's Phase 1 report, in addition to the assessment of additional information (as detailed within Section 3.2) provided to Sirius by Bellway.

This report presents the factual information available during this appraisal, interpretation of the data obtained and recommendations relevant to the defined objectives.

It has been assumed in the production of this report that the site is to be redeveloped for a residential with gardens end use. At the time of writing finished floor/development levels had not been provided to Sirius. In the absence of proposed development levels and for the purpose of this report it has been assumed that site levels will remain broadly consistent with those at the time of the investigation. If this is not the case, then amendments to the recommendations made in this report may be required.

Where the report refers to the potential presence of invasive plants (such as Japanese Knotweed) or asbestos-containing materials, such observations are for information only and should be verified by a suitably qualified expert.

The comments and opinions presented in this report are based on the findings of the Eastwood's Phase 1 desktop report, ground conditions encountered during intrusive investigation works performed by Sirius and the results of tests carried out within one or more laboratories. There may be other conditions prevailing on the site which have not been revealed by this investigation and which have not been taken into account by this report. Responsibility cannot be accepted for any conditions not revealed by this investigation. Any diagram or opinion on the possible configuration

of strata, contamination or other spatially variable features between or beyond investigation positions is conjectural and given for guidance only. Confirmation of ground conditions between exploratory holes should be undertaken if deemed necessary. Evaluation of groundwater is based on observations made at the time of the investigation. It should be noted that groundwater levels and quality may vary due to seasonal and other effects.

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2. SITE DETAILS AND DESCRIPTION

Table 2.1 Current Site Overview

Location	The site is located to the east of Huddersfield Road, approximately 1km to the north west of Penistone town centre, South Yorkshire. A site location plan is included as Drawing No. C5362/01 within Appendix A.
National Grid Reference	E 424220, N 404200.
Topography and Features	The site is an irregular shaped plot of land with buildings associated with the former school located in the west, central and south eastern site areas and a heavily vegetated area with numerous mature trees in the eastern parts. The natural topography of the site slopes downwards from the west to the east, with a level difference of approximately 16m, with steeper slopes present in the westernmost parts of the site. The main school buildings present on the site are of sandstone construction and comprise Fulford, located adjacent to the site's south western boundary; the former stable block located in the central site area; and Weirfield, located adjacent to the site's south eastern boundary. A former electricity substation is located to the south west of Fulford, and it is understood that a service corridor, aligned north east – south west, extends beneath the building. Beneath the north eastern end of Fulford, service/caretaker's rooms/stores are present at a lower level to the ground floor level of the school, with access at ground level to the north east of the building, accommodated by the natural slope, although it is anticipated that the rooms will have been cut into the natural ground in the western part. A low retaining wall is present adjacent to the south western face of Weirfield, with the ground floor and entrance corridor approximately 1m bgl in the western part but with the north east elevation of the building at approximately the same level as external ground level. It is understood that basements are present beneath Weirfield and the Old Stables. Ancillary buildings including prefabricated classrooms, sheds, a waste

	depot and boiler room and are present in the north west. This area is predominatly hardsurfaced with either gravel, tarmacadam or concrete evident at ground level. In the north east, a series of retaining walls are present, each approximately 1m high, constructed to accommodate the fall in ground levels and provide a level development platform in this part of the site. A concrete slab is present between the retaining walls, with a shallow lined pond located to the north of the slab. A further shallow pond is present to the east of Weirfield, within a former terraced garden area. Asbestos cement sheeting was stacked adjacent to one of the ancillary buildings located in the north western part of the site. Flytipped waste materials (principally plastic bottles) were noted to the north east of the waste depot and former stable block, in the centre of the site. Localised construction waste was noted in the south east. It is understood that a culvert, aligned south west – north east is present beneath the central site area. In addition, a disused/backfilled well is located within the woodland in the central part of the site (its location confirmed by the Sirius ground investigation).
Approximate Site Area	1.5 hectares.
Site Boundaries	Huddersfield Road forms the site's western boundary. The northern boundary is formed by the hedgeline/fenceline of an adjacent residential property. Scout Dam forms the western boundary with associated weirs in the southern part. An access road to the new school forms the south western boundary with adjacent landscaping on the south east.
Current Land Use	The site is currently disused.
Invasive Plant Species	None noted. An ecological survey should be carried out to confirm if any invasive plant species are present.
Adjacent Land Uses	Residential, recreational with a school present to the south.

The main site features are shown on Drawing No. C5362/03 within Appendix A of this report.

3. PREVIOUS INVESTIGATION FINDINGS

3.1. Eastwood's Phase 1 Desktop Report (October 2010)

A Phase 1 Geotechnical and Geo-environmental Desktop Report was prepared for the site by Eastwood & Partners (Consulting Engineers) Ltd (Eastwood) on behalf of BMBC (Report Ref: 33275, dated 29th October 2010).

The Eastwood's desk study, provided to Sirius by Bellway, includes an assessment of information provided by the Landmark Informatioin Group (LIG) the British Geological Survey (BGS), and the Coal Authority (CA). A summary of salient information, updated where required, is provided below. However, the previous Eastwood report (included in Appendix B of this report) should be referred to for a more detailed assessment of the site's environmental setting.

Table 3.1 Summary of Environmental Setting

Site History	The earliest OS mapping (1851) indicated the site comprised undeveloped land, with Scout Dam and associated weirs located to the east. By 1893 Weirfield House and part of the stable block had been constructed in the south eastern part with some re-profiling of the slope to the north east of Weirfield having taken place. A well was recorded in the central site area. By 1931 Fulford House had been constructed in the west of the site. By 1960 the school had extended into the north and also beyond the site's southern boundaries. The surrounding area was noted to been used only for either agricultural or residential usages.
Geology and Mining	The site was recorded to be underlain by Penistone Flags (sandstone) of the Lower Coal Measures. No superficial deposits were identified beneath the site or in close proximity. As part of the Sirius investigation, the 1:10,000 scale BGS map (Sheet SE 20 SW) was obtained, in addition to the County Series 1:10,560 scale map referenced and reviewed by Eastwood. Made ground is indicated beyond the site's eastern boundary in the location of the weir.

	Undifferentiated mudstone or siltstone is indicated within the western part of the site and beyond the site's eastern boundary. Strata is indicated to be dipping gently to the north east in the vicinity of the site. There are no faults shown on, or within the immediate vicinity (<500m) of, the site. The CA Mining Report obtained for the site by Eastwood stated that the site did not lie within an area which was known to be affected by shallow coal mining. Eastwood's stated that the shallowest coal seam beneath the site was anticipated to be the Grenoside Sandstone coal, recorded as being circa 100mm thick in the vicinity of the site, and thus unlikely to have been worked. It was reported that there were no recorded mine shafts or entries within, or within 20m of, the site boundary. No sandstone quarries/opencast workings within 250m of the site boundary were reported by Eastwood. No radon protective measures were required within new buildings at the site.
Landfills	Eastwood reported no historical landfills within 250m of the property or infilled land in close vicinity to the site. It was thus concluded that the risk of landfill gases migrating beneath the site was negligible.
Hydrogeology and Hydrology	It was reported that a small pond was present in the north eastern part of the site and Scout Dam was located beyond the site's eastern boundary. The underlying solid geology was reported as being classified by the Environment Agency as a Secondary A Aquifer. There were no surface water or groundwater licences recorded within 500m of the site. The site did not lie within a groundwater Source Protection Zone (SPZ). There were no recorded pollution incidents to controlled waters within 100m of the site.
Flooding	The Eastwood's report stated, based on information provided within the LIG Envirocheck Report, land located to the north east of the site (namely Scout

	Dam), was classified as a flood plain, as defined by the EA. However, as ground levels within the site area are significantly higher than those within Scout Dam, it was considered unlikely that the site would be affected by flooding. However, as the site area was greater than 1 hectare, a flood risk assessment would be required for the site. This was subsequently undertaken by Eastwood for BMBC and is summarised within Section 3.2 below.
Potential Contaminative Constraints	Eastwood reported that the past and present uses of the site presented a generally low potential for significant contamination. Potential contaminants of concern included heavy metals and PAHs within made ground; hydrocarbons as a result of spillages, and elevated heavy metals within natural strata. In addition possible phytotoxic contaminants and sulphate attack of buried concrete were identified as potential contaminant constraints.

3.2. Additional Information

The following reports and relevant information for the site were provided to Bellway by the vendor, and have subsequently been forwarded to Sirius.

- *Asbestos Survey for Barnsley M.B.C at Penistone Grammar School, Huddersfield Road, Penistone, South Yorkshire S36 7BX*, dated August 2006, prepared by Peak Facilities Limited.
- *Penistone Grammar School, Penistone, South Yorkshire: An Archaeological Building Record*, dated October 2010, prepared by CS Archaeology.
- *Flood Risk Assessment*, dated November 2010, prepared by Eastwood.
- *Drainage Investigation Plan*, undated, author unknown.

Pertinent information contained within these reports is summarised below.

Asbestos Survey Report

A Phase 1, Type 3 (Full Access Sampling and Identification Survey) asbestos survey was undertaken by Peak Facilities Limited in July 2006. ACMS (namely chrysotile and amosite) were identified within the infrastructure/structure of the existing buildings on the site.

All confirmed asbestos containing materials (ACMs) should be removed by a licensed asbestos removal contractor.

An Archaeological Building Record

The report indicated that the oldest building on the site, Weirfield, was constructed circa 1875. By 1895 the building was bought and converted to Penistone Grammar School. Extensive modifications and extensions occurred up to the 1960s. The Stables were rebuilt in 1900 and the Fulford Building constructed in 1911.

The Building Records for Weirfield House noted a small basement cellar with three rooms, including a wine cellar. A further, brick vaulted cellar, was identified beneath the northernmost part of the west wing to the house.

'Basement' rooms were also identified beneath the north eastern part of the Fulford Building, although these can be accessed at ground level from the north eastern elevation of the building before continuing at the same level towards the south west. These lower level rooms include a boiler room, caretaker's workshop and store rooms. The CS Archaeology report, stated that the boiler room also served the modern school buildings to the south of the site. A central service corridor was noted to extend from the 'basement' rooms and is shown to extend along the length of the building in a north east – south west direction.

The report recommended that further archaeological work should be undertaken, to include an archaeological watching brief, should demolition of any of the three buildings referenced above take place.

Flood Risk Assessment

The Flood Risk Assessment (FRA), concluded that the site is at negligible risk of flooding from the nearest watercourse, Scout Dike, or from other sources.

The principal concern of the FRA was surface water disposal. Eastwood conclude that infiltrations SUDS such as soakaways are unlikely to be viable due to the presence of clay and/or rock at shallow depth, to be confirmed by intrusive investigation.

A drainage survey would be required to establish the outfall of the existing surface water system, assumed to be Scout Dam reservoir.

It was concluded that surface water discharge would be likely to require flow balancing and on site retention.

Drainage Investigation Plan

A hand annotated drainage survey provided to Sirius by Bellway indicates a culvert, aligned north east – south west, crossing the central site area, with flow assumed to the north east. The author of the drawing is not known to Sirius.

It is indicated on the drawing that dye testing has proven discharge to Scout Dam below a dry stone wall in this location. The approximate line of culvert is included on the site features plan, Drawing No. C5362/02.

4. PRELIMINARY CONCEPTUAL MODEL

Based on the information contained within the Eastwood desktop study and subsequent addition information provided to Sirius and listed within Section 3.2, a combined preliminary conceptual site model and conceptual exposure model (PCSM) has been developed for the proposed future land use (low rise housing with associated private gardens).

The PCSM summarises the understanding of surface and sub-surface features, the potential contaminant sources, transport pathways and receptors in order to assess potential pollutant linkages. In assessing the likely contaminants present at the site, reference has been made to the Industry Profile report series issued by the Department of the Environment and other relevant supporting documentation.

A qualitative risk assessment has also been made of the likelihood of any pollutant linkage operating and its potential significance.

The preliminary conceptual model is presented in schematic form as Drawing No. C5362/03 in Appendix A. In summary, the PCSM has identified the following potential pollutant linkages which could result in an unacceptable risk to the proposed end-use, denoted as moderate or higher risk:

- Ingestion, inhalation of dust and dermal contact with metals, asbestos containing materials (ACMs) and hydrocarbons (including PAHs) in made ground and/or shallow soils.
- Possible leachable heavy metals and hydrocarbons (including PAHs) in made ground and/or shallow soils with the potential to impact controlled waters (principally the underlying Secondary A Aquifer and Scout Dam).
- Migration of contaminants within shallow groundwater to controlled waters (principally the underlying Secondary A Aquifer and Scout Dam).

5. FIELDWORK

5.1. Scope of Investigation

The information contained in this report is limited to areas of land accessible during the investigation within the site boundary, as indicated on the site features plan, presented in Appendix A as Drawing No. C5362/03.

Sirius scoped the intrusive ground investigation using guidance presented in BS 10175:2011, BS 8485:2007, the CLR series of documents (Defra and Environment Agency, 2002a-2002e) and BS EN 1997:2004 and 2007.

The investigation, which was supervised by a Sirius Geoenvironmental Engineer, took place between 16th and 20th July 2012 and comprised:

- Eight window sample boreholes (WS1 to WS8 inclusive) to a maximum depth of 4.45m bgl;
- Ten trial pits (TP1 to TP9 inclusive) to a maximum depth of 2.50m bgl. Two trial pit records (TP5NE, TP5SW) were prepared for trial pit TP5 as the excavation encountered a suspected drain in the north eastern part and was subsequently continued to the south west. Trial pits TP1 and TP9 were also foundation exposure pits, excavated at the request of the structural engineer.
- Two hand excavated trial pits (HDTP1 and HDTP2) to depths of 0.90m and 0.80m bgl.

5.2. Strata Description

Detailed descriptions of strata and groundwater observations made during investigation works, together with samples recovered, are presented on the engineer's exploratory hole records in Appendix D.

Standard strata descriptions are compliant with BS EN ISO 14688:2002 and 2004 and BS EN ISO 14689:2003. The depths of strata on the record sheets are recorded from current ground levels at each location, unless indicated otherwise.

5.3. Exploratory Hole Locations

The exploratory hole locations were based on the findings of the preliminary conceptual site model in order to target specific areas of interest and achieve a general site coverage. Procedures and

principles recommended in CLR4 and BS 10175:2011 were followed when determining exploratory hole locations.

The following table details the exploratory hole rationale:

Table 5.1 Exploratory Hole Rationale

Exploratory Hole	Rationale
TP1	Foundation exposure pit to the north western elevation of the former stable block (to be retained), at request of structural engineer.
TP9	Foundation exposure pit to the south eastern elevation of Weirfield House (to be retained), at request of structural engineer.
WS3	To target the area of electricity substation in the south eastern part of the site. A cable avoidance tool sweep indicated that this substation was still live.
TP6	To investigate the historical well indicated on OS mapping in the central site area.
TP7	To target the culvert shown on the Drainage Investigation Drawing, referenced above, at request of Bellway, in order to confirm location.
HDTP1, HDTP2	Hand dug trial pits excavated in heavily vegetated eastern part of the site, where access was not achievable with other plant due to steep slopes.
WS2, TP8 (TP4, TP7)	To target the boiler house located in the central site area.

Other exploratory holes were positioned in order to achieve general site coverage on an approximate 25-40m grid.

Exploratory hole locations are shown on Drawing No. C5362/04 in Appendix A of this report.

5.4. Access Constraints

Access into the majority of buildings on the site was not available due to stepped access to most buildings and the fact that the buildings were boarded up.

The eastern part of the site was occupied by dense vegetation and steep slopes. Subsequently access into this area was restricted. However, hand excavated trial pits were undertaken adjacent to the site's eastern boundaries in order to confirm ground conditions and retrieve topsoil samples for contamination testing within this part of the site.

Areas of the site with restricted access during the fieldworks, namely heavily vegetable areas, are indicated on Drawing No. C5362/04, within Appendix A of this report.

5.5. Geotechnical Testing

Geotechnical laboratory testing was carried out on selected soil samples in accordance with techniques outlined in BS 1377:1990 “Methods of Test for Soils for Civil Engineering Purposes” at Professional Soils Laboratory (PSL), a UKAS accredited laboratory, and Derwentside Environmental Testing Services (DETS), a UKAS and MCERTS accredited laboratory.

Geotechnical and geochemical test results are included within Appendix E of this report.

5.6. Chemical Testing

Selected samples of the soil (made ground and natural soils) were tested for a range of potential contaminants under subcontract with DETS.

The potential contaminants of concern identified by the preliminary conceptual site model were selected as the analytes for the samples recovered from the site. The results of soil and leachate analysis, as received from the laboratory, are presented in Appendix E of this report.

6. GROUND CONDITIONS AND MATERIAL PROPERTIES

6.1. Strata Profile

A summary of the strata profile is provided in Table 6.1.

Table 6.1 Strata Profile

Strata	Depth Range (Thickness Range)	Description and Comments
Made Ground/ Reworked Topsoil	Ground Level (0.25m – 1.40m)	Made ground and/or reworked topsoil was found to be present within all of the exploratory holes to depths typically between 0.30m and 0.90m bgl. Deeper made ground (to 1.40m bgl) was encountered within WS6, located in the northern part of the site where ground levels appear to have been plateaued as part of the school development, although buildings are no longer present in this location. Types of made ground encountered during the Sirius fieldwork are summarised below: <u>Hardstanding</u> Concrete or tarmacadam hardstanding was encountered in external car park and hard surfaced areas to typical depths of between 0.05m and 0.20m bgl. In TP5 a concrete slab was encountered from 0.30m to 0.50m bgl. <u>Granular Made Ground/Sub Base</u> Granular made ground was encountered beneath hardstanding and at surface within TP7 and TP8, located in the central site area. The granular made ground was described as locally ashy or sandy gravel of sandstone, siltstone, limestone, clinker, brick, coal, with occasional cobble sized fractions of sandstone, brick and concrete. In WS6, drilled in the northern part of the site, a gravel of concrete was encountered beneath the concrete hardstanding, which was in turn underlain by an ashy gravel of brick, concrete and clinker. <u>Relic Topsoil</u> The hardstanding/granular made ground/sub base was found to be

Strata	Depth Range (Thickness Range)	Description and Comments
		underlain by relic topsoil within WS2, TP3 and TP8 (located within the central and western parts of the site) to depths of between 0.50m and 0.70m bgl, indicating that ground levels have been historically raised slightly in these locations. The relic topsoil comprised slightly sandy, slightly gravelly clay in which the gravel fraction included coal, clinker and brick as well as natural lithologies. <u>Reworked Topsoil</u> Reworked topsoil was encountered within WS3, located in a grassed verge in the west of the site, and WS5, WS8, TP9 and HDTP1 and HDTP2, located in the eastern half of the site. The reworked topsoil was between 0.20m and 0.30m thick, and was generally described as firm, slightly sandy clay with occasional or rare gravel of coal, clinker and brick. <u>Ash & Clinker</u> Dark grey ashy gravel of clinker and coal was encountered at ground level within WS7, located within the heavily vegetated area in the western part of the site, extending to 0.30m bgl. Granular made ground including a high proportion of ash and clinker were also encountered at surface within TP5SW and TP6 (in the central northern site area), to depths of 0.05m and 0.30m bgl, respectively. In WS1 and WS4, the granular sub base was observed to contain a high proportion of clinker. In TP6 the surface covering comprised sandy gravel of sandstone, clinker, coal with fragments of glass to a depth of 0.30m bgl. In TP7 a 100mm thick band of clinker was encountered between 0.30m and 0.40m bgl. This stratum was noted to have a slight hydrocarbon odour. <u>Backfill to Well</u> TP6 identified an infilled well at approximately 0.30m bgl. The depth of the well was not proven as part of this investigation. Competent siltstone bedrock was encountered at 1.40m bgl, below which the

Strata	Depth Range (Thickness Range)	Description and Comments
		well extended. The infill materials were described as reddish brown, sandy, clayey, angular, tabular sandstone flags.
Residual Soils (Weathered Bedrock Material)	0.25m – 1.40m (1.00m – 3.50m)	A variable sequence of weathered bedrock material, both granular and cohesive material, was encountered beneath the made ground/reworked topsoil in all exploratory holes. The residual soils typically comprised firm and stiff, medium and high strength, variably sandy/silty, slightly gravelly clay, with the gravel fraction including sandstone, siltstone and mudstone. Medium dense and dense granular residual soils were encountered underlying the cohesive material and occasionally interbedded within the cohesive strata. The granular strata was typically described as silty or clayey, sandy gravel of siltstone, sandstone and mudstone. Generally cohesive soils were encountered underlying the made ground/reworked topsoil in the western part of the site and granular soils in the eastern part.
Bedrock (Penistone Flags/Lower Coal Measures)	1.00m – 3.50m (Not proven)	Extremely or very weak bedrock was encountered beneath the residual soils at depths of between 1.00m and 3.50m bgl. Bedrock strata comprised sandstone, siltstone and mudstone. Excavation was slow within the bedrock material. Window sample boreholes refused at depths of between 1.30m and 4.45m bgl.

6.2. Material Properties

Made Ground

One Standard Penetration Tests (SPTs) undertaken within the granular made ground encountered within WS6 at 1.00m bgl recorded an uncorrected N value of 11, indicative of medium dense material.

Water soluble sulphate (SO_4) concentrations and pH values recorded within nine samples of made ground (including reworked topsoil) obtained as part of the Sirius ground investigation recorded concentrations of between 0.021g/l and 1.5g/l, together with pH conditions of between 5.7 and

12.1. The results indicate a design sulphate class of DS-1 and an ACEC class of AC-1, in accordance with BRE Special Digest 1 (2005) for the design of buried concrete, based on brownfield site designation and mobile groundwater conditions, with the exception of the samples obtained from TP7 between 0.30m and 0.40m bgl and HDTP2 at 0.20m bgl.

The sample from TP7, comprising black gravel of clinker noted to have a hydrocarbon odour, recorded a water soluble sulphate content of 1500mg/kg and a pH of 12.1. Therefore the design sulphate class should be increased to DS-2 and ACEC class to AC-2 where buried concrete may come into contact this material.

A slightly acidic pH condition of 5.7 was encountered within the sample of reworked topsoil obtained from HDTP2 at 0.20m bgl. Consequently the ACEC class should be increased to of AC-2z.

Residual Cohesive Soils

Atterberg limit determinations within three samples of residual cohesive soils indicate the material to be clay of intermediate to high plasticity, with liquid limits of between 35% and 57%, plastic limits of between 20% and 24% and plasticity indices of between 14% and 33%. The natural moisture content ranged between 20% and 30%. Calculation of the modified plasticity indices indicate the cohesive head deposits to be of low and medium volume change potential.

Consistency indices (Ic) of the glacial clay indicate Ic values of between 0.74 and 1.07, indicative of firm to very stiff material.

Eight hand shear vane tests undertaken within the residual cohesive soils recorded undrained shear strengths typically between 58kN/m^2 and 74kN/m^2, indicative of medium strength material.

An undrained shear strength of 22kN/m^2 was obtained at 1.50m bgl in TP3. Groundwater seepage was encountered within the same trial pit at 1.90m bgl. No groundwater was encountered in any other exploratory hole. As the trial pit was excavated in close proximity to Huddersfield Road and close to a conjectured culvert, it is possible that the firm, low strength cohesive soil has been softened by water, possibly as a result of leakage from a culvert or drain. Consequently this material is considered localised and not representative of the wider prevalent site conditions.

Seven SPTs undertaken within the residual cohesive soils during the drilling of the window sample boreholes, resulted in uncorrected N values of between 10 to 33.

Indicative undrained shear strengths of cohesive soils can be derived by applying a correlation to SPT 'N' values according to the material's plasticity, after Stroud (1975)[1]. Based on an average reported plasticity index of 23% for the residual cohesive soils, a correlation factor of approximately 5 can be derived. Using Stroud's correlation the SPT N values indicate typical undrained shear strengths of between 50kN/m^2 and 165kN/m^2, indicating medium to very high strength, typically medium strength.

Water soluble sulphate (SO4) concentrations recorded within two samples of the residual cohesive soils recorded concentrations of 0.011g/l and 0.016g/l, together with pH conditions of 7.2 and 7.8.

These results indicate a design sulphate class of DS-1 and an ACEC class of AC-1, in accordance with BRE Special Digest 1 (2005) for the design of buried concrete, based on brownfield site designation and mobile groundwater conditions.

Residual Granular Soils

Seven Standard Penetration Tests (SPTs) undertaken within the residual granular soils recorded uncorrected N values of between 16 and 32, indicative of medium dense and dense material.

The SPT undertaken within WS8 at 4.00m bgl resulted in 50 blows for 295mm penetration. It is likely that the test penetrated bedrock. However, no recovery was possible to confirm this assumption.

A water soluble sulphate (SO_4) concentration of <0.01g/l and pH of 7.9 were recorded within one sample of the residual granular soils, indicating a design sulphate class of DS-1 and an ACEC class of AC-1, in accordance with BRE Special Digest 1 (2005) for the design of buried concrete, based on brownfield site designation and mobile groundwater conditions.

Bedrock

Eight SPTs undertaken within bedrock strata during the drilling of the window sample boreholes resulted in 50 blows for between 40mm and 275mm.

[1] Stroud, M. A. The standard penetration test in insensitive clays and soft rocks, *Proceedings of the European Symposium on Penetration Testing,* 2, 367 – 375 (1975)

Extrapolation of the SPT penetration and the blow counts obtained give an equivalent uniaxial unconfined compressive strength (UCS) of the rock (using the method in CIRIA Report No. 143) of at least 0.5MPa, indicative of extremely weak rock and very weak (with depth).

Water soluble sulphate (SO4) recorded within three samples of bedrock (sandstone/siltstone and mudstone) recorded concentrations of between 0.015g/l and 0.07g/l, together with pH conditions of between 6.7 and 8.0.

These results indicate a design sulphate class of DS-1 and an ACEC class of AC-1, in accordance with BRE Special Digest 1 (2005) for the design of buried concrete, based on brownfield site designation and mobile groundwater conditions.

6.3. Groundwater

Groundwater seepage was encountered within TP3 at 1.90m bgl. As the trial pit was excavated in close proximity to Huddersfield Road and close to a conjectured culvert, it is possible that the groundwater is the result of leakage from a culvert or drain, and thus localised and not representative of the wider prevalent site conditions.

No groundwater was encountered in any other exploratory hole.

6.4. Stability

The trial pits were generally recorded as being stable during excavation, with the exception of the backfilled materials encountered within the well in TP6.

6.5. Visual / Olfactory Evidence of Contamination

Black gravel of clinker encountered within TP7 between 0.30m and 0.40m bgl exhibited olfactory evidence of hydrocarbon contamination. It is considered that the hydrocarbon odour is associated with the strata itself and not hydrocarbon migration from the nearby boiler house, located approximately 10m to the south.

No other visual or olfactory evidence of hydrocarbon contamination was noted during the intrusive works undertaken by Sirius.

Made ground/reworked topsoil, including fragments of brick, ash, clinker, coal, concrete, red shale and of glass, was encountered. Such soils commonly contain elevated concentrations of metals

and PAHs. In addition the presence of glass fragments encountered in reworked topsoil in TP6 makes the material texturally unsuitable to be used near surface in future garden areas.

6.6. Obstructions/Relic Foundations/Culvert

Relic foundations/substructures were encountered within TP5SW, extending to 0.70m bgl.

TP7 was excavated in order to confirm the location/alignment of a culvert. A concrete haunch was encountered at 0.90m bgl. However, due to the presence of live electrical cable to the east of the trial pit, it was not possible to lift/break the haunch.

6.7. Foundation Exposure Pits

TP1 was excavated against the north western elevation of the former stable block, which it is understood is to be retained for future residential usage.

At 0.20m bgl, the sandstone wall was observed to step out by 100mm and at 0.35m by a further 50mm. The bottom of the stepped foundation was noted at 0.50m bgl. Natural strata at this founding depth comprised residual granular soils, which were in turn underlain by residual cohesive soils at 0.80m bgl. Very weak sandstone bedrock was proven at 2.00m bgl.

TP9 was excavated against the south eastern elevation of Weirfield. The wall extended to a depth of 0.60m bgl. Natural soils at this depth comprised residual cohesive soils, described as medium strength, slightly gravelly silty clay. Bedrock strata was not proven due to the proximity of a drain to the east of the trial pit.

7. RESULTS OF CHEMICAL TESTING

7.1. Assessment Methodology

The laboratory test data for the relevant soil strata were reviewed for completeness and consistency.

Usually statistical testing is undertaken for the Planning Scenario by the methods described in CL:AIRE & CIEH "Guidance on Comparing Soil Contamination Data with a Critical Concentration", May 2008. This statistical testing is undertaken to determine whether there was sufficient evidence that the true mean concentration of each determinant was less than the relevant critical concentration for that component. However, statistical analysis has not been considered appropriate in this instance due to the heterogeneous nature of the made ground soils.

7.2. Soil Analysis

Results of chemical analysis are presented in full in Appendix E.

For this site, measured values were compared to Generic Assessment Criteria (GAC) derived for a residential with gardens end use. Source data for all GACs are provided in Appendix F.

The chemical analysis results and screening criteria are summarised in Tables 7.1 and 7.2.

Reworked Topsoil

Table 7.1 Summary of Total Soil Concentrations (Reworked Topsoil)

Determinand	No. of Samples Tested	Range of Results (mg/kg unless specified)	GAC (1% SOM)	No. of Samples >GAC
Metals				
Inorganic Arsenic	2	13 – 15	32	0
Cadmium	2	0.6 – 0.7	10	0
Chromium (III)	2	20 – 30	3000	0
Lead	2	42 – 54	450	0
Inorganic Mercury	2	0.16 – 0.19	170	0
Selenium	2	<0.5	350	0
Copper	2	24 – 25	200	0
Nickel	2	13 – 20	130	0
Zinc	2	64 – 80	450	0
Inorganics				
pH	2	5.7 – 8.2	<5	0

Determinand	No. of Samples Tested	Range of Results (mg/kg unless specified)	GAC (1% SOM)	No. of Samples >GAC
Total Sulphate	2	700	2400	0
Water Sol. Sulphate	2	0.021 – 0.085 g/l	0.5 g/l	0
Speciated PAH				
Acenaphthene	2	<0.1	200	0
Anthracene	2	<0.1 – 0.1	2200	0
Acenaphthylene	2	< 0.1	160	0
Benzo(a)anthracene	2	<0.1 – 0.8	3.3	0
Benzo(b)fluoranthene	2	<0.1 – 0.4	5.6	0
Benzo(k)fluoranthene	2	<0.1 – 0.1	8.5	0
Benzo(g,h,i)perylene	2	<0.1 – 0.2	44	0
Benzo(a)pyrene	2	<0.1 – 0.5	0.83	0
Chrysene	2	<0.1 – 0.4	6.1	0
Dibenzo(a,h)anthracene	2	<0.1 – 0.2	0.77	0
Fluoranthene	2	<0.1 – 0.7	260	0
Fluorene	2	<0.1	160	0
Indeno(1,2,3-cd)pyrene	2	<0.1 – 0.4	3.2	0
Naphthalene	2	<0.1	0.68	0
Pyrene	2	<0.1 – 0.8	560	0
Phenanthrene	2	<0.1	92	0
Others				
Phenol	2	< 0.3	180	0
TOC	2	<0.5 – 1.7 w/w%	3 w/w%	0
PCBs	1	<0.01	8	0

Table based on a Residential with gardens end use.
GAC - generic assessment criterion; NA - not applicable; LoD – Limit of detection.

Metals and Metalloids

No metals recorded concentrations above the relevant GAC.

Other Inorganic Analytes

No other inorganics recorded concentrations above the relevant GAC.

Organics

No organics recorded concentrations above the relevant GAC.

Made Ground (inc. Relic Topsoil)

The chemical analysis results and screening criteria are summarised in Table 7.2.

Table 7.2 Summary of Total Soil Concentrations – Made Ground

Determinand	No. of Samples Tested	Range of Results (mg/kg unless specified)	GAC (1% SOM)	No. of Samples >GAC	Sample Ref. exceeding GAC
Metals					
Inorganic Arsenic	6	3.6 – 57	32	1	WS7 at 0.2 – 0.3m
Cadmium	6	<0.1 – 1.8	10	0	
Chromium	6	20 – 66	3000	0	
Lead	6	2.3 – 620	450	1	WS7 at 0.2 – 0.3m
Inorganic Mercury	6	<0.05 – 1.3	170	0	
Selenium	6	<0.5 – 2.6	350	0	
Copper	6	6.5 – 220	200	1	WS7 at 0.2 – 0.3m
Nickel	6	1.2 – 34	130	0	
Zinc	6	7.2 – 100	450	0	
Inorganics					
pH	6	7.7 – 12.1	<5	0	
Total Sulphate	6	700 – 8200	2400	1	TP7 at 0.30 – 0.40m
Water Sol. Sulphate	6	0.044 – 1.5	0.5 g/l	1	TP7 at 0.30 – 0.40m
Speciated PAH					
Acenaphthene	6	<0.1 – 31	200	0	
Anthracene	6	<0.1 – 65	2200	0	
Acenaphthylene	6	<0.1 – 1.4	160	0	
Benzo(a)anthracene	6	<0.1 – 130	3.3	3	TP3 at 0.50m; TP7 at 0.30 – 0.40m; WS4 at 0.20m
Benzo(b)fluoranthene	6	<0.1 – 83	5.6	2	TP7 at 0.30 – 0.40m; WS4 at 0.20m
Benzo(k)fluoranthene	6	<0.1 – 49	8.5	2	TP7 at 0.30 – 0.40m; WS4 at 0.20m
Benzo(g,h,i)perylene	6	<0.1 – 60	44	0	WS4 at 0.20m
Benzo(a)pyrene	6	<0.1 – 120	0.83	4	TP2 at 0.20m; TP3 at 0.50m; TP7 at 0.30 – 0.40m; WS4 at 0.20m
Chrysene	6	<0.1 – 140	6.1	2	TP7 at 0.30 – 0.40m; WS4 at 0.20m

Determinand	No. of Samples Tested	Range of Results (mg/kg unless specified)	GAC (1% SOM)	No. of Samples >GAC	Sample Ref. exceeding GAC
Dibenzo(a,h)anthracene	6	<0.1 – 9.4	0.77	2	TP7 at 0.30 – 0.40m; WS4 at 0.20m
Fluoranthene	6	0.2 – 280	260	1	WS4 at 0.20m
Fluorene	6	<0.1 – 44	160	0	
Indeno(1,2,3-cd)pyrene	6	<0.1 – 64	3.2	2	TP7 at 0.30 – 0.40m; WS4 at 0.20m
Naphthalene	6	<0.1 – 1.9	0.68	1	WS4 at 0.20m
Pyrene	6	0.2 – 230	560	0	
Phenanthrene	6	<0.1 – 260	92	0	TP7 at 0.30 – 0.40m; WS4 at 0.20m
TPH					
Aliphatic EC >5-6	3	<0.01	17		
Aliphatic EC >6-8	3	<0.01	36	0	
Aliphatic EC >8-10	3	<0.01	8.8	0	
Aliphatic EC >10-12	3	<1.5	43	0	
Aliphatic EC >12-16	3	<1.2 – 9.2	350	0	
Aliphatic EC >16-35	3	<4.9 – 69	29000	0	
Aromatic EC 5-7	3	<0.01	0.054	0	
Aromatic EC >7-8	3	<0.01	92	0	
Aromatic EC >8-10	3	<0.01	14	0	
Aromatic EC >10-12	3	<0.9 – 3.8	54	0	
Aromatic EC >12-16	3	<0.5 – 140	140	0	
Aromatic EC >16-21	3	<0.6 – 1100	250	1	TP7 at 0.30 – 0.40m
Aromatic EC >21-35	3	<1.4 – 1100	890	1	TP7 at 0.30 – 0.40m
Others					
Phenol	6	<0.3	180	0	
Calorific Value	4	<1.0 – 10.0	2 MJ/kg	1	WS7 at 0.2 – 0.3m
TOC	6	<0.5 – 4.4	3 w/w%	1	WS7 at 0.2 – 0.3m
Asbestos	4	NAD - chrysotile	Fibres present	1	Loose bundles of chrysotile identified within TP3 at 0.50m.

Table based on a Residential with Gardens end use.
US95 - 95th percentile estimate of the mean value; GAC -generic assessment criterion;
NAD – No Asbestos Detected

Metals and Metalloids

Concentrations of arsenic, copper and lead above the relevant GAC were recorded within WS7 between 0.20m and 0.30m bgl. The material was described as ashy gravel of clinker and coal with rootlets and was present from ground level to 0.30m bgl.

Other Inorganic Analytes

Elevated concentrations of water soluble sulphate and total sulphate were recorded in one sample of made ground taken from TP7 between 0.30m and 0.40m bgl. The made ground comprised gravel of clinker.

Sulphate is not considered to pose a potential significant risk to human health under normal circumstances. Recommendations with regard to sulphate attack and buried concrete structures are given in Section 9 of this report.

No other inorganics recorded concentrations above the relevant GAC.

Organics

Concentrations of individual PAH compounds (including benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene and naphthalene) above the relevant GACs were encountered in samples obtained from TP2 at 0.20m bgl, TP3 at 0.50m bgl, TP7 between 0.30m and 0.40m bgl and WS4 at 0.20m. In addition elevated TPH aromatic banding EC >16 – 35 was encountered in the sample obtained from TP7, which was reported to exhibit olfactory evidence of hydrocarbon contamination.

These samples were taken from a range of made ground soils, including granular made ground comprising demolition rubble, clinker and relic topsoil.

Other Determinands

A calorific value of 10.0MJ/kg, above the GAC of 2 MJ/kg, was encountered in WS7 between 0.20m and 0.40m bgl. The sample comprised ashy gravel of clinker and coal.

Total organic carbon (TOC) was recorded in exceedence of the relevant GAC within one sample of near surface ashy material obtained from WS7 between 0.20m and 0.30m bgl.

The GAC for TOC is based on the Hazardous Waste (England and Wales) Regulations 2005. TOC content in itself does not represent a potential risk to human health. This GAC is provided for indicative assessment of disposal options; in the case that off-site landfill of soil is undertaken. This GAC is specified at the 'Inert' waste threshold and should therefore be considered for information purposes only.

Chrysotile was identified in one sample of relic topsoil obtained from TP3 at 0.50m bgl.

No other determinands recorded concentrations above the relevant GAC.

7.3. Leachability Testing

Given the environmental setting of the site, consideration has been taken of both groundwater and surface water as potential controlled water receptors of contamination at the site. Hence, the results of leachate analysis have been evaluated against Drinking Water Standards (DWS) and Inland Waters Environmental Quality Standards (EQS) levels. For EQS levels where a threshold concentration is determined from the hardness of the receiving waters, the most conservative hardness value has been used, as the receiving waters themselves have not been tested.

The derivation of the GAC values is described in Appendix F.

The results of the soil leachate analyses and the outcome of screening are summarised in Table 7.3.

Table 7.3 Summary of Leachate Analysis

Determinand	No. of Samples Tested	No. Samples Above Limit of Detection	Range of Results (µg/l unless specified)	GAC value (µg/l unless specified)		No. of Samples >GAC
Metals				**EQS (Note 1)**	**DWS (Note 2)**	
Arsenic	3	1	<0.16 – 1.5	50	10	0
Cadmium +	3	0	<0.030	0.08 – 0.25	5	0
Chromium	3	1	<0.25 – 61	4.7	50	1
Lead	3	1	<0.09 – 0.096	7.2	25	0
Mercury	3	1	<0.010 – 0.017	0.05	1	0
Copper +	3	0	<0.40	1 – 28	2000	0
Nickel	3	0	<0.50	20	20	0
Zinc +	3	2	<1.3 – 1.9	8 – 125	5000	0
Organics						
Naphthalene	3	3	0.05 – 0.79	2.4	NA	0
Benzo(a)pyrene	3	3	0.09 – 0.21	0.05	0.01	3
Anthracene	3	3	0.10 – 0.16	0.1	NA	2
Fluoranthene	3	3	0.44 – 1.8	0.1	NA	0
Sum of benzo(b)fluoranthene and benzo(k)fluoranthene	3	3	0.19 – 0.41	0.03	NA	3
Sum of benzo(ghi)perylene and indeno(1,2,3-cd)pyrene	3	3	0.14 – 0.38	0.002	NA	3
Sum of four PAHs (benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene and indeno(1,2,3-cd)pyrene	3	3	0.33 – 0.79	NA	0.1	3
Phenol	3	0	<0.50	7.7	0.5	0
Total TPH[3]	3	0	<10	200	NA	0

+ – EQS is hardness related
1 – Inlands Waters EQS values
2 – DWS values
3 – EA Surface Water (Abstraction for Drinking Water) (Classification) Regulations (1996) (SWAD)

Metals and Metalloids

An elevated leachable concentration of chromium was recorded in one sample of made ground comprising gravel of clinker obtained from TP7 between 0.30m and 0.40m bgl.

Organics

Elevated leachable PAH compounds (including benzo[a]pyrene) were encountered within all three samples of made ground tested.

8. REVISED CONCEPTUAL MODEL AND GENERIC QUANTITATIVE RISK ASSESSMENT OF POLLUTANT LINKAGES

The preliminary combined conceptual site model and conceptual exposure model, developed from the desk study information and presented in Section 4, has been revised in light of the ground investigation and the chemical analysis results presented above.

The revised conceptual site model (CSM) has been developed for the proposed future land use (residential with gardens). This summarises the understanding of surface and sub-surface features, the potential contaminant sources, transport pathways and receptors.

The revised CSM is presented in schematic form in Appendix A, as Drawing No. C5362/05.

8.1. Summary of Identified Pollutant Linkages

In summary, the revised CSM has identified the following potential pollutant linkages, which could result in an unacceptable risk to the proposed end-use:

- Ingestion, inhalation and dermal contact of locally elevated concentrations of arsenic, copper, lead, individual PAH species and locally TPH contamination within granular made ground and relic topsoil posing a moderate risk to end-users, adjacent site users and construction workers.

- Asbestos fibres (namely chrysotile) within relic topsoil posing a moderate risk to end-users, adjacent site users and construction workers.

- Leachable chromium and individual PAH species posing a moderate risk to controlled waters (principally the underlying Secondary A Aquifer and Scout Dam).

- Potentially combustible ash rich fill posing a moderate risk to end users, construction workers and buried services.

9. CONCLUSIONS AND RECOMMENDATIONS

9.1. General

This geoenvironmental appraisal has been performed for land at the former Penistone Grammar School, Huddersfield Road, Penistone.

It is understood that Bellway are considering acquisition of the site, with a view to redeveloping the property for a low rise residential end-use. It is understood that the residential development is to comprise two and three storey detached dwellings and townhouses with private gardens, associated areas of soft landscaping/public open space (POS) and estate roads. In addition it is understood that the former stable block and 'Weirfield House' are to be retained for residential usage.

At the time of writing finished floor/development levels had not been provided to Sirius. Given that current site levels vary between approximately 199.3m AOD and 214.9m AOD, it is assumed that the site, in particular the eastern part, will be regraded as part of the redevelopment works. Whilst a detailed earthworks 'cut and fill' appraisal is outwith the scope of this report, it is assumed that re-profiled final ground levels (i.e. to provide a level development platform for the proposed residential properties) will not preclude the use of traditional strip or trench fill foundations across the majority of the site.

However, in the absence of proposed development levels and for the purpose of preliminary foundation recommendations, it has been assumed that site levels will remain broadly consistent with those at the time of the investigation and will require amending/updating once final site levels are confirmed.

9.2. Flood Risk/Surface Water Drainage

A flood risk assessment prepared for the site by Eastwood concludes that the site is at negligible risk of flooding from the nearest watercourse, Scout Dyke or from other sources.

Surface water disposal was considered by Eastwood in accordance with the drainage hierarchy presented in the Building Regulations (Part H, 2002), with disposal via SUDS methods the preferred option. However, Eastwood states that infiltration SUDS, for example soakaways, are unlikely to be practicable due to the presence of clay and/or bedrock at shallow depth. The Sirius intrusive ground investigation confers with this conclusion.

Eastwood recommended that a drainage survey be completed to establish the outfall of the existing surface water system. It is understood that this has now been commissioned and undertaken by Bellway.

The permitted discharge rate is subject to regulatory agreement. Eastwood state that surface water discharge is likely to require flow balancing and on-site storage.

9.3. Geotechnical

Mining and Quarrying

Based on the site's geological setting and the Coal Authority Mining Report, the risk to the surface stability of the site from underground coal workings is considered low/negligible.

No quarrying activities are known to have taken place on the site.

Foundations

It is understood that consideration is being given to the redevelopment of the site with low rise residential properties with private gardens. Proposed development loads were not available to Sirius at the time of writing, but are expected to be relatively light. If this is not the case, then the following comments may require amendment. It is further understood that some cut and fill works will be required, in particular in the eastern part of the site, in order to form a level development platform for future properties.

It should be noted that these foundation recommendations could be subject to significant change if the aforementioned development proposals change.

The investigation has identified variable composition made ground and/or reworked topsoil across the site, generally to depths of between 0.3m and 0.9m bgl. Deeper made ground (to 1.40m bgl) was encountered in the northern part of the site, where ground levels appear to have been locally raised to form a plateau to accommodate part of the former school development.

The made ground is underlain by a variable sequence of weathered bedrock material, both granular and cohesive material. The residual soils typically comprise either firm and stiff, medium and high strength, variably sandy/silty, slightly gravelly clay; or medium dense/dense silty or clayey, sandy gravel of siltstone, sandstone and/or mudstone. Extremely or very weak bedrock (sandstone, siltstone or mudstone) is present beneath the residual soils at depths of between 1.00m and 3.50m bgl.

It is considered that conventional spread foundations, taken down through any made ground into the underlying medium/high strength, medium dense/dense residual soils would suitable to support structural loads typically associated with low rise residential properties across the majority of the site.

Following re-profiling of ground levels across the site, where suitable founding strata is found to lie at depths in excess of 0.9m below finished formation levels, locally deepened strip or trench fill foundations are likely to be required. Any trench fill foundations deeper than 2.5m would require an engineered design, to be agreed with the NHBC. It is anticipated that underbuild up to the proposed finished floor level will be required where ground levels vary significantly across the footprint of the proposed plots. It is recommended that the foundation recommendations are reviewed once finished floor levels and proposed loadings are known.

In addition, retaining walls may be required within garden areas in the eastern part of the site to accommodate changes in ground level.

The underlying medium strength residual cohesive soils are considered to have a characteristic undrained shear strength of 50kN/m^2 at 0.9m bgl, increasing with depth. Assuming conventional 600mm wide strip trench fill or foundation and a maximum tolerable settlement of 25mm, Eurocode 7 compliant calculations indicate that for such soils, a 0.6m wide strip could support a line load of 65kN/m run.

The clay soils on this site have been found to be of low and medium volume change potential, in accordance with NHBC Standards Chapter 4.2. Foundations placed into natural in situ clay soils should be taken to a minimum of 0.9m below finished ground level, locally deepened within the zone of influence of existing or proposed trees.

A tree survey was not included in the scope of this investigation, but should be carried out prior to the production of a detailed plot-specific foundation schedule.

Where granular strata is present at founding depth, based on a characteristic SPT N value of 16 for the residual granular soils, a 0.60m wide strip footing at a depth of 0.90m bgl could support a design loading of 120kN/m run. Calculations indicate that for the above foundation size and loading scenario, settlement should be below 25mm.

Foundations bearing upon granular deposits should be placed a minimum of 500mm below finished ground level to alleviate any effects arising from frost heave beneath the foundation.

Where bedrock is encountered in foundation excavations, it is recommended that the foundation for that particular plot bears wholly upon rock in order to mitigate against the potential effects of differential settlements. For design of foundations on extremely or very weak rock, a characteristic UCS of at least 250kN/m^2 may be assumed.

It is recommended that if foundations are to bear upon a mix of cohesive and granular deposits, the settlement performance between foundation types should be calculated/assessed. Reinforcement of foundations to cater for potential differential settlement of natural cohesive and granular soils should be anticipated. Should the differential settlement between foundations constructed on cohesive and granular deposits not be able to be accommodated economically, foundations should be taken through the cohesive deposits to found on the underlying granular deposits/bedrock strata.

Settlements of foundations upon granular and cohesive materials are dependent on foundation loading and dimensions. It is therefore recommended that foundation settlements are reviewed by the design engineer when final loading arrangements and foundation sizes are known.

Due to the existing slopes on the site, particularly in the eastern part, foundations will need to be stepped down to ensure that the foundation bears entirely onto a consistent stratum. The dimensions of any stepped foundation shall be in accordance with NHBC Chapter 4.4 (2010).

Alternatively, piles could be considered if localised fill depths following re-profiling are considered excessive in some locations, i.e. in areas of former basements or other deep structures, or if this is the preferred option by the structural engineer based on the proposed building design.

Piling contractors have their own proprietary methods of working. It is therefore recommended that consultation with a specialist piling contractor takes place at an early stage in the construction process. In addition it must be ensured that piles do not introduce any preferential pathways for the migration of contaminants and the guidance given in the Environment Agency document ‘Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention’ should be followed and discussed with the Environment Agency prior to undertaking any piling operations.

Given the history of the site and the findings of the site investigation, the presence of relic substructures and foundations should be expected.

Foundations should be taken below a line drawn up at 45° from the base of any existing or proposed services.

It is understood that a culvert, aligned north east – south west is located beneath the central site area. Depending on the finalised site layout, the culvert may require diverting, or alternatively foundations locally designed to span the culvert.

Where ash fill is encountered in excavations for potential heat sources, such as electric cables, it should be removed for 1m in all directions of the heat source and be replaced with compacted inert fill.

Floors

In accordance with NHBC Standards 2010 (Chapters 4.2, 4.6 and 5.1), suspended ground floor slabs are required in the following situations:

- Made ground greater than 600mm thick.
- Where soil swelling may occur.
- Where vibratory ground improvement has been carried out.
- Where the ground has insufficient bearing capacity.

At this stage it is anticipated that, based on the future re-profiling of the site to enable the redevelopment, suspended floor slabs will be required.

Sulphate Attack

Based on the samples tested, a design sulphate class of DS-1 and an ACEC Class of AC-1 can be used for buried concrete structures in contact with natural soils/rock.

For concrete in contact with reworked topsoil, the ACEC class should be increased to of AC-2z, and where black clinker, as encountered in TP7, is present and is to remain in situ the design sulphate class should be increased to DS-2 and ACEC class to AC-2.

Groundworks, Excavation Stability and Groundwater Dewatering

Excavations into existing granular soils should be assumed to be unstable. No man entry into unsupported excavations should be allowed without an appropriate risk assessment. Reference to CIRIA report 97 should be made to establish suitable means of support or battering of excavation sides.

Based on the results of this investigation, localised seepages of groundwater into excavations should be allowed for, in particular in the western part of the site. To control this groundwater, localised pumping from sumps should generally be adequate.

It is recommended that an adequate drainage system for surface water be installed by a competent contractor in order to prevent surface water ponding or collecting both during and post construction, as this may lead to deterioration of the founding stratum.

It is recommended that in order to reduce the possibility of softening or swelling of cohesive soils at the base of foundation trenches, it should be suitably blinded with concrete.

Competent bedrock strata is anticipated at shallow depth across the site. For deep excavations, for example, for services, bedrock may require breaking-out using heavy mechanical plant.

Pavements and Highways

Based on a visual examination of the soil and Atterberg test results, a CBR value of <2.5% is suggested for the made ground soils and natural cohesive soils. Highways Agency document HD25 Interim Advice Note 73/06 Revision 1 (2009) states that where a subgrade has a CBR lower than 2.5%, it is considered unsuitable support for a pavement foundation since it would tend to deform under construction traffic, and must be improved.

For preliminary design a CBR value of 3% is suggested for residual granular soils.

It is recommended that *in situ* CBR testing is carried out following completion of the enabling works, when final site levels will be known.

A backfilled well is present beneath the proposed highway in the central part of the site. This feature will require capping as part of the enabling/remediation works.

All road design should be discussed with the relevant local authority if highways are to be subject to a Section 38 agreement.

9.4. Asbestos-Containing Materials

Asbestos fibres (chrysotile) were recorded within one sample of relic topsoil encountered in the western part of the site. It is anticipated that this material should not pose a risk to end users if placed beneath either buildings or hardstanding areas. Alternatively the material should be

removed from site. Should the latter be the preferred option, it is recommended that delineation of the impacted area be undertaken as part of the remediation works.

The possibility of asbestos sheeting, used as shuttering, and/or fragments of asbestos-containing materials within made ground or fill materials beneath concrete slabs cannot be discounted.

Construction workers involved in the groundworks and construction during the site redevelopment are considered to be at high risk from exposure to ACM impacted soils. However, these risks can be reduced by appropriate PPE, hygiene precautions and good working practices.

Existing ACMs identified within the existing buildings' fabric and stockpiled ACMs located within the western part of the site will require removal by a licensed contractor and disposal from site to an appropriately licensed waste facility.

9.5. Soil and Groundwater Contamination

Risk Evaluation for the Proposed Land Use (residential with gardens)

The revised conceptual site model confirms significant pollutant linkages exist for both site end users, controlled waters and construction workers. Pollutant linkages assessed as a Low or Negligible risk are not considered significant or requiring remedial action, and are not considered further.

Human Health Receptors

Elevated concentrations of arsenic, copper, lead, individual PAH species and locally TPH contamination have been identified within granular made ground and relic topsoil, considered to pose a moderate risk to end-users, adjacent site users and construction workers, should these soils remain at shallow depth within future gardens/areas of POS.

Asbestos fibres (namely chrysotile) have also been identified within relic topsoil, considered to pose a moderate to high risk to end-users, adjacent site users and construction workers.

In addition potentially combustible ash rich fill has been identified near surface in the eastern part of the site.

Consequently, it is considered that remedial action as outlined below is required to be protective of end-users, adjacent site users and construction workers.

Ground gas is discussed separately below.

Controlled Waters Receptors

Elevated leachable chromium and individual PAH species have been identified within granular made ground, posing a potential risk to controlled waters (principally Scout Dam and the underlying Secondary A Aquifer).

Consequently, it is considered that remedial action as outlined below is required to be protective of controlled waters.

Ecological Receptors

No potential pollutant linkages to ecological receptors have been identified for the site.

Utilities

It is recommended that the results of the chemical testing and details of the proposed remedial works are provided to the appropriate utility companies to determine the necessity for service protection.

A calorific value of 10MJ/kg was recorded in a sample of ashy made ground within WS7 containing coal and clinker. Consequently, precautions will be required around potential heat sources, such as electric cables, where made ground containing significant quantities of coal or ash fill is encountered.

Construction and Maintenance Workers

Contamination may pose a short-term (acute) or long-term (chronic) risk to workers during construction and maintenance. The potential risks must be specifically assessed as part of the health and safety evaluation for the works to be performed in accordance with prevailing legislation. Site practices must conform to the specific legislative requirements and follow appropriate guidance (e.g., HSE, 1991; CIRIA, 1996).

Outline Remediation Requirements

In view of the locally elevated levels of metals and PAH determinands, including leachable chromium, identified within the shallow made ground soils across the site, it is recommended that these materials be excavated and either placed under areas of proposed hardstanding or buildings, or be disposed off at a suitably licensed landfill facility.

Should the material be placed under hardstanding, surface water infiltration and leachate generation will be limited. Therefore it is considered that no further remedial works will be required to be protective of controlled waters.

Based on the thickness of made ground encountered across the site, it is recommended that the full thickness of made ground be removed form gardens/soft landscaped areas as part of the enabling works. In these cases a minimum 100mm depth of 'clean' topsoil will be required.

Based on the results of testing undertaken as part of this investigation, reworked topsoil present on the site may be suitable for reuse. However, visual inspection to ensure textural suitability and further chemical testing should be undertaken as part of the remediation works.

If soils are imported for clean capping purposes (topsoil or subsoil) additional chemical testing will be required.

If the full thickness of made ground is removed from garden areas, validation following placement of topsoil will not be required.

Alternatively, if made ground soils are to remain beneath future gardens/soft landscaping, a clean capping layer will be required. Based on the chemical testing undertaken as part of this investigation, a minimum 600mm clean capping layer will be required. The cover soil thickness should be confirmed with the local authority ahead of the commencement of development site works.

It is possible that areas of more significant contamination not identified to date may be encountered onsite during redevelopment. If any areas of noxious odorous, brightly coloured, fibrous, liquid etc. contamination are encountered further advice should be sought from a suitably qualified consultant.

The above recommendations comprise a general outline of possible or likely works.

9.6. Ground Gas

No recorded historical landfills have been identified within 250m of the property. No significant depths of made ground have been identified beneath the site as part of the Sirius ground investigation. Consequently no special precautions with regard to ground gas are considered necessary.

Radon protection measures are <u>not</u> required for the proposed development on this site.

9.7. Invasive Plants

Invasive plant species were not observed on the site at the time of investigation.

It is recommended that the absence or otherwise of invasive plant species be confirmed by a qualified consultant ecologist and their advice taken on appropriate treatment. The treatment of any invasive species should take place in advance of the proposed construction works.

9.8. Disposal of Soils

Any materials removed from site should be undertaken in accordance with the Duty of Care Regulations 1991. There will also be a requirement to classify the waste in accordance with the European Waste Catalogue. The waste could also be subject to Waste Acceptance Criteria (WAC) testing. It is recommended that discussion with landfill operators takes place at an early stage to ascertain costs for soil removal from site.

10. REGULATORY APPROVALS

Further ground investigation works may be required once the development levels/layout have been finalised, and loadings are confirmed.

As part of the enabling/remediation works it is recommended that trial pits are excavated and nominal chemical testing completed within areas inaccessible at the time of the intrusive investigation (i.e. following demolition of existing buildings) in order to confirm the soil profile in these locations.

11. FURTHER WORKS

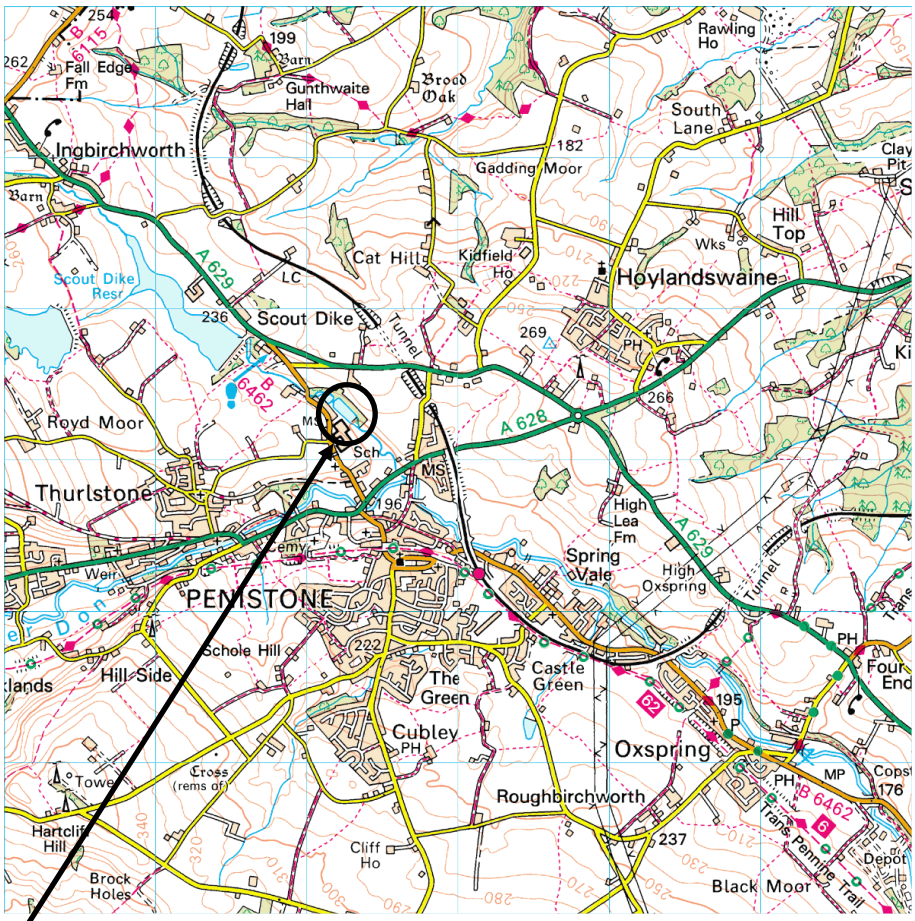
The conclusions and recommendations presented above are considered reasonable based on the findings of the site investigation. However, these cannot be guaranteed to gain regulatory approval and, therefore, the report should be passed to the appropriate regulatory authorities and/or other organisations for their comment and approval prior to undertaking any works on site.

APPENDIX A

FIGURES AND DRAWINGS

Site Location Plan

Contract Number	C5362
Contract	Former Penistone Grammar School, Huddersfield Road, Penistone
Client	Bellway Homes Ltd.



Scale	1:50,000		
Drawn by	CJ	Approved	JW
Drawing Number	C5362/01		

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NOTES

Approximate site boundary

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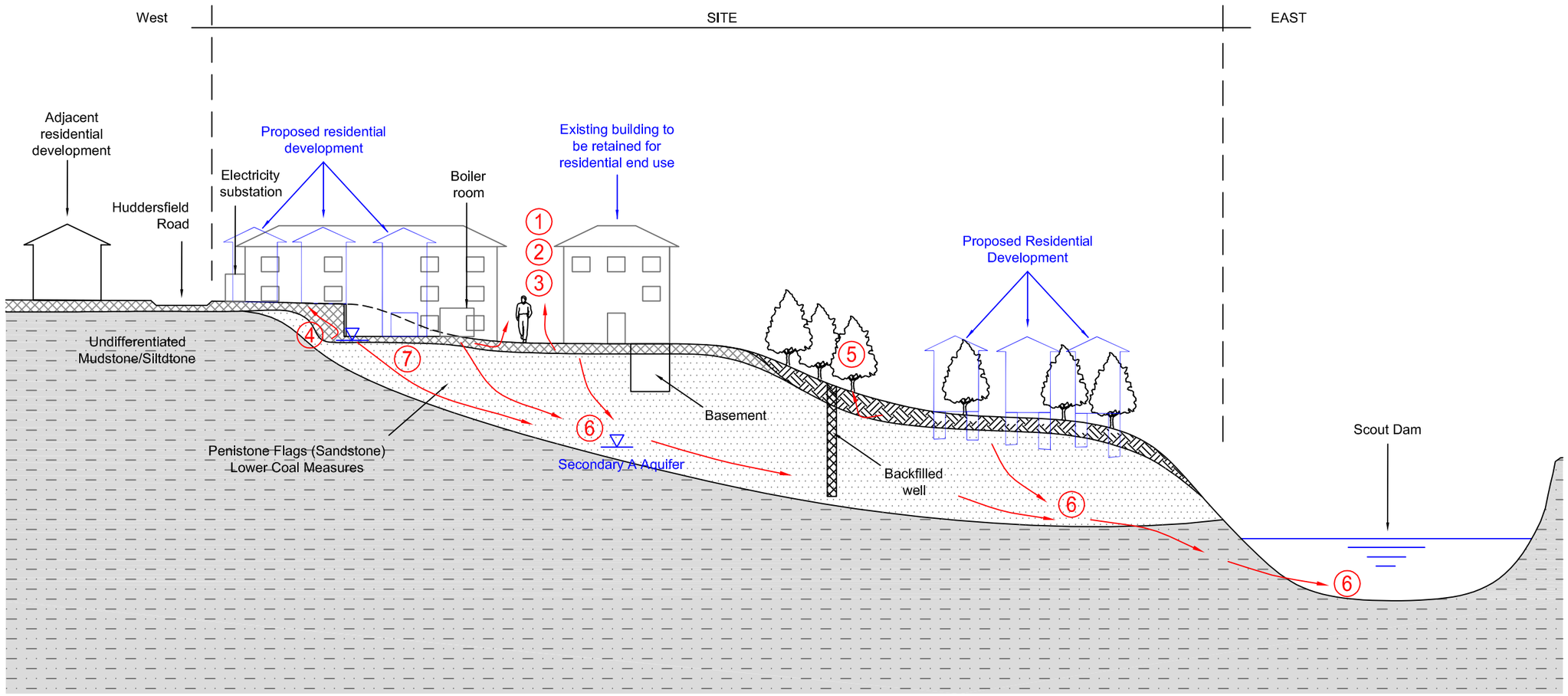
SITE

FORMER PENISTONE GRAMMAR SCHOOL, HUDDERSFIELD ROAD, PENISTONE

DRAWING TITLE

SITE FEATURES

DRAWING NO.	REVISION NO.
C5362/02	0
DRAWN BY	APPROVED BY
JW	SC
DATE	SCALE	PAPER SIZE
JUNE 2013	1:500	A2



Contamination Sources	Contamination Pathways	Potential receptors	Risk of significant pollutant linkage
Elevated metals, inorganic and organic contaminants and asbestos containing materials (ACM) within made ground and shallow natural soils	(1) Direct and indirect ingestion	Construction workers/end users/adjacent site users	Moderate
	(2) Inhalation of contaminated particles/dust	Construction workers/end users/adjacent site users	Moderate
	(3) Dermal contact	Construction workers/end users/adjacent site users	Moderate
	(4) Sulphate attack	Built development	Low - moderate
	(5) Plant uptake	Proposed / existing landscaping	Low - moderate
Elevated leachable metals, inorganic and organic contaminants within made ground	(6) Migration via groundwater flow	Controlled Waters (Scout Dam/ Secondary A Aquifer	Moderate
Elevated metals, inorganic and organic contaminants in the shallow/perched groundwater underlying the site	(7) Migration via groundwater flow	Controlled Waters (Scout Dam/ Secondary A Aquifer	Moderate

Key

- Top soil
- Made ground
- Penistone Flags (sandsto
- Mudstone/siltstone

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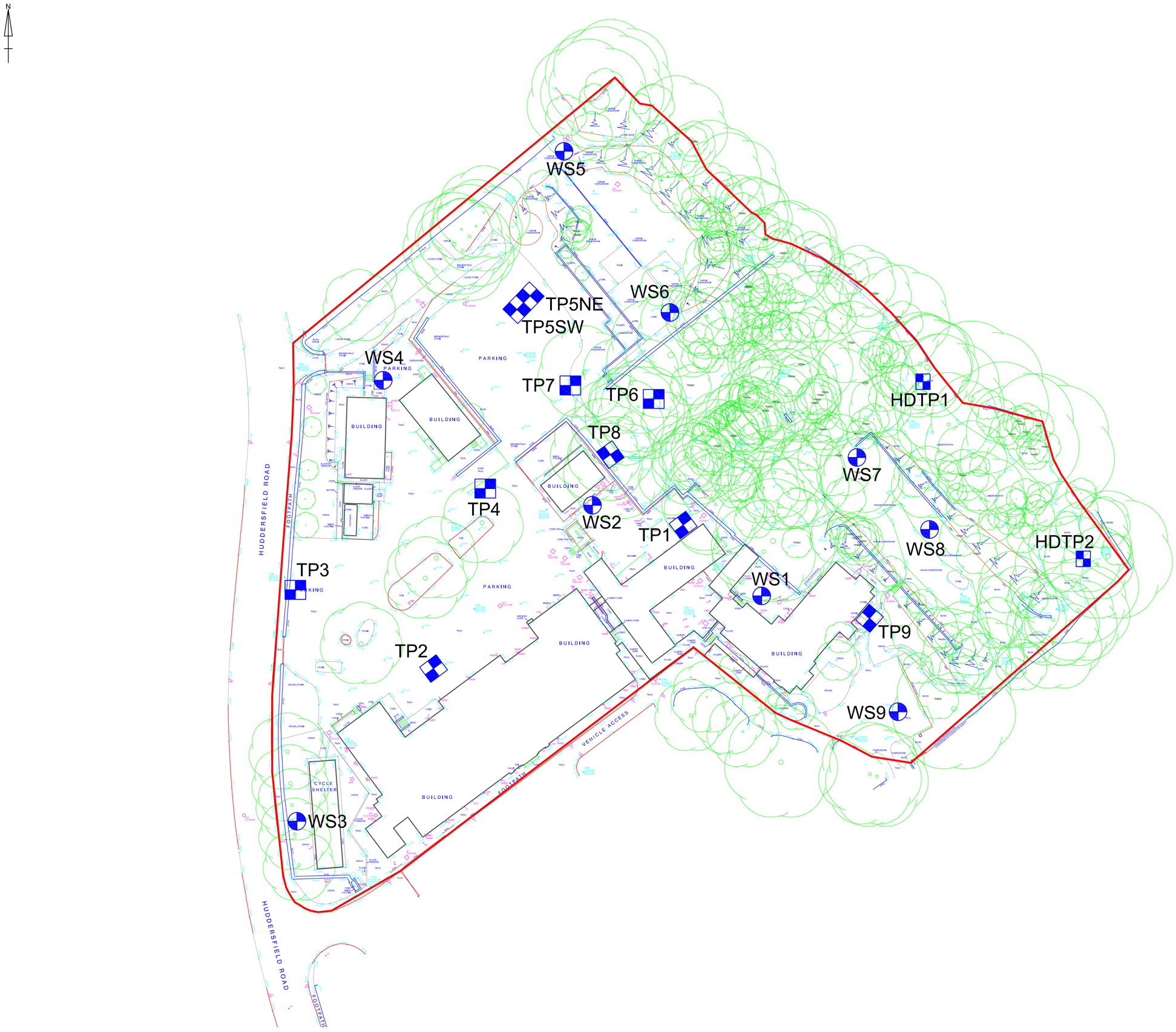
CLIENT

Bellway

SITE
FORMER PENISTONE GRAMMER SCHOOL, HUDDERSFIELD ROAD, PENISTONE

DRAWING TITLE
PRELIMINARY CONCEPTUAL SITE MODEL

DRAWING NO.	REVISION NO.
C5326/03	0
DRAWN BY: IW	APPROVED BY: JW
DATE: JUNE 2013	SCALE: NTS
PAPER SIZE: A3	



NOTES

- Approximate site boundary
- Sirius window sample borehole (April 2013)
- Sirius machine excavated trial pit (April 2013)
- Sirius hand excavated trial pit (April 2013)

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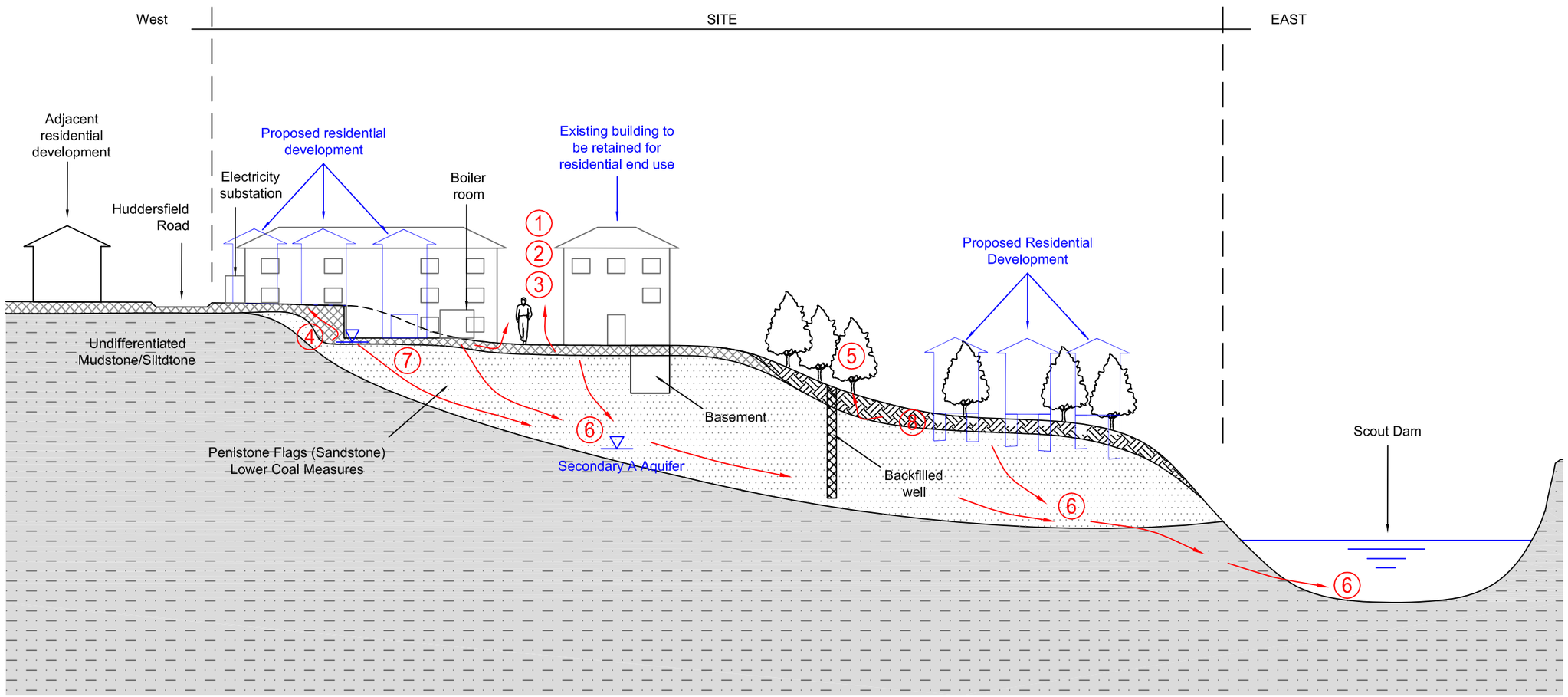
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FORMER PENISTONE GRAMMAR SCHOOL, HUDDERSFIELD ROAD, PENISTONE

DRAWING TITLE

EXPLORATORY HOLE LOCATION PLAN

DRAWING NO.	REVISION NO.
C5362/04	0
DRAWN BY: JW	APPROVED BY: SC
DATE: JUNE 2013	SCALE: 1:500
PAPER SIZE: A2	



Contamination Sources	Contamination Pathways	Potential receptors	Risk of significant pollutant linkage
Elevated metals, inorganic and organic contaminants and asbestos containing materials (ACM) within made ground and shallow natural soils	(1) Direct and indirect ingestion	Construction workers/end users/adjacent site users	Moderate
	(2) Inhalation of contaminated particles/dust	Construction workers/end users/adjacent site users	Moderate
	(3) Dermal contact	Construction workers/end users/adjacent site users	Moderate
	(4) Sulphate attack	Built development	Low - moderate
	(5) Plant uptake	Proposed / existing landscaping	Low - moderate
Elevated leachable metals, inorganic and organic contaminants within made ground	(6) Migration via groundwater flow	Controlled Waters (Scout Dam/ Secondary A Aquifer	Moderate
Elevated metals, inorganic and organic contaminants in the shallow/perched groundwater underlying the site	(7) Migration via groundwater flow	Controlled Waters (Scout Dam/ Secondary A Aquifer	Moderate
Elevated calorific value (CV) within made ground containing ash.	(8) Ignition	Services	Moderate

Key

- Top soil
- Made ground
- Penistone Flags (sandsto
- Mudstone/siltstone

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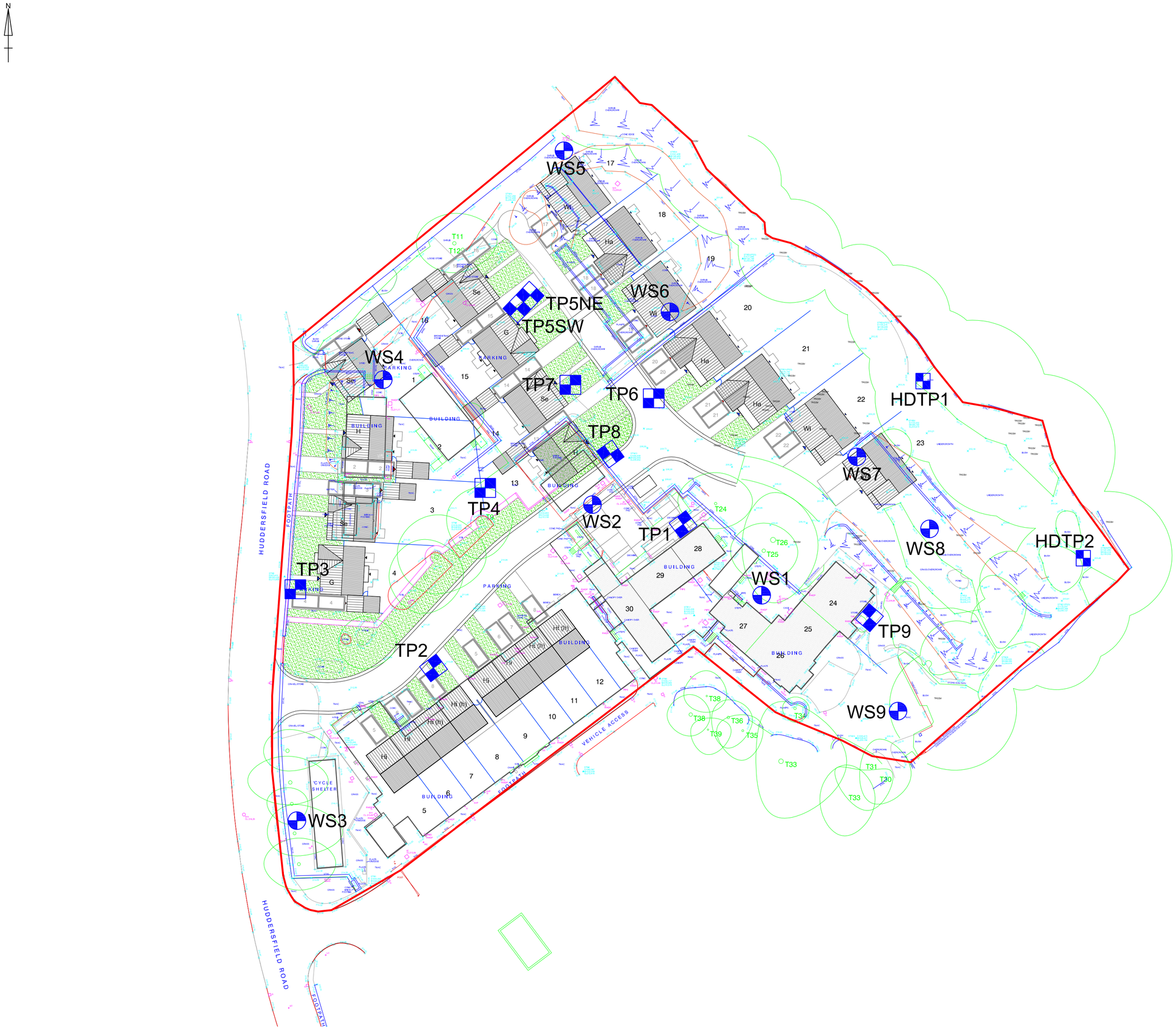
CLIENT

Bellway

SITE
FORMER PENISTONE GRAMMER SCHOOL, HUDDERSFIELD ROAD, PENISTONE

DRAWING TITLE
REVISED CONCEPTUAL SITE MODEL

DRAWING NO.	REVISION NO.
C5326/05	0
DRAWN BY	APPROVED BY
IW	JW
DATE	SCALE	PAPER SIZE
JUNE 2013	NTS	A3



NOTES

- Approximate site boundary
- Sirius window sample borehole (April 2013)
- Sirius machine excavated trial pit (April 2013)
- Sirius hand excavated trial pit (April 2013)

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CLIENT

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SITE

FORMER PENISTONE GRAMMAR SCHOOL, HUDDERSFIELD ROAD, PENISTONE

DRAWING TITLE

EXPLORATORY HOLE LOCATION PLAN / PROPOSED DEVELOPMENT OVERLAY

DRAWING NO.	REVISION NO.
C5362/06	0
DRAWN BY: JW	APPROVED BY: SC
DATE: JUNE 2013	SCALE: 1:500
PAPER SIZE: A2	

Bellway

Penistone

N



Bellway

(Yorkshire Division)

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Development

Penistone

Drawing Title

Planning Site Layout

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(Yorkshire Division)
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Tel 01937 583 533 Fax 01937 586 147
www.bellway.co.uk

Scale	1:500	Drawn	ZE
Date	April 13	Checked	

Drawing No.	Rev
P / Site Layout	-

APPENDIX B

EASTWOOD & PARTNERS DESK STUDY REPORT (ON CD)

Eastwood & Partners
CONSULTING ENGINEERS

PHASE 1 GEOTECHNICAL AND GEO-ENVIRONMENTAL DESKTOP REPORT

LAND AT PENISTONE GRAMMAR SCHOOL,

PENISTONE

FOR

BARNSLEY METROPOLITAN BOROUGH COUNCIL

ISSUE 1

33275-001 **29 OCTOBER 2010**

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PHASE 1 GEOTECHNICAL AND GEO-ENVIRONMENTAL DESKTOP REPORT

LAND AT PENISTONE GRAMMAR SCHOOL

PENISTONE

FOR

BARNSLEY METROPOLITAN BOROUGH COUNCIL

ISSUE 1

Job No.	:	33275
Report Status	:	ISSUE 1
Document Date	:	29 October 2010
Approved	:	

J M Wood

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C A Wood BSc, CEng, MIStructE, AMICE **C A Topliss** BSc, CEnv, CSci, CGeol, AMICE, FGS

Eastwood & Partners (Consulting Engineers) Limited Registered No 1835021

CONTENTS

1.0 EXECUTIVE SUMMARY 6
2.0 INTRODUCTION 8
2.1 Terms of Reference 8
3.0 THE SITE 9
3.1 Description 9
3.2 History 10
3.2.1 The Site 10
3.2.2 The Surrounding Area 11
3.3 Geology 12
3.4 Hydrogeology 12
3.4.1 Groundwater Vulnerability 12
3.4.2 Groundwater Abstractions 13
3.5 Hydrology 13
3.6 Mining 13
3.6.1 Coal Mining 13
3.6.2 Quarrying 14
3.7 Ground Gas 14
3.7.1 Landfill Gas 14
3.7.2 Radon Gas 14
3.8 Pollution Incidents to Controlled Waters 14
3.9 Discharge Consents 14
3.10 Flooding 15
4.0 EXPECTED GROUND CONDITIONS 16
5.0 GEOTECHNICAL APPRAISAL 17
5.1 General 17
5.2 Foundations and Floor Slabs 17
5.3 Problems Due To Past Development 18
5.4 Excavation Problems 18
5.5 Surface Water Drainage 18
5.6 Sulphate Attack of Buried Concrete 19

6.0 CONTAMINATION APPRAISAL 20

6.1 Outline Conceptual Model 20

6.2 Possible Significant Pollutant Linkages 21

7.0 RATIONALE FOR FURTHER INVESTIGATION 22

APPENDICES

Appendix 1 *'Site Location Plan'*, Drawing 33275/SK1 revision A

Appendix 2 Landmark Envirocheck Report
Historical Ordnance Survey Maps
Coal Authority Mining Report

1.0 EXECUTIVE SUMMARY

1. This report presents the findings of a Phase 1 geotechnical and geo-environmental site investigation carried out by Eastwood & Partners (Consulting Engineers) Limited for Barnsley Metropolitan Borough Council, under the instruction of Chris Carr Associated Ltd.

2. The site is located to the east of Huddersfield Road in Penistone, South Yorkshire. The site has an area of approximately 1.5 hectares and is centred around Ordnance Survey national grid reference SE 242 042 (424220 404200).

3. The site is currently occupied by buildings belonging to Penistone Grammar School. A large classroom and workshop block is located in the south of the site, with further classroom and office buildings in the south east and north. A waste depot in located in the centre of the site, with various stores and bike stores also present. The remainder of the western half of the site is predominantly hard covered as car parking. The eastern area is covered by mature woodland.

4. Historical maps show the site to have been occupied by a residential building with associated outbuildings in the late 1800's. This was converted to use as the grammar school at the turn of the century, with additional buildings added soon after. Further buildings were added prior to 1948, which were removed in recent years. The eastern part of the site has been landscaped since the 1800's, with trees indicated across this area for all of this time. The surrounding area is generally residential or agricultural in nature, and has been for the past 100 years. Scout Dam reservoir is located immediately east of the site.

5. The geology beneath the site comprises Penistone Flags sandstone of the Lower Coal Measures. The upper layers of the bedrock are likely to have weathered to gravelly sand or clay.

6. The site does not lie within an area which is known to be affected by shallow coal mining.

7. No radon precautions are required at the site. The site is unlikely to be affected by the migration of landfill gases from the surrounding area.

8. It is not expected that soakaways will be a viable method of draining surface water from the site. Infiltration testing would be required if soakaway drainage is to be considered as part of any development. The site is currently served by surface water drains, and it should be acceptable to retain the existing connections if soakaway drainage is not viable.

9. It is likely that traditional strip or trench fill footings will be suitable for use on the site in low rise developments, with footings taken through any made ground and founded at a minimum depth of 600 mm or 750 mm in sand or gravel soils, or 900 mm in clay. Where clay is present, foundations should be made deepened near to trees.

10. Ground bearing floor slabs should be acceptable for use where there is less than 600 mm of granular made ground beneath the slab.

11. At this stage, class DS-2, AC-2 sulphate precautions should be adopted for all subsurface concrete. Chemical testing should be undertaken during an intrusive investigation which may allow this classification to be downgraded.

12. Generally, no significant contamination is expected to be encountered. Chemical testing of the soils will be required to determine the level of risk presented and hence the level of remediation required.

13. The conclusions made in this report are subject to agreement by the approving bodies such as the Local Authority and the NHBC and Environment Agency where applicable.

2.0 INTRODUCTION

2.1 Terms of Reference

This report presents the findings of a Phase 1 desktop investigation, undertaken by Eastwood & Partners, for Barnsley Metropolitan Borough Council, under the instruction of Chris Carr Associated Ltd. It incorporates information from a Landmark Envirocheck report, a Coal Authority Mining report and a site walkover survey.

The recommendations made within this report are based on the assumption that the site will be sold for development. Some or all of the existing buildings will be demolished. We understand that a number of potential uses are being considered, including commercial developments, residential care homes or private housing. At the time of writing, no firm proposals are in place. Within our report, we have assumed that any buildings will be of traditional construction and will be no more than three storeys in height. We have also assumed that part of the site will be given over to private gardens, with other areas of soft and hard landscaping also being provided.

All information, comments and opinions given in this report are based on the information gained from the review of published information, as outlined above, and from observations made during the site walkover. However, there may be conditions at the site, which have not been taken into account such as unpredictable soil strata and water conditions. It should be noted that groundwater levels vary due to seasonal or other affects and may at times differ from those measured during the investigation. It should be noted that an internal inspection of the existing buildings was not made, with the walkover survey being restricted to external areas only.

This report was prepared for the sole and exclusive use of Barnsley Metropolitan Borough Council, in response to particular instructions. Any other parties using the information contained in this report, unless given prior written approval, do so at their own risk, and any duty of care to those parties is excluded.

3.0 THE SITE

3.1 Description

The site is located to the east of Huddersfield Road in Penistone, South Yorkshire. The site has an area of approximately 1.5 hectares and is centred around Ordnance Survey national grid reference SE 242 042 (424220 404200). The site is irregular in shape.

The western part of the site is currently occupied by buildings belonging to Penistone Grammar School, along with hard covered areas used as parking, paths and storage areas, and an areas of woodland to the east.

The largest building on the site is known as 'Fulford', and comprises a two storey classroom and workshop block of stone block construction. A sub level basement is also present at the eastern end of the building, which appears to function as a service room. An electricity substation is located on the western most end of the building, along with a store for gas cylinders. Warning signs posted on the doors state that acetylene and oxygen cylinders are stored on site. A large cycle store is also located to the west of the building, which is a metal framed cover with Perspex panels, with a concrete base.

To the east of Fulford, a two storey stable block is located. This has been converted to use as classrooms. A date stone over the doorway states that the building was constructed in 1900.

'Weirfield' is located to the south east of the stable block. This is a two storey building of stone construction, currently used as classroom and administration offices. The ground floor level is below that of the adjacent ground, with small retaining walls running along the south western side of the building, which retain around 1 m of earth. The rear of the building is level with the surroundings, due to the slope of the site.

In the north west of the site, a number of sheds and classroom buildings are located. Some of these buildings are of brick construction, with one of the classrooms being a prefabricated type unit. The gardeners store is located in this area, with gardening equipment including a small tractor being stored here.

Further buildings are located in the centre of the site. Here, two temporary buildings, stacked one on another, are located. These appear to be used as offices for cleaning/maintenance staff and meeting rooms. A waste depot is also located in this area, which includes a bin store and boiler room.

The remainder of the western side of the site is predominantly hard covered as car parking, with the surfacing comprising a mixture of tarmac, concrete slabs and gravel.

The eastern side of the site is covered by woodland, with mature trees of various species being present, including sycamore, pine, beech, maple and cypress. A small, shallow decorative pond is present in the northern most corner of the site, surrounded by concrete slabs.

A number of mature trees are also located across the centre of the car park, and along the western boundary with Huddersfield Road.

The site slopes down towards the east, with the eastern side of the car park being approximately 3 m below the level of Huddersfield Road. A number of small retaining walls create areas of different levels, each wall retaining around 1 m of ground. At the bottom of the car park in the north of the site, the level drops approximately 1 m via a retaining wall into the woodland. The level then slopes down by around 3 m, before dropping around 5-6 m at a steep angle to an adjacent reservoir. The southern side of the site drops a similar amount although the slope is more consistent at this end of the site.

The surrounding area is a mixture of agricultural land and residential development. A body of water known as Scout Dam is located immediately east of the site. Further school buildings are located to the south including a new main building currently under construction.

The 'Site Location Plan', drawing 33275/SK1 revision A, in Appendix 1 shows the general layout of the site.

3.2 History

Historical Ordnance Survey maps obtained as part of the Envirocheck Report have been studied to assess the previous use of the site. Copies of the maps are presented in Appendix 2.

3.2.1 The Site

The earliest map reviewed, dated 1851, indicates the site to be agricultural in nature, comprising open fields. The next map, 1894, shows Weir Field House to have been constructed in the south of the site, with the building position and shape matching that of the current 'Weirfield' building which remains on site today. A number of small outbuildings are also shown around the house, with landscaped gardens surrounding. The land to the east of the house appears to be terraced, with two separate levels down to the adjacent Scout Dam

reservoir. A number of trees are indicated within the gardens. The land to the north and west of the house remains undeveloped, with a tree lined track providing access to Weir Fields House. A well is also indicated in the central area of the site.

By 1906, the site is labelled as Penistone Grammar School. No major change in site layout have taken place, with the exception of the conversion and extension of one of the outbuildings. It is likely that this is 'The Stables' as the building layout appears similar to that which remains today, with the date stone of 1900 further supporting this theory.

By 1931, the Fulford building has been constructed in the west of the site, with a number of trees indicated around the buildings. A rectangular feature is indicated to the east of Weir Field House, the use of which is not known, although it is likely to be either gardens or a playground. The well is no longer shown by this time. The north of the site remains undeveloped until around 1948, when a building is shown in the centre of the northern area, with another small building added in the north west prior to 1955.

The buildings in the north were replaced prior to 1960 by a large 'C-shaped' building in the centre and smaller buildings in the west. The buildings in the west are a similar layout to the sheds and classroom remaining to the present day. Various slopes and changes in level are indicated around this area, suggesting that some minor cut and fill works had taken place during the construction of these new buildings.

No further changes to the site layout are indicated until around 2000, when the building in the north of the site was demolished. The waste depot appears to have been added in recent years.

3.2.2 The Surrounding Area

Early maps show the land surrounding the site to be agricultural in nature, with occasional residential development along Huddersfield Road. Scout Dam reservoir is located to the east of the site. A mill race also runs south east from the reservoir to a corn mill located around 400 m south east of the site. A number of old sandstone quarries and air shafts are indicated in the area surrounding the site and Penistone town, although these are all over 500 m from the site. Penistone Union workhouse is shown 250 m south east of the site, with a church opposite along with a burial ground. Penistone town centre is located around 700 m south east of the site with various residential, commercial and small industrial developments shown.

Little change is noted by maps dating from the early 1900's. Westhorpe Detonator Works is shown 150 m north of the site, beyond the reservoir. Various small buildings and tanks are shown within the works.

The union workhouse became a Poor Law Institution prior to 1931. Additional houses were constructed to the north of the site at this time also, with further residential properties added by 1960. The poor law institution became a hostel for the aged by 1960, and was later converted for use as part of the Grammar School's Sixth Form Centre by the mid 1980's. The main Grammar school campus also expanded to the south of the site in the years between 1960 and 1989 with new buildings and playing fields added. No other major development is indicated in the area immediately surrounding the site up to the present day, with only the new school buildings being added. The construction of this is still ongoing at the time of writing.

Penistone town gradually expanded over the 20th Century, although major industrial development was generally absent.

3.3 Geology

The Geological Map Sheet 273 SE (1:10,560 scale) shows the solid geology beneath the site to comprise Penistone Flags sandstone of the Lower Coal Measures. Mudstone and shales are conjectured to outcrop immediately to the east of the site. The strata are indicated to be horizontally bedded.

No alluvial or superficial deposits are indicated to cover the site, and no faults or other lines of weakness are indicated to cross the site.

The Lower Penistone Coal is conjectured to outcrop approximately 600 m west of the site. A coal seam is also conjectured to outcrop 290 m west, which is also likely to be the Lower Penistone Coal. Stratagraphically, the Lower Penistone Coal lies above the Penistone Flags, and therefore this coal is not expected below the site. The shallowest coal seam below the site is expected to be the Grenoside Sandstone Coal.

3.4 Hydrogeology

3.4.1 Groundwater Vulnerability

The Environment Agency identify the site to overlie a Secondary A aquifer (formerly minor aquifer) comprising 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.

3.4.2 Groundwater Abstractions

There are no groundwater abstractions within 500 m of the site boundary.

3.5 Hydrology

The nearest surface water feature is a small decorative pond, located in the north east of the site. Scout Dam is located adjacent to the site's eastern boundary.

The site does not lie within a groundwater Source Protection Zone.

There are no surface water abstractions within 500 m of the site boundary.

3.6 Mining

3.6.1 Coal Mining

The shallowest seam of coal expected beneath the site is the Grenoside Sandstone Coal. This is conjectured to outcrop approximately 800 m south west of the site, although the seam thins out and is not shown towards the north east. It is therefore doubtful whether this seam will be present beneath the site.

If present, the Grenoside Sandstone Coal is expected at a depth of around 21 m below the site. The coal is recorded as being thin, around 4" (10 cm) thick in the local area, and is therefore unlikely to have been worked at depth. Any workings which are present are unlikely to affect developments at surface as there is in excess of ten times the worked seam thickness of competent ground between the seam and the likely underside of footings.

A Coal Authority mining report has been obtained, and this confirms that the site is not within the zone of likely physical influence of any recorded past or current underground or opencast coal workings. There are no recorded mine shafts or entries on the site or within 20 m of the boundary.

The site is not within an area where the Coal Authority is currently determining whether to grant a license to begin coal extraction.

There have been no claims for subsidence due to mining activity made to the Coal Authority.

The report states that there are reserves of coal which remain in the area, which could potentially be worked in the future, subject to planning consent and licenses. However, this is unlikely to be within any shallow seams of coal, and therefore workings are unlikely to affect surface developments. Future working of the remaining coal reserves below the site is

considered unlikely in any case, due to the demise of the UK coal industry and due to the sites location within an urbanised area.

A copy of the Coal Authority Mining Report is included in Appendix 2.

3.6.2 Quarrying

A number of small sandstone quarries are noted around the area by the historical maps and by information provided within the Envirocheck report. According to the Envirocheck Report, the closest of these was located 390 m east of the site, where sandstone was extracted.

No opencast workings are indicated to have taken place on the site in the past, or in the area immediately surrounding the development site.

3.7 Ground Gas

3.7.1 Landfill Gas

The Envirocheck Report does not include any records of any former landfill sites within 250 m of the site. During the historical review, no areas of potentially infilled land have been identified in the area immediately surrounding the site.

Therefore, the risk of landfill gases migrating onto the site is considered to be negligible.

3.7.2 Radon Gas

Information provided within the Envirocheck Report states that no radon precautions will be required for residential developments on the site.

3.8 Pollution Incidents to Controlled Waters

The Envirocheck Report does not record any pollution incidents to controlled waters within 100m of the site.

3.9 Discharge Consents

The Envirocheck Report does not record any discharge consents within 250 m of the site.

3.10 Flooding

Information provided in the Envirocheck Report shows that the land to the north east of the site is classed as being an indicative flood plain, as defined by the Environment Agency. This is the area occupied by Scout Dam. As the water level within the reservoir is significantly lower than the ground level of the majority of the site, it is unlikely that the site will be affected by flooding. However, a full flood risk assessment will be required prior to any development because the site has an area of over 1 hectare.

Eastwood and Partners have been commissioned by Barnsley BMC to produce a flood risk assessment for the site.

4.0 EXPECTED GROUND CONDITIONS

On the basis of information on the historical Ordnance Survey Maps, geological information and the walkover survey, it is expected that natural ground will be encountered at shallow depth across much of the site.

Across the western part of the site, which is currently occupied by the school buildings, a limited amount of made ground is expected at below the current tarmac and concrete surfacing, which is likely to comprise granular material. The granular made ground may include red shale gravel or ash. Below the made ground, a weathered profile of gravel and sand or clay is expected, becoming flaggy sandstone with depth. Competent sandstone bedrock is expected at relatively shallow depth.

Below the eastern woodland part of the site, it is expected that topsoil will be encountered, over the same weathered profile of clay/sand and gravel with sandstone bedrock at relatively shallow depth.

Ground water is not expected to be encountered at shallow depth on the site.

After demolition of the current buildings, some areas of deeper fill may be encountered where basements have been infilled or where levels which are currently terraced are regarded to form slopes.

A well was noted on early historical maps in the central area of the site, which may remain.

5.0 GEOTECHNICAL APPRAISAL

5.1 General

The natural ground beneath the site is indicated to be the Penistone Flags, which are a sandstone of the of the Lower Coal Measures. This is likely to have weathered to gravelly sand or clay in the upper layers.

A thin covering of made ground is expected over the western half of the site, below the current hard surfacing. The made ground is likely to comprise mainly granular materials. The eastern half of the site is likely to have a covering of topsoil

The site is not within an area thought to be affected by shallow coal workings.

5.2 Foundations and Floor Slabs

It is likely that suitable founding material will be encountered at shallow depth across the site, and therefore the most suitable foundation type for a low rise development will be traditional strip or trench fill footing, taken through any made ground and constructed within the natural clay or sand or sandstone bedrock at a likely minimum depth of 600 mm to 900 mm bgl.

Where clay soils are encountered, footings should be deepened and heave precautions taken where trees will potentially influence the foundation, in accordance with guidance given in NHBC Chapter 4.2.

Ground bearing floor slabs should be appropriate if the depth of made ground is less than 600 mm. If the made ground is in excess of 600 mm deep, insitu suspended reinforced concrete slabs or beam and block floors will be required. However within the influencing distance of trees, a precast concrete floor with a void below is likely to be required in accordance with NHBC standards if clay soils are present.

5.3 Problems Due To Past Development

No significant problems are anticipated due to the previous development on the site. Some areas of deeper fill may be present where cellars or basements are present, particularly after demolition, dependant on finished ground levels. Service trenches may also affect foundations, with localised deepening of footings or diversion of sewers and other services.

A well is indicated to have been previously located in the central area of the site, in the area now covered by woodland. This feature may still be present below the current surfacing, and may therefore require filling and/or capping. The position of the well may locally affect foundations.

5.4 Excavation Problems

Excavations are likely to be fairly stable in the natural ground, but are expected to be slightly unstable in any made ground which is present.

Groundwater is not expected at shallow depth. However, perched water may be encountered within the shallow soils, particularly where clay is present.

Where excavations which workers are required to enter are over 1.2 m deep, or less where there is a risk of harm from collapse of the side of the excavation, the sides should be supported or battered back to make them safe.

5.5 Surface Water Drainage

It is expected that clay or sand soils are present, with flaggy sandstone bedrock below. Past experience suggests that these strata do not lend themselves well to soakaway drainage. However, infiltration testing could be undertaken to check if soakaways could be used within any proposed development.

It appears that the school is served by separate foul and surface water drains, with roof water being directed into below ground pipes. Surface water gulleys are also provided across hard covered areas. According to information provided by the caretaker on site during the walkover survey, the sewers are currently in good working condition, and include interceptors on the surface water system. The outfall of the drains is currently unknown.

It is therefore likely that the existing piped system could be retained within any new development, subject to agreement from the Local Authority and the water company if applicable. Flow attenuation may be required.

5.6 Sulphate Attack of Buried Concrete

At this stage, it should be assumed that a minimum Design Sulphate Class of DS-2 will be necessary due to the likely presence of made ground on the site. This would require the use of FND-2 concrete for below ground structures at the site.

It is recommended that chemical testing is carried out during an intrusive investigation, and pending the results of the testing, it may be possible to downgrade this classification.

6.0 CONTAMINATION APPRAISAL

6.1 Outline Conceptual Model

The site is approximately 1.5 hectares in area and is currently occupied by part of Penistone Grammar School. Buildings include classrooms and workshops, offices, a waste depot, temporary classrooms and storage sheds. The remainder of the site is used as car parking, with the eastern area covered by woodland. A electricity substation is located in the south west of the site adjacent to 'Fulford'. Gas bottles are also stored within the Fulford building, including acetylene and oxygen.

The surrounding area is a mixture of residential and agricultural use, with further school buildings to the south and Scout Dam reservoir to the east. The surrounding area has generally not changed over the past 100 years. No industrial development is indicated within the immediate vicinity of the site by any of the historical maps, with the nearest works buildings being located to the east of the site on the opposite side of Scout Dam.

From the past and present uses of the site, it is considered that the potential for significant contamination to be present is generally low. Some elevated concentrations of heavy metals and PAHs may be encountered within any made ground that is present, particularly if ashy materials have been deposited across the site in the past. Elevated concentrations of sulphates may be encountered if red shale or similar materials have been included within the made ground. Sulphates can be aggressive towards buried concrete structures, meaning that more resistant concrete mixtures are required.

Some naturally elevated concentrations of heavy metals such as arsenic, copper or nickel may also be recorded in the natural strata.

There is a small potential for hydrocarbon contamination to be present, if vehicles using the site have suffered from leakages of fuel, or if fuel was stored in any of the garages on the site. Such contamination is likely to be confined to localised areas of the site, however.

No risk of landfill gases migrating onto the site from the surrounding area has been identified. No radon precautions are required in new dwellings built on the site.

6.2 Possible Significant Pollutant Linkages

Contaminant	Pathways	Receptor
• Heavy metals and PAH's within any made ground present.	• Ingestion or inhalation, • Dermal contact.	• Future residents, construction workers, visitors.
• Hydrocarbons from fuel spillages. • Elevated heavy metals within natural strata.	• Migration through ground	• Groundwater aquifer.
• Elevated arsenic, zinc, copper and nickel within made and natural ground.	• Direct contact and root uptake	• Plants
• Sulphate.	• Direct contact.	• Below ground concrete.

7.0 RATIONALE FOR FURTHER INVESTIGATION

Before more definite foundation information or a contamination appraisal can be given, an intrusive investigation will be required. This will be best done by way of a trial pit investigation, using a mechanical excavator. Investigation positions should be selected to give good site coverage, unless detailed proposals are in place which would enable trial pit positions to target areas of the site where specific geotechnical information may be required. If the investigation were to be undertaken whilst the site is still in use by the school, then an investigation using a window sampler may be more suitable.

Areas of deep fill are not expected on the site, but if fill is encountered, a borehole investigation may be required.

The potential pollutant linkages presented in the Outline Conceptual Model will also need to be investigated by means of soil analysis. The chemical testing suite should be chosen to cover the range of potential contaminants indicated above. Hydrocarbon testing should be carried out where fuel contamination is suspected.

APPENDIX 1

'Site Location Plan', Drawing 33275/SK1 Revision A

Information within this drawing is not necessarily produced to scale.
Always use figured dimensions and co-ordinates – if in doubt, ask.



REV	DESCRIPTION	SIG	CHK	DATE
A	First Issue.			

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BARNSLEY METROPOLITAN BOROUGH COUNCIL

PENISTONE GRAMMAR SCHOOL

SITE LOCATION PLAN

SCALE WHEN PLOTTED AT A3	DRAWING STATUS
1:1000	INFORMATION

DRAWN	CHECKED	DATE	DRAWING NUMBER	REV
CD	AK	25-10-10	33275/001	A

APPENDIX 2

Landmark Envirocheck Report

Historical Ordnance Survey Maps

Coal Authority Mining Report

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
32686376_1_1

Customer Reference:
33275/AS/AJK/JMW

National Grid Reference:
424220, 404200

Slice:
A

Site Area (Ha):
1.51

Search Buffer (m):
1000

Site Details:

106, Huddersfield Road
Penistone
Sheffield
S36 7BX

Client Details:

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Contents

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	12
Hazardous Substances	15
Geological	16
Industrial Land Use	20
Sensitive Land Use	23
Data Currency	24
Data Suppliers	28
Useful Contacts	29

Introduction

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

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

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Report Version v47.0

Envirocheck®

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1			3	11
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 4			1	
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature		Yes			
Pollution Incidents to Controlled Waters	pg 4			4	13
Prosecutions Relating to Authorised Processes					
Prosecutions Relating to Controlled Waters					
Registered Radioactive Substances					
River Quality	pg 7		1	1	1
River Quality Biology Sampling Points	pg 8				1
River Quality Chemistry Sampling Points	pg 8				1
Substantiated Pollution Incident Register	pg 9		1		3
Water Abstractions	pg 9				(*8)
Water Industry Act Referrals					
Groundwater Vulnerability	pg 11	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences	pg 11	Yes	Yes	n/a	n/a
Flooding from Rivers or Sea without Defences	pg 11	Yes		n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
Waste					
BGS Recorded Landfill Sites	pg 12			1	1
Historical Landfill Sites	pg 12			3	1
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)	pg 13			1	
Local Authority Recorded Landfill Sites	pg 13			2	1
Registered Landfill Sites	pg 14			1	1
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites	pg 15			1	
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					
Geological					
BGS Recorded Mineral Sites	pg 16			1	4
BGS 1:625,000 Solid Geology	pg 16	Yes	n/a	n/a	n/a
Brine Compensation Area			n/a	n/a	n/a
Coal Mining Affected Areas	pg 16	Yes	n/a	n/a	n/a
Mining Instability	pg 16	Yes	n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain	pg 17	Yes		n/a	n/a
Potential for Collapsible Ground Stability Hazards				n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 17	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 18		Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 19	Yes		n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 20			9	14
Fuel Station Entries	pg 22			1	

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Areas of Adopted Green Belt	pg 23	1			
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones	pg 23	1		1	
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewage Disposal Works - Water Company Location: Ingbirchworth Stw Huddersfield Road, Penistone, Barnsley, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: Wra7365 Permit Version: 2 Effective Date: 9th September 1998 Issued Date: 9th September 1998 Revocation Date: 10th September 2003 Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Don & Ingbirchworth Dyke **Status: Modified (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A8NW (S)	387	1	424220 403750
2	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewage Disposal Works - Water Company Location: Ingbirchworth Stw Huddersfield Road, Penistone, Barnsley, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: Wra7365 Permit Version: 1 Effective Date: 24th October 1997 Issued Date: 24th October 1997 Revocation Date: 8th September 1998 Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Don **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A8NE (SE)	435	1	424420 403750
2	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewerage Network - Sewers - Water Company Location: Wentworth/Bridge End Cso Wentworth Road, Penistone, Sheffield, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: C4960 Permit Version: 1 Effective Date: 27th January 1988 Issued Date: 27th January 1988 Revocation Date: 3rd June 2007 Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Don **Status: Transferred from COPA 1974** Positional Accuracy: Located by supplier to within 100m	A8NE (SE)	470	1	424440 403720
3	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewerage Network - Sewers - Water Company Location: Wentworth/Bridge End Cso Wentworth Road, Penistone, Sheffield, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: C4960 Permit Version: 2 Effective Date: 4th June 2007 Issued Date: 4th June 2007 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Don **Status: Modified (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A8NE (SE)	520	1	424450 403670

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
4	**Discharge Consents** Operator: Arthur Stanley Property Type: Undefined Or Other Location: Field Adjacent To Wellhouse Farm Off Halifax Road, Penistone, Barnsley, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: 3753 Permit Version: 1 Effective Date: 5th December 1983 Issued Date: 5th December 1983 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Tributary Of The River Don **Status: Transferred from Rivers (Prevention of Pollution) Act 1951-1961** Positional Accuracy: Located by supplier to within 100m	A14SW (E)	582	1	424900 404200
5	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewage Disposal Works - Water Company Location: Scout Dyke Stw, Penistone, Barnsley, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: E696(Ss) Permit Version: 2 Effective Date: 1st January 2010 Issued Date: 24th September 2009 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Scout Dyke **Status: Transferred from Rivers (Prevention of Pollution) Act 1951-1961** Positional Accuracy: Located by supplier to within 100m	A17SE (NW)	583	1	423700 404600
5	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewage Disposal Works - Water Company Location: Scout Dyke Stw, Penistone, Barnsley, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: E696(Ss) Permit Version: 1 Effective Date: 16th November 1981 Issued Date: 16th November 1981 Revocation Date: 31st December 2009 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Scout Dyke **Status: Transferred from Rivers (Prevention of Pollution) Act 1951-1961** Positional Accuracy: Located by supplier to within 100m	A17SE (NW)	583	1	423700 404600
5	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Undefined Or Other Location: Scout Dike Wtp, Ingbirchworth, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: C5632 Permit Version: 1 Effective Date: 21st June 1989 Issued Date: 21st June 1989 Revocation Date: 7th August 1996 Discharge Type: Trade Effluent Discharge Environment: Freshwater Stream/River Receiving Water: Not Supplied **Status: Consent revoked: Discharge ceased (Water Resources Act 1991, Schedule 10 & 6)** Positional Accuracy: Located by supplier to within 100m	A17SE (NW)	619	1	423670 404620

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
6	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewerage Network - Sewers Location: Thurlstone Road Off, THURLSTONE, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Reference: S/UD/91 Permit Version: Not Supplied Effective Date: Not Supplied Issued Date: 27th May 1963 Revocation Date: Not Supplied Discharge Type: Sewage Effluent Discharge-Storm Effluent Discharge Environment: Unknown Receiving Water: Not Supplied **Status: Not Supplied** Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	707	1	423720 403580
6	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewerage Network - Sewers Location: Thurlstone Road Off, THURLSTONE, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Reference: S/UD/91 Permit Version: Not Supplied Effective Date: Not Supplied Issued Date: 30th June 1993 Revocation Date: Not Supplied Discharge Type: Sewage Effluent Discharge-Storm Effluent Discharge Environment: Unknown Receiving Water: Not Supplied **Status: Not Supplied** Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	711	1	423720 403575
7	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Undefined Or Other Location: Scout Dyke Reservoir Scout Dyke, Penistone, Sheffield, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: Wadc559 Permit Version: 1 Effective Date: 18th September 1989 Issued Date: 18th September 1989 Revocation Date: 1st June 2004 Discharge Type: Trade Discharges - Process Effluent - Water Company (Wtw) Discharge Environment: Freshwater Stream/River Receiving Water: Scout Dyke **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 100m	A17SW (NW)	803	1	423500 404700
8	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewerage Network - Sewers - Water Company Location: Thurlestone No 2 Cso Thurlestone Road, Penistone, Sheffield, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: Wra8207 Permit Version: 1 Effective Date: 31st March 2004 Issued Date: 4th February 2004 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Rive Don **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A7SE (SW)	816	1	423610 403530

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
9	**Discharge Consents** Operator: Tumble Dove House Property Type: Domestic Property (Single) Location: Upperhouse Farm House Halifax Road, Penistone, Sheffield, South Yorkshire, S36 7ey Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: Wra8308 Permit Version: 1 Effective Date: 14th April 2004 Issued Date: 14th April 2004 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Trib Of River Don **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A14NE (E)	850	1	425110 404510
10	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewerage Network - Pumping Station - Water Company Location: Wilson Pumping Station, Thurlstone, Penistone, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: 1629 Permit Version: 1 Effective Date: 21st August 1963 Issued Date: 21st August 1963 Revocation Date: 8th August 1996 Discharge Type: Trade Discharges - Process Effluent - Water Company (Wtw) Discharge Environment: Freshwater Stream/River Receiving Water: Trib Of River Don **Status: Consent revoked: Discharge ceased (Water Resources Act 1991, Schedule 10 & 6)** Positional Accuracy: Located by supplier to within 100m	A7SE (SW)	865	1	423700 403400
11	**Local Authority Pollution Prevention and Controls** Name: Bridge End Garage Location: Barnsley Road, Penistone, SHEFFIELD, South Yorkshire, S36 8AF Authority: Barnsley Metropolitan Borough Council, Environmental Health and Trading Standards Permit Reference: PPC/B/87 Dated: 7th January 2002 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status: Authorised** Positional Accuracy: Automatically positioned to the address	A8NE (S)	473	2	424346 403692
	Nearest Surface Water Feature	A13NE (NE)	0	-	424254 404265
12	**Pollution Incidents to Controlled Waters** Property Type: Other General Premises Location: Don At, THURLSTONE Authority: Environment Agency, North East Region Pollutant: Unknown Note: No Fish Killed Incident Date: 3rd February 1995 Incident Reference: SH950083 Catchment Area: Don Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A8NE (SE)	381	1	424400 403800
13	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Sewage Treatment Works Location: Ingbirchworth Sewage Treatment Works, INGBIRCHWORTH Authority: Environment Agency, North East Region Pollutant: Sewage - Treated Effluent Note: River Don; No Fish Killed Incident Date: 30th April 1998 Incident Reference: SH980163 Catchment Area: Don Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A8NW (S)	383	1	424225 403755

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
14	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Sewage Treatment Works Location: Penistone, Millhouse Green, BARNSLEY Authority: Environment Agency, North East Region Pollutant: Sewage - Treated Effluent Note: River Don; Fish Killed: No Information Incident Date: 4th May 1998 Incident Reference: SH980196 Catchment Area: Don Tributaries Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A8NE (S)	406	1	424300 403750
14	**Pollution Incidents to Controlled Waters** Property Type: Fire Water Location: River Don, PENISTONE Authority: Environment Agency, North East Region Pollutant: Oils - Unknown Note: No Fish Killed Incident Date: 22nd May 1997 Incident Reference: SH970222 Catchment Area: Don Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A8NE (S)	453	1	424300 403700
15	**Pollution Incidents to Controlled Waters** Property Type: Domestic/Residential Location: Viad B 6462/Inter A628/B6462 Don 62 Authority: Environment Agency, North East Region Pollutant: Mud/Clay/Soil Note: Not Supplied Incident Date: 27th April 1994 Incident Reference: 150829 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9NW (SE)	627	1	424700 403700
15	**Pollution Incidents to Controlled Waters** Property Type: Highway/Car Park Location: Viad B 6462/Inter A628/B6462 Don 62 Authority: Environment Agency, North East Region Pollutant: Oils - Diesel (Including Agricultural) Note: Not Supplied Incident Date: 6th May 1993 Incident Reference: 144353 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A9NW (SE)	630	1	424700 403695
16	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Inter A628/B6462/Thurlstone Don 63 Authority: Environment Agency, North East Region Pollutant: Construction Materials Note: Not Supplied Incident Date: 21st March 1994 Incident Reference: 150307 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	704	1	423700 403600
16	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Inter A628/B6462/Thurlstone Don 63 Authority: Environment Agency, North East Region Pollutant: Rubbish Note: Not Supplied Incident Date: 30th March 1990 Incident Reference: 109136 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	708	1	423700 403595

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
17	**Pollution Incidents to Controlled Waters** Property Type: Other General Premises Location: Viad B 6462/Inter A628/B6462 Don 62 Authority: Environment Agency, North East Region Pollutant: Not Given Note: Not Supplied Incident Date: 21st June 1991 Incident Reference: 123612 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9NW (SE)	704	1	424700 403600
18	**Pollution Incidents to Controlled Waters** Property Type: Other General Premises Location: Winterbtm Works/Viad B6462 Don 61 Authority: Environment Agency, North East Region Pollutant: Mud/Clay/Soil Note: Not Supplied Incident Date: 13th May 1994 Incident Reference: 151054 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9NW (SE)	767	1	424900 403700
19	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Inter A628/B6462/Thurlstone Don 63 Authority: Environment Agency, North East Region Pollutant: Oils - Lubricating Note: Not Supplied Incident Date: 19th September 1994 Incident Reference: 153151 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A7SE (SW)	782	1	423700 403500
20	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Inter A628/B6462/Thurlstone Don 63 Authority: Environment Agency, North East Region Pollutant: Wood Based Products Note: Not Supplied Incident Date: 8th January 1990 Incident Reference: 106617 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7SE (SW)	842	1	423605 403500
20	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage (Non-PLC): Combined Sewer Overflow Location: River Don At, THURLSTONE Authority: Environment Agency, North East Region Pollutant: Sewage - Storm Overflow Note: No Fish Killed Incident Date: 18th August 1997 Incident Reference: SH970418 Catchment Area: Don Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7SE (SW)	845	1	423605 403495
20	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Foul Sewer Location: A628 Thurlstone/Birkin Lane Don 64 Authority: Environment Agency, North East Region Pollutant: Unknown Sewage Note: Not Supplied Incident Date: 14th August 1992 Incident Reference: 135726 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A7SE (SW)	845	1	423600 403500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
20	**Pollution Incidents to Controlled Waters** Property Type: Road Location: Thurlstone Village, Penistone, SHEFFIELD Authority: Environment Agency, North East Region Pollutant: Miscellaneous - Vehicle Washings And De Waxing Note: Fish Killed: No Information Incident Date: 30th August 1997 Incident Reference: SH970463 Catchment Area: Don Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7SE (SW)	849	1	423600 403495
21	**Pollution Incidents to Controlled Waters** Property Type: Miscellaneous Premises: Unknown Location: Viad B 6462/Inter A628/B6462 Don 62 Authority: Environment Agency, North East Region Pollutant: Algae Note: Not Supplied Incident Date: 29th March 1993 Incident Reference: 141959 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A17SW (NW)	887	1	423400 404700
22	**Pollution Incidents to Controlled Waters** Property Type: Farm Location: PENISTONE Authority: Environment Agency, North East Region Pollutant: Animal Waste/Slurry Note: Not Supplied Incident Date: 14th March 1989 Incident Reference: 6825 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A19SE (NE)	985	1	425100 404800
	River Quality Name: Scout_Dyke GQA Grade: River Quality B Reach: Fox_Hill_River_Do Estimated Distance (km): 2.3 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A13NE (NE)	42	1	424308 404278
	River Quality Name: River_Don GQA Grade: River Quality B Reach: Split_Scout_Dyk Estimated Distance (km): 4 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A8NW (S)	377	1	424129 403758
	River Quality Name: River_Don GQA Grade: River Quality C Reach: Scout_Dyke_Cubley_Broo Estimated Distance (km): 1.3 Flow Rate: Flow less than 0.62 cumecs Flow Type: River Year: 2000	A9NW (SE)	566	1	424736 403818

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
23	**River Quality Biology Sampling Points** Name: Don Reach: Scout Dyke To Cubley Brook Estimated Distance: 1.30 Positional Accuracy: Located by supplier to within 10m Year: 1990 GQA Grade: River Quality Biology GQA Grade D - Fair Year: 1995 GQA Grade: River Quality Biology GQA Grade C - Fairly Good Year: 2000 GQA Grade: River Quality Biology GQA Grade C - Fairly Good Year: 2002 GQA Grade: River Quality Biology GQA Grade C - Fairly Good Year: 2003 GQA Grade: River Quality Biology GQA Grade C - Fairly Good Year: 2004 GQA Grade: River Quality Biology GQA Grade D - Fair Year: 2005 GQA Grade: River Quality Biology GQA Grade D - Fair Year: 2006 GQA Grade: River Quality Biology GQA Grade D - Fair Year: 2007 GQA Grade: River Quality Biology GQA Grade D - Fair Year: 2008 GQA Grade: River Quality Biology GQA Grade C - Fairly Good	A9NW (SE)	527	1	424692 403828
24	**River Quality Chemistry Sampling Points** Name: River Don Reach: Scout Dyke To Cubley Brook Estimated Distance: 1.30 Objective: Not Supplied Positional Accuracy: Located by supplier to within 10m Year: 1990 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1993 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1994 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1995 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1996 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1997 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1998 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 1999 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2000 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2001 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2002 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2003 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2004 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2005 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2006 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2007 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied Year: 2008 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied	A9NW (SE)	613	1	424715 403731

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
25	**Substantiated Pollution Incident Register** Authority: Environment Agency - North East Region, Yorkshire Area Incident Date: 8th October 2004 Incident Reference: 270865 Water Impact: Category 1 - Major Incident Air Impact: Category 4 - No Impact Land Impact: Category 4 - No Impact Positional Accuracy: Located by supplier to within 10m Pollutant: Other Pollutant	A13NE (NE)	51	1	424280 404310
26	**Substantiated Pollution Incident Register** Authority: Environment Agency - North East Region, Yorkshire Area Incident Date: 17th August 2004 Incident Reference: 260087 Water Impact: Category 4 - No Impact Air Impact: Category 4 - No Impact Land Impact: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 10m Pollutant: Specific Waste Materials: Commercial Waste	A8NW (SW)	539	1	423899 403662
27	**Substantiated Pollution Incident Register** Authority: Environment Agency - North East Region, Yorkshire Area Incident Date: 16th October 2004 Incident Reference: 272357 Water Impact: Category 4 - No Impact Air Impact: Category 2 - Significant Incident Land Impact: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 10m Pollutant: Specific Waste Materials: Commercial Waste	A7NE (SW)	679	1	423761 403583
28	**Substantiated Pollution Incident Register** Authority: Environment Agency - North East Region, Yorkshire Area Incident Date: 2nd October 2004 Incident Reference: 269808 Water Impact: Category 2 - Significant Incident Air Impact: Category 4 - No Impact Land Impact: Category 4 - No Impact Positional Accuracy: Located by supplier to within 10m Pollutant: General Biodegradable Materials and WastesAlgae	A17SW (NW)	826	1	423545 404795
	Water Abstractions Operator: Mr & Mrs P & G Whittlestone Licence Number: 2/27/08/077 Permit Version: 100 Location: Spring 2 - Cherry Tree Farm Penistone Authority: Environment Agency, North East Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Cherry Tree Farm,Penistone,Sheffield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 30th June 1976 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A24SW (NE)	1117	1	424700 405300
	Water Abstractions Operator: N & P Linley Licence Number: 2/27/08/084 Permit Version: 100 Location: Spring Fed Trough Authority: Environment Agency, North East Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 2 Yearly Rate (m3): 664 Details: Cat Hill Farm, Hoyland Swaine, Penistone Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 7th January 1970 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A24SW (NE)	1184	1	424840 405300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: William Cook Hi-Tec Integrity Ltd Licence Number: 2/27/05/010 Permit Version: 100 Location: Borehole X2 - Coal Measures - Penistone Authority: Environment Agency, North East Region Abstraction: Mineral Products: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 136 Yearly Rate (m3): 45460 Details: Foundry,Green Road,Penistone. Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 31st May 1996 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4NE (SE)	1454	1	425000 402900
	Water Abstractions Operator: Mr & Mrs P & G Whittlestone Licence Number: 2/27/08/077 Permit Version: 100 Location: Spring Authority: Environment Agency, North East Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Groundwater Daily Rate (m3): 9 Yearly Rate (m3): 3318 Details: Cherry Tree Farm,Penistone,Sheffield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 30th June 1976 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A24NW (N)	1488	1	424700 405700
	Water Abstractions Operator: Mr & Mrs P & G Whittlestone Licence Number: 2/27/08/077 Permit Version: 100 Location: Spring 1 - Cherry Tree Farm Authority: Environment Agency, North East Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Cherry Tree Farm,Penistone,Sheffield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 30th June 1976 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A24NW (N)	1488	1	424700 405700
	Water Abstractions Operator: Yorkshire Water Services Ltd Licence Number: 2/27/05/013 Permit Version: 100 Location: Royd Moor Storage Reservoir Authority: Environment Agency, North East Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 0 Yearly Rate (m3): 2954900 Details: N/A Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 7th December 1965 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(W)	1847	1	422400 404800

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Mr E Davies Licence Number: 2/27/05/107 Permit Version: 100 Location: Borehole - Coal Measures - Penistone - Sheffield Authority: Environment Agency, North East Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 9 Yearly Rate (m3): 3319 Details: Royd Moor House & Royd Moor Lathe, Nr. Penistone Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 14th December 1965 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(W)	1955	1	422200 404100
	Water Abstractions Operator: G H Dickinson Licence Number: 2/27/05/004 Permit Version: Not Supplied Location: Location Description Not Available Authority: Environment Agency, North East Region Abstraction: Domestic & Agriculture Abstraction Type: Not Supplied Source: Groundwater Daily Rate (m3): 11 Yearly Rate (m3): 3864 Details: Coal Measures Licence Revoked Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(W)	1958	1	422200 404300
	Groundwater Vulnerability Geological Classification: Minor Aquifer (Variably permeable) - These can be fractured or potentially fractured rocks, which do not have a high primary permeability, or other formations of variable permeability including unconsolidated deposits. Although not producing large quantities of water for abstraction, they are important for local supplies and in supplying base flow to rivers Soil Classification: Soils of Low Leaching Potential - Soils in which pollutants are unlikely to penetrate the soil layer because water movement is largely horizontal or they have large ability to attenuate diffuse pollutants. Lateral flow from these soils contribute to groundwater recharge elsewhere in the catchment Map Sheet: Sheet 11 South Pennines Scale: 1:100,000	A13SW (SE)	0	1	424224 404205
	Drift Deposits None				
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NE (NE)	0	1	424255 404255
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13SE (SE)	107	1	424296 404054
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Boundary Accuracy: As Supplied	A13NE (NE)	0	1	424255 404255
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
29	**BGS Recorded Landfill Sites** Site Name: Thurlstone Road Location: PENISTONE, South Yorkshire Authority: British Geological Survey, National Geoscience Information Service Ground Water: Information not available Surface Water: Information not available Geology: N/A Positional Accuracy: Positioned by the supplier Boundary Accuracy: Moderate	A8NW (SW)	363	4	423933 403849
30	**BGS Recorded Landfill Sites** Site Name: Stottercliffe Road Location: PENISTONE, South Yorkshire Authority: British Geological Survey, National Geoscience Information Service Ground Water: Threat to ground water Surface Water: Threat to surface water Geology: N/A Positional Accuracy: Positioned by the supplier Boundary Accuracy: Moderate	A8SE (S)	760	4	424305 403384
31	**Historical Landfill Sites** Licence Holder: Mr A Gill Location: Thurlstone Road, Penistone, Sheffield Name: T.A. Centre Operator Location: Nethfield Farm, Huddersfield Road, Penistone Boundary Accuracy: As Supplied Provider Reference: EAHLD04924 First Input Date: 7th May 1982 Last Input Date: 29th April 1994 Specified Waste Type: Deposited Waste included Inert and Commercial Waste EA Waste Ref: Not Supplied Regis Ref: Not Supplied WRC Ref: 4400/0436 BGS Ref: Not Supplied Other Ref: 4400/(33), WD20 B261	A8NW (SW)	326	1	424050 403827
32	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Penistone, South Yorkshire Name: Thurlstone Road Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD31835 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Deposited Waste included Industrial and Commercial Waste, and Liquid Sludge EA Waste Ref: Not Supplied Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: 715 Other Ref: Not Supplied	A8NW (SW)	363	1	423933 403849
33	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Penistone, South Yorkshire Name: Thurlstone Road Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD04307 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Deposited Waste included Household Waste EA Waste Ref: Not Supplied Regis Ref: Not Supplied WRC Ref: 4400/0519 BGS Ref: Not Supplied Other Ref: 20B261(33), 4400/B261, (117)B	A8NW (SW)	365	1	423931 403849

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
34	**Historical Landfill Sites** Licence Holder: Barnsley Metropolitan Borough Council Amenities and Recreation Dept Location: Penistone, South Yorkshire Name: Stottercliffe Road Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD04305 First Input Date: 30th April 1978 Last Input Date: 31st December 1984 Specified Waste Type: Deposited Waste included Inert and Industrial Waste EA Waste Ref: Not Supplied Regis Ref: Not Supplied WRC Ref: 4400/0413 BGS Ref: 714 Other Ref: 20B60(10), 4400/B60, WD20 B60	A8SE (S)	759	1	424306 403385
35	**Licensed Waste Management Facilities (Locations)** Licence Number: 65253 Location: 33 Barnsley Road, Penistone, Barnsley, South Yorkshire, S36 8AE Operator Name: Wood Kathrine Operator Location: Not Supplied Authority: Environment Agency - North East Region, Yorkshire Area Site Category: Clinical Waste Transfer Stations **Licence Status: Issued** Issued: 30th January 2003 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14SW (E)	485	1	424772 404027
	Local Authority Landfill Coverage Name: Barnsley Metropolitan Borough Council - Has supplied landfill data		0	2	424224 404205
36	**Local Authority Recorded Landfill Sites** Location: Not Supplied Reference: 33 Authority: Barnsley Metropolitan Borough Council, Environmental Health and Trading Standards **Last Reported Status: Unknown** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A8NW (SW)	326	2	424050 403827
37	**Local Authority Recorded Landfill Sites** Location: Not Supplied Reference: 117 Authority: Barnsley Metropolitan Borough Council, Environmental Health and Trading Standards **Last Reported Status: Unknown** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A7NE (SW)	394	2	423889 403847
38	**Local Authority Recorded Landfill Sites** Location: Not Supplied Reference: 10 Authority: Barnsley Metropolitan Borough Council, Environmental Health and Trading Standards **Last Reported Status: Unknown** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A8SE (S)	760	2	424286 403382

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
39	**Registered Landfill Sites** Licence Holder: A Gill Licence Reference: WD20 B 261 MOD 3 Site Location: Adj. T.A. Centre, Thurlston Road, Penistone, Sheffield, South Yorkshire Licence Easting: 424100 Licence Northing: 403750 Operator Location: Huddersfield Road, Penistone, Sheffield, South Yorkshire Authority: Environment Agency - North East Region, Ridings Area Site Category: Landfill Max Input Rate: Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st May 1982 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste: Demolition Wastes Excav'N Spoil, Sub/Topsoil Prohibited Waste: Waste N.O.S.	A8NW (S)	388	1	424100 403750
40	**Registered Landfill Sites** Licence Holder: Barnsley M.B.C. Licence Reference: WD20 B 60 Site Location: Stottercliffe Road, Penistone, Sheffield, South Yorkshire Licence Easting: 424200 Licence Northing: 403350 Operator Location: Amenities/Recreation, 50 Huddersfield Road, Barnsley, South Yorkshire Authority: Environment Agency - North East Region, Ridings Area Site Category: Landfill Max Input Rate: Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st April 1978 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste: Construction And Demolition Wastes Foundry Sand Prohibited Waste: Liquids In Containers Over 4l Cap. Slurry In Containers Over 4l Cap.	A8SW (S)	784	1	424200 403350

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
41	**Explosive Sites** Name: Clayton & Co(Penistone Ltd) Location: Westhorpe Works, Halifax Road, Penistone, Sheffield, S36 7EY **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	291	3	424291 404574

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
42	**BGS Recorded Mineral Sites** Site Name: Broad Hill Location: Penistone, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 37962 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Penistone Flags Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A14SW (E)	391	4	424680 404050
43	**BGS Recorded Mineral Sites** Site Name: Town'S Field Location: Hoylandswaine, Penistone, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 37957 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A19SE (NE)	783	4	424987 404608
44	**BGS Recorded Mineral Sites** Site Name: Peniston Location: Penistone, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 37963 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Penistone Flags Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A9SW (SE)	808	4	424631 403435
45	**BGS Recorded Mineral Sites** Site Name: Scout Dike Reservoir Puddle Field Location: Scout Dike Reservoir, Thurlstone, Penistone, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 111469 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Common Clay and Shale Positional Accuracy: Located by supplier to within 10m	A12NW (W)	840	4	423346 404444
46	**BGS Recorded Mineral Sites** Site Name: Carr Head Location: Scout Dyke, Penistone, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 37954 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Penistone Flags Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A18NW (N)	883	4	423995 405145
	BGS 1:625,000 Solid Geology Description: Lower Westphalian (mainly Productive Coal Measures)	A13SW (SE)	0	4	424224 404205
	Coal Mining Affected Areas Description: In an area which may be affected by coal mining activity. It is recommended that a coal mining report is obtained from the Coal Authority. Contact details are included in the Useful Contacts section of this report.	A13SW (SE)	0	5	424224 404205
	Mining Instability Mining Evidence: Inconclusive Coal Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A13SW (SE)	0	-	424224 404205

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Non Coal Mining Areas of Great Britain Risk: Rare Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	4	424224 404205
	Potential for Collapsible Ground Stability Hazards No Hazard				
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	4	424224 404205
	Potential for Ground Dissolution Stability Hazards No Hazard				
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	0	4	424224 404275
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	4	424250 404225
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	4	424224 404205
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	6	4	424300 404175
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	7	4	424325 404200
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	32	4	424350 404200
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	36	4	424325 404250
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	38	4	424300 404275
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	40	4	424275 404300
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	45	4	424250 404325
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	55	4	424300 404300
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	59	4	424225 404350
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	62	4	424375 404225
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	75	4	424325 404325
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	82	4	424400 404205
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	85	4	424400 404225
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	86	4	424200 404375

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	107	4	424425 404205
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	107	4	424425 404200
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	117	4	424175 404400
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	132	4	424450 404200
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	134	4	424224 404425
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	134	4	424450 404175
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	137	4	424250 404425
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	140	4	424100 404375
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	145	4	424275 404425
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	159	4	424475 404175
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	164	4	424125 404425
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	164	4	424475 404150
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	188	4	424500 404150
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	191	4	424050 404400
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	196	4	424500 404125
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	208	4	424224 403925
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	209	4	424200 404500
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	220	4	424525 404125
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	229	4	424525 404100
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	4	424224 404205
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	32	4	424350 404205

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	4	424250 404225
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	4	424224 404205
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	96	4	424400 404250
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	109	4	424425 404225
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	141	4	424175 404425
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	150	4	424325 404400
	Radon Potential - Radon Affected Areas Affected Area: The property is not in a radon affected area, as less than 1% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	4	424224 404205
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	4	424224 404205

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
47	**Contemporary Trade Directory Entries** Name: J S Controls Location: 17 Huddersfield Rd, Penistone, Sheffield, South Yorkshire, S36 7EZ Classification: Electrical Engineers **Status: Active** Positional Accuracy: Manually positioned to the road within the address or location	A8NE (S)	345	-	424324 403818
48	**Contemporary Trade Directory Entries** Name: M J French Location: Bridge End, Penistone, Sheffield, South Yorkshire, S36 7AH Classification: Car Body Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NE (S)	468	-	424346 403696
48	**Contemporary Trade Directory Entries** Name: Penistone Tyre Services Location: Barnsley Road, Penistone, Sheffield, South Yorkshire, S36 8AF Classification: Tyre Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NE (S)	468	-	424346 403696
48	**Contemporary Trade Directory Entries** Name: Bridge End Garage Location: Barnsley Road, Penistone, Sheffield, South Yorkshire, S36 8AF Classification: Petrol Filling Stations **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NE (S)	473	-	424346 403692
48	**Contemporary Trade Directory Entries** Name: Penistone Motor Co Location: Barnsley Road, Penistone, Sheffield, S36 8AF Classification: Car Dealers - Used **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NE (S)	473	-	424346 403692
48	**Contemporary Trade Directory Entries** Name: Penistone Trade Centre Location: Barnsley Road, Penistone, Sheffield, S36 8AF Classification: Car Dealers - Used **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NE (S)	473	-	424346 403692
49	**Contemporary Trade Directory Entries** Name: G Vines Location: Don Villa, Barnsley Road, Penistone, Sheffield, S36 8AD Classification: Road Haulage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NE (S)	479	-	424416 403702
50	**Contemporary Trade Directory Entries** Name: Uk Hygiene Location: 33, Barnsley Road, Penistone, Sheffield, S36 8AE Classification: Hygiene & Cleansing Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A14SW (E)	486	-	424772 404027
50	**Contemporary Trade Directory Entries** Name: S R A Services Location: 33, Barnsley Road, Penistone, Sheffield, S36 8AE Classification: Motor Cycle & Component Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SW (E)	486	-	424772 404027
50	**Contemporary Trade Directory Entries** Name: Worsley Wholesale Butchers Ltd Location: Barnsley Rd, Oxspring, Sheffield, South Yorkshire, S36 8YB Classification: Meat - Wholesale **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A14SW (E)	512	-	424794 404010
51	**Contemporary Trade Directory Entries** Name: The Fire Place Location: 3 Thurlstone Rd, Penistone, Sheffield, South Yorkshire, S36 9EF Classification: Fireplaces & Mantelpieces **Status: Active** Positional Accuracy: Manually positioned to the road within the address or location	A8NE (S)	515	-	424320 403642
52	**Contemporary Trade Directory Entries** Name: Penistone Reinforcements Ltd Location: Stanley Mills, Talbot Road, Penistone, Sheffield, S36 9ED Classification: Wire Products - Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NW (S)	559	-	424218 403576

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
53	**Contemporary Trade Directory Entries** Name: Penistone Logistics Location: 1, Wentworth Road, Penistone, Sheffield, South Yorkshire, S36 6ET Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A8NE (S)	571	-	424422 403608
53	**Contemporary Trade Directory Entries** Name: Mrs Mop Barnsley Location: 1a, Wentworth Road, Penistone, Sheffield, S36 6ET Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NE (S)	571	-	424422 403608
54	**Contemporary Trade Directory Entries** Name: S P Location: 3, Bridge Street, Penistone, Sheffield, S36 6AJ Classification: Commercial Cleaning Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SE (S)	693	-	424480 403498
55	**Contemporary Trade Directory Entries** Name: Penistone Engineering Supplies Location: Bridge Street, Penistone, Sheffield, S36 6AJ Classification: Engineering Materials **Status: Active** Positional Accuracy: Automatically positioned to the address	A8SE (SE)	722	-	424534 403486
56	**Contemporary Trade Directory Entries** Name: Its For Hire Ltd Location: St. Marys Street, Penistone, Sheffield, S36 6DT Classification: Asphalt & Coated Macadam Laying Contractors **Status: Active** Positional Accuracy: Automatically positioned to the address	A8SE (S)	781	-	424441 403396
56	**Contemporary Trade Directory Entries** Name: C D Autos Location: St. Marys Street, Penistone, Sheffield, S36 6DT Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A8SE (S)	781	-	424441 403396
56	**Contemporary Trade Directory Entries** Name: Stottercliffe Garage Location: Stottercliffe Road, Penistone, Sheffield, S36 6EB Classification: Car Body Repairs **Status: Active** Positional Accuracy: Automatically positioned to the address	A8SE (S)	804	-	424440 403373
57	**Contemporary Trade Directory Entries** Name: James H Wood Printers Ltd Location: 9, Church Street, Penistone, Sheffield, S36 6AR Classification: Printers **Status: Active** Positional Accuracy: Automatically positioned to the address	A9SW (SE)	889	-	424658 403358
58	**Contemporary Trade Directory Entries** Name: D C Patterns Location: 11, Church Street, Penistone, Sheffield, South Yorkshire, S36 6AR Classification: Pattern Makers - Industrial **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9SW (SE)	930	-	424742 403356
59	**Contemporary Trade Directory Entries** Name: A & D Mackrill Location: Don Press,Church St, Penistone, Sheffield, South Yorkshire, S36 6AR Classification: Stationery Manufacturers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A9SW (SE)	935	-	424726 403341
59	**Contemporary Trade Directory Entries** Name: Electech Technical Services Location: A, 53, Shrewsbury Road, Penistone, Sheffield, S36 6DZ Classification: Electrical Engineers **Status: Inactive** Positional Accuracy: Automatically positioned in the proximity of the address	A9SW (SE)	962	-	424719 403307

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
60	**Fuel Station Entries** Name: Bridge End Service Station Location: BARNSLEY ROAD, HUDDERSFIELD ROAD, PENISTONE, SHEFFIELD, SOUTH YORKSHIRE, S36 8AF Brand: Jet Premises Type: Petrol Station **Status: Open** Positional Accuracy: Automatically positioned to the address	A8NE (S)	473	-	424346 403692

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
61	**Areas of Adopted Green Belt** Authority: Barnsley Metropolitan Borough Council, Planning Department Plan Name: Barnsley Unitary Development Plan **Status:** **Adopted** Plan Date: 31st December 2000	A13SW (SE)	0	6	424224 404205
62	**Nitrate Vulnerable Zones** Name: Not Supplied Description: Surface Water - Designated 2002 Source: Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	A13SW (SE)	0	7	424224 404205
63	**Nitrate Vulnerable Zones** Name: Not Supplied Description: Surface Water - Designated 2006 Source: Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	A18SE (N)	416	7	424300 404700

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards	August 2010	Annual Rolling Update
Sheffield City Council - Environmental Protection Service	March 2010	Annual Rolling Update
Kirklees Metropolitan Borough Council - Planning Services	November 2009	Annual Rolling Update
Discharge Consents		
Environment Agency - North East Region	July 2010	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - North East Region	August 2010	Quarterly
Integrated Pollution Controls		
Environment Agency - North East Region	October 2008	Not Applicable
Integrated Pollution Prevention And Control		
Environment Agency - North East Region	July 2010	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Kirklees Metropolitan Borough Council - Environmental Health Department	April 2010	Annual Rolling Update
Sheffield City Council - Environmental Protection Service	February 2010	Annual Rolling Update
Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards	January 2010	Annual Rolling Update
Local Authority Pollution Prevention and Controls		
Kirklees Metropolitan Borough Council - Environmental Health Department	April 2010	Annual Rolling Update
Sheffield City Council - Environmental Protection Service	February 2010	Annual Rolling Update
Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards	January 2010	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
Kirklees Metropolitan Borough Council - Environmental Health Department	April 2010	Annual Rolling Update
Sheffield City Council - Environmental Protection Service	February 2010	Annual Rolling Update
Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards	January 2010	Annual Rolling Update
Nearest Surface Water Feature		
Ordnance Survey	April 2010	Quarterly
Pollution Incidents to Controlled Waters		
Environment Agency - North East Region	December 1998	Not Applicable
Prosecutions Relating to Authorised Processes		
Environment Agency - North East Region	July 2010	Monthly
Prosecutions Relating to Controlled Waters		
Environment Agency - North East Region	July 2010	Monthly
Registered Radioactive Substances		
Environment Agency - North East Region	July 2010	Quarterly
River Quality		
Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points		
Environment Agency - Head Office	January 2010	Annually
River Quality Chemistry Sampling Points		
Environment Agency - Head Office	January 2010	Annually
Substantiated Pollution Incident Register		
Environment Agency - North East Region - Ridings Area	July 2010	Quarterly
Environment Agency - North East Region - Yorkshire Area	July 2010	Quarterly
Water Abstractions		
Environment Agency - North East Region	July 2010	Quarterly
Water Industry Act Referrals		
Environment Agency - North East Region	January 2010	Quarterly
Groundwater Vulnerability		
Environment Agency - Head Office	January 1999	Not Applicable
Drift Deposits		
Environment Agency - Head Office	January 1999	Not Applicable

Agency & Hydrological	Version	Update Cycle
Source Protection Zones		
Environment Agency - Head Office	June 2010	Quarterly
Extreme Flooding from Rivers or Sea without Defences		
Environment Agency - Head Office	August 2010	Quarterly
Flooding from Rivers or Sea without Defences		
Environment Agency - Head Office	August 2010	Quarterly
Areas Benefiting from Flood Defences		
Environment Agency - Head Office	March 2010	Quarterly
Flood Water Storage Areas		
Environment Agency - Head Office	March 2010	Quarterly
Flood Defences		
Environment Agency - Head Office	March 2010	Quarterly
Waste	**Version**	**Update Cycle**
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Historical Landfill Sites		
Environment Agency - North East Region - Ridings Area	July 2010	Quarterly
Environment Agency - North East Region - Yorkshire Area	July 2010	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - North East Region	October 2008	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency - North East Region - Ridings Area	July 2010	Quarterly
Environment Agency - North East Region - Yorkshire Area	July 2010	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency - North East Region - Ridings Area	July 2010	Quarterly
Environment Agency - North East Region - Yorkshire Area	July 2010	Quarterly
Local Authority Landfill Coverage		
Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards	May 2000	Not Applicable
Kirklees Metropolitan Borough Council - Planning Services	May 2000	Not Applicable
Sheffield City Council - Environmental Protection Service	May 2000	Not Applicable
Local Authority Recorded Landfill Sites		
Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards	May 2000	Not Applicable
Kirklees Metropolitan Borough Council - Planning Services	May 2000	Not Applicable
Sheffield City Council - Environmental Protection Service	May 2000	Not Applicable
Registered Landfill Sites		
Environment Agency - North East Region - Ridings Area	March 2003	Not Applicable
Registered Waste Transfer Sites		
Environment Agency - North East Region - Ridings Area	March 2003	Not Applicable
Registered Waste Treatment or Disposal Sites		
Environment Agency - North East Region - Ridings Area	March 2003	Not Applicable

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	May 2010	Bi-Annually
Explosive Sites		
Health and Safety Executive	January 2009	Bi-Annually
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements		
Peak District National Park - Development Control	August 2010	Annual Rolling Update
Sheffield City Council	February 2010	Annual Rolling Update
Barnsley Metropolitan Borough Council - Planning Department	July 2009	Annual Rolling Update
Kirklees Metropolitan Borough Council - Planning Services	July 2009	Annual Rolling Update
Planning Hazardous Substance Consents		
Peak District National Park - Development Control	August 2010	Annual Rolling Update
Sheffield City Council	February 2010	Annual Rolling Update
Barnsley Metropolitan Borough Council - Planning Department	July 2009	Annual Rolling Update
Kirklees Metropolitan Borough Council - Planning Services	July 2009	Annual Rolling Update

Geological	Version	Update Cycle
BGS Recorded Mineral Sites		
British Geological Survey - National Geoscience Information Service	April 2010	Bi-Annually
BGS 1:625,000 Solid Geology		
British Geological Survey - National Geoscience Information Service	August 1996	Not Applicable
Brine Compensation Area		
Cheshire Brine Subsidence Compensation Board	November 2002	Not Applicable
Coal Mining Affected Areas		
The Coal Authority - Mining Report Service	January 2006	As notified
Mining Instability		
Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain		
British Geological Survey - National Geoscience Information Service	February 2009	Not Applicable
Potential for Collapsible Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	January 2010	Annually
Potential for Compressible Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	January 2010	Annually
Potential for Ground Dissolution Stability Hazards		
British Geological Survey - National Geoscience Information Service	January 2010	Annually
Potential for Landslide Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	January 2010	Annually
Potential for Running Sand Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	January 2010	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	January 2010	Annually
Radon Potential - Radon Affected Areas		
British Geological Survey - National Geoscience Information Service	May 2007	As notified
Radon Potential - Radon Protection Measures		
British Geological Survey - National Geoscience Information Service	May 2007	As notified

Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	August 2010	Quarterly
Fuel Station Entries Catalist Ltd - Experian Catalist	April 2010	Quarterly
Sensitive Land Use	**Version**	**Update Cycle**
Areas of Adopted Green Belt Barnsley Metropolitan Borough Council - Planning Department Kirklees Metropolitan Borough Council Sheffield City Council	 March 2010 March 2010 March 2010	 As notified As notified As notified
Areas of Unadopted Green Belt Barnsley Metropolitan Borough Council - Planning Department Kirklees Metropolitan Borough Council Sheffield City Council	 March 2010 March 2010 March 2010	 As notified As notified As notified
Areas of Outstanding Natural Beauty Natural England	July 2010	Bi-Annually
Environmentally Sensitive Areas Natural England	July 2010	Annually
Forest Parks Forestry Commission	April 1997	Not Applicable
Local Nature Reserves Natural England	June 2010	Bi-Annually
Marine Nature Reserves Natural England	September 2010	Bi-Annually
National Nature Reserves Natural England	June 2010	Bi-Annually
National Parks Natural England	July 2010	Bi-Annually
Nitrate Sensitive Areas Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	December 2009	Not Applicable
Nitrate Vulnerable Zones Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	February 2009	Annually
Ramsar Sites Natural England	June 2010	Bi-Annually
Sites of Special Scientific Interest Natural England	June 2010	Bi-Annually
Special Areas of Conservation Natural England	June 2010	Bi-Annually
Special Protection Areas Natural England	June 2010	Bi-Annually

Data Suppliers

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	Ordnance Survey Licensed Partner
Environment Agency	Environment Agency
Scottish Environment Protection Agency	SEPA Scottish Environment Protection Agency
The Coal Authority	THE COAL AUTHORITY
British Geological Survey	British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL
Centre for Ecology and Hydrology	Centre for Ecology & Hydrology NATURAL ENVIRONMENT RESEARCH COUNCIL
Countryside Council for Wales	CYNGOR CEFN GWLAD CYMRU COUNTRYSIDE COUNCIL FOR WALES
Scottish Natural Heritage	SCOTTISH NATURAL HERITAGE
Natural England	NATURAL ENGLAND
Health Protection Agency	Health Protection Agency
Ove Arup	ARUP
Peter Brett Associates	pba

Useful Contacts

Contact	Name and Address	Contact Details
1	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 08708 506 506 Email: enquiries@environment-agency.gov.uk
2	**Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards** Central Offices, Kendray Street, Barnsley, South Yorkshire, S70 2TN	Telephone: 01226 770770 Fax: 01226 772599 Website: www.barnsley.gov.uk
3	**Health and Safety Executive** HSE Infoline, Caerphilly Business Park, Caerphilly, CF83 3GG	Telephone: 08701 545500 Fax: 02920 859260 Email: hseinformationservices@natbrit.com Website: www.hse.gov.uk
4	**British Geological Survey - Enquiry Service** British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
5	**The Coal Authority - Mining Report Service** 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG	Telephone: 0845 7626848 Email: thecoalauthority@coal.gov.uk
6	**Barnsley Metropolitan Borough Council - Planning Department** Central Offices, Kendray Street, Barnsley, South Yorkshire, S70 2TN	Telephone: 01226 770770 Fax: 01226 772599 Website: www.barnsley.gov.uk
7	**Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)** Government Buildings, Otley Road, Lawnswood, Leeds, West Yorkshire, LS16 5QT	Telephone: 0113 2613333 Fax: 0113 230 0879
-	**Health Protection Agency - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@hpa.org.uk Website: www.hpa.org.uk
-	**Landmark Information Group Limited** The Smith Centre, Henley On Thames, Oxfordshire, RG9 6AB	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Please note that the Environment Agency / SEPA have a charging policy in place for enquiries.

Envirocheck® Report:

BGS Boreholes Datasheet

Order Details:

Order Number:
32686376_1_1

Customer Reference:
33275/AS/AJK/JMW

National Grid Reference:
424220, 404200

Slice:
A

Site Area (Ha):
1.51

Borehole Search Buffer (m):
1000

Site Details:

106, Huddersfield Road
Penistone
Sheffield
S36 7BX

Client Details:

Miss A Seymour
Eastwood & Partners Ltd
St Andrews House
23 Kingfield Road
Sheffield
S11 9AS

BGS Boreholes Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m
BGS Boreholes	pg 1	None	8	None	2

Introduction

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

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

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A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

Report Version v47.0

BGS Boreholes Detail

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
64	**BGS Boreholes** BGS Reference: Se20sw68 Drilled Length (m): 4.11 Borehole Name: Penistone Grammar School Sports Hall 4	A13SW (SW)	74	4	424160 404060
64	**BGS Boreholes** BGS Reference: Se20sw72 Drilled Length (m): 1.21 Borehole Name: Penistone Grammar School Sports Hall Tp 4	A13SW (SW)	74	4	424160 404060
64	**BGS Boreholes** BGS Reference: Se20sw66 Drilled Length (m): 1.82 Borehole Name: Penistone Grammar School Sports Hall 2	A13SW (SW)	86	4	424140 404050
64	**BGS Boreholes** BGS Reference: Se20sw70 Drilled Length (m): .91 Borehole Name: Penistone Grammar School Sports Hall Tp 2	A13SW (SW)	86	4	424140 404050
64	**BGS Boreholes** BGS Reference: Se20sw71 Drilled Length (m): .45 Borehole Name: Penistone Grammar School Sports Hall Tp 3	A13SW (S)	104	4	424160 404030
64	**BGS Boreholes** BGS Reference: Se20sw67 Drilled Length (m): 3.35 Borehole Name: Penistone Grammar School Sports Hall 3	A13SW (S)	104	4	424160 404030
64	**BGS Boreholes** BGS Reference: Se20sw65 Drilled Length (m): 1.82 Borehole Name: Penistone Grammar School Sports Hall 1	A13SW (SW)	106	4	424140 404030
64	**BGS Boreholes** BGS Reference: Se20sw69 Drilled Length (m): .6 Borehole Name: Penistone Grammar School Sports Hall Tp 1	A13SW (SW)	106	4	424140 404030
65	**BGS Boreholes** BGS Reference: Se20sw13 Drilled Length (m): Not Supplied Borehole Name: Water Hall Borehole	A9NW (SE)	552	4	424677 403779
66	**BGS Boreholes** BGS Reference: Se20sw2 Drilled Length (m): 115.82 Borehole Name: Wilson Pumping Station Penistone	A7SE (SW)	905	4	423646 403388

Data Currency and Contact Details

BGS Boreholes	Version	Update Cycle
BGS Boreholes British Geological Survey - National Geoscience Information Service	August 2010	Quarterly

Contact Details	Contact Logo
4 **British Geological Survey - Enquiry Service** British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk	British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL
- **Landmark Information Group Limited** The Smith Centre, Henley On Thames, Oxfordshire, RG9 6AB Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk	LANDMARK Information Group