

Harworth Estates Limited

Former North Gawber Colliery, South Yorkshire

Coal Mining Risk Assessment

321370-R2 (01)

MARCH 2014

RSK

RSK GENERAL NOTES

Project No.: 321370-R2 (01)

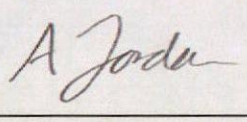
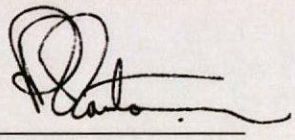
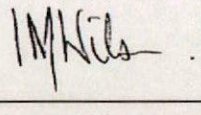
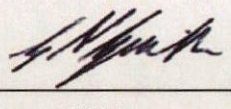
Title: Former North Gawber Colliery, South Yorkshire, Coal mining risk assessment.

Client: Harworth Estates Limited

Date: March 2014

Office: Helsby

Status: Final

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK Environment.

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1 INTRODUCTION

RSK Environment (RSK) was commissioned by Harworth Estates Ltd (HE) to undertake a coal mining risk assessment from mining activities at a proposed development on the former North Gawber colliery, Barnsley. The assessment is required due to the site being within an area defined by the Coal Authority as a Coal Mining Development Referral Area.

These are areas, based upon Coal Authority records, where the potential land stability and other safety risks associated with former coal mining activities are likely to be greatest. They include, for example, areas of known or suspected shallow coal mining, recorded mine entries and areas of former surface mining.

For all new development proposals within Coal Mining Development Referral Areas that require planning permission, except householder developments, a Coal Mining Risk Assessment is required to be submitted with the planning application to the Local Planning Authority.

This report therefore provides information on coal mining associated with the site and the surrounding area and includes an assessment of its impact on land stability.

1.1 Scope of the coal mining risk assessment

The scope of this Coal Mining Risk Assessment Report is to:

- present a desk-based review of available information on the coal mining issues which are relevant to the site
- use that information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues
- set out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development
- demonstrate to the Local Planning Authority that the site is, or can be made, safe and stable to meet the requirements of national planning policy with regard to development on unstable land.

1.2 Limitations

The comments given in this report and the opinions expressed are based on the data obtained during the desk study and the sources of information are presented within the report for reference. Please note that there may be conditions pertaining to the site that have not been disclosed by the desk study, either because the data was unavailable or incomplete. This report is subject to the RSK service constraints given in Appendix A.

2 SITE DETAILS

2.1 Site location

The site is located to the south of Mapplewell, which is approximately 3km northwest of Barnsley, at National Grid reference (NGR) 433,050E 409,650N. The site lies to the east of Spark Lane and to the west of Carr Green Lane. A site location plan is presented as Figure 1.

2.2 Site description

The site is approximately 16 hectares in area. The site is bounded by residential housing fronting onto Spark Lane to the west, and to the east Carr Green Lane with residential housing beyond. To the north are commercial and retail units fronting onto Mapplewell Drive, including a car crash recovery yard, and to the northwest a grassed football pitch with church beyond. To the south is a birch coppice with open fields that have been reprofiled following their previous use as a colliery tip. A site plan is presented as Figure 2.

The site is at an elevation of between approximately 95m above Ordnance Datum (AOD) north with the ground surface falling in a series of four terraces to a level around 70m AOD in the south.

A site visit was undertaken on 22 August 2013. The site was found to be cleared of structures with some concrete slabs remaining in-situ across the northern part of the site, with the site surface comprising sparse grass, birch scrub and bare colliery spoil.

A concrete slab was identified toward the northern site boundary which may represent the capping of a shaft as it is located in the area where shaft ref. 433409-001 is thought to be located (see Section 3.5 and 3.6). The brick outline of a former building is still in-situ in the approximate location of the adit ref. 433409-016.

2.3 Description and layout of proposed development

Full planning permission is sought for the remediation and restoration of the site and outline planning permission is sought for up to 325 dwellings, open space and associated infrastructure with all matters reserved except for access. It is understood that previous planning permission was granted in January 2012.

3 DESK STUDY

3.1 Introduction

A review of publicly available information has been undertaken to establish the historical development of the site in relation to coal mining activities and to ascertain the environmental setting relating to geology. The following sources of information have been used within the review:

- Historical mapping (1854-1993)
- British Geological Survey Geological Map of Yorkshire (West Riding) Sheet CCLXII SE (1:10,560)
- Mineral Resources Information in support of National, Regional and Local Planning: South Yorkshire (comprising Metropolitan Boroughs of Barnsley, Doncaster and Rotherham and City of Sheffield) BGS Report CR04173N dated 2006
- Mineral Resources Information in support of National, Regional and Local Planning: South Yorkshire (comprising Metropolitan Boroughs of Barnsley, Doncaster and Rotherham and City of Sheffield) BGS Report CR04173N Mineral Resources Map Scale 1:100,000 dated 2006
- The Coal Authority. Non-Residential Mining Report, former North Gawber Colliery, Mapplewell, Barnsley dated 5 August 2013
- The Coal Authority. Shaft Plan and Data Sheets Report, former North Gawber Colliery, Spark Lane, Mapplewell, Barnsley dated 20 August 2013
- Desk study carried out by the former British Coal Opencast Executive (BCOE) in December 1990 for a proposed surface mine on the site
- The Coal Authority Abandonment Records
- British Geological Survey Borehole records SE30NW/9/A and SE30NW/9/C.

In addition, geo-environmental reports have also been reviewed to obtain a better understanding of ground conditions and coal-related activities. The following reports have been reviewed and a summary is presented in Section 3.10:

- Scott Doherty Associates report Geo-Environmental Assessment Ref. SDA/04014 dated December 2004
- Scott Doherty Associates Ground Investigation Report ref. DJL/07053/03 dated 3 December 2007
- Supplementary ground Investigation Report Scott Doherty Associates report ref. 09002 dated June 2009
- Scott Doherty Associates report Revised Remedial Method Statement Ref. SDA/09002 dated July 09.

3.2 Site history

A summary of the site history has been established from a review of historical maps. Extracts are presented in Figures 3 to 6. A summary of the site's history is presented below:

- between 1854 and 1893 (Figure 3): North Gawber Colliery was constructed, and coke ovens, an engine house, and the North Gawber Colliery Railway were all present on site. A drain/stream appears to be present along field boundaries through the centre of the site
- 1906: there were more residential properties along Spark Lane to the north-west of the site and some parts of the railway had been removed
- 1918: additional storage tanks in the northeast corner of site, spoil mounds had increased in size and extended north of the railway track. Spoil heaps had also formed south of the coke ovens
- 1938: spoil heaps had been extended
- 1956: coke ovens had been demolished, a large aerial ropeway ran from the site, depositing spoil off site to the southwest. Further development to the north-east of the site and spoil heaps in the north of the site had increased in size
- 1962 (Figure 4): four lagoons had been constructed along the southern boundary of the site. Further expansion to the spoil heap in the north of the site. New drains adjacent to the aerial ropeway
- 1973: spoil heaps classed as 'unused' and the aerial cable had been dismantled.
- 1974: four slurry ponds had been created in the southern area of the site, conveyors had been constructed to transport soil in a southeasterly direction to the North Gawber – Hill End Tip. A stream flows into the site form the northwest corner, and runs through the site in a northwest to southeast direction
- 1977 (Figure 5): four additional slurry lagoons had formed in the western corner of the site, and a small woodland area had been created along the eastern boundary of the site
- between 1983 and 1993 (Figure 6): the North Gawber Colliery Railway was dismantled and the main colliery buildings and conveyor belt was demolished. The football ground in the northwest corner of the site was created. Slurry ponds had been backfilled and a pond was created south of the site's centre. A depot and factory units were constructed north of the site.

3.3 Published geology

The British Geological Survey, six inch to one mile scale (1:10,560) map (Figure 7) shows the site to be underlain by shales and mudstones with coal seams of the Carboniferous Middle Coal Measures. No drift deposits are present.

These rocks are shown to dip to the northeast and they typically comprise siltstone, mudstone, sandstone and coal. The map indicates a dip of 1 in 21 (approximately 3 degrees) measured underground, at a location approximately 400m north of the site.

Two coal seams are shown to outcrop beneath the site: the Kent's Thin Coal overlying the Mapplewell Coal. They are mapped with broken lines, which the map explanation records as indicating some uncertainty. These seams overlie the Barnsley Coal. The Mapplewell Coal is also known as the Kent's Thick or High Hazels Seam.

Two mine shafts are shown within the boundaries of the site, with one shaft annotated "98ft to Mapplewell Coal" and the second not annotated. A third shaft is shown along the strike to the east of the site and is annotated "252ft to Barnsley Coal". An adit is also shown on the outcrop of the Mapplewell Coal, close to the centre of the site, but no additional information is given.

3.4 Mineral resources information in support of national, regional and local planning: south Yorkshire

The British Geological Survey has produced a technical report (CR04173N) describing aspects of mineral geology, that relate to planning across South Yorkshire; the report is called 'Mineral Resources Information in support of National, Regional and Local Planning: South Yorkshire (comprising Metropolitan Boroughs of Barnsley, Doncaster and Rotherham and City of Sheffield) BGS Report CR04173N dated 2006'. The aim of the report was to delineate the mineral resources of current, or potential, economic interest in the area and the sites where minerals are or have been worked. The site is located within the area covered by the technical report.

The report provides a thematic map (1:100,000 scale), which collates information relating to the geological distribution of mineral resources, the extent of mineral planning permissions, the location of current mineral workings and the extent of selected nationally designated planning constraints.

The map (an extract presented as Figure 8) shows the site to be in the Carboniferous Pennine Coal Measures and to have two areas of former opencast coal workings.

3.5 The Coal Authority non-residential mining report

A non-residential coal report has been received from the Coal Authority (dated 5 August 2013), which relates to the site. It is presented as Appendix B. The report states that the site is within the likely zone of influence from nine worked coal seams, from shallow depth to 340m below ground level, last worked underground in 1981.

The report states that the site is not within an area for which a license to extract coal by underground methods is awaiting determination by the Coal Authority, or which has been granted. However, reserves of coal exist in the locality, which could be worked at some time in the future subject to feasibility, licenses and planning consents.

No notice of the risk of the land beneath the site being affected by subsidence has been given under section 46 of the Coal Mining Subsidence Act 1991.

Eight mine entries are identified within the report to be within, or within 20m of the site boundary. Figure 2 shows their approximate positions. The shaft and adit details, as presented in the Coal Authority report include:

- 432409-026 – no treatment details

- 432409-027 - no treatment details
- 433409-01 (432409-002 on map) – was filled to the surface in 1967 and following slumping was excavated and capped at 3.8m bgl with a 6m x 6m reinforced concrete cap by the Coal Authority in March 2005
- 433409-011 – was filled in May 1987 (adit)
- 433409-005 - no treatment details
- 433409-025 - no treatment details
- 433409-016 - no treatment details (adit)
- 433409-028 - no treatment details (adit).

The report states that the property is within the boundary of an opencast site from which coal has been removed by opencast methods in the past. The property is not within 200m of the boundary of a present opencast site, nor within 800m of an opencast site for which the Coal Authority is determining whether to grant a license to remove coal by opencast methods.

The Coal Authority has not received a damage notice or claim for the subject property (or any property within 50m) since 31 October 1994. There is no current Stop Notice, and the Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

The report states that there are no records of a mine gas emission requiring action by the Coal Authority within the site boundary.

The land is in an area for which a notice of entitlement to withdraw support was published in 1946, 1947 and 1980. The property is not in an area for which a notice has been given under section 41 of the Coal Industry Act (1994), revoking the entitlement to withdraw support.

The property has been subject to remedial works, by or on behalf of the Coal Authority, under its Emergency Surface Hazard Call Out Procedures. No further information is given concerning the location or extent of the remedial works.

3.6 The Coal Authority shaft plan and data sheets

Based on the results of the Coal Authority Non-Residential Mining Report a Coal Authority Shaft Plan and Data Sheets report was acquired, dated 20 August 2013. This provides a summary of the data that the Coal Authority holds for each recorded mine entry. The provided data is summarised in the table below:

Table 1: Summary of mine entry information

Coal Authority Ref.	432409-026	432409-027	433409-001	433409-011	433409-005	433409-025	433409-016	433409-028
Entry name	unknown	unknown	North Gawber Colliery Barnsley Downcast	North Gawber Colliery No.1 Adit	North Gawber Colliery Air Shaft	unknown	Old Adit	North Yorkshire Adit
Depth of Shaft (m)	unknown	unknown	96.0	unknown	51.0	unknown	unknown	unknown
Diameter of Shaft (m)	unknown	unknown	3.0	unknown	unknown	unknown	unknown	unknown
Adit azimuth	Not applicable	Not applicable	Not applicable	41°	Not applicable	Not applicable	42°	45°
Treatment details	no treatment details	no treatment details	filled to surface in 1967 excavated and capped at 3.8m depth in March 2005	filled in May 1987	no treatment details	unknown	unknown	unknown

3.7 Former British Coal Opencast Executive (BCOE) report

This desk study report from 1990 was carried out to assess the potential for an opencast coal mine at the site. It summarises historical uses of the site and the surrounding area, focusing on mining developments, coking, chemical and bleach works, tip and spoil heaps, watercourses and sewage works.

The report identified works associated with coal mining, coke and gas production on site as possible sources of PAHs, phenols, sulphates and cyanides, in addition to acid tars.

BCOE subsequently carried out an extensive intrusive programme of exploratory drilling in the early 1990s, the results of which have not been made available to RSK.

3.8 The Coal Authority mine abandonment records

An abandonment catalogue search was conducted on 9 August 2013, and the resulting information has been reviewed. The searches were based on two search radii: 10m and 500m from the co-ordinates of the former North Gawber Colliery (433000E 409700N).

The 10m search radius resulted in 21 records being identified and for the 500m search 61 records were returned. Review of these records showed two to provide salient information on the North Gawber Colliery: catalogue number '7083 – Gawber North' and 'NE863 – Old Darton & Extension Opencast'. Extracts from these plans are provided in Figures 9 and 10 respectively.

The '7083 – Gawber North' record (Figure 9) shows the outlines and dates of areas of workings in the Kent's Thick Seam beneath the North Gawber Colliery and indicates they were worked by 1920. The positions of two adits and one shaft correspond to shafts identified in the Coal Authority Mining Report: two adits are shown at the crop of

the Kent's Thick Seam that correspond with the Coal Authority report's mineshaft entries 433409-016 and 432409-028; and one mineshaft' that corresponds to 433409-001' that indicates the Kent's Thick Seam (KT) lies at 30m depth and the Barnsley Seam at a depth of 95m. Two further shafts are shown to be located just outside the northeast boundary of the site. The annotations 'c 1.02m' and 'c. 97cm' appear on the plan, close to the outcrop of the Kent's Thick seam. It is assumed that these figures indicate a seam thickness of approximately 1m. No information on the dip of the seam is shown.

The 'NE863 – Old Darton & Extension Opencast' record (Figure 10) shows two areas of opencast workings in the Kent's Thick Seam. The area of opencast in the northwestern part of the site is hand annotated as being worked in 1977 – 1978. The area of opencast in the central area of the site is hand annotated as being worked in 1974. The record states that the entries were abandoned 9 July 1980. It also shows the colliery buildings and mineral railway that were present at that time.

3.9 British Geological Survey borehole logs

A copy of borehole log SE30NW/9A was obtained from the British Geological Survey (BGS) borehole log database. This is the log titled 'North Gawber Colliery at Blacker'. The summary sheet describes the Kent's Thin Coal to occur at a depth of 27'2" (8.28m) with a thickness of 2' (0.61m) and the Kent's Thick to occur at a depth of 97' 10" (29.82m) with a thickness of 3' 3" (0.99m). The depth to the Kent's Thick is in agreement with the depth shown on the geological map for one of the shafts within the site, but is not at the exact location recorded, which is just to the northeast of the site.

A copy of a second borehole log SE30NW/9B, recorded as being at the same location, but recording slightly different geology, was also obtained. This is the log titled 'North Gawber Colliery – New Lidgett Shaft'. It is uncertain whether this record refers to the stated location to the northeast of the site boundary, or whether it if fact records one of the other two shafts recorded close to the shaft discussed above. It states the dip of the strata to be 1 in 12 to the northeast. The log shows the Kent's Thin Coal to occur at a depth of 22'3" with a thickness of 2'6" and the Kent's Thick to occur at a depth of 98' 9" with a thickness of 3' 7".

A copy of the borehole logs is presented din Appendix D.

3.10 Geo-environmental reports review

A review of reports relating to geo-environmental investigations undertaken by Scott Doherty Associates (SDA) on the site has been completed. The site boundary as presented in these previous reports is nearly identical to the site boundary of the site as considered for this coalmining risk assessment. The main points within the SDA reports, relating to the geological setting or mining interests beneath the site are presented below.

3.10.1 SDA geo-environmental assessment ref. SDA/04014 dated 2005

An intrusive geo-environmental site investigation was undertaken to assist design of a possible surface mine and to investigate any contamination on site. The work comprised the excavation of 29 trial pits and the drilling of 20 cable percussive boreholes. Trial pits ranged in depth from 0.8m to 3.5m. Boreholes extended to between 4.4m and 14.1m depth.

Made ground comprising fine to coarse colliery backfill/spoil and demolition material was encountered across the entire site. The thickness of made ground ranged from 3.5m to 13.8m, and the thickest deposits were generally encountered in the northern part of the site.

A layer of glacial till was encountered in many exploratory holes, and extended to between 0.3m and 2.5m in thickness.

Bedrock comprised sandstone, mudstone and siltstone and was encountered at depths ranging from 3.6m to 13.8m.

The geological sequence underlying the site was described and the BCOE report was reviewed (as described in Section 3.7 of this report). A Coal Authority Mining report was reviewed to reveal eight mine entries within the boundaries of the site. It presents the same information as gained in the Coal Authority non-residential mining report dated 5 August 2013 as described in Section 3.5 of this report. The area of opencast along the crop of the Kent's Thick was identified (as described in section 3.8 of this report). The SDA report presented a National Coal Board (NCB) geological map. An extract from that map is presented as Figure 11 in this report and as Appendix C.

3.10.2 SDA ground investigation report ref. DJL/07053/03 dated 2008

The investigation provided further information on coal mining issues. The site was divided into 5 'Areas' based on previous land use to make the discussion easier to follow with a plan showing the area boundaries in the appendix of the SDA report. The investigation comprised the excavation of 75 trial pits, drilling 17 rotary open holes and 18 cable percussion boreholes.

The rotary holes ranged in depth from 3.5m to 26m. Some of the rotary holes were drilled to investigate the presence of mine workings in the Kent's Thick seam, and others were to advance deeper in areas where trial pits or cable percussion boreholes were abandoned due to obstructions. Both the Kent's Thick and Kent's Thin coal seams were encountered in the rotary boreholes across the northeastern half of the site. Eight mine entries (five shafts and three adits) were identified together with three gas vents on the boundary of the adjoining football pitch. The gas vents are located outside the site boundary on the adjoining football pitch. The positions of the underground mining galleries and an area of goaf (infilled underground workings) were shown on Figure B – Principal Constraints Plan of the report. A copy of the Coal Authority's record 'NE863 – Old Darton & Extension Opencast' was presented in its Appendix A. This is reproduced as Figure 10 of this report.

The SDA report identified a considerable number of development constraints relating to mining issues: obstructions, shallow mine workings and entries. These constraints are reproduced on Figure 2 of this report.

The SDA report recommended that voids in worked coal seams should be grouted, and shafts and adits be grouted and capped with concrete. It also recommended that a safety zone should be implemented around the shafts, and no building should be located directly above a treated adit.

3.10.3 SDA supplementary ground investigation report ref. 09002 dated June 2009

This intrusive investigation comprised the excavation of 60 trial pits with an aim of establishing the extent of previously identified contamination 'hotspots' identified in the 2008 investigation, determining the full thickness of made ground deposits and providing further chemical data for a revised contamination assessment. It recommended that further investigations should be undertaken to locate the mineshafts and adits.

3.10.4 SDA revised remedial method statement ref. SDA/09002 dated July 09

This report summarised the results of previous reports, and presented a remedial method statement principally to mitigate contamination risks. However, it did state that where the ratio of the thickness of solid rock cover to the underlying worked seam thickness is less than 10:1, seams should be grouted with a suitable cement-based grout.

4 RISK ASSESSMENT

4.1 Introduction

This section looks at the coal mining legacy issues that that may present a likely risk to site development, which have been identified from data included and discussed above. Coal mining geology (fissures or tension cracks generated by settlement) will not be covered as no evidence of their existence on-site had been found during the desk study.

4.2 Risk assessment

An assessment of potential risk to the proposed development has been undertaken from the following coal mining issues that have been identified either beneath the site, or within 20m of the site boundary:

- underground coal mining (recorded at shallow depths)
- underground coal mining (probable at shallow depths)
- mine entries (shafts and adits)
- surface mining (opencast workings)
- record of past mine gas emissions
- recorded coal mining surface hazard.

4.2.1 Underground coal mining (recorded at shallow depths)

The abandonment plans show the Kent's Thick (Mapplewell Coal) to have been worked beneath parts of the site. The Kent's Thick outcrops beneath the site, and is shown to be at approximately 30m bgl beneath the northeastern boundary of the site. Two adits with azimuths of approximately 45 degrees serve the workings.

As a rule of thumb, it is considered that in most cases ten times the seam thickness in competent rock above a worked seam is sufficient to mitigate the effects of subsidence at the surface, which may result as a consequence of collapse of the workings. For the purpose of risk estimation, competent overburden does not include superficial deposits. Based on the data from the abandonment plans ('7083 – Gawber North' record (Figure 9), and the BGS borehole log SE30 NW/9, the thickness of the Kent's Thick is approximately 1m. The BGS borehole log SE30 NW/9 also states that the strata dip at approximately 1 in 12 to the northeast i.e. approximately five degrees. This leads to a significant area across the centre of the site where the depth of competent rock overburden is less than ten times the seam thickness. This area is shown on Figure 2 and on the schematic cross section as shown provided as Figure 12.

4.2.2 Underground coal mining (probable at shallow depths)

The Kent's Thin is shown on the BGS geological map (Figure 7) and on the NCB Geological map (Figure 11) to outcrop beneath the northern part of the site.

The Kent's Thin would be present at relatively shallow depth in the northern part of the site and may have been worked with no records being maintained. There is consequently the possibility of shallow unrecorded workings beneath the northern part of the site.

The BGS borehole log SE30 NW/9 states that the thickness of the Kent's Thin is approximately 0.6m. As with the Kent's Thick, as discussed in Section 4.2.1, this leads to an area across the northeastern part of the site where the depth of competent rock overburden above this possibly worked seam is less than ten times the seam thickness. This area is shown on Figure 2 and on the schematic cross section provided as Figure 12.

4.2.3 Mine entries (shafts and adits)

Several mine entries are identified on site and within approximately 20m of the site boundary. The BGS map, Coal Authority map and SDA reports identify a shaft toward the north east of the site (annotated on the BGS map with "98ft to the Mapplewell Coal"). The position shown is consistent with that of shaft ref. 433409-01 as identified in the Coal Authority Mining report. This shaft is confirmed in the Coal Authority Shaft Plan and Data Sheets report to have been filled to the surface in 1967 and following slumping was excavated and capped at 3.8m bgl with a 6m x 6m reinforced concrete cap by the Coal Authority in March 2005.

Two adits are shown on the Coal Authority Abandonment record '7083 – Gawber North'. These are referred to as 432409-28 and 433409-16 in the Coal Authority Mining Report and known as the 'Old Adit' and 'North Yorkshire Adit' respectively. These adits are also shown in the SDA reports. Their azimuths are recorded as 42 and 45 degrees respectively. Their diameters or treatment details are not known.

The Coal Authority report identified four further shafts (refs. 432409-026, 432409-027, 433409-005 and 433409-025) and one further adit (ref. 433409-011) within 20m of the site. Of these only the depth of 433409-005, 'North Gawber Colliery Air Shaft', at 51m deep is known. The fill status of these shafts is not known. Adit ref. 433409-011, 'North Gawber Colliery No.1 Adit', is recorded to have an azimuth of 41 degrees and to have been filled in May 1987. These mine entries are detailed in the SDA reports.

The SDA report also details three gas vents immediately beyond the northwestern boundary of the site on the adjoining football pitch. The origin of this information is not provided. Their approximate location is shown on Figure 2. The nature of these gas vents is not described in the SDA report. During the site walkover conducted by RSK there was no surface expression of these gas vents evident: the area where they are indicated being a well tended and mown periphery of a football pitch.

4.2.4 Surface mining (opencast workings)

The Coal Authority abandonment records shows two areas of opencast workings in the Kent's Thick Seam. The area of opencast in the northwestern part of the site is hand annotated as being worked in 1977 – 1978. The area of opencast to the centre east of the site is hand annotated as being worked in 1974. The record states that the workings were completed before 9 July 1980.

The Coal Authority did not hold any records of opencast mine completion plans that may be expected for the two identified opencast areas.

4.2.5 Record of past mine gas emissions

No record of past mine gas emissions have been reviewed and therefore the risks associated with this are not known, although the Coal Authority do state that they are unaware of mine related gas issues at the site. However the SDA investigations identify three gas vents on the boundary of the adjoining football pitch. Without the data on which to make an assessment, the default position should be that there is a potential risk unless demonstrated otherwise.

4.2.6 Recorded coal mining surface hazard

The property has been subject to remedial works, by or on behalf of the Coal Authority, under its Emergency Surface Hazard Call Out Procedures. Although not specifically stated, this is likely to be the filling of shaft ref. 433409-01 to the surface in 1967 and following slumping its excavation and capping at 3.8m bgl with a 6m by 6m reinforced concrete cap that was undertaken by the Coal Authority in March 2005.

No other surface hazards are identified within the site except for potential contamination issues associated with the past mining and coke works that occupied the site. Contamination hazards are assessed in separate RSK reports.

5 MITIGATION STRATEGY

Based on the potential risks identified in Section 4, a series of mitigation measures are proposed prior to the commencement of the site.

5.1 Underground coal mining (recorded and probable workings at shallow depths)

The presence of shallow coal mining will be assessed through intrusive investigation using drilling techniques. The appropriate permission will need to be obtained from the Coal Authority for intrusive activities, which will potentially disturb or enter any coal seams, coal mine workings or coal mine entries.

The areas where coal seams lie at shallow depth beneath the site and less than ten times rock cover is present are indicated on Figure 2. This plan should be revised in the future following additional drilling investigation to more accurately reflect ground conditions. In these areas ground treatment will be required to consolidate the workings before development proceeds. The standard procedure for housing developments is for a specialist grouting contractor to attend site and treat the required plots for each development phase. The work, which is usually carried out immediately in advance of groundworks and foundation construction, requires probe drilling to be carried out beneath each house plot to determine the extent of workings and areas requiring consolidation. Treatment of each plot is then carried out by drilling (usually on a 6m or so grid) and grouting using a pulverised fuel ash (PFA) and cement mix grout (usually in a ratio of 10:1). In areas where high grout takes are recorded additional holes are drilled and grouted. In some local authorities this consolidation treatment may be required beneath roads before they can be adopted. Ground treatment works should be independently checked and validated and a completion report prepared including details of all boreholes drilled and quantities of grout used.

5.2 Mine entries (shafts and adits)

Eight abandoned mine entries have been identified on or potentially affecting the site.

Records for the shafts show one (ref. 433409-01) to have been capped and grouted by the Coal Authority. A building exclusion zone should be incorporated into the site design layout to accommodate the proximity of the grouted and capped shaft.

The adit identified on site (ref. 433409-011), which has previously been filled in May 1987 should be located and investigated, its status confirmed and appropriate measures taken to make the entry safe will be proposed and the findings will be incorporated into a development exclusion drawing if necessary.

The locations of shafts 432409-026 and 432409-027, as provided on the Coal Authority Mining report, have not been corroborated by other information gathered. The Coal Authority Mining Report shows their positions are just beyond the site's northwestern boundary. For these two possible shafts and three gas vents further assessment that the features are off-site could be provided by undertaking geophysical surveys on the

immediately adjacent parts of the site. Such works (and any subsequent drilling work if the surveys suggest the features are on-site) should be taken once the site has been cleared of vegetation and any regrading works are completed (i.e. following enabling works but prior to site development).

Adit 433409-025 is shown by the Coal Mining report to be located just beyond the site's northern boundary.

The remaining three mine entries on site should be identified using geophysical surveys and intrusive techniques (excavation/drilling) to confirm their location and status and appropriate measures to make the entry safe will be proposed and the findings will be incorporated into a development exclusion drawing if necessary.

The SDA 2008 ground investigation report identified three gas vents to be located just outside the site boundary on the adjoining football pitch. The nature of the three gas vents that are reported by SDA has not been established.

A summary of available information in relation to the mine entries, including suggested mitigation, is presented in Table 2 below.

Table 2: Summary of mine entry mitigation

Coal Authority Ref.	432409-026	432409-027	433409-001	433409-011	433409-005	433409-025	433409-016	433409-028
Additional sources of location information	**None**	**None**	"Shaft" OS map. **(Fig. 3)**	"No. 1 Adit" NCB plan, **(Fig. 11)**	"Air Shaft" OS map. **(Fig. 3)**	**None**	Adit on abandonment plan, **(Fig. 10)**	Adit on abandonment plan, **(Fig. 10)**
Reliability of location information	Unknown	Unknown	Good	Unknown	Good	Unknown	Fair	Fair
Located on or off site	Probably off site	On site	On site	Probably off site	On site	Probably off site	On site	On site
Within area of proposed housing	If on site, in open space	Within housing	Within housing	If on site, within housing	Within housing	If on site, in open space	Within housing	Within housing
Treatment recorded	None	None	Filled 1967, capped 2005	Filled 1987	None	None	None	None
Mitigation requirements	**Geophysics* to provide assurance not within site area**	**Locate, treat, cap and define building exclusion zone**	**Confirm location and define building exclusion zone**	**Confirm location and possibly define building exclusion zone**	**Locate, treat, cap and define building exclusion zone**	**Geophysics* to provide assurance not within site area**	**Locate, treat, and define building exclusion zone**	**Locate, treat, and define building exclusion zone**

Notes: *Geophysics should also be carried out in the site area adjacent to the three gas vents identified by SDA 2008.

5.3 Record of past mine gas emissions

No data is available to determine this risk. An investigation into current ground gas regime will be undertaken on site utilising a series of ground gas monitoring boreholes spread at locations across the site. Results of the gas monitoring and recommendations for the development will be presented to the local authority for approval prior to implementation and a best practice approach will be taken.

In order to minimise any risks associated with mine gas emissions it is likely, subject to gas monitoring findings, that the housing units in close proximity to mine entries will incorporate gas ingress preventative measures. In addition no buildings will be constructed over or in the immediate vicinity of any mine entries.

5.4 Recorded coal mining surface hazard

Coal mining operations and associated historical works on site have the potential to contaminate soil and groundwater and pose risk to site end users.

A geo-environmental ground investigation will be undertaken on site to help characterise the soil and groundwater regime. The assessment will be in line with CLR11, which will require the production of a conceptual site model, which is achieved through a tiered approach being undertaken with a preliminary risk assessment being followed, by a site investigation, then quantitative risk assessments. The findings of this investigation will be discussed with the local authority to ensure it fulfils the requirements of the planning conditions.

5.5 Development constraints

At present a draft development constraints plan has been prepared and is presented as Figure 2. It is draft due to the uncertainty of the shaft abandonment details. However, once these are established, the site development constraints plans will be produced to ensure they incorporate the risks from mining activities such that the risks are reduced to an acceptable level.

6 SUMMARY

The following risks and mitigation are identified for the site, in relation to mining activities:

- underground coal mining (probable and recorded at shallow depths) - investigate through intrusive investigation and where necessary treat by drilling and grouting consolidation
- mine entries (shafts and adits) – confirm the location of all entries with geophysics and intrusive investigation if necessary. Review development proposals include no build areas
- record of past mine gas emissions – no records available. Undertake a site wide ground gas investigation and assessment with design approved by the local authority and include gas protection measures to all dwellings
- recorded coal mining surface hazard – a geo-environmental risk assessment will be undertaken in line with CLR11 will be undertaken, incorporating risk assessment and site investigation to produce a conceptual site model. Any necessary remedial works would be carried out in advance of development
- development constraints – these should be used to inform site development layout. A draft plan is produced and this should be refined following additional investigation works.

FIGURES



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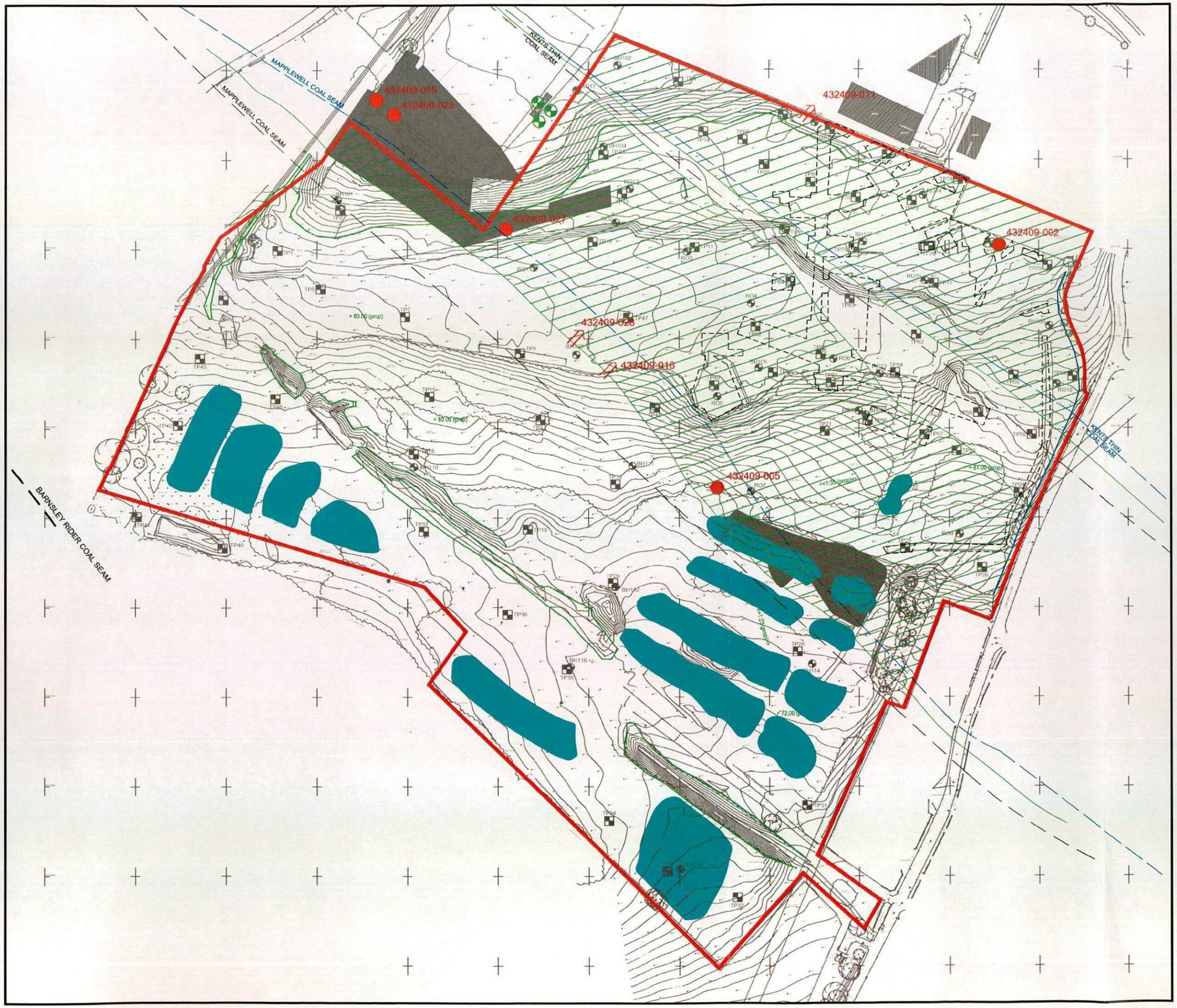
Client: HARWORTH ESTATES

Project Title: NORTH GAWBER

Drawing Title: SITE LOCATION PLAN

Drawn	Date	Checked	Date	Approved	Date	Project No.	Drawing File
HD	17.10.13	AJ	17.10.13	AJ	17.10.13	321370	321370-R2(00)D001A

Scale	Orig Size	Dimensions	Drawing No.	Rev.
NTS	A4	—	FIGURE 1	A



LEGEND:

- Indicative site boundary
- Adit
- Shaft
- Opencast backfill (highwall at perimeter)
- Old lagoons
- Footprint of historical buildings
- Inferred coal seam outcrop (information taken from geological survey map, scale 6 inch to 1 mile, 1932 edition)
- Gas vents (from SDA Dwg No. SDA/09002/19, figure 4 dated May 2010)
- Inferred coal seam outcrop (information taken from NCB North Gawber Colliery Spoil Tip Geological Plan)
- Best estimate of seam outcrop based on all information received
- Area where competent overburden does not exceed ten times seam thickness

NOTE:
Underground workings provided on other drawings

N

REV	DATE	DESCRIPTION	BY	CHD.	APR.
A	17.10.13	FIRST ISSUE	HD	AJ	AJ

Dimensions	Projection	Scale	Orig Size
m		1:2,000	A3

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CLIENT
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PROJECT
NORTH GAWBER

TITLE
SITE PLAN WITH CONSTRAINTS

JOB No.:	DRAWING FILE:
321370	321370-R2(00)D002A

BY:	DATE:	CONTRACT NO.		REV:
HD	17.10.13		FIGURE 2	A

Scale 1 : 2000
0 50 100 150 200m



NOTE:
The site boundary shown is indicative

REV	DATE	DESCRIPTION	BY	CHD.	APR.
A	17.10.13	FIRST ISSUE	HD	AJ	AJ

Dimensions	Projection	Scale	Orig Size
m		1:2,500	A3

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PROJECT
NORTH GAWBER

TITLE
HISTORICAL MAP 1892

JOB No.:	DRAWING FILE:
321370	321370-R2(00)D003A

BY:	DATE:	CONTRACT NO.		REV:
HD	17.10.13		FIGURE 3	A

Scale 1 : 2,500
0 20 40 60 80 100m



NOTE:
The site boundary shown is indicative

N

REV	DATE	DESCRIPTION	BY	CHD.	APR.
A	17.10.13	FIRST ISSUE	HD	AJ	AJ

Dimensions	Projection	Scale	Orig Size
m		1:2,500	A3

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TITLE
HISTORICAL MAP 1962

JOB No.:	DRAWING FILE:
321370	321370-R2(00)D004A

BY:	DATE:	CONTRACT NO.		REV:
HD	17.10.13		FIGURE 4	A

Scale 1 : 2,500
0 20 40 60 80 100m



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NOTE:
The site boundary shown is indicative

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Dimensions	Projection	Scale	Orig Size
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TITLE
HISTORICAL MAP 1977

JOB No.:	DRAWING FILE:
321370	321370-R2(00)D005A

BY:	DATE:	CONTRACT NO.		REV:
HD	17.10.13		FIGURE 5	A

Scale 1 : 2,500

0 20 40 60 80 100m



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NOTE:
The site boundary shown is indicative

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REV	DATE	DESCRIPTION	BY	CHD.	APR.
A	17.10.13	FIRST ISSUE	HD	AJ	AJ

Dimensions	Projection	Scale	Orig Size
m		1:10,000	A3

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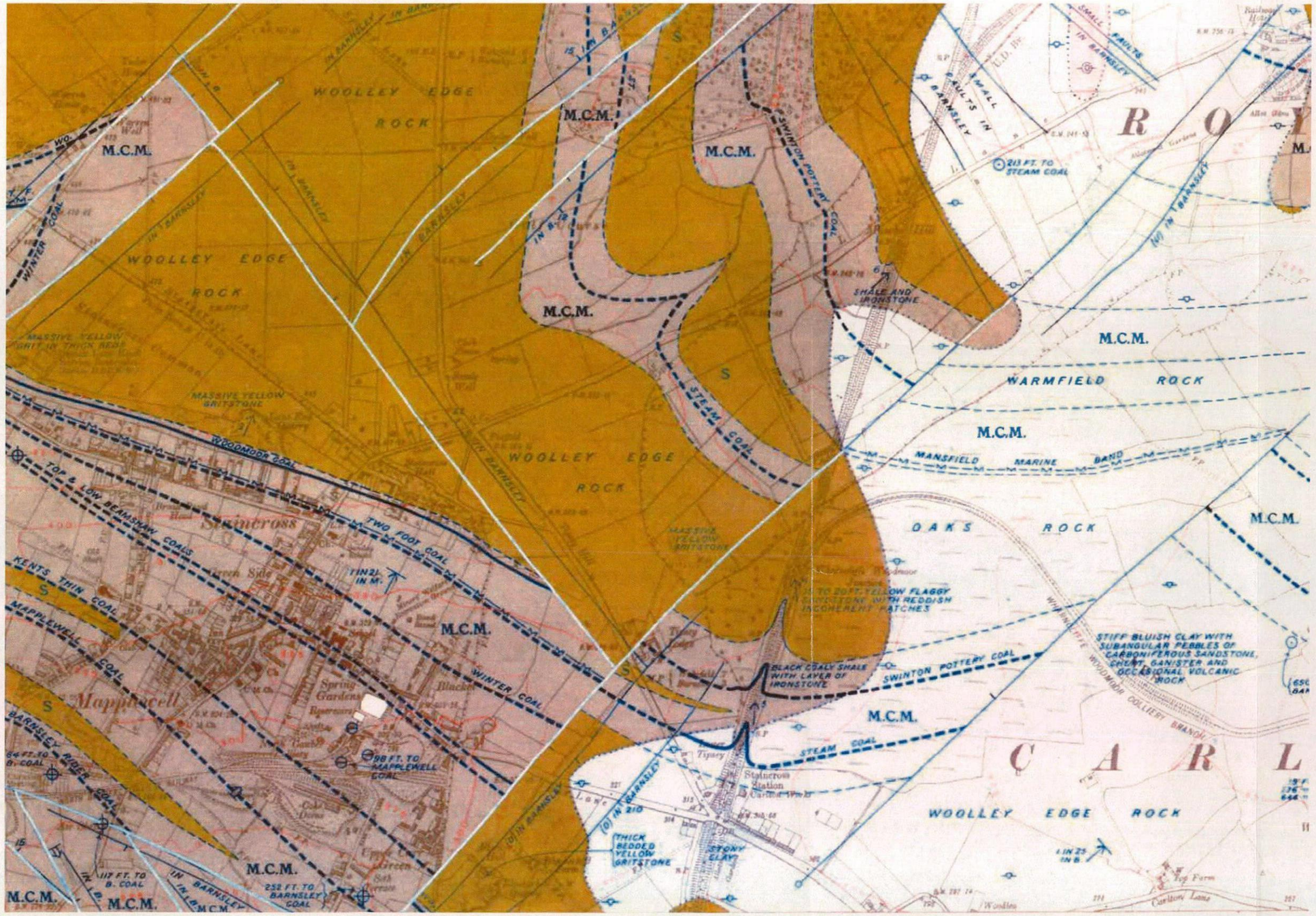
PROJECT
NORTH GAWBER

TITLE
HISTORICAL MAP 1993

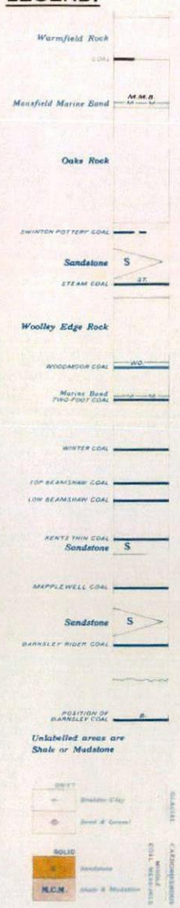
JOB No.:	DRAWING FILE:
321370	321370-R2(00)D006A

BY:	DATE:	CONTRACT NO.		REV:
HD	17.10.13		FIGURE 6	A

Scale 1 : 10,000
0 100 200 300 400 500m



LEGEND:





REV	DATE	DESCRIPTION	BY	CHD.	APR.
A	21.10.13	FIRST ISSUE	HD	AJ	AJ

Dimensions	Projection	Scale	Orig Size
m		NTS	A3

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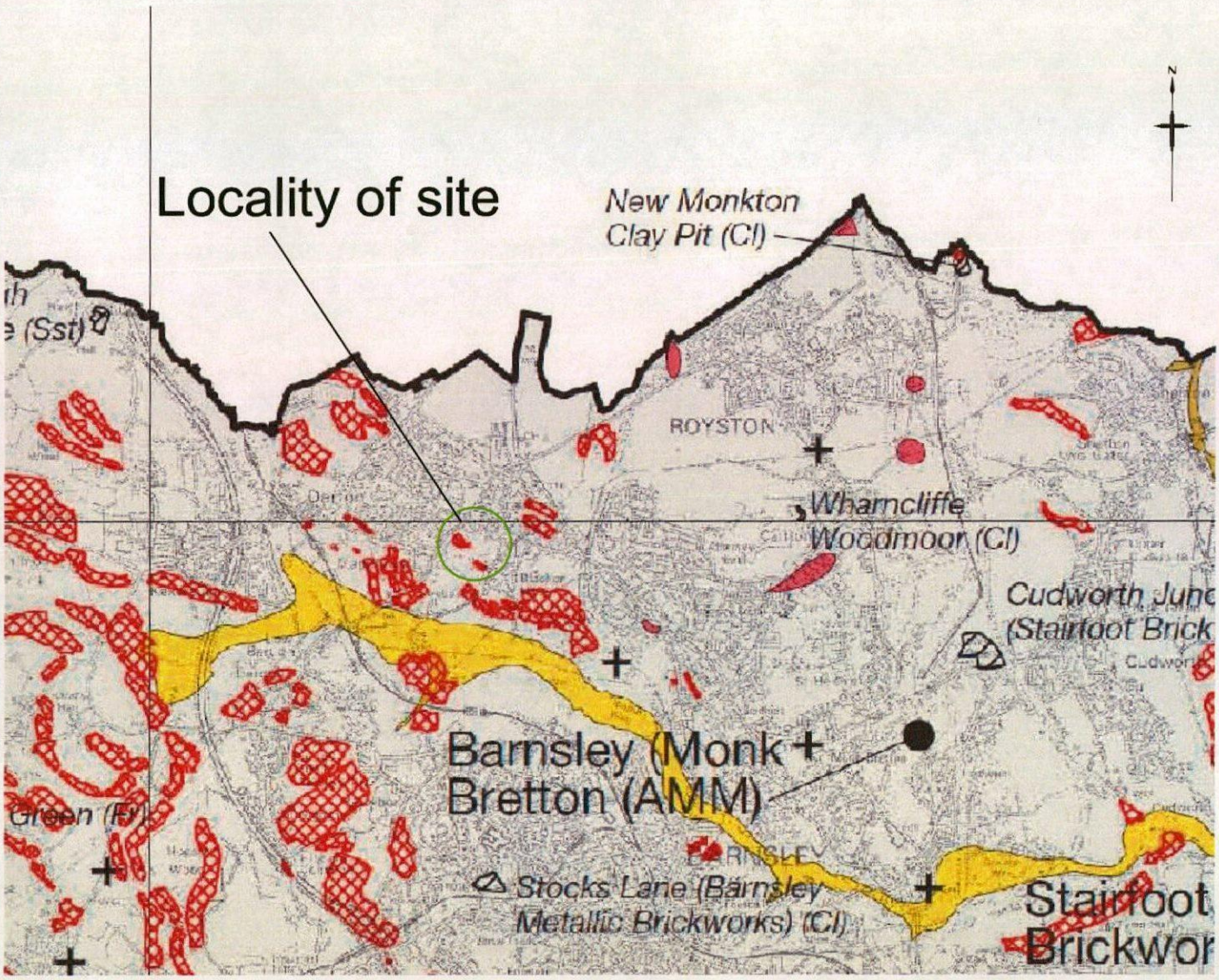
CLIENT: HARWORTH ESTATES

PROJECT: NORTH GAWBER

TITLE: BRITISH GEOLOGICAL SURVEY.
GEOLOGICAL MAP OF YORKSHIRE (WEST RIDING)
SHEET CCLXII SE

JOB No.:	DRAWING FILE:
321370	321370-R2(00)D007A

BY:	DATE:	CONTRACT NO.		REV:
HD	21.10.13		FIGURE 7	A



LEGEND:

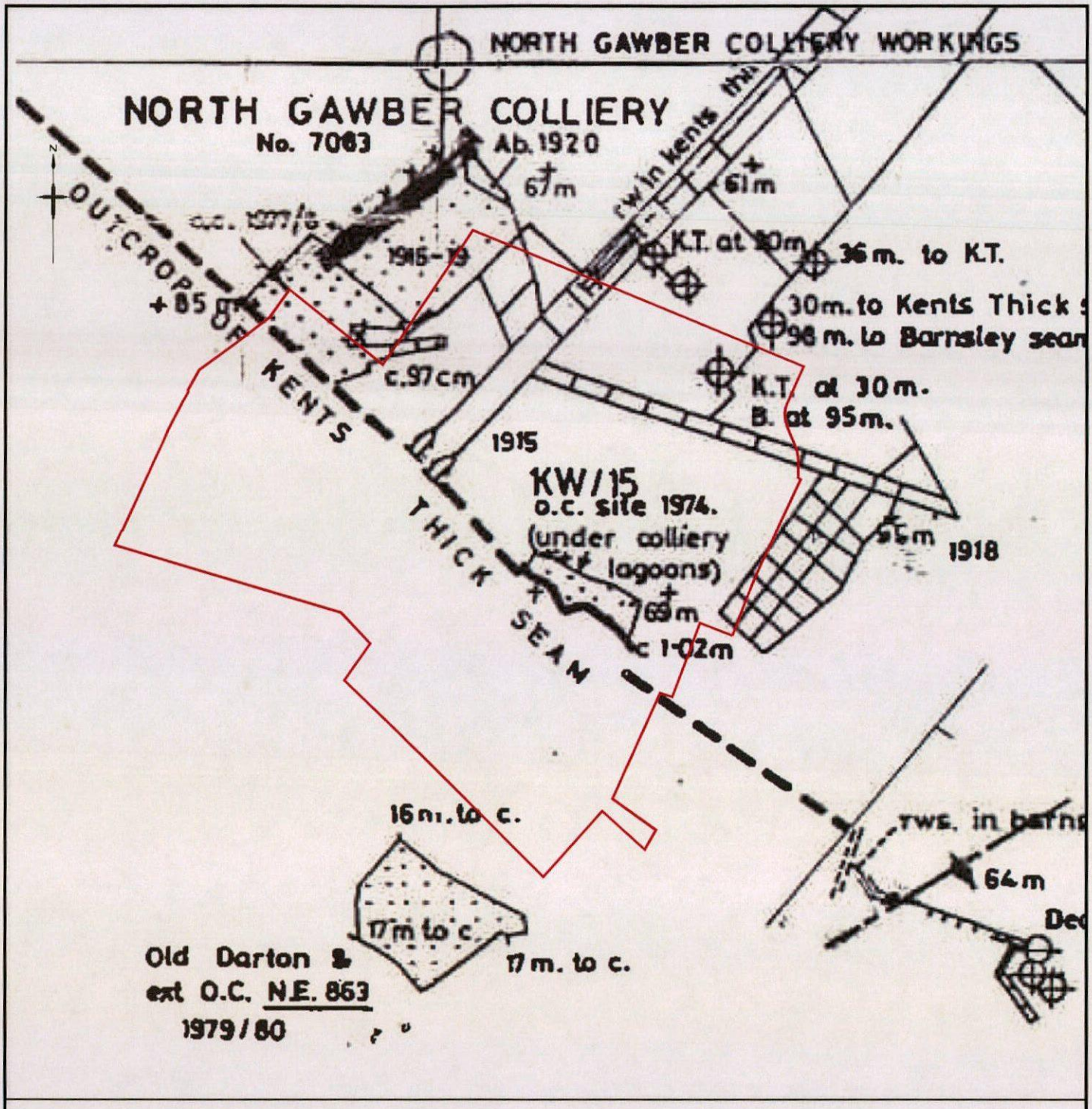
Opencast coal: worked areas

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Client	HARWORTH ESTATES
Project Title	NORTH GAWBER
Drawing Title	EXTRACT FROM MINERAL RESOURCES INFORMATION IN SUPPORT OF NATIONAL REGIONAL AND LOCAL PLANNING

Drawn	Date	Checked	Date	Approved	Date	Project No.	Drawing File
HD	21.10.13	AJ	21.10.13	AJ	21.10.13	321370	321370-R2(00)D008A

Scale	Orig Size	Dimensions	Drawing No.	Rev.
NTS	A4	—	FIGURE 8	A



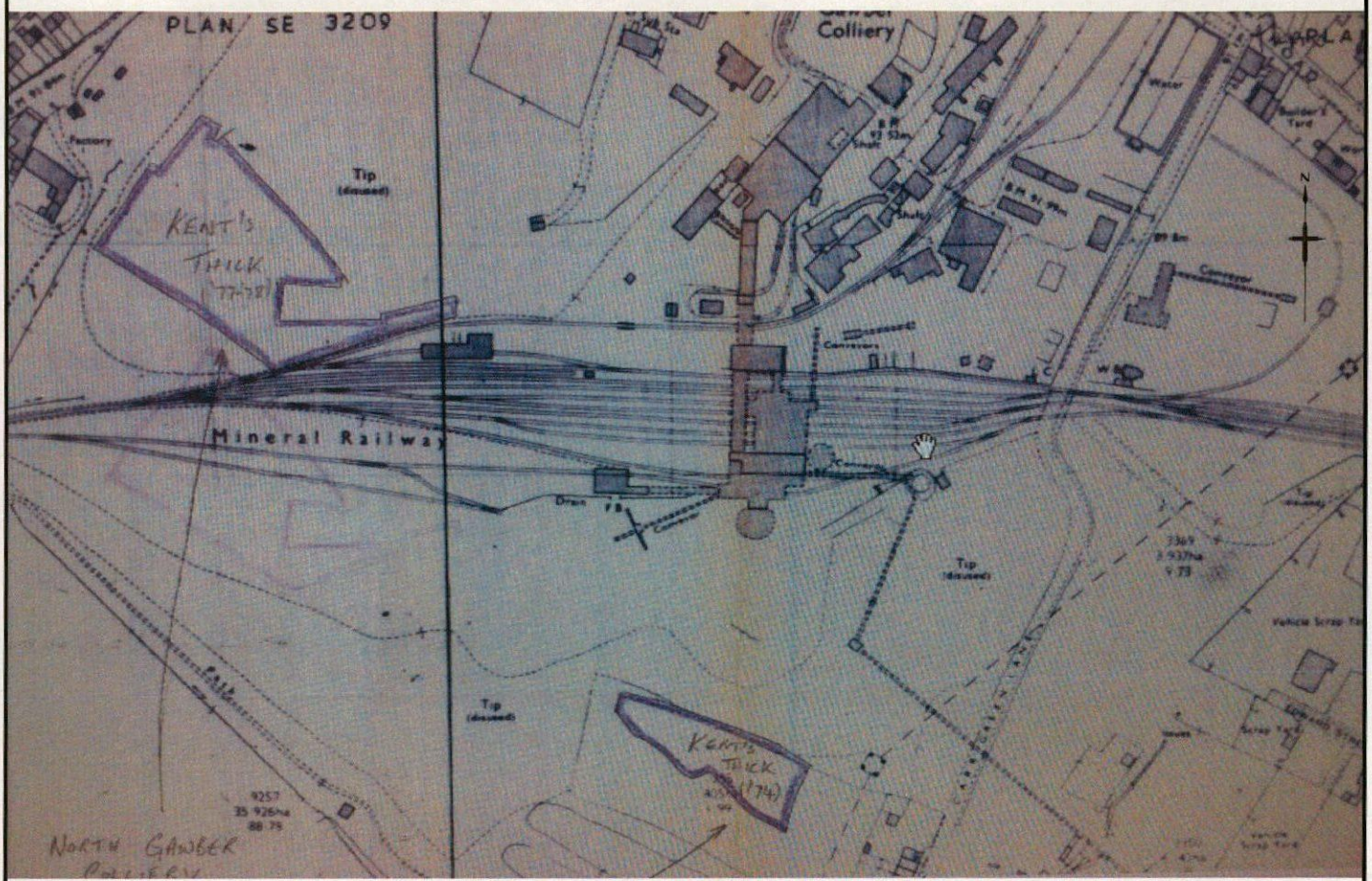
NOTE:
Red outline of site boundary is an approximation and for indicative use only.

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Client	HARWORTH ESTATES
Project Title	NORTH GAWBER
Drawing Title	GAWBER NORTH - KENTS THICK

Drawn	Date	Checked	Date	Approved	Date	Project No.	Drawing File
HD	21.10.13	AJ	21.10.13	AJ	21.10.13	321370	321370-R2(00)D009A

Scale	Orig Size	Dimensions	Drawing No.	Rev.
NTS	A4	—	FIGURE 9	A



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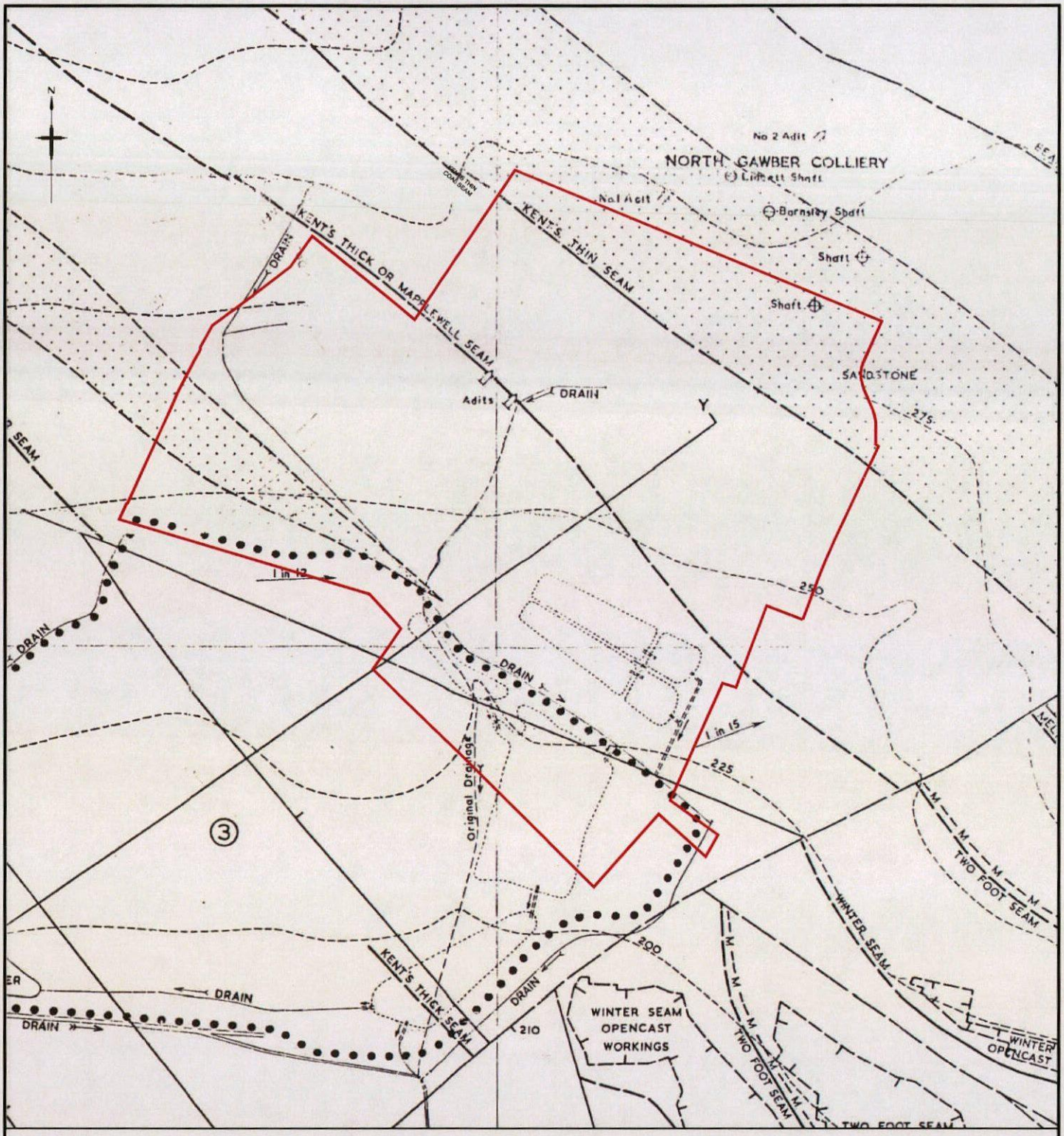
Client
HARWORTH ESTATES

Project Title
NORTH GAWBER

Drawing Title
OLD DARTON AND EXTENSION OPENCAST - KENTS THICK

Drawn	Date	Checked	Date	Approved	Date	Project No.	Drawing File
HD	21.10.13	AJ	21.10.13	AJ	21.10.13	321370	321370-R2(00)D010A

Scale	Orig Size	Dimensions	Drawing No.	Rev.
NTS	A4	—	FIGURE 10	A



NOTE:
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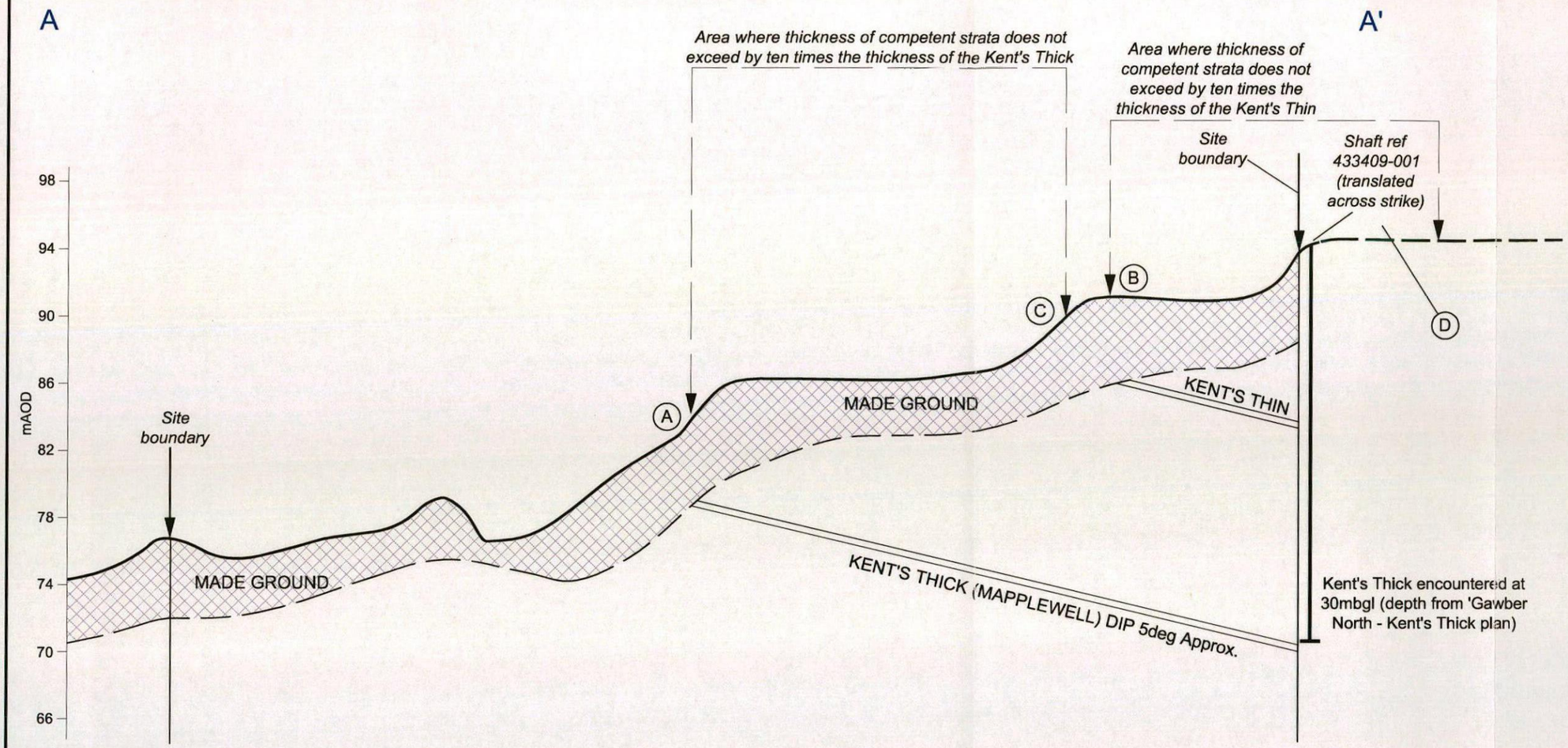
Client: HARWORTH ESTATES

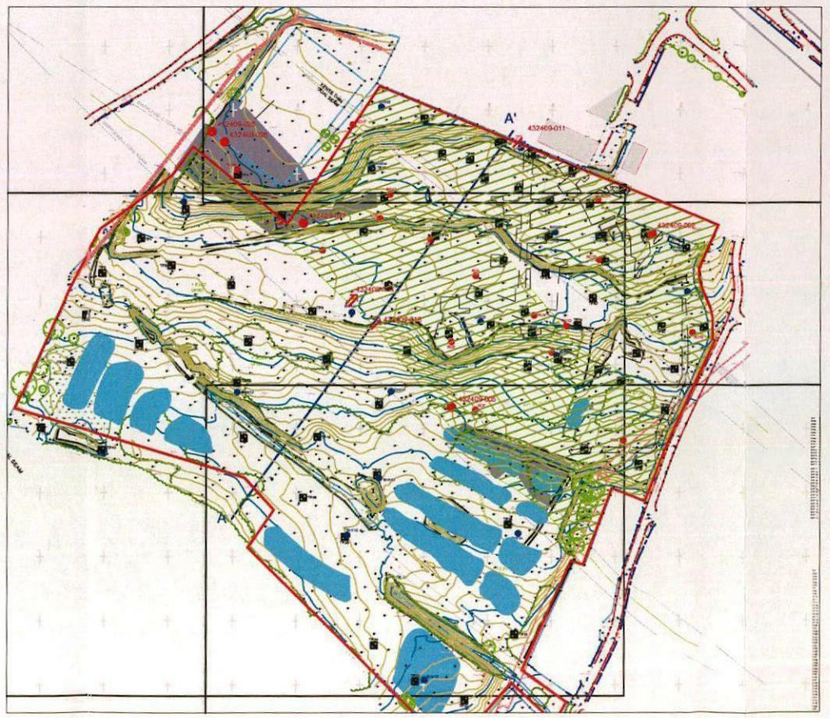
Project Title: NORTH GAWBER

Drawing Title: EXTRACT FROM NCB NORTH GAWBER COLLIERY SPOIL TIP GEOLOGICAL PLAN

Drawn	Date	Checked	Date	Approved	Date	Project No.	Drawing File
HD	21.10.13	AJ	21.10.13	AJ	21.10.13	321370	321370-R2(00)D011A

Scale	Orig Size	Dimensions	Drawing No.	Rev.
NTS	A4	—	FIGURE 11	A





LEGEND:

- (A) Best estimate of outcrop of Kent's Thin (from BGS-6" sheet and NCB topographical plan)
- (B) Best estimate of outcrop of Kent's Thin (from BGS-6" sheet and NCB topographical plan)
- (C) Position at which thickness of overburden exceeds the thickness of the Kent's Thick seam (approximately 1.0m) by ten times
- (D) Position at which the thickness of overburden exceeds the thickness of the Kent's Thin seam (approximately 0.7m) by ten times is located to the north of the site boundary

REV	DATE	DESCRIPTION	BY	CHD.	APR.
A	24.10.13	FIRST ISSUE	HD	AJ	AJ

Dimensions	Projection	Scale	Orig Size
m		AS SHOWN	A3

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PROJECT
NORTH GAWBER

TITLE
SCHEMATIC CROSS SECTION

JOB No.:	DRAWING FILE:
321370	321370-R2(00)D012A

BY:	DATE:	CONTRACT NO.		REV:
HD	24.10.13		FIGURE 12	A

APPENDIX A
RSK SERVICE CONSTRAINTS

RSK ENVIRONMENT LIMITED SERVICE CONSTRAINTS

1. This report (the "Services") was compiled and carried out by RSK Environment Limited (RSK) for Harworth Estates Limited (the "client") in accordance with the terms of a contract between RSK and the "client", The Services were performed by RSK with the skill and care ordinarily exercised by a reasonable environmental consultant at the time the Services were performed. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the client.

2. Other than that expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services.

3. Unless otherwise agreed the Services were performed by RSK exclusively for the purposes of the client. RSK is not aware of any interest of or reliance by any party other than the client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. **Any such party would be** well advised to seek independent advice from a competent environmental consultant and/or lawyer.

4. It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK 's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date hereof, RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.

5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.

6. The observations and conclusions described in this report are based solely upon the Services which were provided pursuant to the agreement between the client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, RSK did not seek to evaluate the presence on or off the site of asbestos, electromagnetic fields, lead paint, heavy metals, radon gas or other radioactive or hazardous materials.

7. The Services are based upon RSK's observations of existing physical conditions at the Site gained from a walk-over survey of the site together with RSK's interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The Services are also based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely. The Services clearly are limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the walkover survey. Further RSK was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services. RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the client and RSK.

8. The phase II or intrusive environmental site investigation aspects of the Services is a limited sampling of the site at pre-determined borehole and soil vapour locations based on the operational configuration of the site. The conclusions given in this report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and RSK] [based on an understanding of the available operational and historical information,] and it should not be inferred that other chemical species are not present.

9. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site.

APPENDIX B
NON-RESIDENTIAL MINING REPORT, FORMER NORTH GAWBER COLLIERY, MAPPLEWELL, BARNSLEY

THE COAL AUTHORITY
200 LICHFIELD LANE
MANSFIELD
NOTTINGHAMSHIRE
NG18 4RG

Our reference:	**71000481021001**
Your reference:	**8224**
Date of your enquiry:	**05 August 2013**
Date we received your enquiry:	**05 August 2013**
Date of issue:	**05 August 2013**

This report is for the property described in the address below and the attached plan.

Non-Residential Coal Authority Mining Report

FORMER NORTH GAWBER COLLIERY, MAPPLEWELL, BARNSLEY,

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

Coal mining	See comments below
Brine Compensation District	No

Information from the Coal Authority

Underground coal mining

Past

The property is in the likely zone of influence from workings in 9 seams of coal at shallow to 350m depth, and last worked in 1981.

Present

The property is not in the likely zone of influence of any present underground coal workings.

Future

The property is not in an area for which the Coal Authority is determining whether to grant a licence to remove coal using underground methods.

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

The property is not in an area that is likely to be affected at the surface from any planned future workings.

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

No notice of the risk of the land being affected by subsidence has been given under section 46 of the Coal Mining Subsidence Act 1991.

Mine entries

Within, or within 20 metres of, the boundary of the property there are 8 mine entries, the approximate positions of which are shown on the attached plan.

Our records disclose the following information:

432409-026. No treatment details.

432409-027. No treatment details.

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433409-001. was filled to the surface in 1967 and following slumping was excavated and capped at 3.8m bgl with a 6m x 6m reinforced concrete cap by the Coal Authority in March 2005.

433409-011. was filled in May 1987.

433409-005. No treatment details.

432409-025. No treatment details.

433409-016. No treatment details.

432409-028. No treatment details.

Records may be incomplete. Consequently, there may exist in the local area mine entries of which the Coal Authority has no knowledge.

For an additional fee, the Coal Authority will provide a supplementary Mine Entry Interpretive Report. The report will provide a separate assessment for the mine entry (entries) referred to in this report. It will give details based on information in the Coal Authority's possession, together with an opinion on the likelihood of mining subsidence damage arising from ground movement as a consequence of the existence of the mine entry/entries. It will also give details of the remedies available for subsidence damage where the mine entry was sunk in connection with coal mining.

Please note that it may not be possible to produce a report if the main building to the property cannot be identified from Coal Authority plans (ie. for development sites and new build).

For further advice on how to order this additional information visit www.groundstability.com or telephone 0845 7626 848.

Coal mining geology

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

Opencast coal mining

Past

The property is within the boundary of an opencast site from which coal has been removed by opencast methods.

Present

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

Future

The property is not within 800 metres of the boundary of an opencast site for which the Coal Authority is determining whether to grant a licence to remove coal by opencast methods.

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

Coal mining subsidence

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

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

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

Mine gas

There is no record of a mine gas emission requiring action by the Coal Authority within the boundary of the property.

Hazards related to coal mining

The property has been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

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Withdrawal of support

The property is in an area for which notices of entitlement to withdraw support were published in 1946, 1947, 1980.

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

Working facilities orders

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

Payments to owners of former copyhold land

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

Comments on Coal Authority information

The attached plan shows the approximate location of the disused mine entry/entries referred to in this report. For reasons of clarity, mine entry symbols may not be drawn to the same scale as the plan.

Property owners have the benefit of statutory protection (under the Coal Mining Subsidence act 1991*). This contains provision for the making good, to the reasonable satisfaction of the owner, of physical damage from disused coal mine workings including disused coal mine entries. A leaflet setting out the rights and the obligations of either the Coal Authority or other responsible persons under the 1991 Act can be obtained by telephoning 0845 762 6848 or online at www.coal.decc.gov.uk/en/coal/cms/services/claims.

If you wish to discuss the relevance of any of the information contained in this report you should seek the advice of a qualified mining engineer or surveyor. If you or your adviser wish to examine the source plans from which the information has been taken these are normally available at our Mansfield office, free of charge, by prior appointment, telephone 01623 637235. Should you or your adviser wish to carry out any physical investigations that may enter, disturb or interfere with any disused mine entry the prior permission of the owner must be sought. For coal mine entries the owner will normally be the Coal Authority.

The Coal Authority, regardless of responsibility and in conjunction with other public bodies, provide an emergency call out facility in coalfield areas to assess the public safety implications of mining features (including disused mine entries). Our emergency telephone number at all times is 01623 646333.

*Note, this Act does not apply where coal was worked or gotten by virtue of the grant of a gale in the Forest of Dean, or any other part of the Hundred of St. Briavels in the county of Gloucester.

In view of the mining circumstances a prudent developer would seek appropriate technical advice before any works are undertaken.

Therefore if development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply good engineering practice developed for mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority. Developers should be aware that the investigation of coal seams/former mines of coal may have the potential to generate and/or displace underground gases and these risks both under and adjacent to the development should be fully considered in developing any proposals. The need for effective measures to prevent gases entering into public properties either during investigation or after development also needs to be assessed and properly addressed. This is necessary due to the public safety implications of any development in these circumstances.

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A site investigation was carried out in January 2007 by Scott Doherty Associates, Derwentside Business Centre, Unit 42/43, Consett Business Park, Villa Real, Consett, County Durham, DH8 6BP on behalf of UK Coal Mining Ltd., Harworth Park Industrial Estate, Blyth Road, Harworth, Doncaster, South Yorkshire, DN11 8DB.

Information from the Cheshire Brine Subsidence Compensation Board

The property lies outside the Cheshire Brine Compensation District.

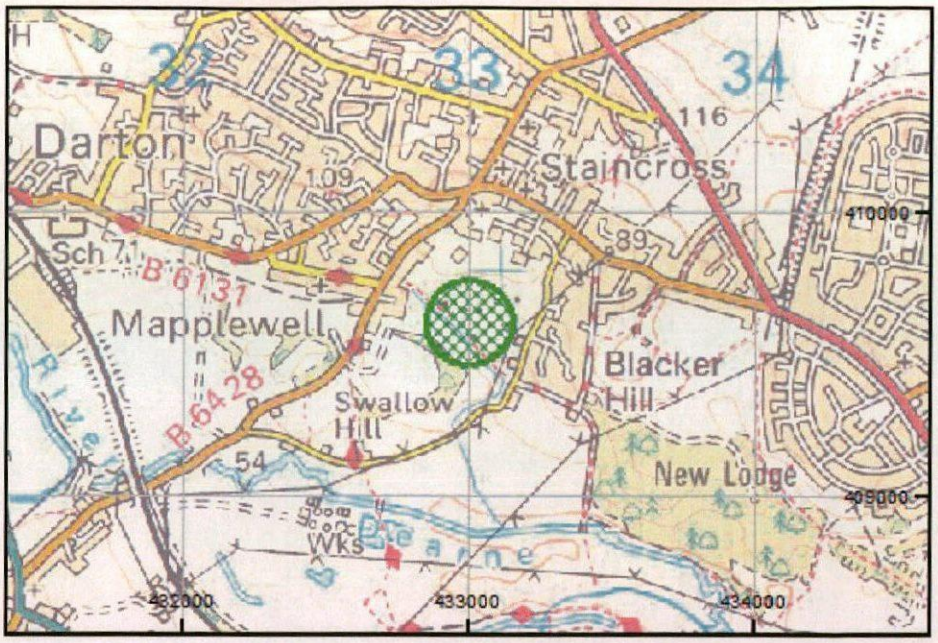
Additional Remarks

This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority and Cheshire Brine Board's Terms and Conditions 2006.

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Location map

Approximate position of property



Enquiry boundary

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Key

Approximate position of enquiry boundary shown

Disused Adit or Mineshaft

Mapping sourced from Ordnance Survey

APPENDIX C
COAL AUTHORITY SHAFT PLAN AND DATA SHEETS

The COAL AUTHORITY

Issued by:
The Coal Authority, Property Search Services, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire, NG18 4RG
Website: www.groundstability.com Phone: 0845 762 6848 DX 716176 MANSFIELD 5

RSK
12 ROYAL SCOT ROAD
PRIDE PARK
DERBY
DE24 8AJ

Our reference:	**71000491160001**
Your reference:	**321370 North Gawber**
Date of your enquiry:	**20 August 2013**
Date we received your enquiry:	**20 August 2013**
Date of issue:	**20 August 2013**

This report is for the property described in the address below and the attached plan.

Shaft Plan and Data Sheets

FORMER NORTH GAWBER COLLIERY, MAPPLEWELL, SPARK LANE, MAPPLEWELL, BARNSLEY, SOUTH YORKSHIRE,

I refer to the enquiry dated 20 August 2013, received 20 August 2013, in connection with the above.

As requested I enclose the mine entry data sheet(s) held for the mine entry/entries referred to.

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Mine Entry Data

Shaft/adit:	Shaft
Reference:	433409-005
Source:	OS:1/2500 Scale 262/15 1st ed Ab Plan:BE29
Colliery name:	Unknown
Entry name:	North Gawber Colliery Air Shaft
Date abandoned:	Unknown
Depth of superficial deposits (m):	Unknown
Depth of shaft (m):	51.0
Diameter of shaft (m):	Unknown
Probable adit azimuth:	Not Applicable
Treatment details:	Unknown
Conveyance:	Not Applicable
Easting:	433071
Northing:	409617
Other information:	None

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Mine Entry Data (continued)

Shaft/adit:	Shaft
Reference:	433409-001
Source:	OS:1/2500 Scale 262/15 1st 2nd 4th ed Ab Plan:SCC12/1 M1096 M1097 NE978 NE979 NE816 NE695 NE868 Geol:1/10560 Scale SE 30 NW NG ed Other:North Gawber-Barnsley SMP
Colliery name:	Unknown
Entry name:	North Gawber Colliery Barnsley Downcast
Date abandoned:	Unknown
Depth of superficial deposits (m):	Unknown
Depth of shaft (m):	96.0
Diameter of shaft (m):	3.0
Probable adit azimuth:	Not Applicable
Treatment details:	was filled to the surface in 1967 and following slumping was excavated and capped at 3.8m bgl with a 6m x 6m reinforced concrete cap by the Coal Authority in March 2005
Conveyance:	Not Applicable
Easting:	433228
Northing:	409752
Other information:	Yes

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Mine Entry Data (continued)

Shaft/adit:	Adit
Reference:	433409-011
Source:	Ab Plan:NE492 NE978 NE979 NE493 NE996 NE868 Geol:1/10560 Scale SE 30 NW NG ed Other:Colliery Surface Overlay
Colliery name:	Unknown
Entry name:	North Gawber Colliery No.1 Adit
Date abandoned:	Unknown
Depth of superficial deposits (m):	Unknown
Depth of shaft (m):	Unknown
Diameter of shaft (m):	Unknown
Probable adit azimuth:	41
Treatment details:	was filled in May 1987
Conveyance:	Not Applicable
Easting:	433126
Northing:	409830
Other information:	None

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Mine Entry Data (continued)

Shaft/adit:	Shaft
Reference:	432409-027
Source:	Former British Coal Records (North Gawber 1/2500 Opencast Site Plan)
Colliery name:	Unknown
Entry name:	Unknown
Date abandoned:	Unknown
Depth of superficial deposits (m):	Unknown
Depth of shaft (m):	Unknown
Diameter of shaft (m):	Unknown
Probable adit azimuth:	Not Applicable
Treatment details:	Unknown
Conveyance:	Not Applicable
Easting:	432955
Northing:	409761
Other information:	None

Mine Entry Data (continued)

Shaft/adit:	Adit
Reference:	432409-028
Source:	NG SE30NW Ed. 6 inch Geological. Ab Plan NE1037
Colliery name:	Unknown
Entry name:	North Yorkshire Adit
Date abandoned:	Unknown
Depth of superficial deposits (m):	Unknown
Depth of shaft (m):	Unknown
Diameter of shaft (m):	Unknown
Probable adit azimuth:	45
Treatment details:	Unknown
Conveyance:	Not Applicable
Easting:	432997
Northing:	409705
Other information:	None

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Mine Entry Data (continued)

Shaft/adit:	Shaft
Reference:	432409-025
Source:	Former British Coal Records (North Gawber 1/2500 Opencast Site Plan)
Colliery name:	Unknown
Entry name:	Unknown
Date abandoned:	Unknown
Depth of superficial deposits (m):	Unknown
Depth of shaft (m):	Unknown
Diameter of shaft (m):	Unknown
Probable adit azimuth:	Not Applicable
Treatment details:	Unknown
Conveyance:	Not Applicable
Easting:	432883
Northing:	409833
Other information:	None

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Mine Entry Data (continued)

Shaft/adit:	Shaft
Reference:	432409-026
Source:	Former British Coal Records (North Gawber 1/2500 Opencast Site Plan)
Colliery name:	Unknown
Entry name:	Unknown
Date abandoned:	Unknown
Depth of superficial deposits (m):	Unknown
Depth of shaft (m):	Unknown
Diameter of shaft (m):	Unknown
Probable adit azimuth:	Not Applicable
Treatment details:	Unknown
Conveyance:	Not Applicable
Easting:	432895
Northing:	409825
Other information:	None

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Mine Entry Data (continued)

Shaft/adit:	Adit
Reference:	433409-016
Source:	Ab Plan:NE1037 Geol:1/10560 Scale SE 30 NW NG ed Other:North Gawber 1/2500 Opencast Site Plan Kents Thick
Colliery name:	Unknown
Entry name:	Old Adit
Date abandoned:	Unknown
Depth of superficial deposits (m):	Unknown
Depth of shaft (m):	Unknown
Diameter of shaft (m):	Unknown
Probable adit azimuth:	42
Treatment details:	Unknown
Conveyance:	Not Applicable
Easting:	433015
Northing:	409687
Other information:	None

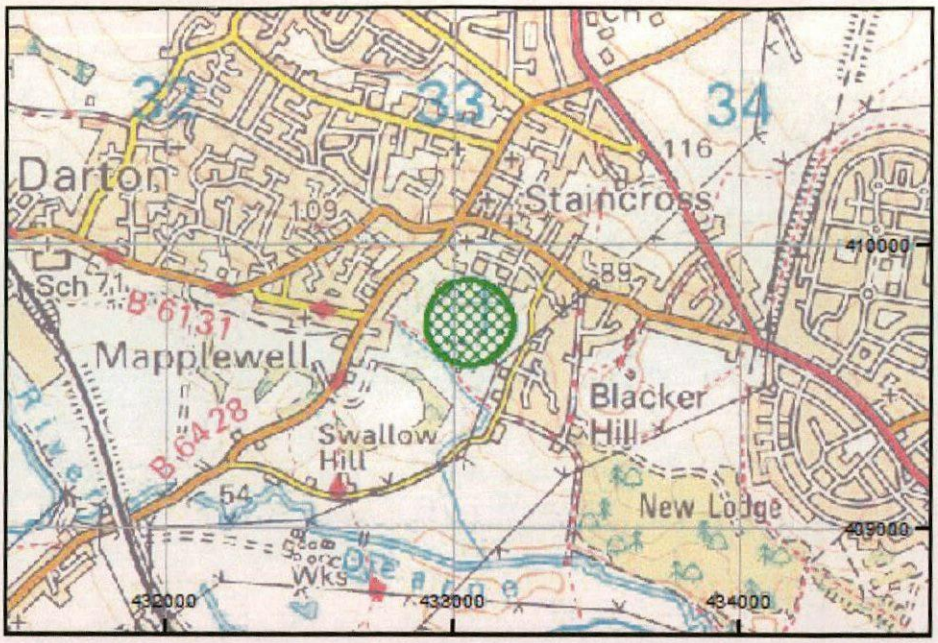
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Issued by:	The Coal Authority, 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG
Tax Point Date:	20 August 2013
Issued to:	RSK 12 ROYAL SCOT ROAD PRIDE PARK DERBY DE24 8AJ
Property Search for:	FORMER NORTH GAWBER COLLIERY, MAPPLEWELL, SPARK LANE, MAPPLEWELL, BARNSLEY, SOUTH YORKSHIRE,
Reference Number:	71000491160001
Date of Issue:	20 August 2013
Cost:	£105.00
VAT @ 20%:	£21.00
Total Received:	£126.00
VAT Registration	598 5850 68

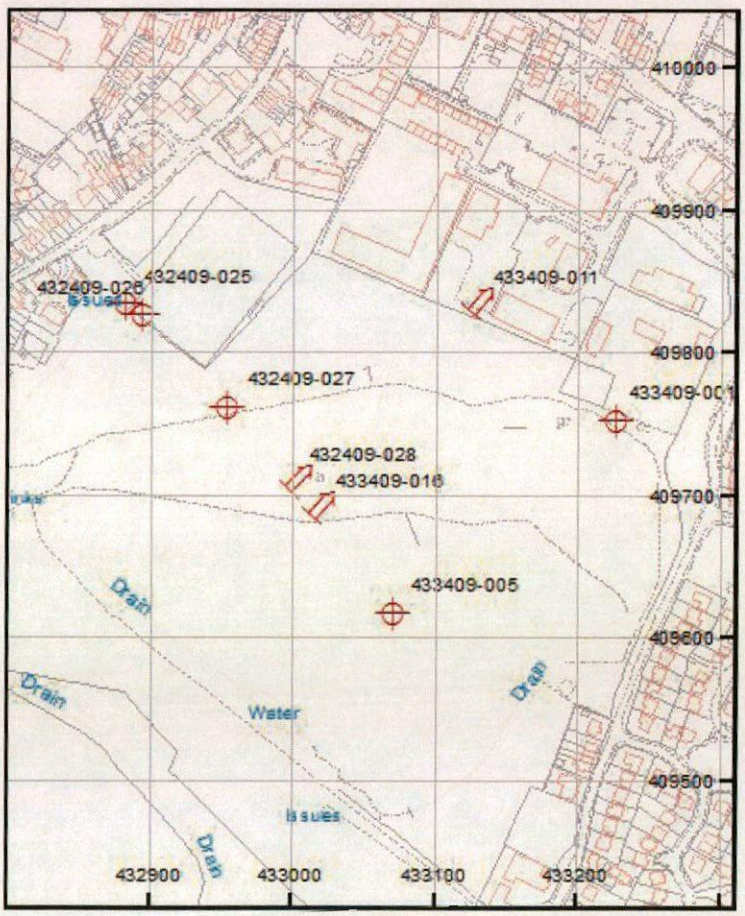
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Location map

Approximate position of enquiry



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This plan shows the approximate location of the disused mine entry / entries referred to in the attached mining report. For reasons of clarity, mine entry symbols may not be drawn to the same scale as the plan.

Property owners have the benefit of statutory protection (under the Coal Mining Subsidence Act 1991). This contains provision for the making good, to the reasonable satisfaction of the owner, of physical damage from disused coal mine workings including disused coal mine entries. A DTI leaflet setting out the rights and obligations of either the Coal Authority or other responsible persons under the 1991 Act can be obtained by telephoning 0845 762 6848.

If you wish to discuss the relevance of any of the information contained in the attached report you should seek the advice of a qualified mining engineer or surveyor. If you or your advisor wish to examine the source plans from which the information has been taken these are available at our Mansfield office, free of charge by prior appointment, telephone 01623 637235. Should you or your advisor wish to carry out any physical investigations that may enter, disturb or interfere with any disused mine entry the prior permission of the owner must be sought. For coal mine entries the owner will normally be the Coal Authority.

The Coal Authority, regardless of responsibility and in conjunction with other public bodies, provide an emergency call out facility in coalfield areas to assess the public safety implications of mining features (including disused mine entries).

Our emergency telephone number at all times is 01623 646333.

Key

Disused Adit or Mineshaft

Mapping sourced from Ordnance Survey

APPENDIX D
BRITISH GEOLOGICAL SURVEY BOREHOLE LOGS

4 SE 30 NW/9 87 87/

British Geological Survey

NORTH GAWBER COLLIERY New Lidgett Shaft

1-in. Geological map: 43

6-in. map: Yorks. 262 N.E.

C

Site: Lat. 53° 35' 2" Long. 1° 29' 57"

Height above O.D. 305.67 ft. Date: 1926

Dip of Strata 1 in 12 N.E.

	Description of Strata	Thickness	Depth
	Soil	0 30 1 0	1 0
	Sandstone rag	1 83 6 0	7 0
	Sandstone rock	3 89 12 9	19 9
KENT'S THIN	COAL	0 76 2 6	22 3
	Fireclay	0 61 2 0	24 3
	Sandstone rock	3 02 9 11	34 2
	Blue bind	2 92 9 7	43 9
	Sandstone	2 31 7 7	51 4
	Blue bind	4 98 16 4	67 8
	Grey stone	0 38 1 3	68 11
	Blue bind	0 46 1 6	70 5
	Sandstone rock	2 31 7 7	78 0
	Blue bind	0 76 2 6	80 6
	Sandstone rock	0 46 1 6	82 0
	Blue bind with ironstone bands	2 69 8 10	90 10
	COAL	0 33 1 3	91 7
KENT'S THICK	Clunch	1 09 3 7	95 2
	COAL	3 7	98 9
	Clunch	0 84 2 9	101 6
	Blue bind	6 32 20 10	122 4
	Ironstone	0 08 3	122 7
	COAL	0 05 2	122 9
	Bind	0 61 2 0	124 9
	Blue bind	4 37 14 4	139 1
	Cank	0 69 2 3	141 4
	Stone bind	4 44 14 7	155 11
	Fireclay	1 83 6 0	161 11
	Stone bind	2 46 8 1	170 0
	Blue bind	2 36 7 9	177 9
	Stone bind	3 07 10 1	187 10
	Blue bind	1 60 5 3	193 1
	Ironstone bind	0 46 1 6	194 7
	Blue bind	8 53 29 0	222 7
BARNSLEY	COAL	0 46 1 6	224 1
RIDER			
	Clunch	6 40 21 0	245 1
	Blue bind	5 21 17 1	262 2
	Stone bind	15 7	277 9
	Blue bind with ironstone nodules	21 4	299 1
	COAL 3 - 2		
BARNSLEY	Dirt 6	9 6	308 7
	COAL 5 -10		
	Clunch	1 11	310 6
	Blue bind with ironstone nodules	21 9	332 3
	Black bat with coal streaks	6	332 9
	Blue bind	8 10	341 7
	COAL 10		
	Clunch 6	1 8	343 3
	COAL 4		
	Clunch	4 11	348 2
	COAL with dirt partings	1 6	349 8
	Blue bind	4 11	354 7

SE 30 NW 9 AM

87/43

WL 17852—8154—5,000 12/26 Gp. 166. O.A.

SEOTION OF North Gawber Colliery, ~~at Mapplewell~~ Blacker, near Staincross.
1000 yds. W 2 N of Staincross Station.

Maps: One-inch 87 Six-inch 262SE County Yorkshire

Height above O.D. c. 295 ft. 87·92 Latitude _____ Longitude approximate site [3318048]

Communicated by Sec. Strata Yks. Clfld. 1927 p. 147. Date of Sinking 1850

Made by _____ Dip of Strata 1 in 12.

Summary:

		Thickness.			Depth from Surface.		
	Drift.	3·20	10	6	3·20	10	6
Coal Measures — Westphalian B — Middle Coal Measures	Intervening measures are usual shales & hard stones.						
	Kent's Thin Coal	0·61	2	-	8·28	27	2
	Mapplewell Coal	0·99	3	3	29·82	97	10
	Barnsley Coal	3·00	9	10	93·45	306	7

42. 14.6.33