



## Combined Phase I and Phase II Geoenvironmental

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**Premier Inn, West Bromwich New Gas Street, West Bromwich B70 0NP**

CRM.1483.095.GE.R.001.A



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## Combined Phase I and Phase II Geoenvironmental Assessment

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## 1.0 INTRODUCTION

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### 1.1 Background

- 1.1.1 Enzygo Geoenvironmental Limited has been commissioned to prepare a Geoenvironmental assessment in support of a planning application for the Premier Inn, Maple Road, Tankersley, Barnsley, S75 3DL.

### 1.2 Proposed Development

- 1.2.1 The existing site comprises a Premier Inn Hotel and Brewers Fayre restaurant with associated car parking and soft landscaping. The proposed development comprises an extension/annex to the existing hotel together with car parking and soft landscaping to the southeast of the hotel.
- 1.2.2 The proposed development is shown on Drawing P11079 – SK998 prepared by Allison Pike Architects. A copy is included within the Drawing Section of this report.

### 1.3 Objectives

- 1.3.1 The objectives of the study are to:
- Obtain desk study information, a copy of which is included within Appendix 1;
  - Review the coal mining risk assessment, a copy of which is included in Appendix 2;
  - Undertake a targeted ground investigation;
  - Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors; and
  - Provide a factual and interpretative report relating to the desk study and site investigations. Provide a revised conceptual model and recommendations on any potential development issues and mitigation measures, where appropriate.
  - Provide geotechnical recommendations in relation to foundations and infrastructure.

### 1.4 Risk Classification

- 1.4.1 Enzygo Geoenvironmental has utilised the available information, together with our experience to assess the likely risks to development from land quality issues. Definitions of the risk terms used are provided on the following table.

**Table 1.4.1 Risk Classification**

Risk	Description
Dismissed	No contamination risk has been identified which is likely to affect development.
Low	No significant contaminated land risks have been encountered affecting development and a low risk that remediation will be required.
Low-Moderate	There are unlikely to be significant contaminated land issue associated with the site which will adversely affect its re-development. However, minor, or localised contamination may be present requiring remediation. Remediation should be possible under a discovery strategy and with a call out service.
Moderate	Some potential contaminated land risks have been encountered or identified which may affect re- development. The risks identified are unlikely to affect the entire site or preclude development. Remediation is considered feasible as part of the development process and no further investigation is considered necessary.
Moderate-High	Some potentially significant contaminated land risks have been identified at the property that requires remediation. It is recommended that a separate remedial methodology is prepared supported by a site-specific risk assessment
High	Significant potential contaminated land risks have been identified, and remediation is required supported by further intrusive ground investigation, risk assessment and remedial design.

1.4.2 Where adverse risks from ground instability are identified these are discussed within the report.

## 2.0 SITE SETTING

**Table 2.0 Site Description**

Item	Description
Site Address	Premier Inn, Maple Road, Tankersley, Barnsley, S75 3DL
National Grid Reference	433546 399070

### 2.1 Current Site Description

- 2.1.1 The site of the proposed annex/extension site is currently occupied by car parking surrounded by soft landscaping comprising a grassed area and hedging with scattered mature trees in the soft landscaping areas.
- 2.1.2 The main hotel buildings comprise a two-storey building and is located to the northwest of the site.
- 2.1.3 The hotel has previous been extended to the northwest of the hotel and out of the northern wall of the previous hotel.
- 2.1.4 An area of low growing hedges is located immediately to the southeast of the hotel and divides the existing hotel and the proposed annex.
- 2.1.5 A proposed link from the southern eastern wall of the existing hotel will connect into the proposed annex.
- 2.1.6 Mature trees were noted on the southern boundary of the hotel site and some 50m away from the proposed annex site.
- 2.1.7 The proposed extension is located to the southeast of the existing hotel and is occupied by car parking and areas of soft landscaping vegetated with bushes, grass and occasional mature trees.

### 2.2 Surrounding Area

- 2.2.1 Land uses surrounding the site are summarised as follows:

**Table 2.2.1 Land Use Surrounding the Area**

Direction	Land Use
North	Hotel building, and Restaurant buildings with commercial units beyond.
South	Grass Mature Trees (Hotel Boundary) and A616 and open ground including grass and trees beyond.
West	Hotel Car Park, Trees (Hotel Boundary), and A616 and Tankersley Diner beyond.
East	Car park, open space (Hotel Boundary) Maple Road, McDonalds and roundabout beyond.

- 2.2.2 There is no evidence of ground workings on or adjacent to the site, however given the generally level development site some cut and fill operations and therefore Made Ground will be present.

## **3.0 SITE HISTORY**

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### **3.1 Historical Maps**

- 3.1.1 A review of historical Ordnance Survey maps and information pertinent to the site and within a 250m radius is summarised below:

#### **Table 3.1.1 Historical Maps**

Potentially Contaminative Historical Land Use		
Map Edition	Site	Surrounding Area
1855	Open field site	Sowell wood is shown 50m N and NW. West Wood 90m S and SW. Iron stone pit 150 to 180m SE. Sandstone and ironstone pit 250m NE. Westwood Colliery 279m S to include ironstone pit shaft and railway connecting into the mainline 550m SE.
1893-1894	Open field site	Westward colliery is not shown and all that remains is pit/pond and old shaft. All the infrastructure and structure for the colliery are not shown. By 1894 ponds 80m, 90m and 140m N and Air shafts and pit 120m S associated with the coal workings from (Wharnccliffe Silkstone colliery 800m NE and Tankersley colliery 500m SE). Old ironstone pit 180m SE. Old pit and shaft 200m to 270m S. Old shafts shown in Sowell wood 150m NE and 130m NE. Further air shafts 220m E and old shafts 220m NE. Woodburn Junction railway 200m E. Sowell railway Bridge 220m E. Earthworks 20m E and 100m S (Possible former colliery railway or embankment or spoil heap.
1903	No changes	Additional earthworks shown 220 to 250m N and NE. Additional Pond/reservoir/20m N.
1929- 1948	No changes	Westward Main Road 250m E to 90m S and 250m S. Two more additional ponds/reservoirs 220m NE and 270m NE.
1956	Site has been regraded and infilled.	Sowell Wood has been removed as part of the infilled exercise. Part of West Wood has also been removed as part of the infill exercise. The majority of the air shafts and pits recorded in 1855 and 1893 have been infilled. One remaining air shaft is shown 220m NE and a second old shaft 120m SE. Road relabelled as A61 and the bridge has been widened over railway. All the historical ponds and reservoirs minus the pond 270m NE have been infilled as part of the infilling and regrading exercise.
1966	No changes.	Earthworks 20m E infilled.
1980-1981	No changes.	Railway is shown as dismantled. Industrial units shown E of railway. 270m NE.
1992	Site is shown as reprofiled and shows topographical levels on the site.	A616 is shown 20m S on embankment. This connects into roundabout with A61. Drain and excavation (possibly related to the road and roundabout drainage surface water drainage basin.)
1999 to 2003	Hotel Car park and landscaping.	Hotel buildings 20m N. Restaurant 45m NE. filing station 100m NE.

2009-2018	No significant changes.	Hotel building 20m N has been extended 50m NW. Commercial buildings 50m N to 100m N.
2021	No significant changes.	Further Commercial buildings 150m N.
2024	No significant changes.	No significant changes.

- 3.1.2 Historic shafts are identified in the surrounding area associated with the coal outcrop and coal workings underneath the site. Historically collieries and iron workings are shown in the area surrounding the site.
- 3.1.3 The coal legacies are shown via shafts and pits which were worked from the 1850s to 1910. The remaining coal legacy (shallow coal and iron seams) were worked via opencast methods to an estimated depth of 15m by the 1950s whereby these and the previous shafts and pits were infilled to provide the current working platform. As part of the regarding exercise the previous shafts were infilled and/or excavated out.
- 3.1.4 Commercial development including the road network have been subsequently built on top of regarded infilled formation which were infilled and regraded in the late 1950s.
- 3.1.5 Based on the above `backfill/ Made Ground / infilling is noted from 1956 across the entire area including the development site. These materials are likely to contain remnant coal materials and also be loosely compacted. The thickness, classification, chemical composition, and compaction characteristics will need to be confirmed via investigation.

## 4.0 ENVIRONMENTAL SETTING

### 4.1 Ground Conditions

4.1.1 The British Geological Survey (BGS) indicates that the site is underlain by the following geological sequence:

**Table 4.1.1 Geological Sequence**

Geological Unit	Type	Descriptions	Aquifer Classification
Drift	N/a	None	N/a
Solid	Pennine Lower Coal Measures Formation -	Mudstone, Siltstone And Sandstone and coal seam	Secondary A

4.1.2 No faults are shown on the site or within 250m of the site.

4.1.3 BGS records show the site is within an area and published records of infilled ground with worked ground and Made ground to the southeast and east.

4.1.4 There are no records of landslips on or near to the site.

4.1.5 A coal seam has been observed on site with a number of coal seams surrounding the site.

4.1.6 There are two viewable BGS boreholes logs on or within the vicinity of the site. Borehole records are available from the BGS, which are included in Appendix 3 and are summarised on the table below:

**Table 4.1.5 Borehole Records**

Reference	Location	Details
380422	17m N	1.5m of plastic brown clay over gravel to 7.50mbgl over weathered sandstone to 8.78mbgl over sandstone to 12.42m a thin coal seam was encountered at 11.51m (2inch thick). This coal seam is not considered a sufficient risk due to it being thin and non-economically to excavate.
380442	36m NE	0.61m of topsoil over fine sand to 1.37m and weathered sandstone and siltstone to 9.45m bgl. Refusal on rockhead at 9.45mbgl. Groundwater at 1.45mbgl.

4.1.7 Both these boreholes were drilled before any infilled materials and relate to the A616 construction as they were drilled in 1980.

4.1.8 Made Ground and superficial materials were noted to 2.00mbgl below which was sandstone. Coal seams were encountered at depths between 12.00m and 14.00mbgl and were generally 1.50m thick. Made Ground /infilled materials have been placed on top of these boreholes.

### 4.2 Groundwater

4.2.1 Permeability for the Pennine Lower Coal Measures (Siltstone, mudstone and sandstones) are low to high and of fractured flow type.

4.2.2 The Ground Sure Report indicates the site is not located within a Source Protection Zone.

4.2.3 There are no known current groundwater abstraction licenses within 500m of the site.

4.2.4 The Ground Sure Report shows the site is not located within an area of river flooding.

4.2.5 BGS records indicate that the risk of ground water associated with the underlying ground conditions is negligible.

### **4.3 Coal Mining**

4.3.1 The site is identified as being in a coal mining area and as such a separate coal mining risk assessment report (CMRA) CRM.1483.056.GE.R001 has been prepared which dismisses the risk.

### **4.4 Non-Coal Mining and Cavities**

4.4.1 There is one Non coal mining activity shown within 500m of the site. This non coal mining activities comprises an ironstone underground mine 109m east. The risk of these underground mine workings affecting the site are discussed in the section below. There are six recorded underground ironstone mines from 500m to 1000m from the site. Given the distance these are not considered a significant risk to the site.

4.4.2 The Groundsure Geolnsight report indicates no significant risk from non-coal mining activities.

### **4.5 Natural Cavities**

4.5.1 No natural cavities are identified below or near to the site.

### **4.6 Ground Workings**

4.6.1 There are a number of previous coal pits within 250m of the site the closest two are 138m northeast which is referenced Sowell Pit and 165m northeast referenced Catnob Pit. Sowell pit was also extended to work ironstone. All these pits were wholly underground and accessed via shafts.

4.6.2 A number of surface workings have been identified within 500m of the site including, unspecified heaps are located 8 to 10m east, Ponds 31m to 35m south and more unspecified pits 91m to 105m North.

4.6.3 These workings could have been associated with the infilled materials recorded in sections 4.1.3 and roads and ponds identified in the historically section 3.

4.6.4 A number of underground workings have been identified within 500m of the site. These underground workings comprise disused and unspecified air shafts from 125m to 128m southeast, 128 to 214 north east, 221m to 228m south and 215m west.

4.6.5 Other underground ground workings include the collieries, and these are referenced 256 to 302m east, 332m north, 669m north, 824 to 852m northwest and 921m north. The majority of these are described and dismissed in the historical section 3.0.

4.6.6 Ironstone pits are also referenced as underground workings 727m to 867m south, 814m to 914m west, and 952m to 995m southeast and east. The direct risk from these pits is dismissed given the distance to the site.

4.6.7 Some of the workings associated with the collieries and ironstone pits are accessed from air shafts and therefore will extend below the site. the workings are initially thought to be deep enough. Further assessment within the CMRA dismisses the risk.

4.6.8 Nearest referenced colliery shown as 256m east with associated shafts 708m. This was dismissed in the historical section.

#### 4.7 Hydrology

4.7.1 The Groundsure EnviroInsight Report indicates there are one water coarse 66m east (Blackburn Brook). This watercourse flows south. There are one other watercourses within 500m of the site this is located 480m southeast and flows southeast. There are two ponds within 500m of the site these are 280m northwest and 450m southeast. Given the distance of the watercourses this is not considered a significant receptor.

4.7.2 Surface water flooding is noted as negligible for the site.

4.7.3 The site is not shown in flood zone.

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

#### 4.8 Radon

4.8.1 The Groundsure report recommends no radon protection measures are required for the site.

#### 4.9 Natural Hazards Finding

4.9.1 BGS information presented within the Groundsure report identified the following ground conditions:

**Table 4.2.1 Natural Hazards**

Hazard	Risk Designation (Groundsure)
Shrink Swell	Very Low
Landslides	Very Low
Soluble Rocks	Negligible
Compressible Ground	Moderate
Collapsible Rocks	Very Low
Running Sands	Negligible to very Low

4.9.2 The Moderate compressible risk is associated with the Made Ground infilled materials should be assessed as part of any future ground investigation.

4.9.3 No other significant ground hazards are identified.

#### 4.10 Sensitive Land Uses

4.10.1 The site comprises car parking and associated landscaping with the Premier Inn site and so is considered to be of low sensitivity.

4.10.2 No historical features are identified on the site.

#### 4.11 Environmental Sensitivity

4.11.1 Overall, the site is currently considered to be of moderate environmental sensitivity due to the following:

- The underlying stratum are designated as Secondary A Aquifer;
- There are no significant inland water bodies close to the site;
- The site is not located within a source protection zone;
- There are no current known groundwater abstraction wells within 500m of the site;
- No ecological designations on the site;
- Surface water flooding is not present in the vicinity of the site; and
- The site is not recorded within a flood zone.

4.11.2 The proposed end use of the site is for a hotel extension and so future sensitivity will be low for end users.

#### **4.12 Industrial Land Uses**

4.12.1 Industrial land uses within 250m of the site comprise electricity substation, vehicle cleaning areas and a petrol station. With the closest being 92m north which is considered not to be significant risk. All the remaining industrial uses are a greater distance than 100m from the site and therefore are not considered a risk to the site.

4.12.2 No other significant potential contamination sources are identified from the register of current land uses.

4.12.3 The Groundsure Report indicates that there is one garage site within 250m of the site which is located 141m northeast. given the age of this petrol station and the likely modern construction of the tanks (double lined) and the there are no recorded enforcements for this site. The risk from the garage site is dismissed.

4.12.4 Records indicate no high-pressure underground oil or gas pipelines within 250m of the site.

4.12.5 No new risks are identified from the register of industrial land uses.

#### **4.13 Regulatory Database**

4.13.1 The following information has been obtained from a commercially available environmental database.

**Table 4.13.1 Regulatory Database**

Environmental Permits, Incidents and Registers	0-250m	250-500m	Details
Site determined as contaminated land	0	0	Not applicable.
Authorised industrial processes	0	0	Not applicable.
Dangerous substances	0	1	Regulated explosive site 340m NE. given the distance this is not considered a risk to the site.
Registered radioactive substances	0	0	Not applicable.
Enforcements, prohibitions, or prosecutions	0	0	Not applicable.
Pollution Incidents	0	0	Not applicable.
Consents issued under the Planning (Hazardous Substances) Act 1990	0	0	Not applicable.
Control of Major Accident Hazard (COMAH)/ Notification of Installations Handling Hazardous Substances (NIHHS) sites	0	0	Not applicable.
Records of Licensed Discharge Consents	2	0	Closest is 70m E. Sewerage discharge into Trib of Blackburn Brook. Given the distance not considered a significant risk

4.13.2 No significant risks are identified from the regulatory data base.

#### 4.14 Landfill Sites and Waste Treatment Sites

4.14.1 The Groundsure report indicates there are no historical landfill sites within 250m of the site.

4.14.2 The Groundsure report indicates three historical licenced waste exceptions sites with the closest being 61m southeast. Given the distance to the site and the use of waste in construction this is not considered a significant risk to the site.

4.14.3 There is one historical waster site located 463m east which was licenced in 1956 for a refuse tip and ground workings. Given the distance to the site this is not considered a significant risk to the site.

## 5.0 PRELIMINARY CONCEPTUAL MODEL

**Table 5.1.1 Preliminary Conceptual Model**

Source	Location	Exposure Pathway	Potential Receptor	Probability of Exposure	Details
<b>Human Health</b>					
Asbestos, metals and hydrocarbons.	Potential Made Ground.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	Normal construction PPE will address risk under CDM.
			Site users.	Very low	Made Ground materials are likely to comprise foundation materials associated with a regrading exercise of the site to create a level development site. The materials are likely to be reworked natural materials and not imported Made Ground, although some Made Ground may be present. Given the site is covered in hardstanding with some landscaping sections the risk is very low.
Asbestos, metals and hydrocarbons.	Unforeseen Contamination.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	Normal construction PPE will address risk under CDM.
			Site users.	Very Low.	Low sensitivity end use.
Hydrocarbon and metals.	Migration from off-site sources.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	No significant source identified.
			Site users.		
Ground Gas.	Landfill.	Inhalation & Explosive.	Construction Workers.	Dismissed	No Landfills within 250m from site.
			Site users.		
	Potential Made Ground.	Inhalation & Explosive.	Construction Workers.	Very Low.	Significant putrescible material unlikely as the infill materials are likely to be inert. Gas monitoring will be undertaken as part of the investigation.
			Site users.		
Radon	Ground conditions	Inhalation & Explosive.	Site users	Dismissed.	No radon protection required for the site.
<b>Groundwater</b>					
Hydrocarbon and metals.	Unforeseen Contamination.	Vertical Migration.	Groundwater.	Dismissed	Low to high permeability soils, however no significant source identified, and the bedrock is likely to be covered with low permeability materials. (Regraded reworked materials).
<b>Surface Water</b>					
Hydrocarbon and metals.	Unforeseen Contamination.	Horizontal Migration.	River Network.	Dismissed.	No surface water features noted on the site.
<b>Environmental Receptors</b>					
On site contaminants		Ingestion dermal and inhalation.	Ecology.	Dismissed.	None present.
		Direct.	Archaeology.	Dismissed.	None present.
		Direct.	Geology.	Dismissed.	None present.
<b>Building Services</b>					
On site contaminants		Direct.	Historic Buildings.	Dismissed.	No receptors.
		Direct.	Proposed Buildings.	Dismissed.	No sources identified.
		Permeate into pipework.	Water Pipes	Dismissed.	No significant sources identified.

5.1.1 There are potential risks associated with potential Made Ground associated with the regrading exercise to construct the existing development on the site. However, as the majority of proposed annex site is to be covered in hardstanding the risk is dismissed as there is no pathway.

5.1.2 Within proposed landscaping areas it is likely that 400mm of clean inert materials will be required as a growing medium and in order to mitigate any risk from the underlying regarded materials.

5.1.3 There is a risk of unforeseen contamination associated with the regrade materials and reworked materials although this is considered as very low and can be mitigated by a discovery strategy during construction works.

5.1.4 No other risks are identified.

## 6.0 SITE INVESTIGATION

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### 6.1 General

- 6.1.1 A site investigation was undertaken by Enzygo Geoenvironmental Limited on 9<sup>th</sup> and 10<sup>th</sup> April 2025 and comprised window sampler boreholes (WS1 to WS4) and deep Borehole (BH01).
- 6.1.2 Exploratory holes were located to provide general site coverage. Window sampler boreholes were advanced below or adjacent to proposed buildings.
- 6.1.3 Locations of exploratory holes advanced by Enzygo Geoenvironmental Limited are presented on Drawing CRM1483.096.ENZ-XX-XX-DR-G-001. Exploratory holes were located taking account of the proposed development, existing occupied buildings and locations of existing services.
- 6.1.4 A separate coal mining investigation is proposed comprised two 45m deep rotary boreholes to confirm the risk of any coal workings on the site. Due to delays and finding available drillings rigs and working time constraints on site these works are programmed in for mid-June 2025.

### 6.2 Site Works

- 6.2.1 In-situ Standard Penetration Tests (SPT) were undertaken in window sampler boreholes to assess the undrained shear strength of clay soils and density of granular soils.
- 6.2.2 Representative soil samples were collected for chemical and geotechnical testing. Soil samples destined for chemical analysis were collected in appropriate containers provided by the analytical laboratory. Samples were stored in cool boxes prior to dispatch to the laboratory for analysis. All samples were collected using appropriate sampling equipment that was cleaned at each sampling location.
- 6.2.3 Generally, samples were collected from Made Ground, which may contain potential inclusions of contaminating materials and also materials displaying evidence of potential contamination.
- 6.2.4 In the absence of any evidence of contamination, samples were collected near surface as this material is more likely to be contaminated by surface spillages and also will potentially be in contact with future residents.

### 6.3 Laboratory Testing

- 6.3.1 Samples for geotechnical testing were sent to the laboratories of I2 Ltd, which is UKAS accredited, for the following analysis:
- Laboratory CBR tests;
  - Moisture Content;
  - Atterberg Limits Determinations; and
  - Soluble sulphate and pH.
- 6.3.2 Samples for chemical analysis were sent to I2 Ltd who are UKAS and MCERTS accredited. Samples were tested for the CLEA metal suite, pH, sulphate, cyanide, phenols, speciated Polycyclic Aromatic Hydrocarbons (PAH), organic carbon, banded Total Petroleum Hydrocarbon (TPH), and asbestos screen. Leachate analysis was under from soil samples.

6.3.3 Waste Acceptance Criteria (WAC) testing was undertaken to assist in determining the waste classification of surplus soils.

## **6.4 Monitoring**

6.4.1 Installations were placed within selected boreholes which were monitored for groundwater depths and ground gas concentrations on return visits.

## 7.0 GROUND AND GROUNDWATER CONDITIONS

### 7.1 Summary of Ground and Groundwater Conditions

7.1.1 Ground and groundwater conditions have been assessed by Enzygo Geoenvironmental Limited investigation. The investigation undertaken identify the following strata:

**Table 7.1.1 Ground and Groundwater Conditions**

Topsoil	Dark grey and brown sandy slightly gravelly clay with rootlets (Topsoil materials)	0.15
Surface Made ground (landscaping materials)	Dark orangish brown fine to medium SAND & GRAVEL. Gravel is composed of fine to medium angular to sub-angular flint, with concrete and brick fragments	0.45
Deeper Made Ground within landscaping areas	Up to 2 layers firm locally soft and stiff light grey becoming brownish black sandy locally very sandy, gravelly locally very gravelly CLAY. Sand is fine to medium. Gravel is composed of fine to medium angular to sub-angular claystone and flint with rare, with concrete and brick fragments and local Asphalt fragments up to 100mm dia.	In excess of 4.85
Surface Made Ground Hardstanding	Asphalt (150mm thick) over Gravel (type one) materials	0.35
Deeper Made Ground in hardstanding areas	Four layers firm locally soft and becoming stiff with depth light grey becoming brownish black sandy locally very sandy, gravelly locally very gravelly CLAY. Sand is fine to medium. Gravel is composed of fine to medium angular to sub-angular claystone and flint with rare, with concrete and brick fragments and local Asphalt fragments up to 100mm dia. Whole brick encountered at 12.9mbgl	17.8
Weathered Pennine Lower Coal Measures Formation	Very stiff orangish brownish grey gravelly CLAY. Gravel is angular and subangular fine to coarse claystone.	In excess of 0.33
Groundwater.	Not encountered.	

7.1.2 Details of the ground and groundwater conditions encountered are given on the exploratory hole records included in Appendix 2 and are summarised in the sections below:

### 7.2 Surface Made Ground

7.2.1 Topsoil was present across the site and within landscaping area and comprised dark grey, brown Gravel is angular to subrounded fine to coarse of mixed lithologies (topsoil).

7.2.2 Generally, the Topsoil was noted to be 0.15m thick within Borehole WS03, and within landscaping areas. This may be associated with site landscaping associated with the current development. The topsoil was underlain by a layer of sand and gravel (0.45m thick) comprising dark orangish brown fine to medium sand and gravel. Gravel is composed of fine to medium angular to sub-angular flint, with concrete and brick fragments.

7.2.3 Deeper Made Ground was encountered underneath the soft landscaping materials, and this was proved to in excess of 5.45mbgl. These materials comprised up to 2 layers firm locally soft and stiff light grey becoming brownish black sandy locally very sandy, gravelly locally very gravelly clay. Sand is fine to medium. Gravel is composed of fine to medium angular to sub-angular claystone and flint with rare, with concrete and brick fragments and local Asphalt fragments up to 100mm.

7.2.4 Within areas of hardstanding the surface Made Ground comprised either Asphalt (150mm thick) over type one materials to 0.35mbgl.

7.2.5 Deeper Made Ground was encountered underneath the type 1 materials, and this was proved to 17.8mbgl. These materials comprised up to 4 layers of firm locally soft and stiff light grey becoming brownish black sandy locally very sandy, gravelly locally very gravelly CLAY. Sand is fine to medium. Gravel is composed of fine to medium angular to sub-angular claystone and

flint with rare, with concrete and brick fragments and local madam fragments up to 100mm dia. A whole brick was encountered at 12.9mbgl.

### 7.3 Weathered Lower Pennine Coal Meassures

7.3.1 The Weathered Lower Pennine Coal Meassures were encountered below the Made Ground below 17.80mbgl and comprised very stiff orangish brownish grey gravelly clay. Gravel is angular and subangular fine to coarse claystone.

### 7.4 Soil Strength

7.4.1 Strength of soils were assessed using SPT values. Where appropriate the undrained shear strength of clayey Made Ground were calculated using the correlations of Stroud and Butler. The undrained shear strength of the Made Ground ranged from 27kN/m<sup>2</sup> to 225N/m<sup>2</sup> with a lower quartile value of 36kN/m<sup>2</sup> at a depth of 1m below ground level (bgl) and a lower quartile value of 63kN/m<sup>2</sup> at a depth from 1 to 5m below ground level (bgl) and 68kN/m<sup>2</sup> at a depth from 1 to 17.8m bgl. Given this is Made Ground the strength increases with depth however it is recommended that an undrained shear strength of 36kN/m<sup>2</sup> at depths up to 1.00mbgl is used for design proposes and 63kN/m<sup>2</sup> from the remainder of the Made Ground. Localised pockets of softer and harder materials have been proved.

7.4.2 Where appropriate the undrained shear strength of clayey weathered Lower coal measures was calculated using the correlations of Stroud and Butler. The undrained shear strength of these materials was a refusal and was in excess of 225kN/m<sup>2</sup>. Based on the extrapolated SPT values the undrained values are in excess of an extrapolated values of 2000kN/m<sup>2</sup> this also correlates to a weak strength.

7.4.3 Within Borehole BH01 the weathered Lower Coal Meassures recorded an extrapolated SPT N Values ranging from of 600 and 1200. Which correlates to a weak strength.

### 7.5 Visual and Olfactory Evidence of Contamination

7.5.1 No visual or olfactory evidence of contamination was encountered during the site works with the exception of the Made Ground which was capped with clean topsoil like materials.

### 7.6 Groundwater

7.6.1 Groundwater was not encountered during the site works. The depth to groundwater measured during the monitoring visits are summarised in the table below:

**Table 7.7.1 Groundwater Depths**

Exploratory Hole	Depth m(bgl)			
	5.5.25	11.05.25	18.5.25	24.5.25
WS01	Dry	Dry	Dry	Dry
WS02	3.55	3.44	Dry	3.72
WS03	Dry	Dry	Dry	Dry
WS04	Dry	Dry	Dry	Dry

### 7.7 Ground Gas

7.7.1 Ground gas was monitored during the return visit to monitor groundwater levels, and the results are summarised on the table below:

**Table 7.8.1 Gas Monitoring Results**

Exploratory Hole	Atmos pressure (Mb)	Flow (l/hr)	CH4		CO2		O2
			Concentration (%)	GSV (l/hr)	Concentration (%)	GSV (l/hr)	Concentration (%)
<b>05.05.25</b>							
WS01	999 (R)	<0.1	<0.1	<0.0001	6.4	<0.0064	16.9
WS02	999 (R)	<0.1	<0.1	<0.0001	3.8	<0.0038	16.0
WS03	1000 (R)	<0.1	<0.1	<0.0001	1.5	<0.0015	19.4
WS04	1000 (R)	<0.1	<0.1	<0.0001	0.5	<0.0005	20.6
<b>11.05.25</b>							
WS01	995 (F)	<0.1	<0.1	<0.0001	11.9	<0.0119	11.0
WS02	995 (F)	<0.1	<0.1	<0.0001	4.1	<0.0041	16.2
WS03	994 (F)	<0.1	<0.1	<0.0001	11.5	<0.0115	10.5
WS04	994 (F)	<0.1	<0.1	<0.0001	7.3	<0.0073	13.9
<b>18.05.25</b>							
WS01	1002 (R)	<0.1	<0.1	<0.0001	4.8	<0.0048	18.4
WS02	1002 (R)	<0.1	<0.1	<0.0001	4.8	<0.0048	15.9
WS03	1003 (R)	<0.1	<0.1	<0.0001	0.5	<0.0005	20.6
WS04	1003 (R)	<0.1	<0.1	<0.0001	4.5	<0.0045	14.3
<b>24.05.25</b>							
WS01	1003 (R)	<0.1	<0.1	<0.0001	2.0	<0.0020	11.0
WS02	1003 (R)	<0.1	<0.1	<0.0001	0.5	<0.005	11.0
WS03	1004 (R)	<0.1	<0.1	<0.0001	0.6	<0.0115	10.5
WS04	1004 (R)	<0.1	<0.1	<0.0001	0.6	<0.0073	13.9

## 8.0 CONTAMINATION ASSESSMENT

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### 8.1 General

8.1.1 A Tier I risk assessment has been undertaken using available and current screening values for a commercial use. The risk assessment is undertaken based on the findings of the ground investigation. Based on the contamination testing and Tier I assessment a Conceptual Model has been prepared, which is presented later in this section.

8.1.2 Where significant risks are identified remedial measures are recommended.

### 8.2 Human Health

8.2.1 Assessment of the risks to human health has been undertaken by comparing the soil quality data with reference values obtained from the Contaminated Land Exposure Assessment (CLEA), Soil Guideline Values (SGV) and General Acceptance Criteria (GAC) published by LQM/CIEH. The LQM/CIEH S4ULs values are used, and summary tables of the reference values are included in Appendix 5.

8.2.2 Where an exceedance is identified the risk is assessed by considering the sensitivity of the proposed development and the potential pathway. The proposed development is for hotel extension and therefore the GAC values for commercial use are considered suitable.

8.2.3 Results of the chemical testing from the investigations are included in Appendix 3.

8.2.4 The soil quality analysis shows no exceedances of the GAC values. No asbestos was detected.

8.2.5 Samples recorded no exceedances above the guidance values given in Water UK guidelines for the use of plastic pipes, however local water services may have specific localised guidance values for plastic pipes. Based on the above Chemical results should be sent to the Water service provider to confirm which water pipes are suitable.

### 8.3 Controlled Waters

8.3.1 No mobile contamination was noted. Leachate analysis confirms no exceedances above the appropriate EQS guidelines and Drinking Water Standards, however based on the hardness values the EQS guidelines are marginally exceeded for copper and nickel. Given there is no groundwater recorded during drilling to 18.13mbgl and the only groundwater confirmed in the installations is considered to be perched the resulting marginally concentrations do not present a significant risk to controlled waters.

### 8.4 Ground Gas

8.4.1 Following the guidance provided in Section 3 of CIRIA C665 an initial assessment is undertaken to determine if there are any significant sources of potential ground gas. Such sources include landfills, organic clays and made ground incorporating putrescible materials such as rags, paper and wood. Where no significant source is identified no further assessment is necessary.

8.4.2 This approach is further supported by supplementary guidance given in RB17, published by CL:AIRE which confirms that gas monitoring is not generally required on sites where Made Ground is less than 5m thick and with low organic matter content or on natural soils such as alluvial clays and Chalk as the ground gas sources are not considered significant. The supplementary guidance given in RB17 also takes account of the current requirements for sealing of floor slabs and substructures to meet air tightness requirements under Part L of the

Building Regulations which were not considered in CIRIA C665. The advice given in RB17 is consistent with CIRIA C665 and the Local Authority Guide to Ground Gas published by CIEH.

- 8.4.3 Where significant potential risk from ground gas is identified from the Initial Conceptual Model and the intrusive ground investigation works ground gas monitoring is undertaken and the results of the monitoring are compared against the Gas Screening Values given in CIRIA Report 665. From this the Characteristic Situation is identified and remedial measures proposed.
- 8.4.4 When assessing the risk and type of remedial measures appropriate consideration is given to the likely construction of the development, the nature of the gas posing a risk and the nature of the likely source. The use of engineering judgement when determining risk from ground gas is consistent with the recommendations given in CIRIA C665 using a pollutant linkage model.
- 8.4.5 Gas monitoring was undertaken during return visits which has recorded no elevated concentrations of Methane or elevated concentrations of Carbon dioxide (11.5% vol) and no flow.
- 8.4.6 Given elevated Carbon Dioxide and no flows have been recorded consideration is given to increasing the Characteristic Situation from Characteristic Situation 1 to 2 (CS1 and CS2), however given that no flow readings have been encountered and as Carbon Dioxide is heavier than air CS 1 conditions apply and in accordance with BS8485 the building is considered a type C building. Based on the above no gas protection measures are required. In addition, no radon protection measures are required.

## **8.5 Conceptual Model**

- 8.5.1 A Conceptual Model is presented below based on the findings of the ground investigation.

**Table 8.5.1 Conceptual Model**

Source	Location	Exposure Pathway	Potential Receptor	Probability of Exposure	Details
<b>Human Health</b>					
Hydrocarbons, asbestos and metals.	On-site sources.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed	No exceedance of GAC.
			Site users.		
Asbestos, metals and hydrocarbons.	Unforeseen Contamination.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	Normal construction PPE will address risk under CDM.
			Site users.	Very Low.	Discovery Strategy.
Hydrocarbon and metals.	Migration from off-site sources.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	No significant source identified.
			Site users.		
Ground Gas.	Made Ground/Landfill	Inhalation & Explosive.	Construction Workers.	Dismissed.	Characteristic situation 1 and no gas mitigation measures required
			Site users.		
Radon	Natural materials	Inhalation & Explosive.	Site users	Dismissed.	No protection measures are required.
<b>Controlled Waters</b>					
Hydrocarbon and metals.	Potential spillage on site.	Vertical Migration.	Groundwater.	Dismissed.	No significant source identified
<b>Surface Water</b>					
Hydrocarbon and metals.	Potential spillage on site.	Horizontal Migration.	River Network.	Dismissed.	No significant source identified.
<b>Environmental Receptors</b>					
On site contaminants.		Ingestion dermal and inhalation.	Ecology.	Dismissed.	No receptor.
		Direct.	Archaeology.	Dismissed.	No receptor.
		Direct.	Geology.	Dismissed.	No receptor.
		Phytotoxic.	Woodland.	Dismissed.	No receptor.
		Phytotoxic.	Crops.	Dismissed.	No receptor.
		Ingestion dermal and inhalation.	Livestock.	Dismissed.	No receptor.
<b>Building Services</b>					
On site contaminants.		Direct.	Historic Buildings.	Dismissed.	No receptor.
		Direct.	Proposed Buildings.	Dismissed.	No receptor.
		Permeate into pipework.	Water Pipes.	Very Low	Water Authority Guidance values have not been exceeded however local water service providers may have specific guidance which will need to be followed.

## 8.6 Outline Remediation and Verification Strategy

8.6.1 No gross contamination has been identified; however, Made Ground has been encountered to 17mbgl and no GAC exceedances recorded, and no significant leachates recorded from the Made Ground.

- 8.6.2 Local water companies guidance values are to be followed in relation to use of plastic pipes on site and it is recommended that the chemical testing results are sent to the local water company to confirm the type of pipes to be used.
- 8.6.3 The surface Made Ground is not considered suitable as growing medium and therefore within landscaping areas 300mm of clean materials will need to be installed as a growing medium and in accordance with the Landscaping architect recommendations.
- 8.6.4 No gas protection measures are recommended based on the gas monitoring results collected.
- 8.6.5 In addition, within proposed landscaping if unforeseen contamination is encountered during construction works such as localised spillage outside the areas investigated an Environmental consultant will be available on a 'call out' basis to undertake an assessment of risk. If 'unforeseen contamination' is encountered the discovery strategy will be removal of the source.

## **8.7 Waste Classification**

- 8.7.1 WAC testing has been undertaken and no elevated Asbestos, PAH or TPH concentrations were recorded above the Inert Waste from the WAC samples, however PAH concentrations were recorded above the Inert Waste in Borehole WS03 at 0.50mbgl and from the general chemical testing samples
- 8.7.2 In addition, TPH concentrations were recorded above the Inert Waste in Borehole WS04 at 0.50mbgl and from the general chemical testing samples.
- 8.7.3 WAC analysis indicates that no samples taken recorded concentrations and leachable concentrations above the inert Waste
- 8.7.4 Based on the above the preliminary assessment of the soils waste classification is Stable non-reactive.
- 8.7.5 The Waste Management paper 3 requires the landfill to make an appropriate assessment of the waste classification. As such final assessment will be undertaken by the receiving landfill based on the requirements of their permit.

## 9.0 GEOTECHNICAL ASSESSMENT

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### 9.1 Proposed Development

9.1.1 The proposed development comprises an extension to an existing hotel. Structural loads are not known, and so typical wall load of 100kN/m has been used for preliminary assessment purposes.

9.1.2 It is considered that the scheme meets the criteria of Geotechnical Category 1 of Eurocode 7.

### 9.2 Ground Conditions

9.2.1 Ground conditions comprise topsoil over Made Ground to 17.8mbgl over very stiff orangish brownish grey gravelly clay. Gravel is angular and subangular fine to coarse claystone. (Pennine coal measures). No shallow groundwater was encountered during drilling with groundwater recorded in one installation below 3.44mbgl. This is considered a perched groundwater within the Made Ground.

### 9.3 Preparation

9.3.1 The site should be cleared and any vegetation below areas of proposed development stripped in accordance with Series 200 of the Specification for Highway Works. This should include:

- Any redundant services should be sealed off and grubbed out and replaced with suitable compacted engineered fill;
- All buried structures and old foundations should be excavated from below the proposed structures with the resulting void backfilled prior to foundation works; and
- Any root balls associated with existing trees should be grubbed out.

### 9.4 Foundations

9.4.1 It is considered that conventional strip foundations are not suitable given the thickness, consistency and strength of Made Ground.

9.4.2 Based on the boreholes and the SPT Profile it is recommended that foundations are piled into the underlying Lower Coal measures at a depth below 17.80mbgl where refusals have been encountered and an extrapolated SPT values more than 600 and undrained shear strengths values greater than 2000KN/m<sup>2</sup>. Given the depth of the coal measures recorded the pile contractors are likely to request 5m of strength data below the current drilling depth and within the Lower coal Measure materials. In order to provide this data, it is recommended that 5m of coring and SPTs are provided below 17.80m in one of the two proposed 45m coal mining rotary boreholes. This is likely to confirm weak lower coal measures is proved to the depth of 24m bgl.

9.4.3 Final pile assessment will be undertaken by the piling contractor who can confirm final pile depths, pile type and pile diameter.

9.4.4 Based on the above the further rock strength information will be provided to confirm the final pile foundation.

9.4.5 Given the thickness of the Made Ground consideration will need to be given to the generated pile skin friction through the Made Ground which should also be considered to the section of pile type to achieve the required proposed depths of pile.

9.4.6 Given the thickness of the Made Ground it is recommended that the pile foundations are combined with a raft foundation or ring beam and linking the piles together to provide a rigid foundation which will also minimise differential settlement from the Made Ground.

9.4.7 An assessment of the soils modified plasticity index confirms that the cohesive soils (Made Ground) are of a low to medium volume change potential in accordance with Chapter 4.2 of NHBC Standards.

9.4.8 Final foundation depths should also take account of NHBC requirements for building near trees. An assessment of the soils modified plasticity index confirms that the clay soils are of Low to medium volume change potential in accordance with Chapter 4.2 of NHBC Standards and there are limited trees within the proposed extension area.

9.4.9 Concrete blinding is recommended to prevent softening of the formation.

9.4.10 An appropriate pile matt should be designed to allow piling to proceed to depths below 20m.

## **9.5 Floor Slab**

9.5.1 It is recommended that suspended floor slabs are used given the thickness of the Made Ground.

9.5.2 No gas precaution measures are recommended.

9.5.3 No radon protection measures are required.

## **9.6 Pavement Construction**

9.6.1 An assessment of the likely California Bearing Ratio (CBR) has been assessed from the following sources:

- Laboratory CBR tests;
- Description of the materials encountered in the exploratory holes;
- Guidance given in HD25/94 and 73/06; and

9.6.2 Based on this it is recommended that an equilibrium CBR of 5% is used. Soils are considered frost susceptible.

## **9.7 Drainage**

9.7.1 Soakaway drainage is not considered feasible due to the presence of clay soils and also the high clay content of the Made Ground.

9.7.2 The report should be submitted to the Water Authority.

## **9.8 Aggressive Soils**

9.8.1 It is considered that buried concrete may be designed in accordance with ACEC Class AC1 within the Made Ground. Further confirmation analysis will be provided with the deep rotary boreholes.

## **9.9 Excavation**

9.9.1 Based on the various site observations it is considered that shallow excavations should be feasible with normal plant.

Premier Inn, Maple Road, Tankersley, Barnsley, S75 3DL

Whitbread PLC

9.9.2 Excavations where access is required should be supported in accordance with CIRIA RR97.

9.9.3 Significant dewatering is not anticipated.

Premier Inn, Maple Road, Tankersley, Barnsley, S75 3DL

Whitbread PLC

## Drawings

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## **Appendix 1 – Desk Study Assessment**

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## Phase I Desk Study Assessment

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**Premier Inn, Maple Road, Tankersley, Barnsley,**

**S75 3DL**

CRM.1483.096.GE.R.001.A



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## Phase One Desk Study Assessment

Project:	Premier Inn, Maple Road, Tankersley, Barnsley, S75 3DL
For:	Whitbread PLC
Ref:	CRM.1483.096.GE.R.001.A
Status:	Final
Date:	March 2024
Author:	Richard Hamilton <b>Director of Geoenvironmental</b>
Reviewer:	Steve Rhodes <b>Director</b>

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## 1.0 INTRODUCTION

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### 1.1 Background

- 1.1.1 Enzygo Geoenvironmental Limited has been commissioned to prepare a Phase one Desk study Assessment in support of a planning application at the Premier Inn, Maple Road, Tankersley, Barnsley, S75 3DL.

### 1.2 Proposed Development

- 1.2.1 The existing site comprises a Premier Inn Hotel and Brewers Fayre restaurant with associated car parking and soft landscaping. The proposed development comprises an extension/annex to the existing hotel together with car parking and soft landscaping to the south east of the hotel.
- 1.2.2 The proposed development is shown on Drawing P11079 – SK998 prepared by Allison Pike Architects. A copy is included within the Drawing Section of this report.

### 1.3 Objectives

- 1.3.1 The objectives of the study are to:
- Obtain desk study information, a copy of which is included within Appendix 1;
  - Assess the implications of any potential geotechnical issues in relation to the site and any historical mining;
  - Assess the environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors; and
  - Provide a report relating to the Geotechnical and environmental desk study and provide a preliminary conceptual model and recommendations.

### 1.4 Risk Classification

- 1.4.1 Enzygo Geoenvironmental has utilised the available information, together with our experience to assess the likely risks to development from land quality issues. Definitions of the risk terms used are provided on the following table.

**Table 1.4.1 Risk Classification**

Risk	Description
Dismissed	No contamination risk has been identified which is likely to affect development.
Low	No significant contaminated land risks have been encountered affecting development and a low risk that remediation will be required.
Low-Moderate	There are unlikely to be significant contaminated land issue associated with the site which will adversely affect its re-development. However, minor, or localised contamination may be present requiring remediation. Remediation should be possible under a discovery strategy and with a call out service.
Moderate	Some potential contaminated land risks have been encountered or identified which may affect re- development. The risks identified are unlikely to affect the entire site or preclude development. Remediation is considered feasible as part of the development process and no further investigation is considered necessary.
Moderate-High	Some potentially significant contaminated land risks have been identified at the property that requires remediation. It is recommended that a separate remedial methodology is prepared supported by a site-specific risk assessment
High	Significant potential contaminated land risks have been identified, and remediation is required supported by further intrusive ground investigation, risk assessment and remedial design.

1.4.2 Where adverse risks from ground instability are identified these are discussed within the report.

## 2.0 SITE SETTING

**Table 2.0 Site Description**

Item	Description
Site Address	Premier Inn, Maple Road, Tankersley, Barnsley, S75 3DL
National Grid Reference	433546 399070

### 2.1 Current Site Description

- 2.1.1 The site of the proposed annex/extension site is currently occupied by car parking surrounded by soft landscaping comprising a grassed area and hedging with scattered mature trees in the soft landscaping areas.
- 2.1.2 The main hotel buildings comprise a two-storey building and is located to the north west of the site.
- 2.1.3 The hotel has previous been extended to the north west of the hotel and out of the northern wall of the previous hotel.
- 2.1.4 An area of low growing hedges is located immediately to the south east of the hotel and divides the existing hotel and the proposed annex.
- 2.1.5 A proposed link from the southern eastern wall of the existing hotel will connect into the proposed annex.
- 2.1.6 Mature trees were noted on the southern boundary of the hotel site and some 50m away from the proposed annex site.
- 2.1.7 The proposed extension is located to the south east of the existing hotel and is occupied by car parking and areas of soft landscaping vegetated with bushes, grass and occasional mature trees.

### 2.2 Surrounding Area

2.2.1 Land uses surrounding the site are summarised as follows:

**Table 2.2.1 Land Use Surrounding the Area**

Direction	Land Use
North	Hotel building, and Restaurant buildings with commercial units beyond.
South	Grass Mature Trees (Hotel Boundary) and A616 and open ground including grass and trees beyond.
West	Hotel Car Park, Trees (Hotel Boundary), and A616 and Tankersley Diner beyond.
East	Car park, open space (Hotel Boundary) Maple Road, McDonalds and roundabout beyond.

2.2.2 There is no evidence of ground workings on or adjacent to the site, however given the generally level development site some cut and fill operations and therefore Made Ground will be present.

## 3.0 SITE HISTORY

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### 3.1 Historical Maps

3.1.1 A review of historical Ordnance Survey maps and information pertinent to the site and within a 250m radius is summarised below:

#### Table 3.1.1 Historical Maps

Potentially Contaminative Historical Land Use		
Map Edition	Site	Surrounding Area
1855	Open field site	Sowell wood is shown 50m N and NW. West Wood 90m S and SW. Iron stone pit 150 to 180m SE. Sandstone and ironstone pit 250m NE. Westwood Colliery 279m S to include ironstone pit shaft and railway connecting into the mainline 550m SE.
1893-1894	Open field site	Westward colliery is not shown and all that remains is pit/pond and old shaft. All the infrastructure and structure for the colliery are not shown. By 1894 ponds 80m, 90m and 140m N and Air shafts and pit 120m S associated with the coal workings from (Wharnccliffe Silkstone colliery 800m NE and Tankersley colliery 500m SE) . Old ironstone pit 180m SE. Old pit and shaft 200m to 270m S. Old shafts shown in Sowell wood 150m NE and 130m NE. Further air shafts 220m E and old shafts 220m NE. Woodburn Junction railway 200m E. Sowell railway Bridge 220m E. Earthworks 20m E and 100m S (Possible former colliery railway or embankment or spoil heap.
1903	No changes	Additional earthworks shown 220 to 250m N and NE. Additional pond/reservoir/20m N.
1929- 1948	No changes	Westward Main road 250m E to 90m S and 250m S. Two more additional ponds/reservoirs 220m NE and 270m NE.
1956	Site has been regraded and infilled.	Sowell Wood has been removed as part of the infilled exercise . Part of West Wood has also been removed as part of the infill exercise. The majority of the air shafts and pits recorded in 1855 and 1893 have been infilled. One remaining air shaft is shown 220m NE and a second old shaft 120m SE. Road relabelled as A61 and the bridge has been widened over railway. All the historical ponds and reservoirs minus the pond 270m NE have been infilled as part of the infilling and regrading exercise.
1966	No changes.	Earthworks 20m E infilled.
1980-1981	No changes.	Railway is shown as dismantled. Industrial units shown E of railway. 270m NE.
1992	Site is shown as reprofiled and shows topographical levels on the site.	A616 is shown 20m S on embankment. This connects into roundabout with A61. Drain and excavation (possibly related to the road and roundabout drainage surface water drainage basin.)
1999 to 2003	Hotel Car park and landscaping.	Hotel buildings 20m N. Restaurant 45m NE. filing station 100m NE.

2009-2018	No significant changes.	Hotel building 20m N has been extended 50m NW. Commercial buildings 50m N to 100m N.
2021	No significant changes.	Further Commercial buildings 150m N.
2024	No significant changes.	No significant changes.

- 3.1.2 Historic shafts are identified in the surrounding area associated with the coal outcrop and coal workings underneath the site. Historically collieries and iron workings are shown in the area surrounding the site.
- 3.1.3 The coal legacies are shown via shafts and pits which were worked from the 1850s to 1910. The remaining coal legacy (shallow coal and iron seams) were worked via opencast methods to an estimated depth of 15m by the 1950s whereby these and the previous shafts and pits were infilled to provide the current working platform. As part of the regarding exercise the previous shafts were infilled and/or excavated out.
- 3.1.4 Commercial development including the road network have been subsequently built on top of regarded infilled formation which were infilled and regraded in the late 1950s.
- 3.1.5 Based on the above `backfill/ Made Ground / infilling is noted from 1956 across the entire area including the development site. These materials are likely to contain remnant coal materials and also be loosely compacted. The thickness, classification, chemical composition, and compaction characteristics will need to be confirmed via investigation.

## 4.0 ENVIRONMENTAL SETTING

### 4.1 Ground Conditions

4.1.1 The British Geological Survey (BGS) indicates that the site is underlain by the following geological sequence:

**Table 4.1.1 Geological Sequence**

Geological Unit	Type	Descriptions	Aquifer Classification
Drift	N/a	None	N/a
Solid	Pennine Lower Coal Measures Formation -	Mudstone, Siltstone And Sandstone and coal seam	Secondary A

4.1.2 No faults are shown on the site or within 250mm if the site.

4.1.3 BGS records show the site is within an area and published records of infilled ground with worked ground and Made ground to the south east and east.

4.1.4 There are no records of landslips on or near to the site.

4.1.5 A coal seam has been observed on site with a number of coal seams surrounding the site.

4.1.6 There are two viewable BGS boreholes logs on or within the vicinity of the site. Borehole records are available from the BGS, which are included in Appendix 3 and are summarised on the table below:

**Table 4.1.5 Borehole Records**

Reference	Location	Details
380422	17m N	1.5m of plastic brown clay over gravel to 7.50mbgl over weathered sandstone to 8.78mbgl over sandstone to 12.42m a thin coal seam was encountered at 11.51m (2inch thick). This coal seam is not considered a sufficient risk due to it being thin and non economically to excavate.
380442	36m NE	0.61m of topsoil over fine sand to 1.37m and weathered sandstone and siltstone to 9.45m bgl. Refusal on rockhead at 9.45mbgl. Groundwater at 1.45mbgl/

4.1.7 Both these boreholes were drilled before any infilled materials and relate to the A616 construction as they were drilled in 1980.

4.1.8 Made Ground and superficial a materials were noted to 2.00mbgl below which was sandstone. Coal seams were encountered a depths between 12.00m and 14.00mbgl and were generally 1.50m thick. Made Ground /infilled materials have been placed on top of these boreholes.

### 4.2 Groundwater

4.2.1 Permeability for the Pennine Lower Coal Measures (Siltstone, mudstone and sandstones) are low to high and of fractured flow type.

4.2.2 The Ground Sure Report indicates the site is not located within a Source Protection Zone.

4.2.3 There are no known current groundwater abstraction licenses within 500m of the site.

4.2.4 The Ground Sure Report shows the site is not located within an area of river flooding.

4.2.5 BGS records indicate that the risk of ground water associated with the underlying ground conditions is negligible.

### **4.3 Coal Mining**

4.3.1 The site is identified as being in a coal mining area and as such a separate coal mining risk assessment report (CMRA) CRM.1483.056.GE R001 has been prepared which dismisses the risk.

### **4.4 Non-Coal Mining and Cavities**

4.4.1 There is one Non coal mining activity shown within 500m of the site. This non coal mining activities comprises an ironstone underground mine 109m east. The risk of these underground mine workings affecting the site are discussed in the section below. There are six recorded underground ironstone mines from 500m to 1000m from the site. Given the distance these are not considered a significant risk to the site.

4.4.2 The Groundsure Geolnsight report indicates no significant risk from non-coal mining activities.

### **4.5 Natural Cavities**

4.5.1 No natural cavities are identified below or near to the site.

### **4.6 Ground Workings**

4.6.1 There are a number of previous coal pits within 250m of the site the closest two are 138m north east which is referenced Sowell Pit and 165m north east referenced Catnob Pit. Sowell pit was also extended to work ironstone. All these pits were wholly underground and accessed via shafts.

4.6.2 A number of surface workings have been identified within 500m of the site including, unspecified heaps are located 8 to 10m east, Ponds 31m to 35m south and more unspecified pits 91m to 105m North.

4.6.3 These workings could have been associated with the infilled materials recorded in sections 4.1.3 and roads and ponds identified in the historical section 3.

4.6.4 A number of underground workings have been identified within 500m of the site. These underground workings comprise disused and unspecified air shafts from 125m to 128m south east, 128 to 214 north east, 221m to 228m south and 215m west.

4.6.5 Other underground ground workings include the collieries, and these are referenced 256 to 302m east, 332m north, 669m north, 824 to 852m north west and 921m north. The majority of these are described and dismissed in the historical section 3.0.

4.6.6 Ironstone pits are also referenced as underground workings 727m to 867m south, 814m to 914m west, and 952m to 995m south east and east. The direct risk from these pits is dismissed given the distance to the site.

4.6.7 Some of the workings associated with the collieries and ironstone pits are accessed from air shafts and therefore will extend below the site. the workings are initially thought to be deep enough. Further assessment within the CMRA dismisses the risk .

4.6.8 Nearest referenced colliery shown as 256m east with associated shafts 708m. This was dismissed in the historical section.

#### 4.7 Hydrology

4.7.1 The Groundsure EnviroInsight Report indicates there are one water coarse 66m east (Blackburn Brook). This watercourse flows south. There are one other watercourses within 500m of the site this is located 480m south east and flows south east. There are two ponds within 500m of the site these are 280m north west and 450m south east. Given the distance of the watercourses this is not considered a significant receptor.

4.7.2 Surface water flooding is noted as negligible for the site.

4.7.3 The site is not shown in flood zone.

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

#### 4.8 Radon

4.8.1 The Groundsure report recommends no radon protection measures are required for the site.

#### 4.9 Natural Hazards Finding

4.9.1 BGS information presented within the Groundsure report identified the following ground conditions:

**Table 4.2.1 Natural Hazards**

Hazard	Risk Designation (Groundsure)
Shrink Swell	Very Low
Landslides	Very Low
Soluble Rocks	Negligible
Compressible Ground	Moderate
Collapsible Rocks	Very Low
Running Sands	Negligible to very Low

4.9.2 The Moderate compressible risk is associated with the Made Ground infilled materials should be assessed as part of any future ground investigation.

4.9.3 No other significant ground hazards are identified.

#### 4.10 Sensitive Land Uses

4.10.1 The site comprises car parking and associated landscaping with the Premier Inn site and so is considered to be of low sensitivity.

4.10.2 No historical features are identified on the site.

#### 4.11 Environmental Sensitivity

4.11.1 Overall, the site is currently considered to be of moderate environmental sensitivity due to the following:

- The underlying stratum are designated as Secondary A Aquifer;

- There are no significant inland water bodies close to the site;
- The site is not located within a source protection zone;
- There are no current known groundwater abstraction wells within 500m of the site;
- No ecological designations on the site;
- Surface water flooding is not present in the vicinity of the site; and
- The site is not recorded within a flood zone.

4.11.2 The proposed end use of the site is for a hotel extension and so future sensitivity will be low for end users.

#### **4.12 Industrial Land Uses**

4.12.1 Industrial land uses within 250m of the site comprise electricity substation, vehicle cleaning areas and a petrol station. With the closest being 92m north which is considered not to be significant risk. All the remaining industrial uses are a greater distance than 100m from the site and therefore are not considered a risk to the site.

4.12.2 No other significant potential contamination sources are identified from the register of current land uses.

4.12.3 The Groundsure Report indicates that there is one garage site within 250m of the site which is located 141m north east. given the age of this petrol station and the likely modern construction of the tanks (double lined) and the there are no recorded enforcements for this site. The risk from the garage site is dismissed.

4.12.4 Records indicate no high-pressure underground oil or gas pipelines within 250m of the site.

4.12.5 No new risks are identified from the register of industrial land uses.

#### **4.13 Regulatory Database**

4.13.1 The following information has been obtained from a commercially available environmental database.

**Table 4.13.1 Regulatory Database**

Environmental Permits, Incidents and Registers	0-250m	250-500m	Details
Site determined as contaminated land	0	0	Not applicable.
Authorised industrial processes	0	0	Not applicable.
Dangerous substances	0	1	Regulated explosive site 340m NE. given the distance this is not considered a risk to the site.
Registered radioactive substances	0	0	Not applicable.
Enforcements, prohibitions, or prosecutions	0	0	Not applicable.
Pollution Incidents	0	0	Not applicable.
Consents issued under the Planning (Hazardous Substances) Act 1990	0	0	Not applicable.
Control of Major Accident Hazard (COMAH)/ Notification of Installations Handling Hazardous Substances (NIHHS) sites	0	0	Not applicable.
Records of Licensed Discharge Consents	2	0	Closest is 70m E. sewerage discharge into Trib of Blackburn Brook. Given the distance not considered a significant risk

4.13.2 No significant risks are identified from the regulatory data base.

#### 4.14 Landfill Sites and Waste Treatment Sites

4.14.1 The Groundsure report indicates there are no historical landfill sites within 250m of the site.

4.14.2 The Groundsure report indicates three historical licenced waste exceptions sites with the closest being 61m south east. Given the distance to the site and the use of waste in construction this is not considered a significant risk to the site.

4.14.3 There is one historical waster site located 463m east which was licenced in 1956 for a refuse tip and ground workings. Given the distance to the site this is not considered a significant risk to the site.

## 5.0 PRELIMINARY CONCEPTUAL MODEL

**Table 5.1.1 Preliminary Conceptual Model**

Source	Location	Exposure Pathway	Potential Receptor	Probability of Exposure	Details
<b>Human Health</b>					
Asbestos, metals and hydrocarbons.	Potential Made Ground.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	Normal construction PPE will address risk under CDM.
			Site users.	Very low	Made Ground materials are likely to comprise foundation materials associated with a regrading exercise of the site to create a level development sites. The materials are likely to be reworked natural materials and not imported Made Ground, although some Made Ground may be present. Given the site is covered in hardstanding with some landscaping sections the risk is very low.
Asbestos, metals and hydrocarbons.	Unforeseen Contamination.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	Normal construction PPE will address risk under CDM.
			Site users.	Very Low.	Low sensitivity end use.
Hydrocarbon and metals.	Migration from off-site sources.	Ingestion dermal and inhalation.	Construction Workers.	Dismissed.	No significant source identified.
			Site users.		
Ground Gas.	Landfill.	Inhalation & Explosive.	Construction Workers.	Dismissed	No Landfills within 250m from site.
			Site users.		
	Potential Made Ground.	Inhalation & Explosive.	Construction Workers.	Very Low.	Significant putrescible material unlikely as the infill materials are likely to be inert. Gas monitoring will be undertaken as part of the investigation.
			Site users.		
Radon	Ground conditions	Inhalation & Explosive.	Site users	Dismissed.	No radon protection required for the site.
<b>Groundwater</b>					
Hydrocarbon and metals.	Unforeseen Contamination.	Vertical Migration.	Groundwater.	Dismissed	Low to high permeability soils, however no significant source identified, and the bedrock is likely to be covered with low permeability materials. (Regraded reworked materials).
<b>Surface Water</b>					
Hydrocarbon and metals.	Unforeseen Contamination.	Horizontal Migration.	River Network.	Dismissed.	No surface water features noted on the site.
<b>Environmental Receptors</b>					
On site contaminants		Ingestion dermal and inhalation.	Ecology.	Dismissed.	None present.
		Direct.	Archaeology.	Dismissed.	None present.
		Direct.	Geology.	Dismissed.	None present.
<b>Building Services</b>					
On site contaminants		Direct.	Historic Buildings.	Dismissed.	No receptors.
		Direct.	Proposed Buildings.	Dismissed.	No sources identified.
		Permeate into pipework.	Water Pipes	Dismissed.	No significant sources identified.

5.1.1 There are potential risks associated with potential Made Ground associated with the regrading exercise to construct the existing development on the site. However, as the majority of proposed annex site is to be covered in hardstanding the risk is dismissed as there is no pathway.

5.1.2 Within proposed landscaping areas it is likely that 400mm of clean inert materials will be required as a growing medium and in order to mitigate any risk from the underlying regarded materials.

5.1.3 There is a risk of unforeseen contamination associated with the regrade materials and reworked materials although this is considered as very low and can be mitigated by a discovery strategy during construction works.

5.1.4 No other risks are identified.

## 6.0 DISCUSSIONS AND RECOMMENDATIONS

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### 6.1 Proposed Development

6.1.1 The proposed development for the site is to comprise the construction of an annex to the existing Premier Inn within an area of car parking and landscaping areas.

### 6.2 Contamination Considerations

6.2.1 It is considered that there are very low risks associated with land quality at the site. Any contamination is likely to be localised and can be removed and remediated during development. The potential contamination identified is the Made Ground/regraded natural materials associated with the construction of the development platform.

6.2.2 Given the potential for Regarded materials/Made Ground and given the proposed site will comprise hardstanding and or car parking with minimal landscaping the very low contamination risk will need to be investigated as part of the investigation. In order to provide a growing medium any proposed landscaping areas will be designed by the landscape architect and is likely to comprised 400m of clean materials over anon dig barrier.

### 6.3 Geotechnical Considerations.

6.3.1 Based on the desk study information and given the potential underlying ground conditions and thickness of Made Ground and the variability of the materials it is likely that a lightly loaded structures could be constructed on a raft or traditional foundations, however heavily loaded structures may require piled foundations.

6.3.2 The coal mining risk underneath the site has been dismissed in the CMRA report as result of deep open cast works excavating the shallow seams coal seams.

6.3.3 The resulting open cast works are expected to be to infilled with in excess of 14m deep however this will need to be confirmed via investigation In, addition rotary boreholes are required to confirm at least 5m of rock below Made Ground to provide piling parameters for foundations design.

6.3.4 No additional road construction is proposed.

6.3.5 Based on the desk study information the gas risk is very low from the Made Ground/regraded materials, however gas monitoring is recommended to be undertaken as part of the investigation. . No radon protection measures are required.

### 6.4 Recommendations

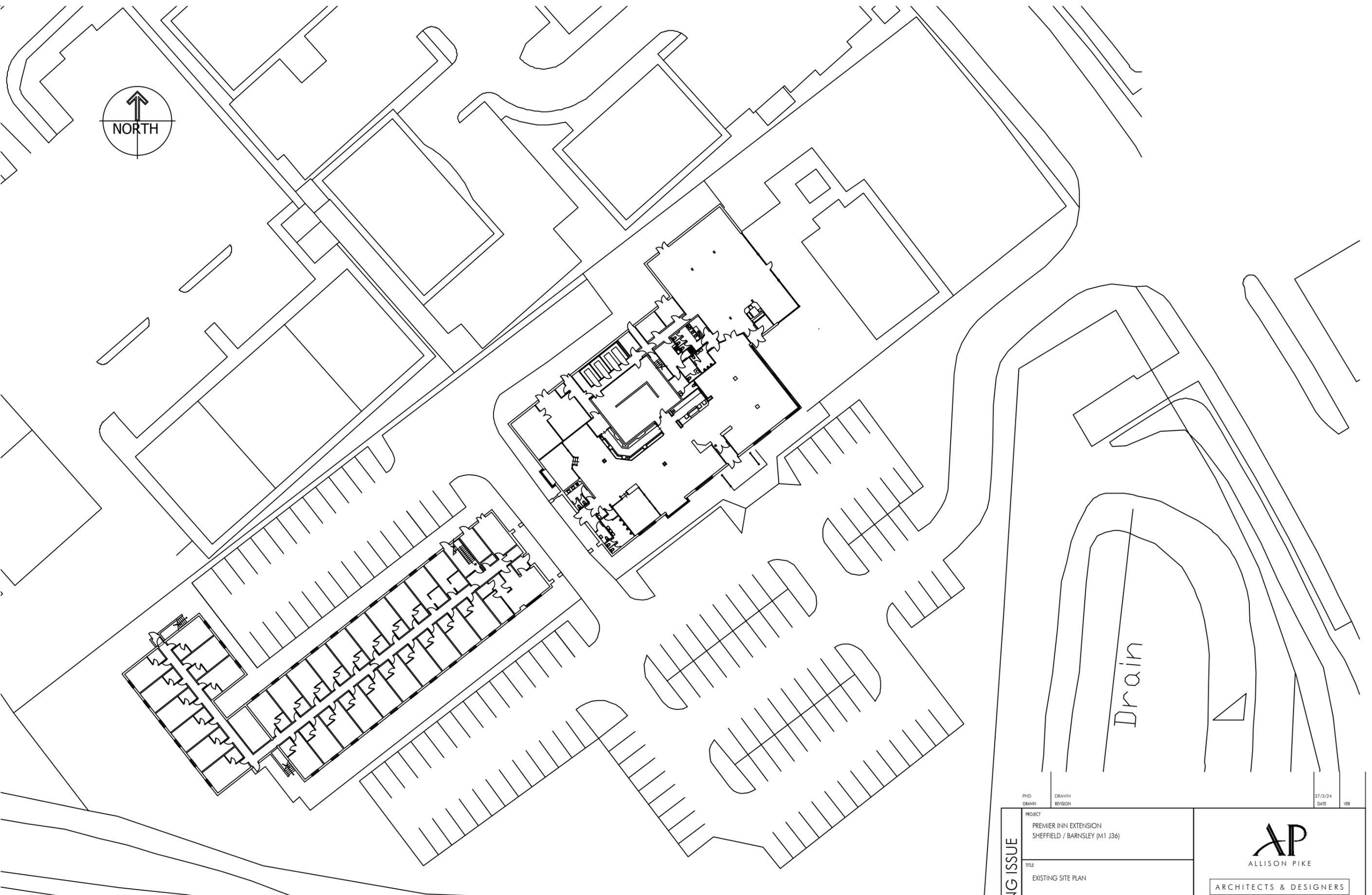
6.4.1 It is recommended that a ground investigation is undertaken to confirm the thickness of the backfilled Made Ground and also confirm the gas regime across the site. As part of the investigation chemical and geotechnical samples with be tested to aid foundation design.

Premier Inn, Maple Road, Tankersley, Barnsley, S75 3DL

Whitbread PLC

## Drawings

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EXISTING SITE PLAN  
SCALE 1:500



PHD DRAWN	DRAWN REVISION	27/3/24 DATE	VER
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PLANNING ISSUE	PROJECT	PREMIER INN EXTENSION SHEFFIELD / BARNSELY (M1 J36)	
	TITLE	EXISTING SITE PLAN	
	SCALE	1:500 @ A3	
	JOB No	DRAWING No	REV
	P11079	AP1	//

**AP**  
ALLISON PIKE  
ARCHITECTS & DESIGNERS

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- LEGEND**
- INDICATES AREAS OF NEW PAVING TO BE BLENDED INTO EXISTING PAVING TO MATCH EXISTING.
  - INDICATES AREA OF NEW LANDSCAPE
  - INDICATES AREA OF NEW AND MADE GOOD FABRIC TO MATCH EXISTING AS PER STRUCTURAL ENGINEERS DETAILS
  - INDICATES AREA OF FEA GRAVEL TO PROVIDE FREE DRAINAGE ARCHITECTS AC UNITS AS PER STRUCTURAL ENGINEERS DETAILS

NOTE: GROUND FLOOR EXTERNAL DOOR THRESHOLDS TO BE SET LEVEL WITH INTERNAL FLOOR LEVEL UNLESS STATED DIFFERENT

NOTE: ELECTRICAL CONTRACTOR TO ENSURE CAR PARK LIGHT LEVELS ARE TO VENDOR'S STANDARDS. LAYOUT TO BE APPROVED BY APP

NOTE: SEE SIGNAGE CONTRACTOR DRAWINGS FOR POWER REQUIREMENTS TO EXTERNAL SIGNS.

ALLOW FOR NEW WHITE LINING TO FULL SITE

**HOTEL GRID LINE SETTING OUT**

GRID POINT	EASTING	NORTHING
A 1	439964.795	399355.954
D 1	439970.812	399348.161
G 1	439976.838	399340.368
G 4	439985.994	399331.849
B 4	439999.778	399339.642
A 1	439983.761	399347.435

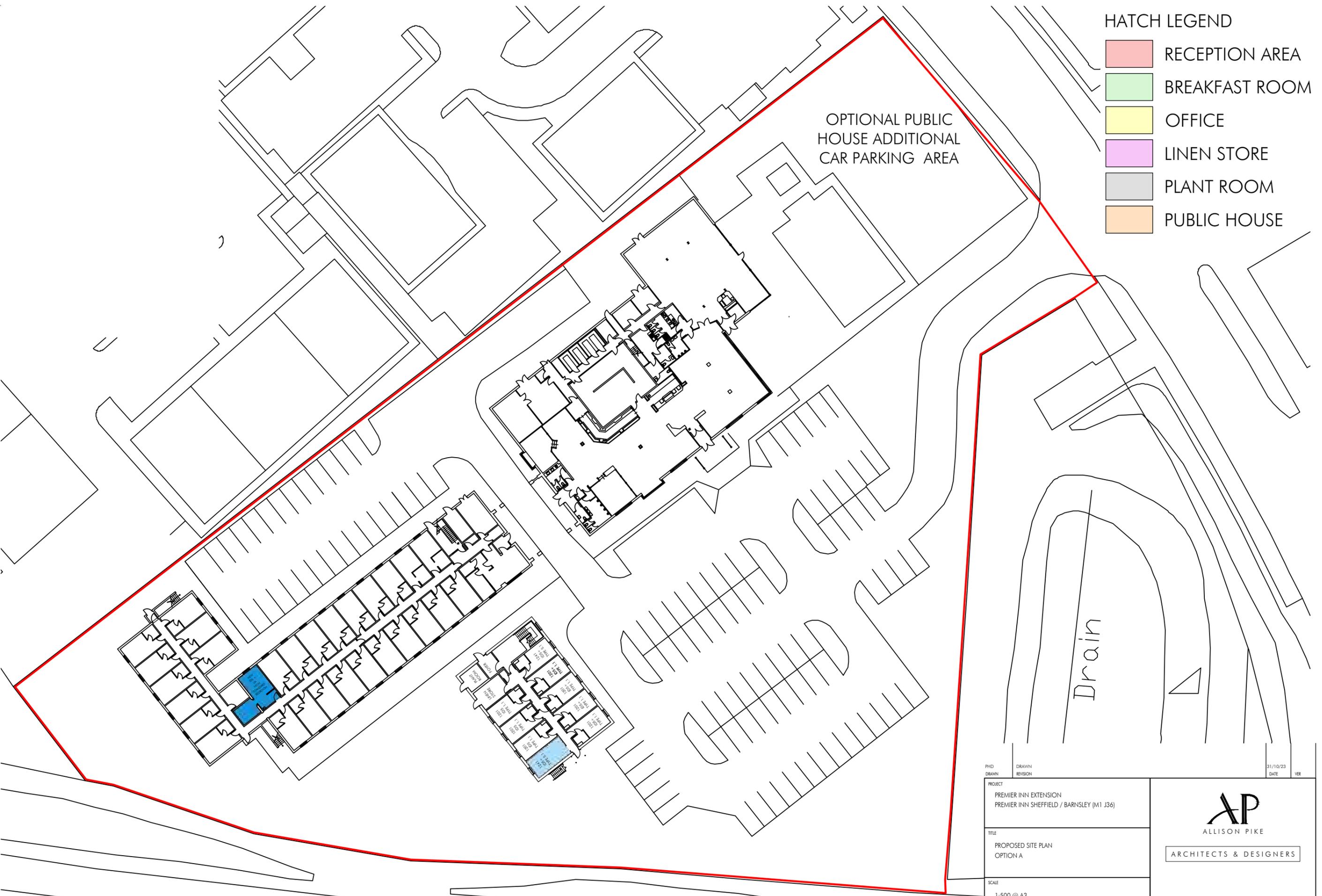
**DRAINAGE SETTING OUT**

POINT	EASTING	NORTHING
DRAIN A	439958.484	399350.809
DRAIN B	439960.467	399348.240
DRAIN C	439962.471	399345.644
DRAIN D	439964.357	399342.958
DRAIN E	439966.480	399340.452
DRAIN F	439968.484	399337.856
DRAIN G	439972.106	399336.994
DRAIN H	439970.123	399339.562
DRAIN J	439968.237	399342.250
DRAIN K	439964.514	399344.755
DRAIN L	439964.110	399347.351
GLBY A	439957.280	399348.073
RWP Z	439959.167	399354.539
RWP Y	439963.712	399355.654
RWP X	439967.599	399353.413
RWP W	439971.148	399348.421
RWP V	439975.187	399343.228
RWP U	439976.265	399339.396
RWP T	439968.837	399332.149
RWP S	439963.450	399334.190
RWP R	439959.441	399339.382
RWP P	439955.432	399344.575
RWP N	439954.525	399348.407
RWP M	439957.037	399352.895

**DUCT RUN SETTING OUT**

POINT	EASTING	NORTHING
DUCT A	439957.623	399358.984
DUCT B	439958.118	399350.489
DUCT C	439957.821	399356.137
DUCT D	439958.316	399350.642

PHD DRAWN	DRAWN REVISION	DATE	VER
<p>7 Buxton Road West, Darnley, Sheffield, Cheshire, S22 2RE. Telephone: 01663 763000          Website: www.allisonpike.com Email: studio@allisonpike.com</p>			
<p>PROJECT PREMIER INN EXTENSION SHEFFIELD / BARNSELEY</p>			
<p>TITLE PROPOSED SITE PLAN</p>			
<p>SCALE 1:100 AND 1:20 @ A0</p>			
JOB No P1079	DRAWING No ALS	REV	



- HATCH LEGEND**
- RECEPTION AREA
  - BREAKFAST ROOM
  - OFFICE
  - LINEN STORE
  - PLANT ROOM
  - PUBLIC HOUSE

OPTIONAL PUBLIC HOUSE  
ADDITIONAL CAR PARKING AREA

Drain

<small>PHD DRAWN</small>	<small>DRAWN REVISION</small>	<small>31/10/23 DATE</small>	<small>VER</small>
<small>PROJECT</small> PREMIER INN EXTENSION PREMIER INN SHEFFIELD / BARNLEY (M1 J36)			
<small>TITLE</small> PROPOSED SITE PLAN OPTION A			
<small>SCALE</small> 1:500 @ A3			
<small>JOB No</small> PI1079	<small>DRAWING No</small> SK998	<small>REV</small>	



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## **Appendix 1 – Desk Study Information**

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Premier Inn, Maple Road, Barnsley, S75 3DL

## Order Details

**Date:** 19/06/2024  
**Your ref:** EMS\_952452\_1182574  
**Our Ref:** EMS-952452\_1210474

## Site Details

**Location:** 433546 399070  
**Area:** 0.04 ha  
**Authority:** [Barnsley Metropolitan Borough Council](#) ↗



[Summary of findings](#)

[p. 2 >](#)

[Aerial image](#)

[p. 9 >](#)

[OS MasterMap site plan](#)

[p.14 >](#)

[Insight User Guide](#) ↗

Contact us with any questions at:

[info@groundsure.com](mailto:info@groundsure.com) ↗

01273 257 755

## Summary of findings

Page	Section	<a href="#">Past land use &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">15 &gt;</a>	<a href="#">1.1 &gt;</a>	<a href="#">Historical industrial land uses &gt;</a>	0	4	63	70	-
<a href="#">21 &gt;</a>	<a href="#">1.2 &gt;</a>	<a href="#">Historical tanks &gt;</a>	0	0	0	1	-
21	1.3	Historical energy features	0	0	0	0	-
21	1.4	Historical petrol stations	0	0	0	0	-
22	1.5	Historical garages	0	0	0	0	-
22	1.6	Historical military land	0	0	0	0	-
Page	Section	<a href="#">Past land use - un-grouped &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">23 &gt;</a>	<a href="#">2.1 &gt;</a>	<a href="#">Historical industrial land uses &gt;</a>	0	5	84	98	-
<a href="#">30 &gt;</a>	<a href="#">2.2 &gt;</a>	<a href="#">Historical tanks &gt;</a>	0	0	0	1	-
31	2.3	Historical energy features	0	0	0	0	-
31	2.4	Historical petrol stations	0	0	0	0	-
31	2.5	Historical garages	0	0	0	0	-
Page	Section	<a href="#">Waste and landfill &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
32	3.1	Active or recent landfill	0	0	0	0	-
32	3.2	Historical landfill (BGS records)	0	0	0	0	-
33	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
33	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
<a href="#">33 &gt;</a>	<a href="#">3.5 &gt;</a>	<a href="#">Historical waste sites &gt;</a>	0	0	0	1	-
33	3.6	Licensed waste sites	0	0	0	0	-
<a href="#">34 &gt;</a>	<a href="#">3.7 &gt;</a>	<a href="#">Waste exemptions &gt;</a>	0	0	2	2	-
Page	Section	<a href="#">Current industrial land use &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">35 &gt;</a>	<a href="#">4.1 &gt;</a>	<a href="#">Recent industrial land uses &gt;</a>	0	0	7	-	-
<a href="#">36 &gt;</a>	<a href="#">4.2 &gt;</a>	<a href="#">Current or recent petrol stations &gt;</a>	0	0	1	0	-
36	4.3	Electricity cables	0	0	0	0	-
36	4.4	Gas pipelines	0	0	0	0	-
37	4.5	Sites determined as Contaminated Land	0	0	0	0	-



37	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
<a href="#">37 &gt;</a>	<a href="#">4.7 &gt;</a>	<a href="#">Regulated explosive sites &gt;</a>	0	0	0	1	-
<a href="#">37 &gt;</a>	<a href="#">4.8 &gt;</a>	<a href="#">Hazardous substance storage/usage &gt;</a>	0	0	0	1	-
38	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
38	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
<a href="#">38 &gt;</a>	<a href="#">4.11 &gt;</a>	<a href="#">Licensed pollutant release (Part A(2)/B) &gt;</a>	0	0	1	1	-
39	4.12	Radioactive Substance Authorisations	0	0	0	0	-
<a href="#">39 &gt;</a>	<a href="#">4.13 &gt;</a>	<a href="#">Licensed Discharges to controlled waters &gt;</a>	0	0	2	0	-
39	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
40	4.15	Pollutant release to public sewer	0	0	0	0	-
40	4.16	List 1 Dangerous Substances	0	0	0	0	-
40	4.17	List 2 Dangerous Substances	0	0	0	0	-
40	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
40	4.19	Pollution inventory substances	0	0	0	0	-
41	4.20	Pollution inventory waste transfers	0	0	0	0	-
41	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
42	5.1	Superficial aquifer	None (within 500m)				
<a href="#">43 &gt;</a>	<a href="#">5.2 &gt;</a>	<a href="#">Bedrock aquifer &gt;</a>	Identified (within 500m)				
<a href="#">44 &gt;</a>	<a href="#">5.3 &gt;</a>	<a href="#">Groundwater vulnerability &gt;</a>	Identified (within 50m)				
45	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
45	5.5	Groundwater vulnerability- local information	None (within 0m)				
<a href="#">46 &gt;</a>	<a href="#">5.6 &gt;</a>	<a href="#">Groundwater abstractions &gt;</a>	0	0	0	0	2
<a href="#">47 &gt;</a>	<a href="#">5.7 &gt;</a>	<a href="#">Surface water abstractions &gt;</a>	0	0	0	0	1
48	5.8	Potable abstractions	0	0	0	0	0
48	5.9	Source Protection Zones	0	0	0	0	-
48	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">49 &gt;</a>	<a href="#">6.1 &gt;</a>	<a href="#">Water Network (OS MasterMap) &gt;</a>	0	0	1	-	-



<a href="#">50</a> >	<a href="#">6.2</a> >	<a href="#">Surface water features</a> >	0	0	1	-	-
<a href="#">50</a> >	<a href="#">6.3</a> >	<a href="#">WFD Surface water body catchments</a> >	1	-	-	-	-
<a href="#">50</a> >	<a href="#">6.4</a> >	<a href="#">WFD Surface water bodies</a> >	0	0	0	-	-
<a href="#">51</a> >	<a href="#">6.5</a> >	<a href="#">WFD Groundwater bodies</a> >	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
52	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
52	7.2	Historical Flood Events	0	0	0	-	-
52	7.3	Flood Defences	0	0	0	-	-
53	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
53	7.5	Flood Storage Areas	0	0	0	-	-
54	7.6	Flood Zone 2	None (within 50m)				
54	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
55	8.1	Surface water flooding	Negligible (within 50m)				
Page	Section	Groundwater flooding >					
<a href="#">56</a> >	<a href="#">9.1</a> >	<a href="#">Groundwater flooding</a> >	Negligible (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
57	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
58	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
58	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
58	10.4	Special Protection Areas (SPA)	0	0	0	0	0
58	10.5	National Nature Reserves (NNR)	0	0	0	0	0
<a href="#">59</a> >	<a href="#">10.6</a> >	<a href="#">Local Nature Reserves (LNR)</a> >	0	0	0	0	1
<a href="#">59</a> >	<a href="#">10.7</a> >	<a href="#">Designated Ancient Woodland</a> >	0	0	3	2	10
60	10.8	Biosphere Reserves	0	0	0	0	0
60	10.9	Forest Parks	0	0	0	0	0
60	10.10	Marine Conservation Zones	0	0	0	0	0
<a href="#">60</a> >	<a href="#">10.11</a> >	<a href="#">Green Belt</a> >	0	1	1	0	1
61	10.12	Proposed Ramsar sites	0	0	0	0	0



61	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
61	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
62	10.15	Nitrate Sensitive Areas	0	0	0	0	0
<b>62 &gt;</b>	<b>10.16 &gt;</b>	<b><u>Nitrate Vulnerable Zones &gt;</u></b>	1	0	1	0	2
<b>63 &gt;</b>	<b>10.17 &gt;</b>	<b><u>SSSI Impact Risk Zones &gt;</u></b>	1	-	-	-	-
64	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
65	11.1	World Heritage Sites	0	0	0	-	-
65	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
65	11.3	National Parks	0	0	0	-	-
65	11.4	Listed Buildings	0	0	0	-	-
66	11.5	Conservation Areas	0	0	0	-	-
66	11.6	Scheduled Ancient Monuments	0	0	0	-	-
66	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	<u>Agricultural designations &gt;</u>	On site	0-50m	50-250m	250-500m	500-2000m
<b>67 &gt;</b>	<b>12.1 &gt;</b>	<b><u>Agricultural Land Classification &gt;</u></b>	Grade 3 (within 250m)				
68	12.2	Open Access Land	0	0	0	-	-
<b>68 &gt;</b>	<b>12.3 &gt;</b>	<b><u>Tree Felling Licences &gt;</u></b>	0	4	13	-	-
<b>69 &gt;</b>	<b>12.4 &gt;</b>	<b><u>Environmental Stewardship Schemes &gt;</u></b>	0	0	1	-	-
69	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	<u>Habitat designations &gt;</u>	On site	0-50m	50-250m	250-500m	500-2000m
<b>70 &gt;</b>	<b>13.1 &gt;</b>	<b><u>Priority Habitat Inventory &gt;</u></b>	0	0	10	-	-
71	13.2	Habitat Networks	0	0	0	-	-
71	13.3	Open Mosaic Habitat	0	0	0	-	-
71	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	<u>Geology 1:10,000 scale &gt;</u>	On site	0-50m	50-250m	250-500m	500-2000m
<b>72 &gt;</b>	<b>14.1 &gt;</b>	<b><u>10k Availability &gt;</u></b>	Identified (within 500m)				
<b>73 &gt;</b>	<b>14.2 &gt;</b>	<b><u>Artificial and made ground (10k) &gt;</u></b>	1	0	5	4	-
75	14.3	Superficial geology (10k)	0	0	0	0	-

75	14.4	Landslip (10k)	0	0	0	0	-
<a href="#">76</a> >	<a href="#">14.5</a> >	<a href="#">Bedrock geology (10k)</a> >	1	1	2	9	-
<a href="#">77</a> >	<a href="#">14.6</a> >	<a href="#">Bedrock faults and other linear features (10k)</a> >	1	0	8	9	-
Page	Section	<a href="#">Geology 1:50,000 scale</a> >	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">79</a> >	<a href="#">15.1</a> >	<a href="#">50k Availability</a> >	Identified (within 500m)				
<a href="#">80</a> >	<a href="#">15.2</a> >	<a href="#">Artificial and made ground (50k)</a> >	1	0	2	2	-
<a href="#">81</a> >	<a href="#">15.3</a> >	<a href="#">Artificial ground permeability (50k)</a> >	1	0	-	-	-
82	15.4	Superficial geology (50k)	0	0	0	0	-
82	15.5	Superficial permeability (50k)	None (within 50m)				
82	15.6	Landslip (50k)	0	0	0	0	-
82	15.7	Landslip permeability (50k)	None (within 50m)				
<a href="#">83</a> >	<a href="#">15.8</a> >	<a href="#">Bedrock geology (50k)</a> >	1	1	1	7	-
<a href="#">84</a> >	<a href="#">15.9</a> >	<a href="#">Bedrock permeability (50k)</a> >	Identified (within 50m)				
<a href="#">84</a> >	<a href="#">15.10</a> >	<a href="#">Bedrock faults and other linear features (50k)</a> >	0	1	4	11	-
Page	Section	<a href="#">Boreholes</a> >	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">86</a> >	<a href="#">16.1</a> >	<a href="#">BGS Boreholes</a> >	0	2	62	-	-
Page	Section	<a href="#">Natural ground subsidence</a> >					
<a href="#">90</a> >	<a href="#">17.1</a> >	<a href="#">Shrink swell clays</a> >	Very low (within 50m)				
<a href="#">91</a> >	<a href="#">17.2</a> >	<a href="#">Running sands</a> >	Low (within 50m)				
<a href="#">93</a> >	<a href="#">17.3</a> >	<a href="#">Compressible deposits</a> >	Moderate (within 50m)				
<a href="#">95</a> >	<a href="#">17.4</a> >	<a href="#">Collapsible deposits</a> >	Very low (within 50m)				
<a href="#">96</a> >	<a href="#">17.5</a> >	<a href="#">Landslides</a> >	Very low (within 50m)				
<a href="#">97</a> >	<a href="#">17.6</a> >	<a href="#">Ground dissolution of soluble rocks</a> >	Negligible (within 50m)				
Page	Section	<a href="#">Mining and ground workings</a> >	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">99</a> >	<a href="#">18.1</a> >	<a href="#">BritPits</a> >	0	0	5	15	-
<a href="#">104</a> >	<a href="#">18.2</a> >	<a href="#">Surface ground workings</a> >	0	8	68	-	-
<a href="#">107</a> >	<a href="#">18.3</a> >	<a href="#">Underground workings</a> >	0	0	24	28	39
110	18.4	Underground mining extents	0	0	0	0	-
110	18.5	Historical Mineral Planning Areas	0	0	0	0	-

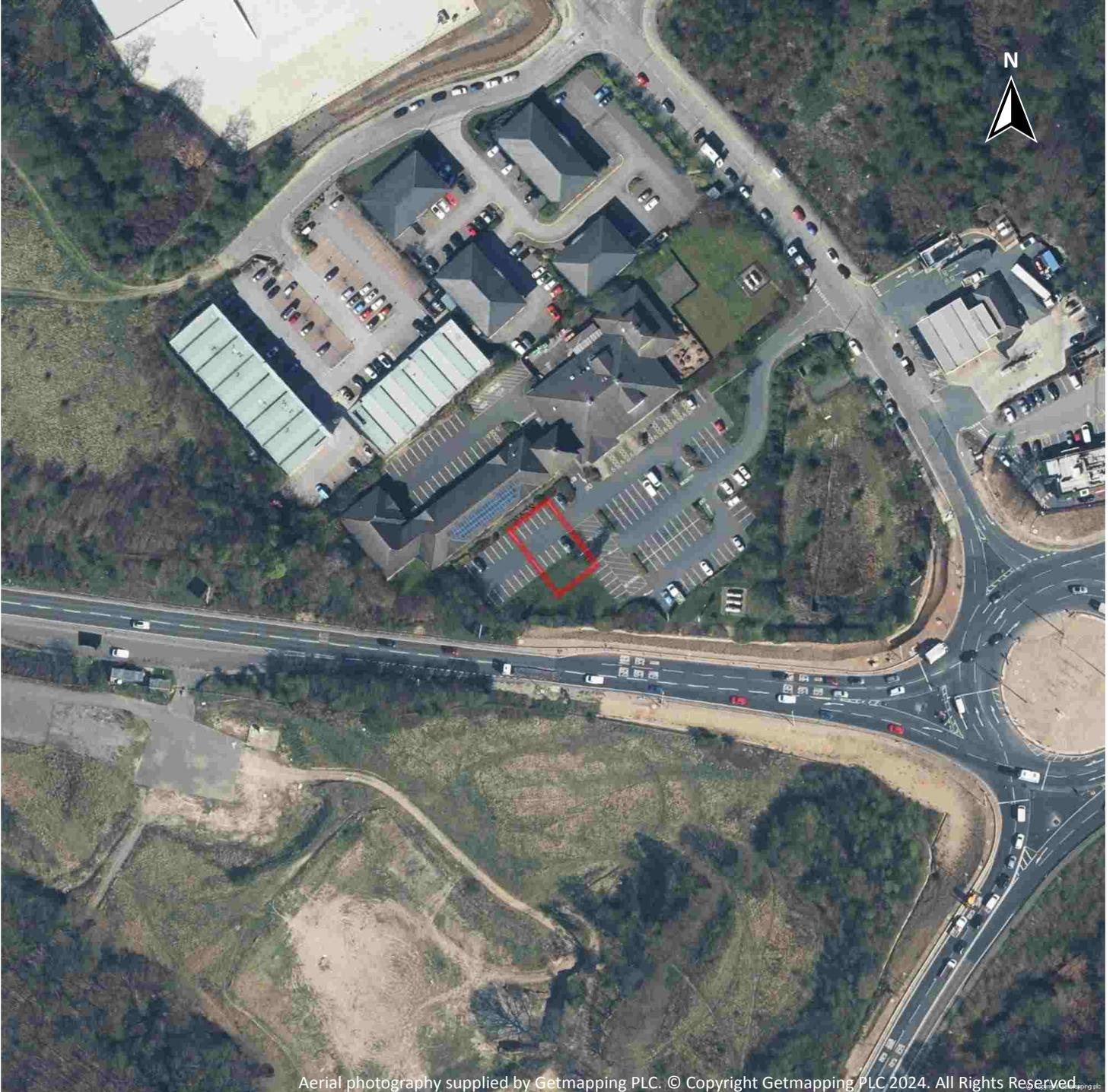


<a href="#">111</a> >	<a href="#">18.6</a> >	<a href="#">Non-coal mining</a> >	0	0	1	0	6
112	18.7	JPB mining areas	None (within 0m)				
<a href="#">112</a> >	<a href="#">18.8</a> >	<a href="#">The Coal Authority non-coal mining</a> >	0	0	2	2	-
<a href="#">112</a> >	<a href="#">18.9</a> >	<a href="#">Researched mining</a> >	0	0	4	24	-
<a href="#">114</a> >	<a href="#">18.10</a> >	<a href="#">Mining record office plans</a> >	0	0	0	1	-
114	18.11	BGS mine plans	0	0	0	0	-
<a href="#">114</a> >	<a href="#">18.12</a> >	<a href="#">Coal mining</a> >	Identified (within 0m)				
114	18.13	Brine areas	None (within 0m)				
115	18.14	Gypsum areas	None (within 0m)				
115	18.15	Tin mining	None (within 0m)				
115	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
116	19.1	Natural cavities	0	0	0	0	-
116	19.2	Mining cavities	0	0	0	0	0
116	19.3	Reported recent incidents	0	0	0	0	-
116	19.4	Historical incidents	0	0	0	0	-
117	19.5	National karst database	0	0	0	0	-
Page	Section	<a href="#">Radon</a> >					
<a href="#">118</a> >	<a href="#">20.1</a> >	<a href="#">Radon</a> >	Between 1% and 3% (within 0m)				
Page	Section	<a href="#">Soil chemistry</a> >	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">120</a> >	<a href="#">21.1</a> >	<a href="#">BGS Estimated Background Soil Chemistry</a> >	1	3	-	-	-
120	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
121	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	<a href="#">Railway infrastructure and projects</a> >	On site	0-50m	50-250m	250-500m	500-2000m
122	22.1	Underground railways (London)	0	0	0	-	-
122	22.2	Underground railways (Non-London)	0	0	0	-	-
123	22.3	Railway tunnels	0	0	0	-	-
<a href="#">123</a> >	<a href="#">22.4</a> >	<a href="#">Historical railway and tunnel features</a> >	0	0	4	-	-
123	22.5	Royal Mail tunnels	0	0	0	-	-



<a href="#">124</a> >	<a href="#">22.6</a> >	<a href="#">Historical railways</a> >	0	0	1	-	-
124	22.7	Railways	0	0	0	-	-
124	22.8	Crossrail 1	0	0	0	0	-
124	22.9	Crossrail 2	0	0	0	0	-
124	22.10	HS2	0	0	0	0	-

## Recent aerial photograph



Capture Date: 19/04/2021

Site Area: 0.04ha



## Recent site history - 2018 aerial photograph



Capture Date: 27/06/2018

Site Area: 0.04ha



## Recent site history - 2012 aerial photograph



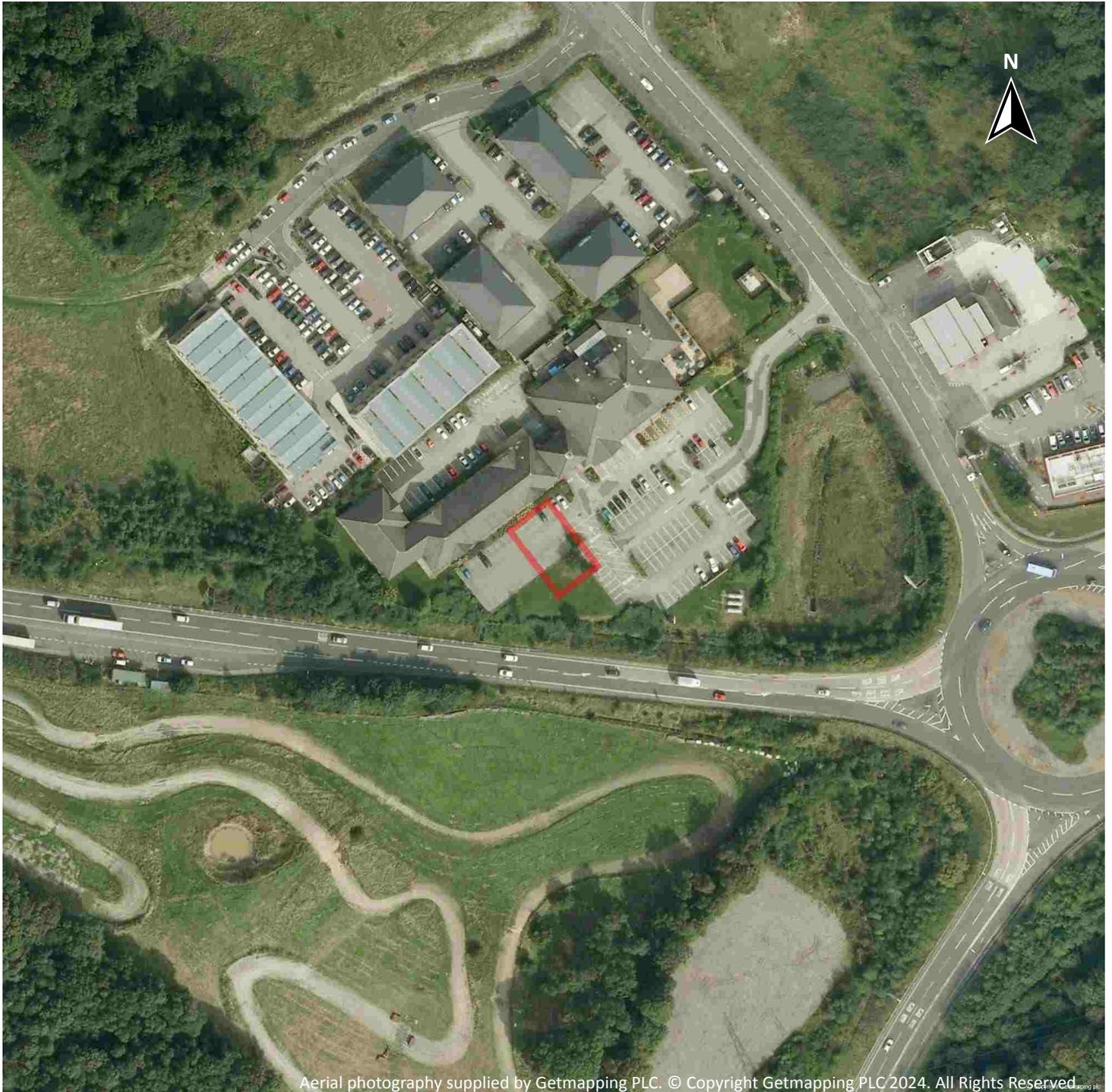
Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2024. All Rights Reserved.

Capture Date: 28/05/2012

Site Area: 0.04ha



## Recent site history - 2009 aerial photograph

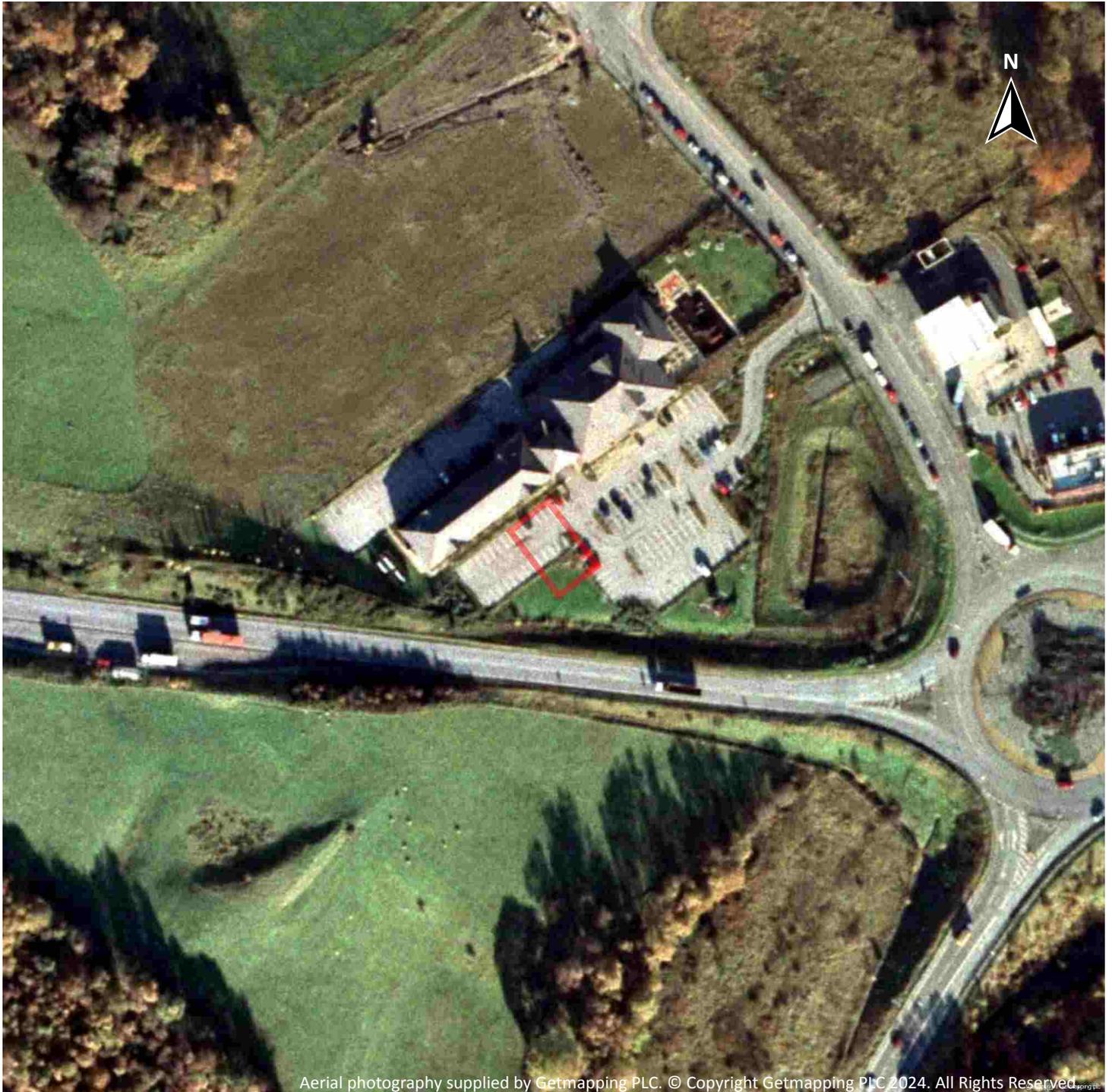


Capture Date: 11/09/2009

Site Area: 0.04ha



## Recent site history - 1999 aerial photograph

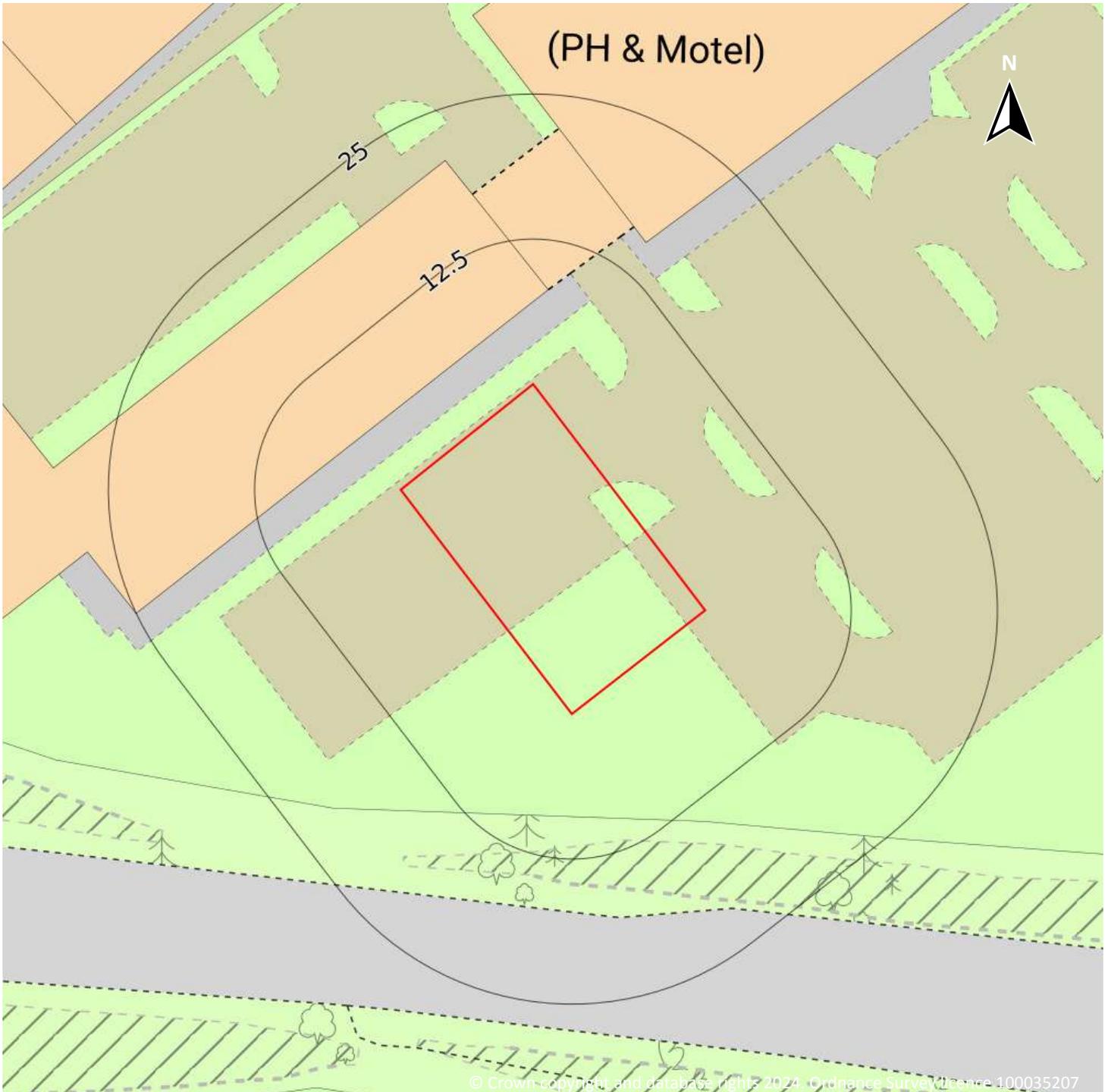


Capture Date: 10/07/1999

Site Area: 0.04ha



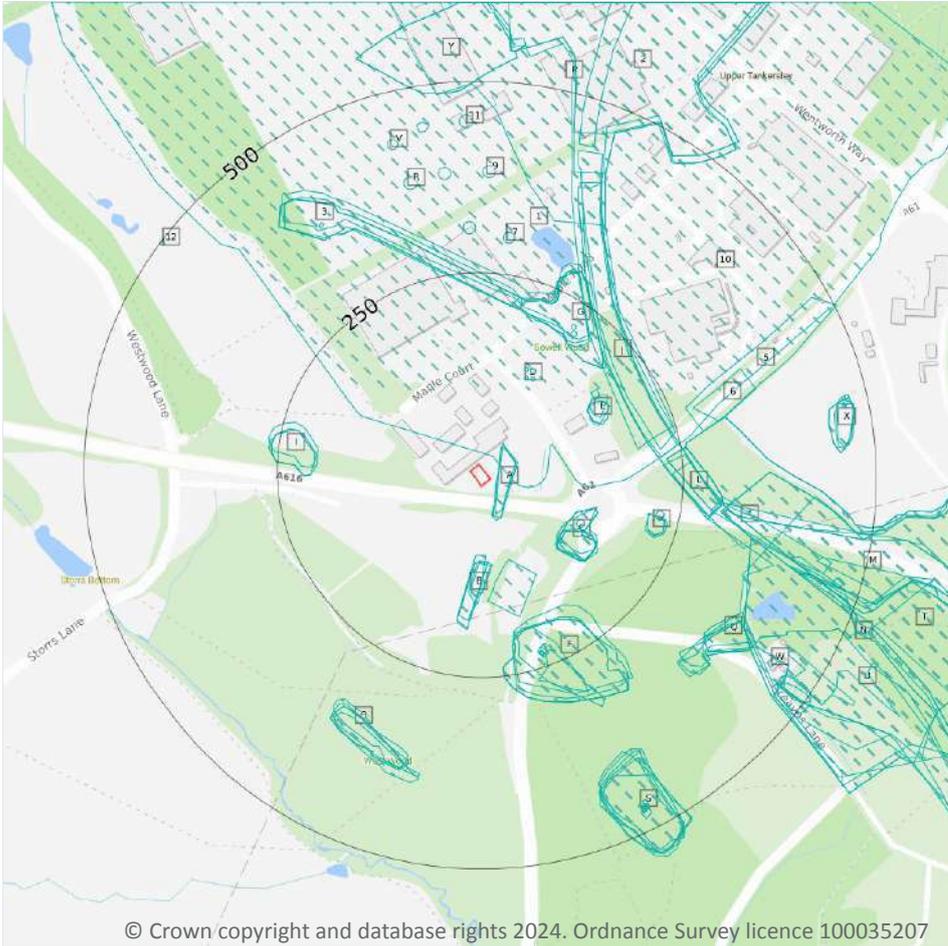
## OS MasterMap site plan



Site Area: 0.04ha



# 1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks

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## 1.1 Historical industrial land uses

**Records within 500m** **137**

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 15 >](#)

ID	Location	Land use	Dates present	Group ID
A	8m E	Unspecified Heap	1938	1619324



ID	Location	Land use	Dates present	Group ID
A	10m E	Unspecified Heap	1948	1710589
A	10m E	Unspecified Heap	1951	1700293
1	15m N	Industrial Park	1992	2367015
B	91m S	Unspecified Heap	1951	1569070
B	97m S	Unspecified Pit	1980 - 1992	1743308
B	99m S	Unspecified Pit	1938 - 1948	1652947
B	99m S	Unspecified Pit	1903	1655895
B	100m S	Unspecified Pit	1966	1679001
B	102m S	Cuttings	1966 - 1980	1624482
C	112m SE	Unspecified Heap	1951	1696022
C	115m SE	Unspecified Heap	1948	1633094
C	115m SE	Unspecified Heap	1891	1674527
C	115m SE	Unspecified Heap	1938	1699292
C	115m SE	Unspecified Heap	1903	1709345
C	119m SE	Unspecified Heap	1980	1673757
C	119m SE	Unspecified Heap	1966	1692085
C	125m SE	Disused Air Shaft	1966 - 1980	1715223
D	127m NE	Unspecified Old Shafts	1938	1620882
D	127m NE	Unspecified Old Shafts	1903	1684436
D	129m NE	Unspecified Old Shafts	1903	1559415
D	129m NE	Unspecified Old Shaft	1938	1571530
D	136m NE	Unspecified Old Shafts	1951	1559416
D	137m NE	Unspecified Old Shafts	1951	1559418
E	151m NE	Unspecified Heap	1948	1743159
E	153m NE	Unspecified Heap	1903	1614775
E	153m NE	Unspecified Heap	1938	1674814
E	158m NE	Unspecified Heap	1951	1703375
E	169m NE	Disused Air Shaft	1966 - 1980	1657786



ID	Location	Land use	Dates present	Group ID
F	185m S	Refuse Heap	1951	1715553
G	191m NE	Refuse Heap	1938	1626490
G	191m NE	Refuse Heap	1903	1655063
G	191m NE	Refuse Heap	1891	1725265
2	191m E	Railway Sidings	1903 - 1966	2367817
F	194m S	Refuse Heap	1948	1737219
H	194m NE	Refuse Heap	1948	1624374
F	195m S	Refuse Heap	1891	1618379
F	195m S	Refuse Heap	1938	1642194
F	195m S	Refuse Heap	1903	1665925
F	196m S	Refuse Heap	1966 - 1980	1664004
H	198m NE	Unspecified Heap	1966 - 1980	1670113
I	199m W	Refuse Heap	1938 - 1948	1640376
I	199m W	Refuse Heap	1951	1702495
J	201m NE	Cuttings	1903	1629088
J	201m NE	Cuttings	1938 - 1948	1726977
I	202m W	Refuse Heap	1903	1644042
I	202m W	Refuse Heap	1891	1664113
J	202m NE	Cuttings	1891	1748464
G	205m NE	Refuse Heap	1951	1735136
H	206m NE	Unspecified Old Shaft	1948	1626748
J	207m NE	Cuttings	1951	1716250
K	210m E	Old Ironstone Pit	1903	1613042
K	210m E	Unspecified Heap	1938	1653863
K	210m E	Unspecified Heap	1891	1730695
3	210m N	Unspecified Heap	1948	1644813
K	211m E	Unspecified Ground Workings	1948	1728210
H	215m NE	Unspecified Old Shafts	1951	1559417

