

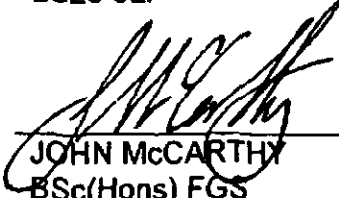

**REPORT C1185
JANUARY 2006**

**PRELIMINARY INVESTIGATION
of land off
DODWORTH GREEN ROAD, DODWORTH, BARNSELY**

**Prepared for
MR A WILKINSON**



PROJECT QUALITY ASSURANCE INFORMATION SHEET

REPORT NUMBER	C1185	REPORT STATUS	FINAL
REPORT TYPE	PRELIMINARY INVESTIGATION		
REPORT DATE	JANUARY 2006		
SITE	LAND OFF DODWORTH GREEN ROAD DODWORTH BARNSELY		
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PRELIMINARY INVESTIGATION

OF LAND OFF

DODWORTH GREEN ROAD,

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PREPARED FOR

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1 0 INTRODUCTION

Sinus Geotechnical and Environmental Ltd (Sinus) were commissioned by John R Paley Associates on behalf of Mr A Wilkinson to undertake a Preliminary Investigation (desk study) of land off Dodworth Green Road Dodworth Barnsley

It is understood that Mr A Wilkinson proposes to redevelop the site which comprises a number of detached houses out buildings and fields with residential properties No detailed plans of the proposed development were available at the time of writing

The objectives of this investigation were as follows

- To determine the land use history of the site from an inspection of available historical Ordnance Survey (OS) plans
- To determine the environmental setting of the site
- To determine whether past mining has an influence on the site
- To determine whether the site had previously been used for any purpose that may have given rise to significant ground contamination
- To determine the potential risk to the site from hazardous gas and
- To provide recommendations for intrusive works required to determine the ground conditions below the site the nature and degree of any contamination and foundation solutions

As part of the desk study information was sourced from the Landmark Information Group (Envirocheck Report) the British Geological Survey the Coal Authority and Barnsley Metropolitan Borough Council (MBC) A site inspection (walk over survey) was also carried out

This report presents the factual information derived during this investigation and makes recommendations relating to the scope of intrusive works required to determine foundation solutions and the extent and nature of any ground contamination

This report is based on the data obtained from the preliminary investigation it is limited to that data and responsibility cannot be accepted for conditions not revealed by the investigation Any diagram or opinion of the possible configuration of the ground conditions is conjectural and given for guidance only

This report is intended for the sole use of Mr A Wilkinson No other third party may rely upon or reproduce the contents of this report without the written authorisation of Sinus If any unauthorised third party comes into possession of this report they rely on it at their own risk and the authors do not owe them any Duty of Care or Skill

2.0 SITE DESCRIPTION

2.1 Site Location

The site is located on the south western side of the village of Dodworth at National Grid Reference SE 314 049. Dodworth is approximately 3km west south west of Barnsley.

2.2 Site Features

The site is roughly rectangular 100m by 220m with the long axis running north north east. The eastern and western boundaries are irregular to accommodate the adjoining properties. It covers an approximate area of 2.2 hectares.

The site is bordered to the north by the gardens of a large detached house Stonehurst, to the east by the gardens of housing off of Stratford Walk and to the south by a stream beyond which are fields and allotments. To the west the site is bordered at the northern end by Dodworth Green Road, in the centre by the grounds of the Travellers Inn, a public house and in the southern area by the grounds of the former Dodworth C of E School, the school buildings are not in use. Both the school and the Travellers Inn front on to Dodworth Green Road.

The overall fall in ground level is from north to south.

Three detached houses and associated gardens are present on the site. Hillside and Fieldhouse occupy the northern quarter of the site. Access to these houses is along a lane/drive which marks the northern boundary of the site from Dodworth Green Road. The third house is the Old Stables which lies in the central area of the site adjacent to the western boundary. South of the Old Stables is a level terrace raised above the surrounding site to the south and east by a retaining wall up to 3m in height. This wall is in a poor state and in places appears to be retained itself by mounds of earth placed against the wall.

The remaining areas of the site are occupied by two irregularly shaped fields, the boundary between them marked by a hedge row adjacent to a stream. The stream flows south east through the centre of the site and forms a small valley, breaking the overall fall in ground level to the south. At the north western end of this valley where it intersects with the car park of the Travellers Inn there is a retaining wall up to 3m high, the car park being at a higher level. The area in the vicinity of the stream is heavily overgrown. The southern part of the site slopes down to the stream on the southern boundary. This stream flows to the east.

There are a number of mature trees together with the hedge rows across the site.

The main site features are shown on Drawing No C1185/2 presented in Appendix A to this report.

3.0 SITE HISTORY

In order to investigate the history of the site extracts of Ordnance Survey (OS) plans dated from 1855 to 2000 obtained as part of the Envirocheck Report included in Appendix B have been examined

Below is a summary of the salient points relating to the history of the site from 1855 with respect to the proposed end use. It is not the intention of this report to describe in detail all the changes that have occurred on or adjacent to the site only those pertinent to the proposed development

OS Map Edition Date	Scale of source map	On-site Features	Off-site Features
1855	1 10 560	<ul style="list-style-type: none"> The site is shown as fields An <i>Old Coal Pit</i> is shown in the centre of the site A <i>Well</i> is shown in the central area of site (north of the old coal pit) 	<ul style="list-style-type: none"> Unnamed stream shown along southern boundary of site Road shown adjacent to north west edge of site (line of existing Dodworth Green Road) road named as <i>Ben Bank Road</i> Group of buildings shown adjacent to western edge of site middle of site boundary appear to be named <i>Lambert Fold</i> Terraced housing shown adjacent to road beyond Lambert Fold <i>National School (Infants)</i> shown 50m west of site <i>Ratten Row</i> housing 50m west of south west corner of site <i>Coal Pit</i> shown 150m north west of site <i>Cliff Lane Quarry (Sandstone)</i> shown 270m north of site
1893/ 1894	1 2 500/ 1 10 560	<ul style="list-style-type: none"> Old Coal Pit no longer shown Well no longer shown 	<ul style="list-style-type: none"> Road shown as <i>Dodworth Green Road</i> <i>Travellers Inn</i> shown adjacent to western boundary and north of Lambert Fold <i>Air Shaft</i> shown 150m north west of site in area of Coal Pit Coal Pit no longer shown <i>National School (Infants)</i> now shown as <i>Schools</i> <i>Cliff Lane Quarry</i> no longer shown <i>Church Lane Colliery</i> shown 600m north west of site Comprises railway sidings buildings and spoil heap <i>New Sovereign Colliery</i> shown 700m south west of site
1906/ 1907	1 2 500/ 1 10 560	<ul style="list-style-type: none"> <i>Spring</i> shown in north west central area of site at head of stream Small building shown in central western area of site 	<ul style="list-style-type: none"> <i>Allotment Gardens</i> shown south of stream on southern boundary of site <i>New Sovereign Colliery</i> shown (<i>Disused</i>) <i>Church Lane Colliery</i> now named <i>Old Silkstone Collieries</i> <i>Coke Ovens</i> and <i>Reservoir</i> shown associated with the colliery

OS Map Edition		On-site Features	Off-site Features
Date	Scale of source map.		
1931	1 2 500	<ul style="list-style-type: none"> Spring no longer shown Additional buildings/boundary walls shown central western area of site 	<ul style="list-style-type: none"> House shown immediately north of site Disturbed ground shown adjacent to north east corner of the site Legend indicates Gravel Pit/Clay Pit but the nature of disturbance is not identified on the map
1938	1 10 560	<ul style="list-style-type: none"> No significant change 	<ul style="list-style-type: none"> Coke Ovens no longer shown at Old Silkstone Collieries
1956	1 10,560	<ul style="list-style-type: none"> No significant change 	<ul style="list-style-type: none"> No significant change
1962	1 2 500	<ul style="list-style-type: none"> Stream on site shown as <i>Drain</i> <i>Hillside</i> and <i>Fieldhouse</i> shown at northern end of site both comprise a main building and two smaller outbuildings Enclosed area in central western area of site shown as Lambert Fold 	<ul style="list-style-type: none"> Disturbed ground north east of site shown as slope <i>Stonehurst</i> shown north of site identified as <i>Surgery</i> School west of site shown enlarged and named as <i>Dodworth C of E School</i> Air shaft no longer shown north west of site
1965/ 1966	1 10 560	<ul style="list-style-type: none"> No significant change 	<ul style="list-style-type: none"> Old Silkstone Collieries now shown as <i>Mine</i>
1971	1 2 500	<ul style="list-style-type: none"> No significant change 	<ul style="list-style-type: none"> No significant change
1973/ 1978	1 10 000	<ul style="list-style-type: none"> No significant change 	<ul style="list-style-type: none"> Housing development shown adjacent to eastern boundary (1978)
1979	1 1 250	<ul style="list-style-type: none"> Driveway shown to <i>Hillside</i> 	<ul style="list-style-type: none"> No significant change
1983	1 10 000	<ul style="list-style-type: none"> No significant change 	<ul style="list-style-type: none"> No significant change
1985	1 2 500	<ul style="list-style-type: none"> No significant change 	<ul style="list-style-type: none"> No significant change
1988	1 2 500	<ul style="list-style-type: none"> <i>Sinks</i> shown on eastern boundary at end of stream 	<ul style="list-style-type: none"> No significant change
1990/ 1991	1 1 250	<ul style="list-style-type: none"> No significant change 	<ul style="list-style-type: none"> No significant change
1991	1 1 250	<ul style="list-style-type: none"> Out building adjacent to <i>Fieldhouse</i> replaced by what appears to be a garage (driveway leads to it) 	<ul style="list-style-type: none"> No significant change
1993/ 1995	1 1 250	<ul style="list-style-type: none"> No significant change 	<ul style="list-style-type: none"> No significant change
1993	1 10 000	<ul style="list-style-type: none"> No significant change 	<ul style="list-style-type: none"> No significant change
2000	1 10 000	<ul style="list-style-type: none"> No significant change 	<ul style="list-style-type: none"> No significant change

The village of Dodworth is shown to expand slowly over time encroaching around the site

4.0 GEOLOGY

The geological setting of the site was determined through reference to BGS Sheet 87 Barnsley Solid and Drift edition (1 50 000 scale published 1974) and Sheets SE30NW and SE30SW Barnsley Solid and Drift edition (1 10 560 scale county series published 1980)

These show the site to be underlain by strata of the Middle Coal Measure series. These comprise an interbedded sequence of sandstone, siltstone and mudstone with coal seams. The

site is shown underlain by undifferentiated measures which generally comprise siltstone and mudstone

Two coal seams are shown to outcrop across the site. Both outcrops trend east west. The Flockton Thick Coal is shown to outcrop in the southern area of the site, the Joan Coal in the northern area of the site. The dip is shown as 4° to the north east, therefore much of the site will be underlain by the Flockton Thick at shallow to moderate depth, with the Joan coal underlying the northern edge of the site only.

Between these two coals is the Tankersley Ironstone. The outcrop of this is shown to run through the central area of the site, again trending east west.

No drift deposits are shown.

The surface trace of a fault is shown running north north west just north of the site. This fault is proven at depth in the Parkgate Coal. The down throw at the surface is shown as 6m to the north east.

5.0 MINING AND QUARRYING

In order to determine the risk to the site from recorded coal mining, a mining report was commissioned from the Coal Authority. A copy of the mining report is included in Appendix C.

Salient points of the report are summarized below:

- *The property is within the likely zone of influence on the surface from workings in 5 seams of coal at shallow to 210m depth, the last date of working being 1961.*
- *The property is not within the zone of likely physical influence on the surface from any present underground coal workings.*
- *The property is not within a geographical area for which a licence to extract coal by underground methods is awaiting determination / has been granted by the Coal Authority.*
- *The property is not within the zone of likely physical influence at the surface from plans of future workings in our possession. However, reserves of coal exist in this locality which could be worked at some time in the future, subject to feasibility licences and planning consents.*
- *Within or within 20m of the property, there are two mine entries, the approximate positions of which are shown on the attached plan. Your attention is drawn to the statements made on that plan.*
- *Claim(s) (subsidence) within or intersecting the property boundary that do not match the property address are shown on the attached plan.*

- *The records in our possession do not show any request having been made to execute preventative works under S 33 of the Coal Mining Act 1991*

The 1:10 000 scale geological map sheet SE30SW shows the two mine entries described above the southern most is an adit on the outcrop of the Flockton Thick Coal the second is a shaft recorded to go to the Flockton Thick Coal Sheet SE30NW shows backfilled opencast workings along the outcrop of Flockton Thick Coal 220m north west of the site

Correspondence has also been received from South Yorkshire Mining Advisory Service (SYMAS) through Barnsley MBC a copy of which is given in Appendix C They confirm the sequence of coals described in Section 4.0 and the information given above They also state

- *The site has been affected by mining on four occasions ranging in depth from the Fenton Coal Seam at 45m down to the Whinmoor Coal Seam at 200m which was worked in 1961*
- *All subsidence movement from these workings would have ceased long ago and as the area lies remote from the active coalfield it should not be affected for the foreseeable future*
- *The Flockton Thick Coal Seam is shown to outcrop through the southern half of the site dipping below it This seam has a general section ranging from 600mm up to 2000mm thick and has been worked by underground methods and opencast operations in the general area*
- *The Joan Coal Seam is shown to outcrop through the northern edge of the site This coal seam has a thickness of 600mm to 800mm generally and is not known to have been worked in this area*
- *The Tankersley Park Ironstone lies just above the Flockton Thick Coal Seam This ironstone has a thickness ranging up to 8m and was worked in localised areas for the steel industry However there are no known workings in this area*

The geological memoir for the 1:50 000 scale geological map Sheet 87 Barnsley records that workings associated with the Tankersley Ironstone are often carried out through bell pits

Inspection of historical OS plans indicates no evidence of the site having been quarried

6.0 HYDROLOGY AND HYDROGEOLOGY

Surface Waters

Inspection of the OS plans reviewed as part of this investigation indicate that the closest surface water feature to the site is a drain / stream running through the centre of the site flowing south west to sinks on the eastern boundary of the site A second stream forms the southern boundary of the site flowing east Both streams are unnamed but are tributaries to Dodworth Dyke which lies east of the site

Dodworth Dyke is classified by the Environment Agency (EA) as GQA Class D (fair) 290m north east of the site

The Envirocheck Report indicates that the Environment Agency (EA) has records of only one pollution incident to controlled waters within 250m of the site. This is 153m west of the site is a Category 3 – minor incident and was for the discharge of fire water / foam. There are also six incidents between 250m and 500m of the site. The majority of these are downstream of the site. Full details are given in the Envirocheck Report Appendix B. One incident is 295m north west of the site i.e. upstream this is also a Category 3 incident and was for miscellaneous urban run off.

According to the Envirocheck Report there are no surface water abstractions within 1km of the site.

There are no licensed discharge consents recorded within 500m of the site and only five within 1km of the site. Details of these are given in the Envirocheck Report in Appendix B. Only one discharge consent lies upstream of the site this is 621m west of the site and was for trade effluent the licence was revoked in 2004.

The site does not lie within a fluvial indicative floodplain.

Groundwater

The site is recorded as being underlain by the undifferentiated strata of the Middle Coal Measure Series. Under the Environment Agency's Policy and Practice for the Protection of Groundwater and the 1:100,000 scale Groundwater Vulnerability Map Sheet 11 (South Pennines) these are classed as a minor aquifer which is defined as

Variable permeable formations which can be fractured or potentially fractured rocks which do not have a high primary permeability or formations of variable permeability including unconsolidated deposits. Although not producing large quantities for abstraction they are important for local supplies and supplying base flows to rivers.

The soils underlying the site are classified as having a low leaching potential. This means that pollutants are unlikely to penetrate the soil layer because water movement is largely horizontal or they have large ability to attenuate diffuse pollutants.

Information sought from the Landmark Information Group (LIG) indicates that the EA has no record of licensed groundwater abstractions within 1km of the site. The historical plans indicate a well to have been formerly on the site this is no longer shown and was not identified during the walk over survey although the area of the well is heavily overgrown.

Correspondence from Barnsley MBC a copy of which is given in appendix C states

"There are no private water supplies within 1km of the above site"

7 0 LANDFILL SEARCH

Information on landfill sites in the vicinity of the property was sought from the Landmark Information Group and local authority. The LIG Envirocheck Report is presented as Appendix B to this report.

Two registered landfill sites are identified by the Landmark Information Group within 1km of the site. The edge of the closest landfill is 222m east south east of the south east corner of the site. The licence ref 114 is shown as lapsed / cancelled / defunct / not applicable / surrendered and was for inert non hazardous demolition / construction waste and soil / subsoil. The second registered landfill site is 381m north east of the site and again has been cancelled etc and was for inert soil and sub soil.

Correspondence from the local authority a copy of which is given in Appendix C states that with reference to licence 114

This landfill has been classified as Category 4 meaning the Waste Disposal Site Licence indicates the site has been licensed to accept materials that would not be expected to give rise to landfill gas in substantial quantities

The 1:10,000 geological survey map Sheet SE3ONW shows backfilled opencast workings 220m north west of the site. These extend for a significant distance away from the site along the line of the outcrop of the Flockton Thick Coal.

8 0 RADON

To determine whether the site is at risk from Radon gas the BRE document Radon guidance on protective measures for new dwellings has been referenced.

This document shows the site to lie within an area where radon protective measures may be required. As such a Radon Report was requested from the BGS which stated that basic radon protection measures are required for the report area. A copy of this radon report is presented in Appendix C.

9 0 MISCELLANEOUS

An approach has been made to Barnsley MBC for any information they may have concerning the site with regard to landfill, contaminated land, Part A & B authorised processes, nuisances, reported incidents and groundwater / surface water abstractions. Their full reply is included in Appendix C of this report. Salient points not previously referred to are summarised below.

- *With regards to the above site we have no current information of any previous uses of the above site that may have caused contamination to occur. Due to the fact that we have no information regarding any previous contaminated uses we have no reason to inspect the site with regards to contaminated land.*
- *There are no authorised processes on or within 250m of the site"*

- *"We have no records on our system of any complaints regarding the above site over the last three year period*
- *"We have no record of any pollution incident relating to this site*

Correspondence has also been received from building control of Barnsley MBC this forms part of a larger correspondence so only the relevant page is included in Appendix C of this report. Much of the information given by building control is discussed above from other sources. They do comment that a number of trees on and adjacent to the site have tree preservation orders on them.

The Envirocheck Report records that the area immediately south of the site is an area of adopted green.

The contemporary trade directory entries included with the Envirocheck Report shows three entries within 250m of the site: car body repairs 92m west of the site, refrigerators and freezers servicing and repair 120m north east of the site, and car breakdown and recovery services 136m north of the site. There are a further five entries given between 250m and 500m of the site, details of these are given in the Envirocheck Report.

10 0 CONCLUSIONS AND RECOMMENDATIONS

10 1 Summary of Land Use

The historical plans reviewed as part of this investigation indicate that the majority of the site has remained as fields since the earliest plan of 1855. The only development being the three detached houses and their gardens including the terrace associated with the Old Stables. However, the earliest historical plan shows an old coal pit and the geological and mining records record a shaft and an adit on the site. These would indicate a limited industrial (mining) use of the site prior to the publication of the historical plan of 1855. The extent of this use is unknown.

A well is also shown on the earliest historical plan but is not shown on any subsequent plans.

The immediate surrounding area has developed over time as residential with the expansion of Dodworth.

10 2 Mining and Quarrying

Based on an inspection of the geological records for the area and a Coal Authority mining report, the possibility of the surface stability at the site being affected by past/present recorded coal workings at depth is considered negligible.

The Coal Authority does have a record of a subsidence claim for the area immediately to the north of the site. The nature of the claim and date of the claim is not given. No reference is made to the depth of workings at the time of the claim.

There are no recorded workings in the Flockton Thick Coal however the presence of the shaft and adit both associated with the Flockton Thick Coal would imply that shallow workings exist beneath the site in this seam. The seam is recorded up to 2m thick in the area and therefore there is the potential for significant voids beneath the site.

The possibility of further mine entries being present on the site can not be ruled out.

There is also the possibility of shallow workings associated with both the Tankersley Ironstone and Joan Coal. These are not known to have been worked locally however the possibility of crop workings or bell pits can not be wholly discounted.

Quarrying is not indicated on the historical plans in the vicinity of the site.

It is likely that shallow workings would need to be treated prior to development of the site. Treatment options are but not confined to

- Drilling and grouting with each housing plot proof drilled prior to construction
- Excavation of overburden and removal of any remaining coal followed by recompaction of overburden as an engineered fill
- Piling through worked seams

To aid in the design of the most suitable treatment an intrusive investigation would be necessary to determine the depth to coal seams and ironstone band and to identify the percentage of any worked coal.

10.3 Contamination

The assessment of contaminated land in the UK as defined in Section 57 of the Environment Act 1995 is currently based upon a simple assessment of pollutant linkages referred to as the source → pathway → target model. This assessment is based upon the current or proposed usage of the site in terms of its suitability for use. This implies the use of risk assessment principles in order to evaluate the potential effects and concerns of contamination on a site specific basis.

Before undertaking a risk assessment it is usual to devise a conceptual site model in order to identify the potential contaminants, pathways and targets. Following completion of the model the requirements for any further investigation can be determined. The results of this further investigation can then be used to refine the initial assessment in order that a suitable cost effective remediation strategy can be devised. A conceptual model for this site is presented as Drawing No. C1185/3 in Appendix A to this report.

The principal source of potential contamination on the site is from its former use associated with mining and any made ground associated with regrading/landscaping the site. Also possible localised spillages of hydrocarbons from domestic vehicles and heating systems.

Potential contaminants associated with the site usage include but are not necessarily limited to

- Toxic and phytotoxic metals
- Sulphate
- Hydrocarbons

The site is considered to lie within a setting of moderate environmental sensitivity the most sensitive environmental receptor being surface water via the stream/drain on the site and the stream adjacent to the southern boundary. The site is underlain by a minor aquifer (siltstone and mudstone of the Coal Measure strata) but this is overlain by low permeability soils of low leaching potential.

Consideration is being given to the development of the site for residential purposes. This is considered a high sensitivity end use as residents are likely to be exposed to ground contamination for a significant period of their lifetime.

Based upon the desk study information it is considered likely that the site may have some ground contamination associated with former mining and possible imported fill to regrade parts of the site although this are likely to be localised. The necessity for remediation is subject to the extent and nature of any contamination. This cannot be determined without an appropriate intrusive investigation. However based upon currently available data it is considered unlikely that any existing ground contamination would prohibit development although some form of simple remediation may be required (e.g. localised removal of hydrocarbon impacted soil and capping of landscaped/garden areas).

It is possible that asbestos has been used in the fabric of some of the buildings. Prior to demolishing the buildings it is recommended that an asbestos survey be undertaken by a suitably qualified consultant. The asbestos should be removed by a suitably qualified contractor to a suitably licensed facility.

10.4 Foundations

It is not possible to provide foundation recommendations until the results of a suitable ground investigation are available the scope of which are discussed in Section 11.0 of this report. However the following general comments are made but should be viewed with caution.

Information held by the BGS indicates that the site is underlain at shallow depth by strata of the Middle Coal Measure series. These generally weather at the surface to a firm or stiff clay which is likely to be suitable for foundations for a low rise development. This is confirmed by comments from building control in their correspondence. It is likely that strip or trench fill foundations would be suitable across the majority of the site.

The adit and shaft should be located and treated in accordance with the Coal Authorities recommendations prior to development of the site. Similarly the former well should be located and treated / infilled as required. No foundations should be placed over the shaft or adit or within an area bounded by a line drawn at 45° back from where the shaft side intersects rockhead.

Foundation precautions should be taken near trees in accordance with NHBC Standards Chapter 4.2

10.5 Hazardous Gas

Based on information provided by the Landmark Information Group (which includes information from the local authority) and from the local authority there is a small landfill site 222m east south east of the south east corner of the site. The majority of the development site lies outside of the zone of influence of this landfill i.e. beyond 250m. Also this landfill is classified as Category 4 meaning the Waste Disposal Site Licence indicates the site has been licensed to accept materials that would not be expected to give rise to landfill gas in substantial quantities.

The development site however is underlain by shallow coal seams which may be worked and give rise to mines gas.

Whilst precautions against landfill gas are considered unlikely precautions against mines gas may be required. Monitoring for hazardous gas should therefore be carried out to assess the risk and likely precautions required.

A radon report from the British Geological Survey shows that the site requires basic radon protection measures. This consists of a gas retardant ground floor membrane suitably lapped and sealed taken continuously through cavity walls.

11.0 FURTHER WORKS

In order to obtain planning permission for the proposed redevelopment and to enable determination of foundation solutions and abnormal costs associated with any contamination and shallow mine workings it will be necessary to undertake an intrusive ground investigation at the site.

The general nature and extent of any made ground below the site should be assessed as part of an intrusive investigation.

The depth and thickness of the coal seams and ironstone band should be determined and the outcrops located. The coal seams should be proved in sufficient locations to allow an assessment of the ratio of intact coal to worked coal at shallow depth beneath the site.

Investigation of the site would be cheaper and easier post demolition of the buildings on site. If this is not possible the scope of an investigation would be dictated by access constraints.

Based on current site operations and the findings of the desk study a Phase I intrusive investigation is likely to comprise

- Window sampling a method of drilling which would form shallow boreholes (up to 5m deep) in areas of limited access
- Trial pitting and trenching
- Rotary probe drilling
- Installation of gas / ground water monitoring standpipes
- Gas / groundwater monitoring
- Laboratory testing both chemical (contamination) and geotechnical

If deep made ground or soft ground is encountered then cable percussion boreholes may be required. It is likely that a second phase of intrusive work would be required at a later stage once an assessment of the geology is made to locate the shaft and adit. These should be located prior to development.

Prior to demolition an asbestos survey will be required.



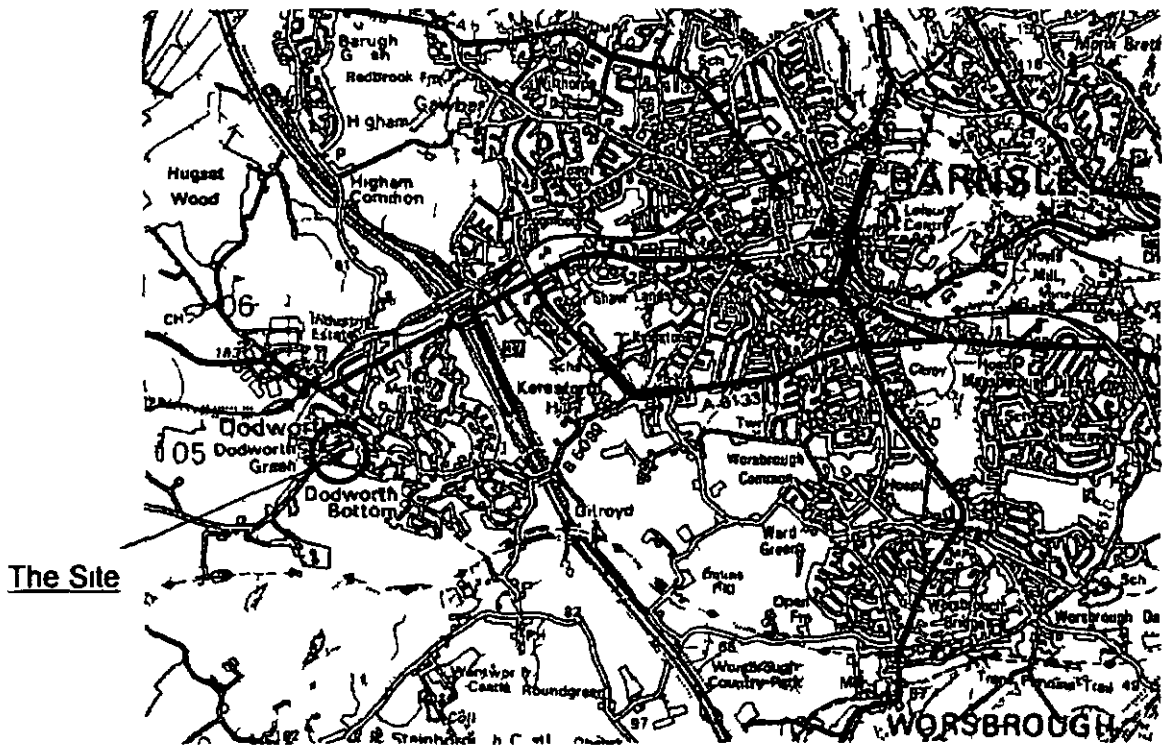
SITUS

**APPENDIX A
DRAWINGS**



Site Location Plan

Contract Number	C1185
Contract	Land off Dodworth Green Road Dodworth Barnsley
Client	Mr A Wilkinson



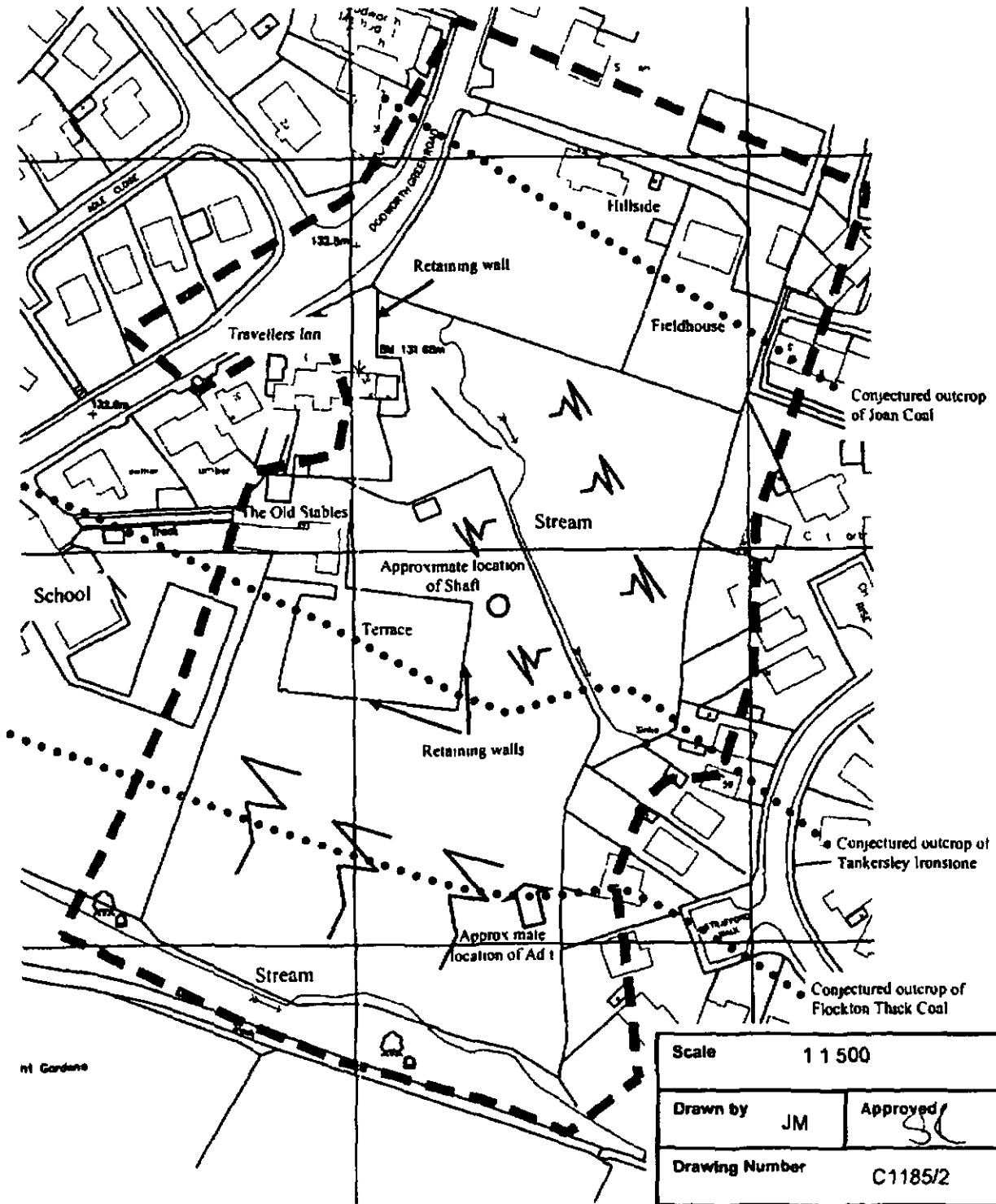
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Scale	1 50 000	
Drawn by	JM	Approved SL
Drawing Number	C1185/1	

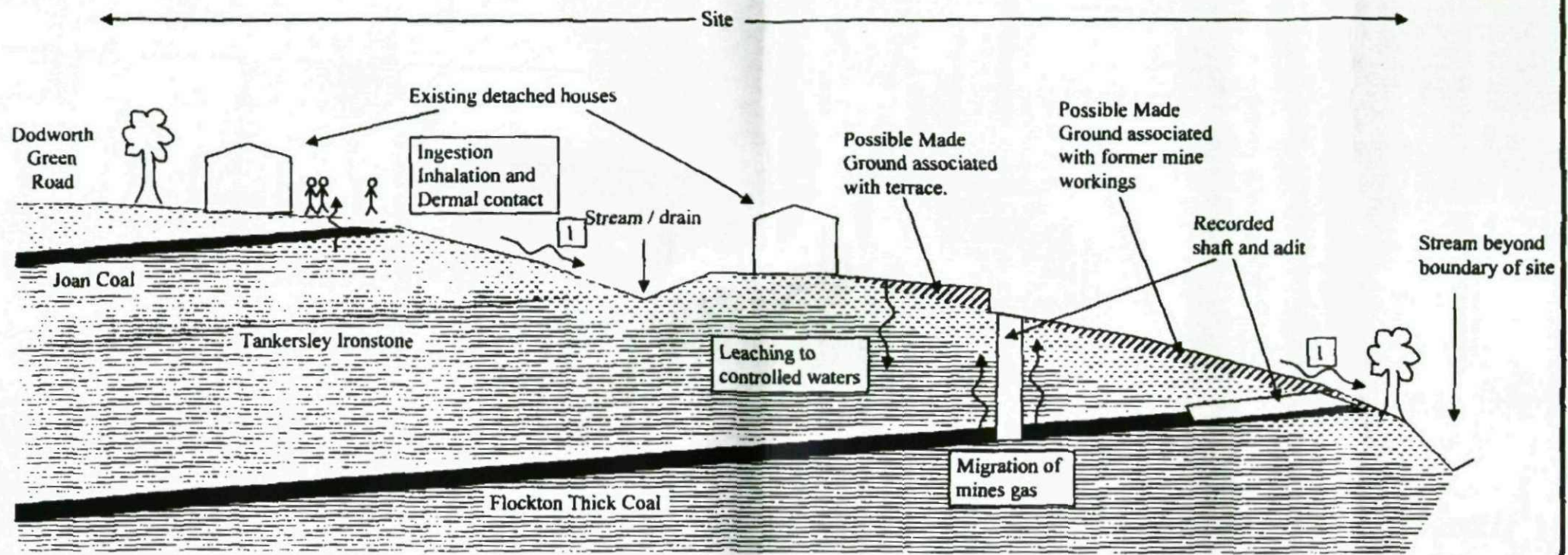


Site Plan

Contract Number	C1185
Contract	Land off Dodworth Green Road Dodworth Barnsley
Client	Mr A Wilkinson



Scale	1 : 1 500	
Drawn by	JM	Approved <i>SC</i>
Drawing Number	C1185/2	



1: Runoff to surface water



Contract Number	C1185	Scale	NTS
Contract	Land off Dodworth Green Road Dodworth, Barnsley	Drawn by	JM
		Approved	<i>[Signature]</i>
		Drawing Number	C1185/3
Client	Mr A Wilkinson		

Conceptual Site Model

Envirocheck[®] Report

Datasheet

Report on:

Green Road
Dodworth
Barnsley
South Yorkshire
S75 3SU

National Grid Reference :

431430, 404990

Prepared For :

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