

Jones Homes (Yorkshire) Limited

Land off Bloomhouse Lane, Darton

Geo-environmental site assessment and coal mining risk assessment report

301645-01 (00)

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RSK GENERAL NOTES

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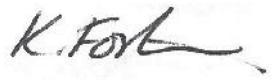
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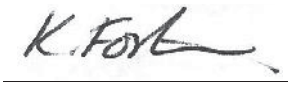
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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

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

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EXECUTIVE SUMMARY

Site description and proposed development	The site is located to the south of Bloomhouse Lane, Darton, South Yorkshire. The site covers an area of approximately 11.9 hectares and is currently occupied by vacant fields. The intention is to redevelop the site for residential end-use.
Purpose of assessment	In accordance with the tender documentation, this assessment was undertaken to support an outline planning application.
PRELIMINARY RISK ASSESSMENT	
History of site and surrounding area	The site has remained largely undeveloped historically, except for a building associated with Manor House in the south western area of site, a school in the south eastern part of site and a tramway in the eastern part of site. An area of raised ground remains in the central northern part of site, the origin of which is unknown, however may be associated with coal mining or quarrying activities in the vicinity of site.
Geology, hydrogeology and hydrology	The site is underlain by the Pennine Middle Coal Measures Formation, a secondary A aquifer. The site does not lie within a source protection zone and no potable water abstractions are situated within 1km of site. The Barnsley Rider Coal and Barnsley Coal are indicated to outcrop within the site boundary. Additionally, an unnamed seam and the Top Haigh Moor Coal Seam outcrop to the southwest of the site. There are five recorded mine entries on-site. The nearest identified surface water feature to the site is the River Dearne, approximately 177m west of site. The site does not lie within a designated fluvial floodplain.
Potentially contaminative uses on site and in surrounding area	The historical research indicates that potentially contaminative activities have occurred on the site, including a tramway in the eastern part of site and areas of made ground associated with the demolition of former buildings (near Manor House and the former school), as well as an area of raised ground in the central northern part of site. Potentially contaminative current activities have been identified in the area surrounding the site, including various industrial land uses (factory, works/ laboratory), an infilled former quarry adjacent to the south west and a railway, 100m south west.
Conceptual model	Potentially complete pollutant linkages identified with a risk estimate of moderate or above include: 1) Direct contact of contaminated soils to future site users 2) Inhalation exposure of future site users to asbestos fibres 3) Plant uptake of contaminants within the soils, which may affect

	plant growth 4) Chemical attack on infrastructure including concrete and potable water supply pipes from contaminated soils 5) Inhalation and explosion of hazardous ground gases from build up within buildings
SITE ASSESSMENT	
Site investigation and refinement of conceptual site model	An intrusive investigation consisting of 32 trial pits, 19 trial trenches, 6 rotary boreholes and 8 probeholes with laboratory analysis and two initial rounds of gas monitoring have been undertaken. The ground conditions encountered generally confirmed the stratigraphical succession described within the initial conceptual model. Made ground was encountered to an average depth of 0.15m to 0.60m, with some localised deeper areas (up to at least 4.6m). Pennine Middle Coal Measures strata were encountered beneath the topsoil or made ground, comprising clay grading into mudstone and sandstone. Coal seams were encountered at depths of between 0.65m and 26.80m. The mine probing investigation encountered evidence of shallow workings (broken ground or possible voids) at depths ranging between 2.0m and 6.4m. The trial trenching exercise identified one of the aforementioned recorded mine adits. No significant visual or olfactory evidence of anthropogenic contamination was noted during the investigation. A selection of soil samples were analysed for a general suite of contaminants. Shallow groundwater was encountered as seepages in the trial pits at various depths and differing strata, indicating the presence of localised perched water. During groundwater monitoring, standing water level was recorded between 0.88m and 8.5m bgl. Concentrations of ground gas were found to be low in the first two rounds of monitoring. However, it is considered that the monitoring carried out to date is insufficient to characterise adequately the ground gas regime.
CONCLUSIONS AND RECOMMENDATIONS	
Environmental assessment	On completion of the GQRA the following pollutant linkages that require further action are: 1. Direct contact of contaminated soils to future site users associated with localised contamination in made ground 2. Inhalation exposure of future site users to asbestos fibres 3. Plant uptake of contaminants within the soils, which may affect plant growth in certain areas of the site

	4. Permeation of contaminants to water supply pipes in certain areas of the site 5. Inhalation and explosion of hazardous ground gases from build up within buildings Localised soil contamination was encountered associated with localised made ground. Additional sampling and analysis is recommended to further investigate linkages 1 and 3. It is recommended that a clean cover with a minimum thickness of 600mm be placed within garden areas of affected plots. Suspected ACM were encountered on site, however asbestos fibres were not detected in soil samples. It is recommended that a watching brief is undertaken during ground works and that ACM is removed from site by a suitably licensed and qualified company. The proposed routes of the potable water supply pipes are currently unknown. A targeted soil sampling and testing investigation should be completed in the route of the proposed pipes once they are known to fully assess the risk of chemical attack on the supply pipes from contaminated soils. Assessment of the ground gas regime is ongoing with a further four rounds to be completed. Currently the site is considered 'Green', however final determination of the requirement for gas protection measures should be reserved until the monitoring programme is completed.
Geotechnical assessment	The firm to stiff natural soils (weathered Coal Measures) are considered suitable to support shallow spread foundations. Trench fill foundations are considered suitable in areas of deeper made ground (less than 2.5m deep) and alternative foundation options will be required in areas where made ground is deeper than 2.5m. For areas affected by shallow underground coal workings, spread foundations will be required to be reinforced. The preliminary recommended sub-grade soil CBR value for road pavement design is 3% based on the ground conditions encountered. It is recommended that in-situ CBR determination be carried out targeting areas of hardstanding prior to construction works to confirm this value. The Aggressive Chemical Environment for Concrete classification is indicated to be AC-1, with a Design Sulphate Class of DS-1 in accordance with current BRE guidance.

Mining	The mine probing investigation encountered evidence of shallow working (broken ground or possible voids) at six locations across the site. It is recommended that the thickness of competent rock overlying a coal / worked seam required to ensure ground stability at the surface is ten times that of the underlying coal / worked seam. On this basis there are substantial areas of the site that do not have the required 'ten times' seam thickness, and these areas will require stabilisation prior to development. In addition, four mining adits have been identified from the Coal Authority records to be present close to the crop of the Barnsley Coal. Evidence of an adit was encountered at one location during the trial trenching exercise. The position of each of the adits should be identified and each of them stabilised to mitigate potential risk to the proposed development.
The information given in this summary is necessarily incomplete and is provided for initial briefing purposes only. The summary must not be used as a substitute for the full text of the report.	

1 INTRODUCTION

RSK Environment Limited (RSK) was commissioned by Jones Homes (Yorkshire) Limited to carry out a geo-environmental assessment of the land off Bloomhouse Lane, Darton, South Yorkshire. It is understood that the site is being considered for redevelopment with a residential end use as a housing development comprising approximately 300 residential units with associated gardens and infrastructure.

This report is subject to the RSK service constraints given in Appendix A.

1.1 Objective

The objective of the work is to assess the potential geo-environmental liabilities associated with the site.

1.2 Scope

The scope of the investigation and layout of this report has been designed with consideration of CLR11 (Environment Agency, 2004a) and BS 10175: 2011 (BSI, 2011) and guidance on land contamination reports issued by the Environment Agency (EA) (2010a).

The project was carried out to an agreed brief as set out in RSK's proposal (ref.T301645/L01/JH, dated 24 June 2015). The scope of works for the assessment included:

- a preliminary risk assessment (PRA) to include a review of existing reports, geological, hydrogeological and hydrological information, a commercially available environmental database, and historical plans; correspondence with regulatory authorities; and a site walkover – this information is used to develop an initial conceptual site model to consider any potentially complete pollutant linkages
- a coal mining risk assessment including detailed review of coal mining reports, mine entry and abandonment plans
- a review of published geological data to assess ground stability
- an intrusive investigation consisting of fourteen boreholes and twenty four trial pits with laboratory analysis plus subsequent groundwater and gas monitoring
- development of a refined conceptual site model followed by generic quantitative risk assessment (GQRA) to assess complete pollutant linkages that may require the implementation of mitigation measures to facilitate redevelopment
- identification of outline mitigation measures for complete pollutant linkages or recommendations for further work

- interpretation of ground conditions and geotechnical data to provide recommendations with respect to foundations and infrastructure design
- a factual and interpretative report with recommendations for further works (i.e. undertake a remedial options appraisal to identify appropriate mitigation measures/produce a remedial implementation and verification plan) and/or remediation as necessary
- an assessment of the potential waste classification implications of soil arisings.

1.3 Existing reports

RSK are unaware of any existing reports pertaining to the site.

1.4 Limitations

The comments given in this report and the opinions expressed are based on the ground conditions encountered during the site work and on the results of tests made in the field and in the laboratory. However, there may be conditions pertaining to the site that have not been disclosed by the investigation and therefore could not be taken into account. In particular, it should be noted that there may be areas of made ground not detected due to the limited nature of the investigation or the thickness and quality of made ground across the site may be variable. In addition, groundwater levels and ground gas concentrations and flows may vary from those reported due to seasonal, or other, effects.

During the site works one piece of possible asbestos containing material (ACM) was noted. This was a piece of possible cement tile associated with some localised fly tipping, which was left in-situ. A number of soil samples were tested for the presence of asbestos and whilst no asbestos was noted, the history of the site indicates asbestos may well be present. Asbestos is often present in discrete areas. Thus, although not proven to have been encountered during the site investigation, may be found during more extensive ground works.

2 THE SITE

2.1 Site location and description

The site is located to the south of Bloomhouse Lane, Darton, South Yorkshire. It is approximately 5km north west of Barnsley town centre at National Grid reference SE 316 103, as shown on Figure 1.

The area around the site is a mixture of residential and rural as detailed in Table 1.

Table 1: Site setting

To the north:	Open fields
To the east:	Residential development
To the south:	Residential development, allotments
To the west:	Open fields, a farmhouse, sports field and commercial property

The site covers approximately 11.9 hectares at an elevation of approximately 100m above Ordnance Datum (AOD) in the north east of the site, falling to approximately 70m AOD in the south west and comprises the following main attributes (some of which are shown on Figure 2). Further detailed description of the site is discussed in Section 3.1 below:

- The rectangular shaped site generally occupied by open fields, with areas of dense rough vegetation, is used for public recreation including dog walking as there is unrestricted access points around the perimeter of the site
- Manor House Farm is located in the western part of the site

2.2 Proposed development

The site is being considered for redevelopment with a housing development comprising approximately 300 dwellings. The planned layout of the site is shown on Figure 3, which has been reproduced from a plan produced by Spawfords, entitled 'Indicative Masterplan', ref 3967-0100-0002, dated February 2015.

3 PRELIMINARY RISK ASSESSMENT (PRA)

3.1 Site walkover

The site was visited on 26 January 2016 to undertake a site walkover. Photographs and the site walkover checklist are provided in Appendix C. No potentially significant ground contamination or geotechnical issues were identified during the site reconnaissance survey as the site is unoccupied.

As the site comprises a large area, it is practical to split the site into separate areas for description. The five areas are shown on Figure 2 and are each discussed in detail below.

3.1.1 Area 1: Western Area

Bloomhouse Lane bounds the Western Area to the west and south and Woolley Colliery Road to the north and east, access is from Bloomhouse Lane in the north. The area comprises two fields currently covered by grass segregated by a row of bushes and small trees running north to south as shown in photograph no. 1. There is evidence that the ground is locally waterlogged and may have been compressed by vehicle movement, as shown on photograph no.2.

3.1.2 Area 2: Central Area

The central area of the site is enclosed on all sides by wooden fencing, grass covered and is used for grazing for horses. There are a number of mature trees around the perimeter of the area. It is segregated east to west by a fence that splits the Central Area into a northern and southern area. The field to the central north area appears to be raised to a significantly higher level than the remainder of the site by approximately 2m to 3m, as shown on photograph no.3. There is a small horse stable shelter in the north of this field and is accessed through locked gates off Bloomhouse Lane.

The southernmost field in this area is accessed from Manor House Farm. There is a small area in the southern part of this field where there appears to have been a fire (possibly a bonfire) and some localised tipping of household and general waste including wheels, bathtub, brick, cabinets and metal sheeting, as shown in photograph no.4.

Japanese knotweed is a non-native, highly invasive species and spreads via rhizomes (underground ‘stems’) rather than seeds in the UK. It is found in a range of habitats across the UK including roadsides, riverbanks and derelict land. Japanese knotweed was unable to be identified during the site visit. However, we were advised that Japanese knotweed is located at discrete locations indicated as the northern most field in Area 2. Japanese knotweed is difficult to identify outside the growing season (March

to September/October). As the site visit was conducted in January, it was not possible to identify the knotweed accurately and, as such, we recommend that the site be resurveyed during the growing season. There are several methods by which Japanese knotweed can be treated/eradicated, all of which are detailed in the EA's (2006b) 'The Knotweed Code of Practice'. A competent knotweed contractor should be employed to manage and perform the works in line with this guidance.

3.1.3 Area 3: Eastern Area

This area is covered by rough, uncultivated vegetation including long grasses, bushes and small trees. The site slopes from the north, which is at an elevation of approximately 100m AOD, towards the south, which is at an elevation of approximately 82m AOD. There are a number of tracks around this area of the site, which is understood to be used for dog walking and general access across the site, as shown in photograph no.5. Access is possible from Bloomhouse Lane in the north and from Appleby Close, Cranborne Close and Howden Close in the east, as shown on photograph no. 6. There is also a path between the allotment gardens between the site and Bridge Street to the south of the site.

There was some potential asbestos containing material (ACM) cement noted on the surface of the site, located to the west of the Eastern Area, close to the boundary with fence of the Central Area, it is shown on Figure 2. The ACM is assumed to be associated with localised fly tipping.

3.1.4 Area 4: Manor House Farm Area

This area can be accessed from Bloomhouse Lane in the south or from Bloomhouse Lane in the north (pedestrian track only). Bloomhouse Lane is shown on mapping as one continuous road, however a fence has been erected next to Manor House Farm to prevent through access. Area 4 comprises a small grassed field in the south, used for animal grazing, as shown in photograph no.8, an area of hardstanding in the north associated with a former development, as shown on photograph no.7 and a woodland area with a pedestrian track running north to south to the north of Manor House Farm.

There are some stockpiles of made ground assumed to be associated with this demolition of the former buildings, as shown in photograph no.9. Bloomhouse Lane which leads from the south up to Manor House Farm is at a lower level than the area of hardstanding, there is a small retaining wall, as shown in photograph no. 10.

3.1.5 Area 5: Former School Area

This area is in the south eastern most area of the site and is accessed from Station Road in the south. This area was formerly Darton primary School and comprises areas of hardstanding, as shown on photograph no.11 and soft overgrown areas, as shown on photograph no. 12. The site is enclosed by a stone wall and has a locked metal double gate.

3.2 Ground conditions

3.2.1 Geology

Published records (British Geological Survey) for the area indicated the geology of the site to be the Pennine Middle Coal Measures, there is an absence of superficial deposits.

Due to the presence of the Coal Measures, the six inch to one mile scale maps were consulted which shows the Barnsley Coal seam to outcrop in the north east of the site, trending north west to south east.

A fault is shown to run north east to south west between the Eastern and Central Areas of the site, close to the line of Bloomhouse Lane, the downthrow is to the north west. There is a second fault shown to trend north to south in the Western Area of the site, the downthrow is to the east.

A number of trial pits logs are available from the British Geological Survey website associated with the development of Appleby Close to the east of the site. The logs extend to around 3m and show firm clay, clayey shale and coal. One trial pit log shows around 3m of fill material including metal, glass, timber and cloth.

Two rotary borehole logs are also available from the BGS, the location is to the south of the site on Station Road. The logs, one to 10m and one to 20m show a descending sequence of sandstone and mudstone from below the made ground at 0.20m and 0.30m. A selection of the BGS logs are provided in Appendix D.

The existing topography and history of development of the site suggests that, in addition to these natural strata, made ground should be expected beneath the site in discrete locations, this is associated with the former building near Manor House Farm and the Former Darton Primary School in the south east, although made ground is not expected to be present site-wide.

3.2.2 Radon

The environmental database report (Envirocheck report, 4 January 2016) indicates that there are two characterisations of radon affected areas for the site.

The report indicates that the ‘north’ of the site is located within an intermediate probability radon area, as between 1 and 3% of homes are above the action level as defined by the British Geological Survey, National Geoscience Information Service. Therefore, the risk of significant ingress of radon into structures on-site is considered to be low and no radon protective measures are required within new dwellings at the site.

The report also indicates that the ‘south west’ of the site is located within an intermediate probability radon area, as between 3 and 5% of homes are above the action level as defined by the British Geological Survey, National Geoscience Information Service.

Therefore, the risk of significant ingress of radon into structures on-site is considered to be medium and basic radon protective measures are required within new dwellings at the site.

The environmental database report does not define the boundary between the two classifications; therefore a supplementary basic Radon report from the British Geological Survey (BGS) was acquired however, the search was also unable to define the boundary. Information from the BGS suggests a third more detailed report can be acquired which should help to determine the boundary between the two zones.

The radon report is provided in Appendix E.

3.2.3 Landfilling and land reclamation

Evidence has been sought to identify any landfilling or land reclamation operations, past and present, which have taken place in the vicinity of the site. The sources of information referenced in this element of the desk study include:

- environmental database report
- records held by local authority
- old Ordnance Survey maps and plans (see Section 3)
- geological maps (see Section 4.1)
- a Coal Authority Mining Report (see Appendix F)

There are no records of landfill sites (former or current) within 250m of the site (i.e. within the planning consultation zone). The landfill sites recorded between 250m and 1km of the site are listed in Table 2.

Table 2: Summary of recorded landfill sites within 1km of the site

Distance and direction from site (historical landfill site/registered landfill site)	Name of Landfill site and Operator	Dates of Operation	Accepted Waste	Other Details
499m south/ 566m south	'Shaw Carpets Limited', operated by Shaw Carpets Limited	April 1980 – December 1993	Inert, Industrial and Commercial (Acceptable waste: construction and demolition waste, industrial non-hazardous waste, soil and subsoil. Prohibited waste: Asbestos, Liquids in containers over 4L capacity, slurry in containers over 4L capacity)	Max input rate: Very small (less than 10,000 tonnes a year) Only waste produced on site
573m south/ 724m south	'Between Darton Lane and Dearne Hall Road', operated by C Birkinshaw and Sons Limited	October 1985 – November 1994	Inert and Commercial (Acceptable waste: construction and demolition waste, excavated natural material, hardcore and rubble. Prohibited waste: Asbestos, biodegradable/putrescible waste, combustible/potentially combustible, Liquids in containers over 4L capacity, slurry in containers over 4L capacity)	Max input rate: Large (equal to or greater than 75,000 and less than 250,000 tonnes per year) No known restriction on source of waste
951m south east/ 999m south east	'Quarry', operated by National Coal Board	January 1978 – January 1985	Inert and Commercial (Acceptable waste: construction and demolition wastes, Prohibited waste: Liquids in containers over 4L capacity, slurry in containers over 4L capacity)	Max input rate: Very small (less than 10,000 tonnes a year) No known restriction on source of waste

The landfill gas generation potential from these types of landfill site is generally low, however consideration should be given to the potential presence of other waste deposited such as timber, plasterboard or possible domestic refuse. Given the distance of the landfill sites from the site, these landfill sites are not considered as representing a significant potential risk to the site from the generation and migration beneath the site of

landfill gases and/or leachate. An overall low/moderate risk is considered to be present from landfill gas to the site.

However, with reference to the historical data there have clearly been some phases of construction and demolition on the site and therefore the presence of made ground should be expected in Area 4 and Area 5 of the site.

3.2.4 Ground gas

Given the anticipated ground conditions the risk associated with ground gas is considered low/moderate in accordance with BS8576.

3.3 Hydrogeology

3.3.1 Aquifer characteristics

Based on the published geological map referred to above, the hydrogeology of the site is likely to be characterised by the presence of an unconfined shallow aquifer comprising the Pennine Middle Coal Measures.

The anticipated depth to the groundwater table is in the order of 10m to 20m below ground level. Shallow groundwater in the site area is anticipated to flow in a south westerly direction, i.e. towards and in the direction of flow of the River Dearne.

3.3.2 Vulnerability of groundwater resources

The site has been classified by the EA website to overlie a secondary A aquifer, which is described as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

The soils beneath the site are classified as having high urban leaching potential. Soil information for restored mineral workings and urban areas is based on fewer observations than elsewhere, so a worst-case vulnerability classification is assumed until proven otherwise.

3.3.3 Licensed groundwater abstraction

The environmental database (Envirocheck report, 4 January 2016) report indicates that there are three current licensed groundwater abstractions (two of which are public/private water supply boreholes) within a 2km radius of the site summarised in Table 3. The nearest is located approximately 413m to the south of the site and is operated by Shaw Carpets Limited for commercial use purposes.

Table 3: Groundwater abstractions

Reference	Distance and orientation from site	Comment
2/27/08/114	413m south	Operated by Shaw Carpets Limited for commercial use (pubs etc), from groundwater source, license status: active, no dates provided.
Ne/027/0008/006	710 north west	Operated by the Coal Authority, location – underground strata at Former Wooley Colliery, abstraction is environmental: pump and treat – pollution remediation, permit start date – July 2009, no end date supplied
2/27/08/048	1816m west	Operated by A I Crossley and Son, location: Spring – coal measures – Darton, abstraction for general farming and domestic from groundwater, daily rate of 5m3, yearly rate of 1659m3, permit start date – January 1966, no end date supplied.

In terms of aquifer protection, the EA generally adopts a three-fold classification of source protection zones (SPZ) for public supply abstraction wells.

- zone 1 or 'inner protection zone' is located immediately adjacent to the groundwater source and is based on a 50-day travel time from any point below the water table to the source. It is designed to protect against the effects of human activity and biological/chemical contaminants that may have an immediate effect on the source
- zone 2 or 'outer protection zone' is defined by a 400-day travel time from a point below the water table to the source. The travel time is designed to provide delay and attenuation of slowly degrading pollutants.
- zone 3 or 'total catchment' is the area around the source within which all groundwater recharge is presumed to be discharged at the source.

Information available on the EA website indicates that the site does not lie within a currently designated groundwater Source Protection Zone.

3.4 Hydrology

3.4.1 Surface watercourses

There are no ponds, streams or drainage ditches on or adjacent to the site. The nearest identified surface watercourse to the site is the River Dearne located approximately 177m to the west of the site.

The EA classification of the water quality in the stretch of the River Dearne nearest to the site is grade C (fairly good). The base flow of the River Dearne is likely to be recharged by groundwater in the shallow aquifer in the site area. A linkage between the river and any ground or groundwater contamination beneath the site may therefore exist.

3.4.2 Surface water abstractions

The environmental database report (Envirocheck report, 4 January 2016) indicates that there is one recorded surface water abstractions within a 2km radius of the site. The abstraction is located approximately 646m to the north west of the site (i.e. upstream of the site) and is operated by British Coal for general industrial purposes, no dates are supplied, however it states that the license is revoked.

3.4.3 Site drainage

Surface drainage from the site appears to drain naturally into the surface soils. Some overland flow during peak times of rainfall may flow south towards the drainage system on Station Road and other local roads, however, this is considered to be insignificant.

3.4.4 Preliminary flood risk assessment

The indicative floodplain map for the area, published by the EA, shows that the site does not lay within a designated floodplain.

3.5 History of site and surrounding area

The history of the land-use and development of the site and surrounding area has been assessed based on the historical maps within the environmental database from 1854 to 2015.

Copies of OS and County Series maps are included in the environmental database report in Appendix D. Reference to historical maps provides invaluable information regarding the land use history of the site, but historical evidence may be incomplete for the period pre-dating the first edition and between successive maps.

The development history of the site and surrounding area from the above sources is detailed in Table 4 and summarised below.

Table 4: Summary of historical development

Date	Land use/features on site	Land use/features in vicinity of site (of relevance to the assessment)
1854 to 1855	Site comprises segregated agricultural fields, Manor House is shown in the south western area of the site and there is a large 'L'	Sandstone Quarry adjacent to site in SW 100m SW, Darton Station and

Date	Land use/features on site	Land use/features in vicinity of site (of relevance to the assessment)
	shaped building opposite Manor House	associated railway line (Barnsley Branch)
1883 to 1894	No significant changes	Sandstone Quarry is no longer shown 200m N, three reservoirs are shown
1907	'Cistern' identified to the north of the building in the SW of the site	50m E, 'Excelsior Works (Chaplet Gas and Water Hooks)' identified
1930	'Tramway' shown entering the eastern boundary of the site and runs north westerly into the site for approx 100m Area of raised ground shown in the northern central most field (Area 2) School shown to be present in the south eastern tip of the site adjacent to Station Road 'cistern' now identified as a tank	10m N, Tramway running north from the site 50m E, 'Excelsior Works' now shown as disused 300m S, rug mill 300m NW, Sewage works 350m W, Quarry 500m NW, Woolley Colliery 500m W, Darton Main Colliery 500m NE, 'Longsight Works (Chaplet and gas hook)
1948	No significant changes	No significant changes
1956	Tramway in east has been removed	Tramway to north has been removed Excelsior Works, no longer shown
1966	No significant changes	NW, 'works' shown 500m W, Darton Main Colliery, no longer shown
1980	The 'L' shaped building opposite Manor House has been removed	Some residential development to east of the site 200m S, Factory shown 500m W, Factory shown
1991 - 1993	No significant changes	Building, previously identified as works adjacent to NW of site is now identified as a laboratory
2006	Number of outbuildings shown in the area of the school	Further residential development to the east of the site
2015	School has been removed	No significant changes

The majority of the site has never undergone any development, however there have been some development phases shown throughout the available historical records in certain areas of the site. A large 'L' shaped building was present associated with Manor House from the earliest available map until around the 1980s where it was removed. There was a cistern and then a tank associated with this building. The school in the far

south east was present on site between the 1930s and 2015, a number of outbuildings appeared in the early 2000s, all of which have now been removed.

The site appears to have had some industrial uses, as a tramway was present across the eastern area of the site. Possibly associated with the tramway, the northern most central field appears to have been raised, possibly with material associated with the coal mining or quarrying in the area.

The area surrounding the site has had some industrial activities, including the railway line, quarries, Collieries and factories; however they are generally over 100m from the site. An unspecified works was located adjacent to the north west of the site, it was identified as a laboratory in 1993.

3.6 Sensitive land uses

No national or internationally designated sensitive land uses such as sites of special scientific interest (SSSI) were identified in the vicinity of the site. The western part of the site is a designated Area of Adopted Greenbelt (Area 1 and Area 4), a comprehensive evaluation of ecological receptors is outside the scope of this report.

3.7 Industrial land use

There are three recorded Contemporary Trade Directory Entries listed within 250m of the site, all of which are inactive. The nearest was 1m south east of the site at Carpet Express Limited, classified as a distribution services. 27m south was a clothing and fabric manufacturers and 93m south west was a printers – glass, metal, plastics etc. The nearest active Contemporary Trade Directory is a toys, games and sporting goods manufacturers located 275m south west of the site.

3.8 Initial conceptual model

The information presented in Sections 2 and 3.1 to 3.7, has been used to compile an initial conceptual model. The identified potential sources of contamination, associated contaminants and receptors have been considered with plausible pathways that may link them. The resulting potential pollutant linkages are considered in Section 3.8.4. The risk classification has been estimated in accordance with information in Appendix G.

3.8.1 Summary of potential contaminant sources

Potential sources and contaminants of concern are summarised in Table 5.

Table 5: Potential sources and types of contamination

Potential sources	Contaminants of concern
On-site historical	
Made ground (i.e. fill material) associated with raised area in north of site and demolition of the building associated with Manor House and Darton Primary School	Unknown fill material (but potentially including heavy metals, ash, clinker, sulphates, polycyclic aromatic hydrocarbons (PAHs), asbestos etc.). Possible soil gases including methane and carbon dioxide
Tramway (1930 – 1956)	Fuel oils, lubricating oils, heavy metals, PAHs and PCBs
On-site present day	
Made ground (i.e. fill material)	Unknown fill material (but potentially including heavy metals, ash, clinker, sulphates, polycyclic aromatic hydrocarbons (PAHs), asbestos etc.)
Flooded mine workings	Hazardous ground gases
Off-site	
Various industrial land uses including: excelsior factory 50m south east (1930s to 1950s), works/laboratory to north west of site (1960s to present)	Fuel oils, lubricating oils, heavy metals, polychlorinated biphenyls (PCBs), PAHs, solvents and other common industrial contaminants
Infilled former quarry adjacent to south west of site (*c*.1850s to 1880s)	Landfill/ground gases, leachate
Railway, 100m south west of site (mid 1800s to present)	Fuel oils, lubricating oils, heavy metals, PAHs, PCBs, ethylene glycol, ash, sulphate, herbicides and asbestos

The site, although generally undeveloped has had several phases of construction and demolition of buildings and industrial uses (the tramline). An area in the north of the site appears to have been infilled, but the source is unknown, possibly associated with colliery spoils due to the presence of the tramlines.

Adjacent to the site are few potential sources of contamination, the railway line is down gradient of the site and is at a distance of 100m at the nearest point. The factory which was present 50m south west of the site has been removed since the 1950s and therefore any residual contamination is expected to be minimal. The former quarry located to the south west of the site was infilled in around the 1880s, which if containing putrescible material, would have ceased gas generation and therefore is not considered significant.

3.8.2 Sensitive receptors

Sensitive receptors at this site include:

- future site occupants
- adjacent site users

- vegetation
- potable water supply pipes
- buildings and infrastructure
- underlying Secondary A aquifer
- River Dearne (177m west of the site)

Please note that construction workers have not been identified in the conceptual model as receptors because risks are considered to be managed through health and safety procedures including CDM regulations.

3.8.3 Summary of plausible pathways

The plausible pathways are summarised below:

- direct contact (soil, dust and vegetable ingestion, dermal contact, dust and fibre inhalation)
- ground gas and soil gas inhalation
- root uptake
- chemical attack of infrastructure (including water supply pipes) and buildings
- vertical or lateral migration of groundwater

3.8.4 Data gaps and uncertainties

The works located to the north west of the site since 1960s identified on the historical maps is unspecified. The shape of the building has not changed and is now identified as a laboratory, therefore although the risks are unknown, it is likely to have been similar types of use.

The material used to raise the northern central field of Area 2 of the site is unknown. The presence of a tramway suggests it may be been used to transfer overburden associated with localised mining activities, however this is unconfirmed.

3.8.5 Potentially complete pollutant linkages

The outline conceptual model is shown schematically in Figure 4 and an estimate of the risk associated with each linkage is summarised in Table 6. The risk classification has been undertaken in accordance with CIRIA C552 (Rudland et al., 2001), a summary of which is included in Appendix G.

Table 6: Risk estimation for potentially complete pollutant linkages

Potential Contaminant	Potential receptor	Possible pathway	Likelihood	Severity	Risk and justification
Made ground, potentially including asbestos, heavy metals, TPH and PAHs	Future site users (residents)	Direct contact including ingestion, dermal contact and inhalation	Likely	Medium	Moderate risk: The majority of the site is expected to be natural soils suitable for the proposed end use. However, in the areas of previous development and the infilled material some contaminated soils may be present. The redevelopment of the site will comprise the housing footprint and areas of hardstanding, however garden areas are proposed and future site users may come into contact with underlying potentially contaminated soils. This can however be mitigated by a clean capping layer in the areas of proposed landscaping and gardens in the areas of contaminated soils if found to be present.
	Adjacent site users (residents)	Inhalation of dust during redevelopment phase	Low likelihood	Mild	Low risk: If contaminated soils on site are allowed to dry out there may be excessive dust generated which may be blown onto adjacent properties, however the impact would be mild.
	Vegetation	Root uptake	Highly likely	Minor	Moderate/Low risk: Vegetation within the garden areas will absorb any contaminants present within the soils, however the presence of a clean capping layer will mitigate this pathway. This remains a potential pathway until the contamination status of the soils is determined
	Potable water supply pipes and buildings	Chemical attack of infrastructure	Likely	Medium	Moderate risk: The geology is potentially pyritic and it is likely that soils will come into contact with buildings and infrastructure, however the level of chemicals is not expected to be at levels that may cause significant problems. An assessment on the chemical concentrations of the soils will confirm the requirements for the type of concrete suitable for use on the site.

Potential Contaminant	Potential receptor	Possible pathway	Likelihood	Severity	Risk and justification
	Groundwater beneath the site and surface water features	Vertical migration of contaminants through soils	Low likelihood	Mild	Low risk: The site lies upon a Secondary A aquifer, and is not within a source protection zone, groundwater is expected to be within 10 to 20m below ground level, therefore vertical migration would be minimal. There have been no pollutant incidents at the site and there are no known up-steam sources of contamination which may impact groundwater. There are no groundwater abstractions within 250m of the site and the nearest surface water feature is the River Dearne located 177m west of the site which is considered to be at a significant enough distance to have minimal impact from the site.
Hazardous ground gases from flooded mine workings and infilled quarry	Future site users (residents)	Inhalation from build up of hazardous gases within buildings	Likely	Severe	High/moderate risk: flooded mine workings are potentially present beneath the site. Gas generation can continue for up to 50 years. The absence of superficial deposits would increase the potential of migration of hazardous ground gases to occur.
	Buildings	Build up and explosions of hazardous ground gases	Low likelihood	Severe	Moderate risk: flooded mine workings are potentially present beneath the site. Gas generation can continue for up to 50 years. The absence of superficial deposits would increase the potential of migration of hazardous ground gases to occur.

The potential pollutant linkages with a risk of moderate or above that may drive site investigation works are:

1) Direct contact of contaminated soils to future site users
2) Inhalation exposure of future site users to asbestos fibres
3) Plant uptake of contaminants within the soils, which may affect plant growth
4) Chemical attack on infrastructure including concrete and potable water supply pipes from contaminated soils
5) Inhalation and explosion of hazardous ground gases from build up within buildings

Given the history of the site, the risk that significant contamination is likely to influence the groundwater or surface water receptors beneath or within the vicinity of the site is low. Therefore, the impact to groundwater has not been considered further in this investigation. However, if significant levels of soil contamination, although unexpected, are found to be present at the site, it would be recommended that consideration of the risks to groundwater receptors would be required.

3.9 Geotechnical Considerations

The environmental database report (Envirocheck, dated 4 January 2016) states the following risks of ground stability hazards may affect the site, as defined by the British Geological Survey, National Geoscience Information Service.

- Very low potential for collapsible ground stability hazards in the south west, west and north east of the site
- Low potential for landslide ground stability hazards in the north of the site
- Very low potential for landslide ground stability hazards in the south west of the site
- Very low potential for running sand ground stability hazards in the west and north east of the site
- Very low potential for shrinking or swelling clay ground stability hazards in the south west of the site

3.10 Coal mining risk assessment

A desk based Coal Mining Risk Assessment (CMRA) report has been completed using a risk based approach to assess the potential risk posed to the proposed development and identifies how coal mining issues may influence the proposed redevelopment. A CMRA is required by the local planning authority (LPA) as part of the planning process

and conforms to the guidance published by the Coal Authority (CA) "Risk Based Approach to Development Management – Guidance for Developers" Version 2 dated 2014. The requirement for a CMRA to be undertaken has been initiated by the site being located in an area classified by the CA as a high risk area i.e. where there are hazards that are likely to affect a new development.

All supporting information for the Mining Risk Assessment is provided in Appendix F.

3.10.1 Desk Study Data Review

The following sources of data have been consulted:

i. Ordnance Survey Historical plans between 1893 and 2015;

ii. Geological Survey of England and Wales 1:63,360/1:50,000 geological map series Sheet 87 Bedrock and Superficial 2008;

iii. Geological Survey of England and Wales Six Inch to One mile geological map;

iv. Mineral Resources Information in support of National, Regional and Local planning report CR/04/173N South Yorkshire (comprising Metropolitan Boroughs of Barnsley, Doncaster and Rotherham and City of Sheffield) dated 2006

v. BGS online map and data viewer;

vi. The Coal Authority interactive map viewer;

vii. Non-residential Coal Authority Mining Report Ref. 51001059098001 dated 4 January 2016;

viii. The Coal Authority Shaft Plan and Data Sheets Ref. 51001072291001 dated 19 January 2016;

ix. Coal Authority archive abandonment records search.

Each source of data is evaluated in turn below:

i. Historical plans between 1893 and 1996

The 1854 1:10,560 OS map shows an 'old quarry' immediately to the west of the site.

The 1894 1:10,560 map shows the establishment of 'Wooley Colliery' approximately 500m to the north west of the site.

The 1893 and 1906 1:2,500 OS plans show an 'Old Coal Pit', 'Old Air shaft' and an 'old dayhole' (adit) approximately 120m to the north of the site, and a second 'Old Coal Pit', and an 'old dayhole' (adit) approximately 300m to the north of the site close to 'Pye Wood'. A shaft and dayhole are shown on the 1:2,500 OS 1906 map approximately 100m to the east of the site, beyond Sackup Lane. These are also shown on the 1907 1:10,560 OS map, with the expansion of Woolley Colliery to the northwest, together with another 'old coal pit' 700m to the east, just to the south of Staincross Common.

The 1918 1:2,500 map shows the establishment of a school in the south east corner of the site.

The 1930 1:10,560 OS map shows a tramway to cross the eastern boundary of the site eastwards, the establishment of the 'Miners Welfare Institute' immediately to the northwest of the site, further expansion of Woolley Colliery to the northwest, and the establishment of 'Darton Main Colliery' approximately 400m to the west.

The 1938 1:10,560 OS map shows the slopes of an excavation in the northern central area of the site, and the extension of tramways to the north east of the site.

The 1956 1:10,560 OS map no longer shows the tramway in the east of the site, and shows the 'Darton Main Colliery' to be disused.

ii. Geological Survey of England and Wales 1:63,360/1:50,000 geological map series Sheet 87 Bedrock and Superficial 2011

The BGS 1:50,000 geological map series Sheet 87 Bedrock and Superficial dated 2011 shows the site to be underlain by the Pennine Middle Coal Measures Formation. This comprises mudstone, siltstone and sandstone with coal seams, ironstone and seatearth beds and marine bands. The sequence underlying the site ranges from the Top Haigh Moor Coal (THM) (0 to 4.3m thick) to the Barnsley Coal (B) (0 to 3.9m thick). This sequence of continuous and discontinuous coal seams is shown on Figure F1 in Appendix F.

The site is crossed by an unnamed northeast-southwest trending fault, with the east-west trending Mapplewell Fault immediately to the south of the site.

iii. Geological Survey of England and Wales Six Inch to One mile geological map

The Geological Survey of England and Wales Six Inch to One mile geological map shows the area of the site in greater detail with the Barnsley Rider Coal outcropping across the north eastern part of the site and the Barnsley Coal across the central area of the site, with an unnamed coal (possibly Shallow Wood Coal from the 1:50,000 sequence) cropping across the southern part of the site, with the Top Haigh Moor Coal cropping to the south of the site.

As with the 1:50,000 BGS map, the site is shown to be crossed by an unnamed northeast-southwest trending fault, with the east-west trending Mapplewell Fault immediately to the south of the site.

An extract of the geology map is provided in Appendix F as Figure F2.

iv. Mineral Resources Information in support of National, Regional and Local planning report CR/04/173N South Yorkshire (comprising Metropolitan Boroughs of Barnsley, Doncaster and Rotherham and City of Sheffield) dated 2006.

Mineral Resources Information in support of National, Regional and Local planning report CR/04/173N South Yorkshire (comprising Metropolitan Boroughs of Barnsley,

Doncaster and Rotherham and City of Sheffield) dated 2006 shows the site to be in an area underlain by shallow coal. It does not show the site to be located in an area of former open cast.

An extract of the Mineral Resources map is provided in Appendix F as Figure F3.

v. BGS online map and data viewer

The BGS online map and data viewer does not document any available borehole logs pertaining to the site itself. There are thirteen borehole logs associated with residential development immediately to the east of the site along Appleby Close, Cranbourne Drive and Howden Close. The closest of these boreholes SE31SW275, SE31SW280 and SE31SW285 show coal to be present at a depth of 1.1m to 3.0m in SE31SW275, but coal not to be present in either SE31SW280 nor SE31SW285.

Extracts from these records SE31SW275, SE31SW280 and SE31SW285 are provided in Appendix F as Figures 4,5 and 6.

vi. The Coal Authority interactive map viewer

The Coal Authority interactive map viewer shows the following:

a. There are five recorded mine entries on or in close vicinity of the site (within 20m);
b. The site is in an area recorded in the abandoned mines catalogue (Catalogue Nos. 16548, 7368, NE978, 5770, NE996, NE816, NE695, NE1034)
c. The north east and southern areas of the site are shown to be in a development high risk area;
d. The site is shows to be in a surface coal resource area;
e. The site has five recorded locations as being located in the potential zone of influence of a mine entrance;
f. There are no fissures or break lines recorded at or in the vicinity of the site;
g. The site is not recorded as a mine gas site;
h. The site is not in an area recorded as subject to past surface hazard;
i. The site is not in an area of recorded surface mining (past and current);
j. The north east corner of the site is in an area of recorded past shallow coal mine workings;
k. The north east and southern areas of the site are in an area of probable shallow coal mine workings;
l. The north east and southern areas of the site are in an area of potential coal outcrop;
m. The site is in a Coal Mining Reporting Area.

vii. Non-residential Coal Authority Mining Report Ref. Ref. 51001059098001 dated 4 January 2016

The non-residential Coal Authority Mining Report Ref. Ref. 51001059098001 dated 4 January 2016 is presented in Appendix E. It states the following key comments:

a. The property is in the likely zone of influence of from workings in seven seams of coal at shallow to 290m depth, last worked in 1979, but is not in the likely zone of influence of any present underground working;
b. The property is not in an area for which the CA is determining whether to grant a license to remove coal or in an area for which a license has been granted to remove or work coal using underground methods;
c. The property is not in an area that is likely to be affected at the surface from any planned future workings;
d. 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 b subsidence has been given under section 46 of the Coal Mining Subsidence Act 1991;
e. There are five known coal mine entries within, or within 20m of the boundary of the property. Record 431410-015 has no treatment details; Record 431410-035 has no treatment details; Record 431410-046 has no treatment details; Record 431410-036 was not encountered during drilling and routing operation carried out beneath plot 15 Sackup Lane by Marsh Homes, and the CA have no record of what steps were taken to treat this mine entry; Record 431410-047 has no treatment details;
f. The CA is not aware of any evidence of damage arsing due to geological faults or other lines of weaknesses;
g. The property is not within the boundary of a past opencast mine, nor does it lie within 200m of the boundary of a present opencast mine, nor is it within 800m of the boundary of an opencast site for which the CA is determining whether to grant a license to remove coal by opencast methods.
h. The CA has not received a damage notice or claim for the subject property or any property within 50m since 31 October 1994;
i. There is no record of mine gas emission requiring action by the CA within the boundary of the property;
j. The property has not been subject to remedial works, by or on behalf of the CA, under its Emergency Surface Hazard Call Out Procedures;
k. The property is not in an area for which notice of entitlement to withdraw support has been published, or where notice has been given under section 41 of the Coal Industry Act 1994, revoking the entitlement to withdraw support.

viii. The Coal Authority Shaft Plan and Data Sheets Ref. 51001072291001 dated 19 January 2016.

A Shaft Plan and Data Sheet report was gained from the CA to gain further detail on the five mine entries identified in the Non-residential Coal Authority Mining Report. A summary of the additional information gained is provided in Table 7 below and a copy of the data sheets is provide in Appendix F.

Table 7: Summary of information from Coal Authority Shaft Plan and Data Sheets

Mine entry (adit) Ref.	Colliery	Adit Azimuth	Name	Name / Treatment details	Easting & northing
431410-015	Unknown	312	Unknown	no treatment details	431686 410329
431410-035	Unknown	17	Bloomhouse Colliery Adit	no treatment details	431705 410325
431410-046	Unknown	34	Bloomhouse Colliery Adit	no treatment details	431626 410369
431410-036	Unknown	8	Bloomhouse Colliery Adit	not encountered during drilling and routing operation carried out beneath plot 15 Sackup Lane by Marsh Homes, and the CA have no record of what steps were taken to treat this mine entry	431774 410306
431410-047	Unknown	38	Bloomhouse Colliery Adit	no treatment details	431621 410374

ix. A Coal Authority archive abandonment records search

A search of the CA abandonment catalogue archive was undertaken on 19 January 2016. The search radius was for 200m and 300m from the centre of the site. It searched for all colliery, seam and working type records within the specified 200m and 300m radius. A copy of the search is included as Appendix F.

A total number of 31 search results were returned for the 300m radius. These were examined in detail and two items were deemed to have direct relevance to the site - catalogue numbers 12647 and NE979. The collieries, seams and abandonment dates are recorded as in Table 8.

Table 8: Summary of the Coal Authority archive abandonment records search

Catalogue No.	Colliery	Seam	Date abandoned
12647	Bloomhouse	Barnsley	18/01/1940
NE979	Wooley (former North Gawber)	Low Haigh Moor (Netherton Thick)	5/09/1986

Catalogue number 12647: shows workings in the Barnsley Seam underlying the site that were finally abandoned in 1940. Within the boundary of the site it shows three adits that correspond to three of the adits recorded in the CA Non-residential Coal Authority Mining Report Ref. Ref. 51001059098001. The dip of the Coal Measures strata is shown to be toward the north east.

A copy of this relevant part of this plan is provided in Appendix F as Figure F7.

Catalogue number NE979: shows the boundary of the Low Haigh Moor (Netherton Thick) seam, worked from the Wooley (former North Gawber) Colliery and dated to 1986 underlying the north east corner of the site. It also shows the workings of the Pyewood Colliery to the west underlying the north-western part of the site.

A copy of this relevant part of this plan is provided in Appendix F as Figure F8.

4 SITE INVESTIGATION METHODOLOGY

RSK carried out intrusive investigation work between 26 and 28 January 2016, with subsequent ground gas and groundwater monitoring visits on 22 February and 16 March 2013. Gas and groundwater monitoring is ongoing. The objectives of the work were to further investigate the potential pollutant linkages identified in the outline conceptual model and to inform geotechnical and mining constraints.

4.1 Sampling strategy and methodology

The techniques adopted for the investigation have been chosen considering the anticipated ground conditions, existing land use and the proposed development. The sampling strategy was focused both on the characterisation of the shallow soils and into the deeper underlying bedrock. The shallow investigation aimed to confirm or otherwise the presence of contamination, and to obtain parameters to facilitate geotechnical design. The deeper investigation was aimed at investigating the potential risk to the site from historical coal mining and also the presence of ground gas.

The layout of the investigation was designed to provide both targeted and non-targeted coverage across the site, and an exploratory hole location plan is presented as Figure 5. The investigation points were located through use of a hand held GPS.

Trial pits were excavated in order to provided both coverage across the site relatively quickly to accurately log the soils beneath the site, obtain representative samples for chemical and geotechnical laboratory testing. A number of the trial pits were used to target potential areas of contamination noted within the PRA. The trial pitting investigation was also used to investigate the presence and location of four mine adits which were highlighted within the Coal Authority Report.

A probing exercise involving the drilling of rotary boreholes was undertaken to investigate the presence or absence of shallow coal seams and/or workings located beneath the site, as previously discussed in section 3.10. They also allowed the installation of gas and groundwater monitoring wells.

4.1.1 Health and safety considerations

Prior to the excavation of the exploratory holes, the site was scanned and cleared of underground services using a Cable Avoidance Tool (CAT) and signal generator and by Ground Penetrative Radar (GPR).

4.1.2 Investigation locations

The following site work was completed as part of this investigation:

- Excavation of 32 trial pits using a 16 tonne tracked excavator
- Excavation of 14 trial trenches using a 16 tonne tracked excavator
- Drilling of 6 rotary boreholes with gas and groundwater monitoring wells using a large tracked rotary rig
- Drilling of 8 rotary probeholes using a large tracked rotary rig

The investigation and the soil descriptions were carried out in general accordance with 'BS 5930:2015. Code of Practice for Site Investigations' (BSI, 1999). The exploratory hole records are presented in Appendix H.

The locations of the intrusive investigations are shown in Figure 5. The rationale for these locations is given in Table 9. A number of the exploratory hole locations were targeted to identify impact from identified sources of contamination.

Table 9: Exploratory hole location rationale

Exploratory hole number	Location	Rationale
TP01 and TP02	North west of Area 1 (western area)	To assess potential of migration of contaminants from off-site sources.
TP03, TP04, TP05	Spread across Area 1	To provide information on the general spread of ground conditions in Area 1
TP06, TP07, TP08	Within area of former building in Area 4	To target potential contamination associated with the former building
TP09, TP10, TP11, TP12	Spread across Area 2	To provide information on the general spread of ground conditions in Area 2
TP13, TP14, TP15, TP16	Within northern 'raised' part of Area 2	To provide information on the composition and depth of filled materials within this raised area
TP17, TP18, TP19, TP22, TP23, TP24	Spread across Area 3	To provide information on the general spread of ground conditions in Area 2
TP20 and TP21	Within area of former school in Area 5	To target potential contamination associated with the former building

The investigation points were located by a hand held GPS. The ground levels at the borehole locations were interpolated from the levels shown on the site plan provided and the survey plan provided by the Client.

4.1.3 Soil sampling, in-situ testing and laboratory analysis

Soil sampling was designed to select samples at regular intervals throughout each of the encountered strata. This included in the made ground and the underlying natural ground.

Soils taken for laboratory analysis were collected in containers appropriate to the anticipated testing suite required. Samples were stored in accordance with RSK quality

procedures to maintain sample integrity and preservation, and to minimise the chance of cross-contamination.

Forty nine samples were taken and are recorded together with their depths on the exploratory hole records in Appendix H. The samples were transported to the laboratory in chilled cool boxes. Laboratory chain of custody forms can be provided if required. The rationale for soil sample chemical analysis is presented in Table 10. The results of the laboratory anaylsis are provided in Appendix K.

Table 10: Scheduled analysis – soil

Exploratory hole no. and sample depth (m bgl)	Analyte	Rationale
TP02 at 0.00-0.35m, TP07 at 0.30-0.50m, TP13 at 0.00-0.25m, TP13 at 0.30-0.50m, TP14 at 1.50-1.80m, TP16 at 1.10-1.40m, TP17 at 0.00-0.30m, TP20 at 0.00-0.40m, TP21 at 0.00-0.50m, TP23 at 0.00-0.30m	Metals, pH, PAH, TPHCWG	Assessment of shallow made ground for potential contaminated soils
TP05 at 0.60-1.00, TP07 at 0.80-1.00m, TP09 at 0.20-0.50m, TP18 at 0.00-0.30m,	Metals, pH, PAH	Assessment of shallow natural soils/possible made ground for potential contaminated soils
TP12 at 0.00-0.60m	Metals, pH, PAH	Assessment of shallow made ground for potential contaminated soils
TP07 at 0.30-0.50m, TP13 at 0.00-0.25m, TP14 at 1.50-1.80m, TP16 at 1.10-1.40m, TP17 at 0.00-0.30m, TP20 at 0.00-0.40m, TP21 at 0.00-0.50m, TP23 at 0.00-0.30m	Asbestos screen	Screen of made ground soils for the presence of asbestos
TP01 at 2.50m, TP03 at 0.80m, TP03 at 1.60m, TP07 at 0.30-0.50m, TP12 at 1.60m, TP14 at 2.50m, TP16 at 1.80-2.00m, TP22 at 0.70m, TP22 at 1.40m	BRE Sulphate suite	Assessment of chemical composition of soils for the risk to concrete assessment

4.1.4 Groundwater monitoring and levelling

Depths to groundwater were recorded using an electronic dip meter during the monitoring visits on 22 February 2016 and 16 March 2016. The monitoring results are given in Section 5.1.

The ground levels and the highest point of the top of casing of the monitoring wells were established in relation relative to a Ordnance Datum extrapolated from the survey plan to enable groundwater flow direction and a hydraulic gradient to be inferred.

4.1.5 Ground gas monitoring

In line with the conceptual model six monitoring rounds will be undertaken, currently two visits have been completed to date. This will include periods of low and/or falling atmospheric pressures and after/during rainfall.

An infrared gas meter was used to measure gas flow, concentrations of carbon dioxide (CO_2), methane (CH_4) and oxygen (O_2) in percentage by volume, while hydrogen sulphide (H_2S) and carbon monoxide (CO) were recorded in parts per million. Initial and steady state concentrations were recorded.

The atmospheric pressure before and during monitoring, together with the weather conditions, was recorded.

All monitoring results together with the temporal conditions are contained within Appendix J and discussed in Section 5.2.

5 GROUND CONDITIONS

The results of the intrusive investigation and subsequent laboratory analysis undertaken are detailed below. The descriptions of the strata encountered, notes regarding visual or olfactory evidence of contamination, list of samples taken, field observations of soil and groundwater, in-situ testing and details of monitoring well installations are included on the exploratory hole records presented in Appendix H.

5.1 Soil

The exploratory holes revealed that the site is underlain by a variable thickness of topsoil, possible made ground or made ground over the Pennine Middle Coal Measures, which grades from weathering Class E at the upper boundary to Weathering Class B encountered at depth (within the trial pits). This appears to confirm the stratigraphical succession described within the initial conceptual model. For the purpose of discussion, the ground conditions are summarised in Table 11 and the strata discussed in subsequent subsections.

Table 11: General succession of strata encountered

Strata	Exploratory holes encountered	Depth to top of stratum m bgl	Thickness (m)
Topsoil	TP10, TP11, TP18, PH1 – PH7 BH1 – BH4	Ground level	0.30m
Possible made ground	TP01, TP09 BH5	Ground level	0.30m – 0.50m 3.00m in BH5
Made ground	TP02, TP04 - TP08, TP12, TP13, TP14, TP15, TP16, TP17, TP19 - TP24 PH8, BH6	Ground level	0.15m – 0.60m (average) More than 4.60m in TP13, to 3.20m in TP14, to 1.80m in TP15, to 1.70m in TP16, to 3.00m in TP21
Pennine Middle Coal Measures (Weathering Class E/D)	TP01 - TP07, TP09 - TP12, TP15 – TP20, TP22 - TP24 PH1 – PH8 BH1 – BH4, BH6	Ground level – 0.60m (average) 1.80m in TP15 and 1.70m in TP16	0.40m – 2.70m
Pennine Middle Coal Measures (Weathering	TP01 - TP06, TP08, TP09, TP11, TP12, TP14, TP15, TP17 -	0.55m – 3.20m	0.20m – 2.45m

Class C/B)	TP24 PH1 – PH8 BH1 – BH6		
Pennine Middle Coal Measures (Coal)	TP01, TP02, TP04 PH4, PH8 BH1, BH2, BH3, BH3A, BH4, BH5, BH6	0.65m - 2.40m 12.00m in PH4, 10.30m, 20.80m and 26.50m in PH8 5.80m in BH1, 11.00m and 11.80m in BH2, 5.00m in BH3, 5.00m in BH3A, 0.710m in BH4, 6.70m and 9.00m in BH5, 4.70m in BH6	0.15m - 0.30m 3.80m in PH4, 0.20m – 0.30m in PH8 0.20m in BH1, 0.50-0.60m in BH2, 0.20m in BH3, 0.20m in BH3A, 0.40m in BH4, 0.10-0.50m in BH5, 0.30m in BH6

5.1.1 Made ground and Topsoil

The composition of the made ground varied across the site depending on the area. In Area 1, the Western Area, made ground generally comprised reworked natural cohesive clay, with occasional pieces of pottery and wood.

In Area 2, the Central Area, there were two areas of made ground noted. The northern field that historically had been raised according to the historical plans, indicated depths of over 4.60m of made ground in the centre of this area, tapering out at the edges to thicknesses of around 1.70m. The made ground encountered in this area comprised sandy gravelly clay with many pieces of glass, pottery, tiles, plastic, brick, metal and tarmac, often noted to have an organic odour. TP12 is located in the southern part of Area 2 and encountered made ground to 0.60m, which comprised sandy gravelly clay; the gravel comprised sandstone, brick and pottery, pieces of metal and pipes were also noted.

Area 3, the Eastern Area, was predominantly covered with natural soils or reworked natural soils with occasional pieces of plastic noted. In the south west corner of this area 3, TP17 encountered made ground to 0.30m which contained pieces of plastic, tyre and glass. The trial trenches were completed in this area to attempt to locate the presence of the mine adits. Close to the area of trial trench 4 a pile of broken tiles were noted suspected to be asbestos containing material in the form of corrugated tiles.

In the area of made ground associated with the building next to Manor House farm, Area 4, the made ground comprised concrete over sandy gravelly clay. Made ground was typical of demolition type materials including brick and concrete to a depth of around 0.60m. Brick footings were noted in this area.

In Area 5, the former school, brick footings were noted to a depth of 3.00m in TP21, which suggests that a basement may have been present which appears to have been

infilled. The made ground material comprised sandy gravelly clay with some tarmac, sandstone, brick and concrete.

5.1.2 Pennine Middle Coal Measures – Class E to D

This stratum was encountered beneath the made ground or topsoil and comprised a layer of firm to stiff slightly sandy slightly gravelly clay between 0.40m and 2.70m in thickness. Based on the in-situ and laboratory test data this layer has a modified plasticity index or between 12% and 33% and as such is likely to have a low to medium volume change potential.

A summary of the in-situ and laboratory test results in this stratum is presented in Table 12 and laboratory test results can be found in Appendix Q.

Table 12: Summary of in-situ and laboratory test results for Pennine Middle Coal Measures – Class E to D

Soil parameters	Range	Reference
Liquid limit (%)	33-61	Appendix Q
Plasticity limit (%)	20-36	Appendix Q
Plasticity index (%)	13-33	Appendix Q
Plasticity term	Low to High	Appendix Q
Moisture content (%)	13-40	Appendix Q

5.1.3 Pennine Middle Coal Measures – Class C to B

Mudstone and sandstone was encountered at a depth of between 0.55m and 3.20m below ground level and was recorded to the full extent of the investigation.

A summary of the in-situ and laboratory test results in this stratum is presented in Table 13 and laboratory test results can be found in Appendix Q.

Table 13: Summary of soil parameters for Pennine Middle Coal Measures – Class C to B

Soil parameters	Range	Reference
Liquid limit (%)	36-45	Appendix Q
Plasticity limit (%)	21-23	Appendix Q
Plasticity index (%)	15-22	Appendix Q
Plasticity term	Intermediate	Appendix Q
Moisture content (%)	12-24	Appendix Q

Coal seams were encountered at the exploratory locations and the depths and thicknesses are presented in Table 14.

Table 14: Summary of coal seams encountered

Exploratory hole location	Depth (m)	Thickness (m)
TP01	2.40–2.70	0.30
TP02	0.65–0.80	0.15
TP04	1.05-1.20	0.15
	2.45-2.70	0.25
PH4	12.00-15.80	3.80
PH8	10.30-10.50	0.20
	20.80-21.00	0.20
	26.50-26.80	0.30
BH1	5.80-6.00	0.20
BH2	11.00-11.60	0.60
	11.80-12.30	0.50
BH3	5.00-5.20	0.20
BH3A	5.00-5.20	0.20
BH4	0.70-1.10	0.40
BH5	6.70-7.20	0.50
	9.00-9.10	0.10
BH6	4.70-5.00	0.30

5.1.4 Mining

The preliminary mining risk assessment in section 3.10 highlighted the presence of historical mining between the late 1800s and 1986. The seams that were worked included the Barnsley and Low Haigh Moor (Netherton Thick) seams. A series of six boreholes (BH1 to BH6) have been completed to depths ranging from 9.1m to 31.0m and eight rotary probeholes (PH1 to PH8) have been completed to depths ranging from 9.0m to 30.0m to establish the presence of coal or workings underlying the site.

The probing investigation encountered evidence of shallow workings (broken ground or possible voids) across the site, as presented in Table 15.

Table 15: Summary of coal workings/voids encountered

Exploratory hole location	Depth (m)	Thickness (m)	Details and Assumed Coal Seam
PH2	3.00-7.50	4.50	Void – Barnsley Seam
PH3	10.00-14.50	4.50	Soft ground – Barnsley Seam
PH5	8.80-15.20	6.40	Soft ground – Barnsley Seam

Exploratory hole location	Depth (m)	Thickness (m)	Details and Assumed Coal Seam
PH6	2.00-8.00	6.00	Soft ground – Barnsley Seam
PH7	4.50-9.00	5.00	Soft ground – Barnsley Seam
BH4	17.00-19.00	2.00	Void – Barnsley Seam

To the south of the southeast-northwest trending fault lines the Barnsley Rider Coal has been confirmed to exist at shallow depth across the north eastern part of the site (as shallow as 0.70m) at BH4 with a thickness of 0.40m.

Underlying the Barnsley Rider, the crop of the Barnsley Seam across the north eastern area of the site is confirmed. The Barnsley Seam is encountered as an intact thickness of 3.80m at 12.00m to 15.80m in PH04. The seam however, is encountered as voids or soft ground as detailed in Table 15 above. These voids / soft ground horizons confirm the Barnsley Seam has been worked.

The unnamed seam that is shown to crop to the south west of the site is confirmed as an intact 0.5m thick coal seam at BH05 at depths of 6.70m to 7.20m. The Top Haigh Moor Coal Seam is encountered as a 0.10m thick intact coal seam at BH05 (between 9.00m to 9.10m bgl), at BH06 as a 0.30m thick intact seam (between 4.70m and 5.00m bgl) and at PH08 as an intact 0.20m thick coal seam (between 10.30m to 10.50m bgl).

To the north of the southeast-northwest trending fault line, the same sequence of seams is encountered, with similar thicknesses, but as intact seams suggesting the seams were not extensively worked north of the southeast-northwest trending fault line.

Figure 7 and Figure 8 show a representative cross-section of geological profile of the boreholes and probeholes that intersect the voids/working of the Barnsley Seam. The line of the cross-sections are shown on Figure 6.

In addition to the coal seam investigation, a series of trial trenches were excavated to attempt to locate the presence of the mine adits that are detailed in the Coal Authority report. A detailed Shaft Plan and Data Sheet was obtained from the Coal Authority to investigate further any records held by the Coal Authority, the report is included in Appendix F. The details are listed in Table 7 in section 3.10.

The trial trenching was able to identify one of the mine adits, as shown on Figure 10. Photographs are included in Appendix I.

5.1.5 Groundwater

Due to the nature of the drilling (rotary that uses added water for flush throughout drilling) significant groundwater strikes were not encountered during this investigation. Groundwater seepages were noted in four trial pits at various depths and in differing strata which suggests a localised perched groundwater table may be present across the site.

It should be noted that groundwater levels might fluctuate for a number of reasons including seasonal variations. Ongoing monitoring would be required to establish both the full range of conditions and any trends in groundwater levels.

The results of the subsequent groundwater monitoring and well surveying exercise are summarised in Table 16. The limited data available is unable to confirm the groundwater flow direction.

Table 16: Groundwater monitoring data (22.02.2016)

Monitoring well	Depth to water (mb TOC)
BH01	8.404
BH02	8.070
BH03A	3.735
BH04	1.880
BH05	Dry
BH06	Dry

5.1.6 Visual/olfactory evidence of soil and groundwater contamination

Generally, no significant visual or olfactory evidence of anthropogenic contamination was noted during the investigation and no further source areas were identified. Significant depths of made ground were noted in the northern central part of the site, however the made ground did not contain any notable evidence of contamination.

5.2 Ground gas regime

The results of the ground gas monitoring and testing carried out are given in Appendix J. The results are summarised in Table 17.

Table 17: Summary of ground gas monitoring results

Borehole	Response zone/strata	Probable source(s) of ground gas	Number of monitoring visits	Methane (%)	Carbon dioxide (%)	Oxygen (%)	Flow rate (l/hr)	Water level (m b TOC)	Atmospheric pressure (mbar)
BH1	PMCM	Coal measures strata	2	<0.1	<0.1	20.8	2.5	8.404	996 - 1018
BH2			2	<0.1	1.9	18.7	0.1	8.070	997-

									1018
BH3A			2	<0.1	<0.1	21.1	0.2	3.735	996-1018
BH4			2	<0.1	1.4	20.3	0.0	1.48	995-1018
BH5			2	<0.1	0.3	21.4	0.2	0.882	997-1020
BH6			2	0.1	0.9	18.6	0.3	Dry	997-1021
Note: PMCM = Pennine Middle Coal Measures									

5.3 Refinement of the initial conceptual site model

The ground, groundwater and ground gas conditions confirmed by the intrusive investigation are generally in accordance with those considered in the PRA. Three areas of significant made ground were noted associated with the building next to Manor House Farm (Area 4), the northern portion of the Central Area (Area 2), and associated with the former school (Area 5). There are some other areas of made ground present in the south of the site and across the site, assumed to be from disturbance of the ground due to agricultural activities.

Firm to stiff clay believed to represent the residual upper surface of the Pennine Middle Coal Measures in its completely weathered state was encountered between ground level and a depth of 0.60m below ground level at a thickness varying between 0.40 and 2.70m. Mudstone and sandstone of the Pennine Middle Coal Measures were encountered at a depth of between 0.55 and 3.20m to the full depth of investigation. Bands of coal were encountered in four locations at shallow depth of between 0.65 and 2.70 m and at five locations slightly deeper between 4.70 and 9.10 m depth. Deeper bands of coal were encountered in three locations between 10.30 and 26.80 m depth.

This generally confirms the stratigraphical succession described in the initial conceptual model.

Shallow groundwater was encountered as seepages during the trial pit investigation at depths ranging between 0.60 and 2.55m in the made ground and underlying Pennine Middle Coal Measures. The standing water levels in monitoring wells installed in boreholes were between 1.880 and 8.404 mb TOC.

Shallow groundwater beneath the site is not expected to be in continuity with the underlying secondary A Aquifer, which is expected to be encountered at depth. The groundwater seepages encountered during the investigation are believed to be discrete pockets within the various strata. The groundwater is unlikely to be in continuity with the River Dearne located 177m west of the site, as discussed within the PRA.

Concentrations of ground gas were found to be low in the first two rounds of monitoring; however, it is considered that the monitoring carried out to date is insufficient to characterise the ground gas regime adequately.

The following potential pollutant linkages, which were identified in the PRA, are considered as still requiring assessment:

1) Direct contact of contaminated soils to future site users
2) Inhalation exposure of future site users to asbestos fibres
3) Plant uptake of contaminants within the soils, which may affect plant growth
4) Chemical attack on infrastructure including concrete and potable water supply pipes from contaminated soils
5) Inhalation and explosion of hazardous ground gases from build up within buildings

These linkages are assessed in Section 6.

5.3.1 Uncertainty

Close to the area of trial trench 4, a pile of broken suspected asbestos containing corrugated tiles were noted. This was not sampled due to specialist equipment not being available at the time of the excavation. A photograph was taken and was assessed by an RSK asbestos specialist who confirmed the material is highly likely to be ACM. The photograph has been provided in Appendix I.

6 QUANTITATIVE RISK ASSESSMENT

In line with CLR11 (EA, 2004a), there are two stages of quantitative risk assessment, generic and detailed. The GQRA comprises the comparison of soil, groundwater, soil gas and ground gas results with generic assessment criteria (GAC) that are appropriate to the linkage being assessed. The results of the soil laboratory testing are provided in Appendix K.

6.1 Linkages for assessment

Section 5.3 presents the refined conceptual model which identified the linkages that required assessment after the findings of the site investigation had been considered. These linkages together with the method of assessment are presented in Table 18.

Table 18: Linkages for generic quantitative risk assessment

Potentially relevant pollutant linkage	Assessment method
1. Direct contact with impacted soil by future residents	Human health GAC in Appendix L for a proposed residential end use with private gardens since proposed end use includes residential gardens.
2. Inhalation exposure of future residents to asbestos fibres	Qualitative assessment based on the asbestos minerals present, their form, concentration, location and the nature of the proposed development.
3. Uptake of contaminants by vegetation potentially impacting plant growth	Comparison of soil data to GAC in Appendix N.
4. Contaminants permeating potable water supply pipes	Comparison of soil data to GAC in Appendix O for plastic water supply pipes using UKWIR (2010) guidance.
5. Concentrations of methane and carbon dioxide in ground gas entering and accumulating in: depressions and excavations that could affect workers enclosed spaces or small rooms in new buildings, which could affect future residents. In the case of methane this could create a potentially explosive atmosphere, while death by asphyxiation could result from carbon dioxide.	Gas screening values (GSV) have been calculated using maximum methane and carbon dioxide concentrations with maximum flow rates recorded at the site. The GSV have been compared with the generic Traffic Lights, as presented within the NHBC ground gases guide (Boyle and Witherington, 2007) and the aforementioned CIRIA report C665, owing to the development comprising low-rise housing with suspended floors. In addition, the gas regime is considered within the context of a conceptual model as required by both aforementioned guidance documents and BS8576

6.2 Methodology and results

The methodology and results of the GQRA are presented for each relevant pollutant linkage in turn.

6.2.1 Direct contact with impacted soil by future residents

Both targeted and non-targeted soil samples were obtained during the site investigation, however, this investigation was aimed at providing an indicative assessment of the site and only a limited number of samples were tested from each area. The results of the laboratory testing have been evaluated in the following subsections depending on the site area. A comparison table of the soil laboratory results to the corresponding GAC is provided in Appendix M.

6.2.1.1 Area 1 – The Western Area

One sample of made ground and one sample of the underlying natural soils was tested for a suite of contaminants. The results were directly compared to the GACs for a residential end use. All of the results were below the GACs, which indicates that the made ground and underlying natural soils are suitable for the proposed end use.

6.2.1.2 Area 2 – The Central Area

Two samples of made ground or possible made ground were tested from the southern part of this area, and four samples were tested from the raised area of infilled ground in the north. All results were compared directly to the GACs and were below the GAC values for all contaminants except the following:

- TP13 at 0.00-0.25m, result of 47mg/kg for Arsenic, which is above the GAC of 37mg/kg
- TP13 at 0.30-0.50m, result of 45mg/kg for Arsenic, which is above the GAC of 37mg/kg
- TP16 at 1.10-1.40m, result of 382mg/kg for Lead, is above the GAC of 200mg/kg

These results indicate there may be some elevated concentrations of metals within the infilled ground in the northern part of Area 2.

6.2.1.3 Area 3 – The Eastern Area

Two samples of made ground and one sample of the topsoil was tested for a suite of contaminants. The results were directly compared to the GACs for a residential end use. All of the results were below the GACs, which indicates that the made ground and topsoil are suitable for the proposed end use.

6.2.1.4 *Area 4 – Manor House Farm Area*

Two samples of made ground was tested for a suite of contaminants. The results were directly compared to the GACs for a residential end use. All of the results were below the GACs, which indicate that the made ground is suitable for the proposed end use.

6.2.1.5 *Area 5 – Former School Area*

Two samples of made ground were tested from this area. All results were compared directly to the GACs and were below the GAC values for all contaminants except the following:

- TP21 at 0.00-0.50m, result of 42.1mg/kg for Benzo(a)anthracene, which is above the GAC of 11mg/kg
- TP21 at 0.00-0.50m, result of 35.6mg/kg for Benzo(a)pyrene, which is above the GAC of 5mg/kg
- TP21 at 0.00-0.50m, result of 40.8mg/kg for Benzo(b)fluoranthene, which is above the GAC of 3.3mg/kg
- TP21 at 0.00-0.50m, result of 50.6mg/kg for Chrysene, which is above the GAC of 22mg/kg
- TP21 at 0.00-0.50m, result of 3.81mg/kg for Dibenzo(ah)anthracene, which is above the GAC of 0.28mg/kg

These results indicate some elevated concentrations of PAH within one sample (TP21 at 0-0.5m). This is likely to be due to the presence of tarmac gravel within this material.

6.2.1.6 *Summary*

On the basis of the above assessment it is considered that there are potentially significant risks associated with the soil contamination and, as such, either additional risk assessment or remediation is required.

6.2.2 Inhalation exposure of future residents to asbestos fibres

The visual inspection at the laboratory identified no materials suspected of potentially containing asbestos and the scheduled laboratory screening for asbestos found no detectable asbestos fibres within the samples of made ground.

However, during the site works, broken piece of possible asbestos containing material in cement form were noted at ground level, close to the area of trial trench 4. The material was left in-situ in order to not disturb the area, as specialist sampling equipment was not available. A photograph was taken and has been assessed by an asbestos specialist, who confirmed it is highly likely to be ACM. The photograph is included in Appendix I.

6.2.3 Uptake of contaminants by vegetation potentially inhibiting plant growth

The results have been compared with the GAC presented in Appendix N for this linkage. The results indicate that a relevant pollutant linkage associated with phytotoxic effects is likely to exist. The results for zinc from TP12 at 0.00-0.60 m of 647 mg/kg (pH 7.66) and from TP16 at 1.10-1.40 m of 606 mg/kg (pH 7.33) are above the GAC of 300 mg/kg for both the appropriate pH bands.

However, the depth of an analysis for uptake of contaminants by vegetation is not required to be any deeper than 0.25 m depth, according to the guidance. Therefore, it is likely that the sample from TP16 at 0.80 m be discounted, depending on the proposed final ground levels.

In the area of TP12, a suitable thickness of capping material may be required, depending on the layout of the proposed development.

6.2.4 Impact of organic contaminants on potable water supply pipes

For initial assessment purposes, the results of the investigation have been compared with the GAC presented in Appendix O for this linkage, which are reproduced from *UKWIR Report 10/WM/03/21. Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites* (UKWIR, 2010).

The results indicate that a relevant linkage is unlikely to exist associated with organic contaminants across the majority of the site. Therefore pollutant polyethylene (PE) and/or polyvinyl chloride (PVC) water supply pipes are expected to be suitable for use on the majority of the development, except for within the vicinity of TP21, where elevated results for mineral oils were noted. Further assessment of this area should be completed once the proposed routes of the pipelines are known.

It should be noted that at the time of this investigation the future routes of water supply pipes had not been established, hence the investigation and sampling strategy may not be fully compliant with UKWIR recommendations. Consequently, a targeted investigation and specific sampling/analytical strategy may be required at a later date once the route(s) of the supply pipes are known. In addition, it is recommended that the relevant water supply company be contacted at an early stage to confirm its requirements for assessment, which may not necessarily be the same as those recommended by UKWIR.

6.2.5 Ground gas

The results have been assessed in accordance with the guidance provided in BS8576 and *CIRIA Report C665*. In the assessment of risks and selection of appropriate mitigation measures, both reports highlight the importance of the conceptual model.

CIRIA C665 identifies two types of development, termed Situation A (modified Wilson and Card method), appropriate to all development excluding traditional low-rise

construction, and Situation B (National House-Building Council, NHBC) only appropriate to traditional low-rise construction with ventilated sub-floor voids.

Both methods are based on calculations of the limiting borehole gas volume flow for methane and carbon dioxide, renamed as the gas screening value (GSV). The GSV (litres of gas per hour) is calculated by multiplying borehole flow rate (litres per hour) and gas concentration (percent by volume).

In both situations, it is important to note that the GSV thresholds are guideline values and not absolute. The GSV thresholds may be exceeded in certain circumstances, if the site conceptual model indicates it is safe to do so. Similarly, consideration of additional factors such as very high concentrations of methane, should lead to consideration of the need to adopt a higher risk classification than the GSV threshold indicates.

The site is to be redeveloped with low rise housing, however the foundation solutions have yet to be finalised and therefore both Situation A and B have been considered.

Situation A relates to all development types except low-rise housing and, by combining the qualitative assessment of risk (see refined conceptual model in Section 5.3) with the gas monitoring results, provides a semi-quantitative estimate of risk for a site. The method uses both gas concentrations and borehole flow rates to define a characteristic situation for a site based on the limiting borehole gas volume flows for methane and carbon dioxide. Having calculated the worst case GSVs for methane and carbon dioxide, the Characteristic Situation is then determined from Table 8.5 of CIRIA C665.

Situation B is a characterisation system developed by the NHBC (Boyle and Witherington, 2007), which relates only to low rise housing development constructed with a clear ventilated underfloor void. The system provides a risk-based approach that is designed to allow an identification of the required gas protection measures for low-rise housing by comparing the measured gas emission rates to generic “Traffic Lights”. The Traffic Lights include typical maximum concentrations that are provided for initial screening purposes and risk-based GSVs for situations where the typical maximum concentrations are exceeded. Based on the typical maximum gas concentrations and the GSVs, the appropriate Traffic Light, ranging from Green through Amber 1 and Amber 2 to Red, is determined from Table 8.7 of CIRIA C665.

The GSV calculations for each borehole are included in Appendix P. The gas monitoring data has identified a maximum methane concentration of <0.1% and a maximum concentration of carbon dioxide of 1.9%. A maximum gas flow rate of 2.4 l/hr has been recorded. Please note CIRIA C665 recommends using the highest gas concentration and highest flow rate recorded at the site even if recorded in different boreholes, unless the characterisation of the site has clearly indicated that the values are associated with different soil gas regimes, e.g. different sources of gas. The calculated GSV for methane is 0.00 l/hr and the GSV for carbon dioxide is 0.00 l/hr. Based on the GSVs the site has been characterised as Green or as Characteristic Situation 1.

For both types of development, CIRIA C665 provides details of the typical scope of protective measures to be adopted for the relevant site characterisation.

The gas monitoring programme carried out to-date provides some evidence for an initial assessment of redevelopment requirements. However, it is considered that the monitoring undertaken during this investigation has not established the 'worst-case' scenario and therefore further monitoring is required to characterise adequately the ground gas regime. Adequate monitoring should be carried out to enable the confident assessment of risk and subsequent design of an appropriate gas protection scheme(s) for the proposed development.

6.3 Environmental assessment conclusions

This investigation aimed to provide information on the ground conditions to provide an initial assessment of the geo-environmental liabilities associated with the development of the site. At the time of writing the layout of proposed development has not been finalised and only an indicative plan has been provided.

The potential pollutant linkages were looked at in turn. The following conclusions can be drawn from the findings:

The intrusive investigation indicated that a number of areas of made ground were present in discrete locations across the site. The results of the contamination testing indicate elevated levels of metals within the northern raised area and a single location with elevated levels of PAH in the south eastern corner of the site associated with the former school were present. The testing completed this far is intended to represent an exploratory level survey of chemical conditions, generally in accordance with BS10175:2001.

In line with BS10175 and CLR 11, further investigations may subsequently be required to achieve full characterisation of the site and development of a detailed conceptual site model to provide full site characterisation to a level that will enable the design of a remediation strategy for the site and / or the discharge of planning conditions relating to contamination.

Whilst asbestos containing materials were not identified during the laboratory analysis of the eight samples, significant depths of made ground, both historical and recent are noted at the site and therefore the risk from asbestos fibres should not be discounted completely.

Furthermore, a pile of suspected ACM was noted close to the location of trial trench 4. The ACM was broken corrugated tiles/cement. Analysis by an RSK asbestos specialist indicted that it is highly likely to be ACM. It is likely to be present due to localised fly tipping. The risk of inhalation exposure to future site users cannot be discounted.

The results from the laboratory analysis indicated an area around TP12 which would be unsuitable for the growth of plants due to the presence of zinc. The results provide an indication of the chemical constituents of the soils on site, although due to the presence of made ground across certain parts of the site, it is likely that further intensive sampling and testing will be required in the proposed garden areas to ensure the soils are suitable for the growth of plants.

The proposed routes of the potable water supply pipes are currently unknown. A targeted soil sampling and testing investigation should be completed in the route of the proposed pipes once they are known to fully assess the risk of chemical attack on the supply pipes from contaminated soils.

Two rounds of ground gas monitoring have been completed to date. The results indicate that ground gas protection measures will not be required in the construction of the new dwellings. However, it would be prudent to note that the site lies within an intermediate probability radon area, as between 3 and 5% of homes are above the action level as defined by the British Geological Survey, National Geoscience Information Service.

Therefore, the risk of significant ingress of radon into structures on-site is considered to be medium and basic radon protective measures are required within new dwellings at the site.

7 GEOTECHNICAL SITE ASSESSMENT

7.1 Engineering considerations

It is understood that the proposed development is to involve the construction of approximately 300 residential properties and associated infrastructure. At this stage no specific information relating to building loads has been provided and therefore a wall loading of 100kN/m has been considered. It has been assumed the ground-bearing floor slabs will not be required and that beam and block flooring will be utilised.

7.2 Geotechnical hazards

A summary of commonly occurring geotechnical hazards is given in Table 19 together with an assessment of whether the site may be affected by each of the stated hazards.

Table 19: Summary of main potential geotechnical hazards that may affect site

Hazard category (excluding contamination issues)	Hazard status based on investigation findings and proposed development			Engineering considerations if hazard affects site
	Found to be present on site	Could be present but not found	Unlikely to be present and/or affect site	
Sudden lateral changes in ground conditions		√	Two fault line shown to dissect the site may cause variable change in depth to bedrock	Likely to affect ground engineering and foundation design and construction
Shrinkable clay soils	√	Clays have been found to be low to medium plasticity and there are a number of established trees on the site which will affect the shrinkability of the soils		Design to NHBC Standards Chapter 4.2 or similar
Highly compressible and low bearing capacity soils, (including peat and soft clay)		√		Likely to affect ground engineering and foundation design and construction

Hazard category (excluding contamination issues)	Hazard status based on investigation findings and proposed development			Engineering considerations if hazard affects site
	Found to be present on site	Could be present but not found	Unlikely to be present and/or affect site	
Silt-rich soils susceptible to rapid loss of strength in wet conditions	√	Variable silt content in the weathered Middle Coal Measures		Likely to affect ground engineering and foundation design and construction
Running sand at and below water table			√	Likely to affect ground engineering and foundation design and construction
Ground subject to or at risk from landslides			√	Likely to require special stabilisation measures
Ground subject to or at risk from coastal or river erosion			√	Likely to require special protection/stabilisation measures
High groundwater table (including waterlogged ground)		√		May affect temporary and permanent works
Underground mining	√	Evidence of mine workings and mine adits present on site		Likely to require special stabilisation measures
Existing sub-structures (e.g. tunnels, foundations, basements, and adjacent sub-structures)	√	Evidence of basements noted in Area 5, former school area		Likely to affect ground engineering and foundation design and construction
Filled and made ground (including embankments, infilled ponds and quarries)	√	Areas of filled ground associated with former buildings and infilled raised area in north of Area 2.		Likely to affect ground engineering and foundation design and construction
Adverse ground chemistry (including expansive slags and weathering of sulphides to sulphates)		√ (See section 7.3.7)		May affect ground engineering and foundation design and construction
Note: Seismicity is not included in the above table as this is not normally a design consideration in the UK.				

7.3 Foundations

7.3.1 General suitability

Generally, firm to stiff clay is present at a relatively shallow depth across the site beneath the made ground, therefore it is considered that traditional shallow spread footings will be suitable for the majority of the proposed development.

Localised areas of deeper made ground and possible made ground were encountered as follows:

- Raised area in central northern part of site (TP13, at least 4.6m; TP14, 3.2m; TP15, 1.8m and TP16, 1.7m
- BH05, 3.0m (possible made ground)
- TP21, 3.0m in the south eastern part of site

Where made ground is less than 2.5m deep in these areas, trench fill foundations are considered suitable.

Where made ground is over 2.5m deep, alternative foundations will be required. Alternative foundation options will depend on final ground levels and may include piled and/or raft foundations; production of a final foundation design layout is recommended.

For areas affected by shallow underground coal workings, spread foundations will need to be suitably reinforced.

7.3.2 Shallow spread foundations

The recommendations for the design and construction of spread foundations in relation to the ground conditions are set out in Table 20.

Table 20: Design and construction of spread foundations

Design/construction considerations	Design/construction recommendations
Founding stratum	Residual soils (Class E to Class C weathered Coal Measures)
Depth	Foundations should be taken to a minimum depth of 0.9m below finished ground level and at least 0.1m into the founding stratum below any overlying topsoil or made ground or to any greater depth required in respect of the special design considerations given below.
Special design considerations	Owing to the presence of low to medium shrinkable clay soils, foundations should be designed taking into account all the normal precautions, including minimum founding depths, to minimise the risk of future foundation movements in accordance with NHBC standards or similar.

Design/construction considerations	Design/construction recommendations
	Owing to the potential for significant lateral and vertical variability of the founding strata, consideration should be given to incorporating appropriate reinforcement into the strip foundations to minimise the risk of future differential foundation movements.
Bearing capacity	Spread foundations constructed on the weathered Coal Measures at a minimum depth of 0.90 m bgl can be designed using a net allowable bearing pressure of 120 kN/m^2. The allowable bearing capacity includes an overall factor of safety of 3 against bearing capacity failure with the total settlements associated with the bearing pressure estimated to be less than 25 mm.
Stability of excavations	Generally the trial pits remained stable during excavation which indicates that foundation excavations should also remain stable in the short term. In the event that excavations are to remain open for longer periods, consideration should be given to the use of trench support systems.
Dewatering	During ground investigation works, groundwater seepage was occasionally recorded in the trial pits. Subsequent groundwater monitoring indicated standing water at it's highest in BH4 and BH5 at depths ranging between 0.88m and 1.88m bgl, therefore allowance should be made for localised water control in these parts of the site (eastern area) during foundation excavation. The highest standing water level in the remaining monitoring wells was 3.6m bgl, indicating that dewatering may not be required in the western part of site.
Construction considerations	All foundation excavations should be inspected, and any made ground and soft, organic or otherwise unsuitable materials removed and replaced with mass concrete. The proposed founding stratum is a relatively silt-rich soil, hence susceptible to rapid softening once exposed. Hence all foundation excavations should immediately be blinded with concrete or the full foundation constructed.

7.3.3 Foundation works risk assessment

It is anticipated that a foundation works risk assessment report will not be required for the development because concentrations of chemicals of potential concern (COPC) within made ground and natural soils were typically below corresponding GAC. Where exceedances were noted, these were found to be marginal and of the same order of magnitude as the associated GAC. It may be prudent to further investigate the area of elevated PAH in the south east corner of the site, as a localised foundation works risk assessment may be required for this area.

7.3.4 Development risk from coal mining assessment

There are a number of lines of evidence that show the Barnsley Rider Coal and Barnsley Coal outcrop within the site boundary. Additionally, the unnamed seam and the Top Haigh Moor Coal Seam outcrop to the southwest of the site. Therefore, there are

significant areas of the site that are underlain by either intact or worked coal seams at relatively shallow depth.

It is recommended that the thickness of competent rock overlying an underlying coal / worked seam required to ensure ground stability at the surface is ten times that of the underlying coal / worked seam. On this basis there are substantial areas of the site that do not have the required 'ten times' seam thickness, and these areas will require stabilisation prior to development. These areas are shown on Figure 11.

In addition four mining adits have been identified from the Coal Authority records to be present close to the crop of the Barnsley Coal. The position of each of these adits should be identified and each of them stabilised to mitigate potential risk to the proposed development.

7.3.5 Floor slabs

It is assumed that during construction of the proposed housing development, a block and beam flooring system will be utilised and therefore floor slabs will be suspended across the whole development.

7.3.6 Roads, hardstanding and drainage

The near surface ground conditions consist of made ground over firm to stiff clay. Therefore, for preliminary purposes a California bearing ratio (CBR) value of 3% can be considered for pavement design. It is recommended that in situ CBR determination be carried out targeting areas of hardstanding prior to construction works, to confirm this value.

7.3.7 Chemical attack on buried concrete

This assessment of the potential for chemical attack on buried concrete is based on current BRE guidance. The desk study and site walkover indicate that, for the purposes of this assessment of the aggressive chemical environment, the site should be considered as a brownfield site.

The laboratory results indicate 2:1 water soil extract sulphate contents of up to 60mg/l with pH values varying between 6.62 and 7.70. Based on the results, an Aggressive Chemical Environment for Concrete classification of AC-1 with a Design Sulphate Class of DS-1 may be assumed for design purposes. This assumes nominally mobile groundwater conditions and that no significantly disturbed clay comes into contact with concrete foundations or structures.

8 REUSE OF MATERIALS AND WASTE

8.1 Reuse of suitable materials

Under the Waste Framework Directive naturally occurring soils are not considered waste if re-used on the site of origin for the purposes of development.

In accordance with the definition provided in the Waste Framework Directive, materials are only considered waste if 'they are discarded, intended to be discarded or required to be discarded, by the holder'. Thus, soils that are not of clean and natural origin, i.e. made ground (whether contaminated or not) and other materials such as recycled aggregate, do not become waste until the aforementioned criteria are met.

The Definition of Waste: Development Industry Code of Practice (CL:AIRE, 2011) (CoP) was developed in consultation with the Environment Agency and development industry to enable the re-use of materials under certain scenarios and subject to demonstrating that specific criteria are met. The current re-use scenarios covered by the CoP comprise:

- Re-use on the site of origin (with or without treatment)
- Direct transfer of clean and natural soils between sites
- Use in the development of land other than the site of origin following treatment at an authorised Hub site (including a fixed Soil Treatment Facility).

The importation of made ground soils (irrespective of contamination status) or crushed demolition materials is not currently permitted under the CoP and requires either a standard rules environmental permit or a U1 waste exemption (see below).

In the context of excavated materials used on sites undergoing development, four factors are considered to be of particular relevance in determining if the material is a waste or when it ceases to be waste:

- the aim of the Waste Framework Directive is not undermined, i.e. if the use of the material will create an unacceptable risk of pollution of the environment or harm to human health it is likely to be waste
- the material is certain to be used
- the material is suitable for use both chemically and geotechnically
- only the required quantity of material will be used.

The CoP requires the preparation of a materials management plan (MMP) that confirms the above factors will be met. This plan needs to be reviewed by a 'Qualified Person' (QP) who will then issue a declaration form to the EA. As the project progresses, data must be collated and on completion a verification report produced that shows the MMP was followed and describes any changes.

The MMP establishes whether specific materials are classified as waste and how excavated materials will be treated and/or re-used in line with the CoP. The MMP is likely to form part of the site waste management plan.

Although generally undeveloped, the site has had several phases of construction and demolition of buildings, industrial uses (the tramline) and an area of infilled ground and the investigation has confirmed the presence of made ground. Therefore, before any excavation works begin on-site, an MMP will need to be prepared, reviewed by a QP; and a Declaration lodged with the EA.

As noted above, under the Waste Framework Directive naturally occurring soils are not considered waste and therefore arisings of clean natural soils, e.g. from foundation and drainage excavations, may be re-used on the site. However, it is important that these soils should be stockpiled separately and not become cross-contaminated with made ground / contaminated soils or construction wastes.

If it is proposed to import clean and naturally occurring soils direct from another site, the receiving site's MMP would need to be updated in advance of importation.

8.2 Treatment to meet suitable-for-use criteria

Where materials do not meet the suitable for use criteria it may be possible to treat them under an environmental permit (mobile treatment licence) to enable them to be reused onsite.

To enable the treatment options to be determined, an options appraisal and a remediation strategy document will be necessary to support discussion of the issues with regulators and third parties.

8.3 Reuse of waste materials

If material is discarded as waste then its reuse on site may still be possible. Waste soils and recycled aggregate can be reused on site under a standard rules environmental permit or a U1 waste exemption from the Environmental Permitting (England and Wales) Regulations 2010 provided that they are suitable for the proposed use, i.e. not cause harm to human health or the environment. However, it should be noted that these have strict limits on the quantity of material that can be reused.

8.4 Wastes for landfill disposal

Wastes require pre-treatment prior to disposal at landfill. Pre-treatment must be a physical, thermal, chemical or biological process (including sorting) that changes the characteristics of the waste to reduce its volume, reduce its hazardous nature, facilitate its handling and enhance its recovery.

The latest, edition of the EA's 'Technical Guidance WM3' (2015) Guidance on the classification and assessment of waste, requires that within a mixed waste* the separately identifiable wastes are assessed separately. Mixing of different types of hazardous waste and hazardous waste with other waste substances is prohibited under the Waste Framework Directive. Wastes that have been mixed must be separated whenever possible.

It is best practice to provide your waste carrier (or the disposal site) with details of how the waste has been treated. Your waste carrier may provide a pre-treatment confirmation form or space on the waste transfer note to detail the pre-treatment.

The classification of waste soil is a two-stage process, the first being an assessment of whether the soil is considered hazardous or not following the guidance within Technical Guidance WM3. For off-site disposal to landfill the results of Waste Acceptance Criteria (WAC) testing must then be reviewed to establish if the soil is acceptable at the relevant class of landfill or requires pre-treatment to reduce specific hazardous properties.

8.4.1 Waste acceptance criteria

All inert, stable non-reactive hazardous and hazardous wastes have limit values (waste acceptance criteria) set out in legislation that must be met before that class of landfill can accept the waste. Currently, no WAC are in place for non-hazardous waste.

Soil and other materials that are found not to be hazardous may be classified as either non hazardous or inert. In order to determine whether they can be classed as inert the soil must be tested and found to be below the inert waste acceptance criteria.

8.4.2 Waste sampling plan

Technical Guidance WM3 sets out in Appendix D requirements for waste sampling. It is a legal requirement to correctly assess and classify waste. The level of sampling should be proportionate to the volume of waste and its heterogeneity. At this stage RSK consider that the level of soil sampling is/is not sufficient to robustly/fully categorise the material.

RSK recommends that a Sampling Plan be prepared to support any waste classifications and hazardous waste assessments, prior to development.

8.4.3 Preliminary waste assessment

Given the level of data obtained, scale of the development and heterogeneity of the site soils the following assessment should be considered indicative and further assessment should be undertaken following the preparation of a Waste Sampling Plan.

Envirolab (an RSK company) has developed a waste soils characterisation assessment tool (HASWASTE), which follows the guidance within Technical Guidance WM3. The

analytical results have been assessed using this tool for potential off-site disposal of materials in the future. The results are presented in Table 21.

Table 21: Results of waste soils characterisation assessment (HASWASTE)

Sample ref/location	Waste classification
TP02, 0m	Not hazardous
TP05, 0.6m	Not hazardous
TP07, 0.3m	Not hazardous
TP07, 0.8m	Not hazardous
TP09, 0.2m	Not hazardous
TP12, 0m	Not hazardous
TP13, 0m	Not hazardous
TP13, 0.3m	Not hazardous
TP14, 1.5m	Not hazardous
TP16, 1.1m	Not hazardous
TP17, 0m	Not hazardous
TP18, 0m	Not hazardous
TP20, 0m	Not hazardous
TP21, 0m	Hazardous
TP23, 0m	Not hazardous

Made ground at one location (sample TP21 at ground level) was classified as hazardous waste, owing to the presence of tarmac gravel within the material and therefore must be disposed of at a suitably licensed hazardous waste landfill.

None of the other samples were classified as hazardous waste. Therefore to determine whether waste might be classified as inert or non hazardous WAC testing will need to be undertaken.

8.4.4 Asbestos within waste soils

The latest, edition of Technical Guidance WM3, requires that within a mixed waste the separately identifiable wastes be assessed separately.

For instance where waste soil contains identifiable pieces of asbestos (visible to the naked eye) the asbestos should, where feasible, be separated from the soil and classified separately.

No asbestos fibres were detected in soil samples analysed for asbestos, however suspected ACM was noted at one location (trial trench 4). Furthermore, asbestos is

often present in discrete areas and since localised made ground is present, asbestos may be found during more extensive ground works.

8.5 Landfill tax

Waste producers disposing of material to landfill are required to pay landfill tax by HM Revenue and Customs.

The tax is chargeable by weight (tonnage) and two rates apply, either standard or lower rate. The lower rate only applies to those less polluting wastes as set out in the Landfill Tax (Qualifying Material) Order 2011, which include naturally occurring rock and soil, concrete, some minerals, some furnace slags and ash, and some low-activity organic compounds. Evidence confirming that the waste qualifies for the lower rate will be required, and standard rate tax will apply for the whole waste load for any loads of mixed waste.

Currently (since April 2015), standard rate landfill tax is £82.60 per tonne and rising to £84.40 after the 1st April 2016.

The lower rate of landfill tax applicable to less polluting wastes (i.e. 'inert' wastes) remains at £2.60 per tonne.

Material disposed of at a soil treatment centre will not be subject to landfill tax.

8.6 Groundwater

When there is an intention to discard groundwater, chemical test results will indicate the appropriate disposal options. This could include disposal to treatment facility, via consent (issued by the water authority) to foul sewer or via consent (issued by the EA) to a watercourse or land.

8.7 Recommendations

RSK recommends that consideration as to how potentially waste soils will be dealt with as part of this development/remediation is given as early in the project planning process as possible. Such planning can lead to cost savings where potentially waste soils are viewed as a resource and retained on-site as part of the development. We also recommend, where off-site disposal is being considered, that appropriate facilities are identified and discussions initiated to confirm suitability of the facility to take the material. Potentially, these may include soil treatment facilities as well as landfills.

RSK can provide specialist advice to assist in this process, which can be complex and subject to regular regulatory change.

9 CONCLUSIONS AND RECOMMENDATIONS

9.1 Environmental

On completion of the GQRA the following pollutant linkages that require further action are:

1. Direct contact of contaminated soils to future site users associated with localised contamination in made ground
2. Inhalation exposure of future site users to asbestos fibres
3. Plant uptake of contaminants within the soils, which may affect plant growth in certain areas of the site
4. Permeation of contaminants to water supply pipes in certain areas of the site
5. Inhalation and explosion of hazardous ground gases from build up within buildings

Localised made ground is present across the site. Three exceedances of the GAC for metals were identified in the area of raised ground (north of Area 2) and five exceedances of the GAC for PAH at a single location in Area 5 (former school area), due to the presence of tarmac gravel. This indicates potential risk associated with soil contamination in these areas of the site. The testing completed to date is intended to represent an exploratory level survey of chemical conditions. It is recommended that additional sampling and analysis of made ground is undertaken to further investigate this linkage and to delineate areas of contamination. It is recommended that a clean cover, with a minimum thickness of 600mm be placed within garden areas of affected plots.

Asbestos fibres were not detected in any of the samples analysed for this contaminant, however the presence of suspected ACM was encountered on site and as such this potential linkage and the potential for encountering further ACM at the site cannot be discounted. It is recommended that a watching brief is undertaken during ground works in areas where fly-tipping and made ground are present. ACM should be removed from site by a suitably licensed and qualified company.

Two exceedances of the GAC for zinc with respect to plant uptake were identified at a single location. It is unlikely that the soils will pose a risk to plant growth site-wide, however it would be prudent to undertake additional assessment of this linkage.

The proposed routes of the potable water supply pipes are currently unknown. A targeted soil sampling and testing investigation should be completed in the route of the proposed pipes once they are known to fully assess the risk of chemical attack on the supply pipes from contaminated soils.

In summary, further investigations may subsequently be required to achieve full characterisation of the site and development of a detailed conceptual site model to provide full site characterisation to a level that will enable the design of a remediation strategy for the site and / or the discharge of planning conditions relating to contamination.

Assessment of the ground gas regime is ongoing with a further four rounds to be completed. Currently the site is considered 'Green', however final determination of the requirement for gas protection measures should be reserved until the monitoring programme is completed. The ground gas risk assessment will be completed as an addendum report.

The site lies within an intermediate probability radon area, as between 3 and 5% of homes are above the action level as defined by the British Geological Survey, National Geoscience Information Service.

Therefore, the risk of significant ingress of radon into structures on-site is considered to be medium and basic radon protective measures are required within new dwellings at the site.

The presence of Japanese Knotweed in discrete locations within Area 2 has been highlighted. It is recommended that the site be re-surveyed during the growing season. A competent knotweed contractor should be employed manage and perform the treatment/ eradication works.

9.2 Reuse of materials and waste

The results of the waste soils and characterisation assessment (HASWASTE) indicates that all soil samples are classified as not hazardous, with the exception of shallow made ground at TP21, which contained tarmac gravel.

9.3 Geotechnical

The firm to stiff natural soils (weathered Coal Measures) would be considered suitable to support shallow spread foundations. Trench fill foundations are considered suitable in areas of deeper made ground (less than 2.5m deep) and alternative foundation options will be required in areas where made ground is deeper than 2.5m. Production of a final foundation design layout is recommended. For areas affected by shallow underground coal workings, spread foundations will be required to be reinforced.

The preliminary recommended sub-grade soil CBR value for road pavement design is 3% based on the ground conditions encountered. It is recommended that in-situ CBR determination be carried out targeting areas of hardstanding prior to construction works to confirm this value.

The Aggressive Chemical Environment for Concrete classification is indicated to be AC-1, with a Design Sulphate Class of DS-1 in accordance with current BRE guidance.

9.4 Mining

The Barnsley Rider Coal and Barnsley Coal are indicated to outcrop within the site boundary. Additionally, the unnamed seam and the Top Haigh Moor Coal Seam outcrop to the southwest of the site. Significant areas of the site that are underlain by either intact or worked coal seams at relatively shallow depth.

The probing investigation encountered evidence of shallow working (broken ground or possible voids) at six exploratory locations across the site.

It is recommended that the thickness of competent rock overlying a coal / worked seam required to ensure ground stability at the surface is ten times that of the underlying coal / worked seam. On this basis there are substantial areas of the site that do not have the required 'ten times' seam thickness, and these areas will require stabilisation prior to development. These areas are shown on Figure 11.

In addition, four mining adits have been identified from the Coal Authority records to be present close to the crop of the Barnsley Coal. Evidence of an adit was encountered at one location during the trial trenching exercise. The position of each of the adits should be identified and each of them stabilised to mitigate potential risk to the proposed development.

BIBLIOGRAPHY

AGS Interim Guidance (2013), 'Site investigation and asbestos risk assessment for the protection of site investigation and geotechnical laboratory personnel', February.

Boyle, R. A. and Witherington, P. J. (2007), 'Guidance on Evaluation of Development Proposals on Sites where Methane and Carbon Dioxide are Present', National House-Building Council and RSK Group.

British Geological Survey (2008), Sheet Number 87, Solid & Drift Edition, scale 1:63,360/1:50,000.

British Geological Survey (1874), Solid Edition, scale 1:10,560.

British Geological Survey (2016), 'Radon report: England and Wales reference GR_213248/1', dated 24 February 2016.

British Standards Institution (BSI) (1990), 'BS 1377:1990. Methods of test for soils for civil engineering purposes'.

British Standards Institution (1999), 'BS 5930:1999. Code of practice for site investigations'.

British Standard Institution (BSI) (2007), 'BS 8485:2007. Code of practice for the characterization and remediation from ground gas in affected developments'.

British Standards Institution (2011), 'BS 10175:2013. Investigation of potentially contaminated sites: Code of practice'.

British Standards Institution (2013), BS8576:2013. Guidance on investigations for ground gas – permanent gases and volatile organic compounds (VOCs)

Building Research Establishment (BRE) (2001), *BRE Report 414. Protective measures for housing on gas-contaminated land* (London: BRE).

Building Research Establishment (2005), *BRE Special Digest 1: Concrete in aggressive ground* (London: BRE).

Card, G. B. (1995), *CIRIA Report 149. Protecting development from methane* (London: CIRIA).

Chartered Institute for Environmental Health and Land Quality Management (2009), 'The LQM/CIEH Generic Assessment Criteria for Human Health', second edition.

Chartered Institute of Environmental Health (CIEH) and CL:AIRE (2008), *Guidance on Comparing Soil Contamination Data with a Critical Concentration* (London: CIEH).

CL:AIRE (2009), *Soil Generic Assessment Criteria for Human Health Risk Assessment* (London: CL:AIRE).

CL:AIRE (2011), *CL:AIRE Code of Practice. The Definition of Waste: Development Industry Code of Practice, Version 2* (London: CL:AIRE).

Dangerous Substances Directive (76/464.EEC).

Department for Environment, Food and Rural Affairs (2010), *The River Basin Districts Typology, Standards and Groundwater Threshold Values (Water Framework Directive) (England and Wales) Directions 2010* (London: HMSO).

Environment Agency (2015), 'Technical Guidance WM3. Guidance on the classification of and assessment of waste. 1st Edition.

Environment Agency (2004a), *Model Procedures for the Management of Contaminated Land. Contaminated Land Report Number 11 (CLR11),* September (Bristol: Environment Agency).

Environment Agency (2004b), 'Policy Number 199_04, dated 9 March 2004, Part IIA – Detailed Quantitative Assessment of Chronic Risks to Human Health from Contaminated Soils'.

Environment Agency (2006a), 'Remedial Targets Methodology: Hydrogeological Risk Assessment for Land Contamination'.

Environment Agency (2006b), 'The Knotweed Code of Practice – managing Japanese Knotweed on development sites'.

Environment Agency (2008), *Science Report SC050021/SR7. Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values* (Bristol: Environment Agency).

Environment Agency (2009a), Contaminated Land Exposure Assessment (CLEA) software, version 1.06.

Environment Agency (2009b), *Human health toxicological assessment of contaminants in soil. Science Report – Final SC050021/SR2*, January (Bristol: Environment Agency).

Environment Agency (2009c), 'Science Report SC050021/benzene SGV, toluene SGV, ethylbenzene SGV, xylene SGV, mercury SGV, selenium SGV, nickel SGV, arsenic SGV, cadmium SGV, phenol SGV, dioxins, furans and dioxin like PCBs SGVs', 'Supplementary information for the derivation of SGV for: benzene, toluene, ethylbenzene, xylene, mercury, selenium, nickel, arsenic, cadmium, phenol, dioxins, furans and dioxin- like PCBs', and 'Contaminants in soil: updated collation of toxicological data and intake values for humans: benzene, toluene, ethylbenzene, xylene, mercury, selenium, nickel, arsenic, cadmium, phenol, dioxins, furans and dioxin- like PCBs', March 2009, May 2009 and September 2009.

Environment Agency (2009d), *Science Report – SC050021/SR3. Updated technical background to the CLEA model* (Bristol: Environment Agency).

Environment Agency (2010a), 'GPLC1 – Guiding Principles of Land Contamination', 'GPLC2 – Frequently Asked Questions, Technical Information, Detailed Advice and References', and 'GPLC3 – Reporting Checklists', all March.

Environment Agency (2011) Chemical Standards Database.

Environment Agency (no date) Freshwater environmental quality standards.

Environment Agency www.environment-agency.gov.uk/.

Environmental Permitting (England and Wales) Regulations 2010 (London: HMSO).

Hazardous Waste Regulations 2005 (London: HMSO).

Landmark Information Group (2016), 'Envirocheck report reference 77520900_1_1', dated 4 January 2016.

National House-Building Council (1999), 'Chapter 5.2: Suspended Ground Floors' in *NHBC Standards*, revised September 1999, effective January 2000.

Norbury, D. (2010), *Soil and Rock Description in Engineering Practice* (Caithness: Whittles).

Office of the Deputy Prime Minister (2004), *Planning Policy Statement 23: Planning and Pollution Control* (London: The Stationery Office).

Part IIA of the Environmental Protection Act (Contaminated Land Regulations (England) 2002 (London: HMSO).

Rudland, D. J., Lancefield, R. M. and Mayell, P. N. (2001), *CIRIA C552. Contaminated Land Risk Assessment: A Guide to Good Practice* (London: CIRIA).

Simpson, G., Blower, T., Craig, R. N. and Wilkinson, W. B. (1989), *CIRIA Special Publication 69. The engineering implications of rising groundwater levels in the deep aquifer beneath London* (London: CIRIA).

The Building Regulations (revised December 2004) 'Approved Document C. Department of the Environment and The Welsh Office'.

The Coal Authority (2016), 'Non-residential coal and brine report reference 51001059098001', dated 04 January 2016.

The Coal Authority (2016), 'Shaft Plan and Data Sheets reference 51001072291001', dated 19 January 2016.

The Coal Authority (2016), Interactive Map Viewer, accessed: http://mapapps2.bgs.ac.uk/coalauthority/home.html 22 February 2016.

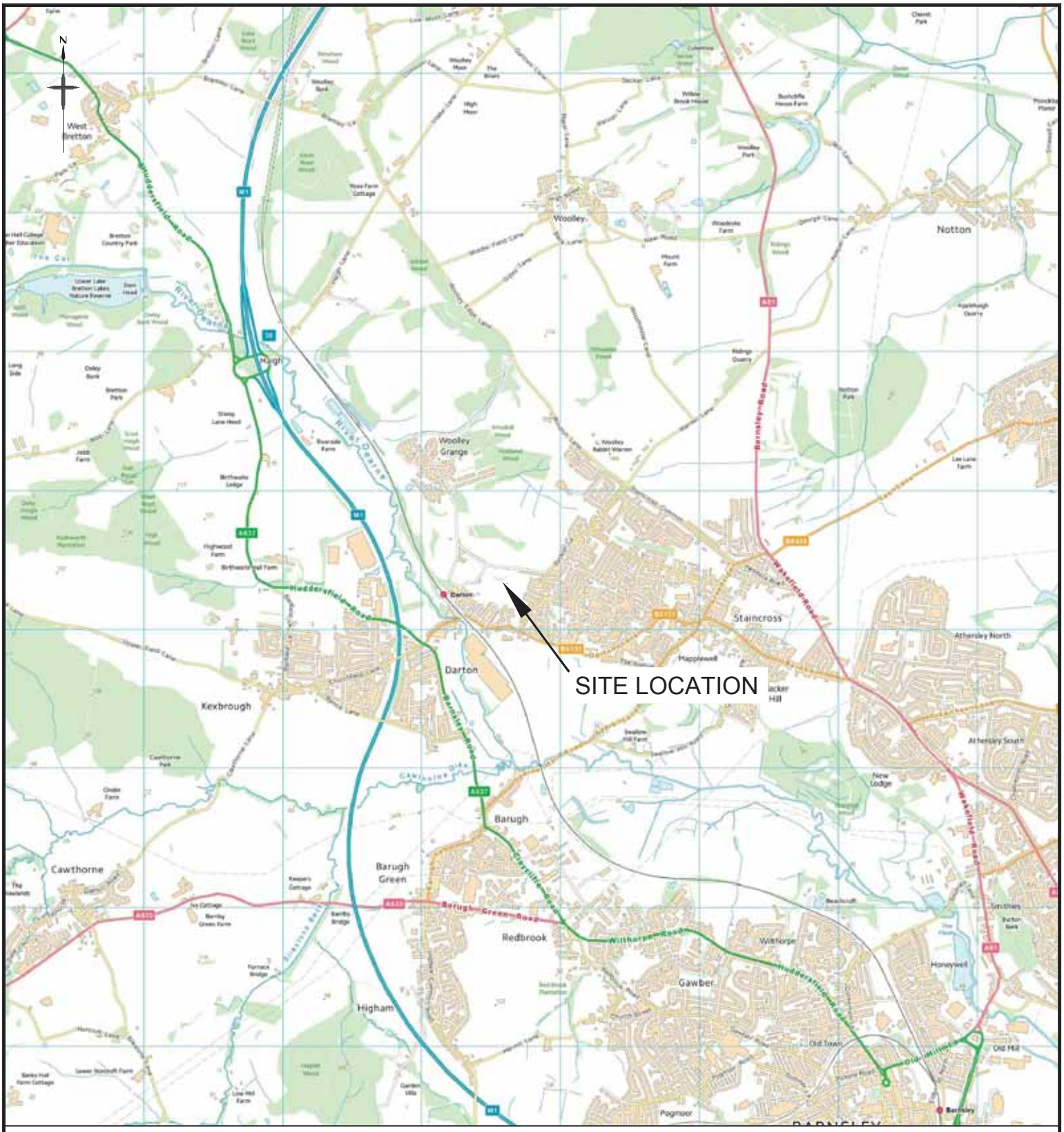
UK Water Industry Research (2010) *UKWIR Report 10/WM/03/21. Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites* (London: UKWIR).

Wilson, S. A. and Card, G. B. (1999), 'Reliability and risk in gas protection design', *Ground Engineering*, February: 33–6.

Wilson, S., Oliver, S., Mallet, H., Hutchings, H. and Card, G. (2007), *CIRIA Report C665: Assessing risks posed by hazardous ground gases to buildings* (London: CIRIA).

WRc plc (2002), 'Polycyclic Aromatic Hydrocarbons (PAH): Priorities for Environmental Quality Standard Development, R&D Technical Report P45'.

FIGURES



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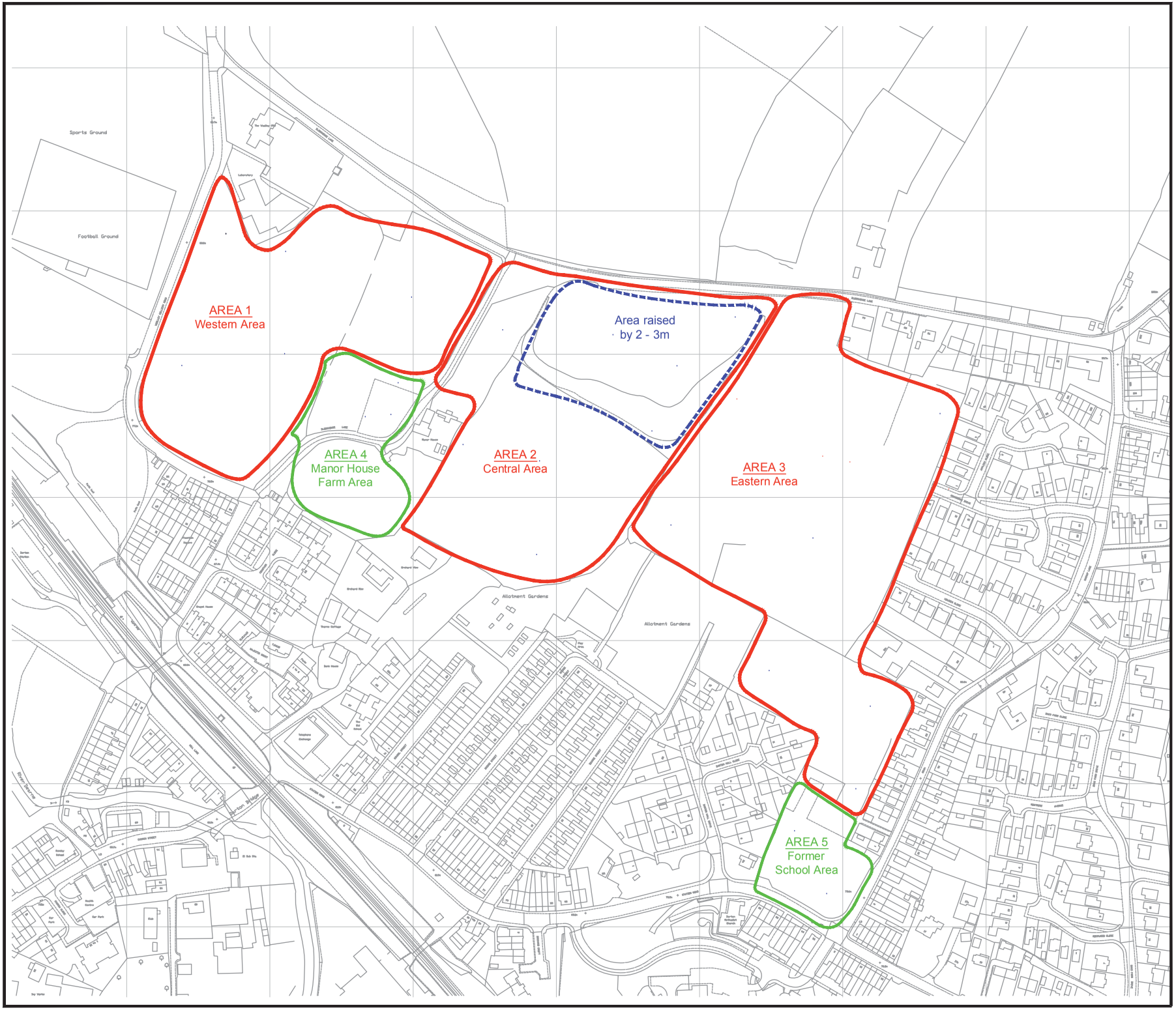
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Client	JONES HOMES (YORKSHIRE) LIMITED
Project Title	LAND OFF BLOOMHOUSE LANE, DARTON
Drawing Title	SITE LOCATION PLAN

Drawn	Date	Checked	Date	Approved	Date	Project No.	Drawing File
HD	22.03.16	JH	22.03.16	JH	22.03.16	301645	301645-R1(00)D001A

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



LEGEND:

N

REV	DATE	DESCRIPTION	BY	CHD.	APR.
A	22.03.16	FIRST ISSUE	HD	JH	JH

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

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Web: www.rsk.co.uk

CLIENT
JONES HOMES (YORKSHIRE) LIMITED

PROJECT
LAND OFF BLOOMHOUSE LANE, DARTON

TITLE
SITE FEATURES PLAN

JOB No.:	DRAWING FILE:
301645	301645-R1(00)D002A

BY:	DATE:	CONTRACT NO.		REV:
HD	22.03.16		FIGURE 2	A

Scale 1 : 2,500

0 20 40 60 80 100m



LEGEND:

N

Base plan from Spawforths, Indicative Master Plan, Dwg No. 0100-0002, dated Feb 2015

REV	DATE	DESCRIPTION	BY	CHD.	APR.
A	22.03.16	FIRST ISSUE	HD	JH	JH

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

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CLIENT
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PROJECT
LAND OFF BLOOMHOUSE LANE, DARTON

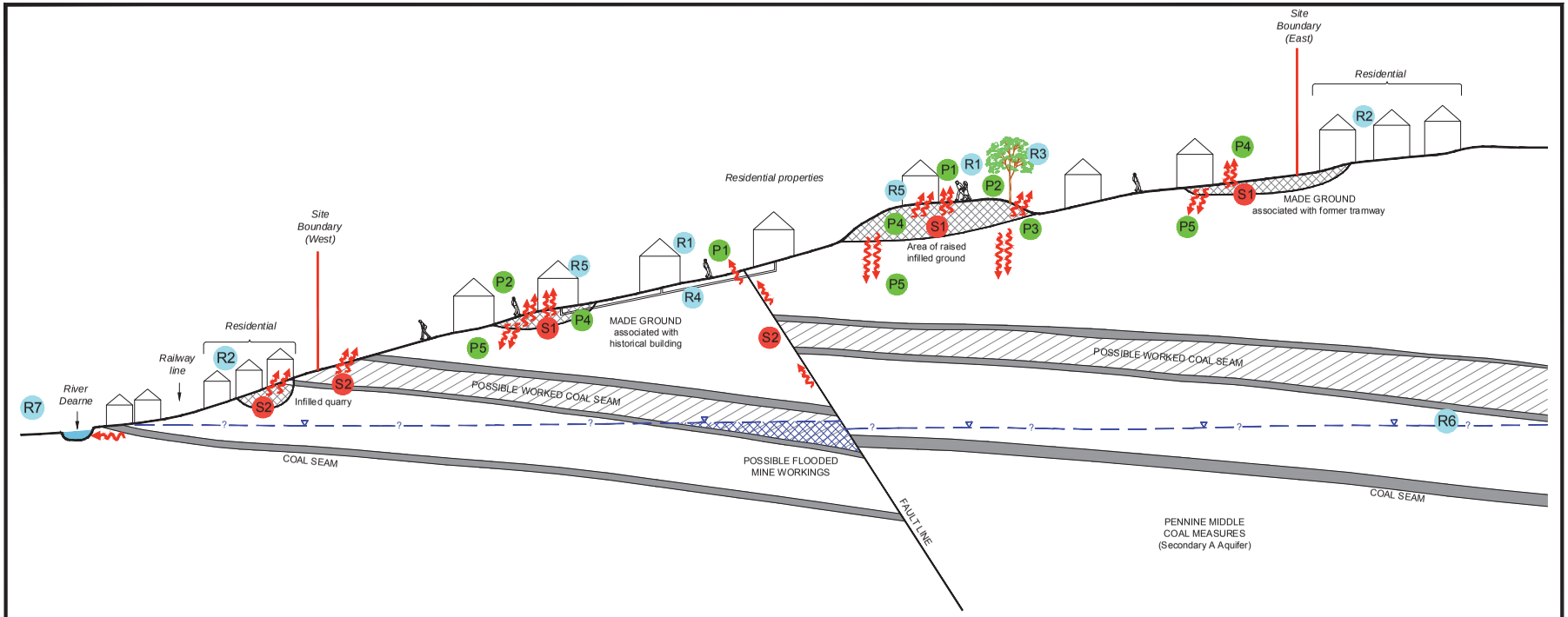
TITLE
PROPOSED DEVELOPMENT PLAN

JOB No.:	DRAWING FILE:
301645	301645-R1(00)D003A

BY:	DATE:	CONTRACT NO.		REV:
HD	22.03.16		FIGURE 3	A

Scale 1 : 2,500

0 20 40 60 80 100m



LEGEND:

- S1 Sources
- P1 Pathways
- R1 Receptors
- Potential Contamination pathways

SOURCES

- S1 Impact from contaminants associated with infilled material and made ground
- S2 Ground gas from flooded mine workings and infilled quarry

POTENTIAL CONTAMINATION PATHWAYS

- P1 Direct contact
- P2 Ground gas and soil gas inhalation
- P3 Root uptake
- P4 Chemical attack of infrastructure
- P5 Vertical or lateral migration

SIGNIFICANT RECEPTORS

- R1 Site occupiers (residents)
- R2 Occupiers of adjacent land
- R3 Vegetation
- R4 Water supply pipes
- R5 Buildings and infrastructure
- R6 Groundwater beneath the site
- R7 Surface water courses

REV	DATE	DESCRIPTION	BY	CHD.	APR.
A	22.03.16	FIRST ISSUE	HD	JH	JH

Dimensions	Projection	Scale	Orig Size
m		NTS	A3

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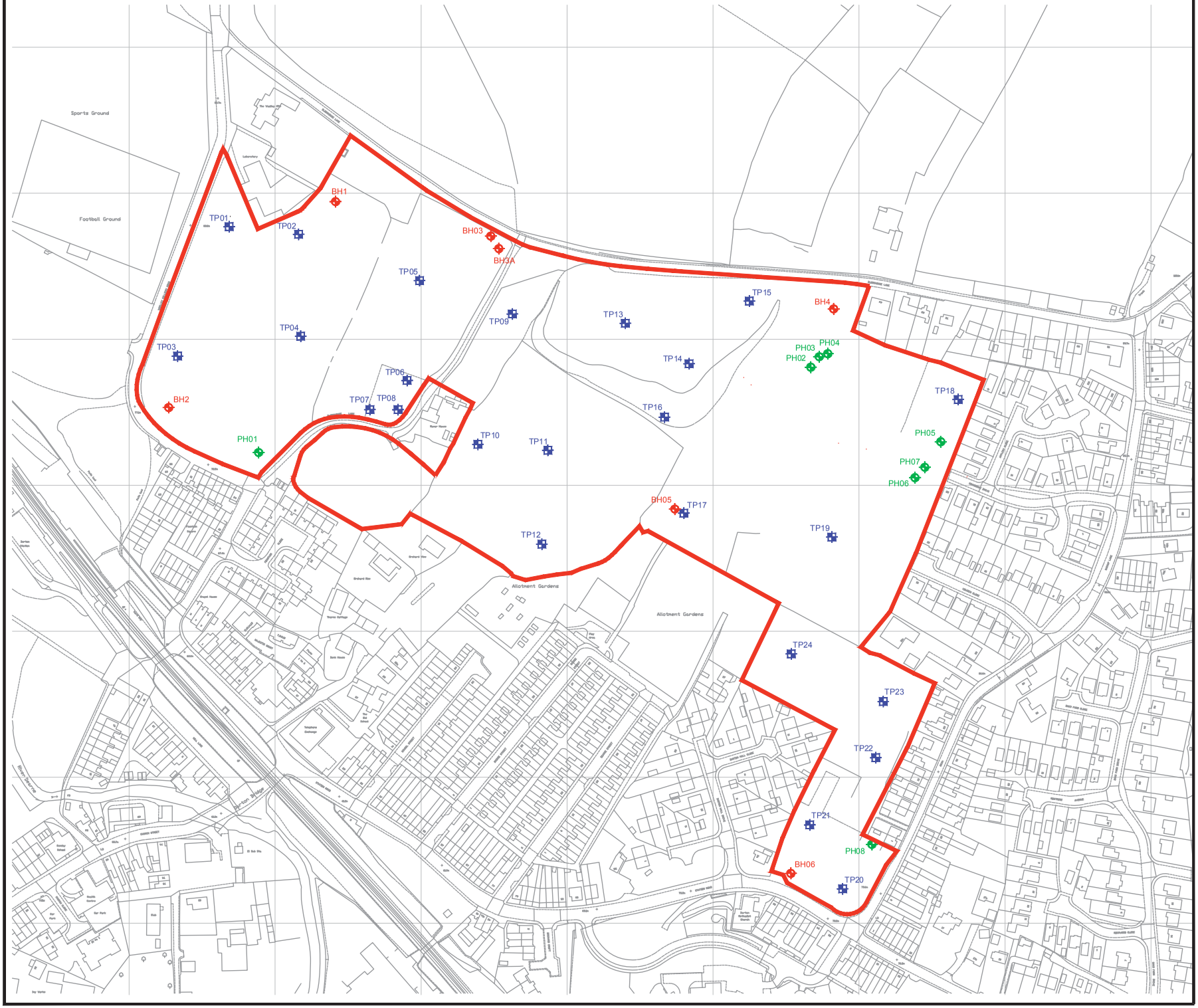
CLIENT: JONES HOMES (YORKSHIRE) LIMITED

PROJECT: LAND OFF BLOOMHOUSE LANE, DARTON

TITLE: INITIAL CONCEPTUAL SITE MODEL

JOB No.:	DRAWING FILE:
301645	301645-R1(00)D004A

BY:	DATE:	CONTRACT NO.		REV:
HD	22.03.16		FIGURE 4	A



LEGEND:

- Site boundary
- RSK borehole
- RSK probe hole
- RSK trial pit

N

REV	DATE	DESCRIPTION	BY	CHD.	APR.
A	22.03.16	FIRST ISSUE	HD	JH	JH

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

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CLIENT
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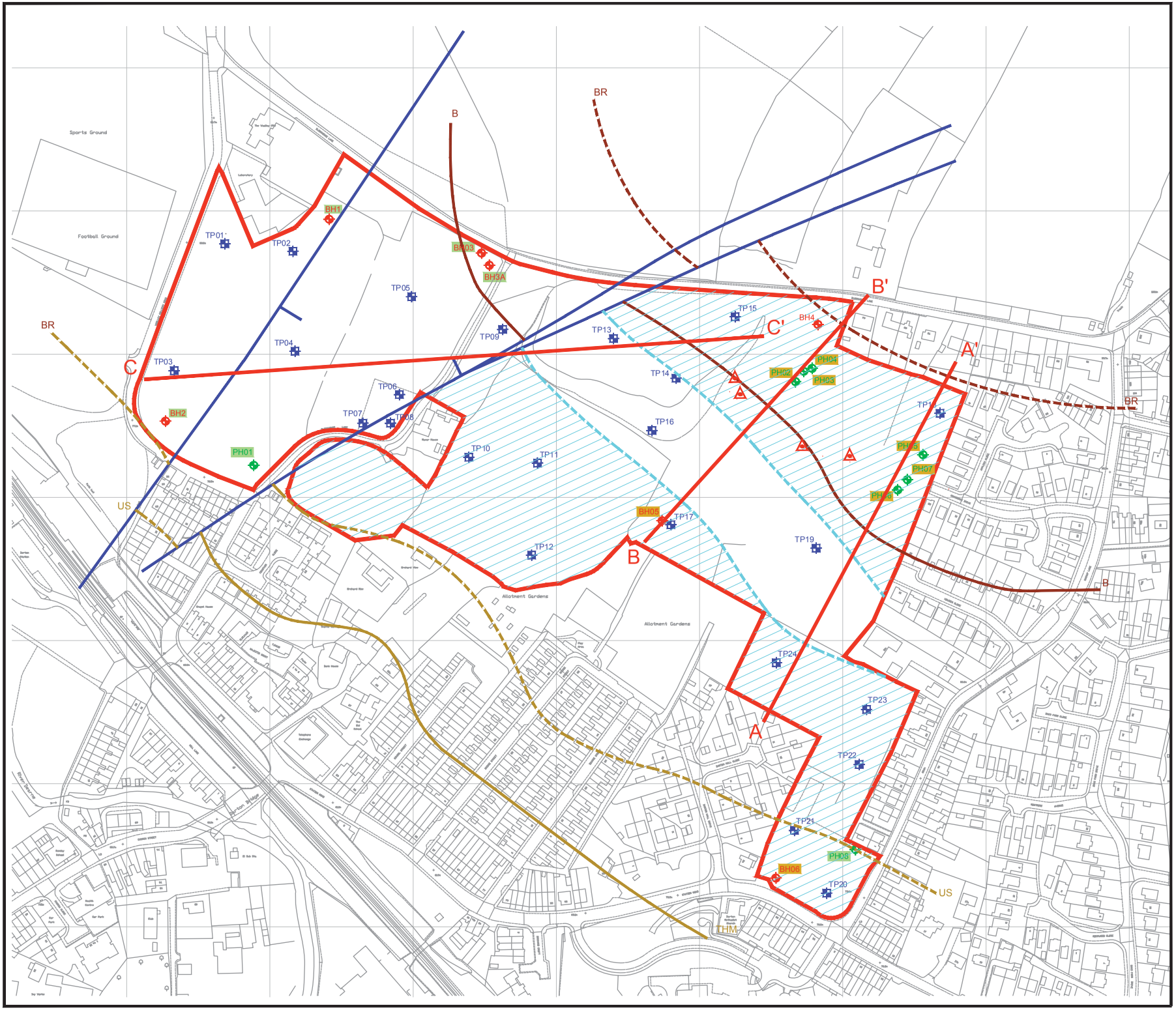
PROJECT
LAND OFF BLOOMHOUSE LANE, DARTON

TITLE
EXPLORATORY HOLE LOCATION PLAN

JOB No.:	DRAWING FILE:
301645	301645-R1(00)D005A

BY:	DATE:	CONTRACT NO.		REV:
HD	22.03.16		FIGURE 5	A

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



LEGEND:

- Site boundary
- Fault
- Barnsley Rider Coal (BR)
- Barnsley Coal (R)
- Unnamed seam (US)
- Top High Moor Coal (THM)
- Ten times seam thickness of competent rock demonstrated
- Ten times seam thickness of competent rock not demonstrated
- Area requiring mine work stabilisation
- RSK borehole
- RSK probe hole
- RSK trial pit
- Mine Adits

N

REV	DATE	DESCRIPTION	BY	CHD.	APR.
A	23.03.16	FIRST ISSUE	HD	JH	JH

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

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CLIENT
JONES HOMES (YORKSHIRE) LIMITED

PROJECT
LAND OFF BLOOMHOUSE LANE, DARTON

TITLE
SECTION DIAGRAM PLAN

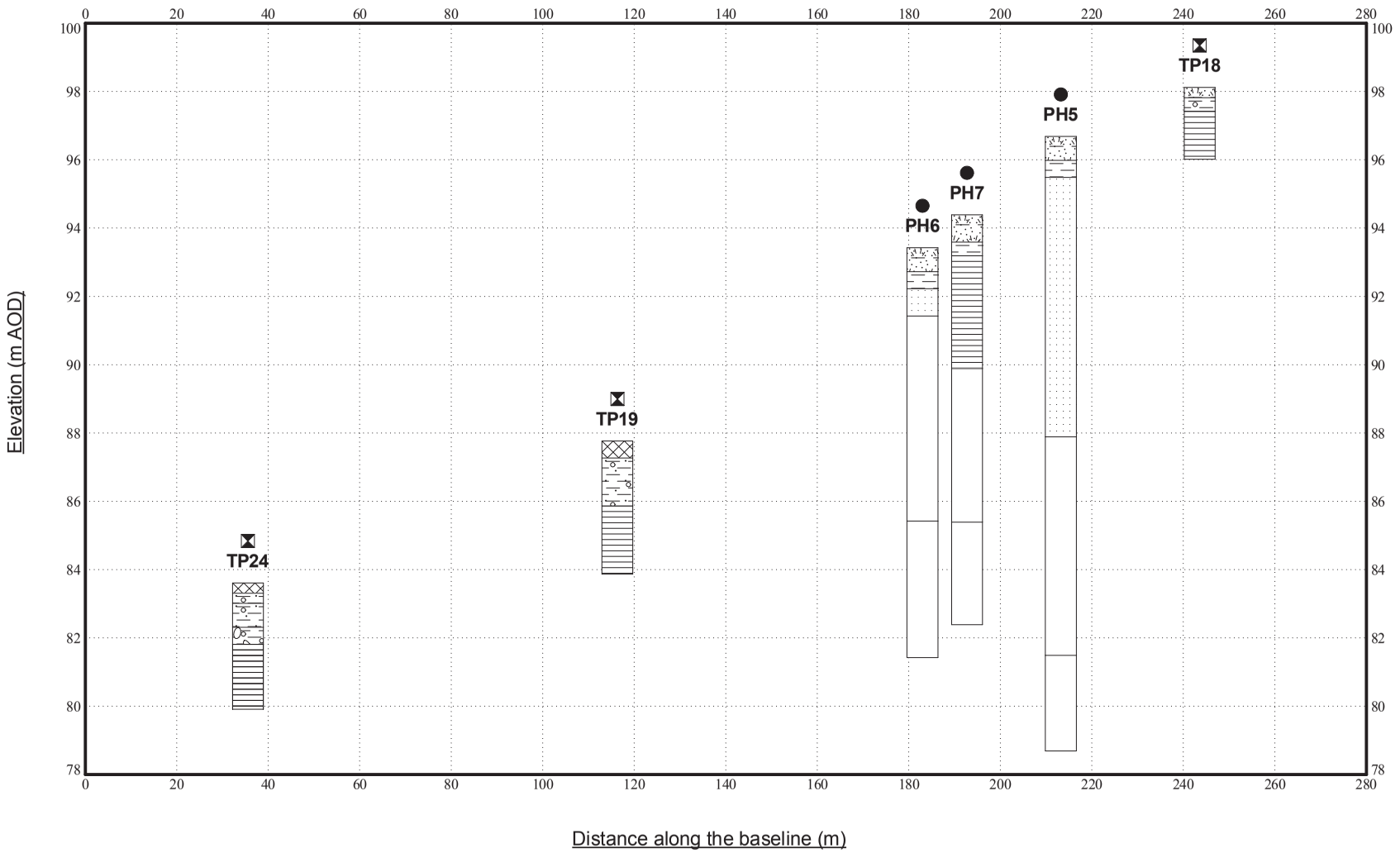
JOB No.:	DRAWING FILE:
301645	301645-R1(00)D006A

BY:	DATE:	CONTRACT NO.		REV:
HD	23.03.16		FIGURE 6	A

Scale 1 : 2,500

0 20 40 60 80 100m

SUBSURFACE SECTION DIAGRAM



HOLE TYPE MARKER LEGENDS:

● = Probeholes
⊠ = Trial Pits

REV.	DATE	DESCRIPTION	BY	CHD.	APR.
	22/03/2016		KF		

Dimensions	Scale
m	Scale X = 1:966 Scale Y = 1:129

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Fourways House
57 Hilton Street
Piccadilly
Manchester M1 2EJ

CLIENT: **Jones Homes (Yorkshire) Limited**

PROJECT: **Bloomhouse Lane, Darton**

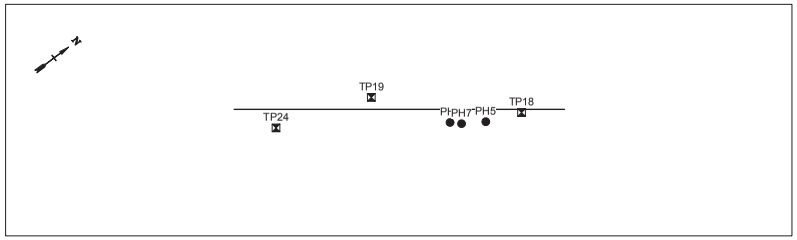
TITLE: **Cross section A to A'**

CONTRACT REF:	DRAWING REF:
301645	1 of 1

DRAWING STATUS:	FIGURE
	7

DRAWING TRACK CODE: GINT_LIBRARY_V8_06.GLB : STANDARD : A3 : LANDSCAPE : ELEV : 301645 DARTON.GPJ : 22/3/16 17:26 : KF :

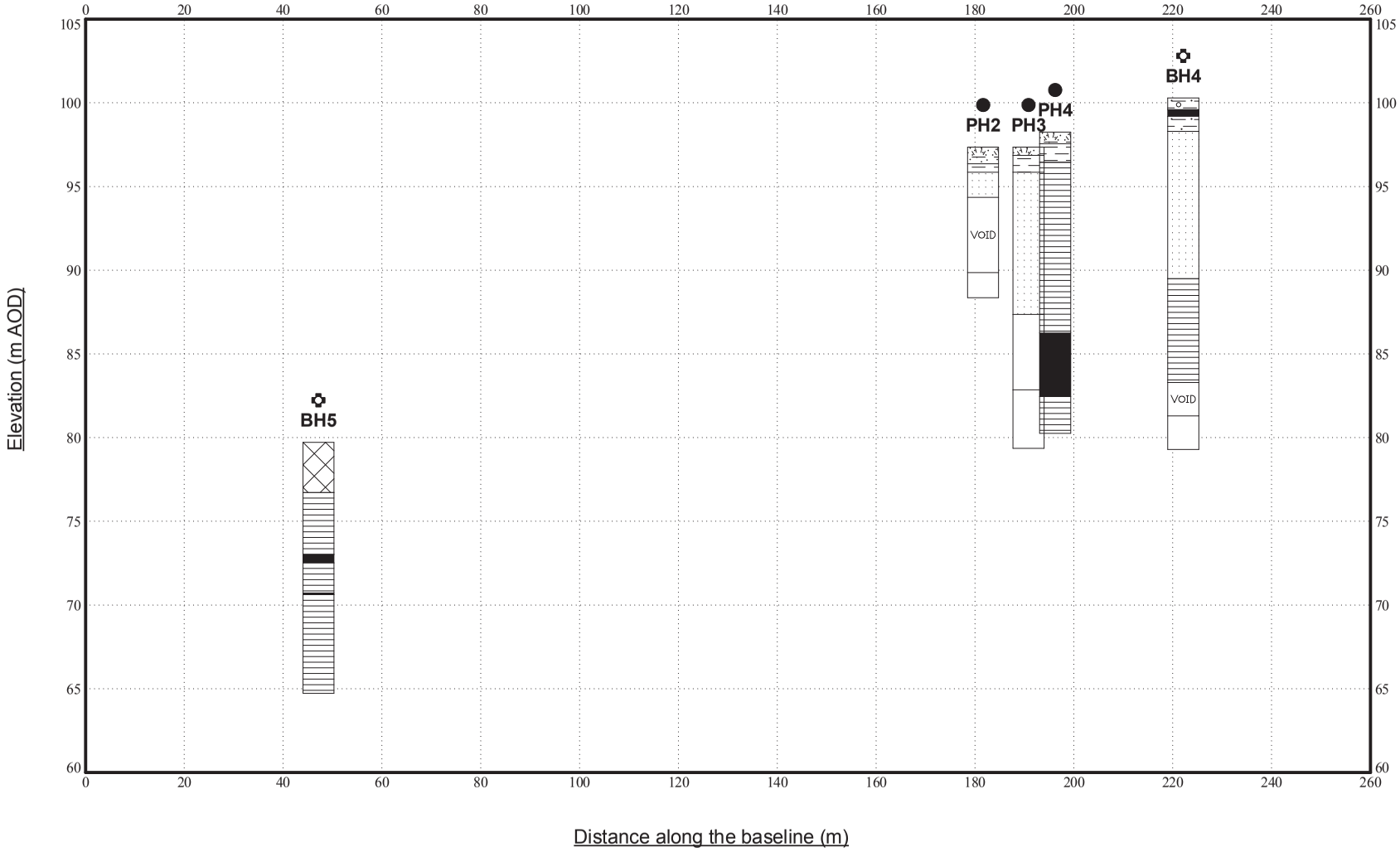
SITEMAP AND SECTION BASELINE



MATERIAL LEGENDS

- CLAY
- Mudstone
- MUDSTONE
- Gravelly CLAY
- Sandstone
- Gravelly CLAY with COBBLES
- Sandy gravelly CLAY
- MADE GROUND
- Topsoil

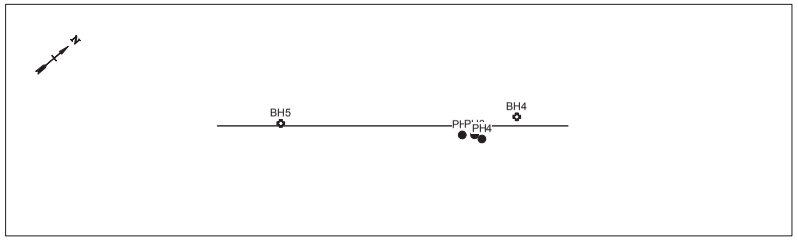
SUBSURFACE SECTION DIAGRAM



HOLE TYPE MARKER LEGENDS:

✪ = Boreholes
● = Probeholes

SITEMAP AND SECTION BASELINE



MATERIAL LEGENDS

- CLAY
- Coal
- Mudstone
- Possible MADE GROUND
- Sandstone
- Sandy CLAY
- Sandy gravelly CLAY
- Topsoil
- Void

REV.	DATE	DESCRIPTION	BY	CHD.	APR.
	22/03/2016		KF		

Dimensions	Scale
m	Scale X = 1:897 Scale Y = 1:265

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Piccadilly
Manchester M1 2EJ

CLIENT: **Jones Homes (Yorkshire) Limited**

PROJECT: **Bloomhouse Lane, Darton**

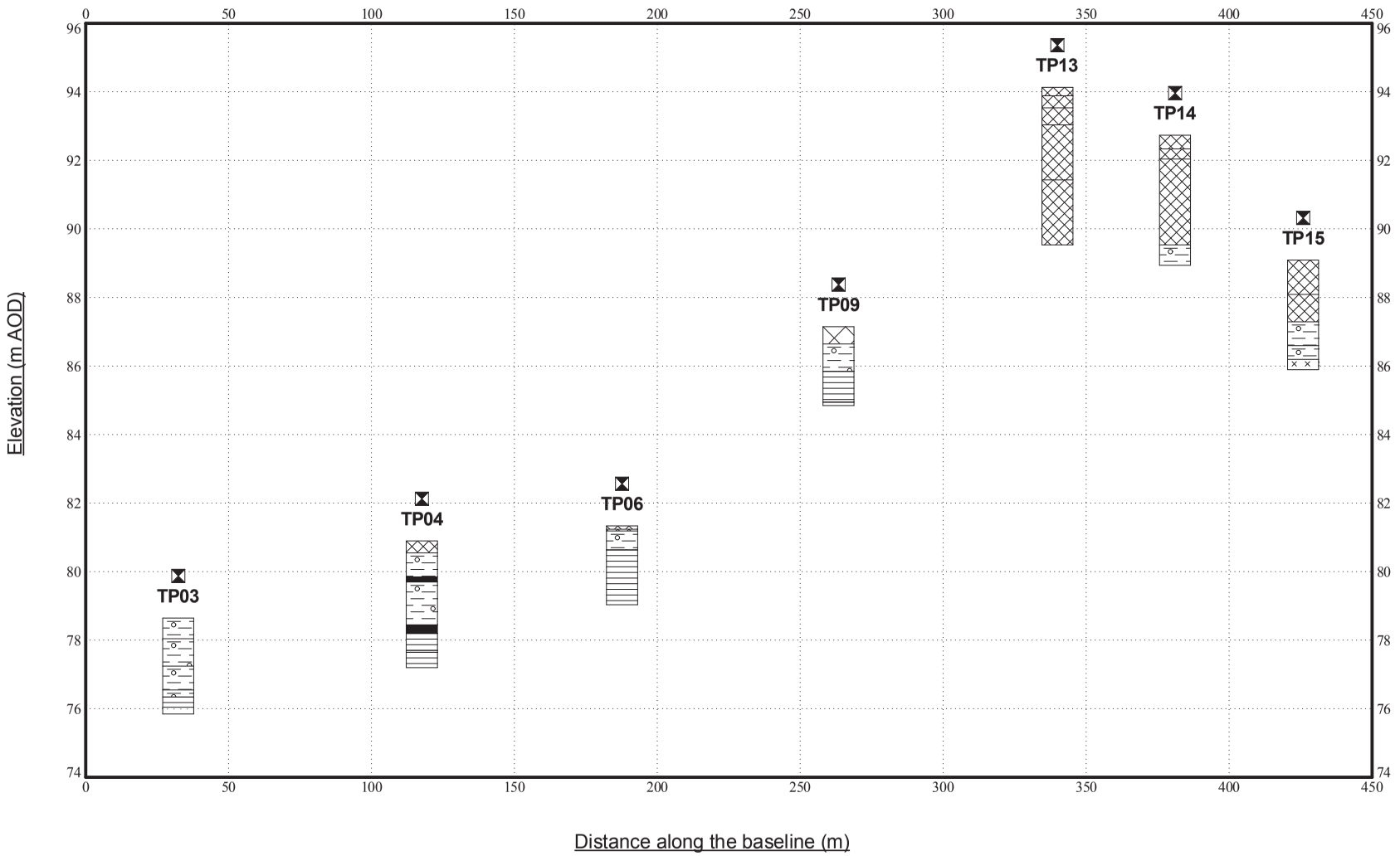
TITLE: **Cross section B to B'**

CONTRACT REF:	DRAWING REF:
301645	1 of 1

DRAWING STATUS:	FIGURE
	8

DRAWING TRACK CODE: GINT_LIBRARY_V8_06.GLB : STANDARD : A3 : LANDSCAPE : ELEV : 301645 DARTON.GPJ : 22/3/16 17:32 : KF :

SUBSURFACE SECTION DIAGRAM



Distance along the baseline (m)

SITEMAP AND SECTION BASELINE



MATERIAL LEGENDS

- Coal
- Possible MADE GROUND
- Gravelly CLAY
- Sandstone
- MADE GROUND
- Siltstone
- Mudstone

HOLE TYPE MARKER LEGENDS:

⊠ = Trial Pits

REV.	DATE	DESCRIPTION	BY	CHD.	APR.
	22/03/2016		KF		

Dimensions	Scale
m	Scale X = 1:1552 Scale Y = 1:129

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57 Hilton Street
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Manchester M1 2EJ

CLIENT: Jones Homes (Yorkshire) Limited

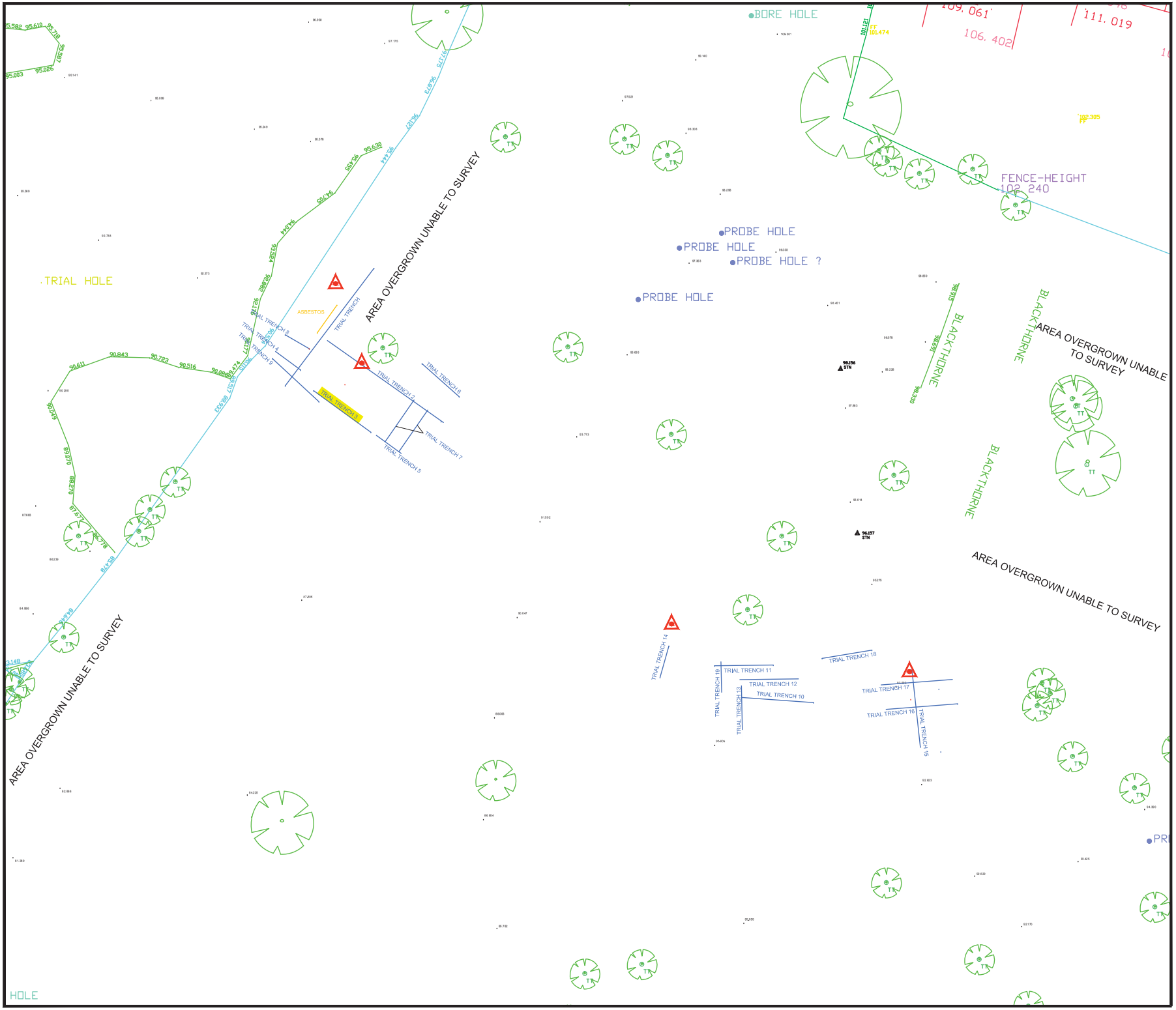
PROJECT: Bloomhouse Lane, Darton

TITLE: Cross section C to C'

CONTRACT REF:	DRAWING REF:
301645	1 of 1

DRAWING STATUS:	FIGURE
	9

DRAWING TRACK CODE: GINT_LIBRARY_V8_06.GLB : STANDARD : A3 : LANDSCAPE : ELEV : 301645 DARTON.GPJ : 22/3/16 17:50 : KF :



LEGEND:

TRIAL TRENCH 6 — Trial trench location

TRIAL TRENCH 3 — Evidence of adit encountered

N

REV	DATE	DESCRIPTION	BY	CHD.	APR.
A	22.03.16	FIRST ISSUE	HD	JH	JH

Dimensions	Projection	Scale	Orig Size
m		1:500	A3

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Web: www.rsk.co.uk

CLIENT
JONES HOMES (YORKSHIRE) LIMITED

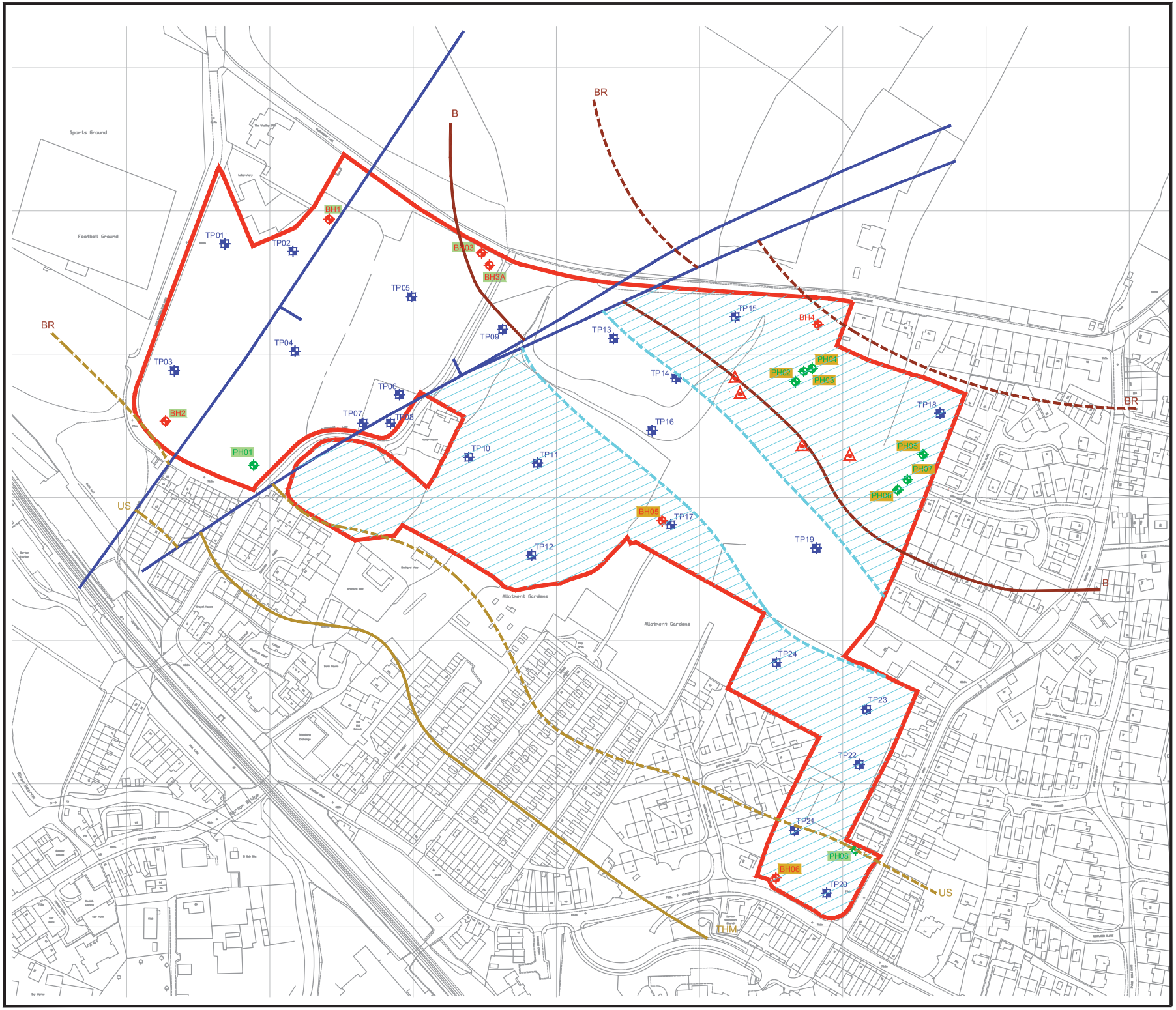
PROJECT
LAND OFF BLOOMHOUSE LANE, DARTON

TITLE
TRIAL TRENCH LOCATION PLAN

JOB No.:	DRAWING FILE:
301645	301645-R1(00)D010A

BY:	DATE:	CONTRACT NO.		REV:
HD	22.03.16		FIGURE 10	A

Scale 1 : 500
0 5 10 15 20 25m



LEGEND:

- Site boundary
- Fault
- Barnsley Rider Coal (BR)
- Barnsley Coal (R)
- Unnamed seam (US)
- Top High Moor Coal (THM)
- Ten times seam thickness of competent rock demonstrated
- Ten times seam thickness of competent rock not demonstrated
- Area requiring mine work stabilisation
- RSK borehole
- RSK probe hole
- RSK trial pit
- Mine Adits

N

REV	DATE	DESCRIPTION	BY	CHD.	APR.
A	22.03.16	FIRST ISSUE	HD	JH	JH

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

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Web: www.rsk.co.uk

CLIENT
JONES HOMES (YORKSHIRE) LIMITED

PROJECT
LAND OFF BLOOMHOUSE LANE, DARTON

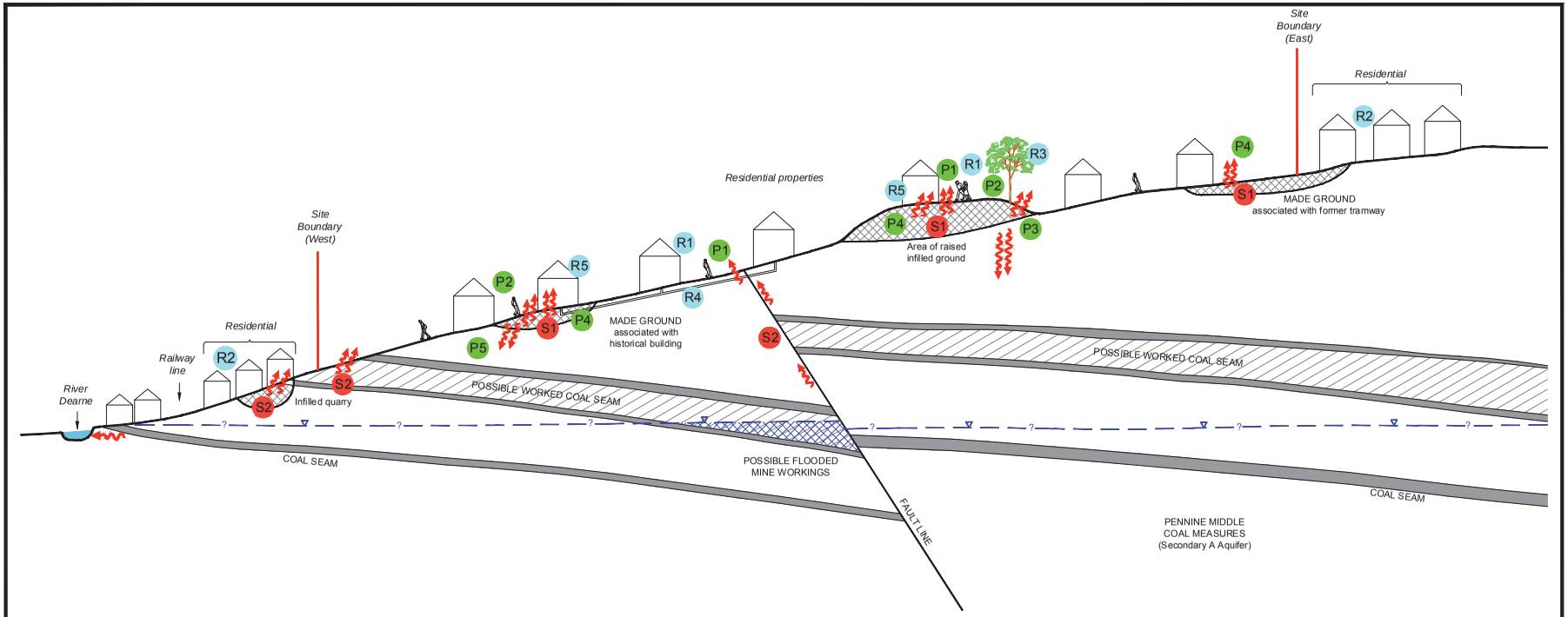
TITLE
MINING CONSTRAINTS PLAN

JOB No.:	DRAWING FILE:
301645	301645-R1(00)D011A

BY:	DATE:	CONTRACT NO.		REV:
HD	22.03.16		FIGURE 11	A

Scale 1 : 2,500

0 20 40 60 80 100m



LEGEND:

- S1 Sources
- P1 Pathways
- R1 Receptors
- Potential Contamination pathways

SOURCES

- S1 Impact from contaminants associated with infilled material and made ground
- S2 Ground gas from flooded mine workings and infilled quarry

POTENTIAL CONTAMINATION PATHWAYS

- P1 Direct contact
- P2 Ground gas and soil gas inhalation
- P3 Root uptake
- P4 Chemical attack of infrastructure

SIGNIFICANT RECEPTORS

- R1 Site occupiers (residents)
- R2 Occupiers of adjacent land
- R3 Vegetation
- R4 Water supply pipes
- R5 Buildings and infrastructure

REV	DATE	DESCRIPTION	BY	CHD.	APR.
A	23.03.16	FIRST ISSUE	HD	JH	JH

Dimensions	Projection	Scale	Orig Size
m		NTS	A3

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Web: www.rsk.co.uk

CLIENT: JONES HOMES (YORKSHIRE) LIMITED

PROJECT: LAND OFF BLOOMHOUSE LANE, DARTON

TITLE: REFINED CONCEPTUAL SITE MODEL

JOB No.:	DRAWING FILE:
301645	301645-R1(00)D012A

BY:	DATE:	CONTRACT NO.		REV:
HD	23.03.16		FIGURE 12	A

APPENDIX A
SERVICE CONSTRAINTS

1. This report and the site investigation carried out in connection with the report (together the "Services") were compiled and carried out by RSK Environment Limited (RSK) for Jones Homes (Yorkshire) Limited (the "client") in accordance with the terms of a contract between RSK and the "client", dated 24 June 2015. 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 in writing 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 of this report, 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 walk-over 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 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. Features (boreholes, trial pits etc) annotated on site plans are not drawn to scale but are centred over the approximate location. Such features should not be used for setting out and should be considered indicative only.

APPENDIX B
SUMMARY OF LEGISLATION AND POLICY RELATING TO CONTAMINATED LAND

Part IIA of the Environmental Protection Act 1990 (EPA) and its associated Contaminated Land Regulations 2000 (SI 2000/227), which came into force in England on 1 April 2000, formed the basis for the current regulatory framework and the statutory regime for the identification and remediation of contaminated land. Part IIA of the EPA 1990 defines contaminated land as 'any land which appears to the Local Authority in whose area it is situated to be in such a condition by reason of substances in, on or under the land, that significant harm is being caused, or that there is significant possibility of significant harm being caused, or that pollution of controlled waters is being or is likely to be caused'. Controlled waters are considered to include all groundwater, inland waters and estuaries.

In August 2006, the Contaminated Land (England) Regulations 2006 (SI 2006/1380) were implemented, which extended the statutory regime to include Part IIA of the EPA as originally introduced on 1 April 2000, together with changes intended chiefly to address land that is contaminated by virtue of radioactivity. These have been replaced subsequently by the Contaminated Land (England) (Amendment) Regulations 2012, which now exclude land that is contaminated by virtue of radioactivity.

The intention of Part IIA of the EPA is to deal with contaminated land issues that are considered to cause significant harm on land that is not undergoing development (see Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance, April 2012). This document replaces Annex III of Defra Circular 01/2006, published in September 2006 (the remainder of this document is now obsolete).

Water Framework Directive (WFD)

The Water Framework Directive 2000/60/EC is designed to:

- enhance the status and prevent further deterioration of aquatic ecosystems and associated wetlands that depend on the aquatic ecosystems
- promote the sustainable use of water
- reduce pollution of water, especially by 'priority' and 'priority hazardous' substances
- ensure progressive reduction of groundwater pollution.

The WFD requires a management plan for each river basin be developed every six years.

Groundwater Directive (GWD)

The 1980 Groundwater Directive 80/68/EEC and the 2006 Groundwater Daughter Directive 2006/118/EC of the WFD are the main European legislation in place to protect groundwater. The 1980 Directive is due to be repealed in December 2013. The European legislation has been transposed into national legislation by regulations and directions to the Environment Agency.

Environmental Permitting Regulations (EPR)

The Environmental Permitting (England and Wales) Regulations 2010 provide a single regulatory framework that streamlines and integrates waste management licensing, pollution prevention and control, water discharge consenting, groundwater authorisations, and radioactive substances regulation. Schedule 22, paragraph 6 of EPR 2010 states: 'the regulator must, in exercising its relevant functions, take all necessary measures - (a) to prevent the input of any hazardous substance to groundwater; and (b) to limit the input of non-hazardous pollutants to groundwater so as to ensure that such inputs do not cause pollution of groundwater.'

Water Resources Act (WRA)

The Water Resources Act 1991 (Amendment) (England and Wales) Regulations 2009 updated the Water Resources Act 1991, which introduced the offence of causing or knowingly permitting pollution of controlled waters. The Act provides the Environment Agency with powers to implement remediation necessary to protect controlled waters and recover all reasonable costs of doing so.

Priority Substances Directive (PSD)

The Priority Substances Directive 2008/105/EC is a 'Daughter' Directive of the WFD, which sets out a priority list of substances posing a threat to or via the aquatic environment. The PSD establishes environmental quality standards for priority substances, which have been set at concentrations that are safe for the aquatic environment and for human health. In addition, there is a further aim of reducing (or eliminating) pollution of surface water (rivers, lakes, estuaries and coastal waters) by pollutants on the list. The WFD requires that countries establish a list of dangerous substances that are being discharged and EQS for them. In England and Wales, this list is provided in the River Basin Districts Typology, Standards and Groundwater threshold values (Water Framework Directive) (England and Wales) Directions 2010. In order to achieve the objectives of the WFD, classification schemes are used to describe where the water environment is of good quality and where it may require improvement.

Planning Policy

Contaminated land is often dealt with through planning because of land redevelopment. This approach was documented in Planning Policy Statement: Planning and Pollution Control PPS23, which states that it remains the responsibility of the landowner and developer to identify land affected by contamination and carry out sufficient remediation to render the land suitable for use.

PPS23 was withdrawn early in 2012 and has been replaced by much reduced guidance within the National Planning Policy Framework (NPPF).

The new framework has only limited guidance on contaminated land, as follows:

- *"planning policies and decisions should also ensure that:*
    - *the site is suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining, pollution arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation;*
    - *after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and*
    - *adequate site investigation information, prepared by a competent person, is presented".*

APPENDIX C
SITE PHOTOGRAPHS AND WALKOVER CHECKLIST

Photo no. 1	**Date:** 26.01.2016
Direction photo taken: West	
Description: View of gap in row of bushes between the two fields in Area 1: Western Area	



Photo No. 2	**Date:** 26.01.2016
Direction photo taken: N/A	
Description: Waterlogged ground noted in Area 1: Western Area	



Photo no. 3	Date: 26.01.2016	
Direction photo taken: West		
Description: Northern most field in Area 2: Central Area, showing raised ground		

Photo no. 4	Date: 26.01.2016	
Direction photo taken: North		
Description: Southern area of southern most field in Area 2: Central Area, showing areas of remnant fires and some localised tipping		

Photo no. 5	Date: 26.01.2016	
Direction photo taken: South		
Description: Track and rough vegetation in Area 3: Eastern Area		

Photo no. 6	Date: 26.01.2016	
Direction photo taken: East		
Description: Open access from Howden Close in the east of Area 3: Eastern Area		

Photo no. 7	Date: 26.01.2016	
Direction photo taken: West		
Description: Area of hardstanding in Area 4: Manor House Farm Area		

Photo no. 8	Date: 26.01.2016	
Direction photo taken: South		
Description: Small enclosed field to the southern part of Area 4: Manor House Farm Area		

Photo no. 9	Date: 26.01.2016	
Direction photo taken: South		
Description: Stockpile of made ground associated with demolition of buildings near hardstanding in Area 4: Manor House Farm Area		

Photo no. 10	Date: 26.01.2016	
Direction photo taken: West		
Description: Small retaining wall to north of Bloomhouse Lane in Area 4: Manor House farm Area		

Photo no. 11	Date: 26.01.2016	
Direction photo taken: South		
Description: Hardstanding and gated access point of Area 5: Former School Area		

Photo no. 12	Date: 26.01.2016	
Direction photo taken: East		
Description: Areas of overgrown soft landscaping in Area 5: Former School Area		

WALKOVER SURVEY CHECKLIST: GEOSCIENCES

These inspections can provide useful information on:

- Potential geotechnical hazards
- Suitable and appropriate locations for investigation
- The groundwater and surface water environments
- Potentially sensitive receptors (targets) including issues that require further investigation, e.g. ecology surveys
- Potential sources of contaminants
- Nature of contamination
- Potential migration routes (pathways)

Mark locations of features described on a map and give them a reference number.

Describe features in as much detail as possible. Continue on the back of the checklist if necessary, using the feature letter for reference. Take photos of site and relevant features in immediate surrounding area.

The walkover survey can also provide information for the environmental consultant in planning the site investigation.

Points that should be addressed in a walkover survey are as follows:

Features	Description	Photo no.
a) Describe materials exposed in nearby road or railway cuttings, in pits and quarries and natural exposures of soils and rocks near to the site. *This will give an indication of the geology beneath the site*	None noted	
b) Describe surrounding properties/land use and name occupiers. Type of boundary demarcation (if any) on each side. *This will identify any potential sources of contamination from adjacent sites and any sensitive receptors*	To the east are houses, to the south are houses or the allotment gardens, to the north are open fields and to the west are open fields or playing fields. All boundaries are fenced or tree lined.	
c) Describe present land use. Are there areas of hardstanding (if yes describe location, types and condition)? *Especially crops, for consideration of appropriate timing for further investigation, compensation and reinstatement. Also note hardstanding, obstructions etc. Note any old buildings/ivy covered trees as these may be used by owls or bats*	Majority of the site is open fields used for dog walking. There is restricted access in the south where the former school was, this is covered with patches of hardstanding. The central area has two individual fields used for keeping horses. There is an area of hardstanding close to the Manor House farm building.	All

WALKOVER SURVEY CHECKLIST Continued

Features	Description	Photo no.
d) Describe the site in terms of ground slopes and changes in slope. Is there any evidence of subsidence or landslip/slope erosion? *Old scarps or hummocky ground may be evidence of previous landslips that could be reactivated. A terraced appearance may be indicative of superficial solifluction movement or cambering. Trees that are leaning may indicate instability or general slope movement.*	Site is generally uneven and slopes down towards the south	5
e) Describe the types and condition of surface vegetation. *Nettles may indicate an old cesspit for example or unhealthy vegetation may indicate the presence of phytotoxic fill or landfill gas. Note invasive weeds, e.g. Japanese knotweed.*	Rough grass and vegetation, brambles, small trees and some larger trees. Generally all seemed in good condition. Japanese knotweed is known to exist in the central area of the site, however was not found during walkover.	
f) Note the number, location, height and species of trees and hedges. *This is important in terms of shrinking and swelling ground. Trees and hedgerows may be protected; their condition should be noted along with any restrictions they will impose for site access.* *It is important to note any areas with the potential for nesting birds, roosting bats, water voles and badger setts.*	Tree species were mixed and of mixed ages depending on the location.	
g) Describe any evidence of animal activity. *For example obvious animal paths or areas of excavations and burrows.*	No specific evidence noted, however normal wildlife animal activities is expected	
h) Describe any damage to existing structures on site or adjacent to the site *For example, cracks in buildings both on the site and in the neighbourhood, and other evidence of settlement or differential settlement.* *Note presence of any suspected asbestos-containing materials (ACM)*	None noted	
i) Note the remains of structures that have been demolished. Look for evidence of remnants of any historical structures. *This will provide valuable information on the location of previous foundations, processes etc.* *Note presence of any suspected asbestos-containing materials (ACM)*	Two areas of former structures noted, footings expected as concrete slabs still in place Fly tipping with ACM noted in central area of site	

WALKOVER SURVEY CHECKLIST Continued

Features	Description	Photo no.
j) Note any abrupt changes in ground level. Is there evidence of Made Ground/fill on site *May indicate that minerals have been worked in surface excavations. May indicate cut and fill.*	Area in central north is at a higher level than rest of site, appears filled	
k) Note any surface hollows. *Which may indicate the presence of solution features or swallow holes in rocks such as chalk limestone, gypsum and salt, or collapsed underground workings in these materials. May also indicate badger setts or other wildlife activity.*	None noted	
l) In areas of country underlain by coal or other minerals note any hummocky ground. *Which may be the remnants of spoil tips and surface depressions that may indicate collapsed shallow workings. Areas of general unevenness may be evidence of waste disposal activities.*	Generally uneven ground across site, overgrown vegetation means its not clear if natural or due to some settlement	
m) Note any evidence of gas from nearby landfill sites *Can be indicated for example by poor vegetation or gas bubbles in water-filled trenches.*	None noted	
n) Are there any evidence of gas protection measures (gas membrane, gravel filled trenches, venting pipes, cowls etc)	None noted	
o) Note the location of streams, culverts, ponds, seepages and sinks and signs of previous flooding. Note direction of flow. Note where the stream is accessible for sampling. May need to take dimensions of stream. *If ponds are present on site they may contain great crested newts. Ditches, streams and rivers that border or run through a site may contain water voles, otters or white-clawed crayfish. Presence of water features on site may prompt the need for a survey during a site investigation.*	None noted	
p) All surface waters should be examined for evidence of contamination. *For example, oil sheen, silt, solid matter, discoloured sediment.*	None noted	

Features	Description	Photo no.
q) Note site drainage. Are there any drain covers/soakaways (if yes describe locations). Are there any outfalls to surface watercourses? Are there any interceptors/lagoons/effluent treatment plants?	None noted – only natural drainage	
r) Describe storage of fuels and chemicals. Are there any drums/containers (if yes, describe quantity, full/empty, stored on hardstanding/softstanding, bunded)? *Is there evidence of underground fuel tanks (if yes, describe locations, how many, volumes, bunding, used/disused, condition)?*	None noted	
s) Note any discoloured ground. *This may provide evidence of contamination.*	None noted	
t) Accidents: In the event of a large spillage would runoff affect any vulnerable watercourses/culverts? *Are emergency procedures/equipment in place?*	N/A	
u) Waste: Are there any waste skips on site? Are waste storage facilities adequate? Is there any litter/fly-tipped material?	Localised fly tipping	
v) Are there any electricity substations on or adjacent to site?	None noted	
w) Identify any old structures, pipework etc. wherever possible and, if safe, inspect for evidence of stored waste. *Old tanks may contain oil. Old electricity transformers should be noted. Asbestos risk should be assessed together with the need for a specialist hazardous materials survey.*	None noted	
x) Examine surrounding areas for evidence of contamination which could migrate onto the site. *For example a leaking oil tank on an adjacent site.*	None noted	
y) Note the presence of any underground structures, services, mine workings, tunnels etc *From a safety point of view for development of the site and also as they may provide contaminant migration routes.*	None noted – although mine workings expected	
z) Note any anecdotal information in past uses of the site. *Local street names etc. can provide indicators of past industry or ground problems*	None noted	

WALKOVER SURVEY CHECKLIST Continued

Features	Description	Photo no.
aa) Description of buildings on site. Is there any evidence of asbestos construction materials, e.g. roofing, insulation materials. Do any of the buildings have basements? Do any of the buildings have a boiler room? (if yes describe fuel type and storage arrangements)	N/A	
bb) Identify potential access routes to the site for plant for the site investigation *Excavators and drilling rigs may be required for the next stage of the investigation, or if the access is limited window sampling techniques may need to be specified. Note any specific obstructions such as unsafe/unstable ground, protected trees or hedgerows, or protected buildings.*	Site can be accessed from various points around the site, including the school area in the south.	
cc) Evidence of buried services (water, gas, electricity, telephone, cable, television, pipelines) *Both for safety considerations and in the case of water as supply for further investigation. As well as danger, there is the question of considerable expense, which can arise from an inadequate knowledge of the location of buried services. The locations and heights of overhead cables may be important when considering the movement of site equipment.*	None noted across the site, redundant services expected to be present in areas of former buildings	

Walkover survey completed	Approved:	_____	Signature
			Name
			Date

Notes:

APPENDIX D
ENVIRONMENTAL DATABASE, HISTORICAL MAPS AND BGS BOREHOLE RECORDS

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
77520900_1_1

Customer Reference:
301645

National Grid Reference:
431520, 410300

Slice:
A

Site Area (Ha):
11.89

Search Buffer (m):
1000

Site Details:

Bloomhouse Lane
Darton
BARNSLEY
South Yorkshire
S75 5HJ

Client Details:

Mr J Harrison
RSK Environment Ltd
RSK Geoconsult Limited
The Potteries
Pottery Street
Casleford
West Yorkshire
WF10 1NJ

Contents

Report Section	Page Number
Summary	-
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Waste	25
Hazardous Substances	28
Geological	29
Industrial Land Use	61
Sensitive Land Use	65
Data Currency	66
Data Suppliers	71
Useful Contacts	72

Introduction

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

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

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Report Version v50.0

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1		5	5	17
Enforcement and Prohibition Notices					
Integrated Pollution Controls	pg 7			1	4
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control	pg 8				1
Local Authority Pollution Prevention and Controls	pg 8				10
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 10		Yes		
Pollution Incidents to Controlled Waters	pg 10		16	7	22
Prosecutions Relating to Authorised Processes	pg 17				1
Prosecutions Relating to Controlled Waters					
Registered Radioactive Substances					
River Quality	pg 17		1		3
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points	pg 19			1	1
Substantiated Pollution Incident Register	pg 20			2	
Water Abstractions	pg 21			1	2 (*1)
Water Industry Act Referrals					
Groundwater Vulnerability	pg 21	Yes	n/a	n/a	n/a
Bedrock Aquifer Designations	pg 22	Yes	n/a	n/a	n/a
Superficial Aquifer Designations			n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences	pg 22		Yes	n/a	n/a
Flooding from Rivers or Sea without Defences	pg 23		Yes	n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
Detailed River Network Lines	pg 23		Yes	Yes	n/a
Detailed River Network Offline Drainage	pg 24		Yes	Yes	n/a

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites	pg 25			1	2
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Recorded Landfill Sites	pg 25			1	2
Registered Landfill Sites	pg 26				3
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)	pg 28			1	
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					
Geological					
BGS 1:625,000 Solid Geology	pg 29	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 29	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 50	1	5	8	27
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
Brine Compensation Area			n/a	n/a	n/a
Coal Mining Affected Areas	pg 57	Yes	n/a	n/a	n/a
Mining Instability	pg 57	Yes	n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain	pg 57	Yes	Yes	n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 57	Yes	Yes	n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 57	Yes	Yes	n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 58	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 58	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 59	Yes	Yes	n/a	n/a
Radon Potential - Radon Affected Areas	pg 60	Yes	n/a	n/a	n/a
Radon Potential - Radon Protection Measures	pg 60	Yes	n/a	n/a	n/a

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Industrial Land Use					
Contemporary Trade Directory Entries	pg 61		3	16	22
Fuel Station Entries	pg 64				1
Sensitive Land Use					
Areas of Adopted Green Belt	pg 65	1		1	
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones	pg 65	1			1
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewerage Network - Sewers Location: Church Street, MILL LANE, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Dearne Reference: S/UD/51 Permit Version: Not Supplied Effective Date: Not Supplied Issued Date: 5th June 1963 Revocation Date: Not Supplied Discharge Type: Sewage Effluent Discharge-Storm Effluent Discharge Environment: Unknown Receiving Water: Not Supplied **Status: Not Supplied** Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	235	2	431265 410055
1	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Not Given Location: Redbrook Road, Redbrook, DARTON, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Dearne Reference: S/UD/51 Permit Version: Not Supplied Effective Date: Not Supplied Issued Date: Not Supplied Revocation Date: Not Supplied Discharge Type: Storm /emergency overflow Discharge Environment: Unknown Receiving Water: Not Supplied **Status: Not Supplied** Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	240	2	431265 410050
1	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Not Given Location: Church Street/Mill Lane, DARTON, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Dearne Reference: S/UD/51 Permit Version: Not Supplied Effective Date: Not Supplied Issued Date: Not Supplied Revocation Date: Not Supplied Discharge Type: Storm /emergency overflow Discharge Environment: Unknown Receiving Water: Not Supplied **Status: Not Supplied** Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	242	2	431260 410050
1	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Not Given Location: Carr Green Lane, Mapplewell, DARTON, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Dearne Reference: S/UD/51 Permit Version: Not Supplied Effective Date: Not Supplied Issued Date: Not Supplied Revocation Date: Not Supplied Discharge Type: Storm /emergency overflow Discharge Environment: Unknown Receiving Water: Not Supplied **Status: Not Supplied** Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	245	2	431265 410045

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Not Given Location: Dearne Hill Road, Low Barugh, DARTON, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Dearne Reference: S/UD/51 Permit Version: Not Supplied Effective Date: Not Supplied Issued Date: Not Supplied Revocation Date: Not Supplied Discharge Type: Storm /emergency overflow Discharge Environment: Unknown Receiving Water: Not Supplied **Status: Not Supplied** Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	247	2	431260 410045
2	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewerage Network - Sewers - Water Company Location: Darton Church Street Cso Church Street (Adj No 74), Darton Bridge, Barnsley, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: Wra8610 Permit Version: 1 Effective Date: 31st March 2005 Issued Date: 31st March 2005 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Dearne **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A6NE (SW)	255	2	431310 410020
3	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewage Disposal Works - Water Company Location: Woolley Colliery Stw, Woolley, Barnsley, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: E707 Permit Version: 2 Effective Date: 14th February 1986 Issued Date: 14th February 1986 Revocation Date: 18th August 1997 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Tributary Of The River Dearne **Status: Transferred from COPA 1974** Positional Accuracy: Located by supplier to within 100m	A10NW (NW)	410	2	431100 410900
3	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewage Disposal Works - Water Company Location: Woolley Colliery Stw, Woolley, Barnsley, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: E707 Permit Version: 2 Effective Date: 14th February 1986 Issued Date: 14th February 1986 Revocation Date: 18th August 1997 Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Tributary Of The River Dearne **Status: Transferred from COPA 1974** Positional Accuracy: Located by supplier to within 100m	A10NW (NW)	410	2	431100 410900

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
3	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewage Disposal Works - Water Company Location: Woolley Colliery Stw, Woolley, Barnsley, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: E707 Permit Version: 1 Effective Date: 16th November 1981 Issued Date: 16th November 1981 Revocation Date: 13th February 1986 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Tributary Of The River Dearne **Status: Transferred from Rivers (Prevention of Pollution) Act 1951-1961** Positional Accuracy: Located by supplier to within 100m	A10NW (NW)	410	2	431100 410900
3	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewage Disposal Works - Water Company Location: Woolley Colliery Stw, Woolley, Barnsley, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: E707 Permit Version: 1 Effective Date: 16th November 1981 Issued Date: 16th November 1981 Revocation Date: 13th February 1986 Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Tributary Of The River Dearne **Status: Transferred from Rivers (Prevention of Pollution) Act 1951-1961** Positional Accuracy: Located by supplier to within 100m	A10NW (NW)	410	2	431100 410900
4	**Discharge Consents** Operator: Emerald Sv Limited Property Type: Trade (Unknown/Other) Location: Junction 38 Business Park Darton Works, Huddersfield Road, Darton, Barnsley, S75 5qq Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: C4011 Permit Version: 2 Effective Date: 22nd July 1993 Issued Date: 22nd July 1993 Revocation Date: Not Supplied Discharge Type: Trade Discharges - Site Drainage (Contaminated Surface Water, Not Waste Sites) Discharge Environment: Freshwater Stream/River Receiving Water: River Dearne **Status: Revised Consent, by Notice (Section 37(1))** Positional Accuracy: Located by supplier to within 10m	A9SE (W)	502	2	430710 410300
4	**Discharge Consents** Operator: West Register (Property Investments Limited) Property Type: Trade (Unknown/Other) Location: Parkside Performance Films, Darton, Barnsley Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: C4011 Permit Version: 2 Effective Date: 22nd July 1993 Issued Date: 22nd July 1993 Revocation Date: Not Supplied Discharge Type: Trade Discharges - Site Drainage (Contaminated Surface Water, Not Waste Sites) Discharge Environment: Freshwater Stream/River Receiving Water: River Dearne **Status: Revised Consent, by Notice (Section 37(1))** Positional Accuracy: Located by supplier to within 10m	A9SE (W)	502	2	430710 410300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
4	**Discharge Consents** Operator: Bp, Performance Films Group Property Type: Trade (Unknown/Other) Location: Junction 38 Business Park Darton Works, Huddersfield Road, Darton, Barnsley, S75 5qq Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: C4011 Permit Version: 1 Effective Date: 25th September 1985 Issued Date: 25th September 1985 Revocation Date: 21st July 1993 Discharge Type: Trade Discharges - Site Drainage (Contaminated Surface Water, Not Waste Sites) Discharge Environment: Freshwater Stream/River Receiving Water: River Dearne **Status: Transferred from COPA 1974** Positional Accuracy: Located by supplier to within 10m	A9SE (W)	502	2	430710 410300
4	**Discharge Consents** Operator: Anglo Clough Management Company Ltd Property Type: Trade (Unknown/Other) Location: Parkside Performance Films, Darton, Barnsley Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: C4011 Permit Version: 2 Effective Date: 22nd July 1993 Issued Date: 22nd July 1993 Revocation Date: Not Supplied Discharge Type: Trade Discharges - Site Drainage (Contaminated Surface Water, Not Waste Sites) Discharge Environment: Freshwater Stream/River Receiving Water: River Dearne **Status: Revised Consent, by Notice (Section 37(1))** Positional Accuracy: Located by supplier to within 100m	A9SE (W)	512	2	430700 410300
4	**Discharge Consents** Operator: Emerald Sv Limited Property Type: Trade (Unknown/Other) Location: Junction 38 Business Park Darton Works, Huddersfield Road, Darton, Barnsley, S75 5qq Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: C4011 Permit Version: 2 Effective Date: 22nd July 1993 Issued Date: 22nd July 1993 Revocation Date: Not Supplied Discharge Type: Trade Discharges - Site Drainage (Contaminated Surface Water, Not Waste Sites) Discharge Environment: Freshwater Stream/River Receiving Water: River Dearne **Status: Revised Consent, by Notice (Section 37(1))** Positional Accuracy: Located by supplier to within 100m	A9SE (W)	512	2	430700 410300
4	**Discharge Consents** Operator: Bp, Performance Films Group Property Type: Trade (Unknown/Other) Location: Junction 38 Business Park Darton Works, Huddersfield Road, Darton, Barnsley, S75 5qq Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: C4011 Permit Version: 1 Effective Date: 25th September 1985 Issued Date: 25th September 1985 Revocation Date: 21st July 1993 Discharge Type: Trade Discharges - Site Drainage (Contaminated Surface Water, Not Waste Sites) Discharge Environment: Freshwater Stream/River Receiving Water: River Dearne **Status: Transferred from COPA 1974** Positional Accuracy: Located by supplier to within 100m	A9SE (W)	512	2	430700 410300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewage Disposal Works - Water Company Location: Woolley Colliery Stw, Woolley, Barnsley, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: E707 Permit Version: 3 Effective Date: 19th August 1997 Issued Date: 19th August 1997 Revocation Date: 29th September 2009 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Trib Of River Dearne **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 100m	A9NE (NW)	542	2	430800 410800
5	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewage Disposal Works - Water Company Location: Woolley Colliery Stw, Woolley, Barnsley, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: E707 Permit Version: 3 Effective Date: 19th August 1997 Issued Date: 19th August 1997 Revocation Date: 29th September 2009 Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Trib Of River Dearne **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 100m	A9NE (NW)	542	2	430800 410800
5	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Undefined Or Other Location: Wooley Colliery Wpc Works Storm Tan, Ks Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: E707(Ss) Permit Version: 1 Effective Date: 1st January 1982 Issued Date: 1st January 1982 Revocation Date: 13th March 1986 Discharge Type: Sewage Discharges - Unspecified - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Dearne **Status: Post National Rivers Authority Legislation where issue date > 31/08/1989** Positional Accuracy: Located by supplier to within 100m	A9NE (NW)	542	2	430800 410800
5	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Undefined Or Other Location: Wooley Colliery Wpc Works Storm Tan, Ks Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: E707(Ss) Permit Version: 1 Effective Date: 1st January 1982 Issued Date: 1st January 1982 Revocation Date: 13th March 1986 Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Dearne **Status: Post National Rivers Authority Legislation where issue date > 31/08/1989** Positional Accuracy: Located by supplier to within 100m	A9NE (NW)	542	2	430800 410800

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
6	**Discharge Consents** Operator: British Coal Property Property Type: Coal Extraction, Surface Location: Woolley Colliery Darton, Barnsley, South Yorkshire, Uk Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: C4947 Permit Version: 1 Effective Date: 26th January 1988 Issued Date: 26th January 1988 Revocation Date: 16th May 1995 Discharge Type: Trade Effluent Discharge Environment: Freshwater Stream/River Receiving Water: River Dearne **Status: Consent revoked: Discharge ceased (Water Resources Act 1991, Schedule 10 & 6)** Positional Accuracy: Located by supplier to within 100m	A14SW (NW)	544	2	431000 411000
7	**Discharge Consents** Operator: The Coal Authority Property Type: Coal Extraction, Surface Location: Woolley Colliery Darton, Barnsley, South Yorkshire, Uk Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: C4758 Permit Version: 1 Effective Date: 2nd September 1987 Issued Date: 2nd September 1987 Revocation Date: 31st October 1994 Discharge Type: Trade Discharges - Site Drainage (Contaminated Surface Water, Not Waste Sites) Discharge Environment: Freshwater Stream/River Receiving Water: River Dearne **Status: Transferred from COPA 1974** Positional Accuracy: Located by supplier to within 10m	A10NW (NW)	567	2	430860 410920
7	**Discharge Consents** Operator: Med Contracting Property Type: Coal Extraction, Surface Location: Woolley Colliery Darton, Barnsley, South Yorkshire, Uk Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: 3747 Permit Version: 1 Effective Date: 25th October 1983 Issued Date: 25th October 1983 Revocation Date: 13th February 1986 Discharge Type: Trade Discharge - Mineral Workings Discharge Environment: Freshwater Stream/River Receiving Water: River Dearne **Status: Transferred from Rivers (Prevention of Pollution) Act 1951-1961** Positional Accuracy: Located by supplier to within 10m	A10NW (NW)	570	2	430830 410892
8	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewerage Network - Sewers Location: Darton Lane Sws, BARNSLEY, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Dearne Reference: WA6007 Permit Version: Not Supplied Effective Date: Not Supplied Issued Date: Not Supplied Revocation Date: Not Supplied Discharge Type: Surface Water Effluent Discharge Environment: Freshwater Stream/River Receiving Water: Dearne **Status: Not Supplied** Positional Accuracy: Located by supplier to within 100m	A3SE (S)	894	2	431950 409150

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
9	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewerage Network - Sewers Location: Dearne Hill Road, LOW BARUGH, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Dearne Reference: S/UD/51 Permit Version: Not Supplied Effective Date: Not Supplied Issued Date: 5th June 1963 Revocation Date: Not Supplied Discharge Type: Sewage Effluent Discharge-Storm Effluent Discharge Environment: Unknown Receiving Water: Not Supplied **Status: Not Supplied** Positional Accuracy: Located by supplier to within 100m	A3SE (S)	959	2	431940 409080
9	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewerage Network - Sewers - Water Company Location: Dearne Hall Road Cso Dearne Hall Road (B6428), Barugh Green, Barnsley, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: Wra8637 Permit Version: 2 Effective Date: 4th June 2007 Issued Date: 4th June 2007 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Dearne **Status: Modified (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A3SE (S)	962	2	431950 409080
9	**Discharge Consents** Operator: Yorkshire Water Services Ltd Property Type: Sewerage Network - Sewers - Water Company Location: Dearne Hall Road Cso Dearne Hall Road (B6428), Barugh Green, Barnsley, South Yorkshire Authority: Environment Agency, North East Region Catchment Area: Don Tributaries Reference: Wra8637 Permit Version: 1 Effective Date: 1st April 2005 Issued Date: 11th March 2005 Revocation Date: 3rd June 2007 Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Dearne **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A3SE (S)	962	2	431950 409080
10	**Integrated Pollution Controls** Name: Dalkia Utilities Services Plc Location: Dearne Mills, Darton, BARNSLEY, South Yorkshire, S75 5NH Authority: Environment Agency, North East Region Permit Reference: AF6529 Dated: 1st November 1993 Process Type: IPC new application Description: 1.3 A (C) Combustion processes within the Fuel & Power Industry **Status: Authorisation revokedRevoked** Positional Accuracy: Unknown	A6SE (S)	411	2	431382 409717
11	**Integrated Pollution Controls** Name: Regency Doors Plc Location: Spring Ram Business Park, Huddersfield Road, Darton, BARNSLEY, South Yorkshire, S75 5JS Authority: Environment Agency, North East Region Permit Reference: AI7050 Dated: 7th May 1993 Process Type: IPC minor (non-substantial) variation to previous variation Description: 6.7 A (A) Timber processes within Miscellaneous Industries **Status: Authorisation revokedRevoked** Positional Accuracy: Automatically positioned to the address	A9SE (W)	620	2	430597 410476

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
11	**Integrated Pollution Controls** Name: Regency Doors Plc Location: Spring Ram Business Park, Huddersfield Road, Darton, BARNSLEY, South Yorkshire, S75 5JS Authority: Environment Agency, North East Region Permit Reference: AI6932 Dated: 4th May 1993 Process Type: IPC minor (non-substantial) variation to previous variation Description: 1.3 A (C) Combustion processes within the Fuel & Power Industry **Status: Authorisation revokedRevoked** Positional Accuracy: Automatically positioned to the address	A9SE (W)	620	2	430597 410476
11	**Integrated Pollution Controls** Name: Regency Doors Plc Location: Spring Ram Business Park, Huddersfield Road, Darton, BARNSLEY, South Yorkshire, S75 5JS Authority: Environment Agency, North East Region Permit Reference: AF9943 Dated: 30th November 1992 Process Type: IPC new application Description: 6.7 A (A) Timber processes within Miscellaneous Industries **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A9SE (W)	620	2	430597 410476
11	**Integrated Pollution Controls** Name: Regency Doors Plc Location: Spring Ram Business Park, Huddersfield Road, Darton, BARNSLEY, South Yorkshire, S75 5JS Authority: Environment Agency, North East Region Permit Reference: AG0534 Dated: 5th November 1992 Process Type: IPC new application Description: 1.3 A (C) Combustion processes within the Fuel & Power Industry **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A9SE (W)	620	2	430597 410476
12	**Local Authority Integrated Pollution Prevention And Control** Name: Parkside Performance Films Ltd Location: Huddersfield Road, Darton, Barnsley, South Yorkshire, S75 5JS Authority: Barnsley Metropolitan Borough Council, Environmental Health and Trading Standards Permit Reference: IPPC/A2/02 Dated: Not Supplied Process Type: Production and Processing of Metals Description: Surface treatment of metals and plastics **Status: Application Withdrawn** Positional Accuracy: Automatically positioned to the address	A5NE (W)	588	3	430680 410095
13	**Local Authority Pollution Prevention and Controls** Name: Rightcast Ltd Location: Unit W4 Junction 38 Business Park, Darton, Barnsley, S75 5QQ Authority: Barnsley Metropolitan Borough Council, Environmental Health and Trading Standards Permit Reference: PPC/B/130 Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG3/1Blending, packing, loading and use of bulk cement **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A9SE (W)	509	3	430707 410272
14	**Local Authority Pollution Prevention and Controls** Name: Robert Thompson Location: Central Garage, Barnsley Road, Darton, BARNSLEY, South Yorkshire, S75 5NN Authority: Barnsley Metropolitan Borough Council, Environmental Health and Trading Standards Permit Reference: PPC/B/102 Dated: 18th October 1999 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status: Authorised** Positional Accuracy: Automatically positioned to the address	A6SW (SW)	598	3	431115 409725

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
15	**Local Authority Pollution Prevention and Controls** Name: Parkside Performance Films Ltd Location: Huddersfield Road, Darton, BARNSLEY, S75 5NA Authority: Barnsley Metropolitan Borough Council, Environmental Health and Trading Standards Permit Reference: Epa50 Dated: 21st October 1993 Process Type: Local Authority Air Pollution Control Description: PG6/17 Printing of flexible packaging **Status: Authorisation revokedRevoked** Positional Accuracy: Manually positioned to the road within the address or location	A5NE (W)	626	3	430644 410082
16	**Local Authority Pollution Prevention and Controls** Name: Med Contracting Location: Woolley Colliery Occs Site, Darton, Barnsley Authority: Wakefield City Metropolitan District Council, Environmental Health Permit Reference: A0155 Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG3/5 Coal, coke and coal product processes **Status: Authorisation revokedRevoked** Positional Accuracy: Manually positioned within the geographical locality	A14SW (NW)	663	4	431104 411168
17	**Local Authority Pollution Prevention and Controls** Name: Premdor Crosby Ltd Location: Huddersfield Road, Darton, Barnsley, S75 5js Authority: Barnsley Metropolitan Borough Council, Environmental Health and Trading Standards Permit Reference: PPC/B/42 Dated: 26th March 2002 Process Type: Local Authority Pollution Prevention and Control Description: PG6/33 Wood coating **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A9NE (W)	708	3	430547 410629
17	**Local Authority Pollution Prevention and Controls** Name: Premdor Crosby Limited Location: Spring Ram Business Park, Huddersfield Road, Darton, Barnsley, S75 5js Authority: Barnsley Metropolitan Borough Council, Environmental Health and Trading Standards Permit Reference: Epa84 Dated: 20th March 1996 Process Type: Local Authority Air Pollution Control Description: PG6/33 Wood coating **Status: Authorised** Positional Accuracy: Located by supplier to within 10m	A9NE (W)	708	3	430547 410629
17	**Local Authority Pollution Prevention and Controls** Name: Premdor Crosby Limited Location: Spring Ram Business Park, Darton, Barnsley, S75 5JS Authority: Barnsley Metropolitan Borough Council, Environmental Health and Trading Standards Permit Reference: Ppc/B/31 Dated: 21st September 1992 Process Type: Local Authority Pollution Prevention and Control Description: PG6/2 Manufacture of timber and wood-based products **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A9NE (W)	708	3	430547 410629
17	**Local Authority Pollution Prevention and Controls** Name: Crosby Limited Location: Spring Ram Business Park, Darton, BARNSLEY, S75 5JS Authority: Barnsley Metropolitan Borough Council, Environmental Health and Trading Standards Permit Reference: Not Supplied Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG6/2 Manufacture of timber and wood-based products **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A9NE (W)	708	3	430547 410629
18	**Local Authority Pollution Prevention and Controls** Name: Meredew Cabinets Location: Spring Ram Business Park, Darton, BARNSLEY, S75 5JS Authority: Barnsley Metropolitan Borough Council, Environmental Health and Trading Standards Permit Reference: Not Supplied Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG6/2 Manufacture of timber and wood-based products **Status: Authorisation revokedRevoked** Positional Accuracy: Manually positioned within the geographical locality	A9SW (W)	774	3	430450 410530

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
19	**Local Authority Pollution Prevention and Controls** Name: The Coal Authority Location: Wooley Colliery Site, Darton, Barnsley Authority: Wakefield City Metropolitan District Council, Environmental Health Permit Reference: A0135 Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG3/5 Coal, coke and coal product processes **Status: Authorisation revokedRevoked** Positional Accuracy: Manually positioned to the address or location	A14NW (NW)	861	4	430901 411305
	Nearest Surface Water Feature	A7NE (E)	177	-	431926 410137
20	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Road Bridge B6428 /, / Road Brdg B6131 Dearne 20 Authority: Environment Agency, North East Region Pollutant: Oils - Diesel (Including Agricultural) Note: Not Supplied Incident Date: 8th September 1993 Incident Reference: 147764 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	91	2	431300 410200
20	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Storm Overflow Location: Church Street, DARTON Authority: Environment Agency, North East Region Pollutant: Sewage - Storm Overflow Note: Pollution Found; No Fish Killed Incident Date: 10th June 1996 Incident Reference: SH960270 Catchment Area: Dearne Receiving Water: Freshwater Stream/River Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	135	2	431300 410150
21	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Storm Overflow Location: Church Street, DARTON Authority: Environment Agency, North East Region Pollutant: Sewage - Storm Overflow Note: No Fish Killed Incident Date: 10th June 1996 Incident Reference: SH960270 Catchment Area: Dearne Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	139	2	431300 410145
21	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Colliery Stn, /Haigh Bridge A637 Dearne 22 Authority: Environment Agency, North East Region Pollutant: Coal Solids Note: Not Supplied Incident Date: 4th September 1989 Incident Reference: 103939 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	181	2	431300 410100
21	**Pollution Incidents to Controlled Waters** Property Type: Other General Premises Location: River Dearne At , Church Street, DARTON Authority: Environment Agency, North East Region Pollutant: Chemicals - Unknown Note: River Dearne; Fish Killed: No Information Incident Date: 26th November 1998 Incident Reference: SH980390 Catchment Area: Dearne Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	184	2	431305 410095

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
21	**Pollution Incidents to Controlled Waters** Property Type: Miscellaneous Premises: Unknown Location: Rd Brdg B6131/Colliery Stn Dearne 21 Authority: Environment Agency, North East Region Pollutant: Miscellaneous - No Visible Pollution/Nothing Found Note: Not Supplied Incident Date: 5th March 1990 Incident Reference: 108349 Catchment Area: Not Given Receiving Water: No Pollution Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	185	2	431300 410095
22	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Sewage Treatment Works Location: Colliery Stn, /Haigh Bridge A637 Dearne 22 Authority: Environment Agency, North East Region Pollutant: Unknown Note: Not Supplied Incident Date: 22nd October 1993 Incident Reference: 148569 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A10NE (NW)	187	2	431200 410700
23	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Storm Overflow Location: Station Road, Darton, BARNSLEY Authority: Environment Agency, North East Region Pollutant: Sewage - Storm Overflow Note: River Dearne; Fish Killed: No Information Incident Date: 3rd July 1998 Incident Reference: SH980430 Catchment Area: Dearne Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	203	2	431250 410100
23	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Rd Brdg B6131/Colliery Stn Dearne 21 Authority: Environment Agency, North East Region Pollutant: Miscellaneous - Tip Leachate Note: Not Supplied Incident Date: 10th November 1989 Incident Reference: 105158 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	216	2	431205 410105
23	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Storm Overflow Location: Church Street, DARTON Authority: Environment Agency, North East Region Pollutant: Sewage - Storm Overflow Note: River Dearne; Fish Killed: No Information Incident Date: 11th July 1998 Incident Reference: SH980274 Catchment Area: Dearne Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	218	2	431200 410105
23	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Storm Overflow Location: River Dearne At , DARTON Authority: Environment Agency, North East Region Pollutant: Sewage - Storm Overflow Note: River Dearne; No Fish Killed Incident Date: 5th July 1998 Incident Reference: SH980267 Catchment Area: Dearne Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	220	2	431195 410105

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
23	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Rd Brdg B6131/Colliery Stn Dearne 21 Authority: Environment Agency, North East Region Pollutant: Coal Solids Note: Not Supplied Incident Date: 7th November 1989 Incident Reference: 105054 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	221	2	431205 410100
23	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Colliery Stn, /Haigh Bridge A637 Dearne 22 Authority: Environment Agency, North East Region Pollutant: Mining Water Note: Not Supplied Incident Date: 30th November 1994 Incident Reference: 154600 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	223	2	431200 410100
23	**Pollution Incidents to Controlled Waters** Property Type: Coal Location: Rear Of Post Office, Church Street, DARTON Authority: Environment Agency, North East Region Pollutant: Unknown Note: No Fish Killed Incident Date: 30th November 1994 Incident Reference: SH950074 Catchment Area: Dearne Tributaries Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	226	2	431205 410095
23	**Pollution Incidents to Controlled Waters** Property Type: Miscellaneous Premises: Unknown Location: Colliery Stn, /Haigh Bridge A637 Dearne 22 Authority: Environment Agency, North East Region Pollutant: Unknown Note: Not Supplied Incident Date: 7th February 1990 Incident Reference: 107551 Catchment Area: Not Given Receiving Water: No Pollution Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	228	2	431200 410095
24	**Pollution Incidents to Controlled Waters** Property Type: Other General Premises Location: Rd Brdg B6131/Colliery Stn Dearne 21 Authority: Environment Agency, North East Region Pollutant: Rubbish Note: Not Supplied Incident Date: 23rd March 1994 Incident Reference: 150728 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A10SW (W)	216	2	431000 410300
25	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Colliery Stn, /Haigh Bridge A637 Dearne 22 Authority: Environment Agency, North East Region Pollutant: Industrial Effluent Note: Not Supplied Incident Date: 6th July 1989 Incident Reference: 101019 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A6NW (SW)	266	2	431100 410100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
26	**Pollution Incidents to Controlled Waters** Property Type: Farm Location: Road Bridge B6428 /, / Road Brdg B6131 Dearne 20 Authority: Environment Agency, North East Region Pollutant: Agricultural: Carcasses Note: Not Supplied Incident Date: 13th July 1994 Incident Reference: 152592 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A6SE (SW)	367	2	431300 409900
27	**Pollution Incidents to Controlled Waters** Property Type: Other General Premises Location: Woolley Colliery Stw, WOOLLEY Authority: Environment Agency, North East Region Pollutant: Oils - Diesel (Including Agricultural) Note: No Fish Killed Incident Date: 20th January 1995 Incident Reference: SH950099 Catchment Area: Dearne Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A10NE (NW)	380	2	431200 410900
28	**Pollution Incidents to Controlled Waters** Property Type: Other General Premises Location: Rd Brdg B6131/Colliery Stn Dearne 21 Authority: Environment Agency, North East Region Pollutant: Coal Solids Note: Not Supplied Incident Date: 31st May 1991 Incident Reference: 122900 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A10NW (NW)	410	2	431100 410900
29	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Rd Brdg B6131/Colliery Stn Dearne 21 Authority: Environment Agency, North East Region Pollutant: Oils - Diesel (Including Agricultural) Note: Not Supplied Incident Date: 8th October 1993 Incident Reference: 148392 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A6SE (SW)	414	2	431300 409800
29	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Rd Brdg B6131/Colliery Stn Dearne 21 Authority: Environment Agency, North East Region Pollutant: Industrial Effluent Note: Not Supplied Incident Date: 4th November 1992 Incident Reference: 138432 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A6SE (SW)	417	2	431300 409795
30	**Pollution Incidents to Controlled Waters** Property Type: Other General Premises Location: Dearne At, DARTON Authority: Environment Agency, North East Region Pollutant: Oils - Diesel (Including Agricultural) Note: No Fish Killed Incident Date: 30th November 1995 Incident Reference: SH950168 Catchment Area: Dearne Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9SE (W)	428	2	430800 410500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
31	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Colliery Stn, /Haigh Bridge A637 Dearne 22 Authority: Environment Agency, North East Region Pollutant: Miscellaneous - Tip Leachate Note: Not Supplied Incident Date: 11th December 1991 Incident Reference: 128941 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A10NW (NW)	524	2	430900 410900
32	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Rd Brdg B6131/Colliery Stn Dearne 21 Authority: Environment Agency, North East Region Pollutant: Coal Solids Note: Not Supplied Incident Date: 5th September 1989 Incident Reference: 102955 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9NE (NW)	535	2	430805 410795
32	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Rd Brdg B6131/Colliery Stn Dearne 21 Authority: Environment Agency, North East Region Pollutant: Industrial Effluent Note: Not Supplied Incident Date: 15th August 1989 Incident Reference: 102421 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 1 - Major Incident Positional Accuracy: Located by supplier to within 100m	A9NE (NW)	537	2	430805 410800
32	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Colliery Stn, /Haigh Bridge A637 Dearne 22 Authority: Environment Agency, North East Region Pollutant: Surface Water Note: Not Supplied Incident Date: 23rd November 1994 Incident Reference: 153676 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9NE (NW)	539	2	430800 410795
32	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Road Bridge B6428 /, Road Brdg B6131 Dearne 20 Authority: Environment Agency, North East Region Pollutant: Coal Solids Note: Not Supplied Incident Date: 20th April 1989 Incident Reference: 6862 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9NE (NW)	540	2	430805 410805
33	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Sewage Treatment Works Location: Rd Brdg B6131/Colliery Stn Dearne 21 Authority: Environment Agency, North East Region Pollutant: Sewage - Treated Effluent Note: Not Supplied Incident Date: 28th March 1994 Incident Reference: 150378 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14SW (NW)	540	2	431000 410995

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
34	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Road Bridge B6428 /, / Road Brdg B6131 Dearne 20 Authority: Environment Agency, North East Region Pollutant: Not Given Note: Not Supplied Incident Date: 4th January 1990 Incident Reference: 106536 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A3NW (S)	541	2	431500 409500
35	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Road Bridge B6428 /, / Road Brdg B6131 Dearne 20 Authority: Environment Agency, North East Region Pollutant: Not Given Note: Not Supplied Incident Date: 28th May 1990 Incident Reference: 111136 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A6SE (S)	553	2	431300 409600
36	**Pollution Incidents to Controlled Waters** Property Type: Petrol/Fuelling Stations Location: Dearne At Darton Authority: Environment Agency, North East Region Pollutant: Unknown Note: No Fish Killed Incident Date: 9th January 1995 Incident Reference: SH950106 Catchment Area: Dearne Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A5NE (W)	568	2	430700 410100
37	**Pollution Incidents to Controlled Waters** Property Type: Surface Water Sewers Location: Footbridge/ Road Bridge B6428 Dearne 19 Authority: Environment Agency, North East Region Pollutant: Oils - Unknown Note: Not Supplied Incident Date: 16th November 1989 Incident Reference: 105236 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 1 - Major Incident Positional Accuracy: Located by supplier to within 100m	A12NW (NE)	596	2	432200 410800
38	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Colliery Stn, /Haigh Bridge A637 Dearne 22 Authority: Environment Agency, North East Region Pollutant: Mining Water Note: Not Supplied Incident Date: 2nd February 1991 Incident Reference: 119382 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A13SE (NW)	666	2	430800 411000
39	**Pollution Incidents to Controlled Waters** Property Type: Other General Premises Location: Road Bridge B6428 /, Road Brdg B6131 Dearne 20 Authority: Environment Agency, North East Region Pollutant: Coal Solids Note: Not Supplied Incident Date: 16th May 1990 Incident Reference: 110515 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14SW (NW)	681	2	430900 411100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
40	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Rd Brdg B6131/Colliery Stn Dearne 21 Authority: Environment Agency, North East Region Pollutant: Surface Water Note: Not Supplied Incident Date: 23rd January 1990 Incident Reference: 107101 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A13SE (NW)	881	2	430700 411200
41	**Pollution Incidents to Controlled Waters** Property Type: Fire Water Location: River Dearne At, DARTON Authority: Environment Agency, North East Region Pollutant: Chemicals - Detergents/Surfactant Note: No Fish Killed Incident Date: 25th July 1997 Incident Reference: SH970370 Catchment Area: Dearne Tributaries Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3SW (S)	906	2	431700 409100
41	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Sewage Treatment Works Location: Low Mill Farm, Silkstone, BARNSLEY Authority: Environment Agency, North East Region Pollutant: Storm Sewage Note: No Fish Killed Incident Date: 9th August 1995 Incident Reference: SH950128 Catchment Area: Dearne Tributaries Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A3SW (S)	911	2	431700 409095
42	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Road Bridge B6428 /, / Road Brdg B6131 Dearne 20 Authority: Environment Agency, North East Region Pollutant: Oils - Diesel (Including Agricultural) Note: Not Supplied Incident Date: 10th November 1993 Incident Reference: 148784 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A3SW (S)	913	2	431800 409100
42	**Pollution Incidents to Controlled Waters** Property Type: Rail Location: River Dearne , Between Darton, & Staincross, DARTON Authority: Environment Agency, North East Region Pollutant: Oils - Other Oil Note: Watercourse :River Dearne; From New Lodge To Old Mill; Fish Killed: No Information Incident Date: 22nd February 1998 Incident Reference: SH980060 Catchment Area: Dearne Receiving Water: Freshwater Stream/River Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3SW (S)	918	2	431800 409095
43	**Pollution Incidents to Controlled Waters** Property Type: Miscellaneous Premises: Unknown Location: Road Bridge B6428 /, Road Brdg B6131 Dearne 20 Authority: Environment Agency, North East Region Pollutant: Mining Water Note: Not Supplied Incident Date: 14th April 1991 Incident Reference: 121394 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3SE (S)	930	2	431900 409100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
43	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Storm Overflow Location: LOW BARUGH Authority: Environment Agency, North East Region Pollutant: Sewage - Storm Overflow Note: River Dearne; Fish Killed: No Information Incident Date: 16th August 1998 Incident Reference: SH980317 Catchment Area: Dearne Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3SE (S)	935	2	431900 409095
44	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Foul Sewer Location: Footbridge/ Road Bridge B6428 Dearne 19 Authority: Environment Agency, North East Region Pollutant: Crude Sewage Note: Not Supplied Incident Date: 17th March 1993 Incident Reference: 145877 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A4SW (SE)	950	2	432200 409200
45	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Storm Overflow Location: Dearne Hall Road, BARUGH Authority: Environment Agency, North East Region Pollutant: Sewage - Storm Overflow Note: No Fish Killed Incident Date: 26th September 1997 Incident Reference: SH970516 Catchment Area: Dearne Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3SE (S)	957	2	432000 409100
46	**Pollution Incidents to Controlled Waters** Property Type: Industrial Premises Location: Colliery Stn, /Haigh Bridge A637 Dearne 22 Authority: Environment Agency, North East Region Pollutant: Mining Water Note: Not Supplied Incident Date: 3rd April 1991 Incident Reference: 121120 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NE (NW)	960	2	430700 411300
47	**Prosecutions Relating to Authorised Processes** Location: Barnsley Road, Darton, Barnsley, Yorkshire, S75 5NT Prosecution Text: EA News Release 04/03/1999, Found guilty of knowingly permitting controlled waste to be deposited without a licence. Prosecution Act: EPA90 Hearing Date: 4th March 1999 Verdict: Guilty Fine: 500 Costs: 1240.1 Positional Accuracy: Manually positioned to the road within the address or location	A2NE (S)	842	2	431286 409268
	River Quality Name: River_Dearne GQA Grade: River Quality C Reach: Wooley_Minewater_Cawthorne_Dyk Estimated Distance (km): 3.3 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A6NE (SW)	199	2	431257 410018

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	River Quality Name: River_Dearne GQA Grade: River Quality C Reach: Bretton_Brook_Wooley_Minewate Estimated Distance (km): 1.2 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A13SE (NW)	823	2	430693 411116
	River Quality Name: River_Dearne GQA Grade: River Quality C Reach: Cawthorne_Dyke_New_Lodg Estimated Distance (km): 2 Flow Rate: Flow less than 0.62 cumecs Flow Type: River Year: 2000	A3SW (S)	983	2	431626 409025
	River Quality Name: Cawthorne_Dyke GQA Grade: River Quality C Reach: Silkstone_Beck_River_Dearn Estimated Distance (km): 2.1 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A3SW (S)	983	2	431626 409025

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
48	**River Quality Chemistry Sampling Points** Name: River Dearne Reach: Wooley Minewater Cawthorne Dyke Estimated Distance: 3.30 Objective: Not Supplied Positional Accuracy: Located by supplier to within 10m Year: 1990 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1993 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1994 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1995 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1996 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1997 GQA Grade: River Quality Chemistry GQA Grade D - Fair Compliance: Not Supplied Year: 1998 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1999 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2000 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2001 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2002 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2003 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2004 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2005 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2006 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2007 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2008 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2009 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied	A6NW (SW)	256	2	431149 410087

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
49	**River Quality Chemistry Sampling Points** Name: River Dearne Reach: Cawthorne Dyke New Lodge Estimated Distance: 2.00 Objective: Not Supplied Positional Accuracy: Located by supplier to within 10m Year: 1990 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1993 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1994 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1995 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1996 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1997 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1998 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1999 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2000 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2001 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2002 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2003 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2004 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2005 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2006 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2007 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2008 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2009 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied	A3SE (SE)	960	2	432021 409104
50	**Substantiated Pollution Incident Register** Authority: Environment Agency - North East Region, Yorkshire Area Incident Date: 26th November 2010 Incident Reference: 841110 Water Impact: Category 2 - Significant Incident Air Impact: Category 4 - No Impact Land Impact: Category 4 - No Impact Positional Accuracy: Located by supplier to within 10m Pollutant: Contaminated Water: Suspended Solids	A6NW (SW)	253	2	431155 410087
51	**Substantiated Pollution Incident Register** Authority: Environment Agency - North East Region, Yorkshire Area Incident Date: 4th October 2010 Incident Reference: 827897 Water Impact: Category 2 - Significant Incident Air Impact: Category 4 - No Impact Land Impact: Category 4 - No Impact Positional Accuracy: Located by supplier to within 10m Pollutant: Crude Sewage	A10NW (NW)	424	2	431064 410898

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
52	**Water Abstractions** Operator: Shaw Carpets Ltd Licence Number: 2/27/08/114 Permit Version: Not Supplied Location: Po Box. 4, Darton, BARNSLEY Authority: Environment Agency, North East Region Abstraction: Commercial Use(pubs etc) Abstraction Type: Not Supplied Source: Groundwater Daily Rate (m3): 312 Yearly Rate (m3): 85072 Details: Licence Status: Active Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A6SE (S)	413	2	431400 409700
53	**Water Abstractions** Operator: British Coal Licence Number: 2/27/08/031 Permit Version: Not Supplied Location: Location Description Not Available Authority: Environment Agency, North East Region Abstraction: General Industrial Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): 2728 Yearly Rate (m3): 818000 Details: Licence Revoked Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A13SE (NW)	646	2	430780 410950
54	**Water Abstractions** Operator: The Coal Authority Licence Number: Ne/027/0008/006 Permit Version: 1 Location: Underground Strata At Former Wooley Colliery Authority: Environment Agency, North East Region Abstraction: Environmental: Pump & Treat: Pollution Remediation Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 13th July 2009 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14SW (NW)	710	2	430949 411161
	Water Abstractions Operator: A I Crossley & Son Licence Number: 2/27/08/049 Permit Version: 100 Location: Spring - Coal Measures - Darton Authority: Environment Agency, North East Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 5 Yearly Rate (m3): 1659 Details: Birthwaite Hall Farm,Darton,Barnsley Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 27th January 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(W)	1816	2	429400 410200
	Groundwater Vulnerability Soil Classification: Soils of High Leaching Potential (U) - Soil information for restored mineral workings and urban areas is based on fewer observations than elsewhere. A worst case vulnerability classification (H) assumed, until proved otherwise Map Sheet: Sheet 11 South Pennines Scale: 1:100,000	A11SW (SW)	0	2	431518 410297
	Drift Deposits None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A11SW (SW)	0	5	431518 410297
	Superficial Aquifer Designations No Data Available				
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A6NE (W)	146	2	431217 410173
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A6NE (SW)	159	2	431212 410162
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models and Fluvial Events Boundary Accuracy: As Supplied	A6NE (SW)	159	2	431305 410062
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A6NE (W)	159	2	431197 410171
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A6NE (SW)	161	2	431274 410102
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A6NW (W)	173	2	431090 410224
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A6NW (W)	177	2	431057 410260
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A6NW (W)	177	2	431074 410235
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A6NW (W)	177	2	431068 410244
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A6NW (W)	177	2	431073 410237
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A6NW (W)	177	2	431064 410249
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A10SW (W)	189	2	431031 410291
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A6NE (SW)	197	2	431270 410093
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A6NW (W)	199	2	431044 410240
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A6NW (W)	203	2	431083 410182

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A6NE (SW)	211	2	431320 410056
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A6NE (SW)	223	2	431266 410068
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A6NE (SW)	226	2	431268 410063
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A6NE (SW)	175	2	431306 410060
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A6NW (W)	182	2	431064 410242
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
55	**Detailed River Network Lines** River Type: Primary River River Name: Dearne Hydrographic Area: D004 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Flood Risk Management Indicative/Statutory Main River Water Course Name: RIVER DEARNE Water Course Reference: 0256	A6NE (SW)	194	2	431302 410055
56	**Detailed River Network Lines** River Type: Tertiary River River Name: Drain Hydrographic Area: D004 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Drain (ditch, Reen, Rhyne, Drain) Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A11NW (NE)	389	2	431811 410810
57	**Detailed River Network Lines** River Type: Tertiary River River Name: Drain Hydrographic Area: D004 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Drain (ditch, Reen, Rhyne, Drain) Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A11NW (N)	442	2	431710 410879

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
58	**Detailed River Network Lines** River Type: Secondary River River Name: Not Supplied Hydrographic Area: D004 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference:	A9SE (W)	445	2	430801 410556
59	**Detailed River Network Lines** River Type: Primary River River Name: River Dearne Hydrographic Area: D004 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Flood Risk Management Indicative/Statutory Main River Water Course Name: RIVER DEARNE Water Course Reference: 0256	A9SE (W)	445	2	430801 410556
60	**Detailed River Network Lines** River Type: Extended Culvert (greater than 50m) River Name: Not Supplied Hydrographic Area: D004 River Flow Type: Primary Flow Path River Surface Level: Below Surface Drain Feature: Not a Drain Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A14SE (N)	472	2	431356 411029
61	**Detailed River Network Lines** River Type: Extended Culvert (greater than 50m) River Name: Not Supplied Hydrographic Area: D004 River Flow Type: Primary Flow Path River Surface Level: Below Surface Drain Feature: Not a Drain Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A9SE (W)	482	2	430746 410509
62	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D004	A7NE (E)	177	2	431926 410137
63	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D004	A11SE (NE)	235	2	431979 410505
64	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D004	A6SE (S)	269	2	431460 409837
65	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D004	A7SE (SE)	303	2	431914 409793
66	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D004	A7SE (SE)	450	2	432097 409795

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
67	**Historical Landfill Sites** Licence Holder: Shaw Carpets Limited Location: Barnsley Road, Darton, Barnsley Name: Shaw Carpets Limited Operator Location: Barnsley Road, Darton, Barnsley Boundary Accuracy: As Supplied Provider Reference: EAHLD04346 First Input Date: 30th April 1980 Last Input Date: 31st December 1993 Specified Waste Type: Deposited Waste included Inert, Industrial and Commercial Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 4400/0478 BGS Ref: Not Supplied Other Ref: WD20 B265, 4400/B265, 20B265(76)	A3NW (S)	499	2	431694 409508
68	**Historical Landfill Sites** Licence Holder: C Birkinshaw and Sons Limited Location: Darton, Barnsley Name: Between Darton Lane and Dearne Hall Road Operator Location: Oaks Farm, Darton Lane, Darton Boundary Accuracy: As Supplied Provider Reference: EAHLD04347 First Input Date: 31st October 1985 Last Input Date: 1st November 1994 Specified Waste Type: Deposited Waste included Inert and Commercial Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 4400/0500 BGS Ref: Not Supplied Other Ref: WD20 B490, 4400/B490, 20B490(98)	A3NW (S)	573	2	431755 409437
69	**Historical Landfill Sites** Licence Holder: National Coal Board Location: Junction of Spark Lane and Swallow Hill Road, Mapplewell, Barnsley Name: Quarry Operator Location: Barnsley Area, Grimethorpe, Barnsley Boundary Accuracy: As Supplied Provider Reference: EAHLD04348 First Input Date: 31st January 1978 Last Input Date: 11th January 1985 Specified Waste Type: Deposited Waste included Inert and Commercial Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 4400/0471 BGS Ref: Not Supplied Other Ref: WD20 B176	A4NW (SE)	951	2	432301 409271
	Local Authority Landfill Coverage Name: Barnsley Metropolitan Borough Council - Has supplied landfill data		0	3	431518 410297
	Local Authority Landfill Coverage Name: Wakefield Metropolitan Borough Council - Has not been able to supply Landfill data		322	4	431154 410827
70	**Local Authority Recorded Landfill Sites** Location: Not Supplied Reference: 76 Authority: Barnsley Metropolitan Borough Council, Environmental Health and Trading Standards **Last Reported Status:** **Unknown** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A3NW (S)	478	3	431680 409529
71	**Local Authority Recorded Landfill Sites** Location: Not Supplied Reference: 98 Authority: Barnsley Metropolitan Borough Council, Environmental Health and Trading Standards **Last Reported Status:** **Unknown** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A3NW (S)	590	3	431767 409422

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
72	**Local Authority Recorded Landfill Sites** Location: Not Supplied Reference: 69 Authority: Barnsley Metropolitan Borough Council, Environmental Health and Trading Standards **Last Reported Status:** **Unknown** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A4NW (SE)	952	3	432299 409269
73	**Registered Landfill Sites** Licence Holder: Shaw Carpets Ltd Licence Reference: WD20 B 265 Site Location: Barnsley Road, Darton, Barnsley, South Yorkshire Licence Easting: 431680 Licence Northing: 409450 Operator Location: As Site Address Authority: Environment Agency - North East Region, Ridings Area Site Category: Landfill Max Input Rate: Very Small (Less than 10,000 tonnes per year) Waste Source Restrictions: Only waste produced on site Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st April 1980 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste: Construction And Demolition Wastes; Ind. Non-Haz. Waste; Soil & Subsoil Prohibited Waste: Asbestos; Liquids In Containers Over 4l Cap.; Slurry In Containers Over 4l Cap.	A3NW (S)	556	2	431680 409450
74	**Registered Landfill Sites** Licence Holder: C Birkinshaw & Sons Ltd Licence Reference: WD20 B 490 Site Location: Between Darton Lane, & Dearne Hall Road, Darton, Barnsley, South Yorkshire Licence Easting: 431850 Licence Northing: 409300 Operator Location: Oaks Farm, Darton Lane, Darton, Barnsley, South Yorkshire Authority: Environment Agency - North East Region, Ridings Area Site Category: Landfill Max Input Rate: Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Status: Licence revokedRevoked Dated: 21st October 1985 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste: Construction And Demolition Wastes; Excavated Natural Materials $; Hardcore And Rubble Prohibited Waste: Asbestos; Biodegradable/Putrescible Waste; Combustible/Potentially Combustible; Liquids In Containers Over 4l Cap.; Slurry In Containers Over 4l Cap.	A3NE (S)	724	2	431850 409300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
75	**Registered Landfill Sites** Licence Holder: N.C.B. Licence Reference: WD20 B 176 MOD 1 Site Location: Quarry At Spark Lane, Mapplewell, Darton, Barnsley, South Yorkshire Licence Easting: 432350 Licence Northing: 409250 Operator Location: Barnsley Area Off. Grimethorpe, Barnsley, South Yorkshire Authority: Environment Agency - North East Region, Ridings Area Site Category: Landfill Max Input Rate: Very Small (Less than 10,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st July 1983 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste Construction And Demolition Wastes Prohibited Waste Liquids In Containers Over 4l Cap. Slurry In Containers Over 4l Cap.	A4SW (SE)	999	2	432350 409250

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
76	**Control of Major Accident Hazards Sites (COMAH)** Name: Stiller Group North Limited Location: Barnsley Depot, Dearne Mills, Barnsley Road, Darton, South Yorkshire, S75 5NN Reference: 4030326 Type: Upper Tier **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A7SW (S)	390	6	431498 409667

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Pennine Middle Coal Measures Formation And South Wales Middle Coal Measures Formation (Undifferentiated)	A11SW (SW)	0	5	431518 410297
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NE (SW)	0	5	431444 410195
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SE (W)	0	5	431298 410279
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11SW (SW)	0	5	431509 410285
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SE (NW)	0	5	431329 410431
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SE (W)	0	5	431269 410347
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11SW (SW)	0	5	431518 410297

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SE (NW)	0	5	431447 410391
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NW (SE)	6	5	431676 410000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NW (S)	12	5	431633 410000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NW (SE)	19	5	431719 410000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NW (SE)	20	5	431764 410047
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NW (S)	30	5	431518 410000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NE (S)	34	5	431442 410070
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SE (W)	35	5	431225 410284
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NW (SE)	39	5	431776 410060
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11SW (NE)	89	5	431751 410521
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NW (SE)	108	5	431822 410000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11SW (NE)	121	5	431660 410576

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NE (SW)	128	5	431307 410130
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NE (W)	132	5	431170 410211
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11SW (NE)	136	5	431804 410535
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7SW (SE)	149	5	431818 409916
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11SW (NE)	151	5	431691 410600
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NE (SW)	165	5	431335 410106

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NE (SW)	165	5	431323 410109
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NE (SW)	166	5	431295 410118
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SW (W)	168	5	431043 410400
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SW (W)	170	5	431052 410443
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NE (S)	179	5	431434 410000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SW (W)	180	5	431030 410340

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 30 - 45 mg/kg	A6NE (S)	205	5	431413 410000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SW (W)	208	5	431000 410297
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SW (W)	209	5	431000 410394
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SW (W)	210	5	430996 410381
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SW (W)	210	5	431000 410403
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SW (W)	210	5	430999 410396

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11SE (E)	214	5	432000 410297
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SW (W)	214	5	431007 410446
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11SE (E)	215	5	432000 410383
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SW (W)	223	5	431000 410454
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11SE (E)	225	5	432000 410438
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11SE (E)	228	5	432000 410295

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11SE (E)	234	5	432010 410306
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NW (W)	252	5	431000 410210
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NW (W)	257	5	431000 410201
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NE (SW)	258	5	431367 410000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10NW (NW)	266	5	431022 410641
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11SE (E)	270	5	432055 410355

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10NW (NW)	273	5	431091 410734
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10NW (NW)	274	5	431010 410624
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NW (NE)	274	5	431826 410688
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10NW (NW)	278	5	431000 410610
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NE (SE)	279	5	432000 410000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6SE (S)	285	5	431457 409817

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10NW (NW)	286	5	431000 410632
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SW (W)	309	5	430931 410515
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NW (N)	311	5	431573 410760
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NE (NE)	326	5	431843 410737
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7SE (SE)	336	5	432000 409854
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NE (NE)	347	5	431962 410670

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11SE (E)	351	5	432130 410437
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NW (SW)	356	5	431098 410000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NE (SW)	356	5	431194 409946
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NW (SW)	360	5	431000 410051
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NE (NE)	361	5	432000 410661
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NW (W)	362	5	430868 410232

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NW (N)	369	5	431611 410811
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NE (SE)	372	5	432096 409949
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NE (NE)	385	5	432000 410690
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9SE (W)	391	5	430817 410369
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10NW (NW)	393	5	431000 410815
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NE (SE)	404	5	432127 410000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NW (SW)	404	5	431000 410000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7SE (SE)	405	5	432000 409736
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8NW (E)	434	5	432179 410086
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 30 - 45 mg/kg	A6SE (S)	446	5	431386 409663
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (N)	474	5	431275 411000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (N)	474	5	431373 411000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (N)	486	5	431417 411000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NW (N)	487	5	431686 410927
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10NW (NW)	489	5	430847 410776
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SW (N)	493	5	431518 411000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8NW (SE)	498	5	432222 410000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NW (NE)	520	5	432240 410623

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A2NE (S)	535	5	431391 409559
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (NW)	544	5	431000 411000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (N)	555	5	431332 411077
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SW (N)	559	5	431647 411000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SW (N)	561	5	431695 411000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (NW)	604	5	430852 410965

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9NE (NW)	605	5	430686 410719
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (N)	606	5	431367 411123
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A2NE (S)	607	5	431233 409585
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (NW)	629	5	430853 411000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SE (NE)	636	5	432000 411000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A2NE (S)	642	5	431275 409508

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SE (NE)	644	5	432016 411000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SE (NE)	644	5	432014 411001
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8SW (SE)	648	5	432305 409759
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SE (NE)	650	5	432000 411015
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (NW)	653	5	430817 411000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SE (NE)	721	5	432000 411094

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A3NE (SE)	724	5	432000 409350
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NW (NE)	737	5	432418 410750
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (N)	756	5	431470 411257
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 30 - 45 mg/kg	A3NE (SE)	773	5	432000 409296
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (NW)	788	5	430637 411000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9NE (NW)	796	5	430497 410744

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (NW)	796	5	431000 411276
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 30 - 45 mg/kg	A2NE (S)	808	5	431378 409261
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SE (NE)	808	5	432131 411123
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A2NE (S)	821	5	431363 409254
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A2NW (SW)	824	5	431000 409517
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8SW (SE)	842	5	432488 409693

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A16SW (NE)	855	5	432366 411000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9SW (W)	856	5	430355 410302
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SE (NE)	862	5	432000 411247
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A2NW (SW)	875	5	431000 409439
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NW (NW)	875	5	431000 411359
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A16SW (NE)	887	5	432412 411000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15NE (N)	921	5	431839 411357
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 30 - 45 mg/kg	A3SE (SE)	933	5	432147 409190
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (NW)	963	5	430523 411138
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A16NW (NE)	978	5	432202 411279
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A3SW (S)	983	5	431680 409019
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9SW (W)	996	5	430212 410393

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15NW (N)	996	5	431631 411468
77	**BGS Recorded Mineral Sites** Site Name: Bloomhouse Green Level Location: , Darton, Barnsley, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 25996 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (South Yorkshire) Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A11SW (E)	0	5	431682 410327
78	**BGS Recorded Mineral Sites** Site Name: Darton Location: , Darton, Barnsley, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 109959 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Haigh Moor Rock Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A10SE (W)	29	5	431188 410330
79	**BGS Recorded Mineral Sites** Site Name: Oates Occs Location: , Darton, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217034 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Surface Mined Positional Accuracy: Located by supplier to within 10m	A7NE (SE)	138	5	431863 410036
80	**BGS Recorded Mineral Sites** Site Name: Pye Wood Location: , Darton, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 103076 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Pennine Middle Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A10NE (NW)	163	5	431349 410676
81	**BGS Recorded Mineral Sites** Site Name: Darton Coal Crop Workings Location: , Darton, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217031 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Surface Mined Positional Accuracy: Located by supplier to within 10m	A7SW (S)	205	5	431526 409866

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
82	**BGS Recorded Mineral Sites** Site Name: Bloomhouse Lane Phase 2 Occs Location: , Darton, Barnsley, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 4504 Type: Opencast **Status: Ceased** Operator: Derbyshire Mining Operator Location: Derbyshire Mining, Spitewinter, Stonedge, Chesterfield, Derbyshire, S45 0lw Periodic Type: Carboniferous Geology: Pennine Middle Coal Measures Formation Commodity: Coal - Surface Mined Positional Accuracy: Located by supplier to within 100m	A11NW (N)	225	5	431500 410700
83	**BGS Recorded Mineral Sites** Site Name: Darton Coal Crop Workings Location: , Darton, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217032 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Surface Mined Positional Accuracy: Located by supplier to within 10m	A7SW (S)	255	5	431575 409779
84	**BGS Recorded Mineral Sites** Site Name: Darton Coal Crop Workings Location: , Darton, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217030 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Surface Mined Positional Accuracy: Located by supplier to within 10m	A7SW (S)	262	5	431737 409748
85	**BGS Recorded Mineral Sites** Site Name: Bloomhouse Green Location: , Darton, Barnsley, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 25995 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Pennine Middle Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A7NE (E)	281	5	432029 410209
86	**BGS Recorded Mineral Sites** Site Name: Oates Occs Location: , Darton, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217033 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Surface Mined Positional Accuracy: Located by supplier to within 10m	A7NE (SE)	299	5	432006 409947
87	**BGS Recorded Mineral Sites** Site Name: Darton Coal Crop Workings Location: , Darton, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217029 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Surface Mined Positional Accuracy: Located by supplier to within 10m	A7SE (SE)	308	5	431845 409737

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
88	**BGS Recorded Mineral Sites** Site Name: Sutcliffe & Shipley Colliery Location: , Mapplewell, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217026 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A7SE (SE)	385	5	432077 409892
89	**BGS Recorded Mineral Sites** Site Name: Pye Wood Location: , Darton, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 103077 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Pennine Middle Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A11NW (N)	409	5	431579 410867
90	**BGS Recorded Mineral Sites** Site Name: Oakfield Road Location: , Mapplewell, Barnsley, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 25994 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Pennine Middle Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A12SW (E)	461	5	432245 410336
91	**BGS Recorded Mineral Sites** Site Name: Darton Main Colliery Location: , Darton, Barnsley, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 25991 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Pennine Middle Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A5NE (W)	503	5	430733 410192
92	**BGS Recorded Mineral Sites** Site Name: Sutcliffe & Shipley Colliery Location: , Mapplewell, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217027 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A8NW (SE)	505	5	432219 409941
93	**BGS Recorded Mineral Sites** Site Name: Woolley Colliery Location: , Woolley, Wakefield, West Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 4499 Type: Underground **Status: Ceased** Operator: British Coal - North Yorkshire Area Operator Location: British Coal - North Yorkshire Area, Allerton Bywater, Castleford, West Yorkshire, Wf10 2al Periodic Type: Carboniferous Geology: Pennine Coal Measures Group Commodity: Coal - Deep Positional Accuracy: Approximate location provided by supplier	A14SW (NW)	544	5	431000 411000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
94	**BGS Recorded Mineral Sites** Site Name: Sutcliffe & Shipley Colliery Location: , Mapplewell, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217028 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A8NW (SE)	554	5	432270 409946
95	**BGS Recorded Mineral Sites** Site Name: Darton Location: , Darton, Barnsley, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 25989 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Pennine Middle Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A6SW (SW)	589	5	430936 409822
96	**BGS Recorded Mineral Sites** Site Name: Speedwell Colliery Location: , Darton, Barnsley, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 25997 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (South Yorkshire) Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A8NW (E)	594	5	432326 410012
97	**BGS Recorded Mineral Sites** Site Name: Darton Colliery Location: , Mapplewell, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217025 Type: Underground **Status: Ceased** Operator: Ncb North Eastern Division, Area No 6 (North Barnsley) Operator Location: Ncb North Eastern Division, Area No 6 (North Barnsley), Woolley Colliery, Darton, Barnsley, Yorkshire Periodic Type: Carboniferous Geology: Pennine Middle Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A4NW (SE)	665	5	432208 409578
97	**BGS Recorded Mineral Sites** Site Name: Darton Colliery Location: , Darton, Barnsley, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 25988 Type: Underground **Status: Ceased** Operator: Ncb North Eastern Division, Area No 6 (North Barnsley) Operator Location: Ncb North Eastern Division, Area No 6 (North Barnsley), Woolley Colliery, Darton, Barnsley, Yorkshire Periodic Type: Carboniferous Geology: Pennine Middle Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A8SW (SE)	675	5	432235 409596

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
97	**BGS Recorded Mineral Sites** Site Name: Darton Occs Location: , Darton, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217037 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Surface Mined Positional Accuracy: Located by supplier to within 10m	A4NW (SE)	695	5	432221 409548
98	**BGS Recorded Mineral Sites** Site Name: Darton Occs Location: , Darton, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217039 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Surface Mined Positional Accuracy: Located by supplier to within 10m	A3NE (SE)	674	5	432101 409466
99	**BGS Recorded Mineral Sites** Site Name: Darton Occs Location: , Darton, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217035 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Surface Mined Positional Accuracy: Located by supplier to within 10m	A8SW (SE)	675	5	432286 409671
100	**BGS Recorded Mineral Sites** Site Name: Staincross Hill Location: , Mapplewell, Barnsley, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 26001 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Woolley Edge Rock Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A12NW (NE)	705	5	432402 410713
101	**BGS Recorded Mineral Sites** Site Name: Belle Vue Colliery Pit Location: , Mapplewell, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217024 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A8SW (SE)	713	5	432297 409617
102	**BGS Recorded Mineral Sites** Site Name: Woolley Colliery Occs Location: , Wooley, Wakefield, West Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 5836 Type: Opencast **Status: Ceased** Operator: L Devine & P Mckernan Operator Location: L Devine & P Mckernan, Kingstocks Site, Rotherham Road, Little Houghton, Barnsley, South Yorkshire Periodic Type: Carboniferous Geology: Pennine Middle Coal Measures Formation Commodity: Coal - Surface Mined Positional Accuracy: Located by supplier to within 100m	A14SW (NW)	725	5	431000 411200

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
103	**BGS Recorded Mineral Sites** Site Name: Darton Occs Location: , Darton, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217036 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Surface Mined Positional Accuracy: Located by supplier to within 10m	A4NW (SE)	747	5	432292 409552
104	**BGS Recorded Mineral Sites** Site Name: Belle Vue Colliery Pit Location: , Mapplewell, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217022 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A8SW (SE)	760	5	432376 409657
104	**BGS Recorded Mineral Sites** Site Name: Mapplewell Brick Works Location: , Mapplewell, Barnsley, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 25987 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Pennine Middle Coal Measures Formation Commodity: Common Clay and Shale Positional Accuracy: Located by supplier to within 10m	A8SW (SE)	771	5	432365 409616
104	**BGS Recorded Mineral Sites** Site Name: Belle Vue Colliery Pit Location: , Mapplewell, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217023 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A4NW (SE)	802	5	432374 409573
105	**BGS Recorded Mineral Sites** Site Name: Belle Vue Colliery Location: , Mapplewell, Barnsley, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 25999 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (South Yorkshire) Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A8SW (SE)	762	5	432426 409751
106	**BGS Recorded Mineral Sites** Site Name: New Speedwell Colliery Location: , Mapplewell, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217019 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A8SE (SE)	845	5	432514 409746

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
106	**BGS Recorded Mineral Sites** Site Name: New Speedwell Colliery Location: , Mapplewell, Barnsley, South Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 25998 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (South Yorkshire) Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A8SE (SE)	871	5	432533 409723
107	**BGS Recorded Mineral Sites** Site Name: Darton Occs Location: , Darton, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217040 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Rider Coal (West And South Yorkshire) Commodity: Coal - Surface Mined Positional Accuracy: Located by supplier to within 10m	A8SW (SE)	845	5	432476 409662
108	**BGS Recorded Mineral Sites** Site Name: Darton Occs Location: , Darton, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217041 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Rider Coal (West And South Yorkshire) Commodity: Coal - Surface Mined Positional Accuracy: Located by supplier to within 10m	A4NW (SE)	873	5	432318 409391
109	**BGS Recorded Mineral Sites** Site Name: Windhill Shaft, Woolley Colliery Location: , Darton, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 102531 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A15NW (N)	890	5	431570 411373
110	**BGS Recorded Mineral Sites** Site Name: Darton Occs Location: , Darton, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217038 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Rider Coal (West And South Yorkshire) Commodity: Coal - Surface Mined Positional Accuracy: Located by supplier to within 10m	A4NW (SE)	903	5	432433 409479
111	**BGS Recorded Mineral Sites** Site Name: Swallow Hill Colliery Location: , Darton, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217043 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Surface Mined Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	941	5	432207 409215

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
112	**BGS Recorded Mineral Sites** Site Name: Spark Lane Mine Location: Spark Lane, Mapplewell, Barnsley, Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 217021 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Carboniferous Geology: Barnsley Coal (West And South Yorkshire) Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A4NE (SE)	973	5	432552 409537
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas Description: In an area which may be affected by coal mining activity. It is recommended that a coal mining report is obtained from the Coal Authority. Contact details are included in the Useful Contacts section of this report.	A11SW (SW)	0	7	431518 410297
	Mining Instability Mining Evidence: Inconclusive Coal Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A11SW (SW)	0	-	431518 410297
	Non Coal Mining Areas of Great Britain Risk: Highly Unlikely Source: British Geological Survey, National Geoscience Information Service	A11SW (SW)	0	5	431518 410297
	Non Coal Mining Areas of Great Britain Risk: Highly Unlikely Source: British Geological Survey, National Geoscience Information Service	A7NW (S)	6	5	431518 410000
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A11SW (SW)	0	5	431518 410297
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NW (S)	6	5	431518 410000
	Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A6NE (SW)	172	5	431299 410070
	Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A6NE (SW)	243	5	431364 410000
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A11SW (SW)	0	5	431518 410297
	Potential for Compressible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A11SW (NE)	0	5	431545 410348
	Potential for Compressible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A10SE (W)	0	5	431231 410328
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NW (S)	6	5	431518 410000
	Potential for Compressible Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A11SW (N)	45	5	431586 410487
	Potential for Compressible Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A6NE (SW)	172	5	431299 410070
	Potential for Compressible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A6NW (W)	221	5	431058 410182

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Compressible Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A6NE (SW)	243	5	431364 410000
	Potential for Compressible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7SW (SE)	246	5	431802 409785
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A11SW (SW)	0	5	431518 410297
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NW (S)	6	5	431518 410000
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A11SW (N)	0	5	431519 410313
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A11SW (SW)	0	5	431518 410297
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NW (S)	6	5	431529 410000
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A10SE (W)	29	5	431232 410286
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A6NE (W)	76	5	431190 410264
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A7NW (S)	82	5	431538 410000
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A7NW (S)	87	5	431538 410010
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A10SW (W)	99	5	431113 410333
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NW (S)	108	5	431529 410005
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A7NW (S)	117	5	431518 410000
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A6NE (SW)	176	5	431355 410086
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A7NE (E)	184	5	431941 410263
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A11SE (NE)	217	5	431881 410586
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A6NE (SW)	250	5	431386 410000
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A11SW (SW)	0	5	431518 410297
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A10SE (W)	0	5	431231 410328
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A11SW (NE)	0	5	431545 410348

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NW (S)	6	5	431518 410000
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A11SW (NE)	38	5	431732 410463
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A11SW (N)	45	5	431586 410487
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A7NW (SE)	76	5	431824 410142
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A7NW (S)	78	5	431529 410000
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A7NW (S)	108	5	431529 410005
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A6NE (SW)	172	5	431299 410070
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A6NW (W)	221	5	431058 410182
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A6NE (SW)	243	5	431364 410000
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7SW (SE)	246	5	431802 409785
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A6NE (W)	0	5	431264 410262
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A11SW (SW)	0	5	431518 410297
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NW (S)	0	5	431512 410262
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NW (S)	6	5	431601 410000
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NW (S)	8	5	431518 410000
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A11SW (NE)	38	5	431732 410463
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A6NE (W)	76	5	431190 410264
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NW (SE)	76	5	431824 410142
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NW (S)	78	5	431529 410000
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NW (S)	108	5	431529 410005
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A6NE (SW)	152	5	431252 410157

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A6NE (SW)	172	5	431299 410070
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A11SW (NE)	174	5	431820 410568
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A6NE (S)	193	5	431433 409972
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A6NE (SW)	200	5	431313 410075
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A6NE (SW)	243	5	431364 410000
	Radon Potential - Radon Protection Measures Protection Measure: Basic radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A11SW (SW)	0	5	431518 410297
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A11SW (N)	0	5	431525 410351
	Radon Potential - Radon Affected Areas Affected Area: The property is in an intermediate probability radon area, as between 3 and 5% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A11SW (SW)	0	5	431518 410297
	Radon Potential - Radon Affected Areas Affected Area: The property is in an intermediate probability radon area, as between 1 and 3% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A11SW (N)	0	5	431525 410351

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
113	**Contemporary Trade Directory Entries** Name: Carpet Express Ltd Location: Dearne Mills, Darton, Barnsley, South Yorkshire, S75 5NH Classification: Distribution Services **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A7NW (SE)	1	-	431727 410177
114	**Contemporary Trade Directory Entries** Name: Bsb Quality Clothing Ltd Location: Station Road, Darton, Barnsley, South Yorkshire, S75 5AF Classification: Clothing & Fabrics - Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7NW (S)	27	-	431625 410014
115	**Contemporary Trade Directory Entries** Name: Microprint Location: 25a, Station Road, Darton, Barnsley, South Yorkshire, S75 5HT Classification: Printers - Glass, Metal, Plastics Etc. **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A6NE (SW)	93	-	431385 410179
116	**Contemporary Trade Directory Entries** Name: Padgett Bros Ltd Location: Darton Business Park, Barnsley Road, Darton, BARNSLEY, South Yorkshire, S75 5QX Classification: Toys, Games & Sporting Goods - Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A6NE (SW)	275	-	431365 409982
117	**Contemporary Trade Directory Entries** Name: Mallinson International Location: Junction 38 Business Park,Parkside Way, Darton, Barnsley, South Yorkshire, S75 5QQ Classification: Freight Forwarders **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A11SE (NE)	354	-	432082 410564
118	**Contemporary Trade Directory Entries** Name: Ivy Motors Location: 36, Church Street, Darton, Barnsley, South Yorkshire, S75 5HG Classification: Car Body Repairs **Status: Active** Positional Accuracy: Automatically positioned to the address	A6NW (SW)	373	-	431139 409963
118	**Contemporary Trade Directory Entries** Name: Mick'S Tyres Location: Units 3-4 Ivy Works, Church Street, Darton, Barnsley, South Yorkshire, S75 5HG Classification: Tyre Dealers **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A6NW (SW)	376	-	431099 409977
118	**Contemporary Trade Directory Entries** Name: M & M Motors Location: Rear of 38, Church Street, Darton, Barnsley, South Yorkshire, S75 5HG Classification: Breakdown and Recovery **Status: Active** Positional Accuracy: Automatically positioned to the address	A6NW (SW)	392	-	431114 409953
119	**Contemporary Trade Directory Entries** Name: Stiller Group Location: Barnsley Road, Darton, Barnsley, South Yorkshire, S75 5NN Classification: Distribution Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A6SE (S)	387	-	431424 409716
119	**Contemporary Trade Directory Entries** Name: Egan Bros Road Haulage Location: Dearne Mills, Barnsley Road, Darton, BARNSLEY, South Yorkshire, S75 5NH Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A6SE (S)	411	-	431397 409704
119	**Contemporary Trade Directory Entries** Name: Colour Craft Location: Darton Business Park, Barnsley Road, Darton, Barnsley, South Yorkshire, S75 5QX Classification: Screen Process Printers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A6SE (S)	412	-	431381 409716

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
120	**Contemporary Trade Directory Entries** Name: Top Gun Cosmetic Car Repairs Location: 16, St. Andrews Drive, Darton, Barnsley, South Yorkshire, S75 5LX Classification: Car Body Repairs **Status: Active** Positional Accuracy: Automatically positioned to the address	A7NE (E)	389	-	432140 410138
121	**Contemporary Trade Directory Entries** Name: G S S Letterpress Location: 5, Fulford Close, Darton, Barnsley, South Yorkshire, S75 5PY Classification: Printing Engineering Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	390	-	432118 410029
122	**Contemporary Trade Directory Entries** Name: Csk Electrical Services Location: 2, Austwick Close, Mapplewell, Barnsley, South Yorkshire, S75 5QF Classification: Laundry Equipment - Sales & Service **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A11SE (E)	411	-	432162 410536
123	**Contemporary Trade Directory Entries** Name: Scrap My Car Now For Money Barnsley Kws Location: Dearne Mills, Barnsley Road, Darton, Barnsley, South Yorkshire, S75 5NH Classification: Car Breakers & Dismantlers **Status: Active** Positional Accuracy: Automatically positioned to the address	A3NW (S)	467	-	431598 409549
124	**Contemporary Trade Directory Entries** Name: Hot House Partnerships Ltd Location: Unit 5 Darton Business Park, Barnsley Road, Darton, Barnsley, South Yorkshire, S75 5NQ Classification: Perfume Suppliers **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A6SW (SW)	473	-	431114 409865
125	**Contemporary Trade Directory Entries** Name: Constant Power Solutions Ltd Location: 4, Swaithe View, Woolley Grange, Barnsley, South Yorkshire, S75 5RW Classification: Generators - Sales & Service **Status: Active** Positional Accuracy: Automatically positioned to the address	A14SW (NW)	492	-	431064 410974
126	**Contemporary Trade Directory Entries** Name: 1st Call Pest Solutions Location: 19, Austwick Close, Mapplewell, Barnsley, South Yorkshire, S75 5QF Classification: Pest & Vermin Control **Status: Active** Positional Accuracy: Automatically positioned to the address	A12SW (E)	493	-	432250 410536
127	**Contemporary Trade Directory Entries** Name: Barnsley Damp Proof Location: 7, Halstead Grove, Mapplewell, Barnsley, South Yorkshire, S75 5QD Classification: Damp & Dry Rot Control **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NW (NE)	500	-	432223 410612
128	**Contemporary Trade Directory Entries** Name: Thyssenkrupp Aerospace Location: Unit 4, Junction 38 Business Park, Parkside Way, Darton, Barnsley, South Yorkshire, S75 5QQ Classification: Engineers - General **Status: Active** Positional Accuracy: Automatically positioned to the address	A9SE (W)	509	-	430707 410273
129	**Contemporary Trade Directory Entries** Name: P B Engineering Services Location: Darton Council Offices, Huddersfield Road, Darton, Barnsley, South Yorkshire, S75 5NB Classification: Engineering Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A6SW (SW)	525	-	430941 409894
129	**Contemporary Trade Directory Entries** Name: Darton Social Services Department Location: The Darton Centre, Huddersfield Road, Darton, Barnsley, South Yorkshire, S75 5ND Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A6SW (SW)	536	-	430942 409880

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
130	**Contemporary Trade Directory Entries** Name: Paul Burgess Location: 16, Sunningdale Avenue, Darton, Barnsley, South Yorkshire, S75 5JB Classification: Washing Machines - Servicing & Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (E)	546	-	432319 410257
131	**Contemporary Trade Directory Entries** Name: Senior Haulage Ltd Location: Unit 3, Junction 38 Business Park, Parkside Way, Darton, Barnsley, South Yorkshire, S75 5QQ Classification: Road Haulage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A5NE (W)	548	-	430689 410182
131	**Contemporary Trade Directory Entries** Name: P B Joinery Ltd Location: Unit 1, Junction 38 Business Park, Parkside Way, Darton, Barnsley, South Yorkshire, S75 5QQ Classification: Mould Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A5NE (W)	548	-	430689 410182
132	**Contemporary Trade Directory Entries** Name: Kuehne + Nagel Ltd Location: Barnsley Road, Darton, Barnsley, South Yorkshire, S75 5NN Classification: Road Haulage Services **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A6SW (SW)	567	-	431101 409766
132	**Contemporary Trade Directory Entries** Name: Robert Thompson Location: Central Garage, Barnsley Road, Darton, Barnsley, South Yorkshire, S75 5NN Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A6SW (SW)	595	-	431110 409730
133	**Contemporary Trade Directory Entries** Name: Harratts Mitsubushi Location: Huddersfield Road, Darton, Barnsley, South Yorkshire, S75 5NF Classification: Car Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A5NE (W)	576	-	430725 410038
134	**Contemporary Trade Directory Entries** Name: European Fleet Management Ltd Location: Dearne Mills, Darton, Barnsley, South Yorkshire, S75 5NH Classification: Commercial Vehicle Bodybuilders & Repairers **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A5NE (W)	701	-	430532 410174
135	**Contemporary Trade Directory Entries** Name: Diane'S Location: 38, Churchfield Lane, Darton, Barnsley, South Yorkshire, S75 5DJ Classification: Ironing & Home Laundry Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A5SE (SW)	710	-	430773 409788
136	**Contemporary Trade Directory Entries** Name: Luxury Cleaning Services Location: 200, Darton Lane, Mapplewell, Barnsley, South Yorkshire, S75 6AH Classification: Commercial Cleaning Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A8SW (SE)	736	-	432405 409767
137	**Contemporary Trade Directory Entries** Name: M Roberts Location: 253, Darton Lane, Mapplewell, Barnsley, South Yorkshire, S75 6AJ Classification: Electrical goods - servicing & repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SW (E)	737	-	432450 409913
137	**Contemporary Trade Directory Entries** Name: Motec Mobile Crypton Tuning Location: 2, Ibberson Avenue, Mapplewell, Barnsley, South Yorkshire, S75 6BJ Classification: Car Engine Tuning & Diagnostic Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SW (E)	782	-	432494 409903

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
138	**Contemporary Trade Directory Entries** Name: Helping Hands Location: Broadway, Mapplewell, Barnsley, South Yorkshire, S75 6HG Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A12SE (E)	746	-	432531 410332
139	**Contemporary Trade Directory Entries** Name: Worth Polythene Ltd Location: 15, Windhill Rise, Woolley Grange, Barnsley, South Yorkshire, S75 5RJ Classification: Paper & Cardboard Products & Packaging - Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A14NW (NW)	832	-	431076 411335
140	**Contemporary Trade Directory Entries** Name: Staincross Coffee Ltd Location: 28, Moorland Avenue, Mapplewell, Barnsley, South Yorkshire, S75 6NJ Classification: Catering Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (E)	861	-	432588 410683
141	**Contemporary Trade Directory Entries** Name: Colouration International Location: A, 48, Roman Road, Darton, Barnsley, South Yorkshire, S75 5DD Classification: Dyers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A5SE (SW)	866	-	430746 409614
142	**Contemporary Trade Directory Entries** Name: Pennine Building Solutions Location: 6, Henry Moore Court, Woolley Grange, Barnsley, South Yorkshire, S75 5QS Classification: Building Block Manufacturers & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (NW)	903	-	430875 411339
143	**Contemporary Trade Directory Entries** Name: Cleanworld Laundry Location: 387, Darton Lane, Mapplewell, BARNSLEY, South Yorkshire, S75 6AL Classification: Laundries & Launderettes **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NE (E)	912	-	432657 410060
144	**Contemporary Trade Directory Entries** Name: Hart Low Loader Transport Hire Location: 27, Windhill Lane, Darton, Barnsley, South Yorkshire, S75 5BJ Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A16SW (NE)	924	-	432309 411135
145	**Contemporary Trade Directory Entries** Name: P R Scaffolding Ltd Location: 17, Bence Lane, Darton, Barnsley, South Yorkshire, S75 5NX Classification: Scaffolding & Work Platforms **Status: Active** Positional Accuracy: Automatically positioned to the address	A2SE (S)	932	-	431213 409205
146	**Fuel Station Entries** Name: Central Garage Location: Barnsley Road, Darton, Barnsley, South Yorkshire, S73 8DD Brand: MURCO Premises Type: Petrol Station **Status: Open** Positional Accuracy: Manually positioned to the address or location	A6SW (SW)	597	-	431103 409732

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
147	**Areas of Adopted Green Belt** Authority: Barnsley Metropolitan Borough Council, Planning Department Plan Name: Barnsley Unitary Development Plan **Status:** **Adopted** Plan Date: 31st December 2000	A10SE (NW)	0	8	431415 410370
148	**Areas of Adopted Green Belt** Authority: Wakefield City Metropolitan District Council Plan Name: Proposal Map **Status:** **Adopted** Plan Date: 12th September 2012	A10NW (NW)	438	9	431044 410903
149	**Nitrate Vulnerable Zones** Name: Not Supplied Description: Surface Water Source: Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	A11SW (SW)	0	10	431518 410297
150	**Nitrate Vulnerable Zones** Name: Not Supplied Description: Surface Water Source: Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	A12NW (NE)	749	10	432400 410800

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards	July 2013	Annual Rolling Update
Wakefield City Metropolitan District Council - Environmental Health	March 2015	Annual Rolling Update
Kirklees Metropolitan Borough Council - Planning Services	November 2013	Annual Rolling Update
Discharge Consents		
Environment Agency - North East Region	November 2015	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - North East Region	March 2013	As notified
Integrated Pollution Controls		
Environment Agency - North East Region	October 2008	Not Applicable
Integrated Pollution Prevention And Control		
Environment Agency - North East Region	October 2015	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards	April 2014	Annual Rolling Update
Kirklees Metropolitan Borough Council - Environmental Health Department	April 2014	Annual Rolling Update
Wakefield City Metropolitan District Council - Environmental Health	June 2014	Annual Rolling Update
Local Authority Pollution Prevention and Controls		
Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards	April 2014	Annual Rolling Update
Kirklees Metropolitan Borough Council - Environmental Health Department	April 2014	Annual Rolling Update
Wakefield City Metropolitan District Council - Environmental Health	June 2014	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards	April 2014	Annual Rolling Update
Kirklees Metropolitan Borough Council - Environmental Health Department	April 2014	Annual Rolling Update
Wakefield City Metropolitan District Council - Environmental Health	June 2014	Annual Rolling Update
Nearest Surface Water Feature		
Ordnance Survey	July 2012	Quarterly
Pollution Incidents to Controlled Waters		
Environment Agency - North East Region	December 1998	Not Applicable
Prosecutions Relating to Authorised Processes		
Environment Agency - North East Region	March 2013	As notified
Prosecutions Relating to Controlled Waters		
Environment Agency - North East Region	March 2013	As notified
River Quality		
Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points		
Environment Agency - Head Office	July 2012	Annually
River Quality Chemistry Sampling Points		
Environment Agency - Head Office	July 2012	Annually
Substantiated Pollution Incident Register		
Environment Agency - North East Region - Ridings Area	October 2015	Quarterly
Environment Agency - North East Region - Yorkshire Area	October 2015	Quarterly
Water Abstractions		
Environment Agency - North East Region	July 2015	Quarterly
Water Industry Act Referrals		
Environment Agency - North East Region	October 2015	Quarterly
Groundwater Vulnerability		
Environment Agency - Head Office	April 2015	Not Applicable
Drift Deposits		
Environment Agency - Head Office	January 1999	Not Applicable
Bedrock Aquifer Designations		
British Geological Survey - National Geoscience Information Service	October 2012	As notified

Agency & Hydrological	Version	Update Cycle
Superficial Aquifer Designations British Geological Survey - National Geoscience Information Service	January 2015	As notified
Source Protection Zones Environment Agency - Head Office	October 2015	Quarterly
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	November 2015	Quarterly
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	November 2015	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	November 2015	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	November 2015	Quarterly
Flood Defences Environment Agency - Head Office	November 2015	Quarterly
Detailed River Network Lines Environment Agency - Head Office	March 2012	Annually
Detailed River Network Offline Drainage Environment Agency - Head Office	March 2012	Annually
Surface Water 1 in 30 year Flood Extent Environment Agency - Head Office	October 2013	As notified
Surface Water 1 in 100 year Flood Extent Environment Agency - Head Office	October 2013	As notified
Surface Water 1 in 1000 year Flood Extent Environment Agency - Head Office	October 2013	As notified
Surface Water Suitability Environment Agency - Head Office	October 2013	As notified

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Historical Landfill Sites		
Environment Agency - Head Office	November 2015	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - North East Region	October 2008	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency - North East Region - Ridings Area	August 2014	Quarterly
Environment Agency - North East Region - Yorkshire Area	August 2014	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency - North East Region - Ridings Area	October 2015	Quarterly
Environment Agency - North East Region - Yorkshire Area	October 2015	Quarterly
Local Authority Landfill Coverage		
Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards	May 2000	Not Applicable
Kirklees Metropolitan Borough Council - Planning Services	May 2000	Not Applicable
Wakefield City Metropolitan District Council - Environmental Health	May 2000	Not Applicable
Local Authority Recorded Landfill Sites		
Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards	May 2000	Not Applicable
Kirklees Metropolitan Borough Council - Planning Services	May 2000	Not Applicable
Wakefield City Metropolitan District Council - Environmental Health	May 2000	Not Applicable
Registered Landfill Sites		
Environment Agency - North East Region - Ridings Area	March 2003	Not Applicable
Registered Waste Transfer Sites		
Environment Agency - North East Region - Ridings Area	March 2003	Not Applicable
Registered Waste Treatment or Disposal Sites		
Environment Agency - North East Region - Ridings Area	March 2003	Not Applicable
Hazardous Substances	**Version**	**Update Cycle**
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	June 2015	Bi-Annually
Explosive Sites		
Health and Safety Executive	June 2015	Bi-Annually
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements		
Kirklees Metropolitan Borough Council - Planning Services	August 2015	Annual Rolling Update
Barnsley Metropolitan Borough Council - Planning Department	October 2013	Annual Rolling Update
Wakefield City Metropolitan District Council	October 2014	Annual Rolling Update
Planning Hazardous Substance Consents		
Kirklees Metropolitan Borough Council - Planning Services	August 2015	Annual Rolling Update
Barnsley Metropolitan Borough Council - Planning Department	October 2013	Annual Rolling Update
Wakefield City Metropolitan District Council	October 2014	Annual Rolling Update

Data Currency

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	Not Applicable
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	January 2010	Annually
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	November 2015	Bi-Annually
Brine Compensation Area Cheshire Brine Subsidence Compensation Board	August 2011	Not Applicable
Coal Mining Affected Areas The Coal Authority - Mining Report Service	March 2014	As notified
Mining Instability Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	July 2014	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	Annually
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	July 2011	As notified
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	July 2011	As notified
Industrial Land Use	**Version**	**Update Cycle**
Contemporary Trade Directory Entries Thomson Directories	November 2015	Quarterly
Fuel Station Entries Catalist Ltd - Experian	August 2015	Quarterly

Sensitive Land Use	Version	Update Cycle
Areas of Adopted Green Belt		
Barnsley Metropolitan Borough Council - Planning Department	November 201	As notified
Kirklees Metropolitan Borough Council	November 201	As notified
Wakefield City Metropolitan District Council	November 201	As notified
Areas of Unadopted Green Belt		
Barnsley Metropolitan Borough Council - Planning Department	November 201	As notified
Kirklees Metropolitan Borough Council	November 201	As notified
Wakefield City Metropolitan District Council	November 201	As notified
Areas of Outstanding Natural Beauty		
Natural England	October 2015	Bi-Annually
Environmentally Sensitive Areas		
Natural England	October 2015	Annually
Forest Parks		
Forestry Commission	April 1997	Not Applicable
Local Nature Reserves		
Natural England	October 2015	Bi-Annually
Marine Nature Reserves		
Natural England	October 2015	Bi-Annually
National Nature Reserves		
Natural England	October 2015	Bi-Annually
National Parks		
Natural England	August 2015	Bi-Annually
Nitrate Sensitive Areas		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	October 2015	Not Applicable
Nitrate Vulnerable Zones		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	October 2015	Annually
Ramsar Sites		
Natural England	October 2015	Bi-Annually
Sites of Special Scientific Interest		
Natural England	October 2015	Bi-Annually
Special Areas of Conservation		
Natural England	October 2015	Bi-Annually
Special Protection Areas		
Natural England	October 2015	Bi-Annually

Data Suppliers

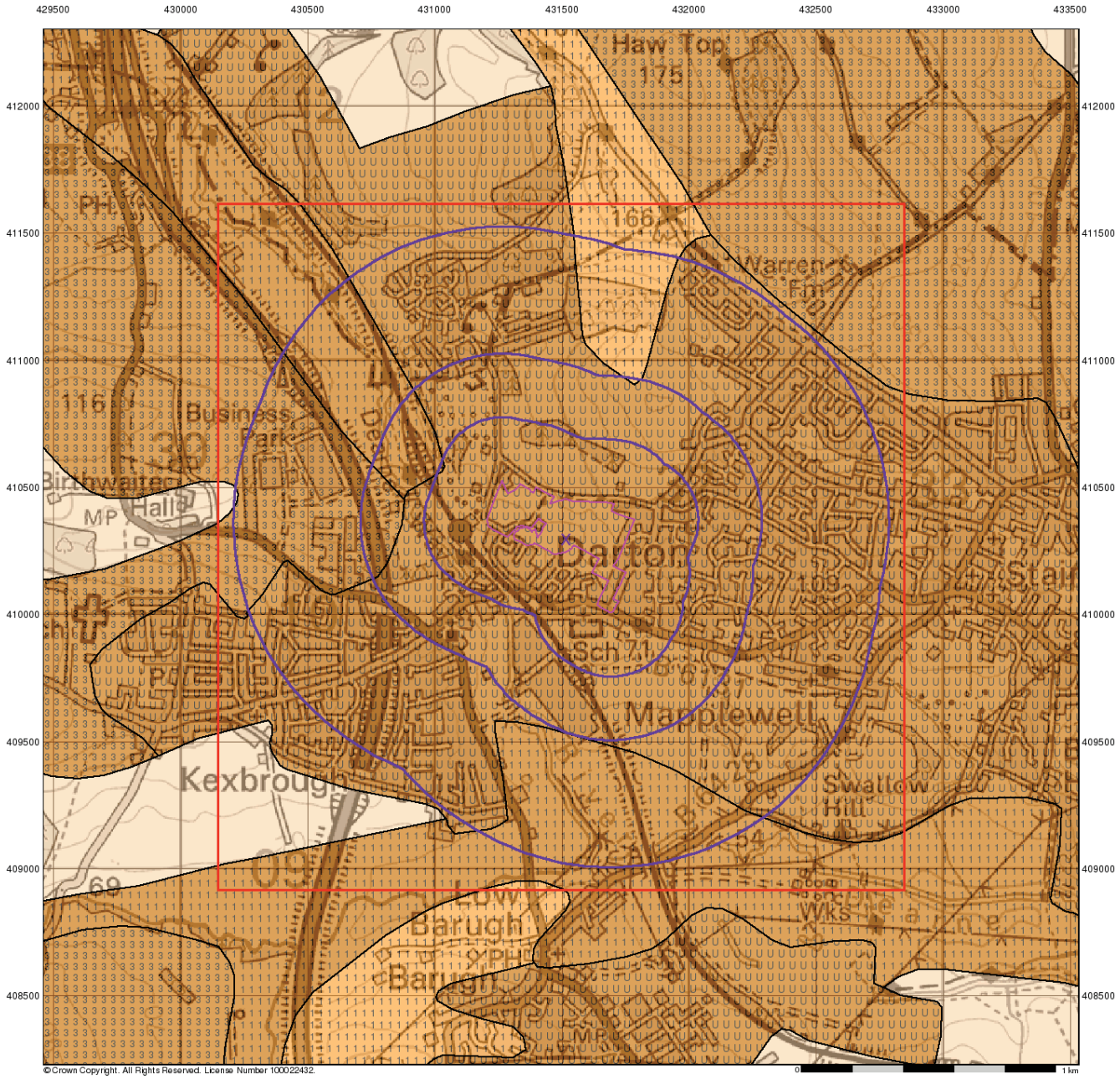
A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	
Centre for Ecology and Hydrology	
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Peter Brett Associates	

Useful Contacts

Contact	Name and Address	Contact Details
2	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
3	**Barnsley Metropolitan Borough Council - Environmental Health and Trading Standards** Central Offices, Kendray Street, Barnsley, South Yorkshire, S70 2TN	Telephone: 01226 770770 Fax: 01226 772599 Website: www.barnsley.gov.uk
4	**Wakefield City Metropolitan District Council - Environmental Health** Newton Bar, Wakefield, West Yorkshire, WF1 2TX	Telephone: 01924 306090 Website: www.wakefield.gov.uk
5	**British Geological Survey - Enquiry Service** British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
6	**Health and Safety Executive** 5S.2 Redgrave Court, Merton Road, Bootle, L20 7HS	Website: www.hse.gov.uk
7	**The Coal Authority - Mining Report Service** 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG	Telephone: 0845 7626848 Email: thecoalauthority@coal.gov.uk
8	**Barnsley Metropolitan Borough Council - Planning Department** Central Offices, Kendray Street, Barnsley, South Yorkshire, S70 2TN	Telephone: 01226 770770 Fax: 01226 772599 Website: www.barnsley.gov.uk
9	**Wakefield City Metropolitan District Council** Newton Bar, Wakefield, West Yorkshire, WF1 2TX	Telephone: 01924 306090 Fax: 01924 378532 Website: www.wakefield.gov.uk
10	**Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)** Government Buildings, Otley Road, Lawnswood, Leeds, West Yorkshire, LS16 5QT	Telephone: 0113 2613333 Fax: 0113 230 0879
11	**Environment Agency - Head Office** Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, Avon, BS32 4UD	Telephone: 01454 624400 Fax: 01454 624409
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

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



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Groundwater Vulnerability

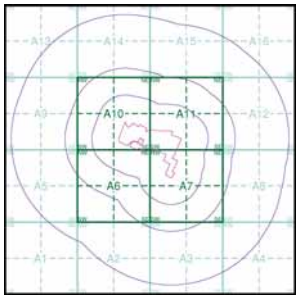
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes	Soil Classes
Major Aquifer (Highly Permeable)	High (H) 1, 2, 3, U
	Intermediate (I) 1, 2
	Low
Minor Aquifer (Variably Permeable)	High (H) 1, 2, 3, U
	Intermediate (I) 1, 2
	Low
Non Aquifer (Negligibly Permeable)	
Water or Sea	
Drift Deposit	

Site Sensitivity Context Map - Slice A



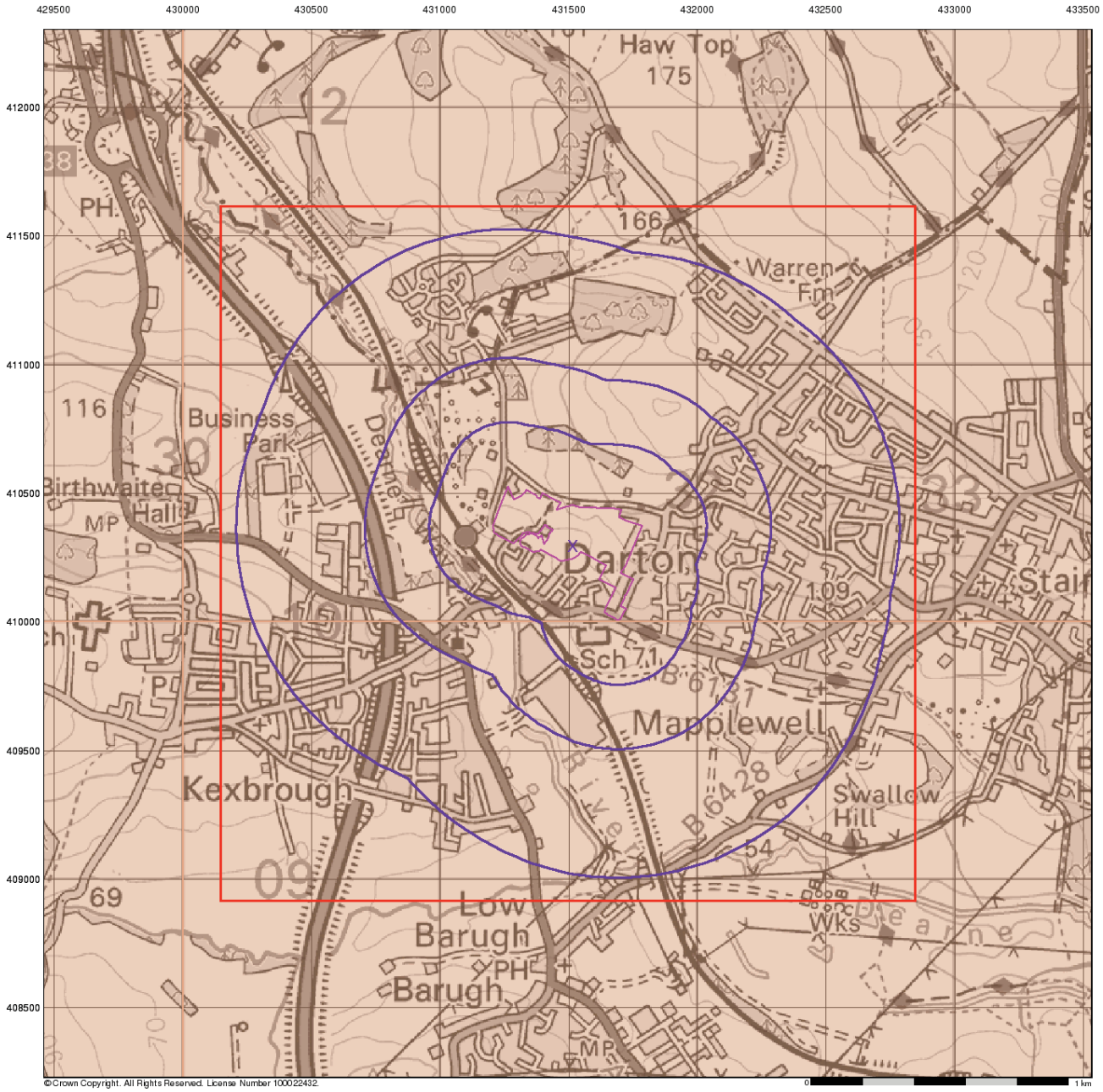
Order Details

Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	1000

Site Details

Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

Landmark Information Group
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Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Bedrock Aquifer Designation

General

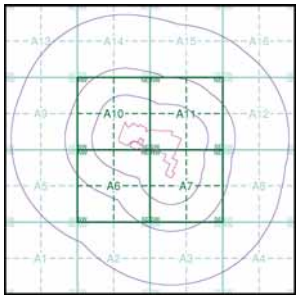
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown

Site Sensitivity Context Map - Slice A



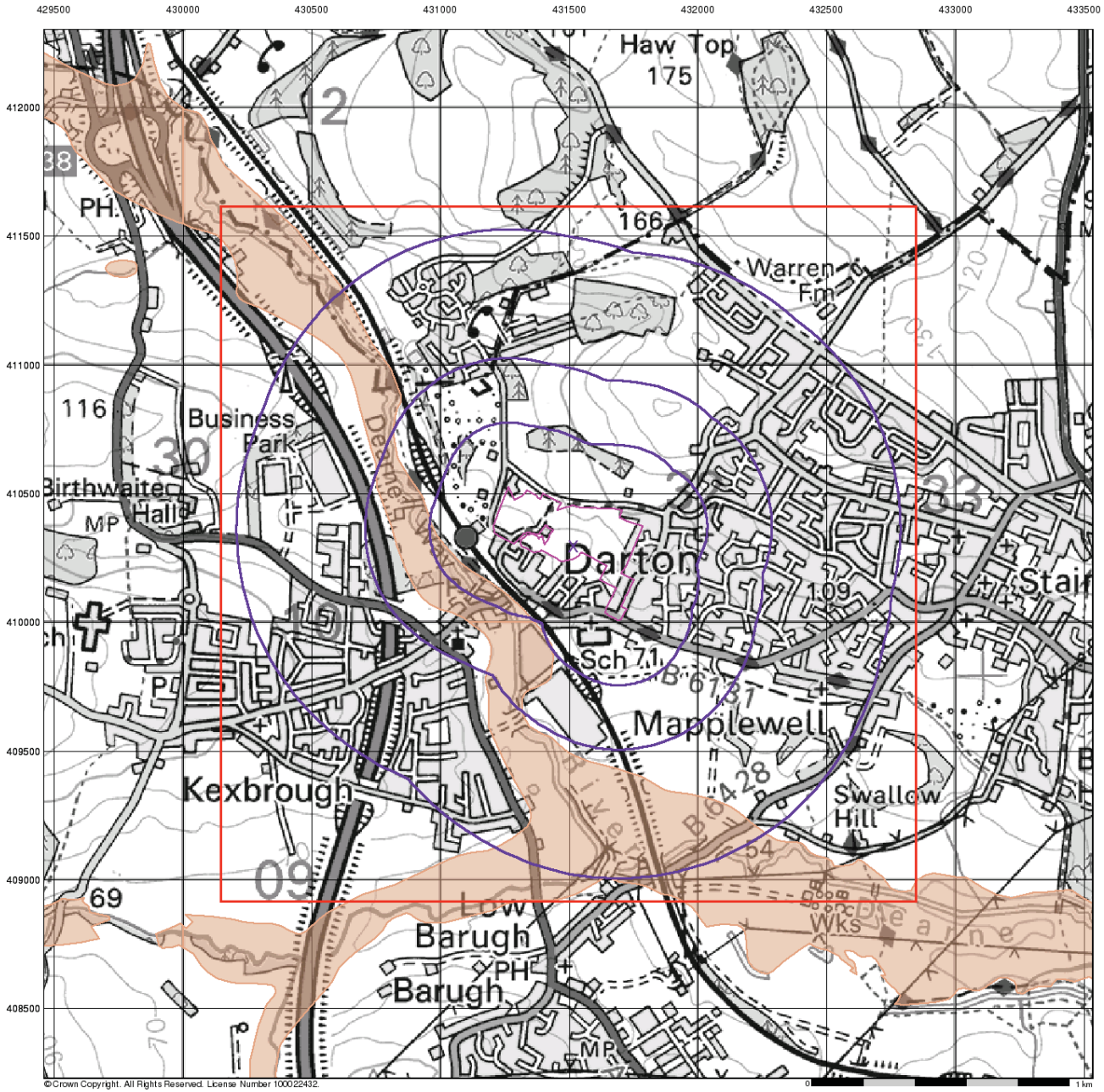
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Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	1000

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Web: www.envirocheck.co.uk



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Superficial Aquifer Designation

General

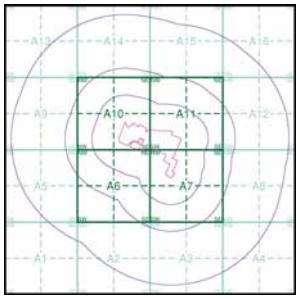
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown

Site Sensitivity Context Map - Slice A



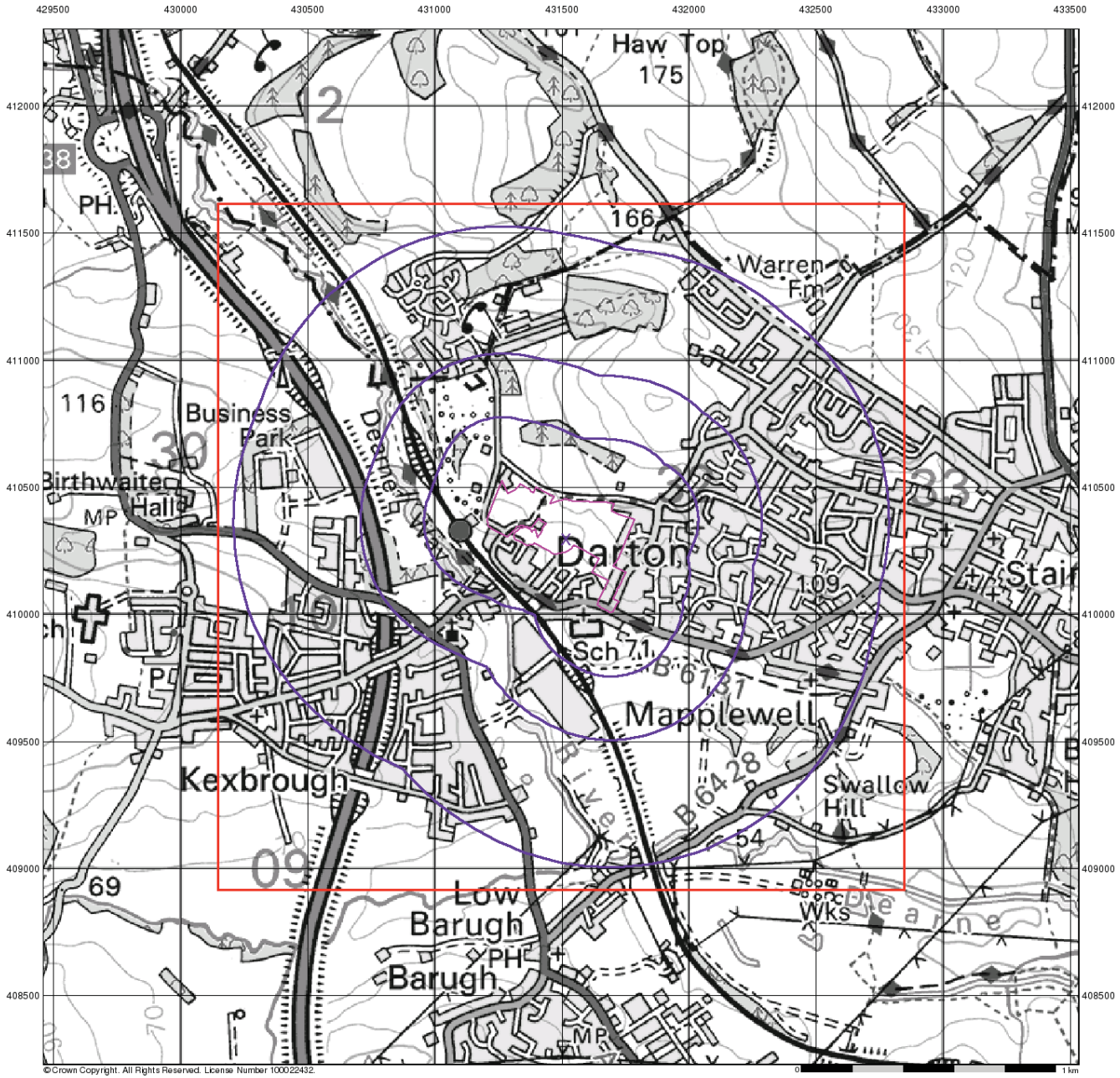
Order Details

Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
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Source Protection Zones

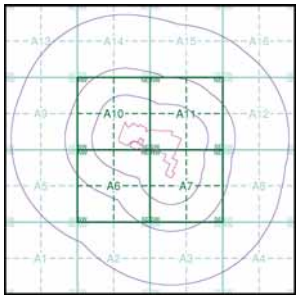
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

- Inner zone (Zone 1)
- Inner zone - subsurface activity only (Zone 1c)
- Outer zone (Zone 2)
- Outer zone - subsurface activity only (Zone 2c)
- Total catchment (Zone 3)
- Total catchment - subsurface activity only (Zone 3c)
- Special interest (Zone 4)
- Source Protection Zone Borehole

Site Sensitivity Context Map - Slice A



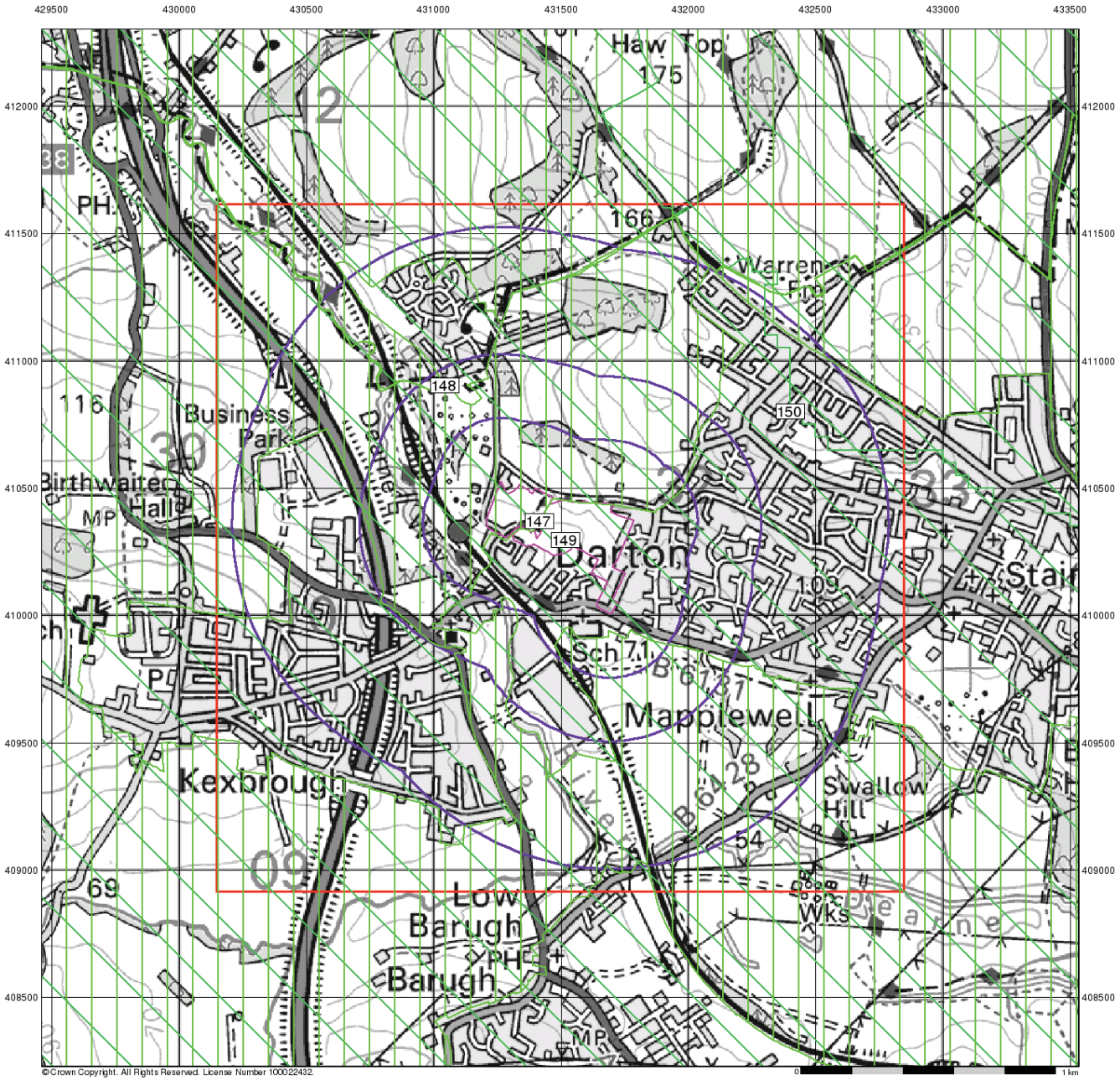
Order Details

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National Grid Reference:	431520, 410300
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Sensitive Land Uses

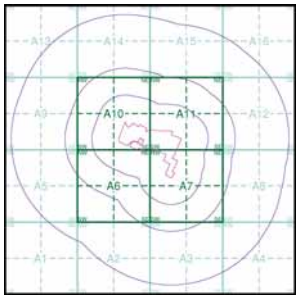
General

Specified Site | Specified Buffer(s) | Bearing Reference Point
Slice | Map ID

Sensitive Land Uses

- Area of Adopted Green Belt
- Area of Unadopted Green Belt
- Area of Outstanding Natural Beauty
- Environmentally Sensitive Area
- Forest Park
- Local Nature Reserve
- Marine Nature Reserve
- National Nature Reserve
- National Park
- Nitrate Sensitive Area
- Nitrate Vulnerable Zone
- Ramsar Site
- Site of Special Scientific Interest
- Special Area of Conservation
- Special Protection Area

Site Sensitivity Context Map - Slice A



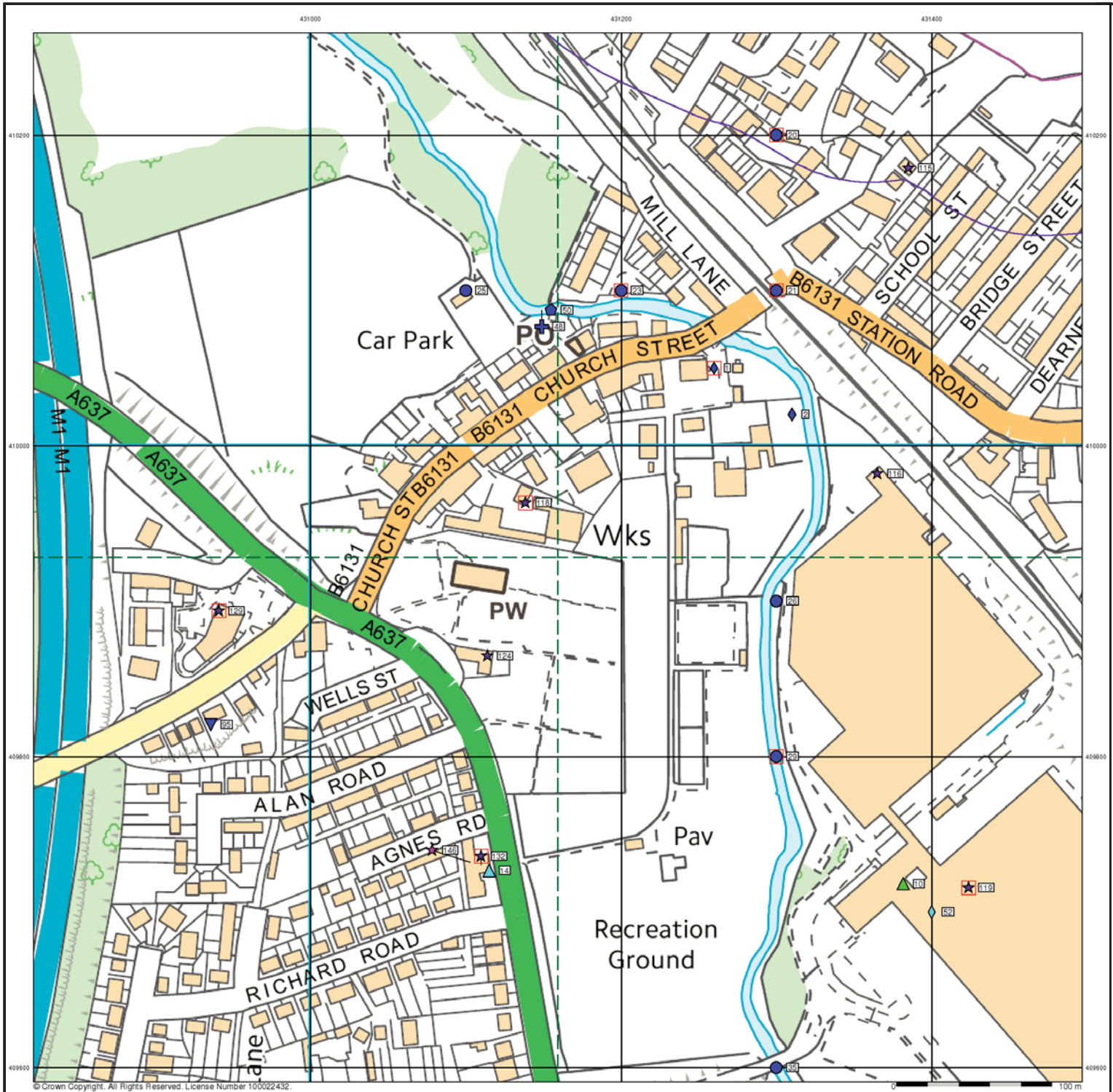
Order Details

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National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	1000

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General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Map ID
Several of Type at Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Geological

- BGS Recorded Mineral Site

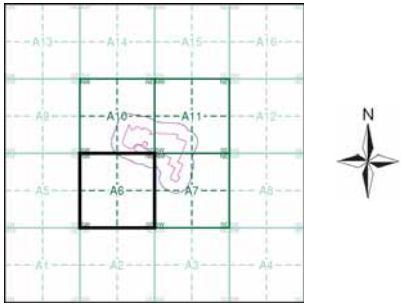
Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

Site Sensitivity Map - Segment A6

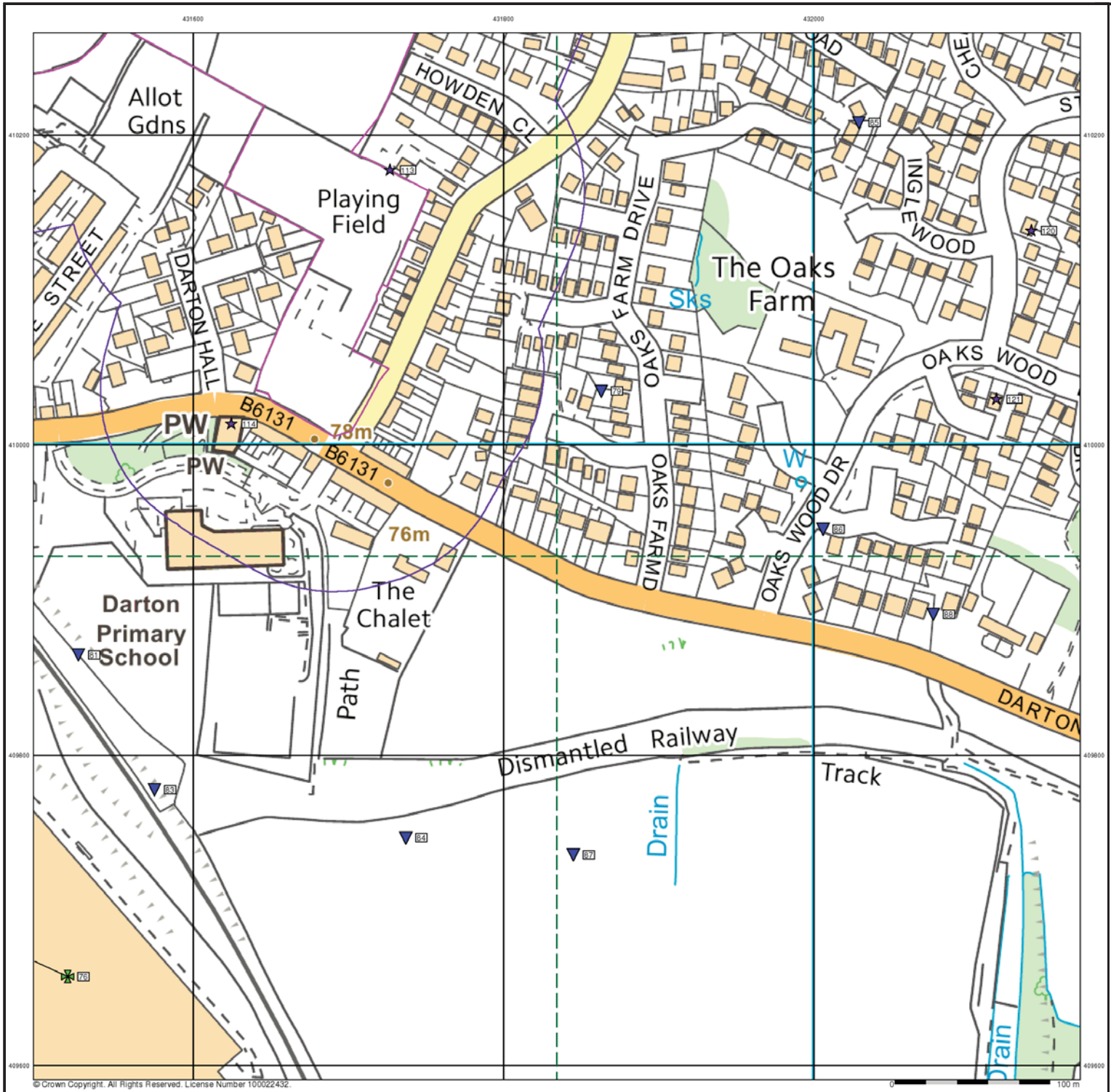


Order Details

Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89

Site Details

Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ



General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Map ID
Several of Type at Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Geological

- BGS Recorded Mineral Site

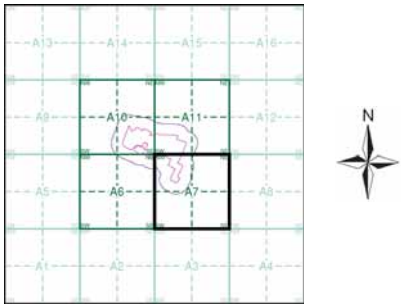
Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

Site Sensitivity Map - Segment A7



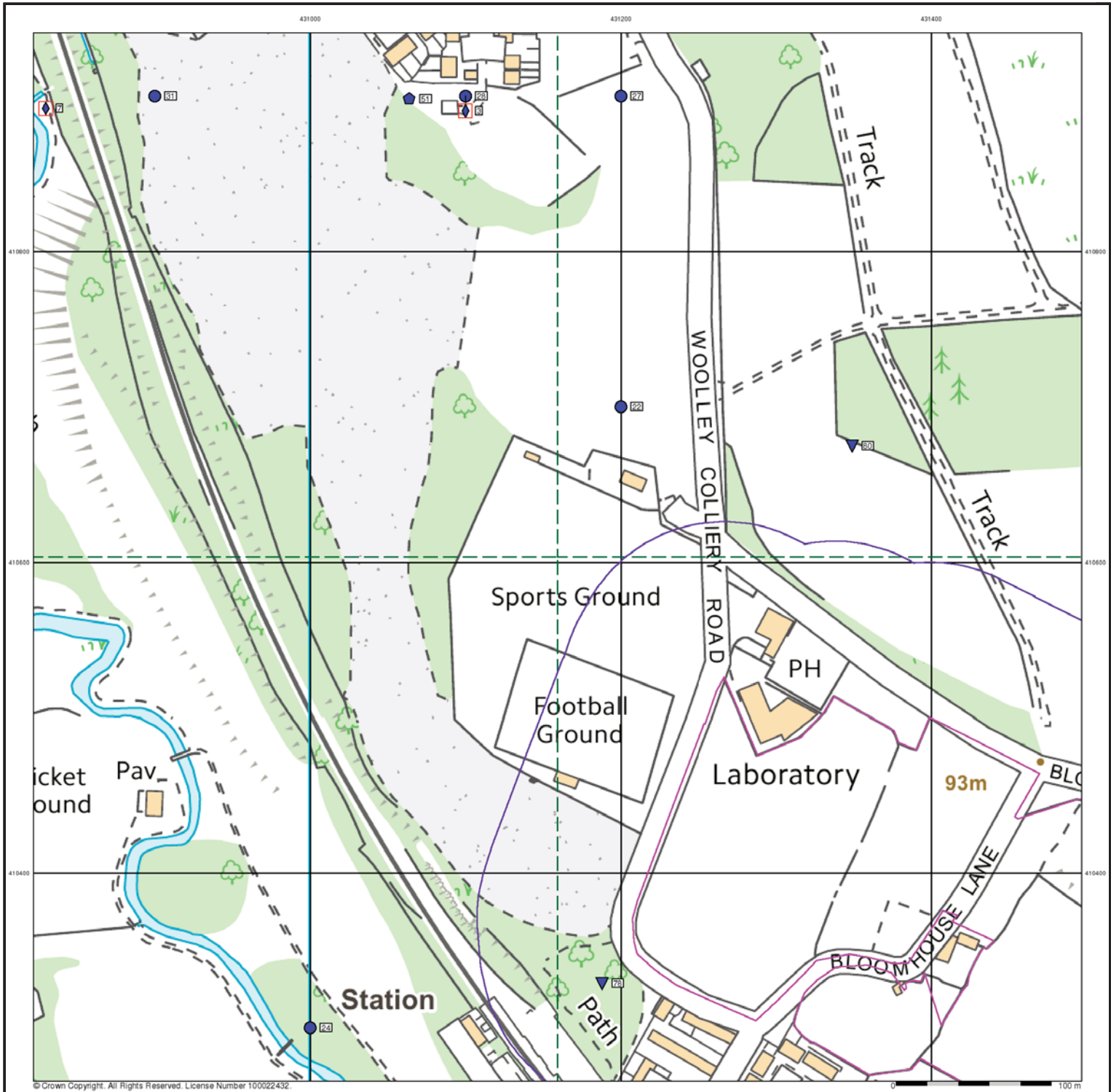
Order Details

Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89

Site Details

Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

Landmark Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



RSK

General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Map ID
Several of Type at Location

Agency and Hydrological

Contaminated Land Register Entry or Notice (Location)
Contaminated Land Register Entry or Notice
Discharge Consent
Enforcement or Prohibition Notice
Integrated Pollution Control
Integrated Pollution Prevention Control
Local Authority Integrated Pollution Prevention and Control
Local Authority Pollution Prevention and Control
Local Authority Pollution Prevention and Control Enforcement
Pollution Incident to Controlled Waters
Prosecution Relating to Authorised Processes
Prosecution Relating to Controlled Waters
Registered Radioactive Substance
River Network or Water Feature
River Quality Sampling Point
Substantiated Pollution Incident Register
Water Abstraction
Water Industry Act Referral

Waste

BGS Recorded Landfill Site (Location)
BGS Recorded Landfill Site
EA Historic Landfill (Buffered Point)
EA Historic Landfill (Polygon)
Integrated Pollution Control Registered Waste Site
Licensed Waste Management Facility (Landfill Boundary)
Licensed Waste Management Facility (Location)
Local Authority Recorded Landfill Site (Location)
Local Authority Recorded Landfill Site
Registered Landfill Site
Registered Landfill Site (Location)
Registered Landfill Site (Point Buffered to 100m)
Registered Landfill Site (Point Buffered to 250m)
Registered Waste Transfer Site (Location)
Registered Waste Transfer Site
Registered Waste Treatment or Disposal Site (Location)
Registered Waste Treatment or Disposal Site

Geological

BGS Recorded Mineral Site

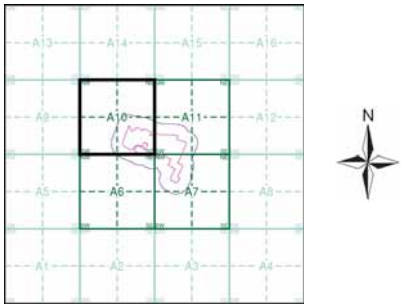
Hazardous Substances

COMAH Site
Explosive Site
NIHHS Site
Planning Hazardous Substance Consent
Planning Hazardous Substance Enforcement

Industrial Land Use

Contemporary Trade Directory Entry
Fuel Station Entry

Site Sensitivity Map - Segment A10



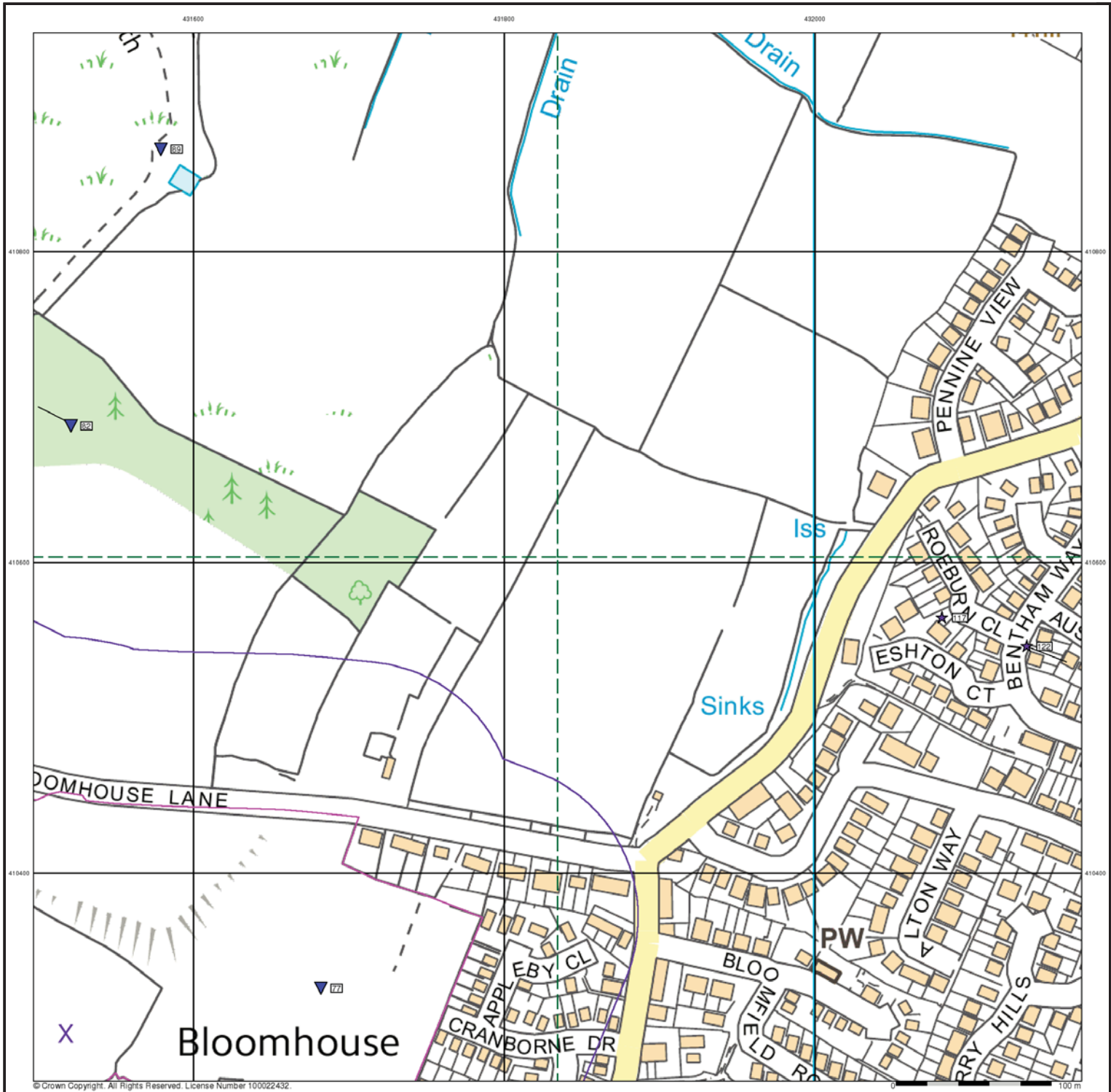
Order Details

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Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89

Site Details

Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

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Fax: 0844 844 9951
Web: www.envirocheck.co.uk



RSK

General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Map ID

Several of Type at Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
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- Local Authority Recorded Landfill Site
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- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Geological

- BGS Recorded Mineral Site

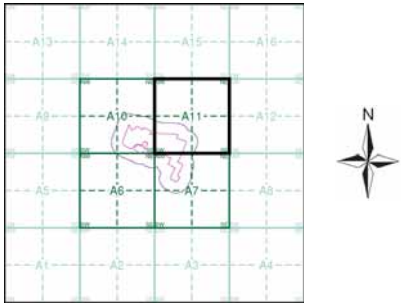
Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

Site Sensitivity Map - Segment A11



Order Details

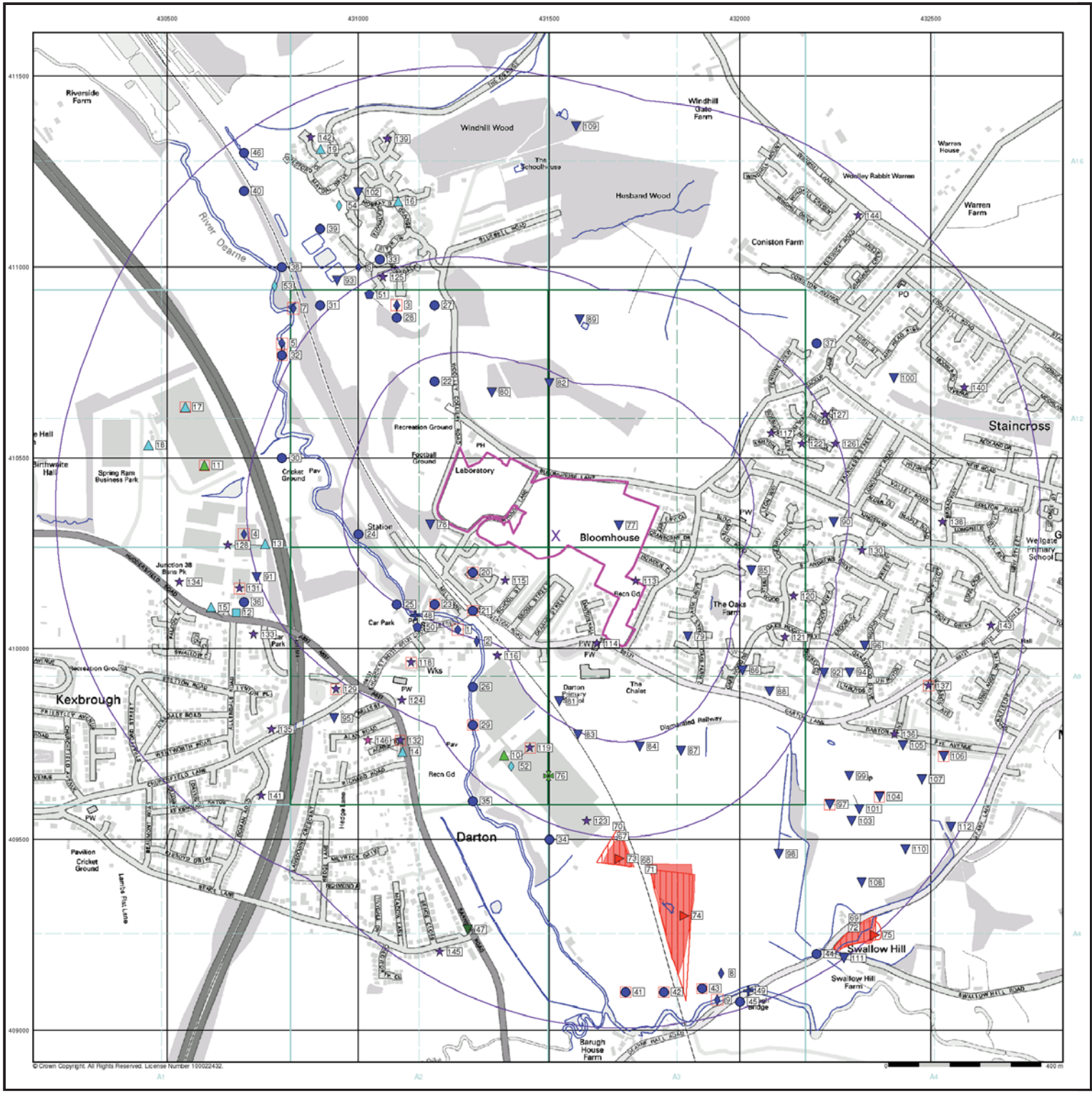
Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89

Site Details

Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

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General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Map ID
Several of Type at Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
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- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Waste

- BGS Recorded Landfill Site (Location)
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- EA Historic Landfill (Polygon)
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- Licensed Waste Management Facility (Location)
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- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Geological

- BGS Recorded Mineral Site

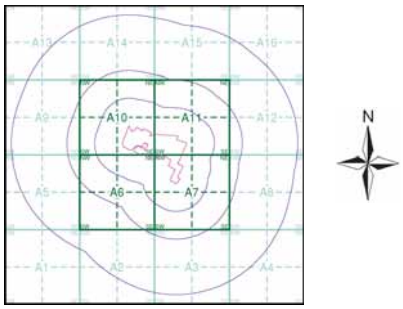
Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

Site Sensitivity Map - Slice A



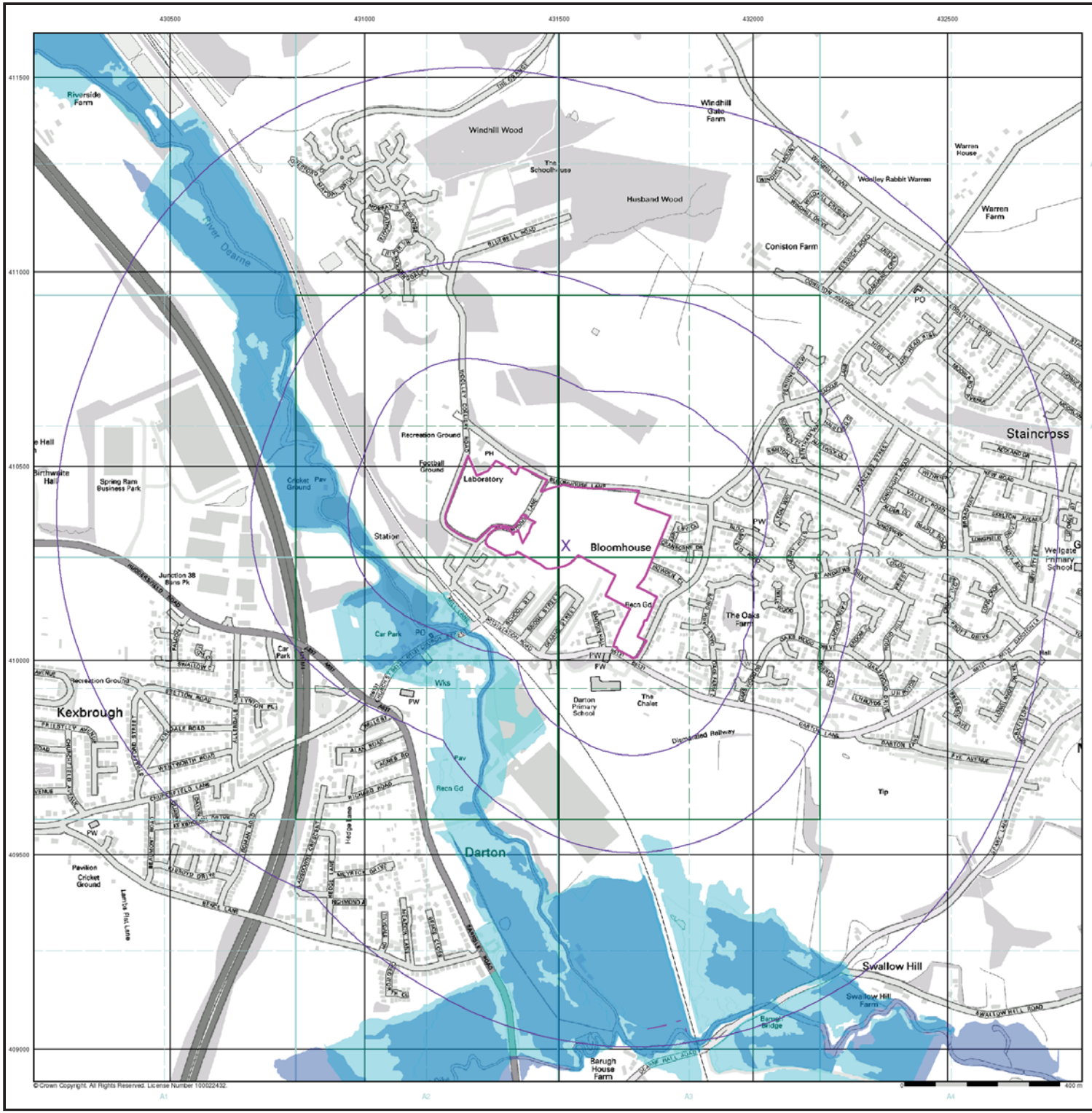
Order Details

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Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	1000

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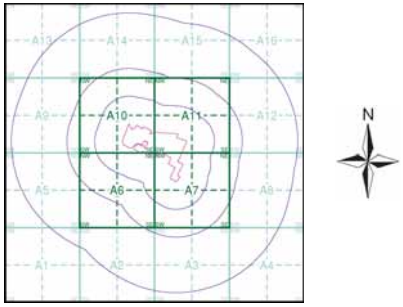
General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice A



Order Details

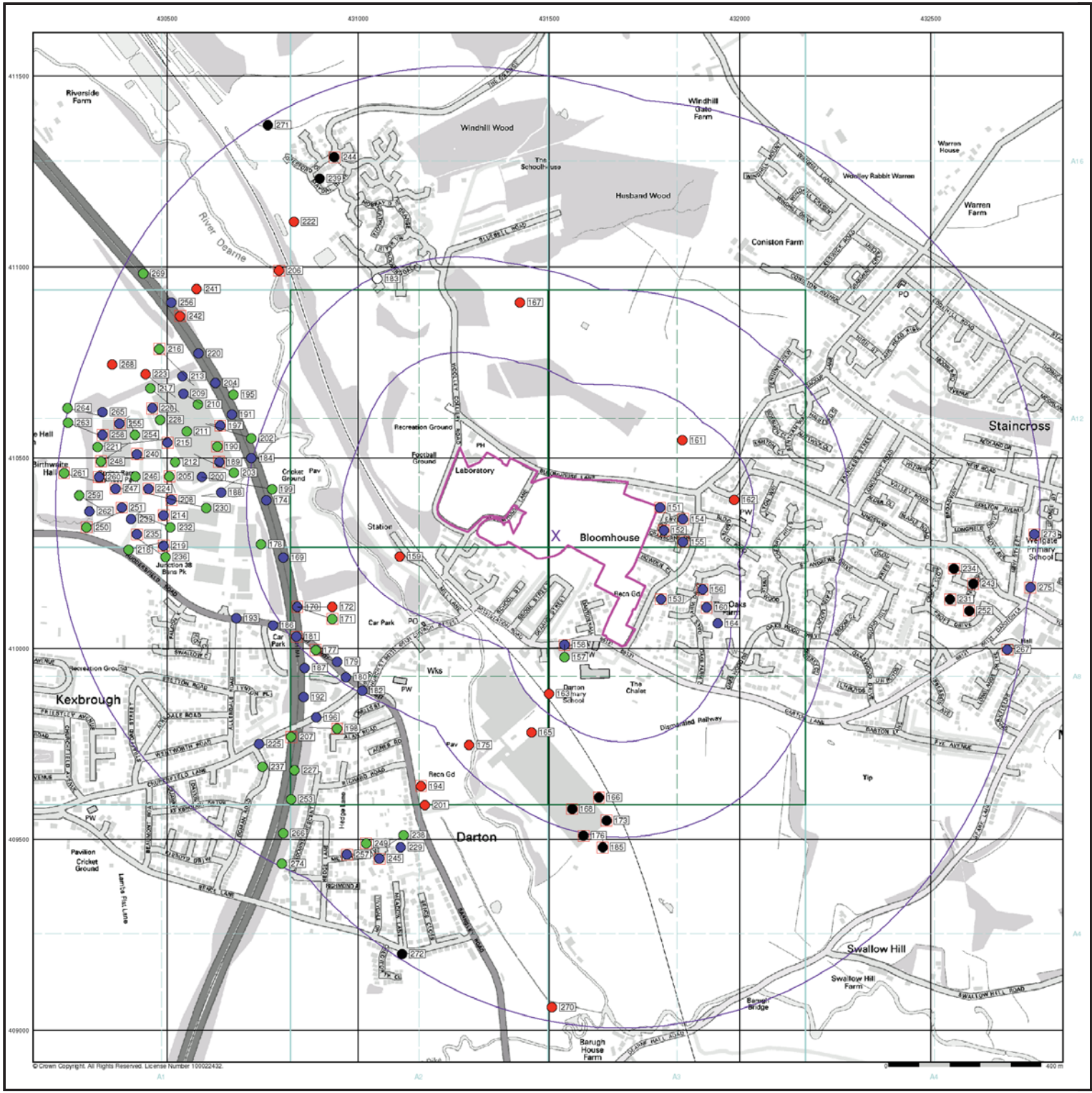
Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	1000

Site Details

Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

Landmark Information Group

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

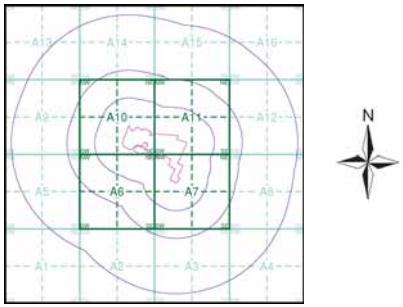
Agency and Hydrological (Boreholes)

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole information please refer to the Borehole .csv file which accompanied this slice.

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

Borehole Map - Slice A



Order Details

Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	1000

Site Details

Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

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RSK

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID

Detailed River Network Data

- Primary River
- Secondary River
- Tertiary River
- Canal
- Canal Tunnel
- Undefined River
- Lake/Reservoir
- Offline Drainage Feature
- Extended Culvert (greater than 50m)
- Underground River (inferred)
- Underground River (local knowledge)
- Downstream of High Water Mark
- Downstream of Seaward Extension
- Not assigned River feature

Contours (height in metres)

Standard Contour 105

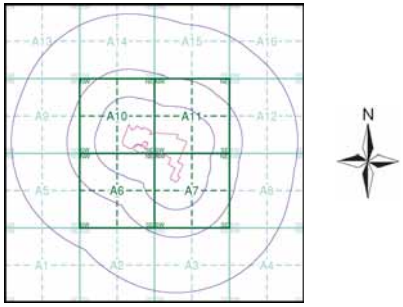
Master Contour 100

Spot Height *167.3

MLW Mean Low Water

MHW Mean High Water

EA/NRW Detailed River Network Map - Slice A



Order Details

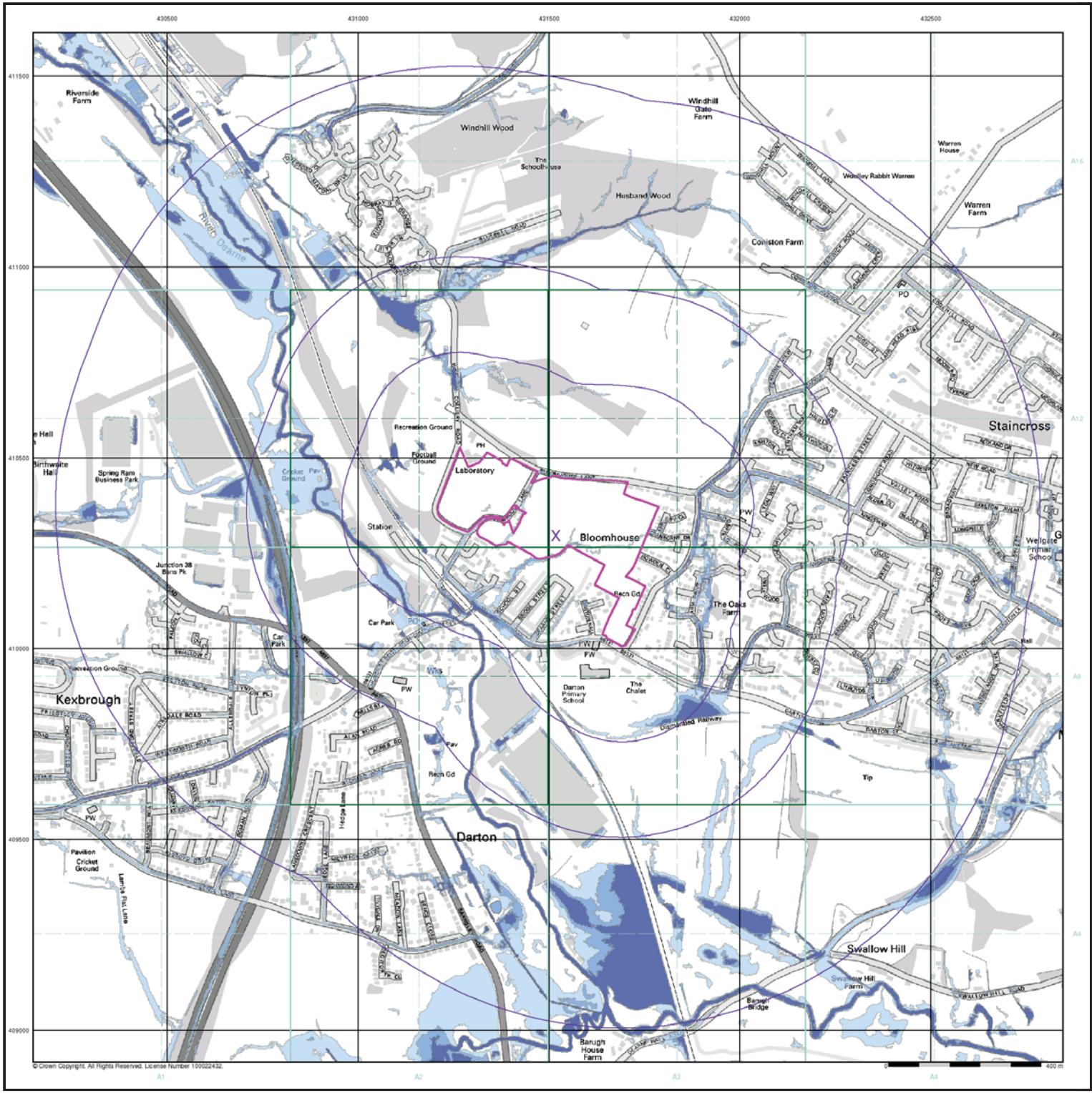
Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
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RSK

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

Risk of Flooding from Surface Water

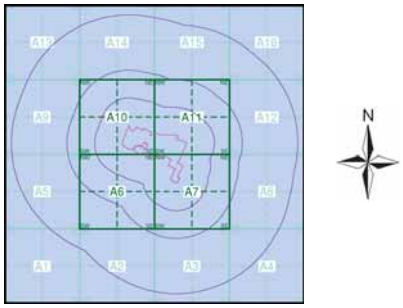
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice A



Order Details

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Customer Ref:	301645
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Site Details

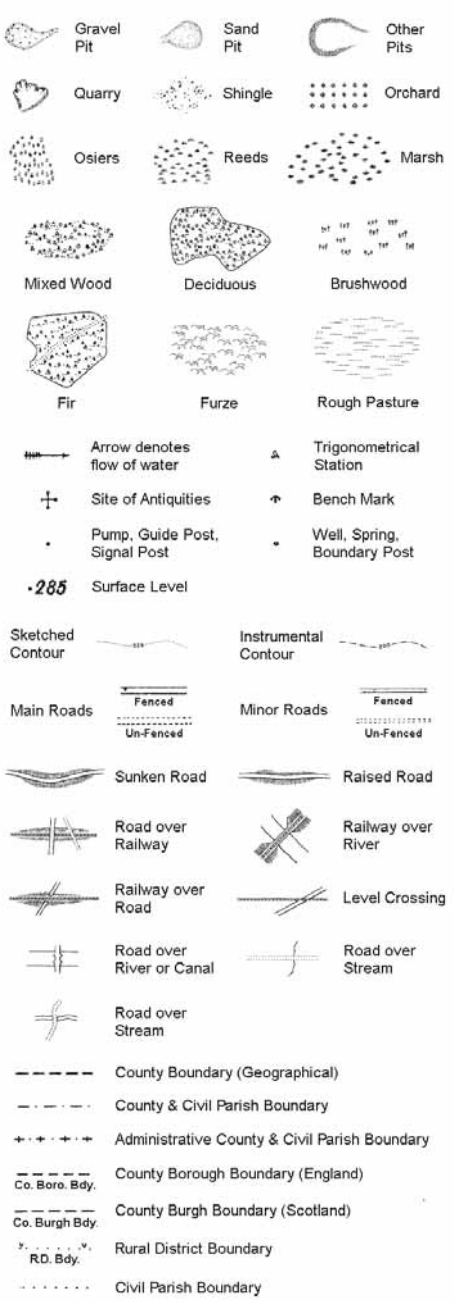
Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

Landmark Information Group

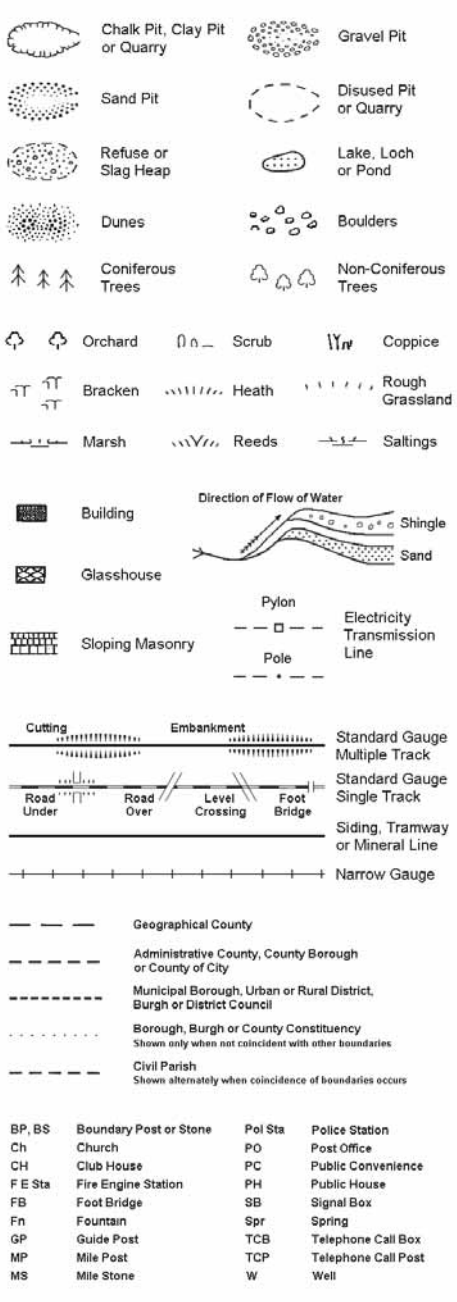
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Historical Mapping Legends

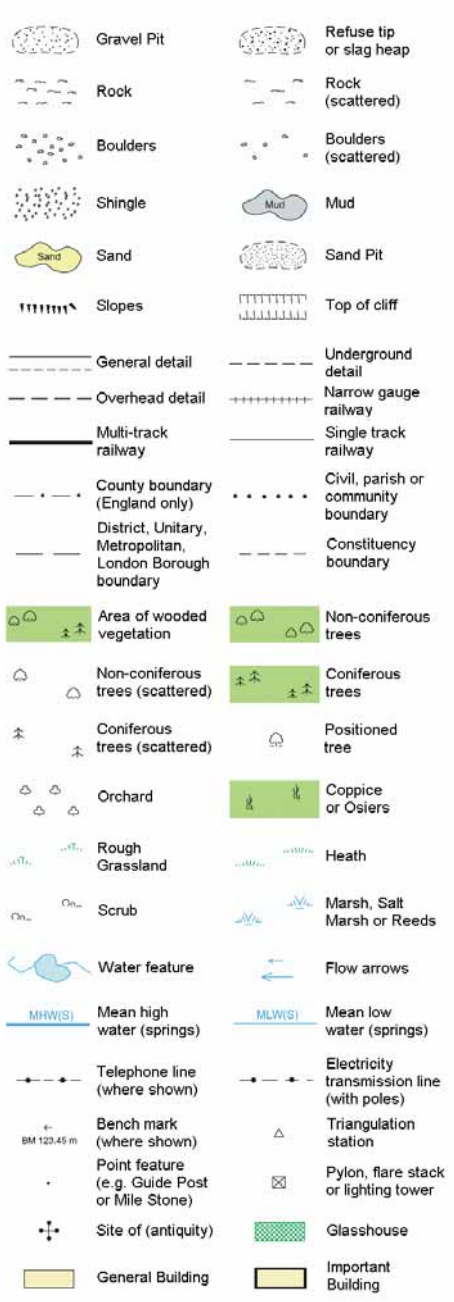
Ordnance Survey County Series 1:10,560



Ordnance Survey Plan 1:10,000



1:10,000 Raster Mapping

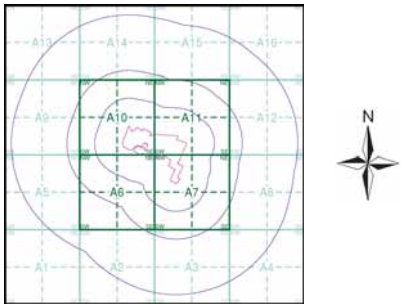


RSK

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Yorkshire	1:10,560	1854 - 1855	2
Yorkshire	1:10,560	1894	3
Yorkshire	1:10,560	1907	4
Yorkshire	1:10,560	1930	5
Yorkshire	1:10,560	1932 - 1933	6
Yorkshire	1:10,560	1938	7
Yorkshire	1:10,560	1938 - 1948	8
Yorkshire	1:10,560	1948	9
Ordnance Survey Plan	1:10,000	1956	10
Ordnance Survey Plan	1:10,000	1965 - 1966	11
Ordnance Survey Plan	1:10,000	1973	12
Ordnance Survey Plan	1:10,000	1980 - 1983	13
Ordnance Survey Plan	1:10,000	1991 - 1993	14
10K Raster Mapping	1:10,000	2006	15
VectorMap Local	1:10,000	2015	16

Historical Map - Slice A



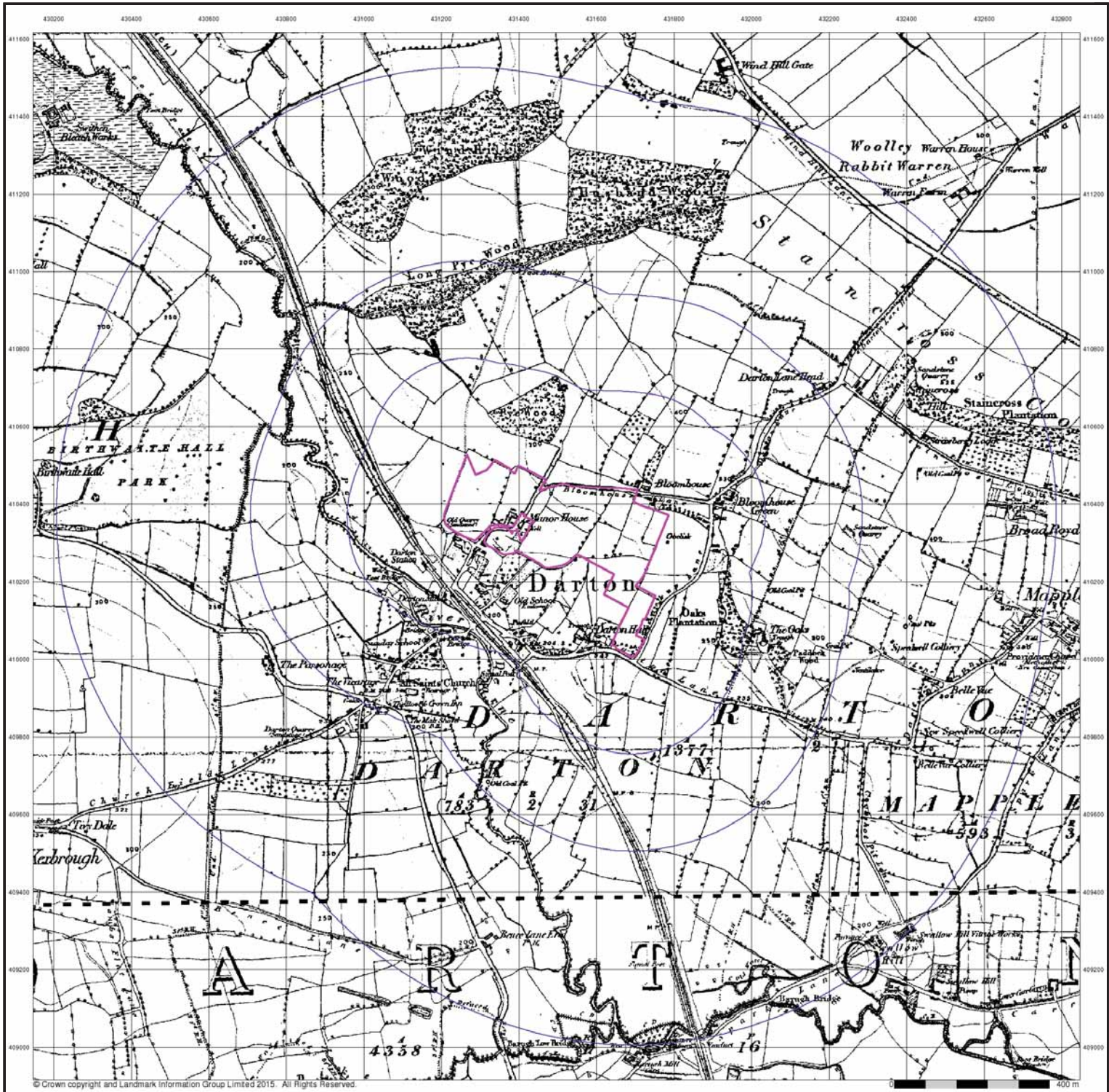
Order Details

Order Number: 77520900_1_1
Customer Ref: 301645
National Grid Reference: 431520, 410300
Slice: A
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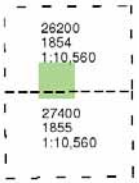
Yorkshire

Published 1854 - 1855

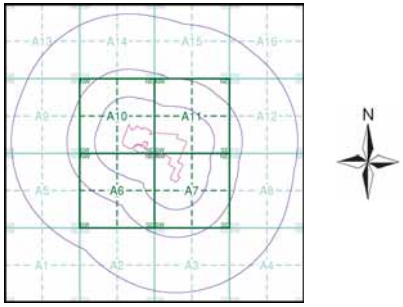
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

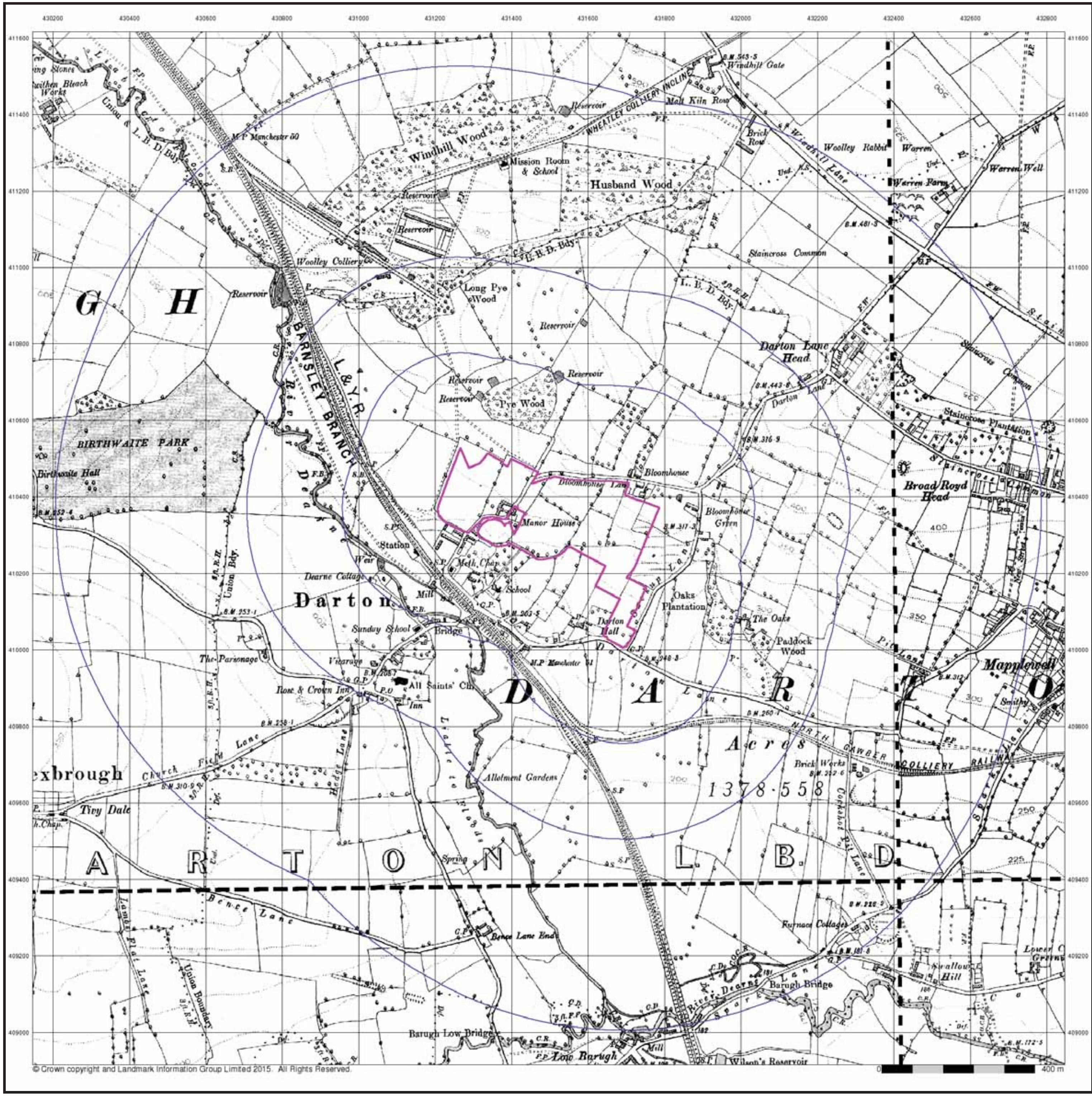
Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
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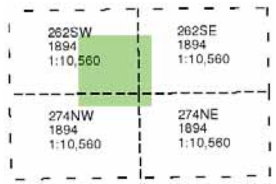
Yorkshire

Published 1894

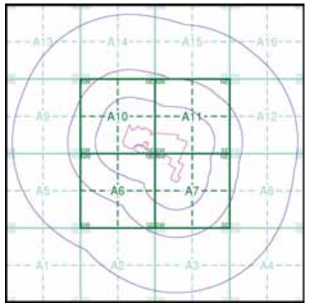
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

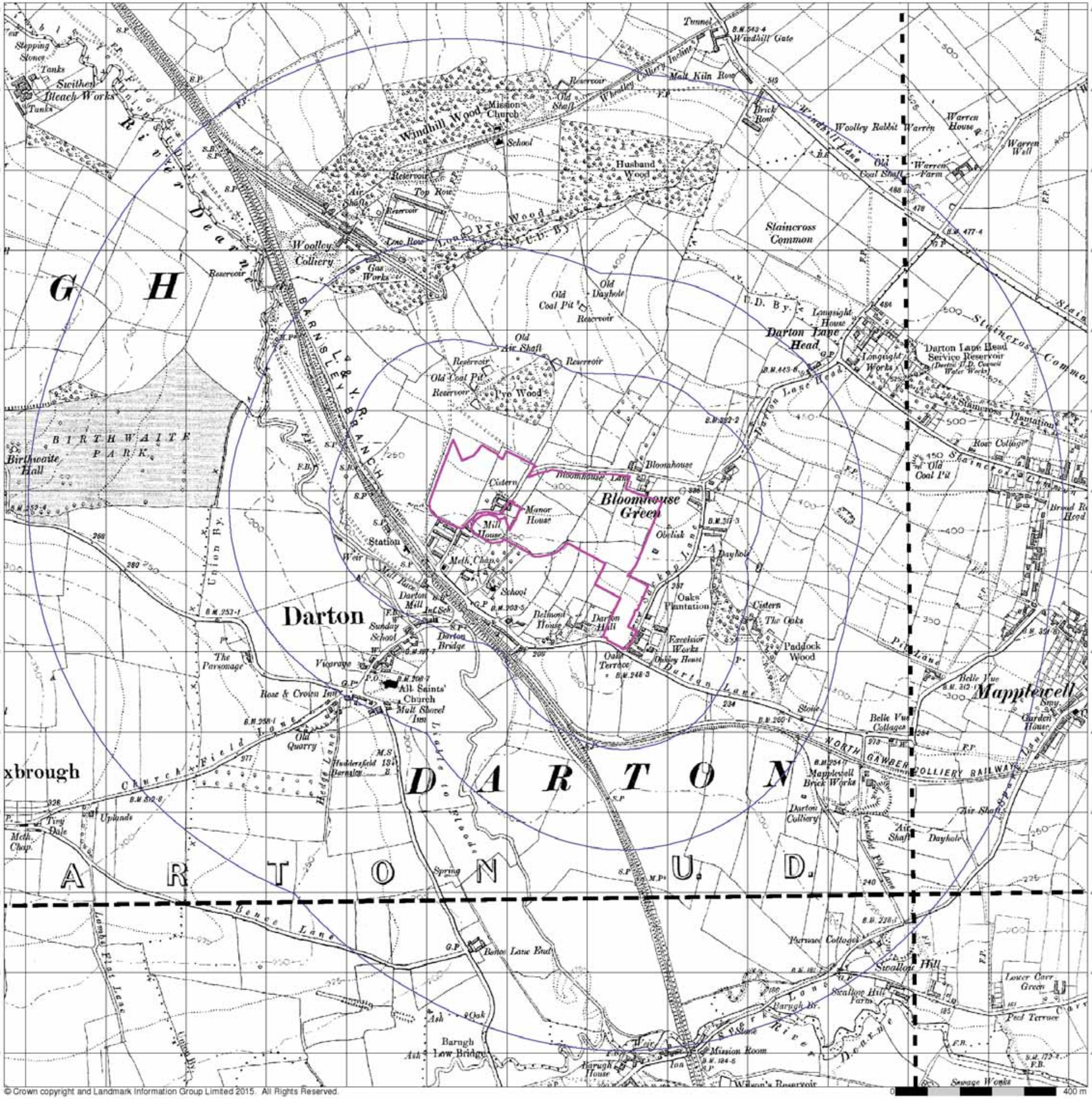
Order Number: 77520900_1_1
Customer Ref: 301645
National Grid Reference: 431520, 410300
Slice: A
Site Area (Ha): 11.89
Search Buffer (m): 1000

Site Details

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Yorkshire

Published 1907

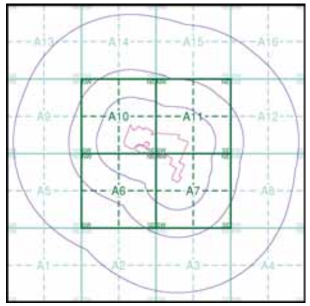
Source map scale - 1:10,560

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Map Name(s) and Date(s)

262SW 1907 1:10,560	262SE 1907 1:10,560
274NW 1907 1:10,560	274NE 1907 1:10,560

Historical Map - Slice A



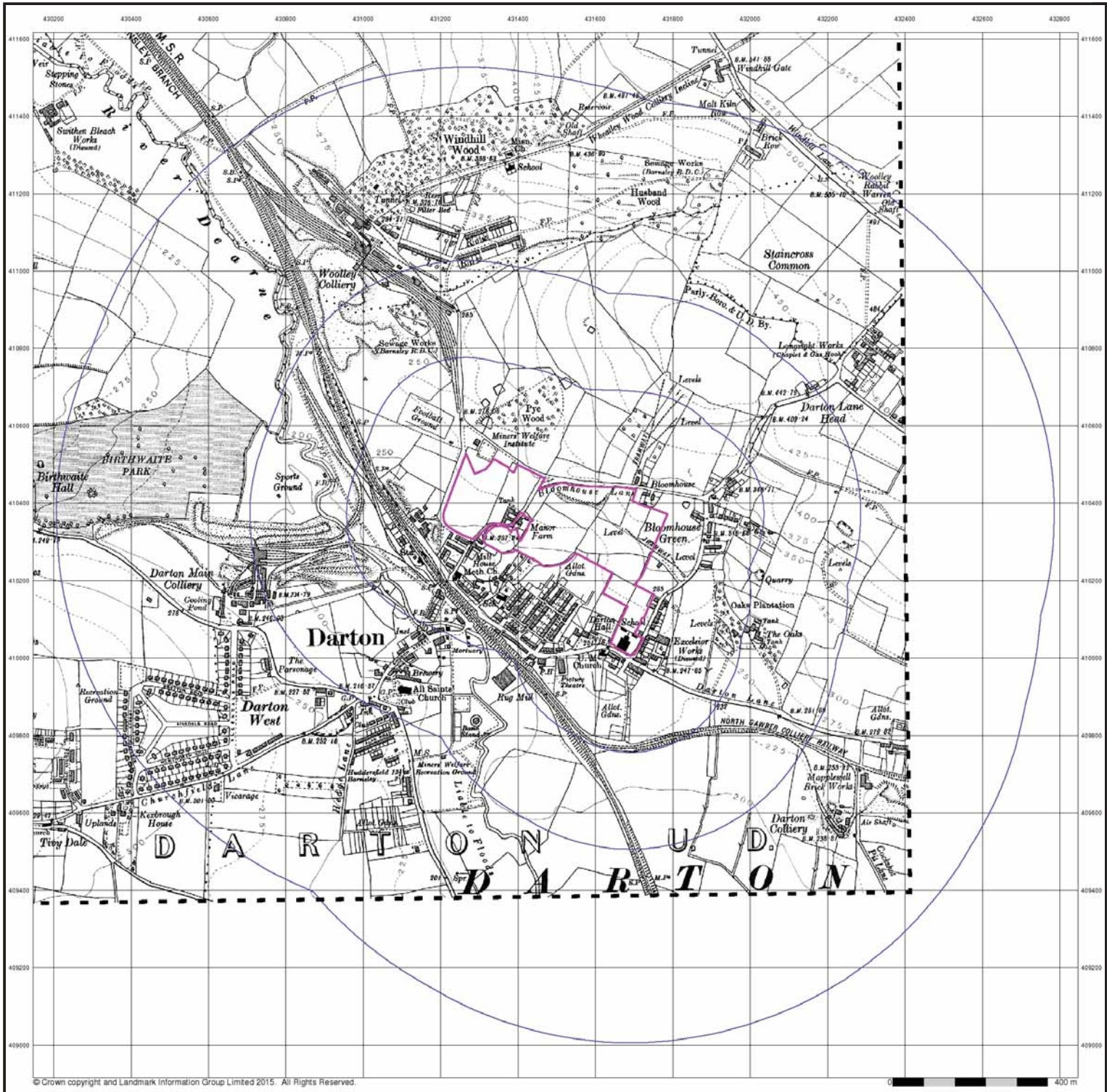
Order Details

Order Number: 77520900_1_1
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Slice: A
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Site Details

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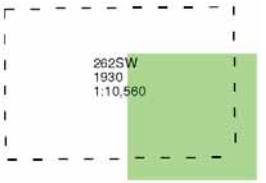
Yorkshire

Published 1930

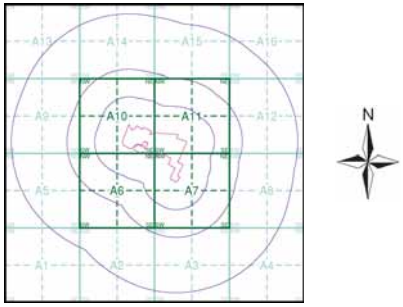
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

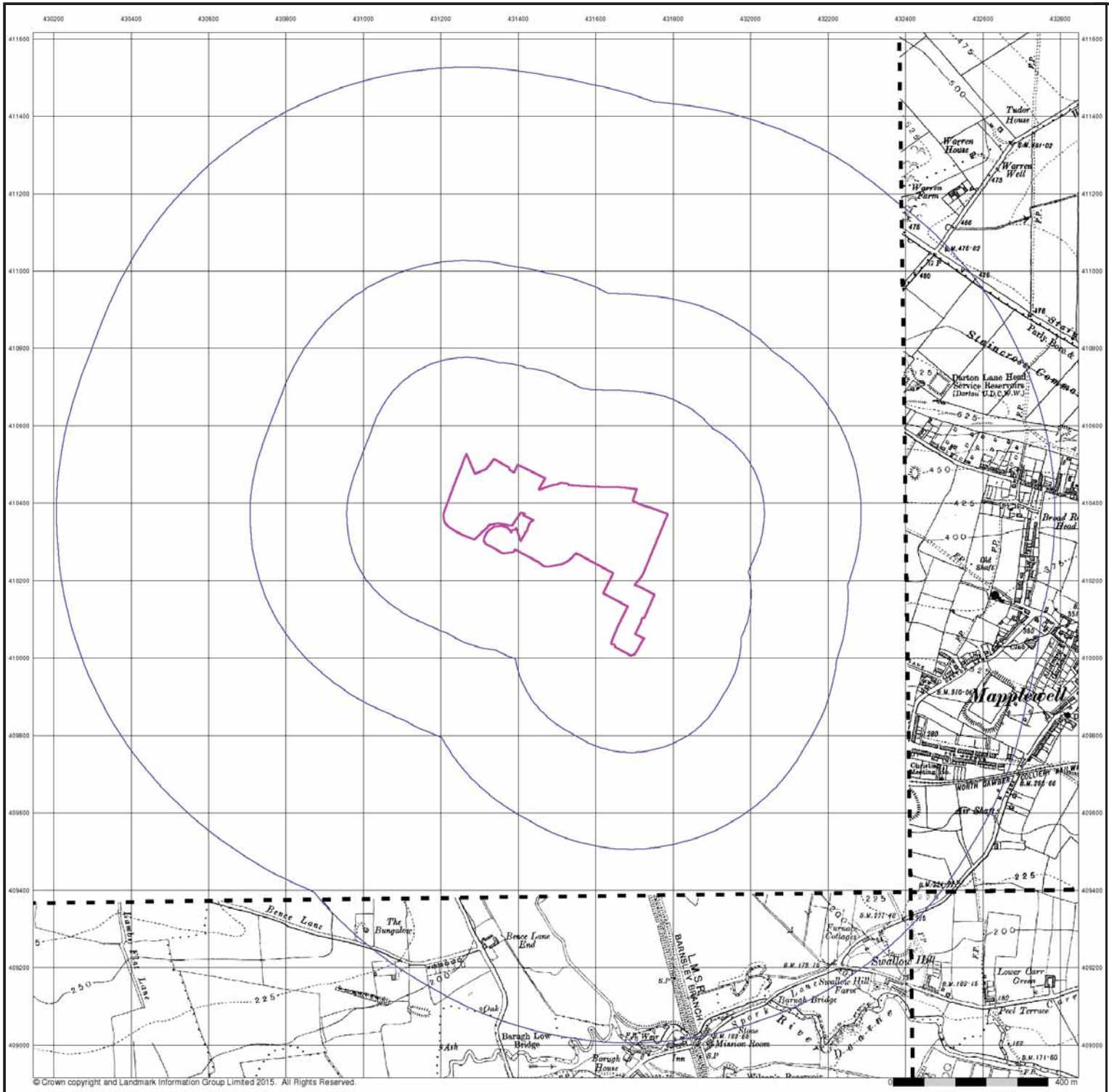
Order Number:	77520900_1_1
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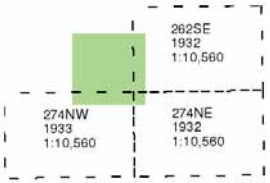
Yorkshire

Published 1932 - 1933

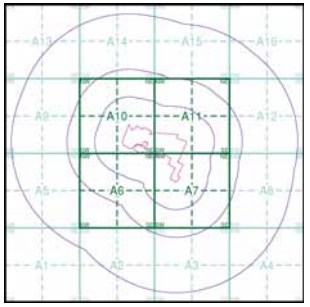
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



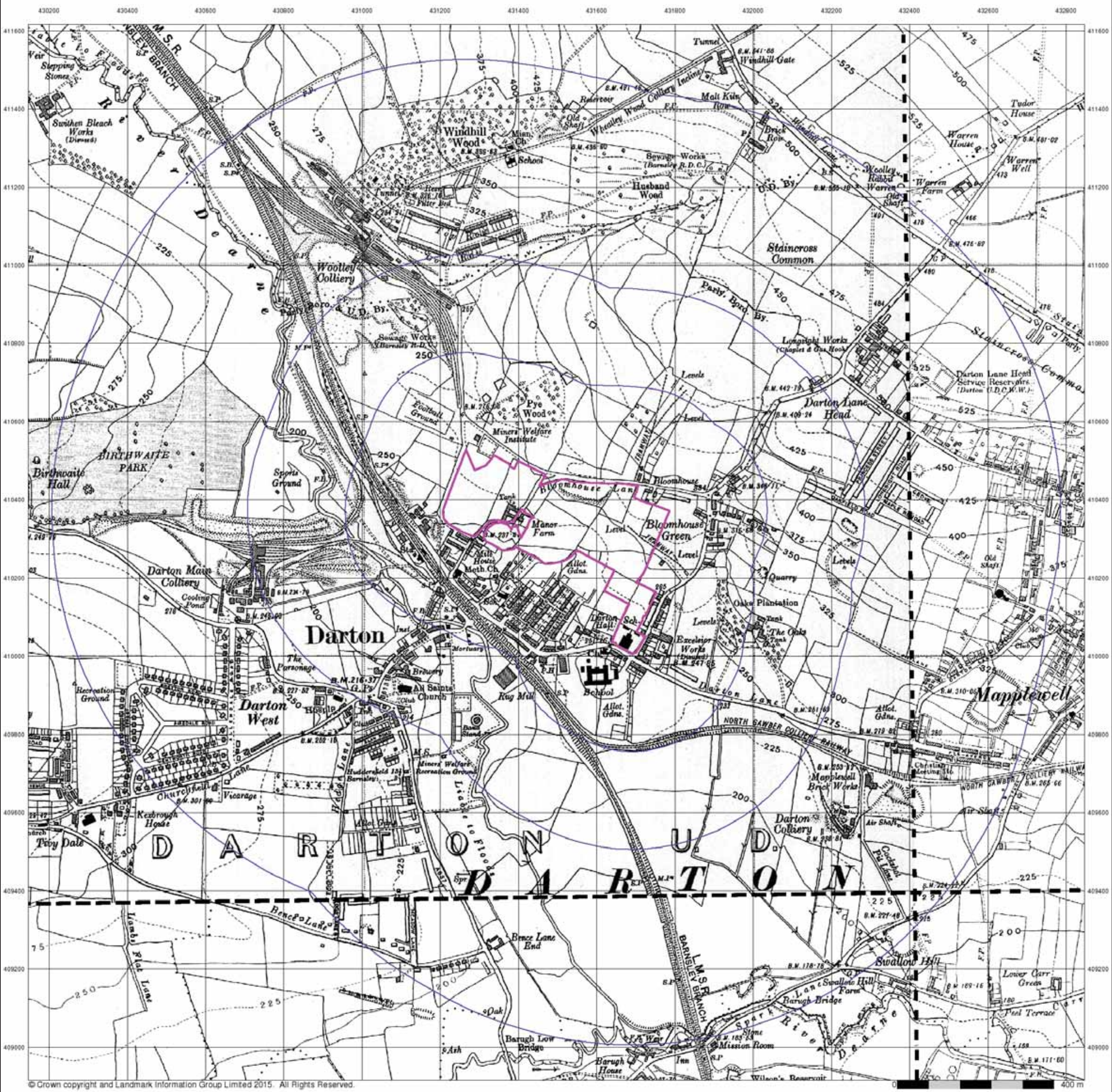
Order Details

Order Number:	77520900_1_1
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National Grid Reference:	431520, 410300
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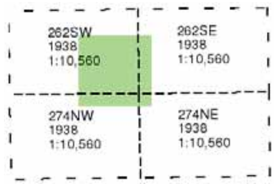
Yorkshire

Published 1938

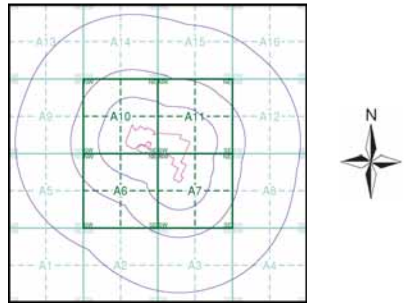
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



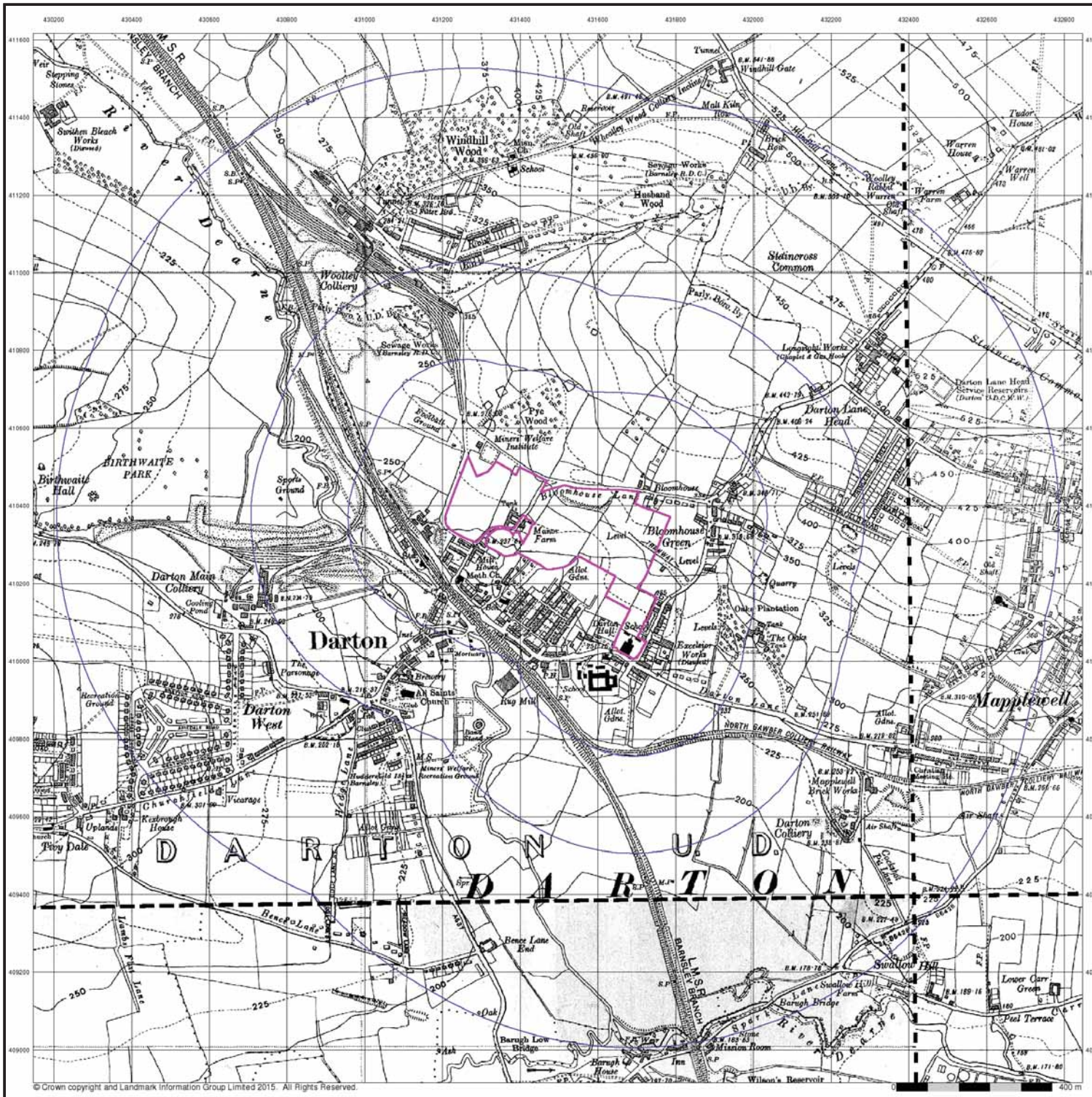
Order Details

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Customer Ref: 301645
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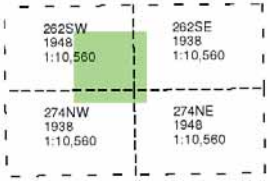
Yorkshire

Published 1938 - 1948

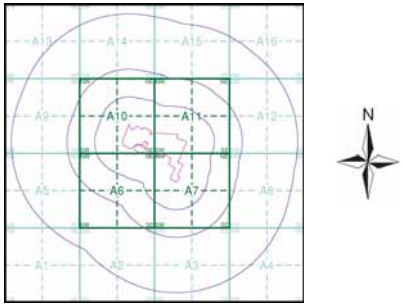
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



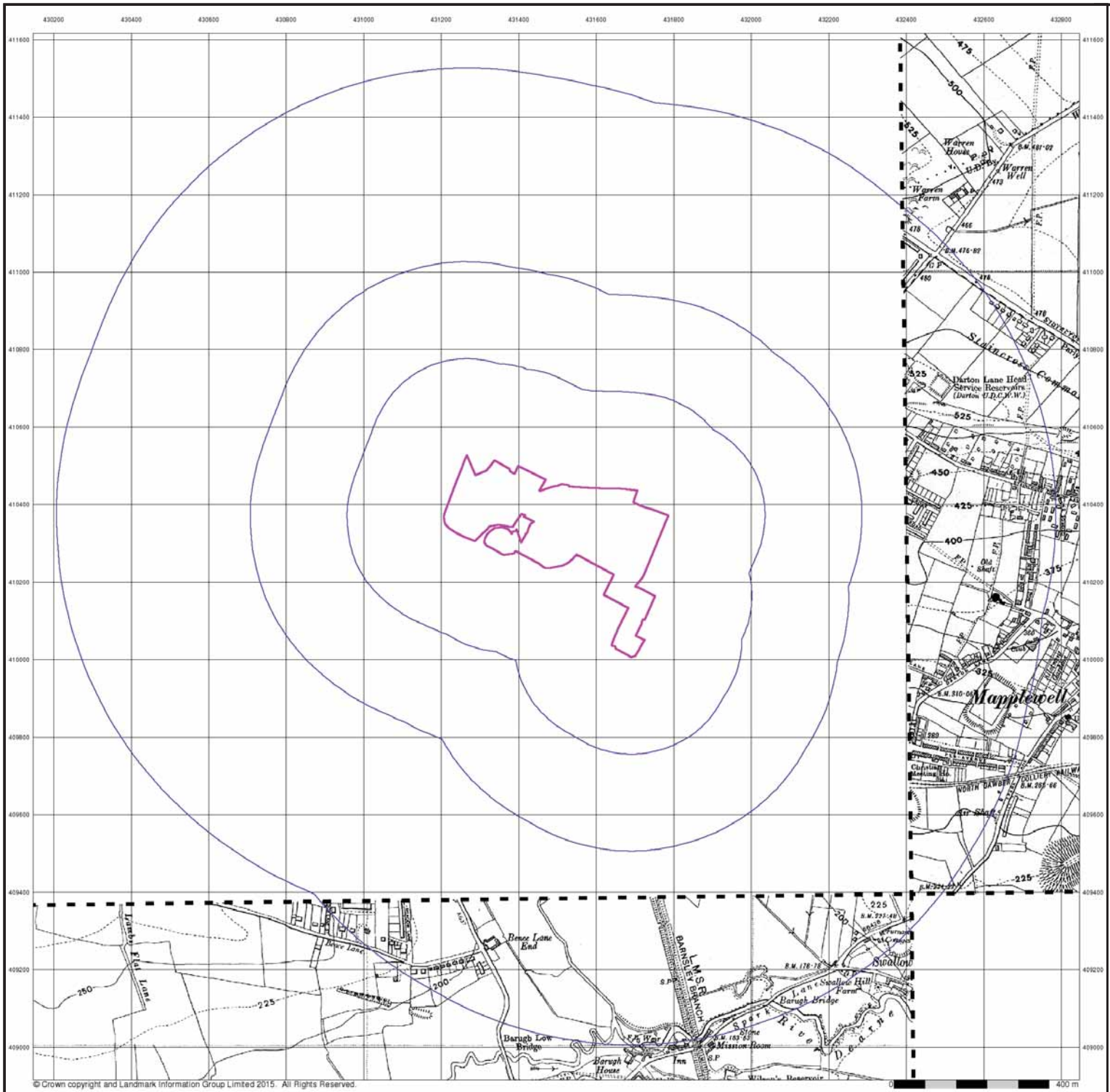
Order Details

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RSK

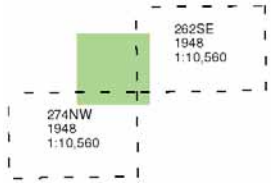
Yorkshire

Published 1948

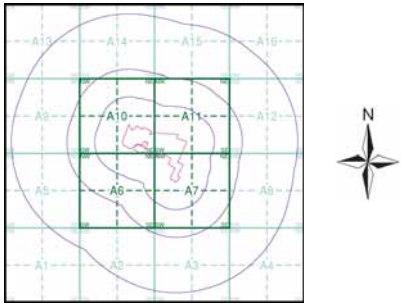
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



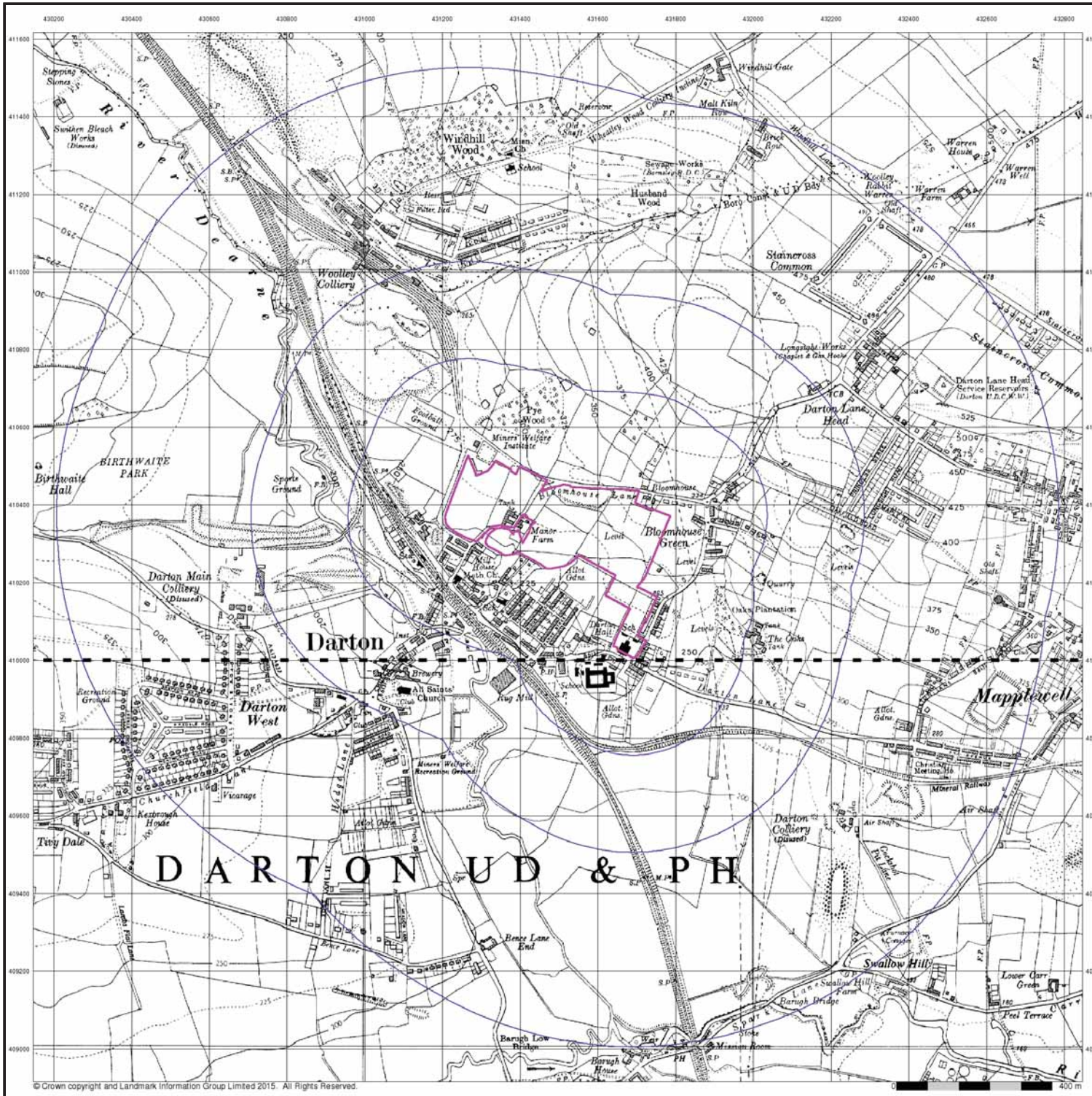
Order Details

Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	1000

Site Details

Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

Landmark Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



RSK

Ordnance Survey Plan

Published 1956

Source map scale - 1:10,000

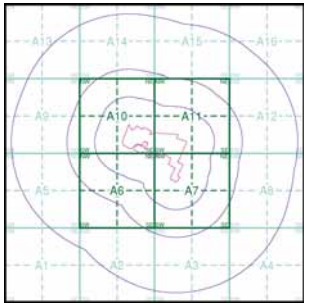
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

SE31SW
1956
1:10,560

SE30NW
1956
1:10,560

Historical Map - Slice A



Order Details

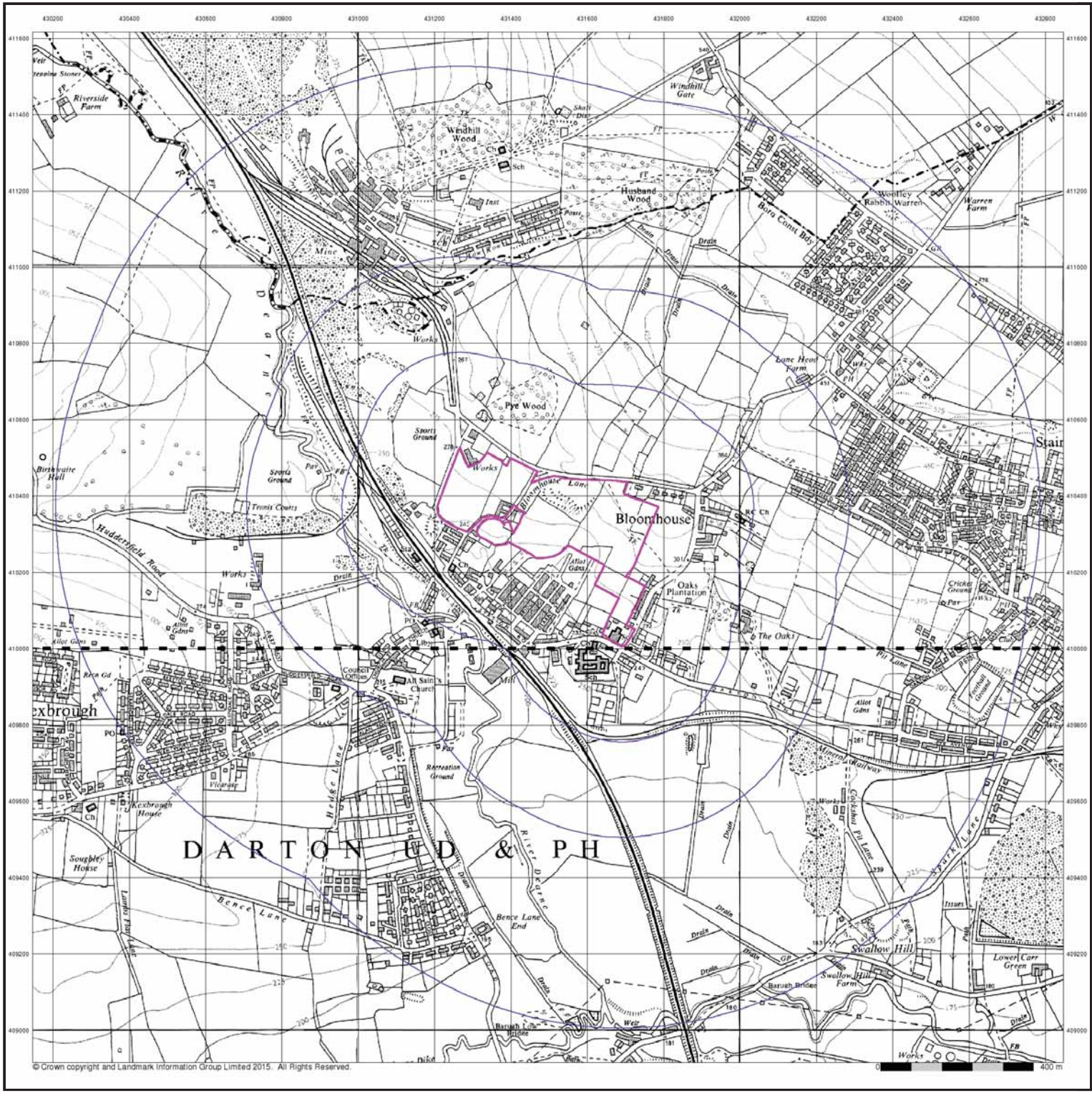
Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	1000

Site Details

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Ordnance Survey Plan

Published 1965 - 1966

Source map scale - 1:10,000

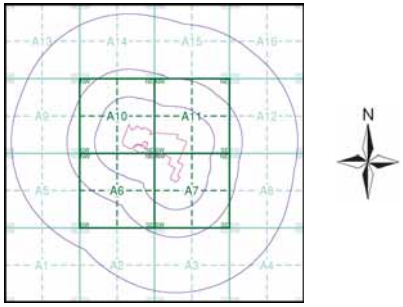
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

SE31SW
1965
1:10,560

SE30NW
1966
1:10,560

Historical Map - Slice A



Order Details

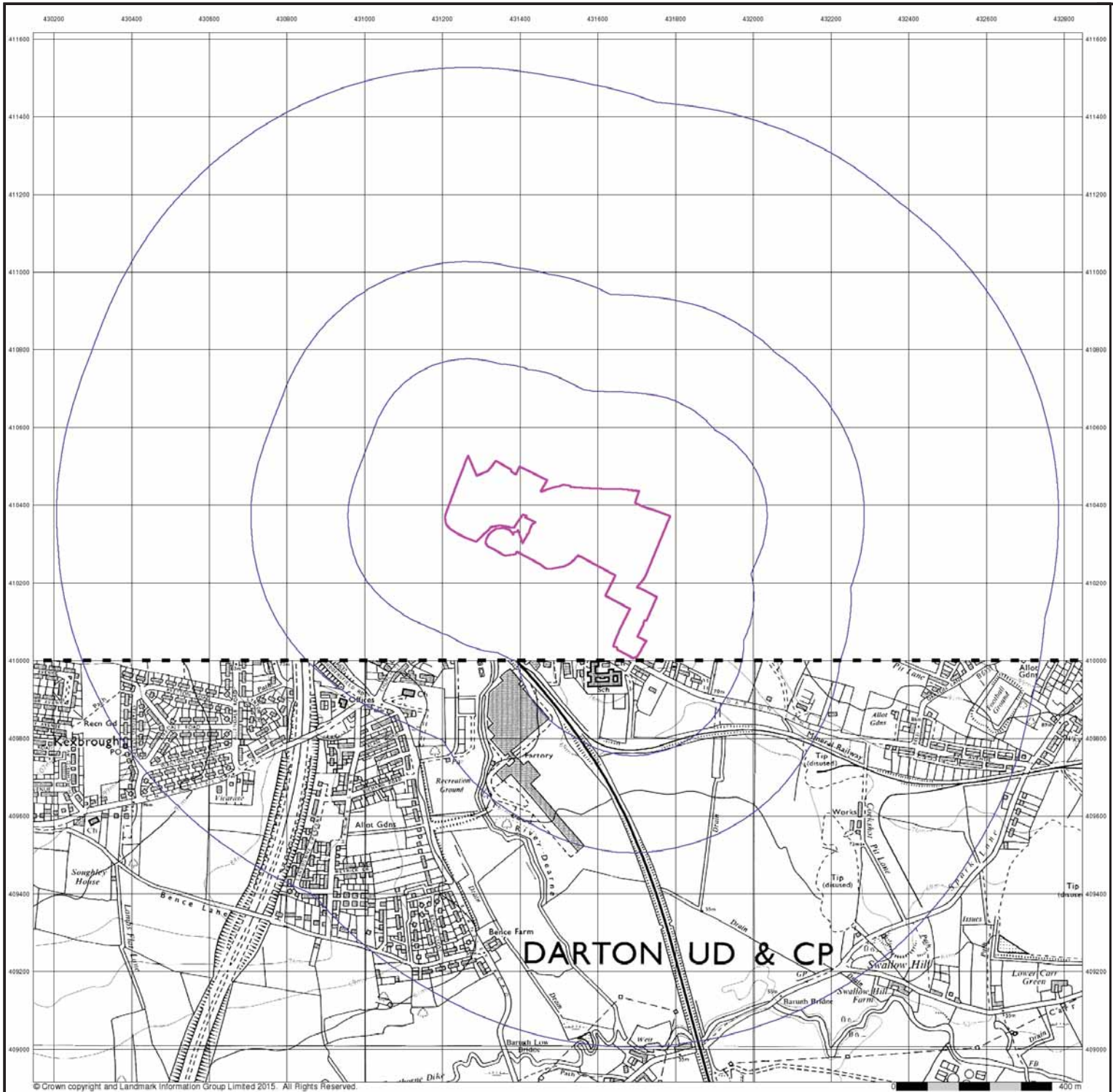
Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
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Site Area (Ha):	11.89
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Site Details

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RSK

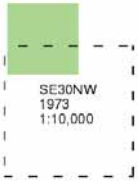
Ordnance Survey Plan

Published 1973

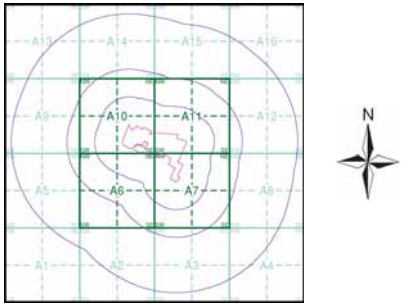
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

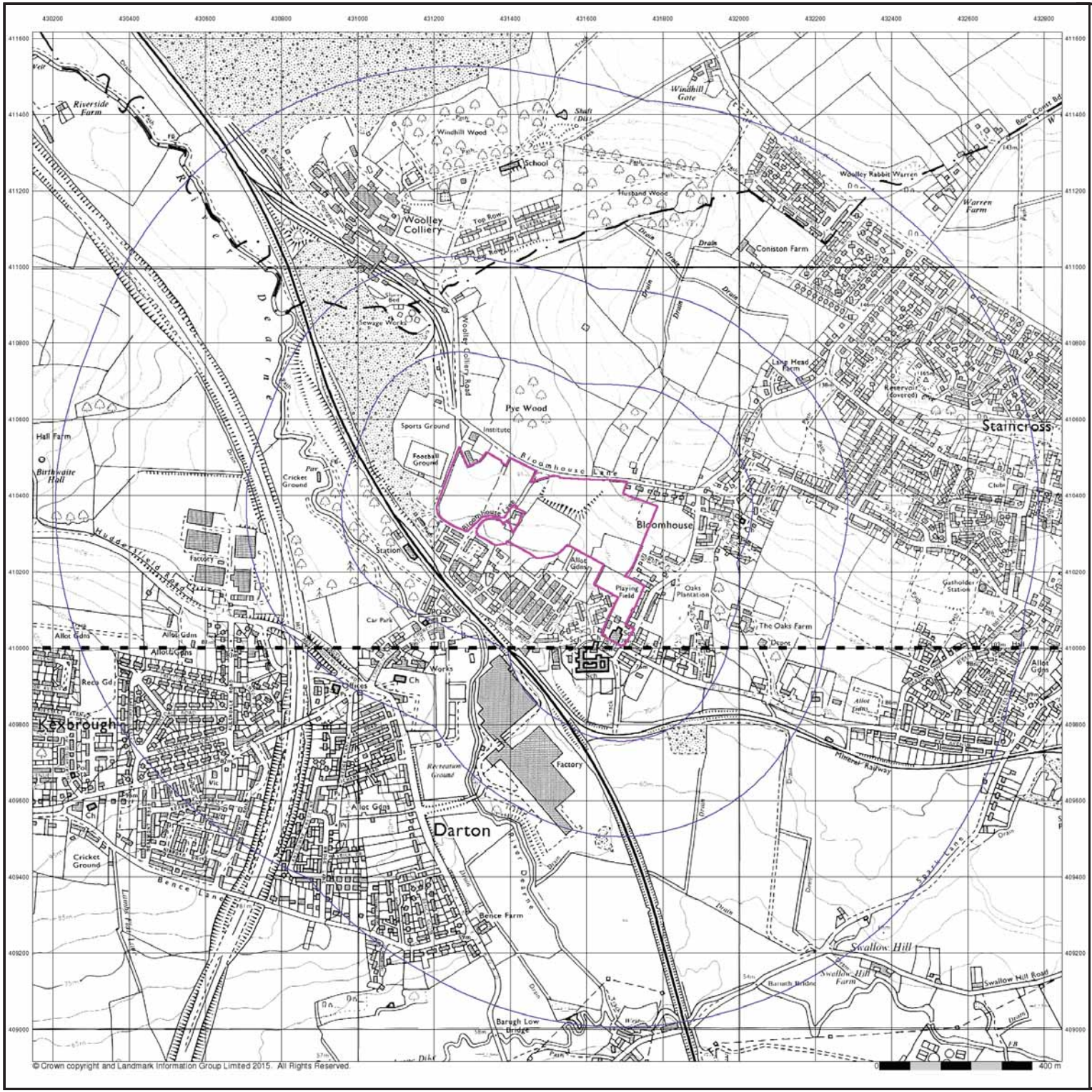
Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	1000

Site Details

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Ordnance Survey Plan

Published 1980 - 1983

Source map scale - 1:10,000

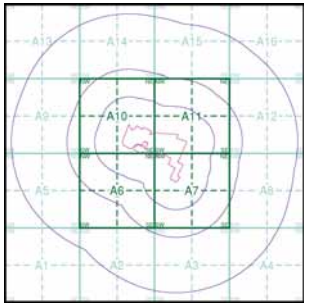
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

SE31SW
1980
1:10,000

SE30NW
1983
1:10,000

Historical Map - Slice A



Order Details

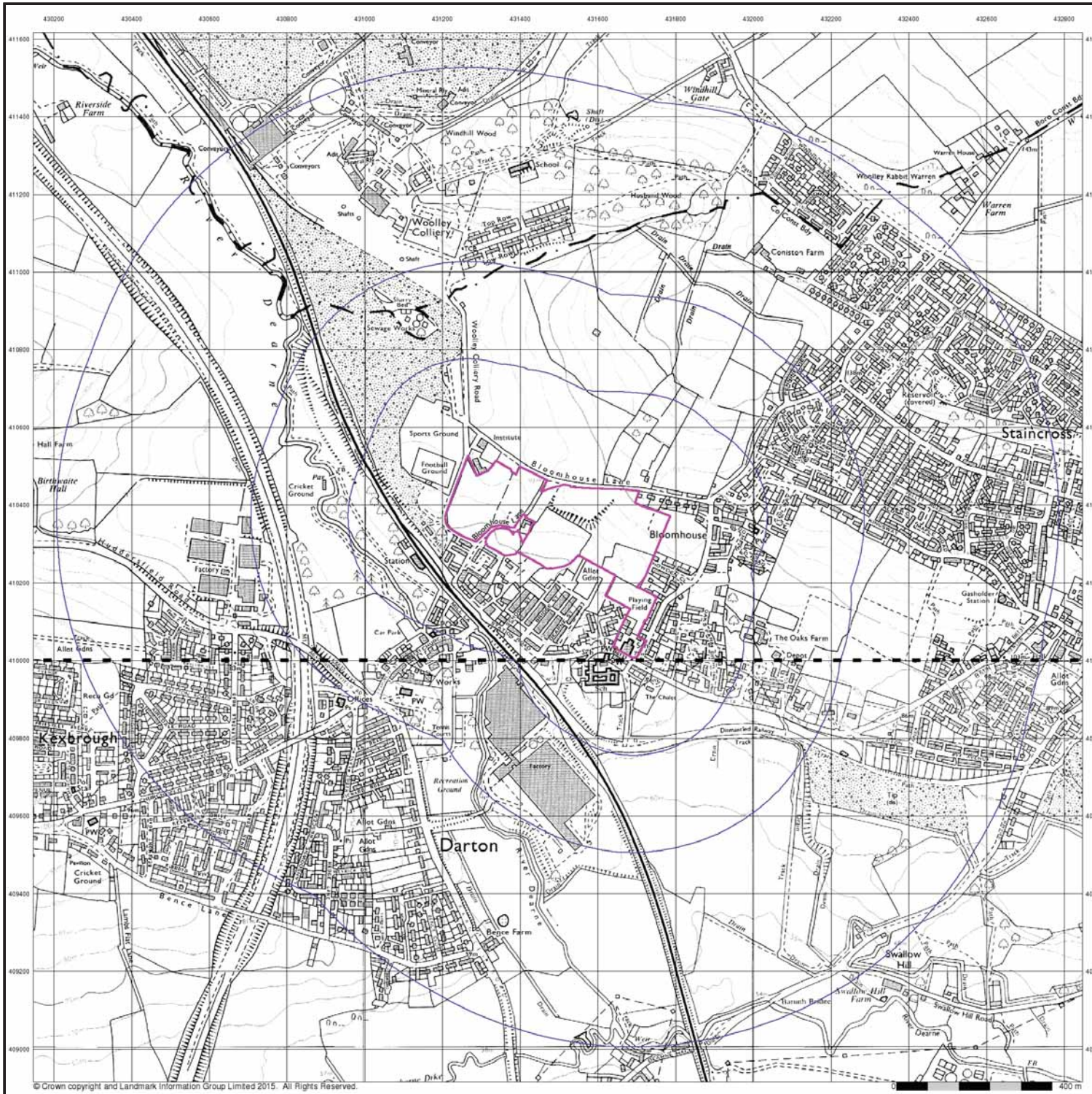
Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	1000

Site Details

Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

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Ordnance Survey Plan

Published 1991 - 1993

Source map scale - 1:10,000

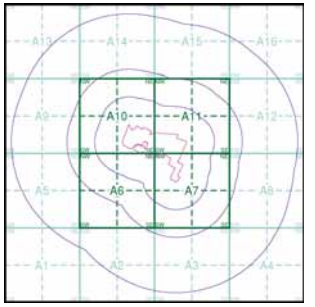
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

SE31SW
1991
1:10,000

SE30NW
1993
1:10,000

Historical Map - Slice A



Order Details

Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	1000

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10k Raster Mapping

Published 2006

Source map scale - 1:10,000

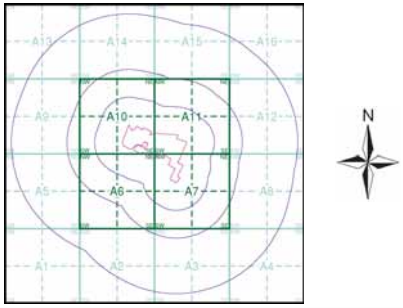
The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

SE31SW
2006
1:10,000

SE30NW
2006
1:10,000

Historical Map - Slice A



Order Details

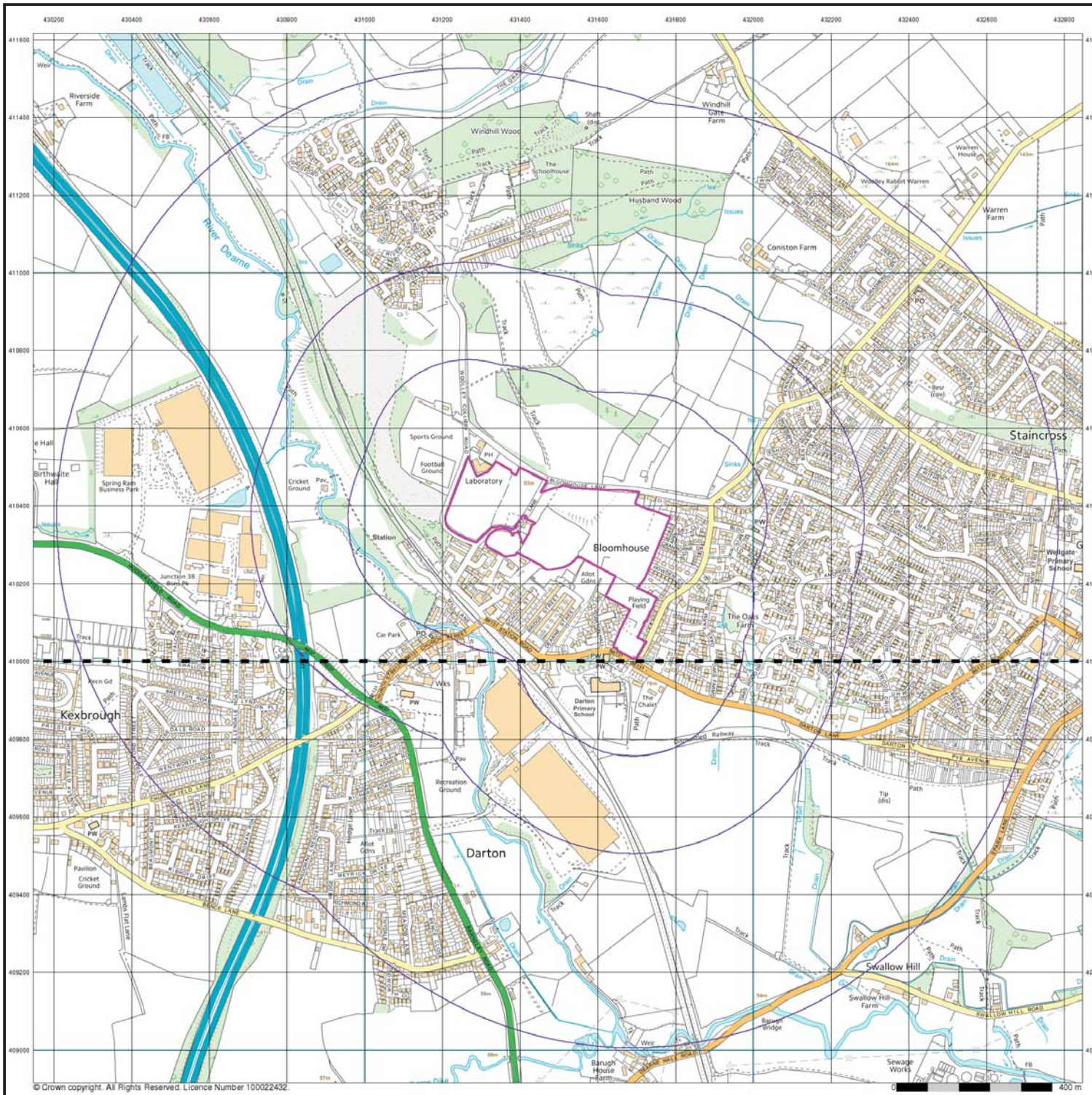
Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	1000

Site Details

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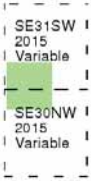
VectorMap Local

Published 2015

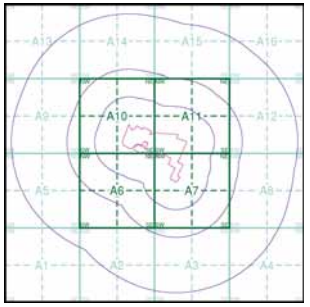
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	1000

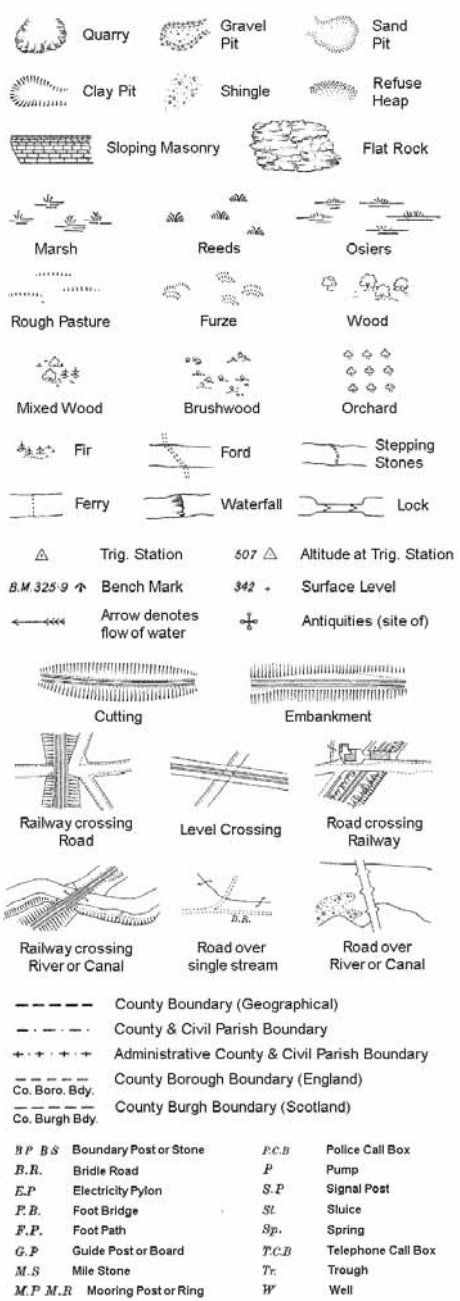
Site Details

Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

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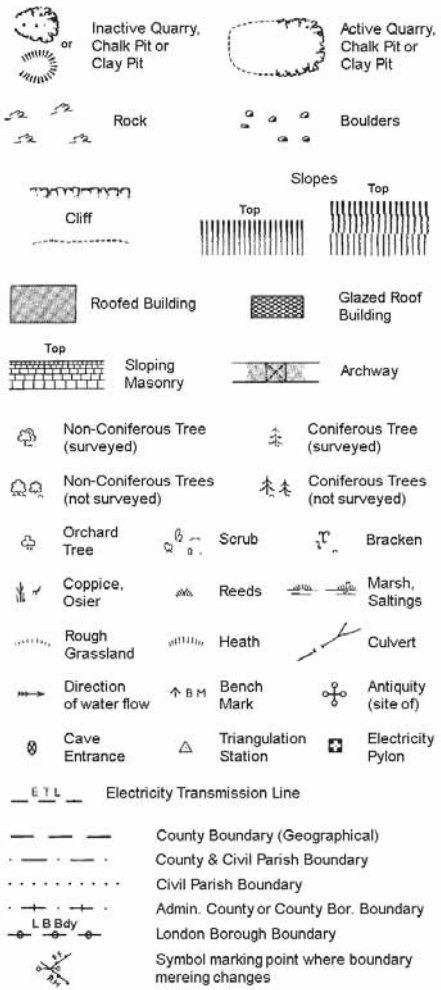
Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



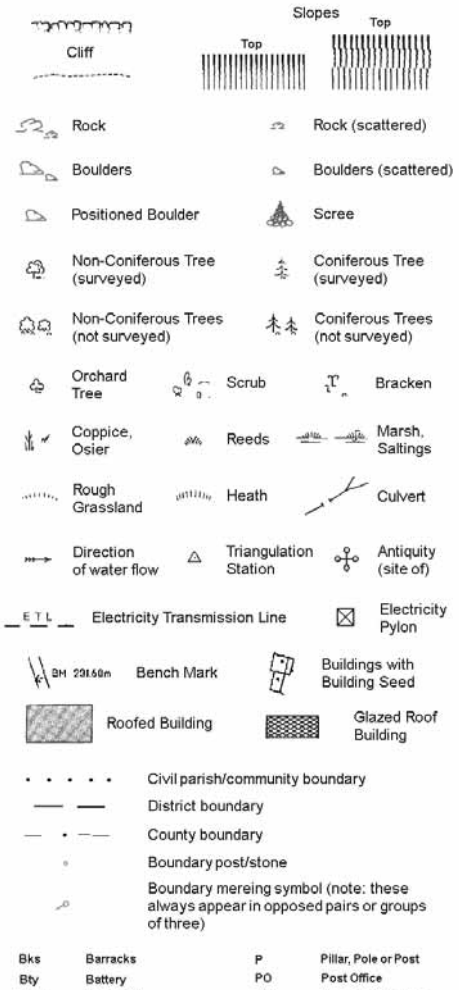
B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	St.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



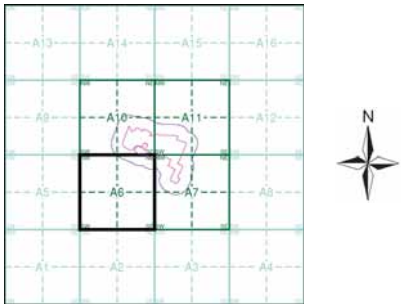
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

RSK

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Yorkshire	1:2,500	1893	2
Yorkshire	1:2,500	1906	3
Yorkshire	1:2,500	1918	4
Ordnance Survey Plan	1:2,500	1961 - 1962	5
Ordnance Survey Plan	1:2,500	1970	6
Ordnance Survey Plan	1:1,250	1978	7
Additional SIMs	1:2,500	1989	8
Additional SIMs	1:1,250	1990 - 1991	9
Additional SIMs	1:1,250	1991	10
Large-Scale National Grid Data	1:1,250	1993	11
Large-Scale National Grid Data	1:1,250	1993 - 1994	12

Historical Map - Segment A6



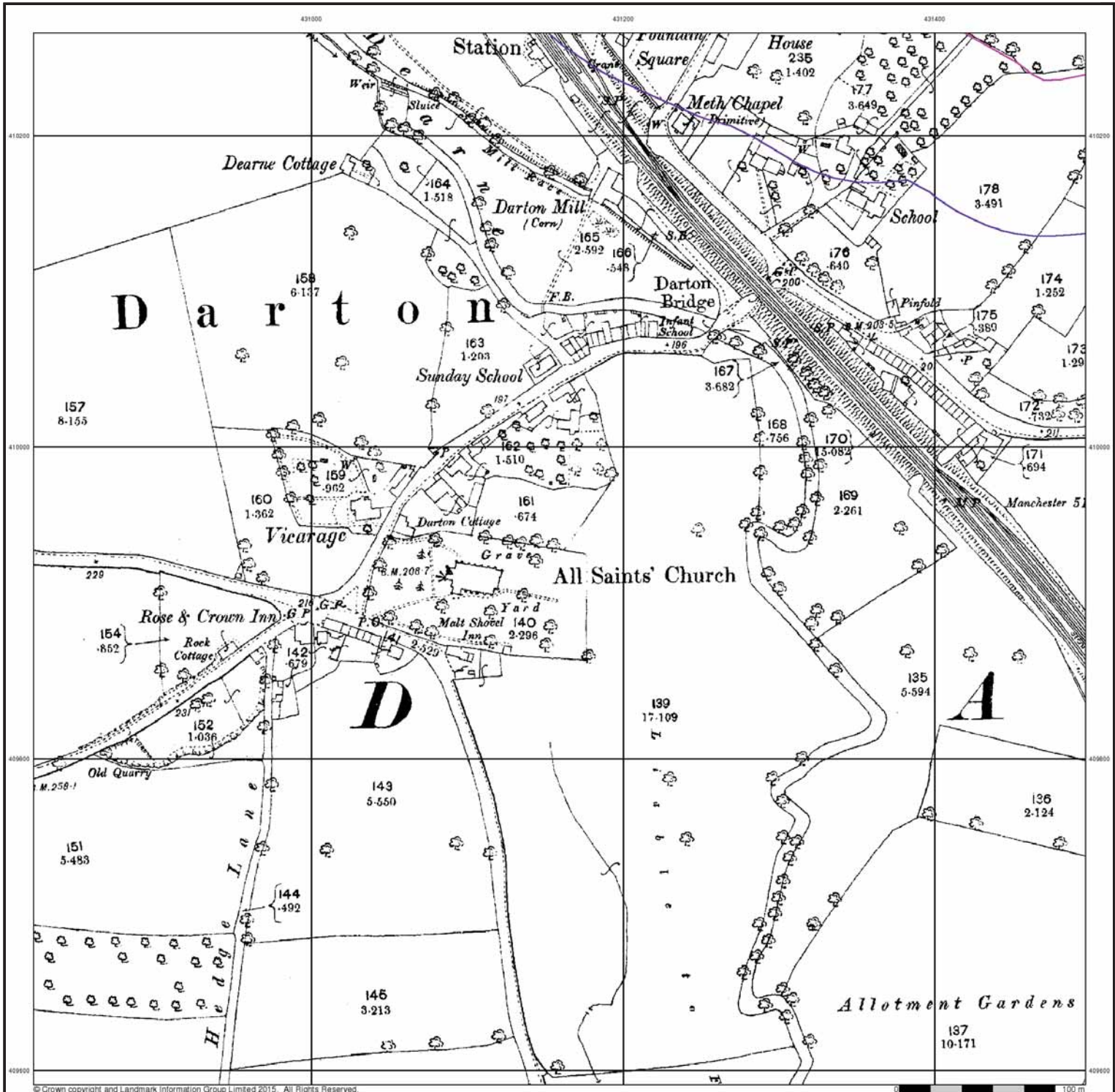
Order Details

Order Number: 77520900_1_1
Customer Ref: 301645
National Grid Reference: 431520, 410300
Slice: A
Site Area (Ha): 11.89
Search Buffer (m): 100

Site Details

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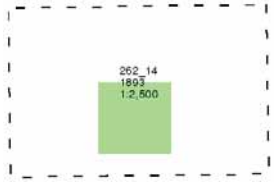
Yorkshire

Published 1893

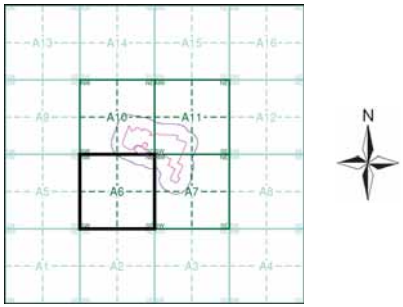
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A6



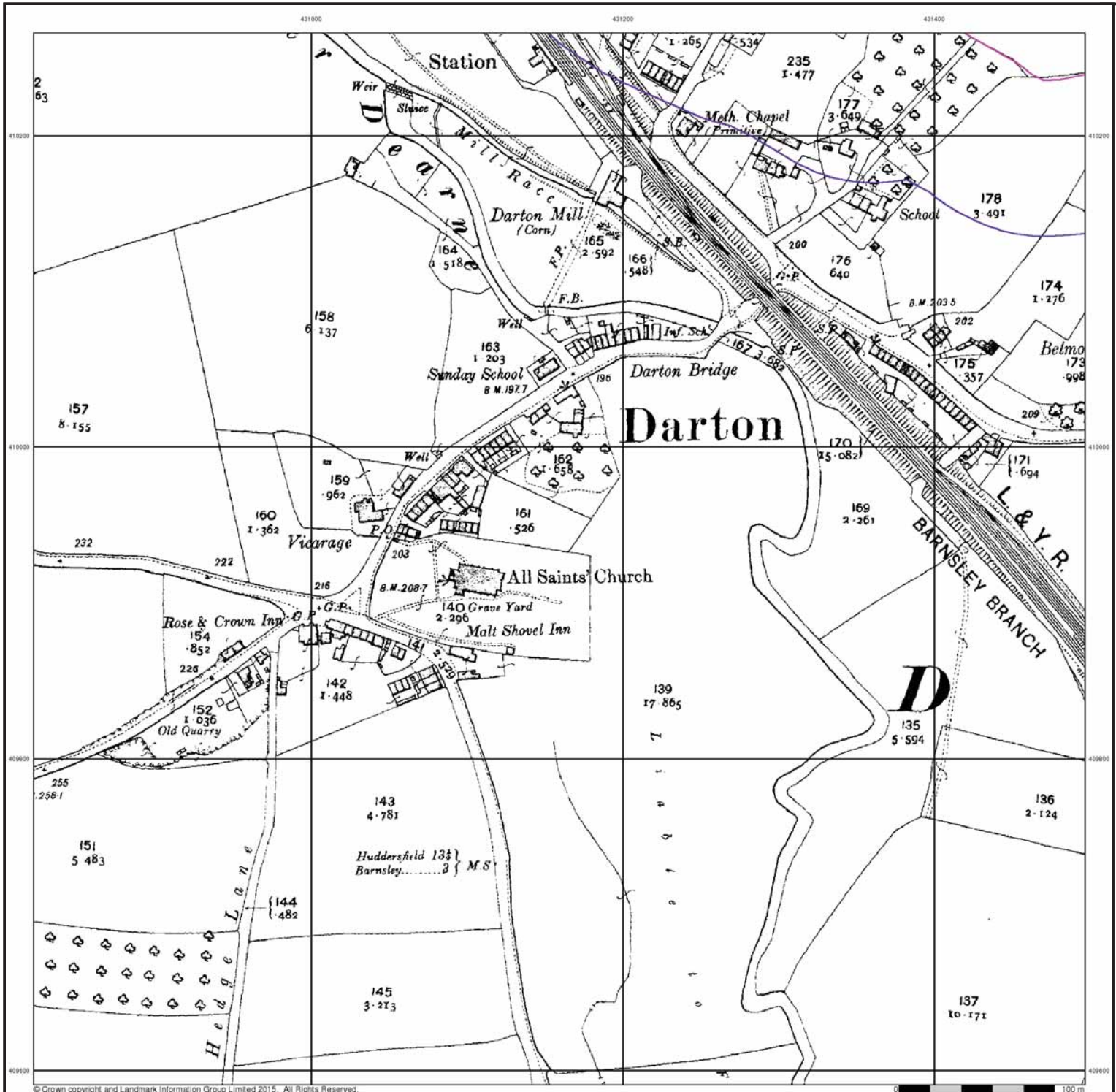
Order Details

Order Number:	77520900_1_1
Customer Ref:	301645
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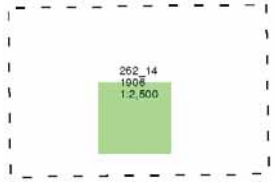
Yorkshire

Published 1906

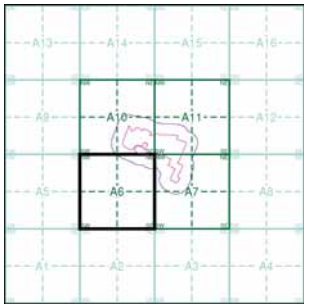
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A6



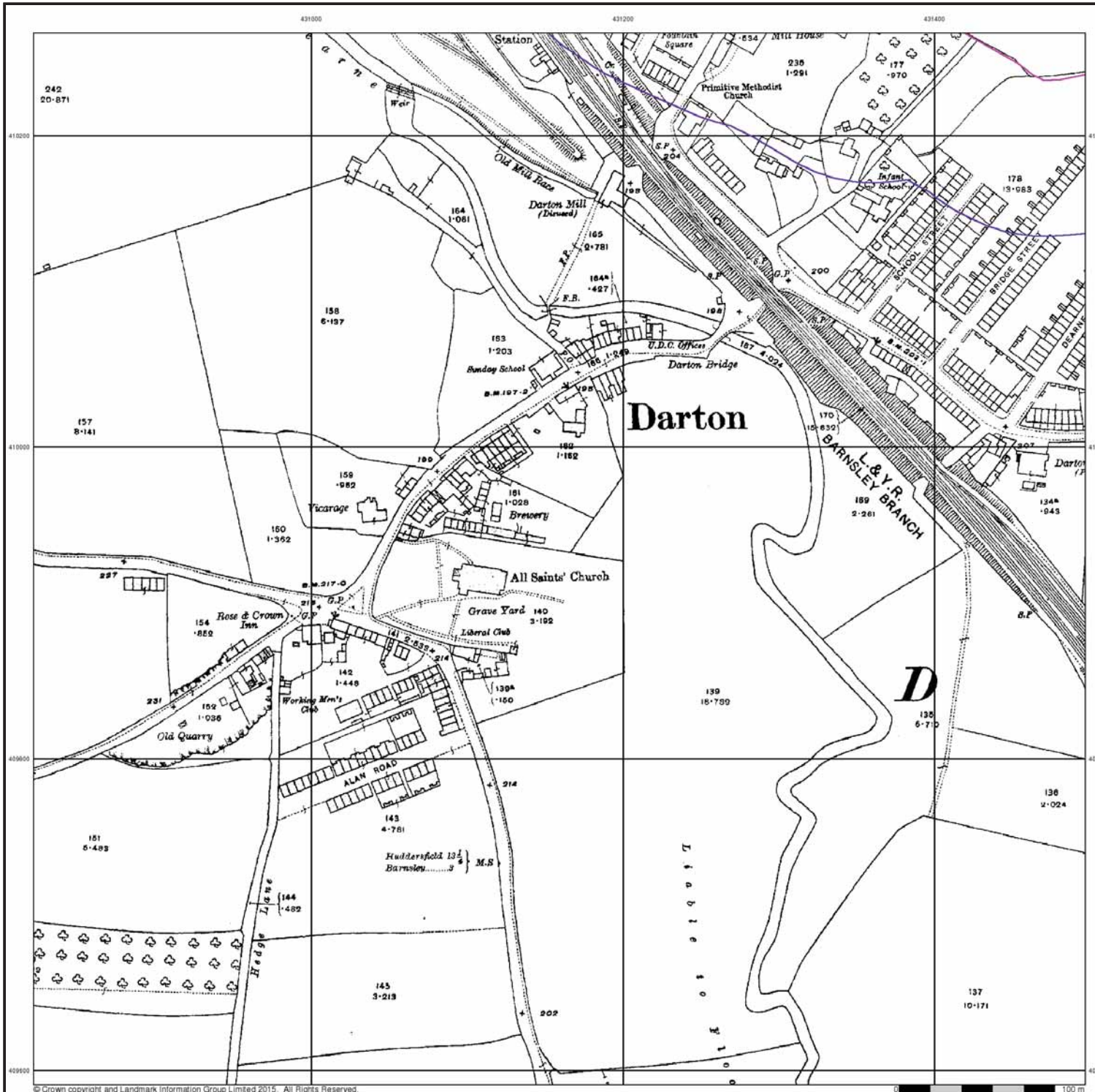
Order Details

Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	100

Site Details

Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

Landmark Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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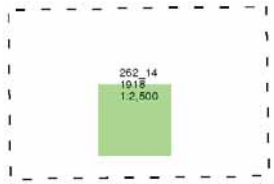
Yorkshire

Published 1918

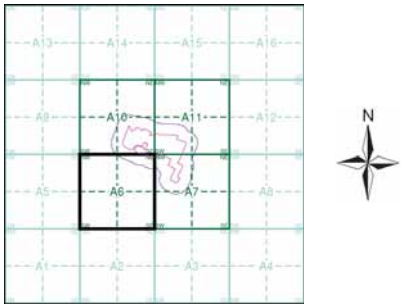
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A6



Order Details

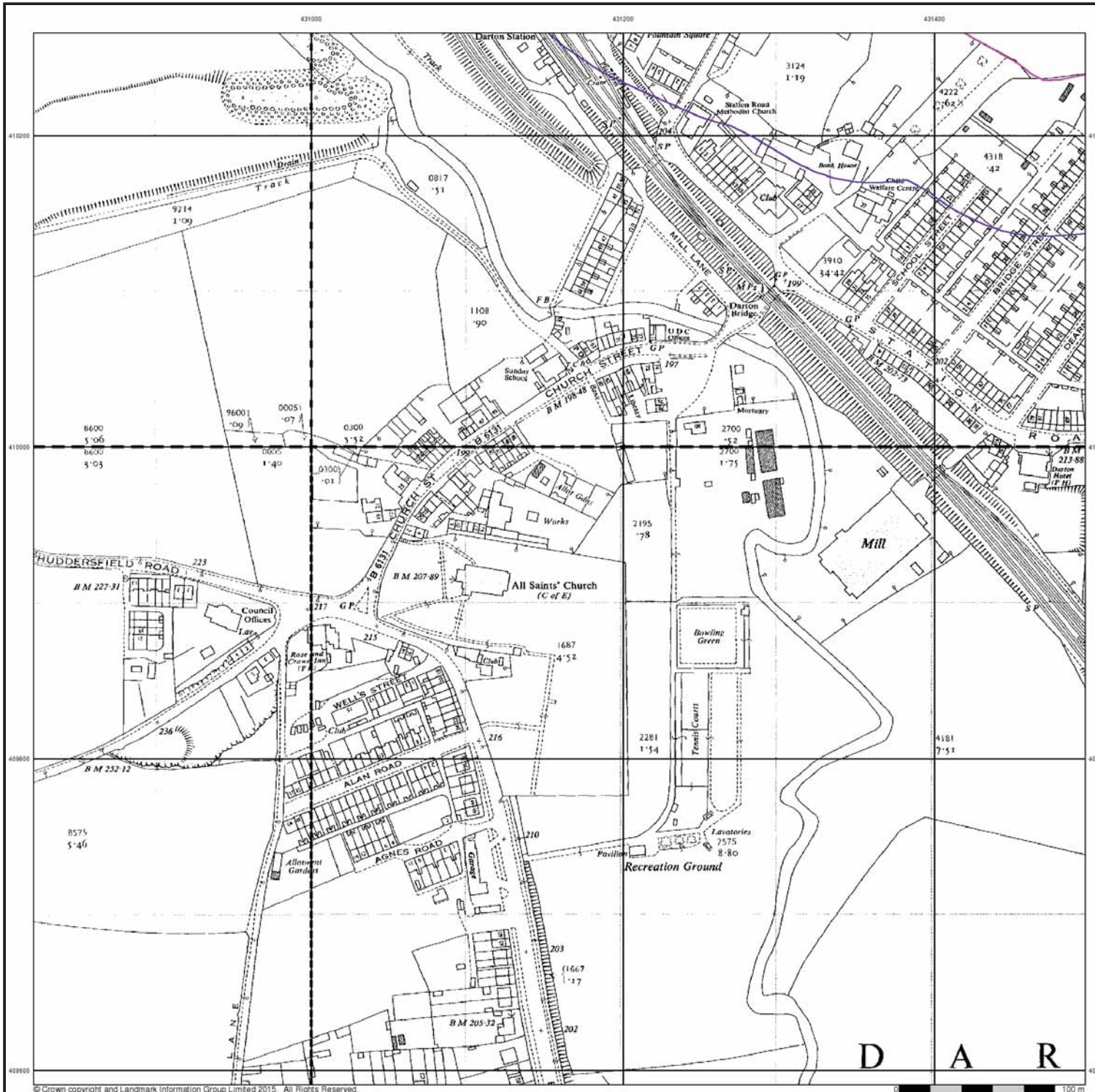
Order Number:	77520900_1_1
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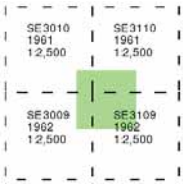
Ordnance Survey Plan

Published 1961 - 1962

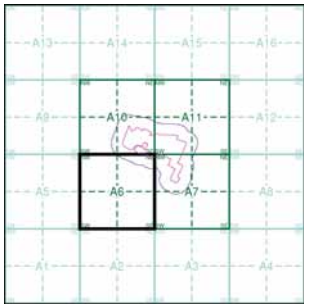
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A6



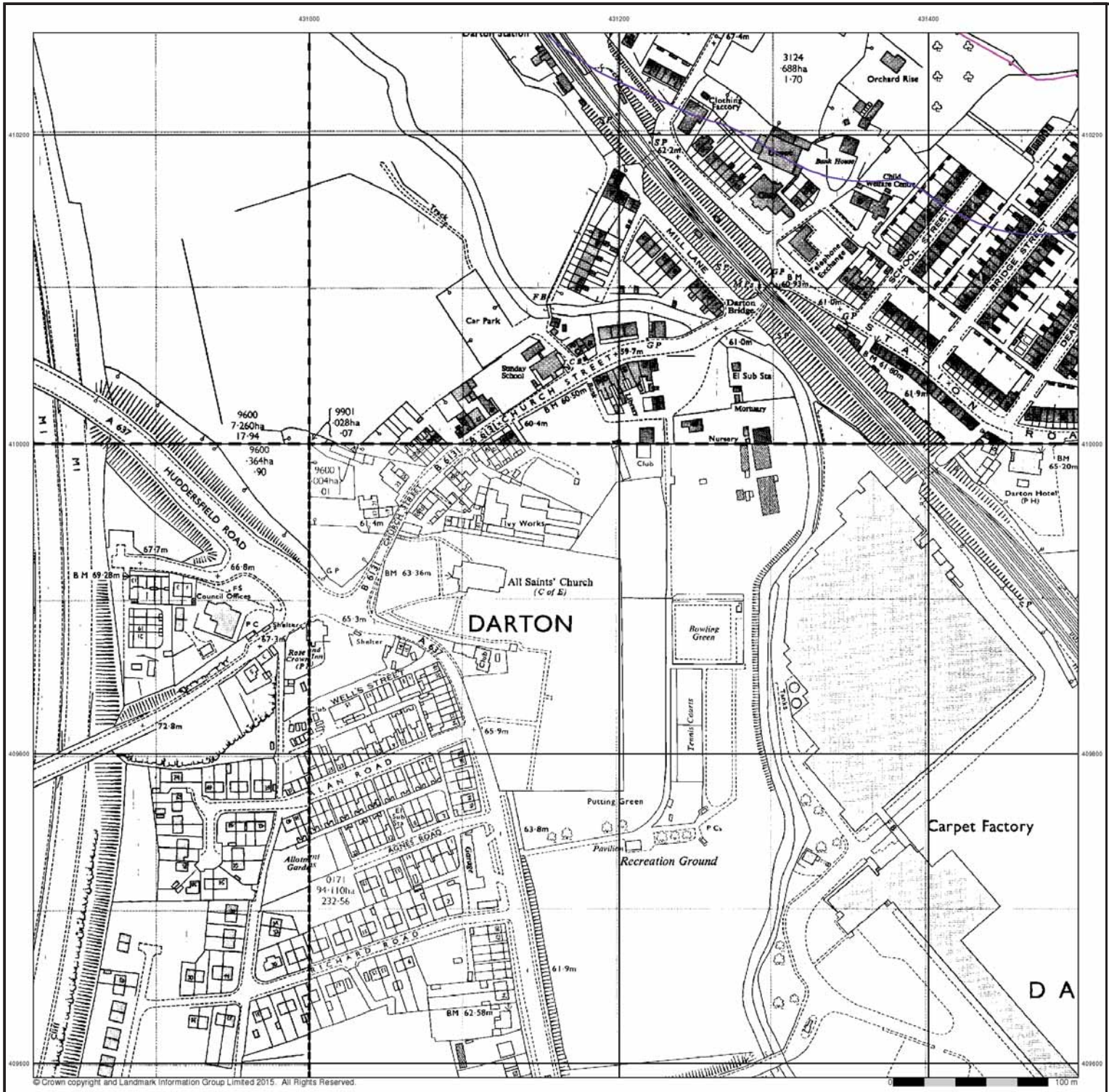
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National Grid Reference:	431520, 410300
Slice:	A
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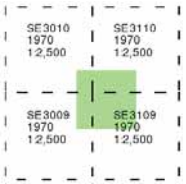
Ordnance Survey Plan

Published 1970

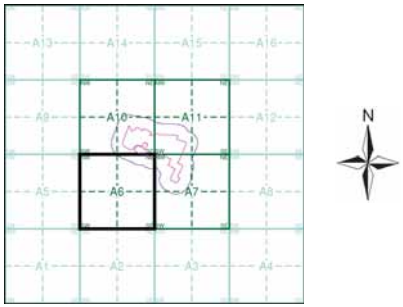
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A6

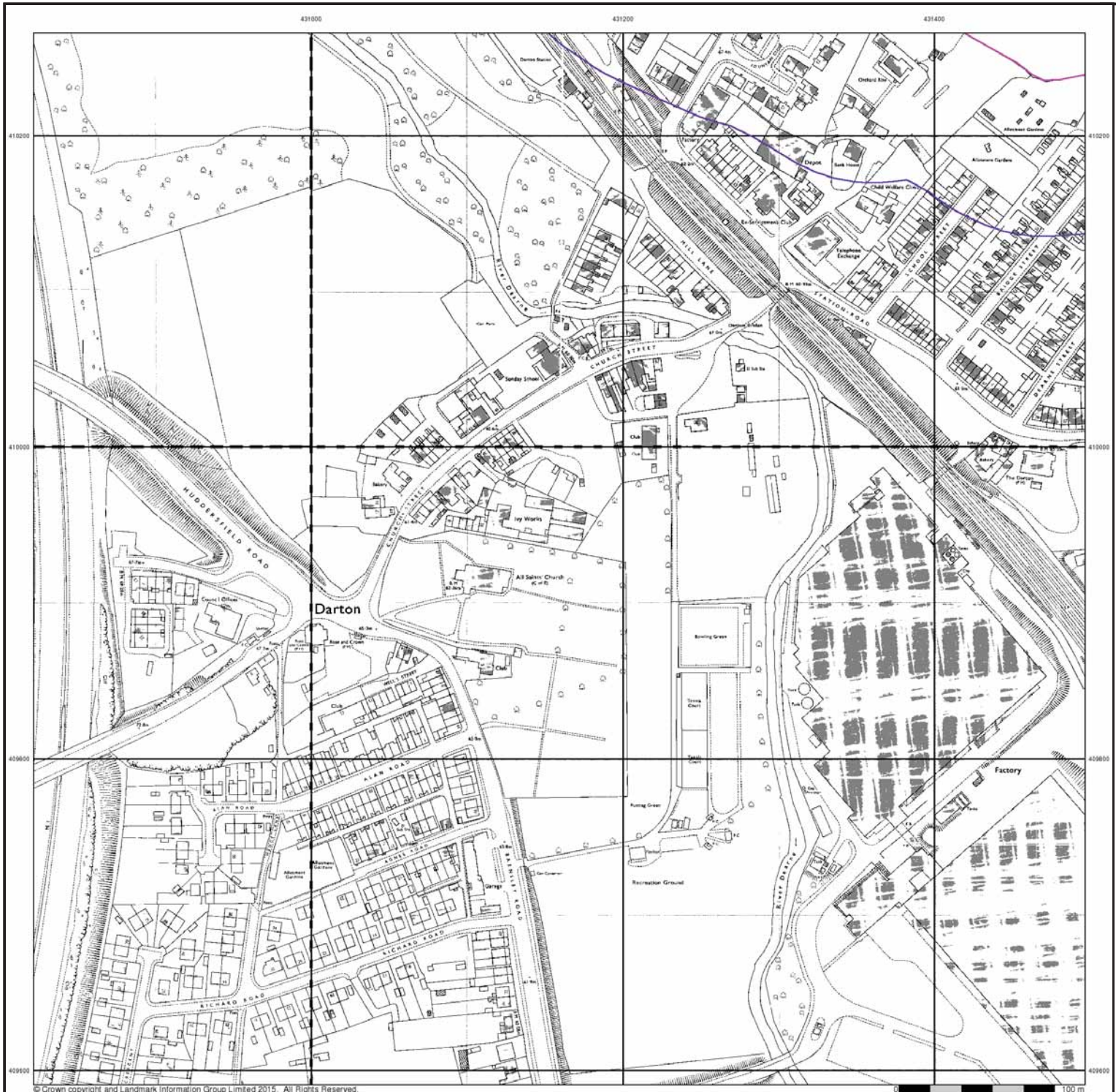


Order Details

Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	100

Site Details

Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ



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RSK

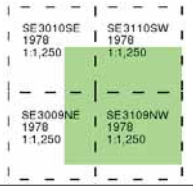
Ordnance Survey Plan

Published 1978

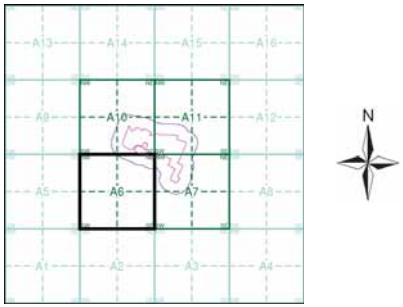
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A6



Order Details

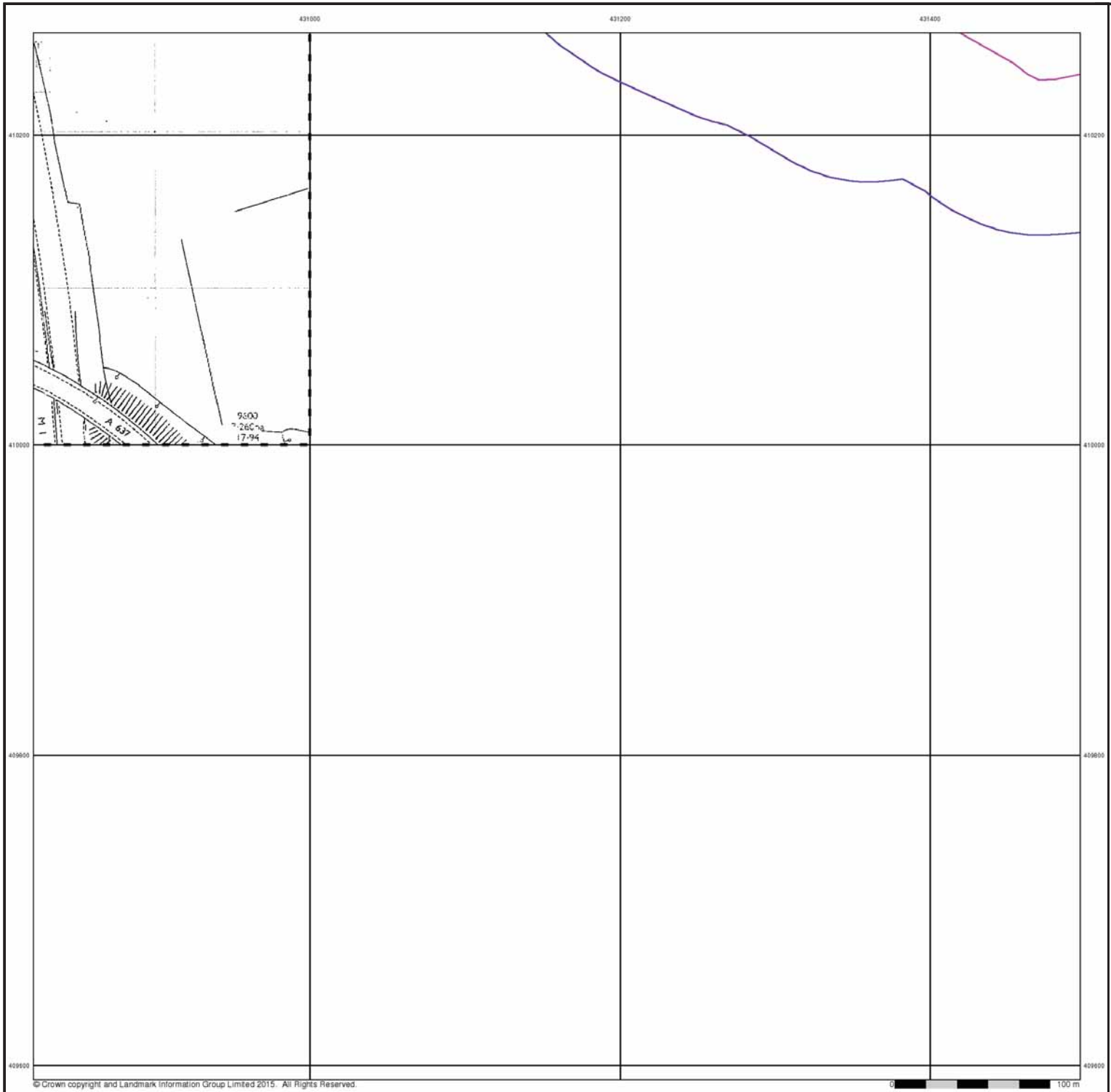
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Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	100

Site Details

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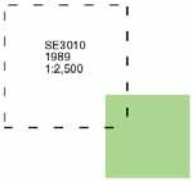
Additional SIMs

Published 1989

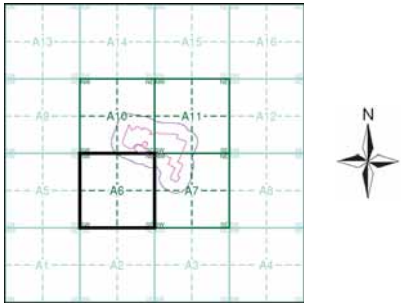
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A6



Order Details

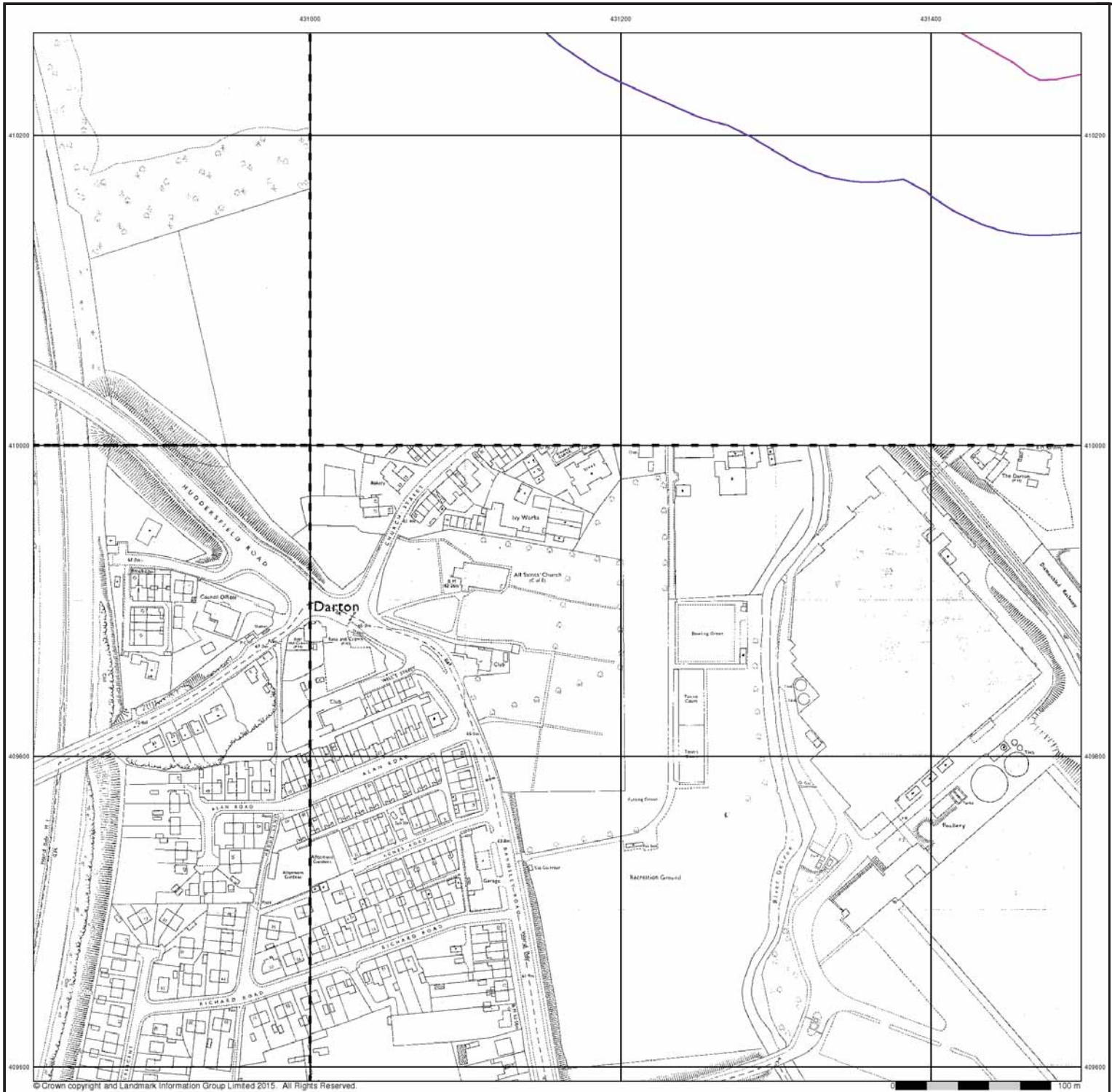
Order Number:	77520900_1_1
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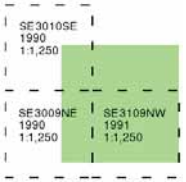
Additional SIMs

Published 1990 - 1991

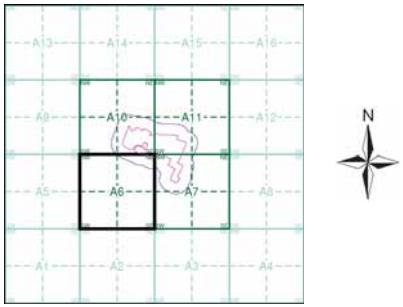
Source map scale - 1:1,250

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Map Name(s) and Date(s)



Historical Map - Segment A6



Order Details

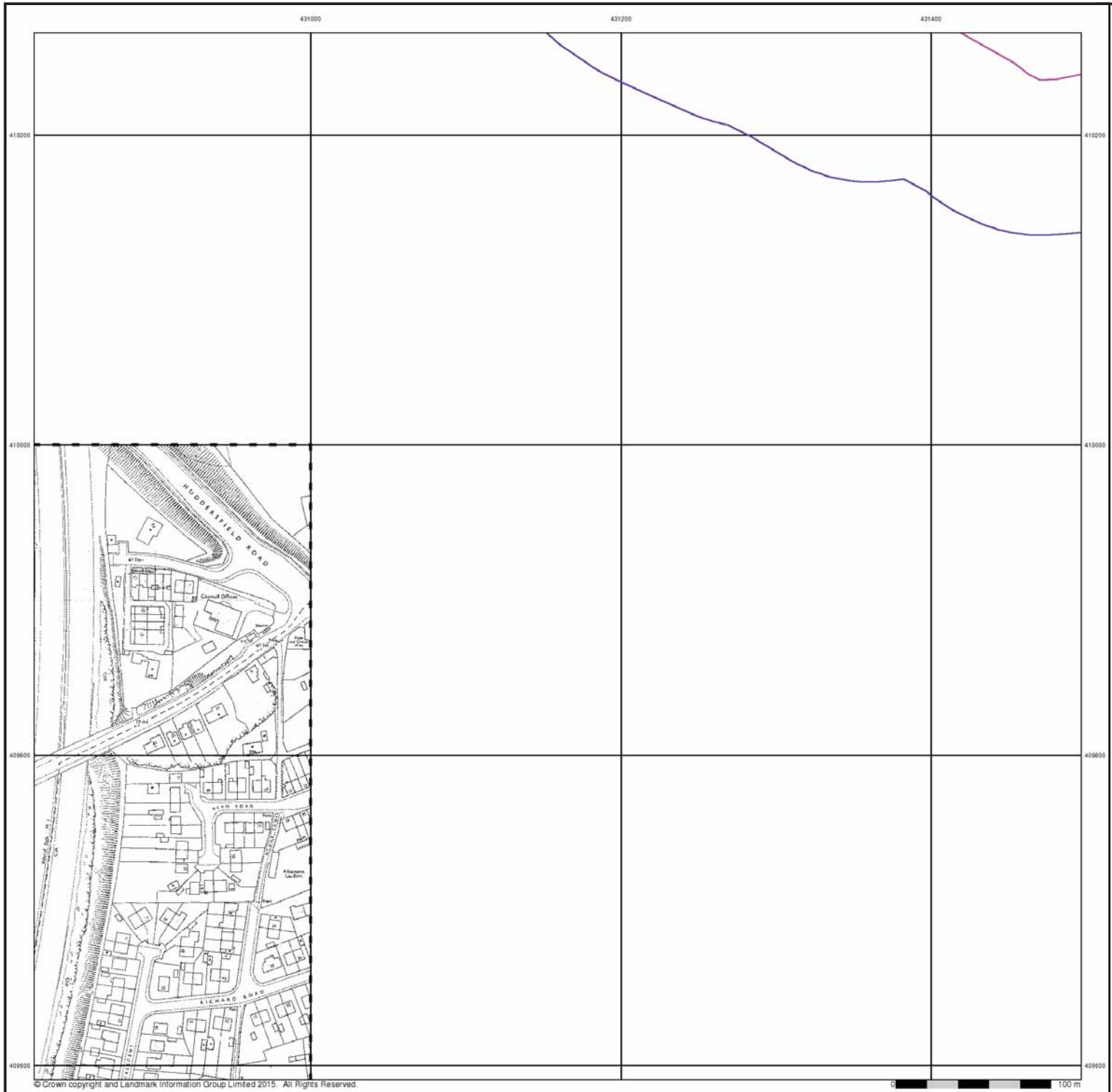
Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
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Site Details

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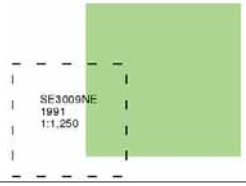
Additional SIMs

Published 1991

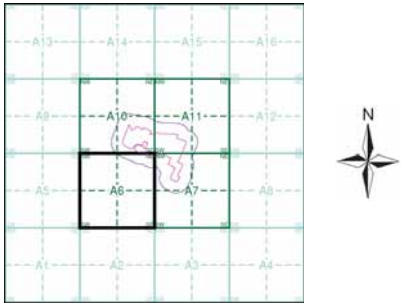
Source map scale - 1:1,250

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Map Name(s) and Date(s)



Historical Map - Segment A6



Order Details

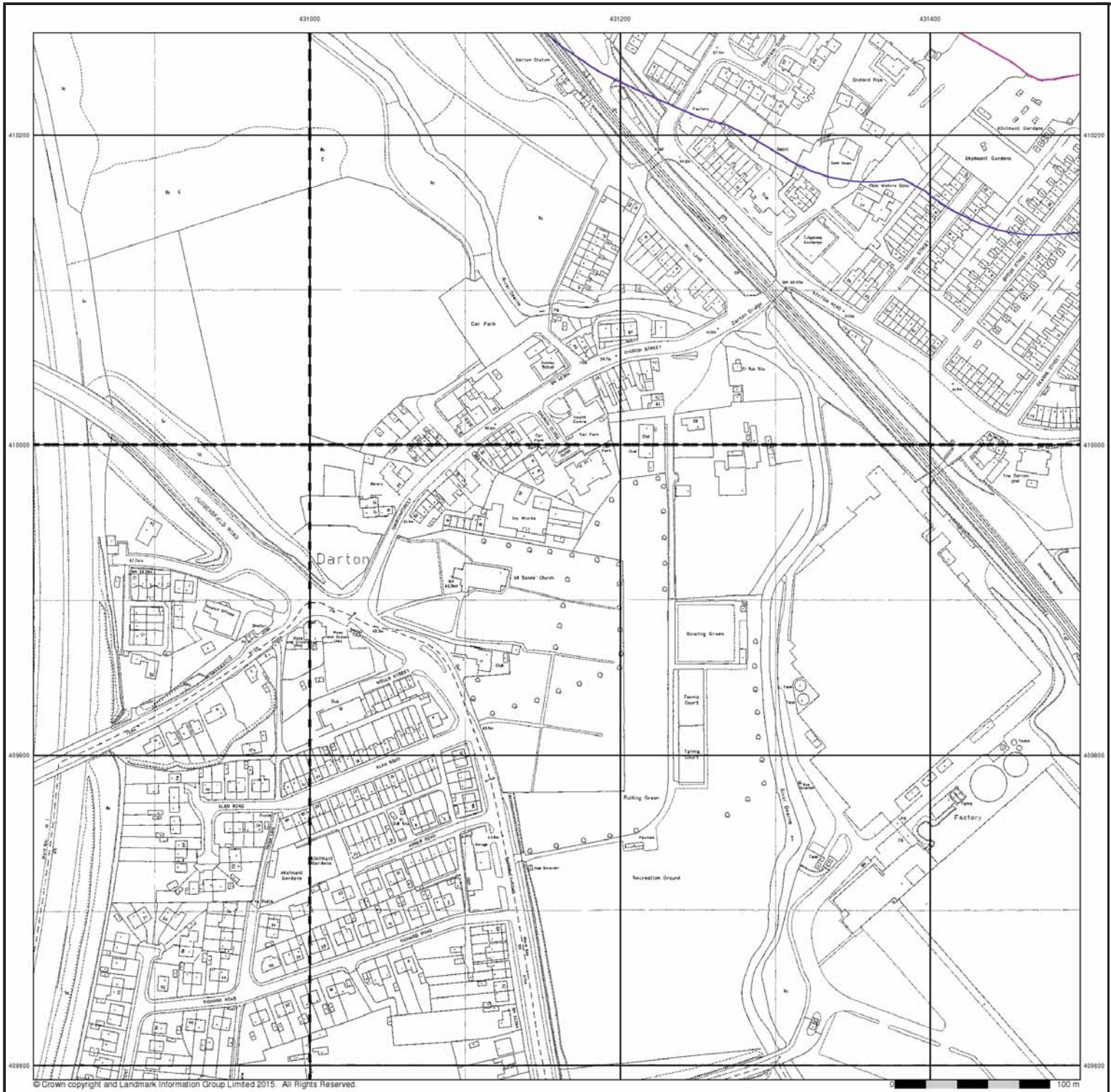
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National Grid Reference:	431520, 410300
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Site Area (Ha):	11.89
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Site Details

Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

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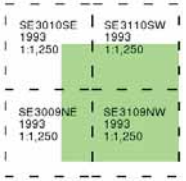
Large-Scale National Grid Data

Published 1993

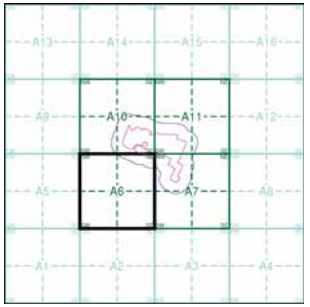
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A6



Order Details

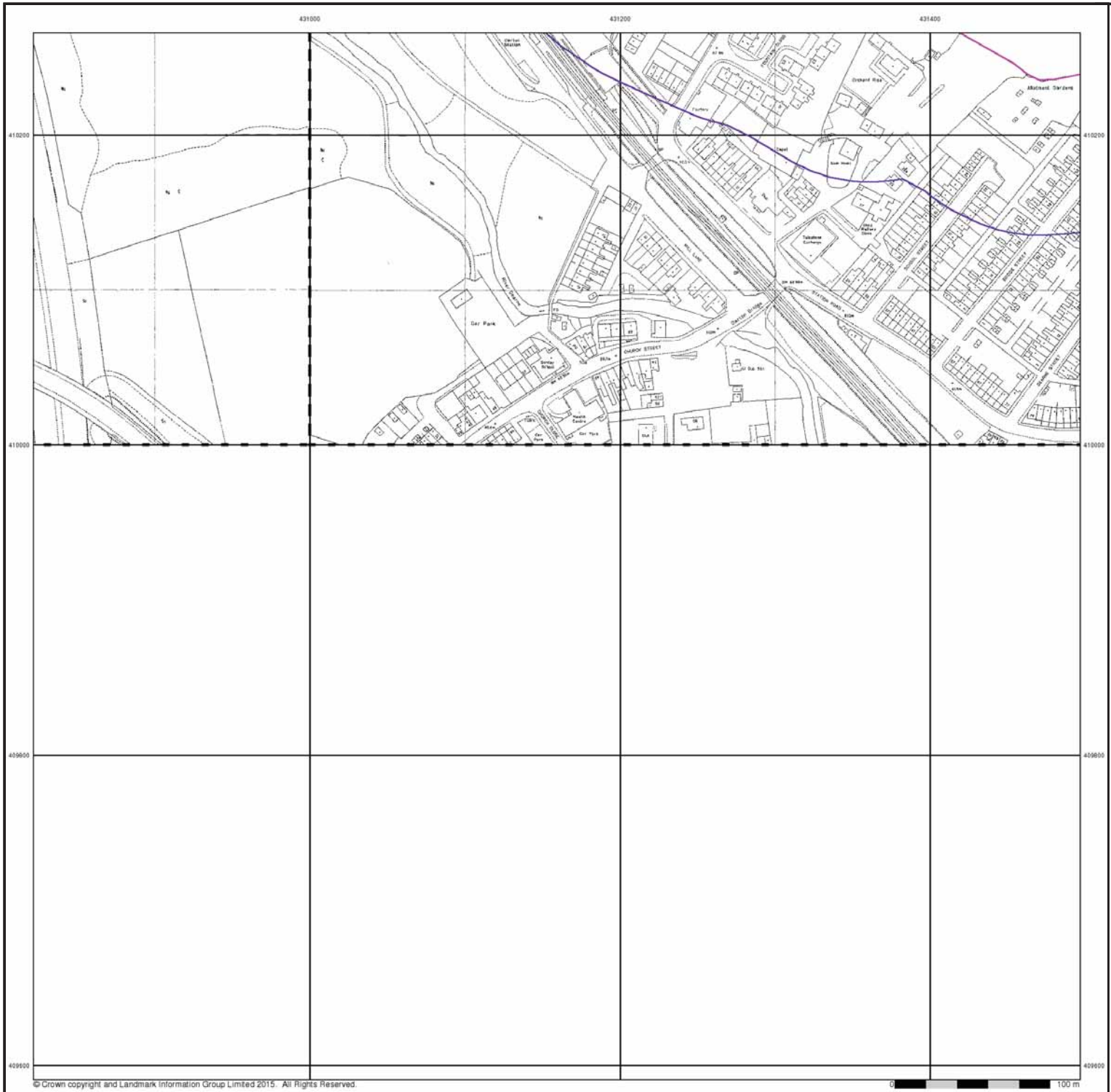
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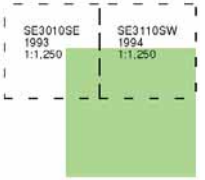
Large-Scale National Grid Data

Published 1993 - 1994

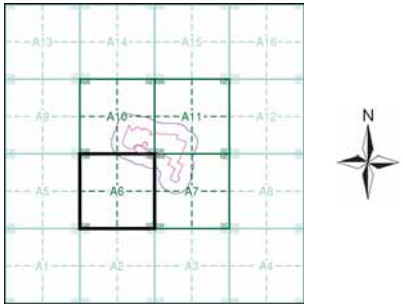
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A6



Order Details

Order Number:	77520900_1_1
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Site Details

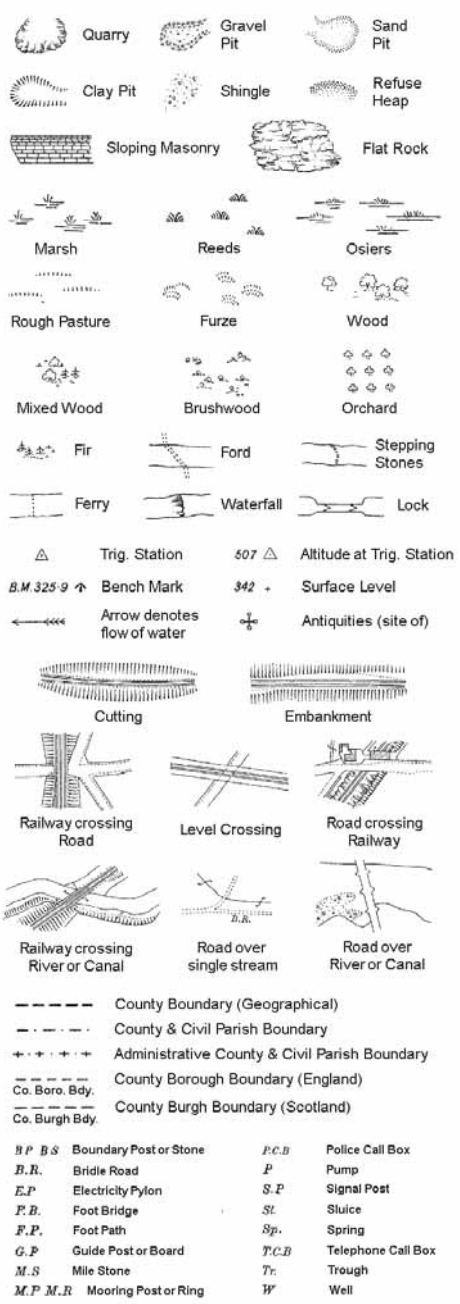
Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

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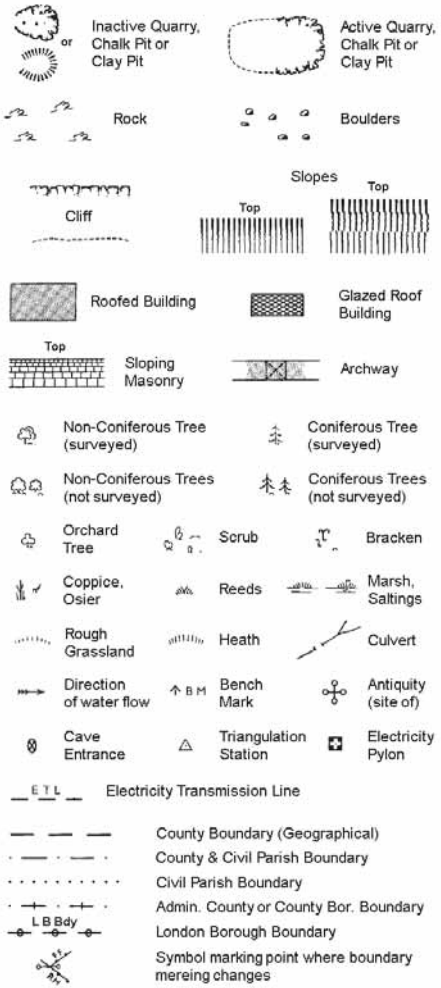
Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



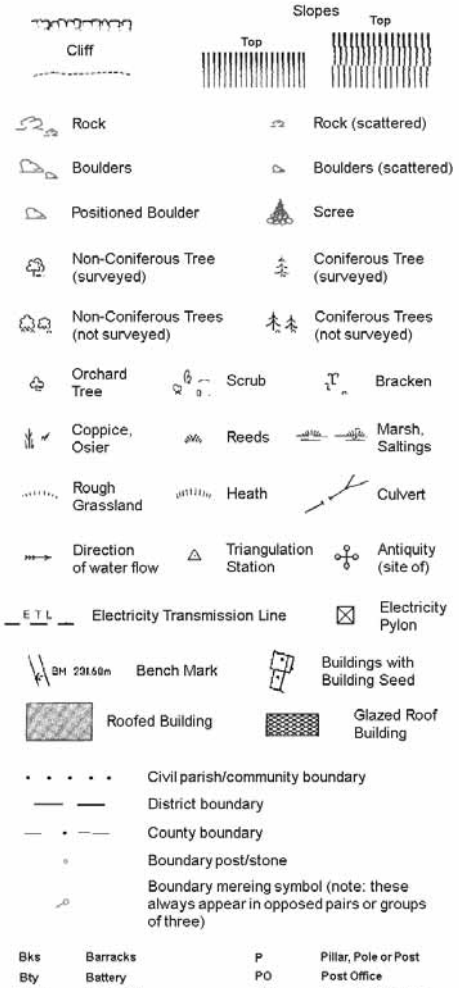
B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	St.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



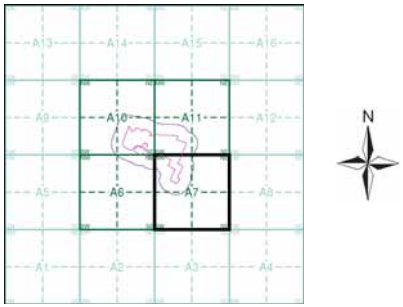
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

RSK

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Yorkshire	1:2,500	1893	2
Yorkshire	1:2,500	1906	3
Yorkshire	1:2,500	1918	4
Ordnance Survey Plan	1:2,500	1961 - 1962	5
Ordnance Survey Plan	1:2,500	1967 - 1974	6
Ordnance Survey Plan	1:1,250	1977 - 1978	7
Additional SIMs	1:1,250	1983 - 1991	8
Additional SIMs	1:2,500	1984	9
Additional SIMs	1:1,250	1990 - 1991	10
Large-Scale National Grid Data	1:1,250	1993	11
Large-Scale National Grid Data	1:1,250	1993 - 1994	12
Large-Scale National Grid Data	1:1,250	1994 - 1995	13
Large-Scale National Grid Data	1:1,250	1995	14
Large-Scale National Grid Data	1:1,250	1996	15

Historical Map - Segment A7



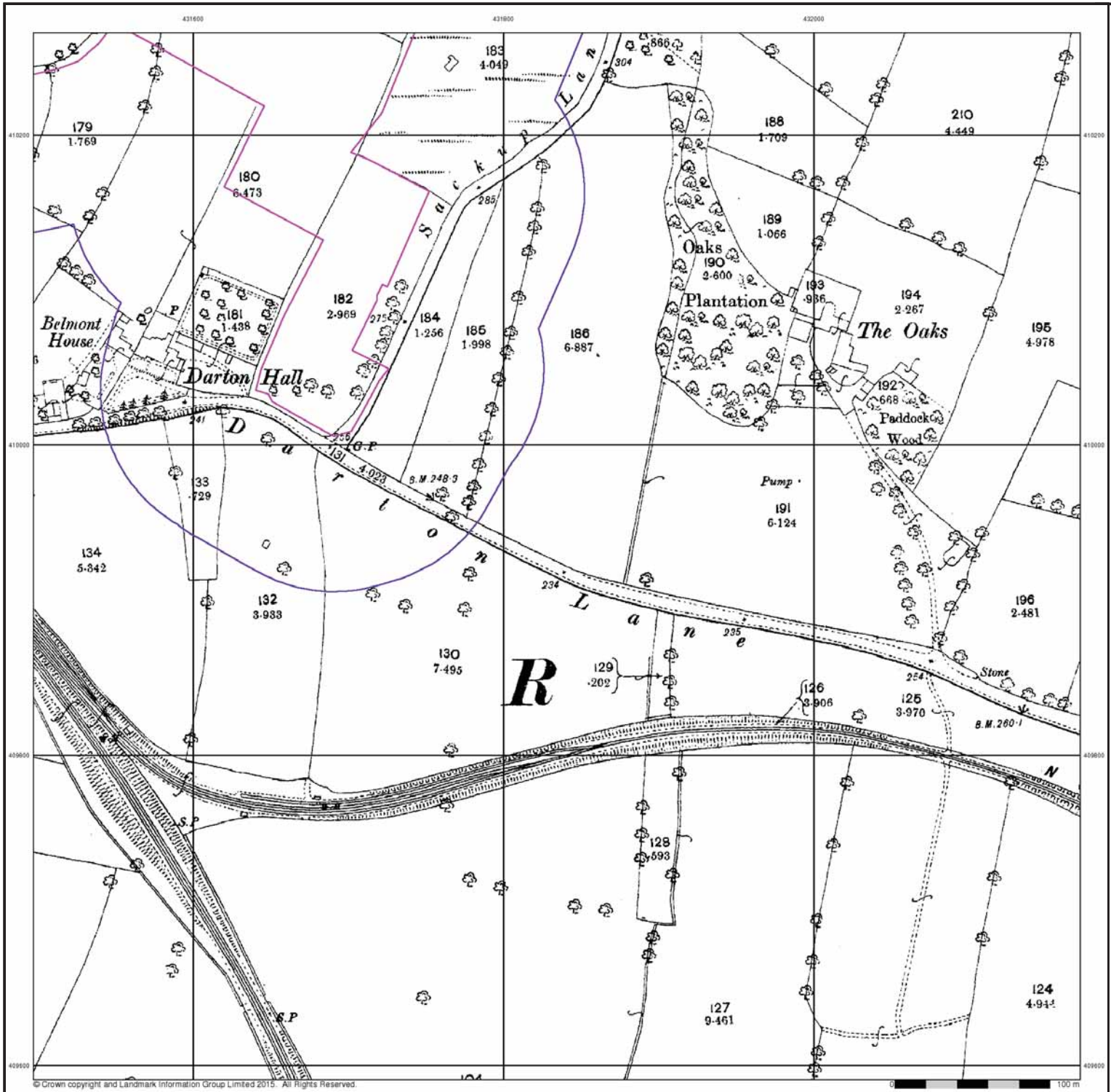
Order Details

Order Number: 77520900_1_1
Customer Ref: 301645
National Grid Reference: 431520, 410300
Slice: A
Site Area (Ha): 11.89
Search Buffer (m): 100

Site Details

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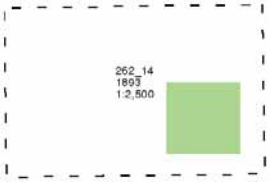
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Published 1893

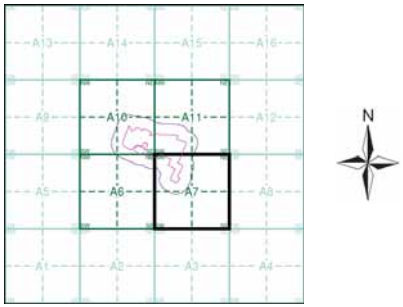
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A7



Order Details

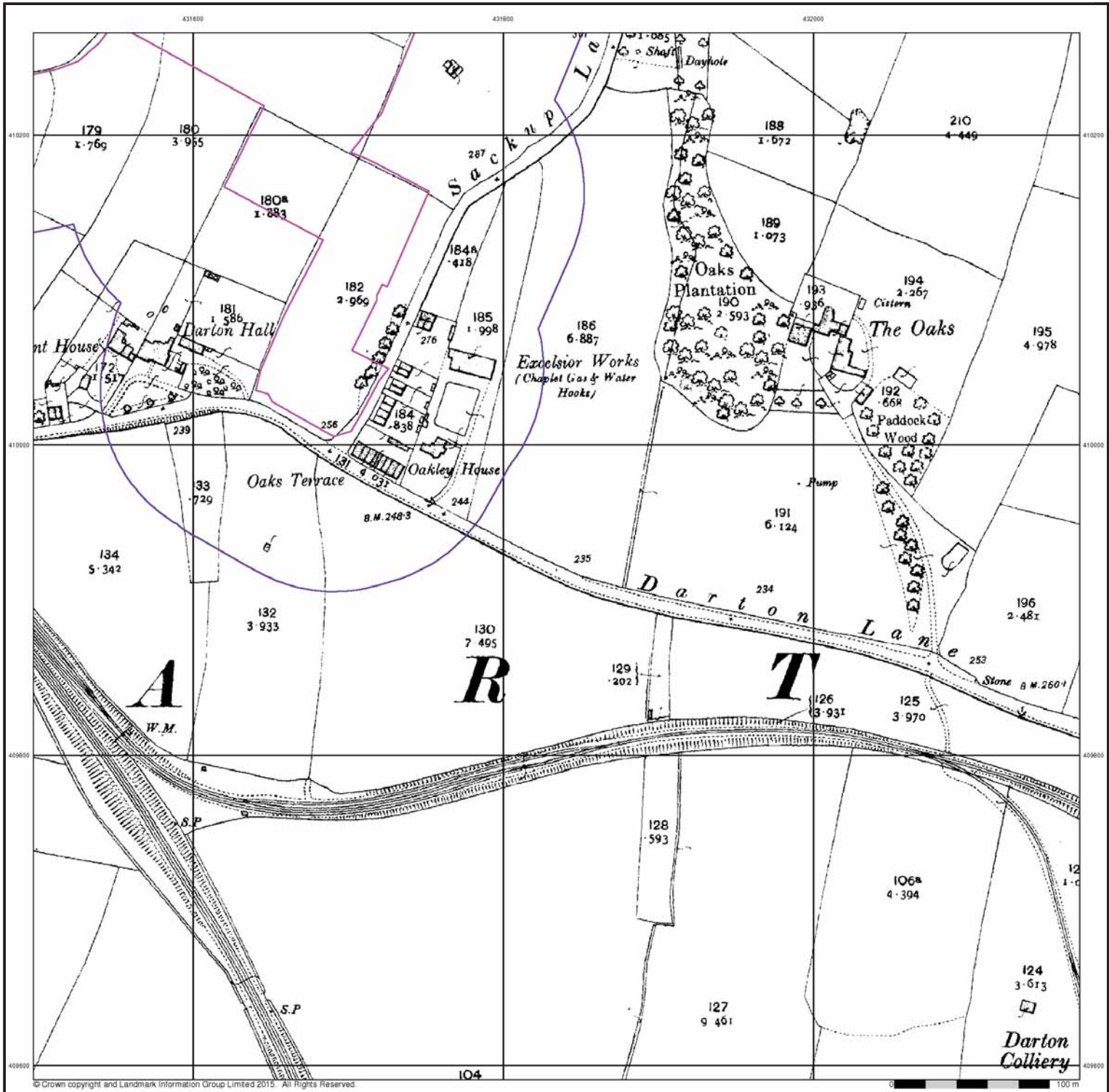
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Site Area (Ha):	11.89
Search Buffer (m):	100

Site Details

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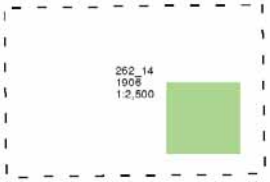
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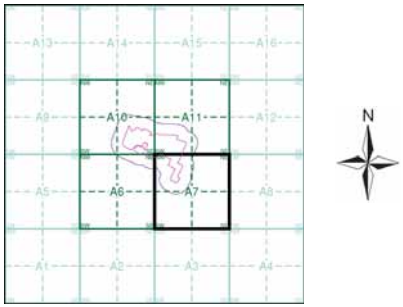
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Map Name(s) and Date(s)



Historical Map - Segment A7



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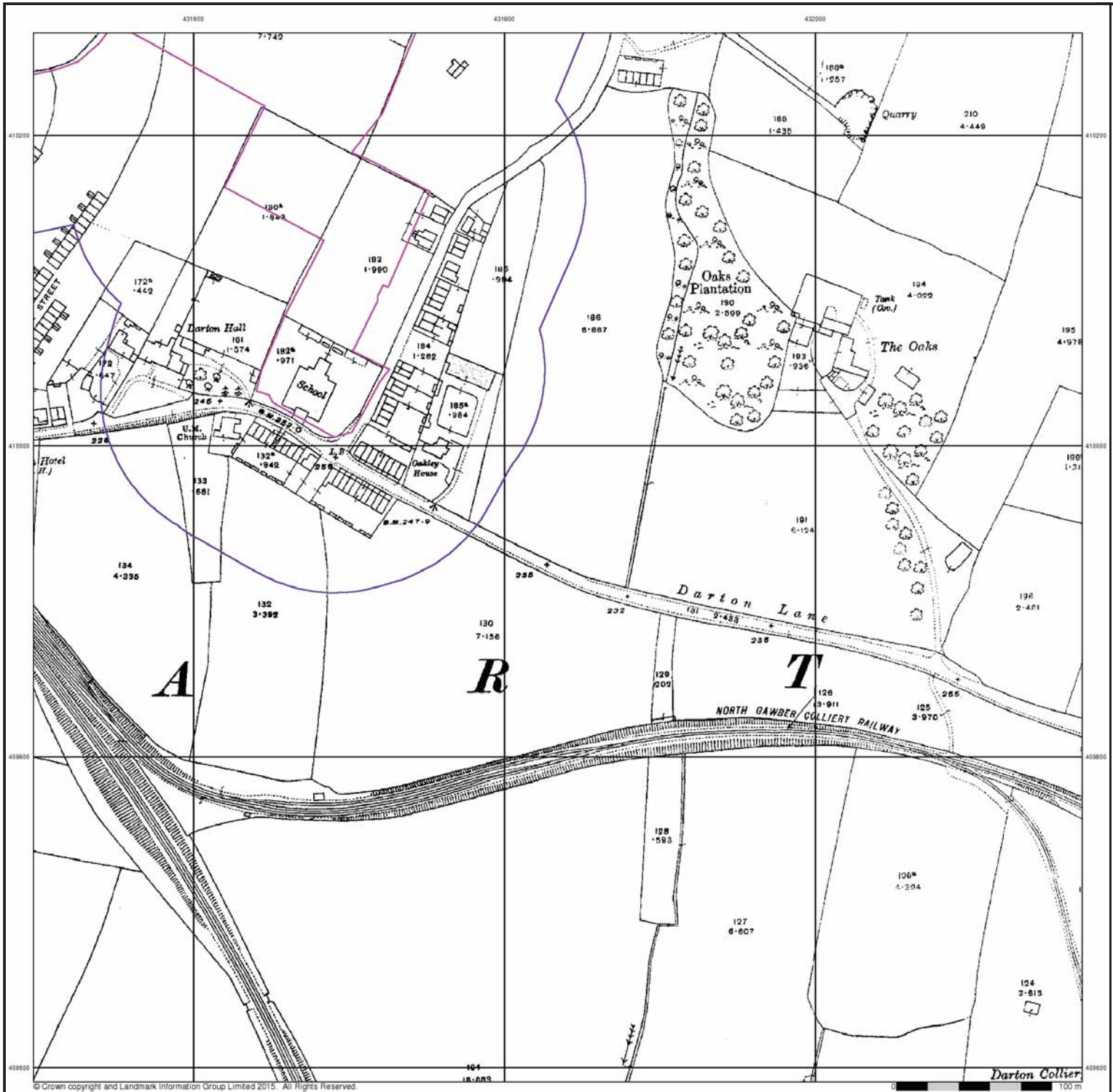
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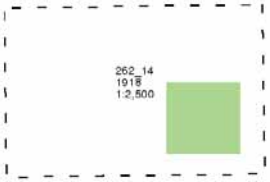
Yorkshire

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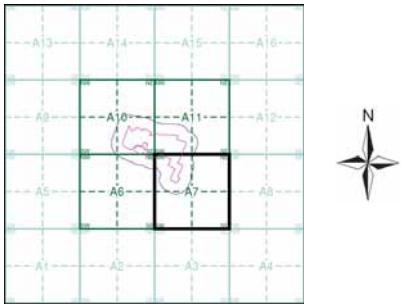
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Map Name(s) and Date(s)



Historical Map - Segment A7



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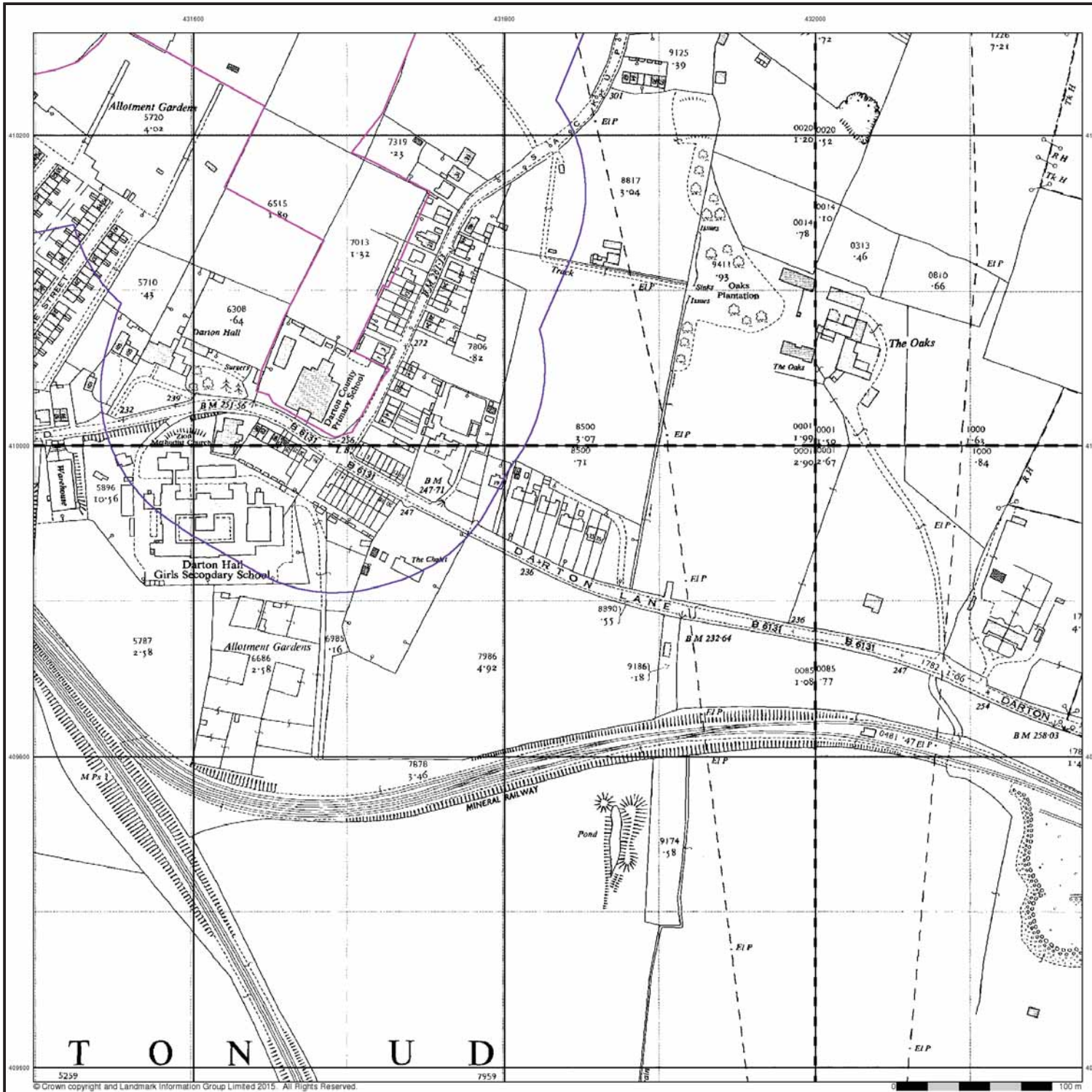
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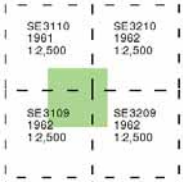
Ordnance Survey Plan

Published 1961 - 1962

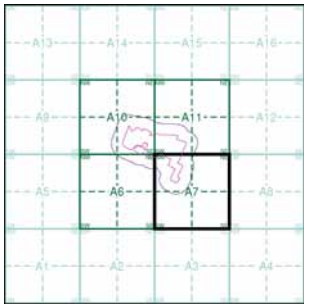
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A7



Order Details

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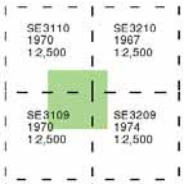
Ordnance Survey Plan

Published 1967 - 1974

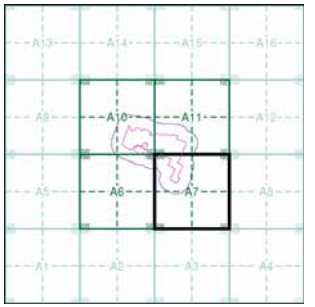
Source map scale - 1:2,500

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Historical Map - Segment A7



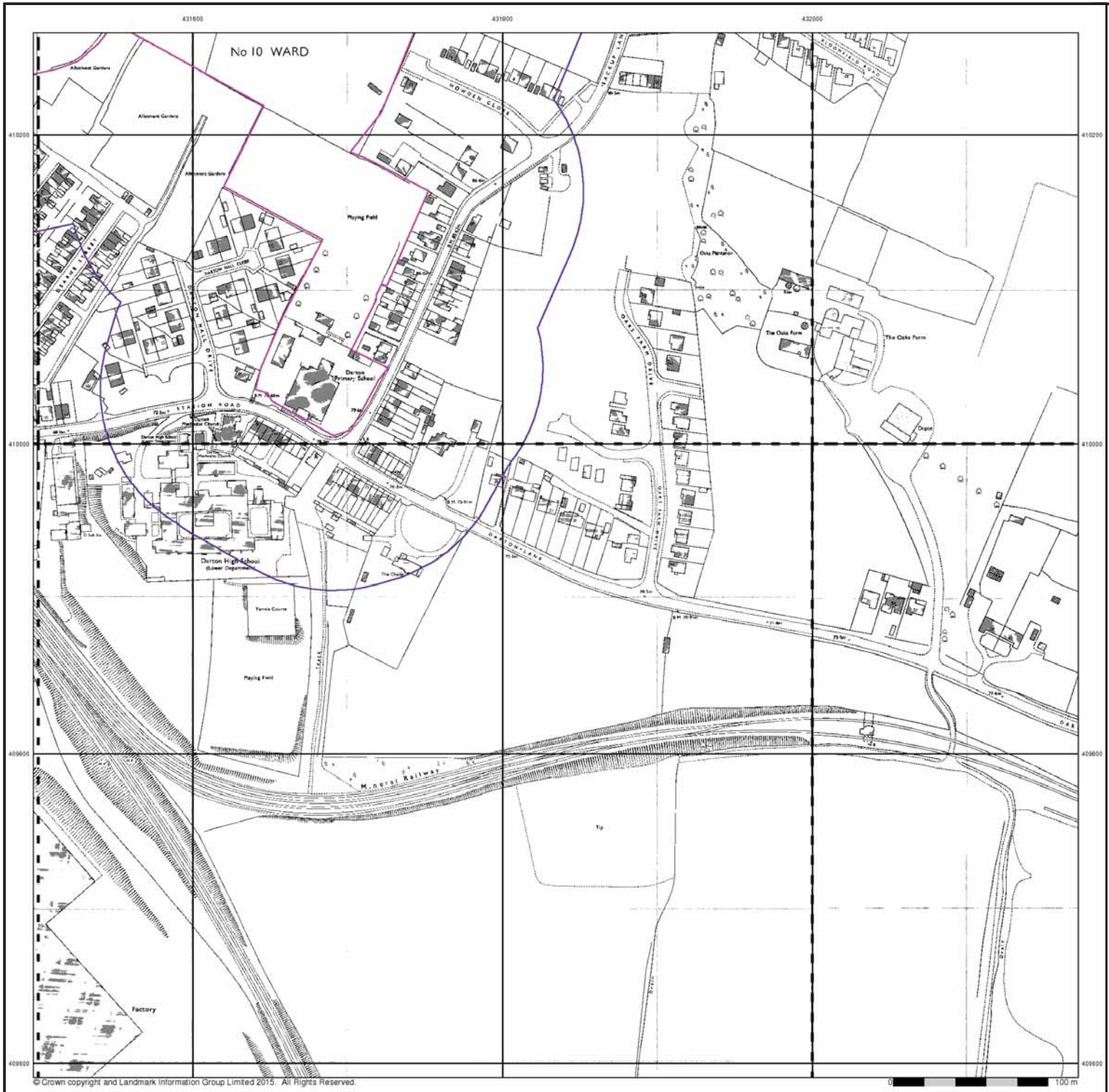
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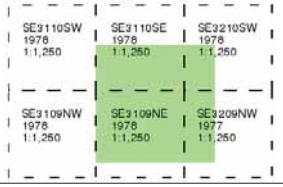
Ordnance Survey Plan

Published 1977 - 1978

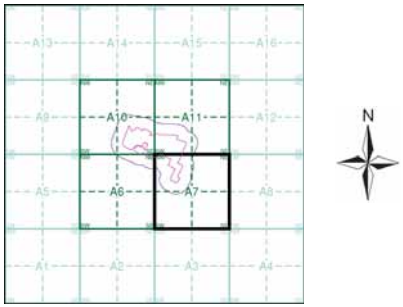
Source map scale - 1:1,250

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Map Name(s) and Date(s)



Historical Map - Segment A7



Order Details

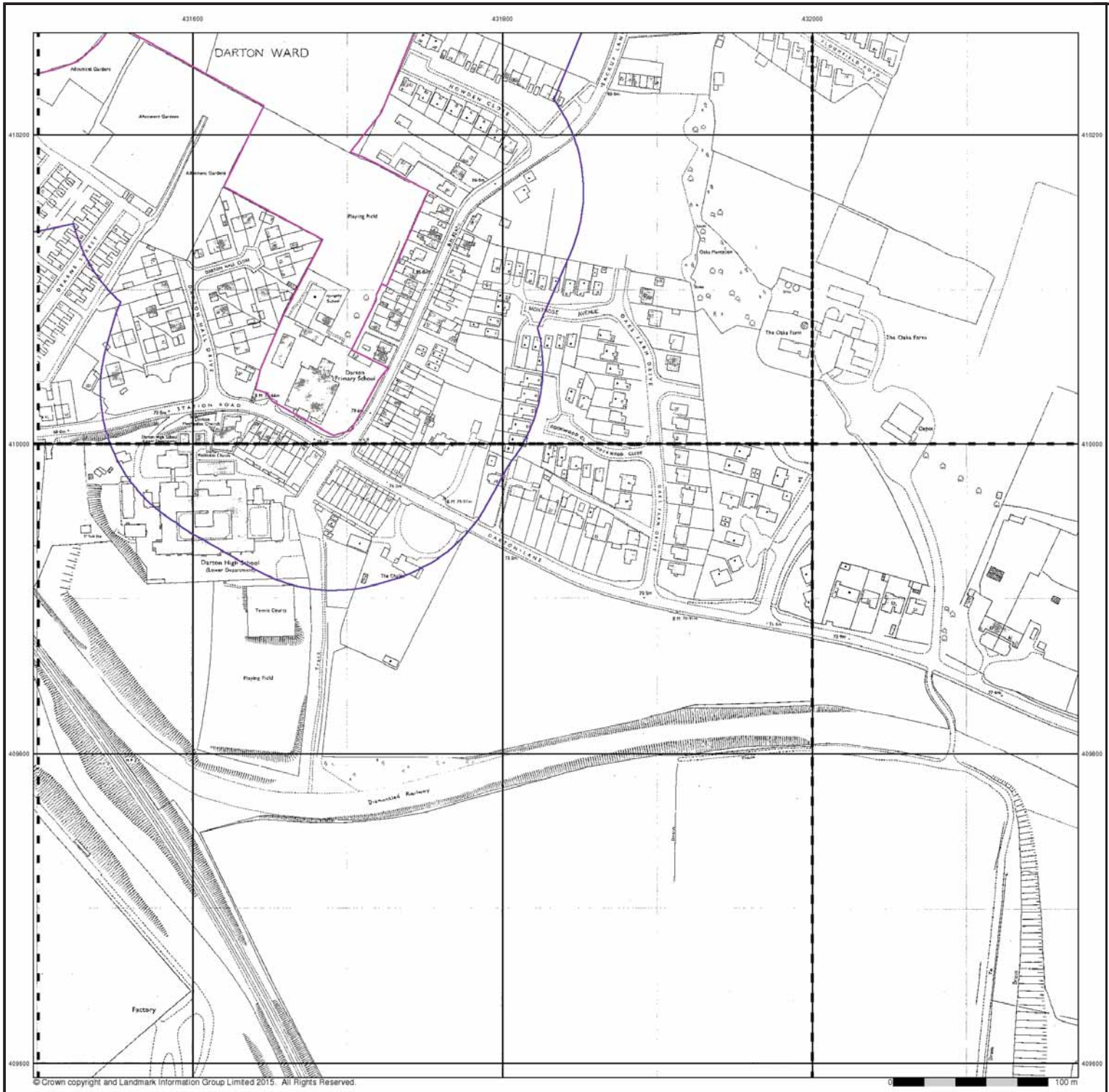
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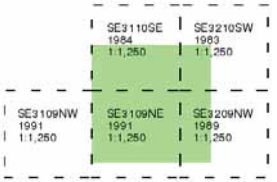
Additional SIMs

Published 1983 - 1991

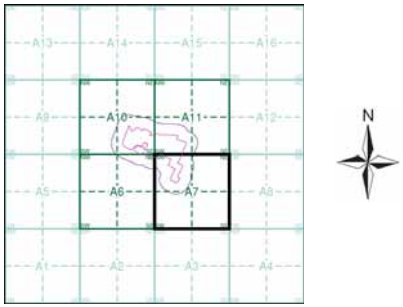
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A7



Order Details

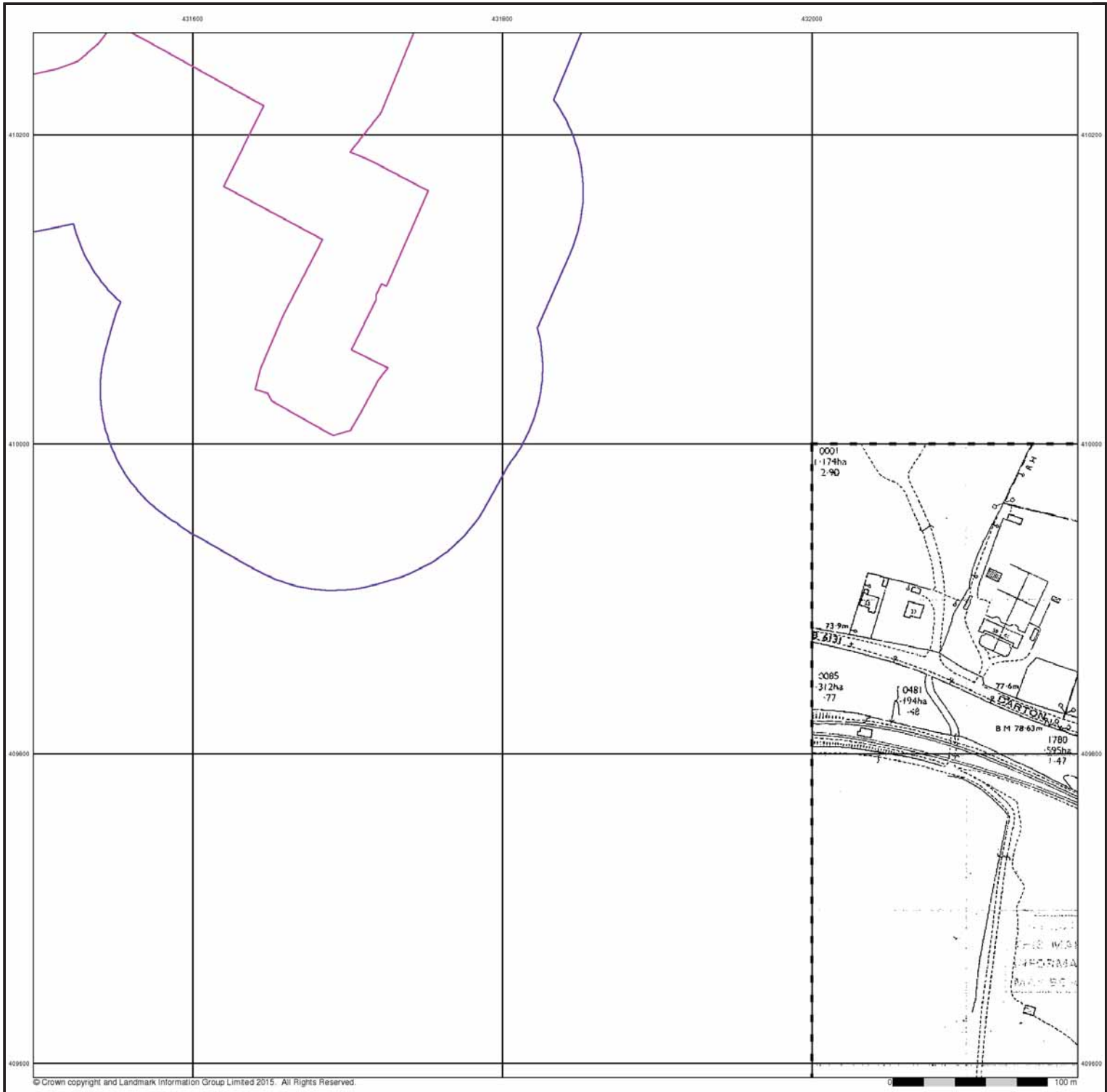
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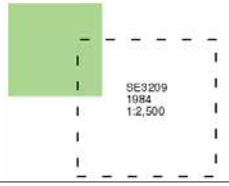
Additional SIMs

Published 1984

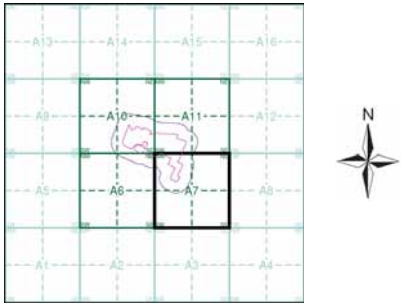
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A7



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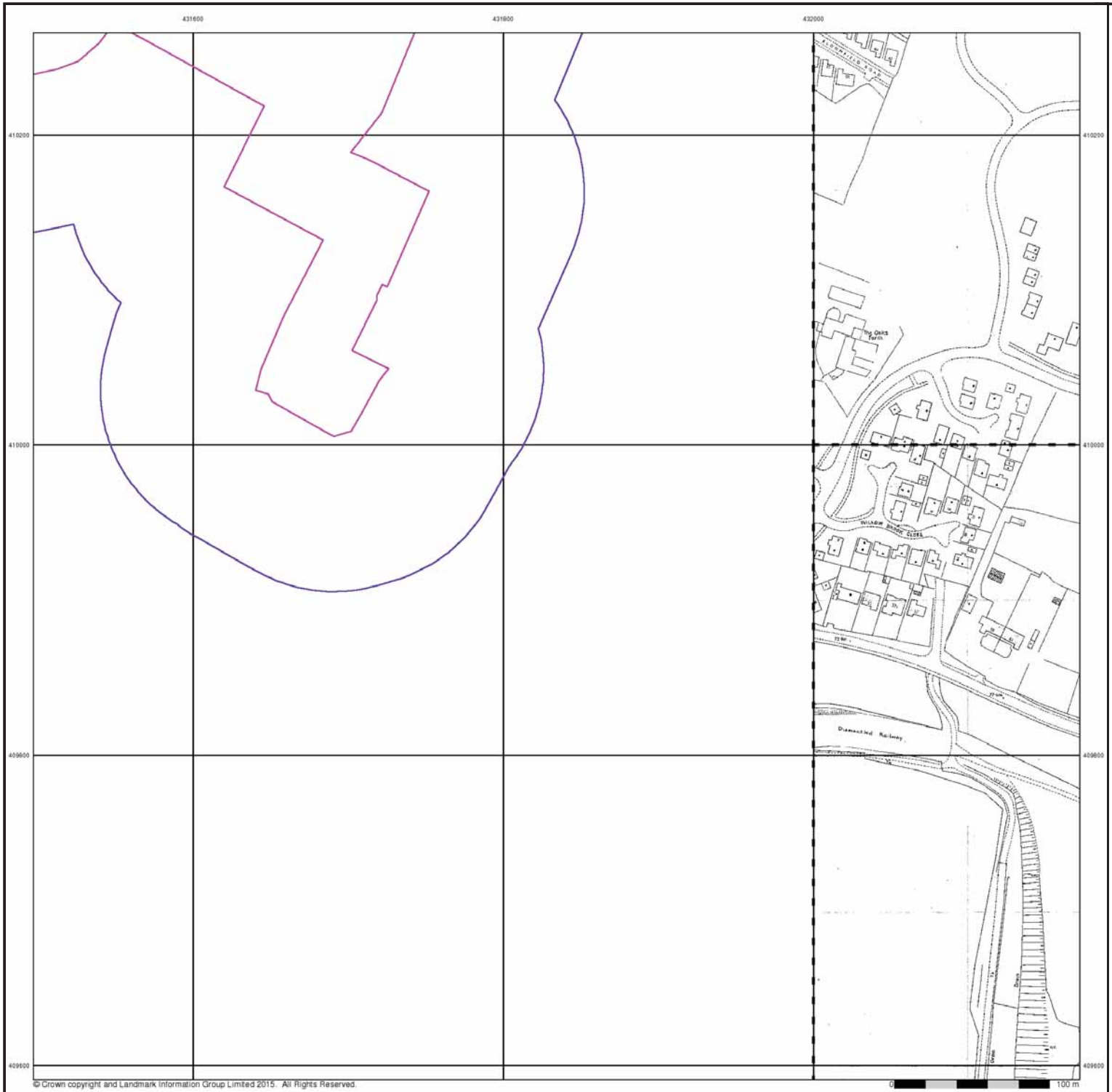
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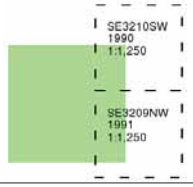
Additional SIMs

Published 1990 - 1991

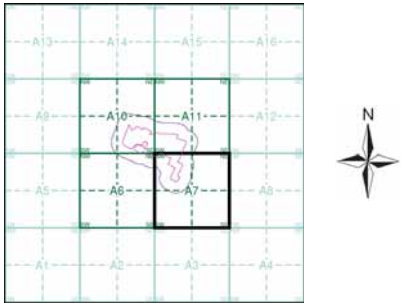
Source map scale - 1:1,250

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Map Name(s) and Date(s)



Historical Map - Segment A7



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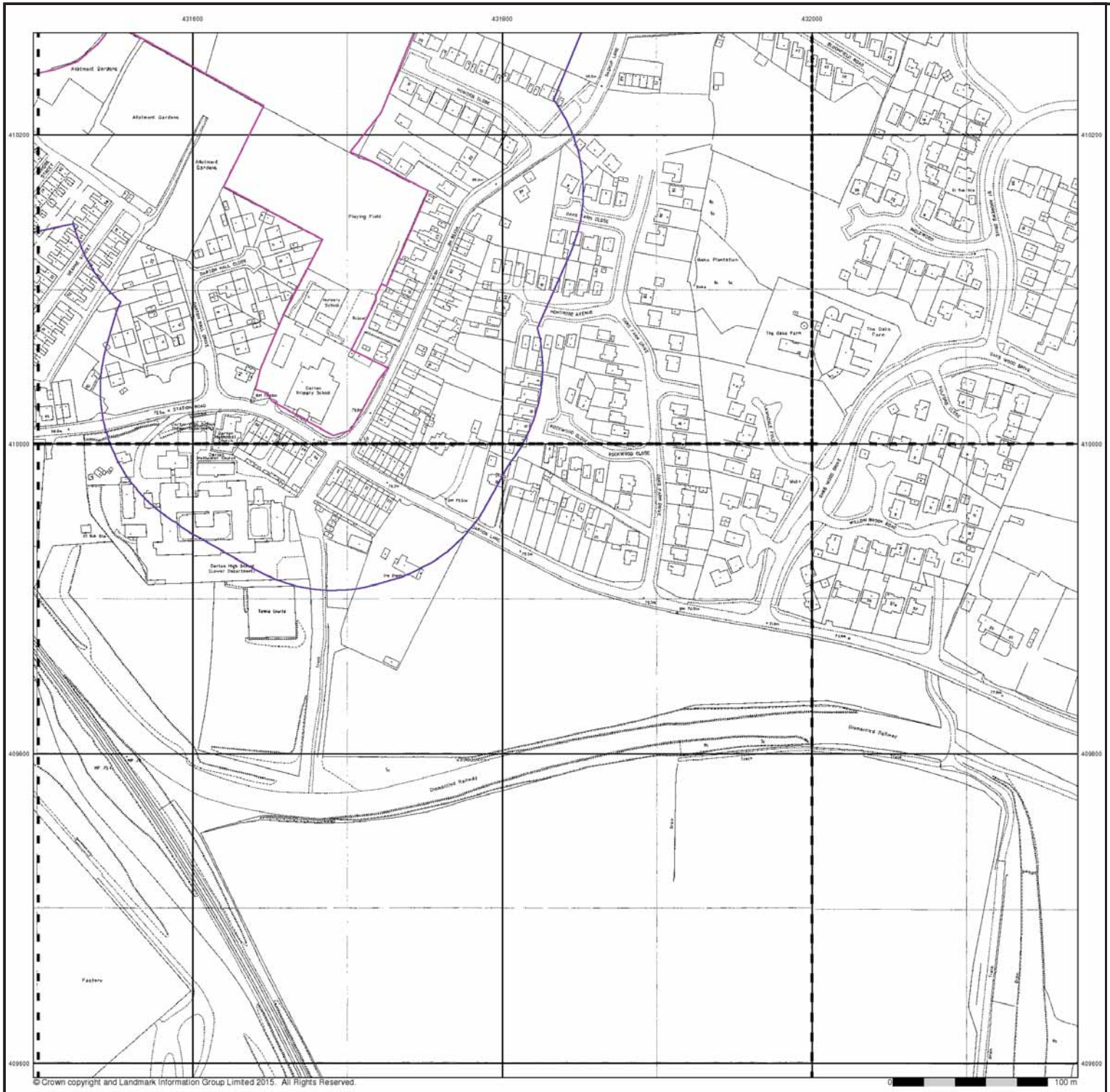
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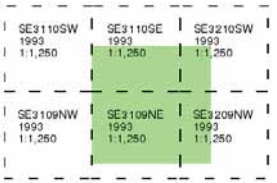
Large-Scale National Grid Data

Published 1993

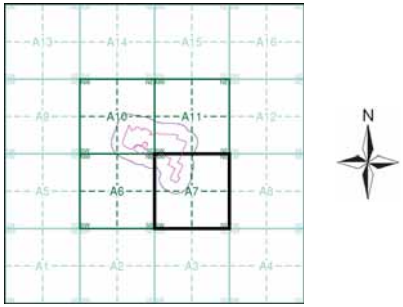
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A7



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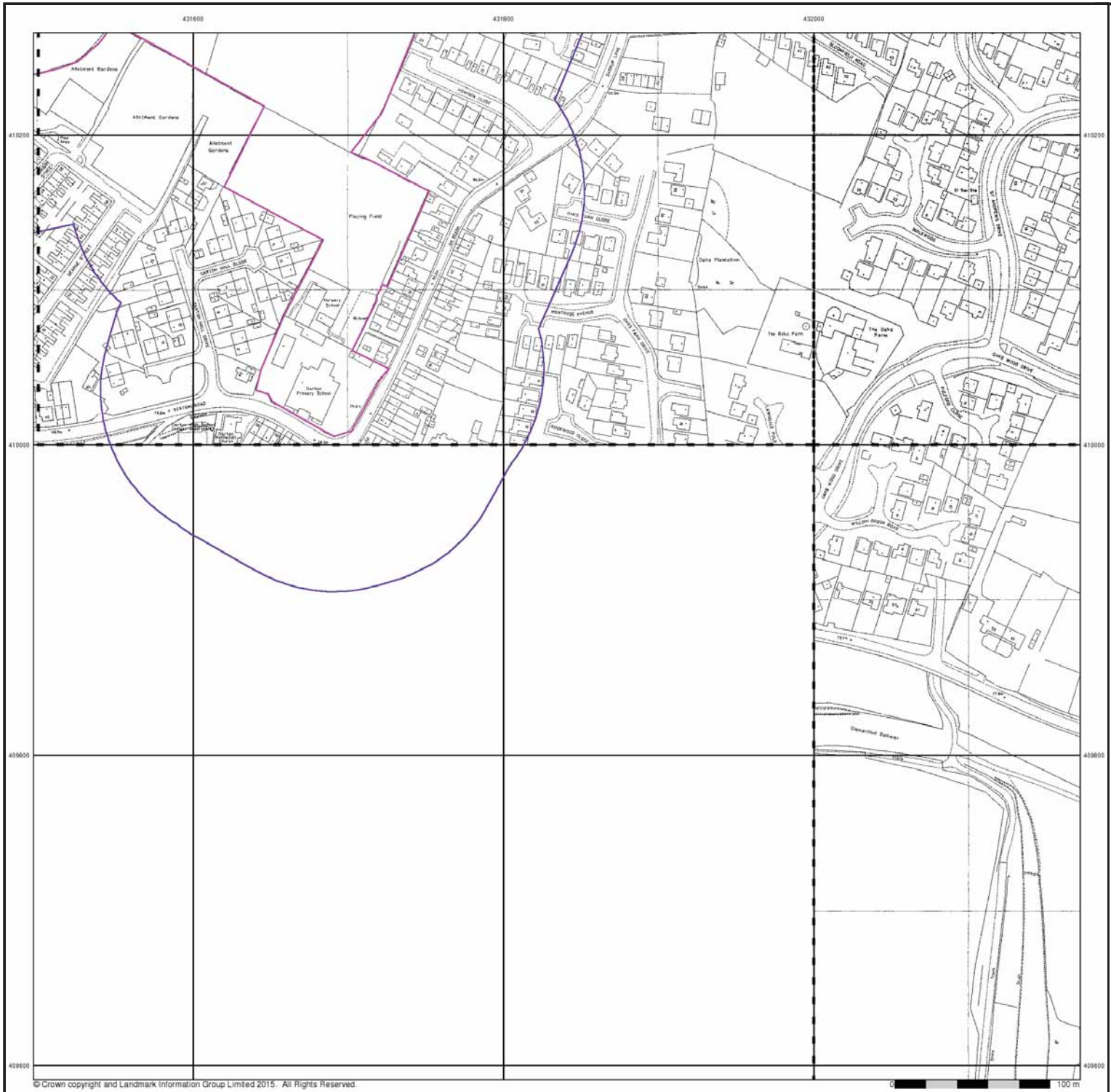
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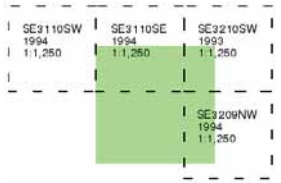
Large-Scale National Grid Data

Published 1993 - 1994

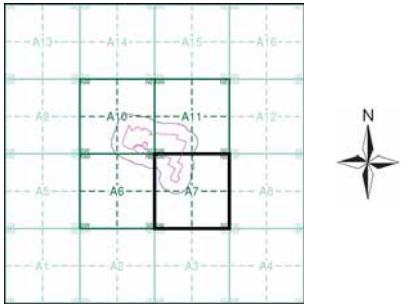
Source map scale - 1:1,250

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Map Name(s) and Date(s)



Historical Map - Segment A7



Order Details

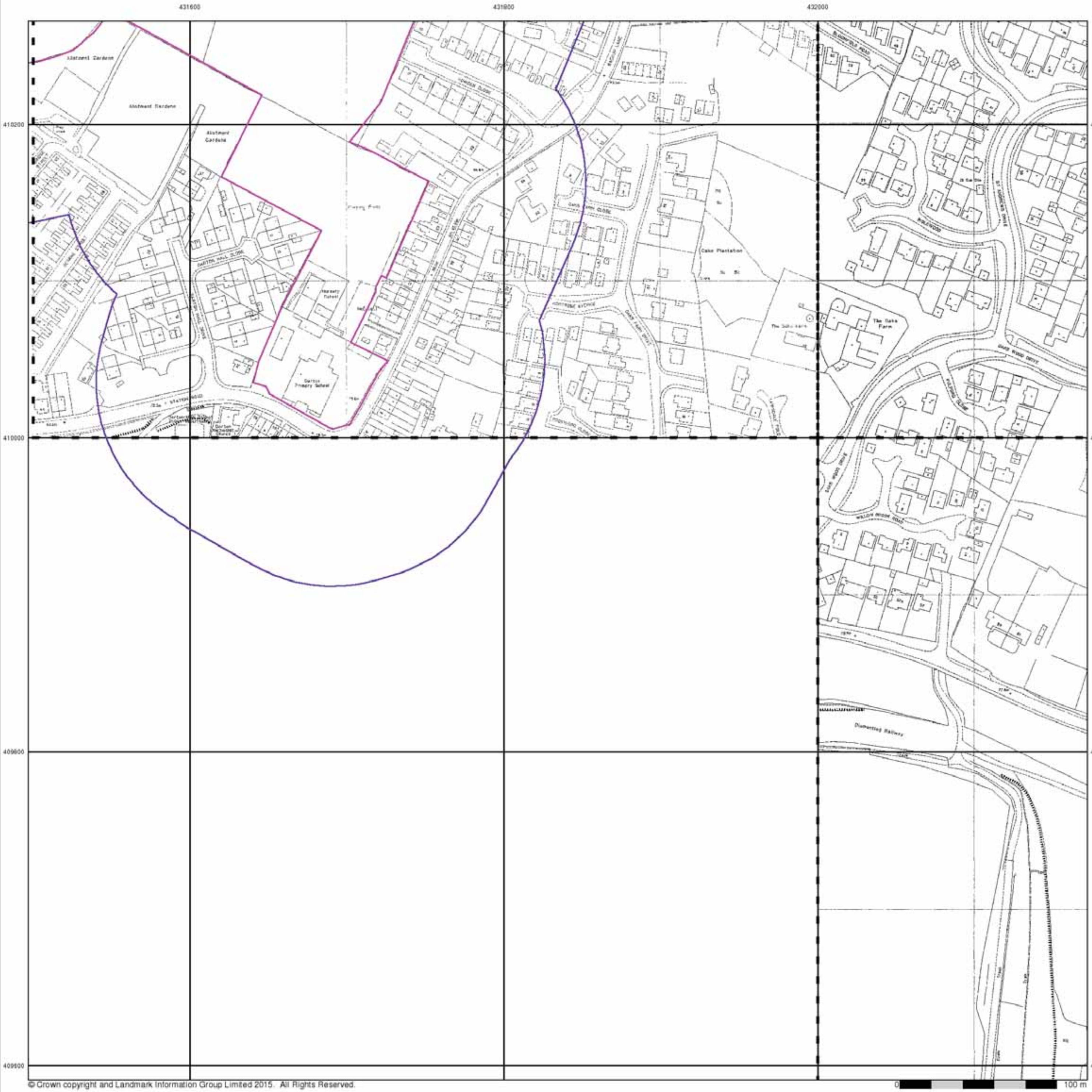
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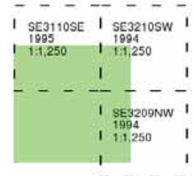
Large-Scale National Grid Data

Published 1994 - 1995

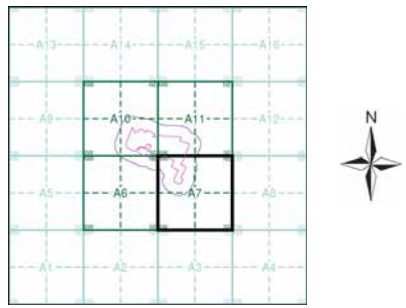
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

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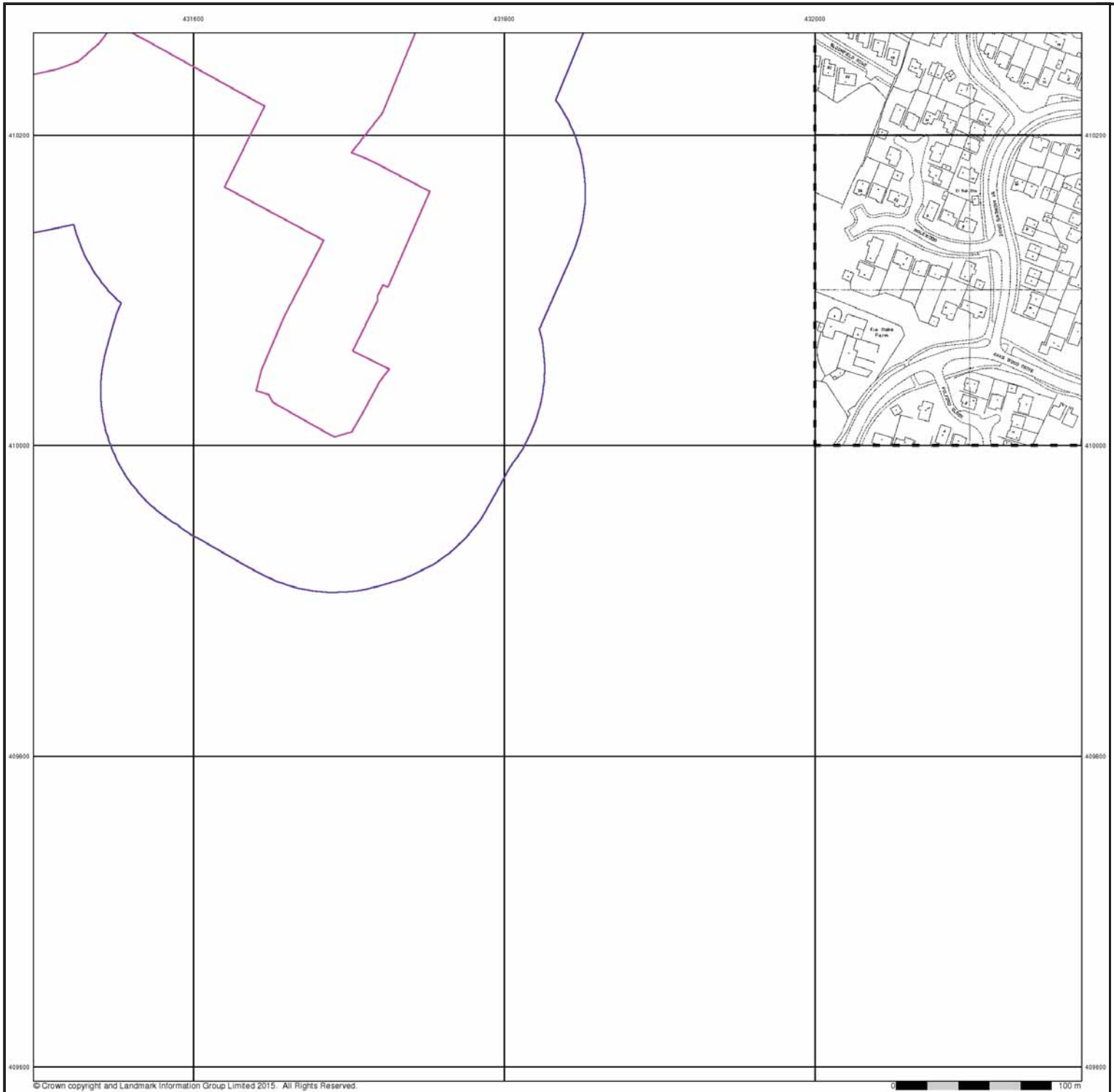


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Slice: A
Site Area (Ha): 11.89
Search Buffer (m): 100

Site Details

Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ



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RSK

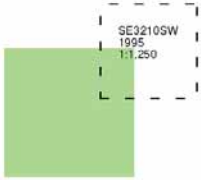
Large-Scale National Grid Data

Published 1995

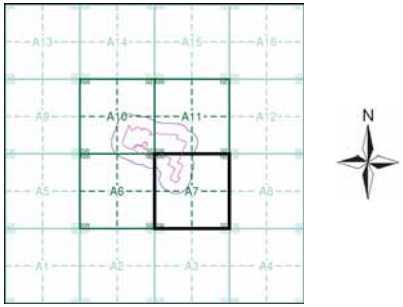
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A7



Order Details

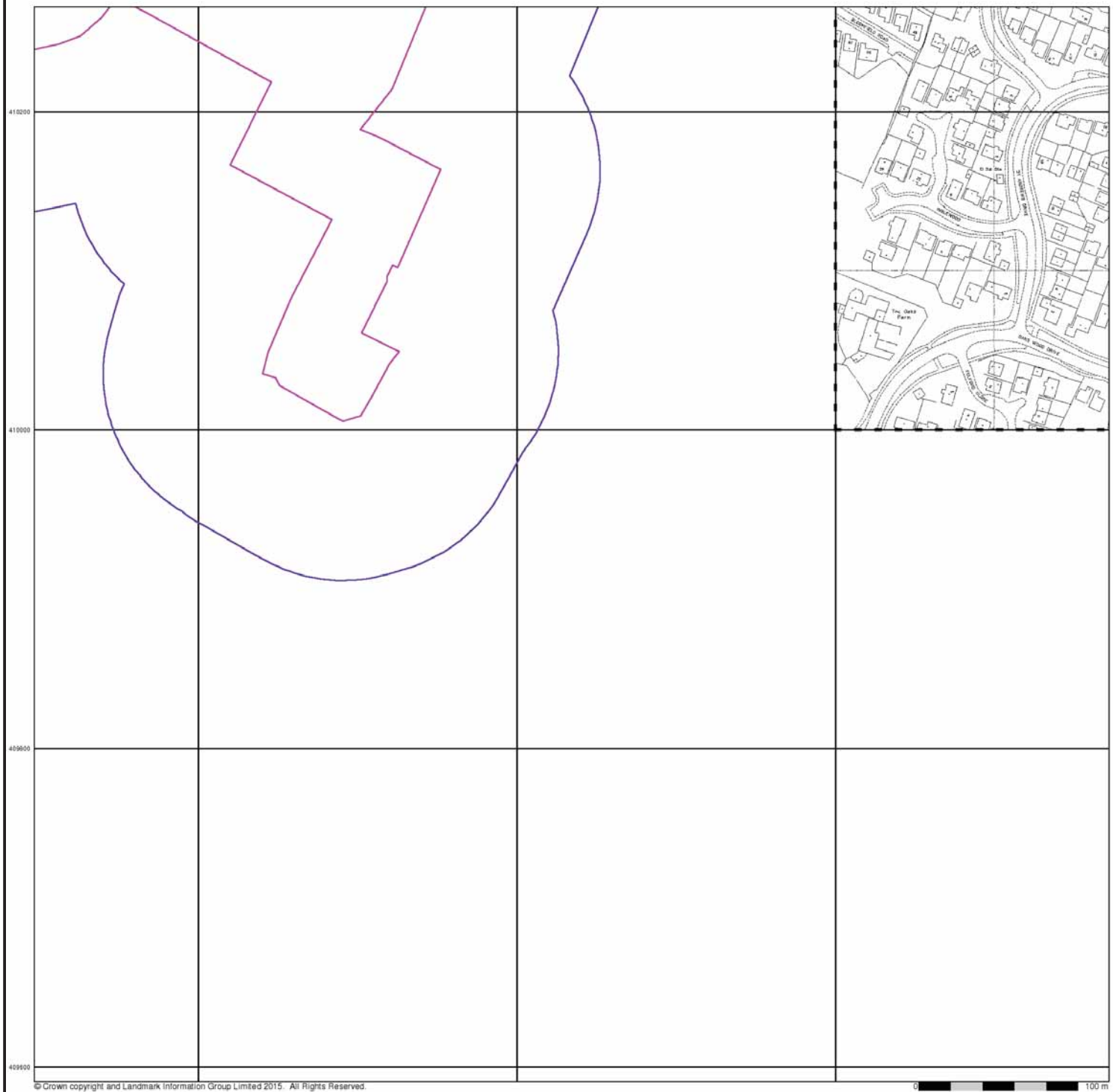
Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	100

Site Details

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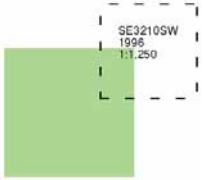
Large-Scale National Grid Data

Published 1996

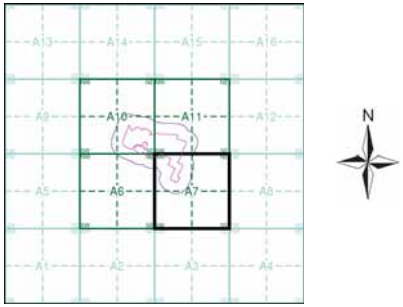
Source map scale - 1:1,250

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Map Name(s) and Date(s)



Historical Map - Segment A7



Order Details

Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
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Site Details

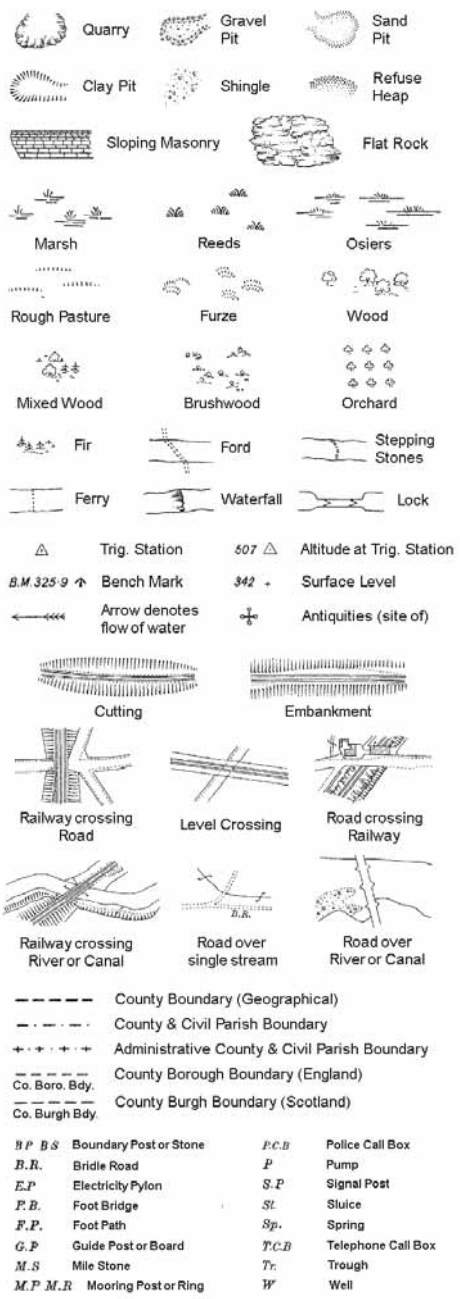
Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

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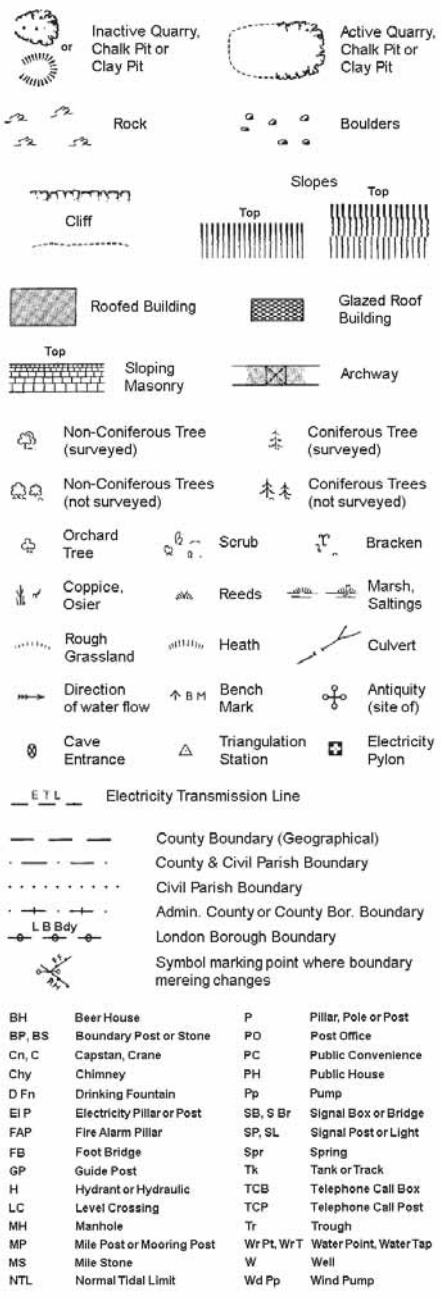
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Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500

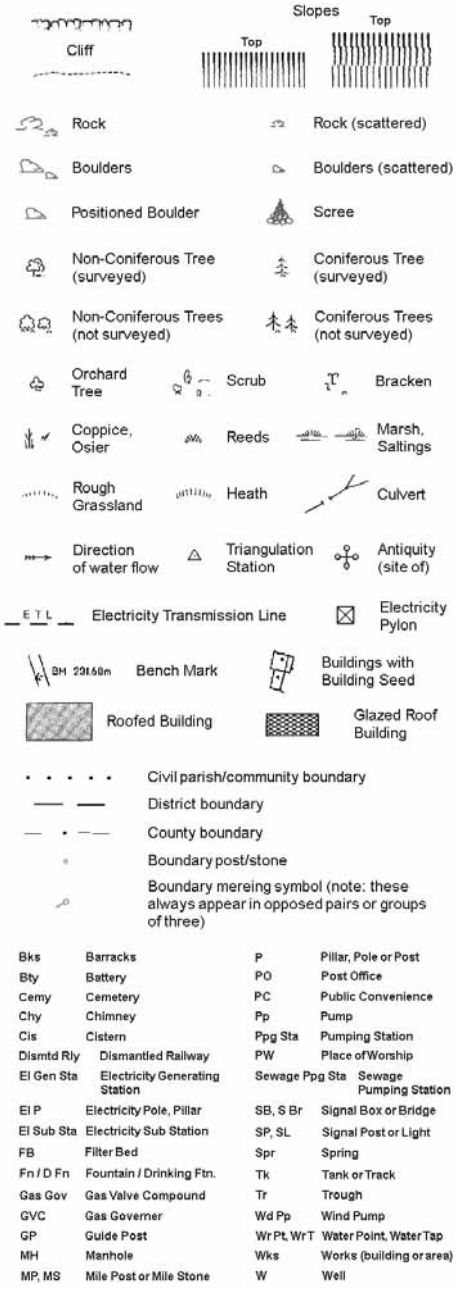


Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



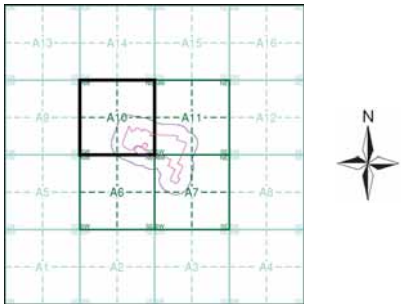
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

RSK

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Yorkshire	1:2,500	1893	2
Yorkshire	1:2,500	1906	3
Yorkshire	1:2,500	1918	4
Ordnance Survey Plan	1:2,500	1961	5
Ordnance Survey Plan	1:2,500	1970	6
Ordnance Survey Plan	1:1,250	1978	7
Additional SIMs	1:2,500	1989	8
Additional SIMs	1:1,250	1990	9
Large-Scale National Grid Data	1:1,250	1993	10
Large-Scale National Grid Data	1:1,250	1993 - 1994	11

Historical Map - Segment A10



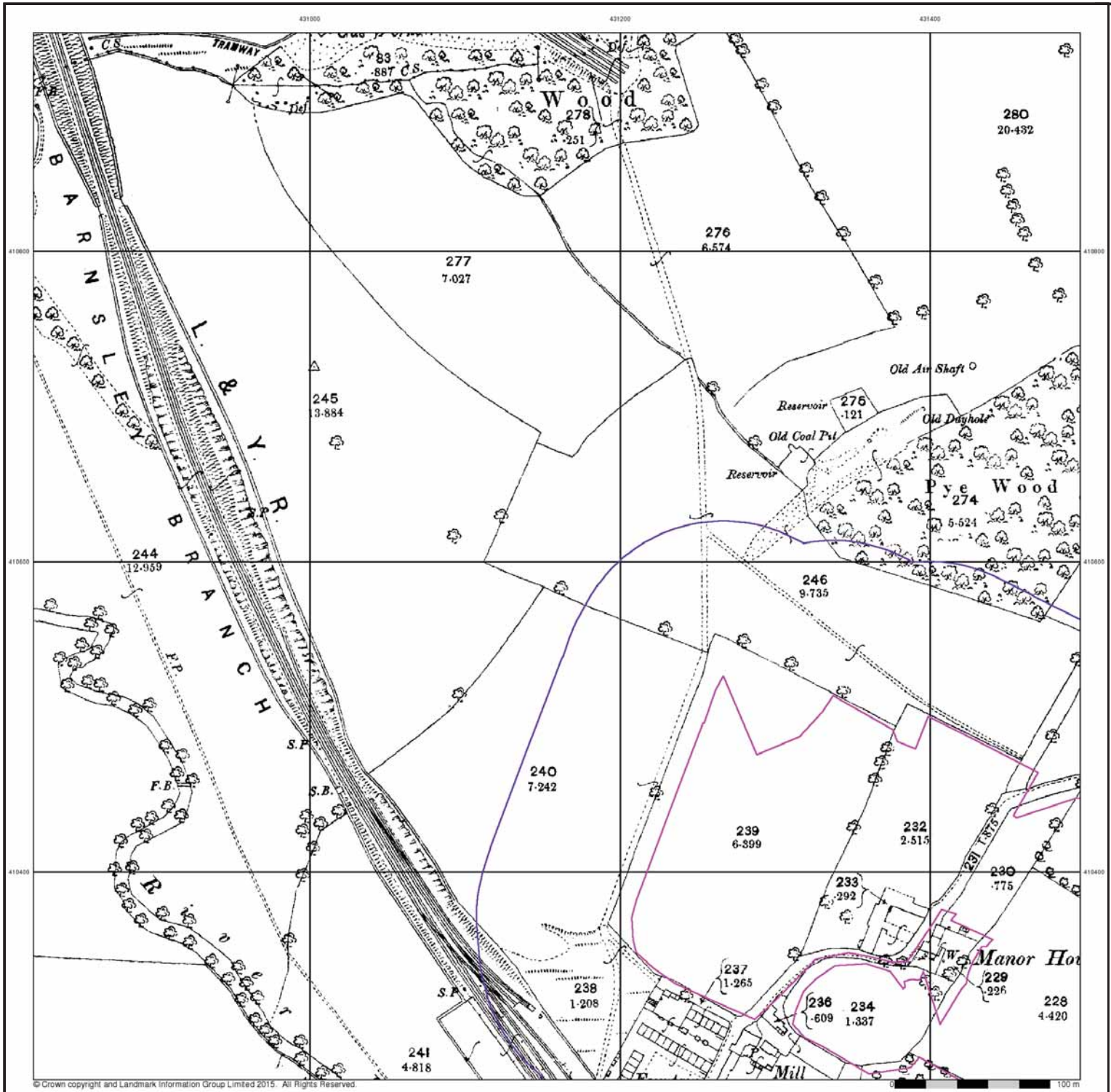
Order Details

Order Number: 77520900_1_1
Customer Ref: 301645
National Grid Reference: 431520, 410300
Slice: A
Site Area (Ha): 11.89
Search Buffer (m): 100

Site Details

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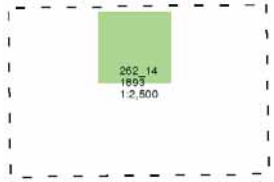
Yorkshire

Published 1893

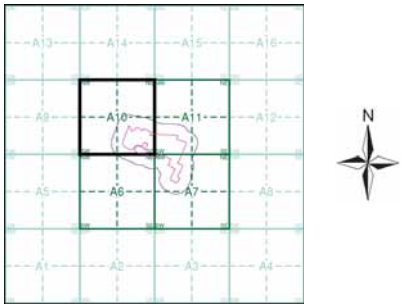
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A10



Order Details

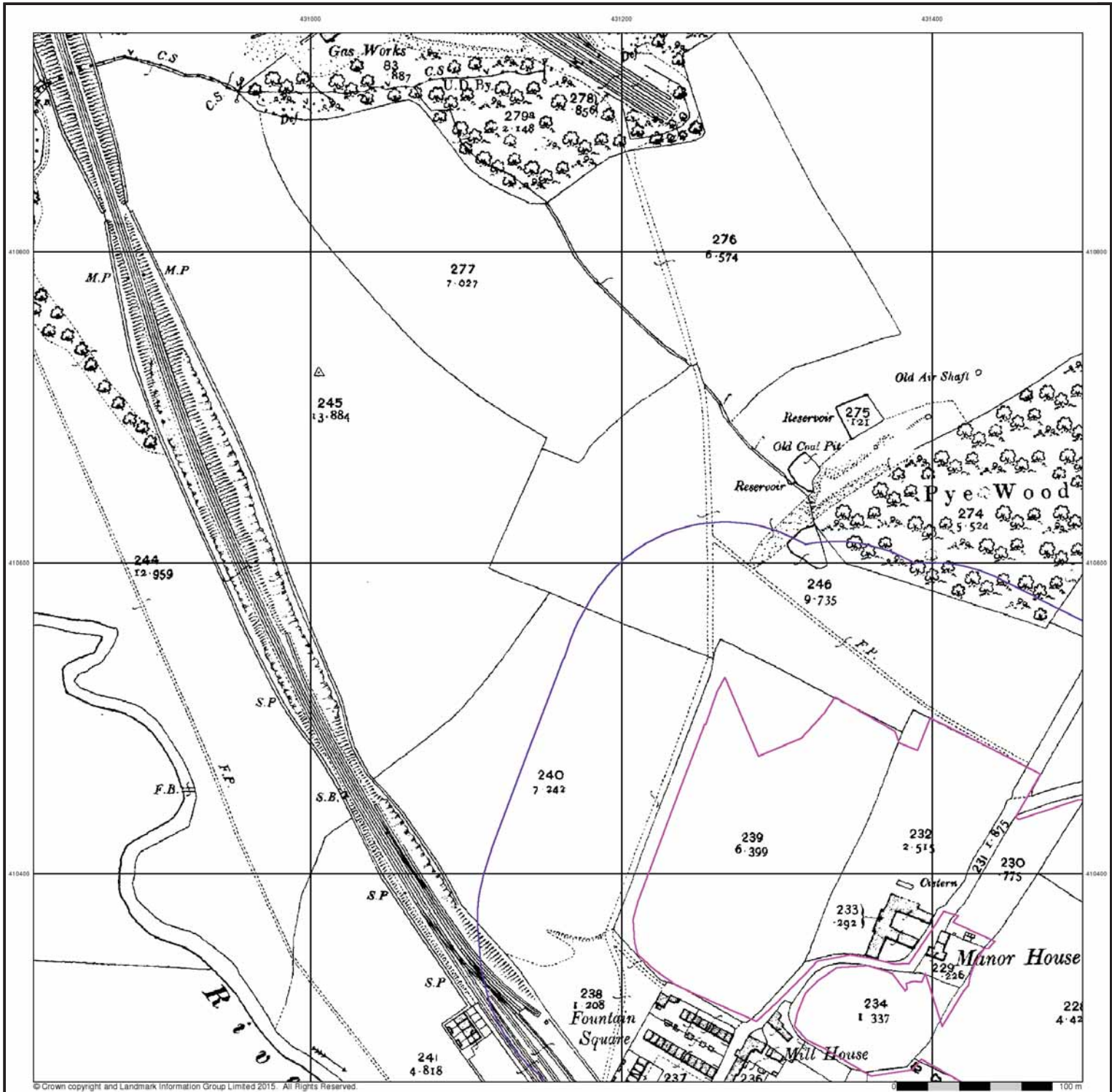
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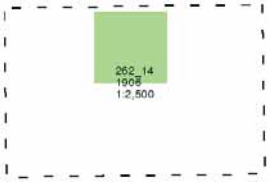
Yorkshire

Published 1906

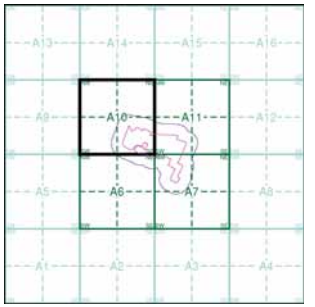
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A10



Order Details

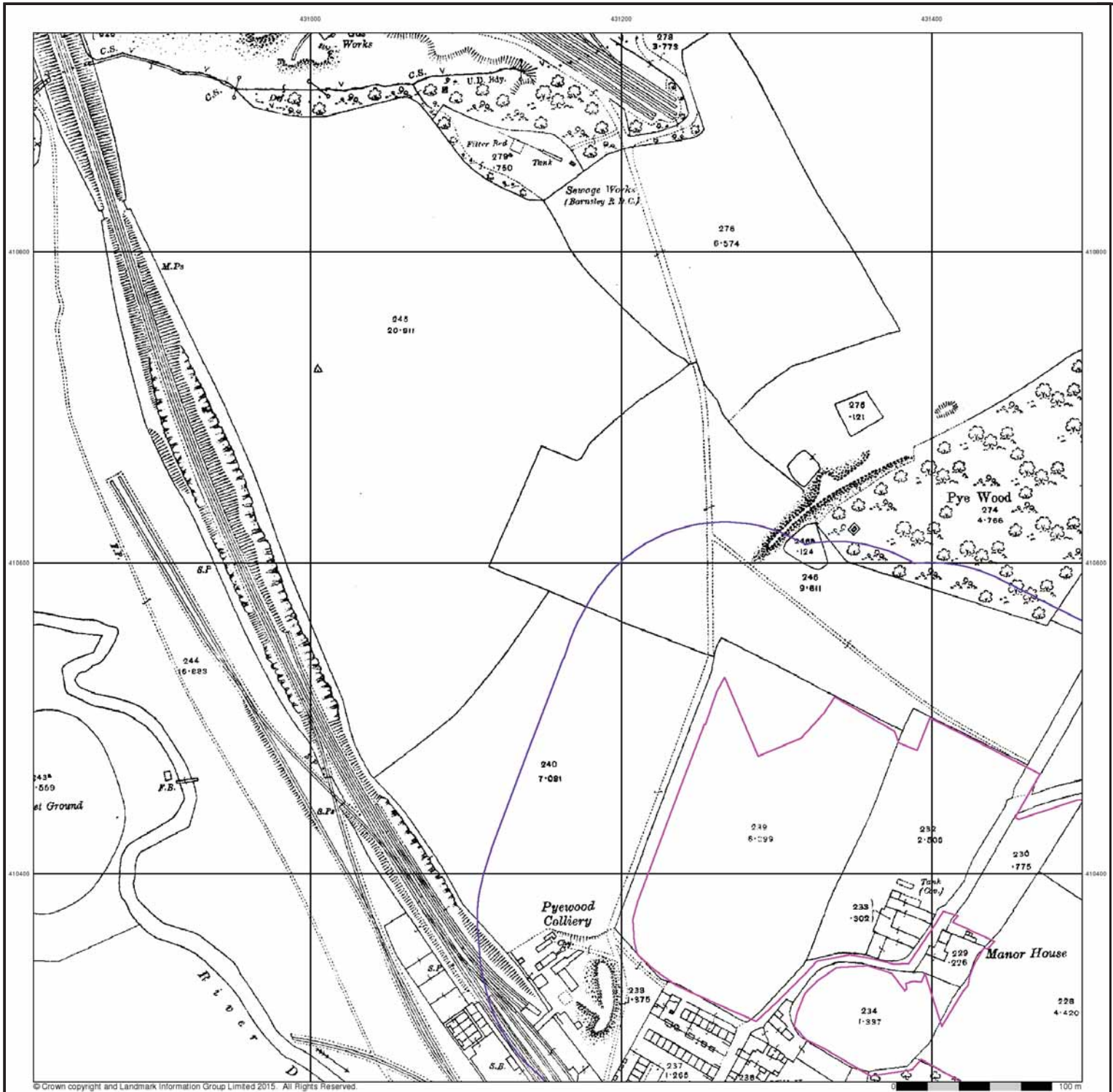
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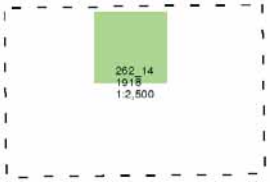
Yorkshire

Published 1918

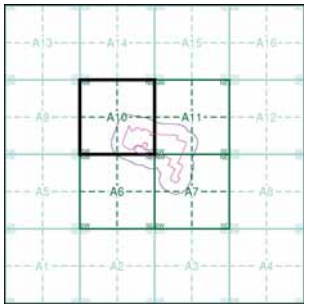
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A10



Order Details

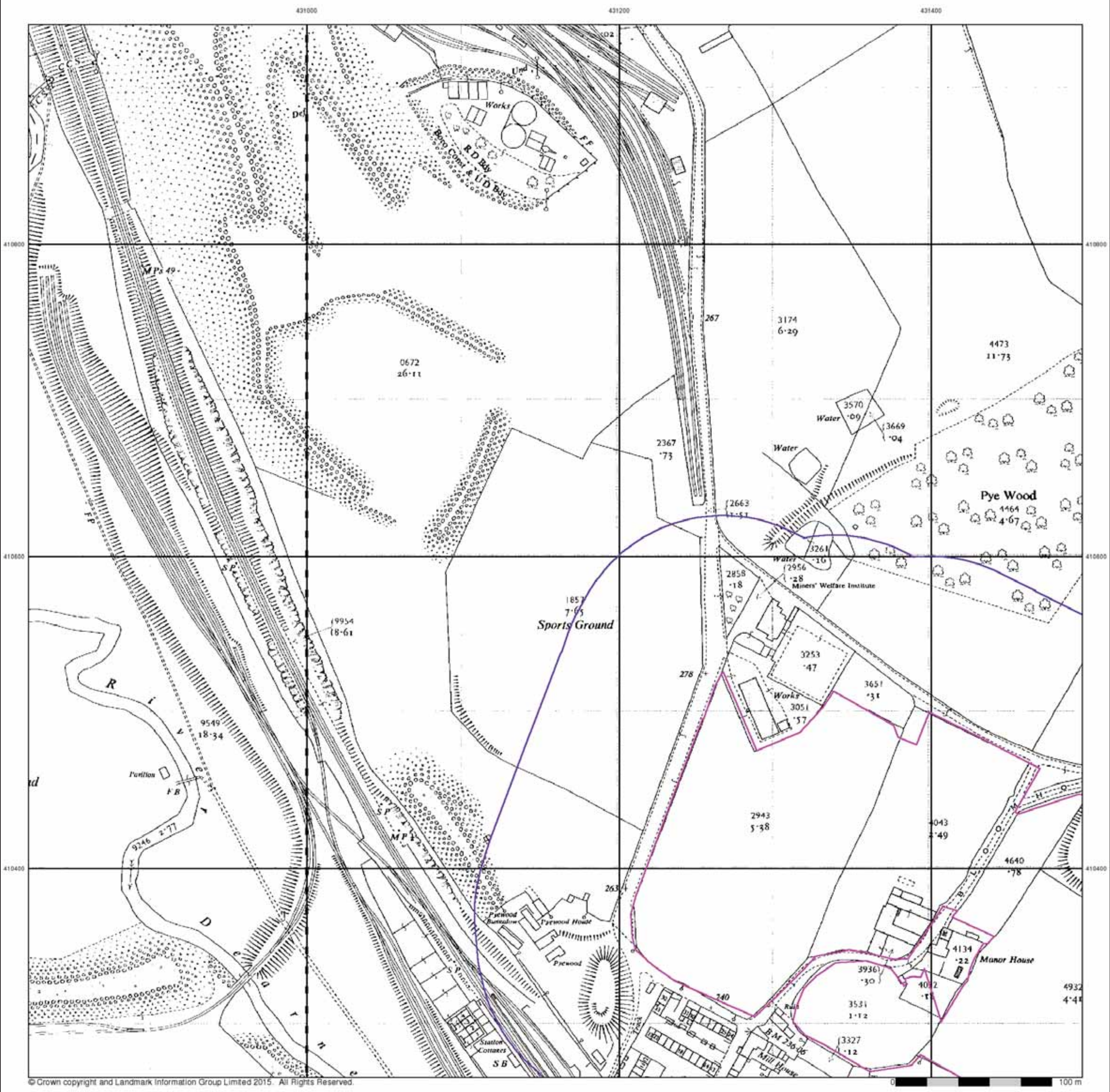
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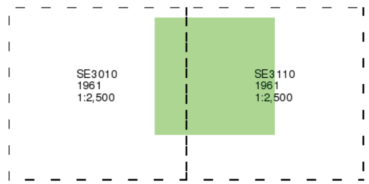
Ordnance Survey Plan

Published 1961

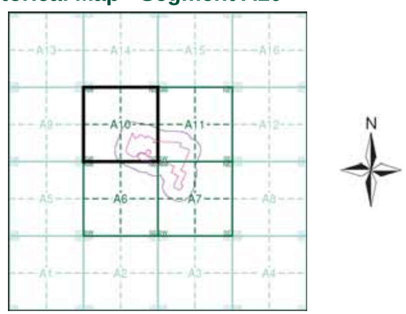
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Map Name(s) and Date(s)



Historical Map - Segment A10



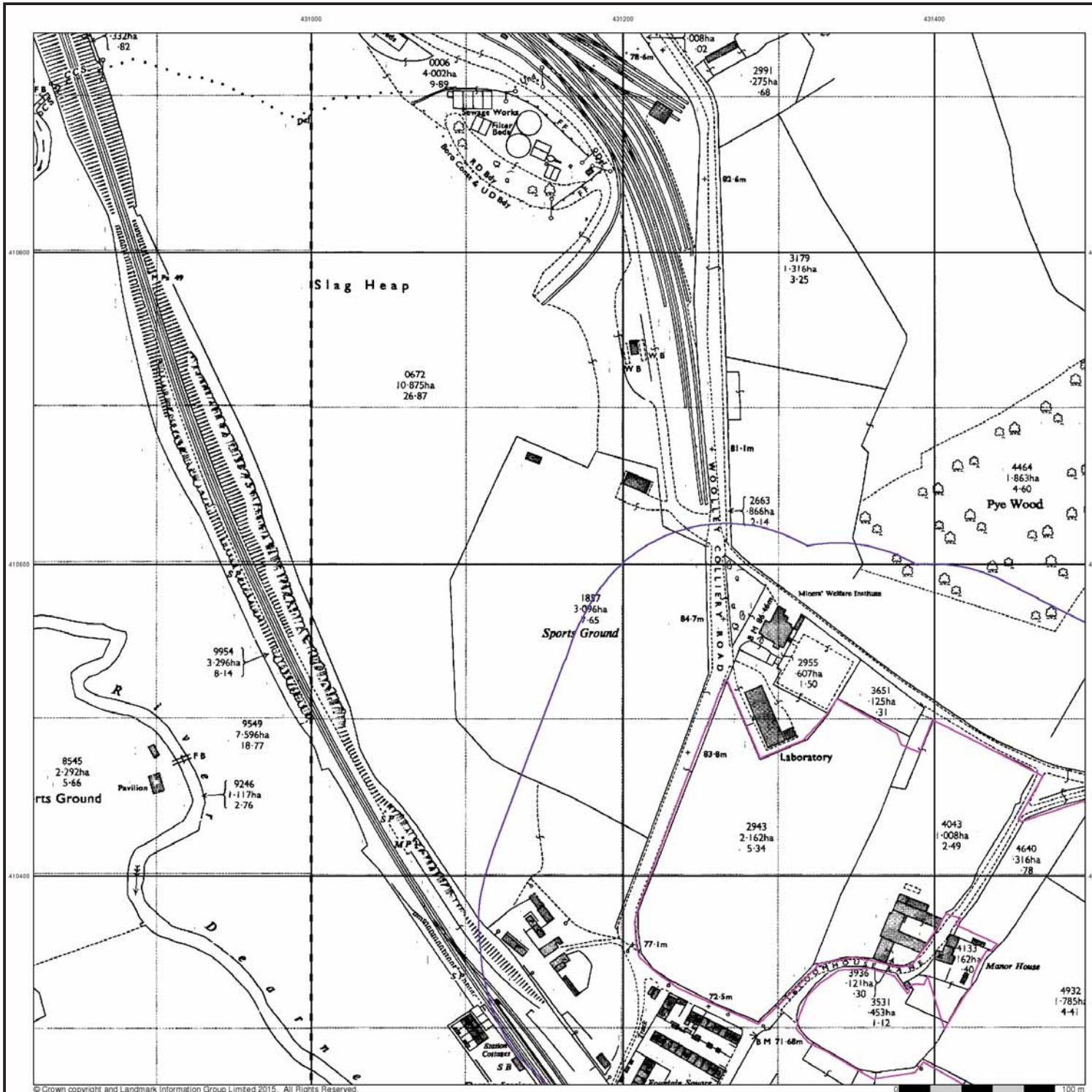
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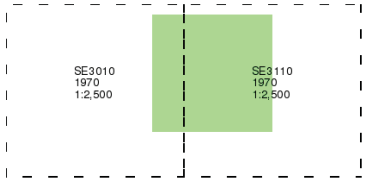
Ordnance Survey Plan

Published 1970

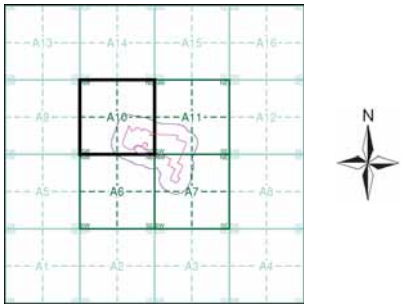
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A10



Order Details

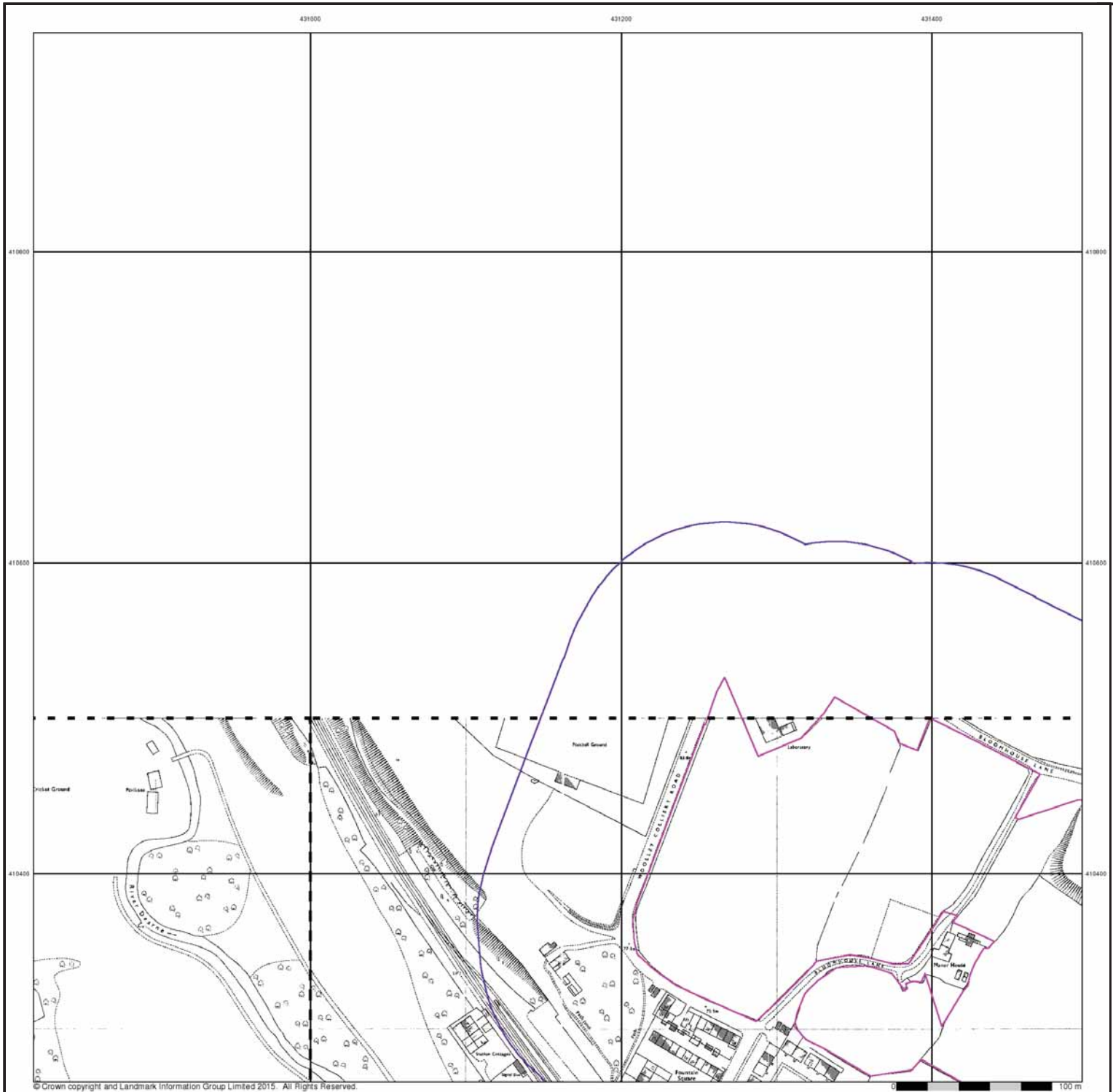
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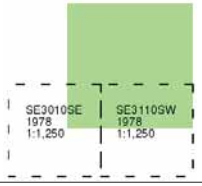
Ordnance Survey Plan

Published 1978

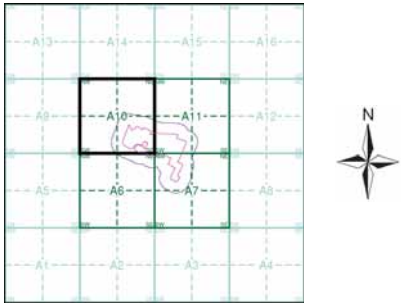
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A10



Order Details

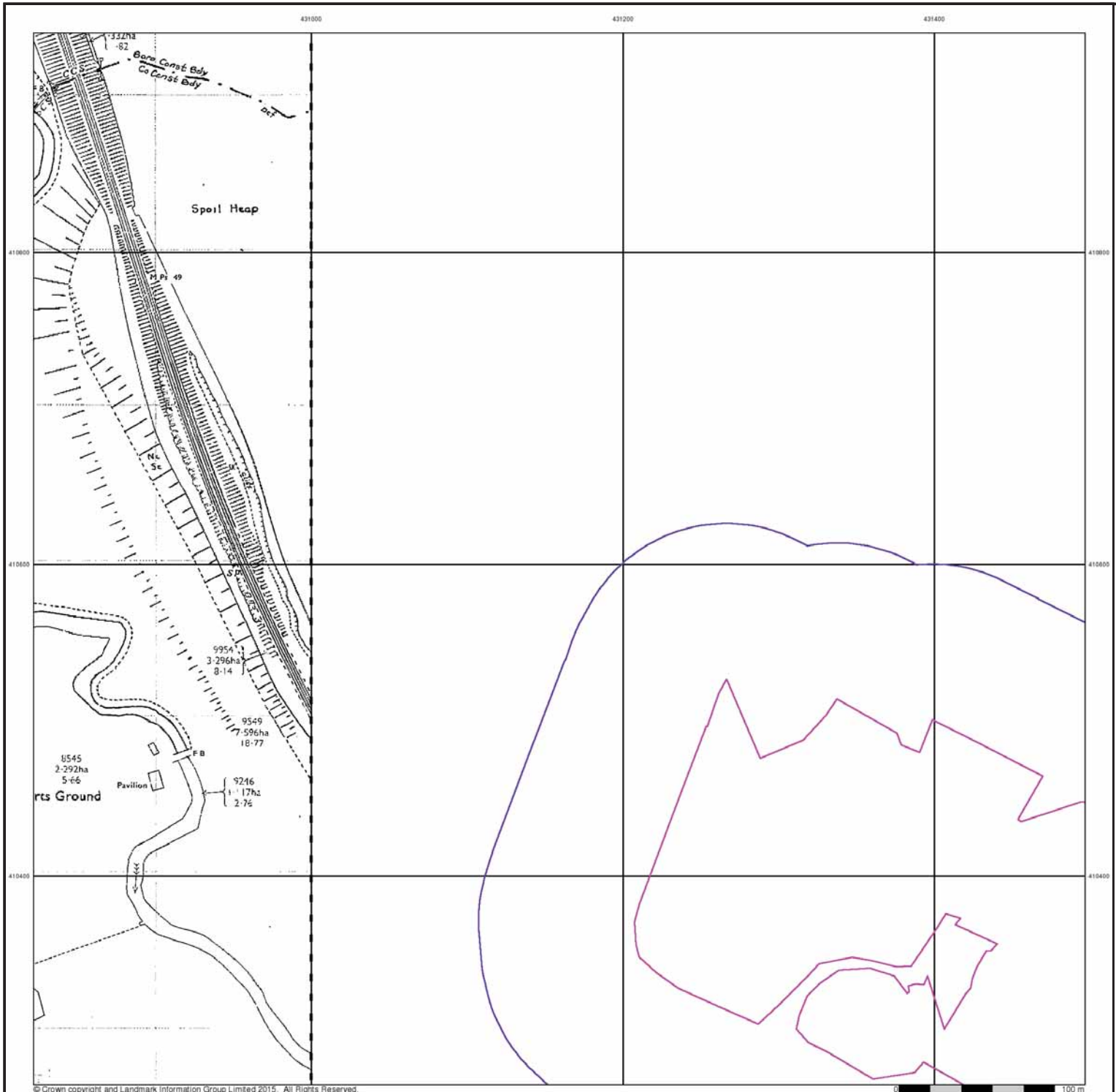
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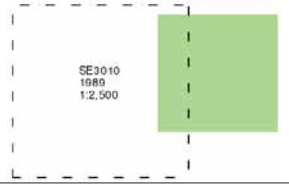
Additional SIMs

Published 1989

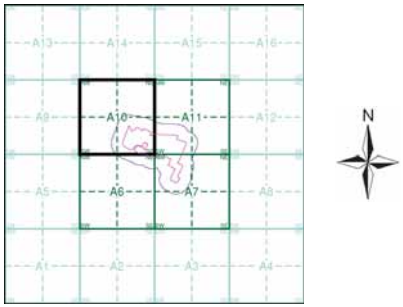
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A10



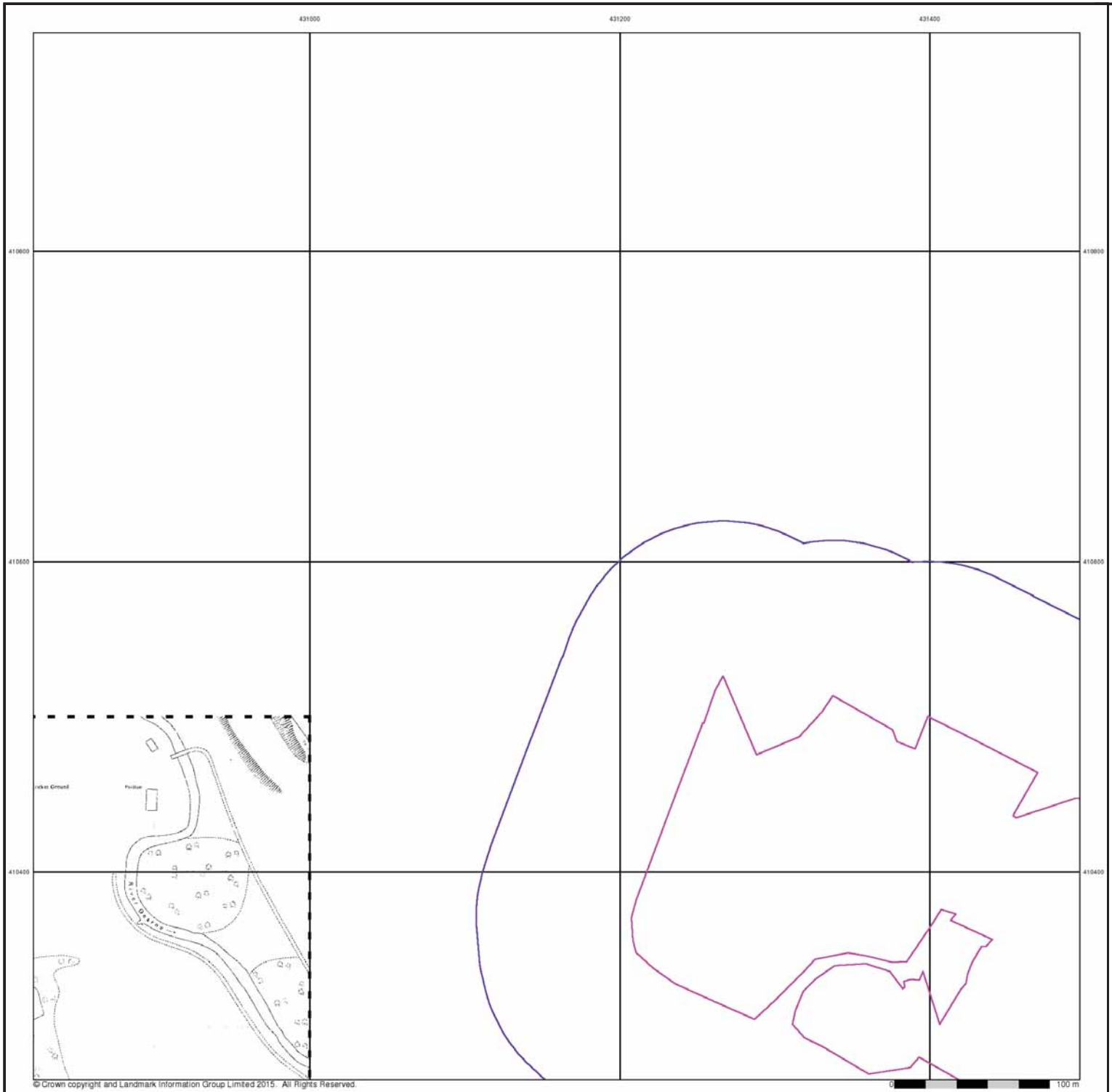
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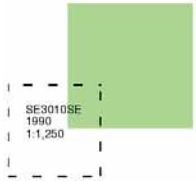
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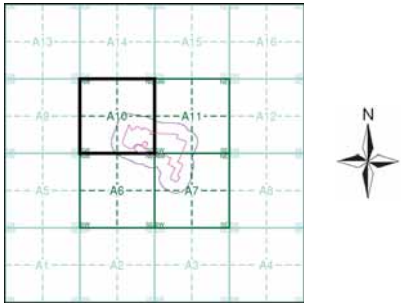
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A10



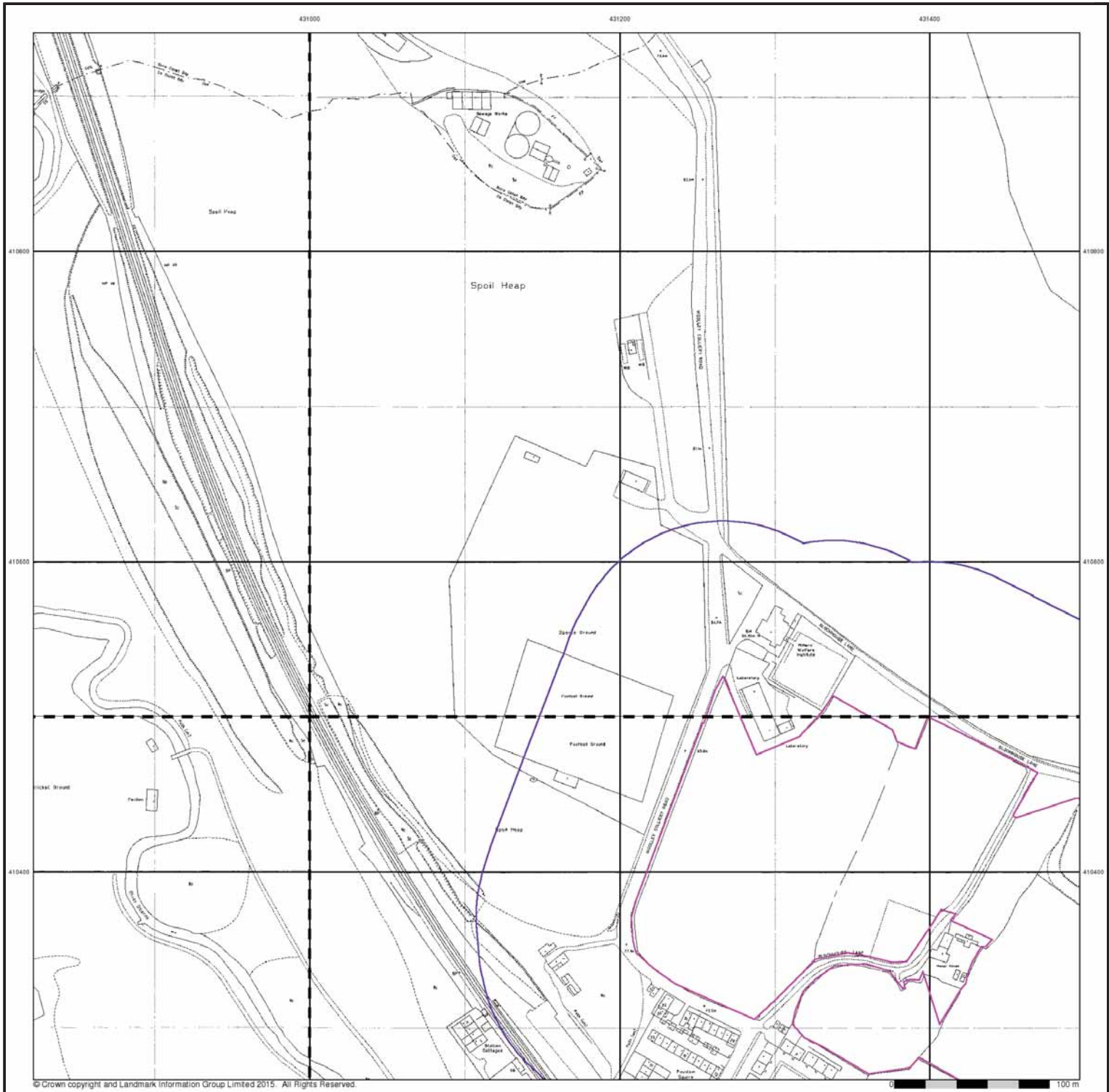
Order Details

Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	100

Site Details

Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

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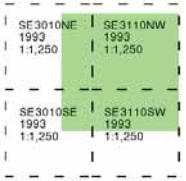
Large-Scale National Grid Data

Published 1993

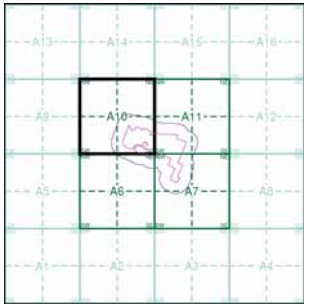
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A10



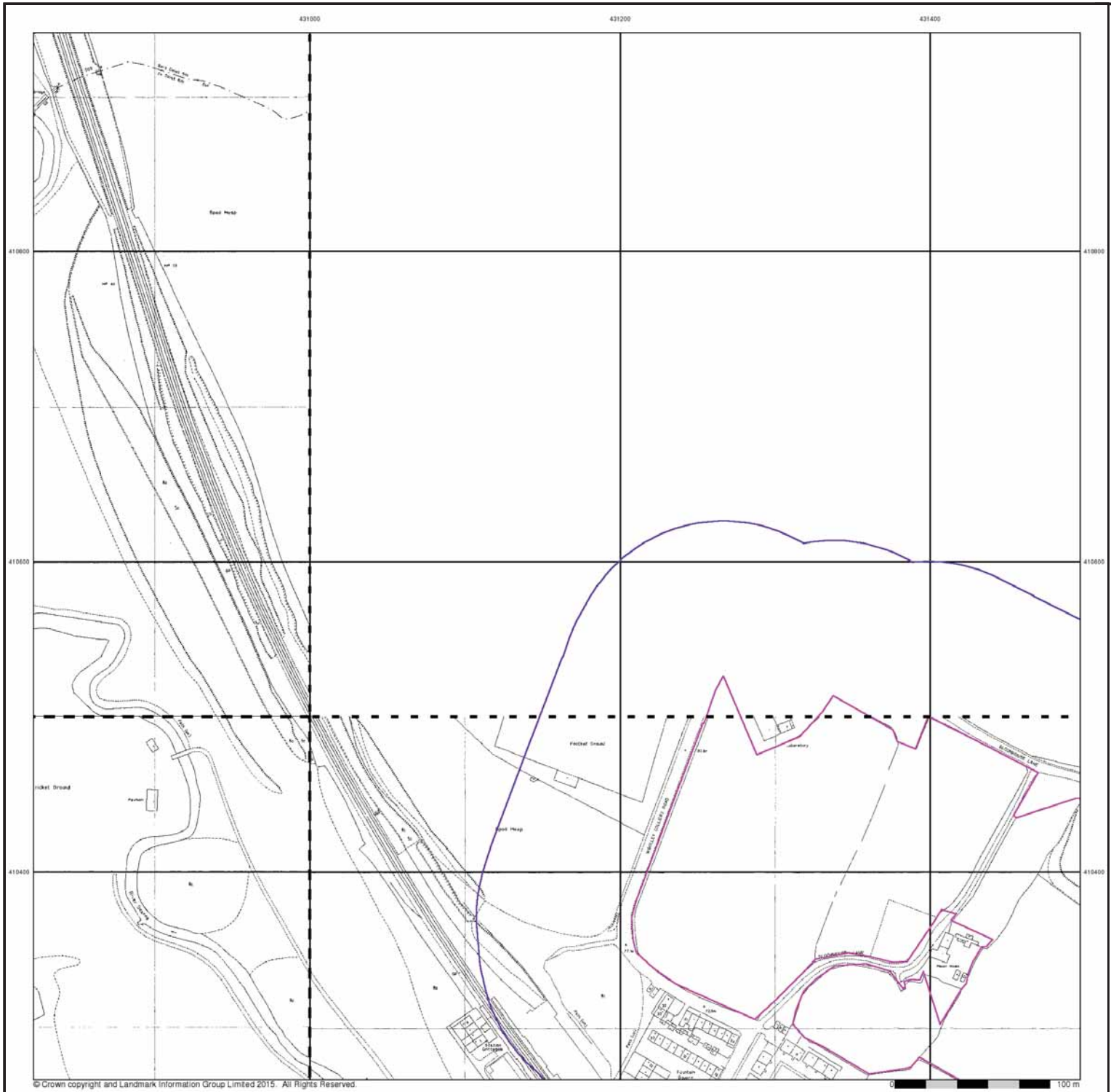
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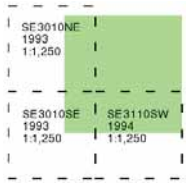
Large-Scale National Grid Data

Published 1993 - 1994

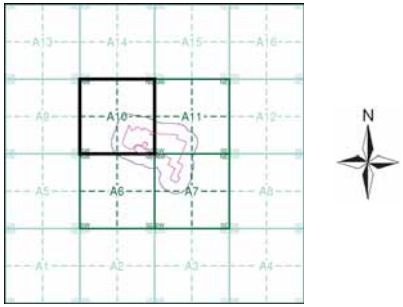
Source map scale - 1:1,250

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Map Name(s) and Date(s)



Historical Map - Segment A10



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Site Details

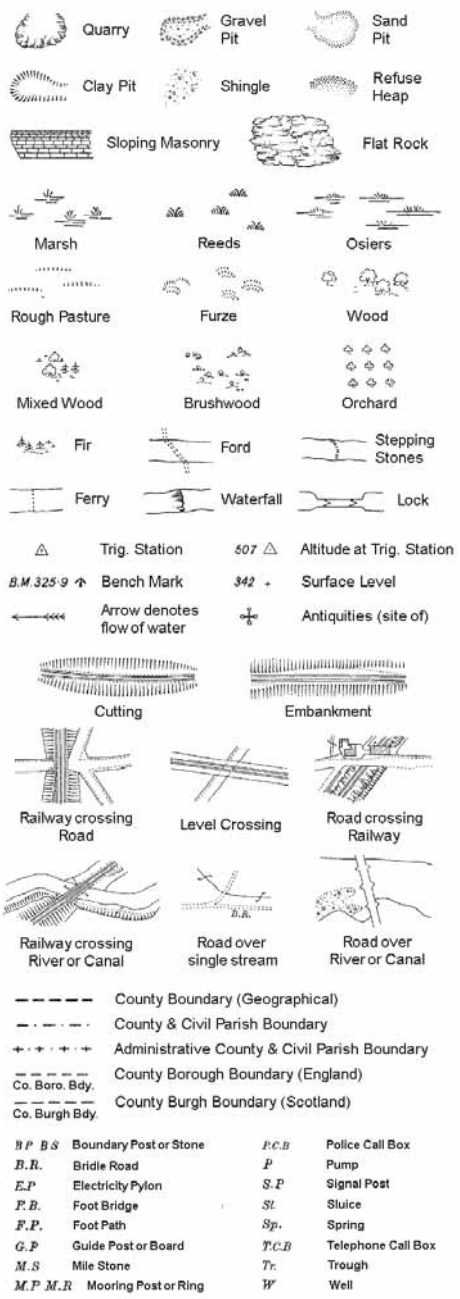
Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

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Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



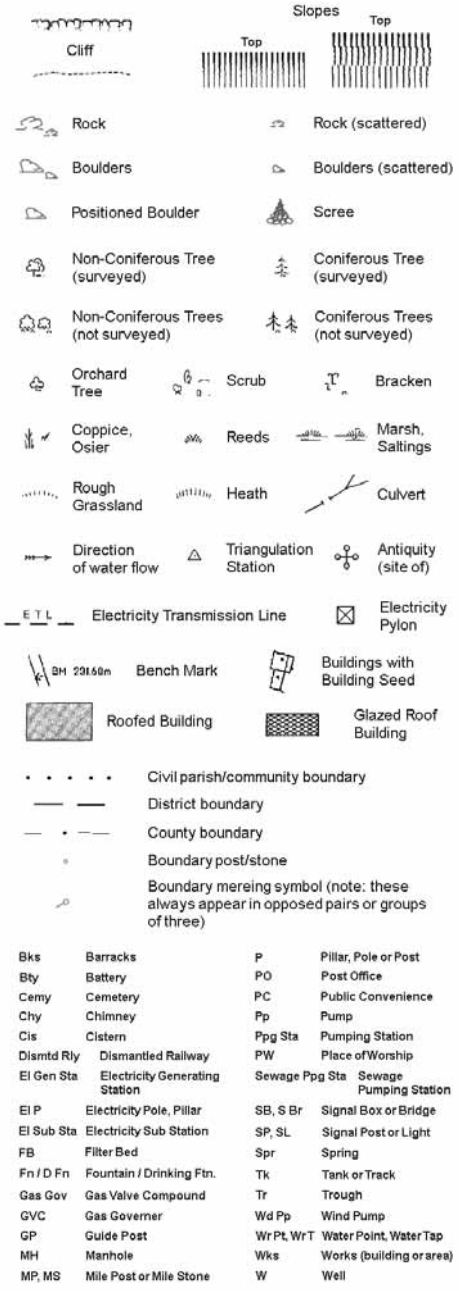
B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	St.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



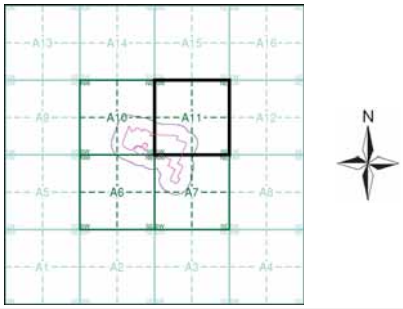
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Yorkshire	1:2,500	1893	2
Yorkshire	1:2,500	1906	3
Yorkshire	1:2,500	1918	4
Ordnance Survey Plan	1:2,500	1961 - 1962	5
Ordnance Survey Plan	1:2,500	1967 - 1970	6
Ordnance Survey Plan	1:1,250	1978	7
Additional SIMs	1:1,250	1982 - 1984	8
Additional SIMs	1:1,250	1984 - 1990	9
Large-Scale National Grid Data	1:1,250	1993	10
Large-Scale National Grid Data	1:1,250	1993 - 1994	11
Large-Scale National Grid Data	1:1,250	1994 - 1995	12
Large-Scale National Grid Data	1:1,250	1995	13
Large-Scale National Grid Data	1:1,250	1996	14
Large-Scale National Grid Data	1:1,250	1996	15

Historical Map - Segment A11



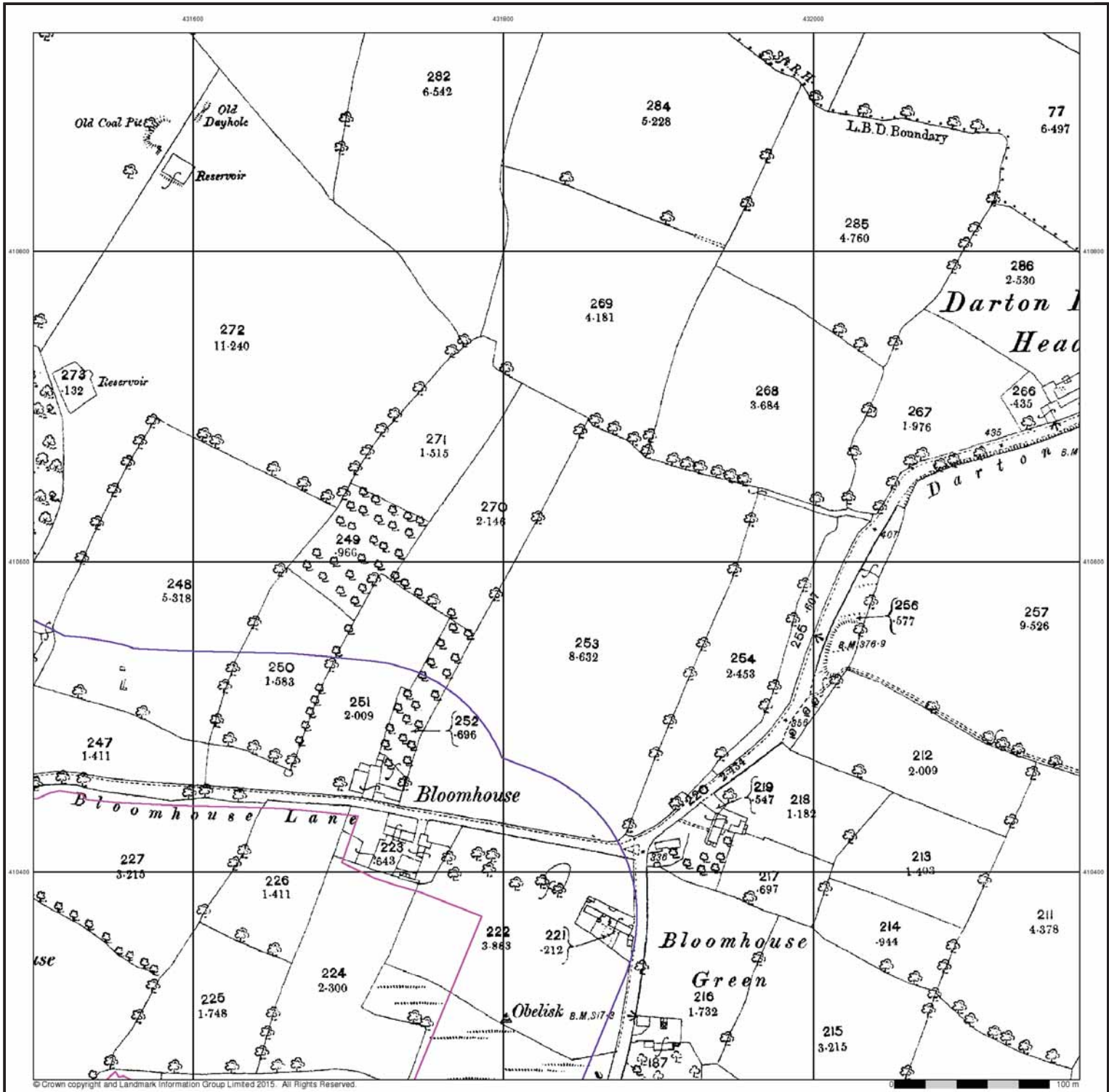
Order Details

Order Number: 77520900_1_1
Customer Ref: 301645
National Grid Reference: 431520, 410300
Slice: A
Site Area (Ha): 11.89
Search Buffer (m): 100

Site Details

Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

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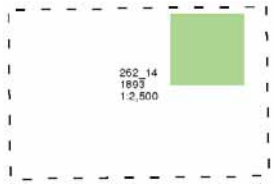
Yorkshire

Published 1893

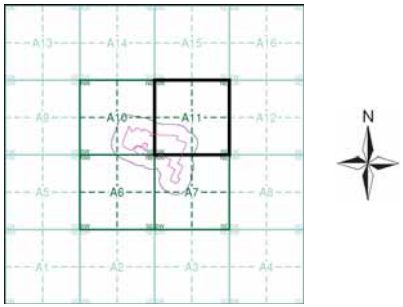
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A11



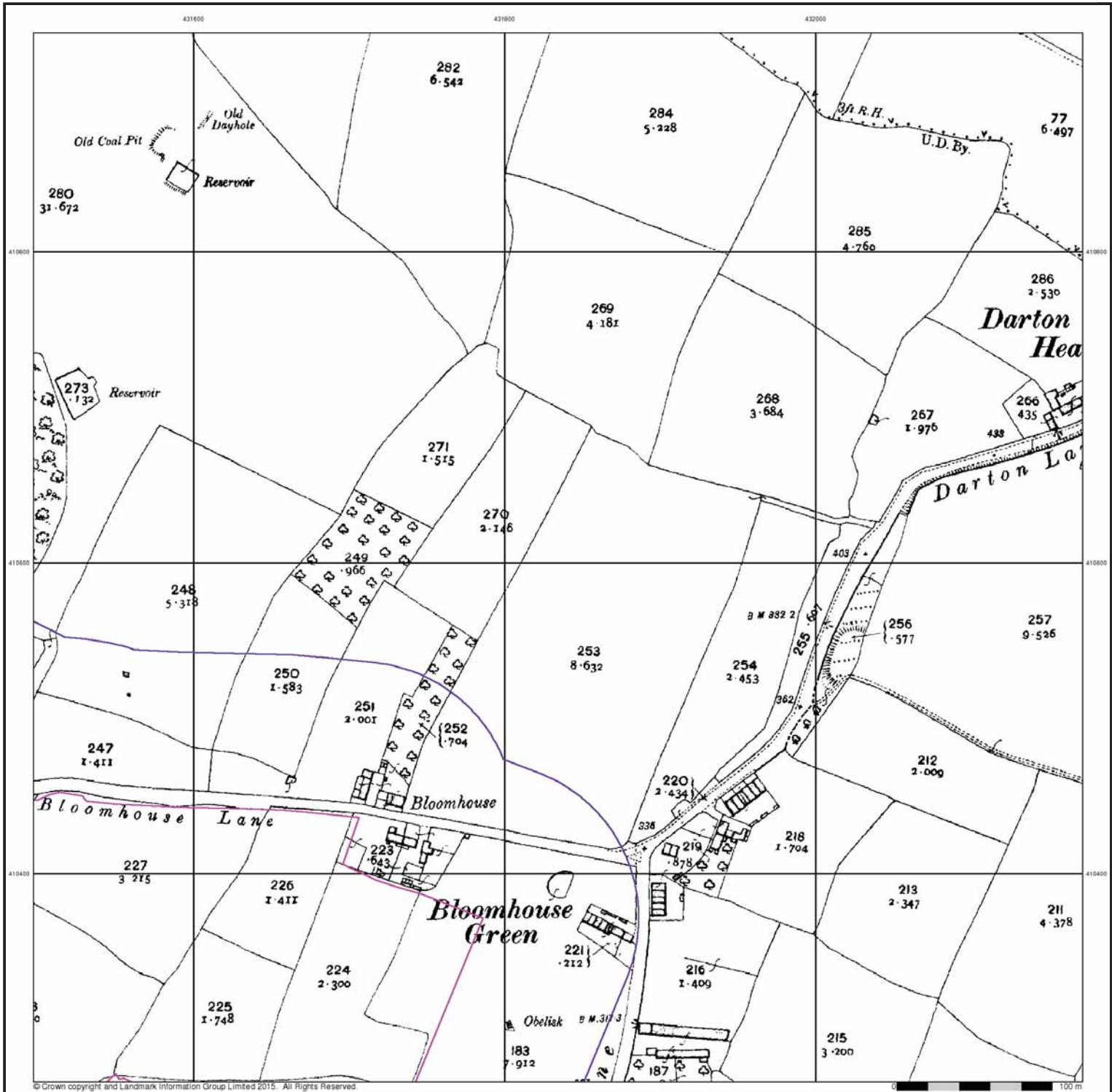
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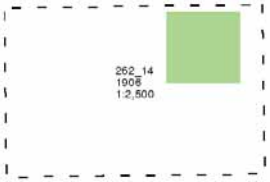
Yorkshire

Published 1906

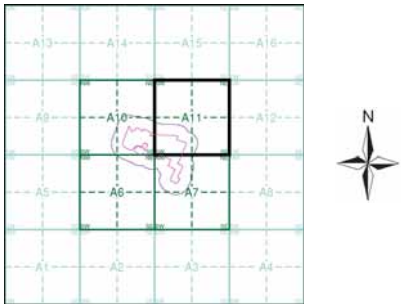
Source map scale - 1:2,500

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Historical Map - Segment A11



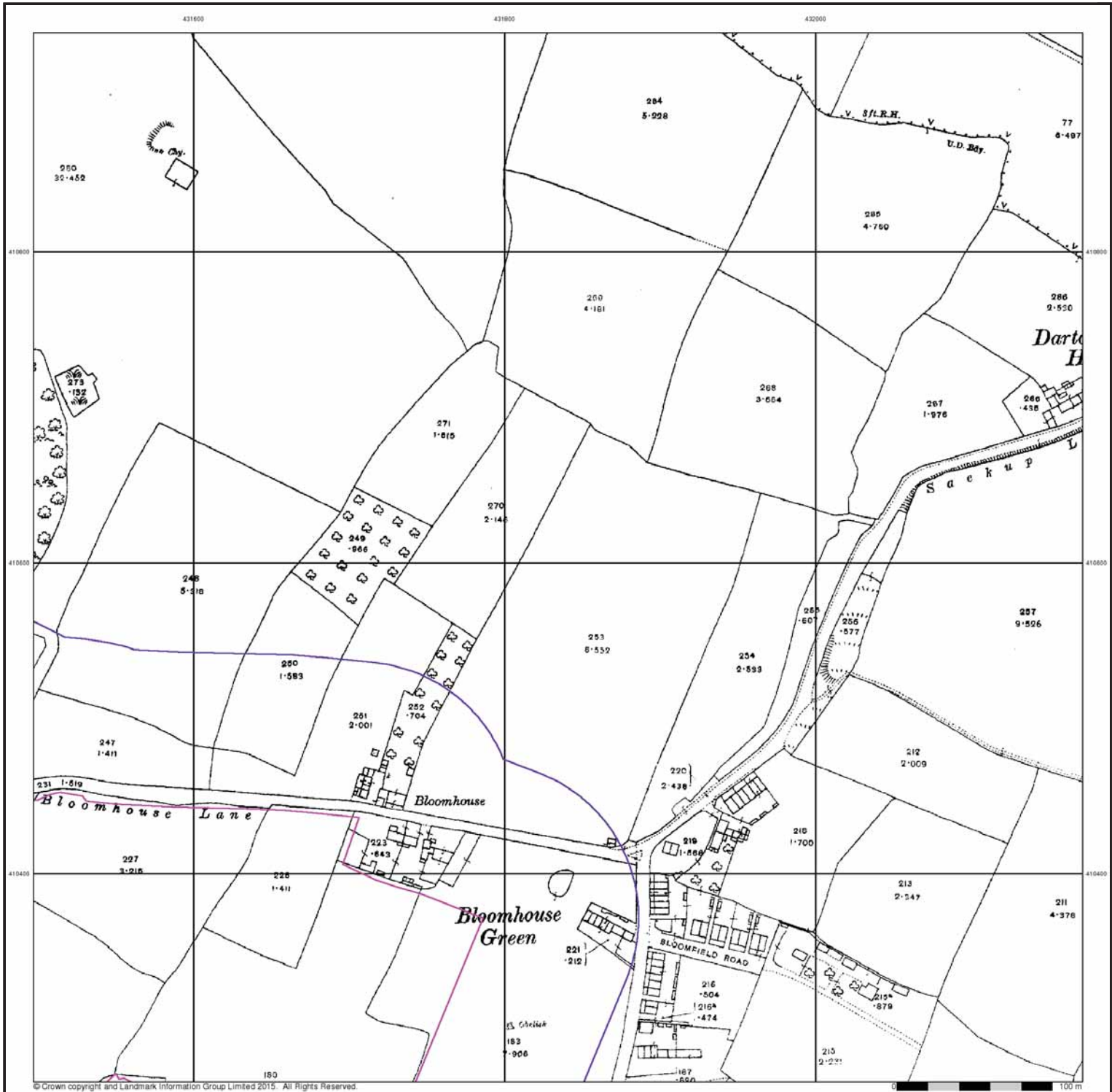
Order Details

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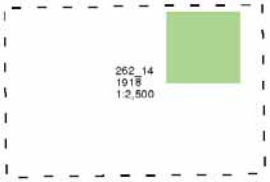
Yorkshire

Published 1918

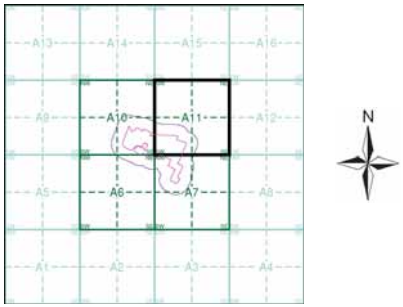
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A11



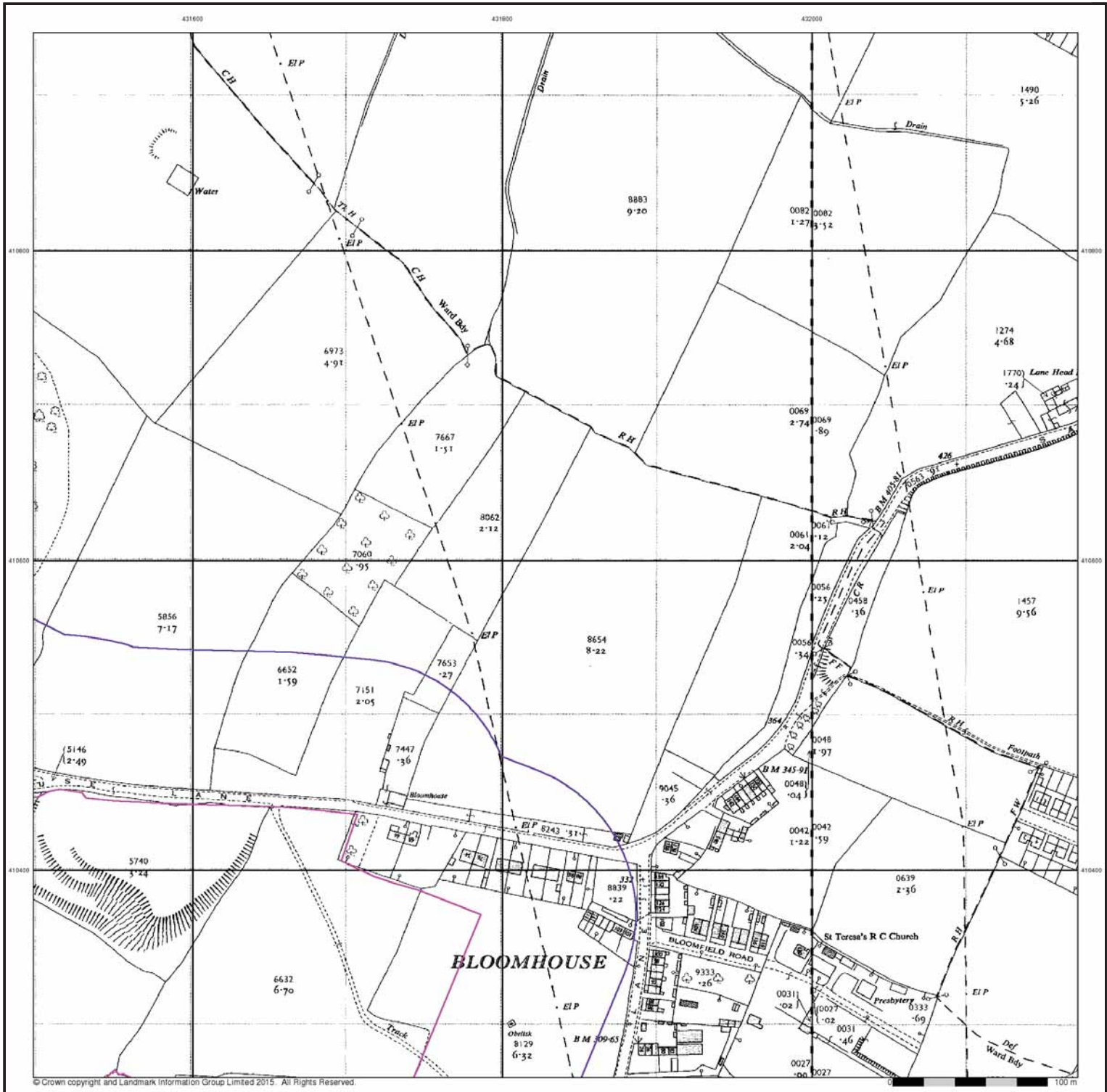
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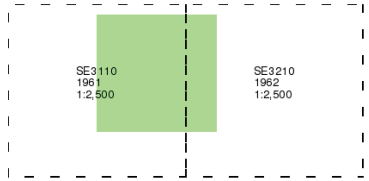
Ordnance Survey Plan

Published 1961 - 1962

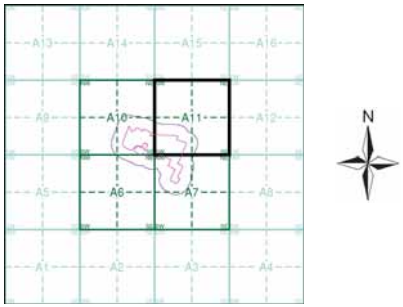
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A11



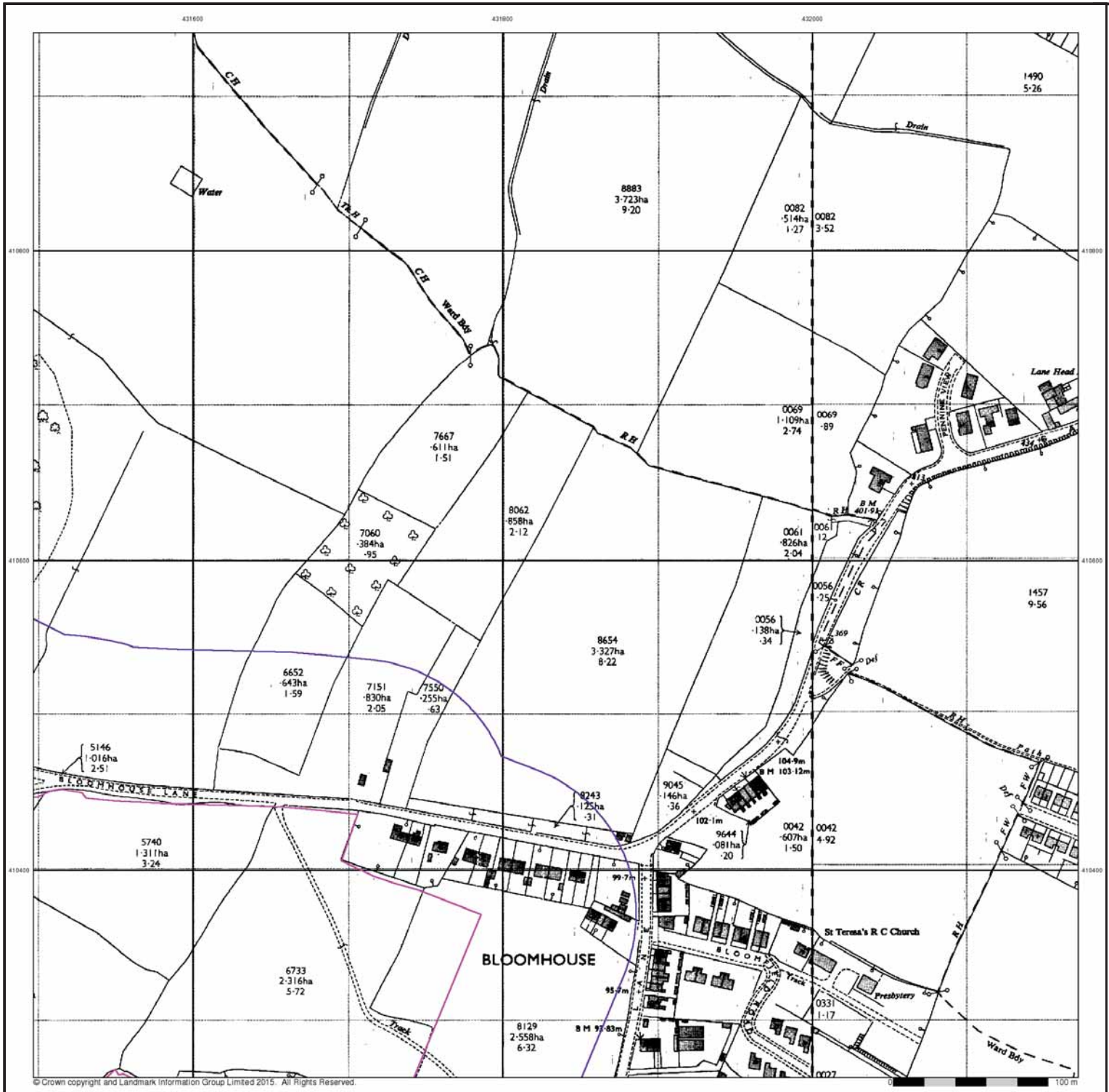
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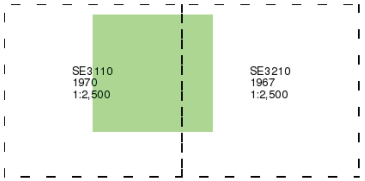
Ordnance Survey Plan

Published 1967 - 1970

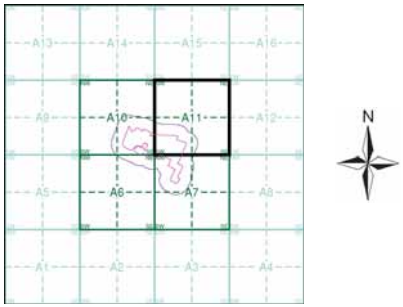
Source map scale - 1:2,500

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Historical Map - Segment A11



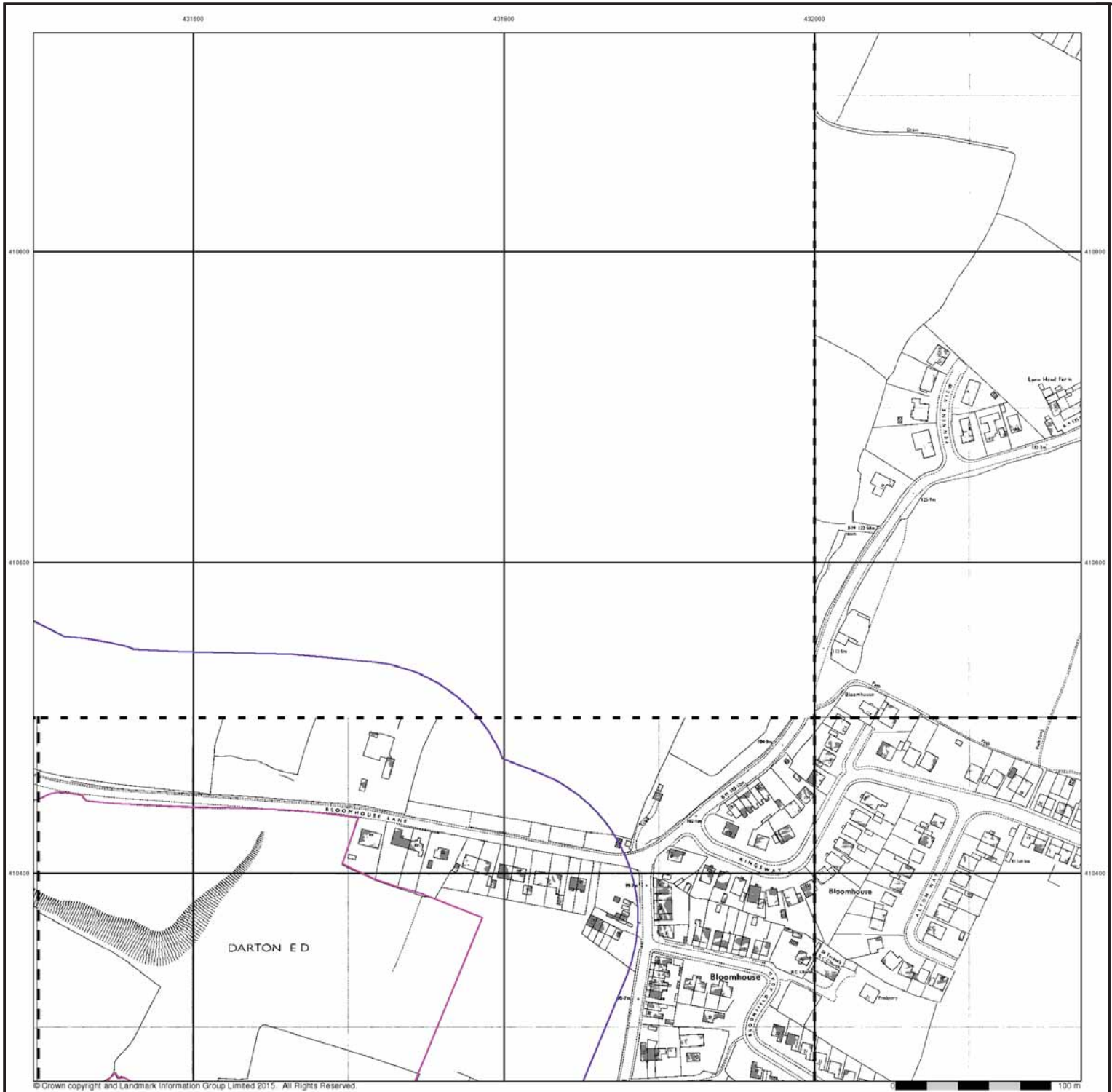
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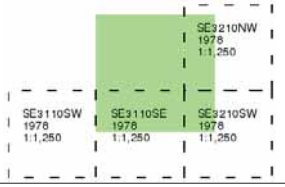
Ordnance Survey Plan

Published 1978

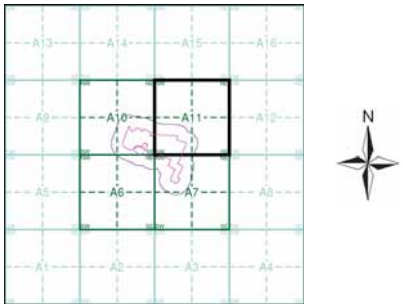
Source map scale - 1:1,250

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Map Name(s) and Date(s)



Historical Map - Segment A11



Order Details

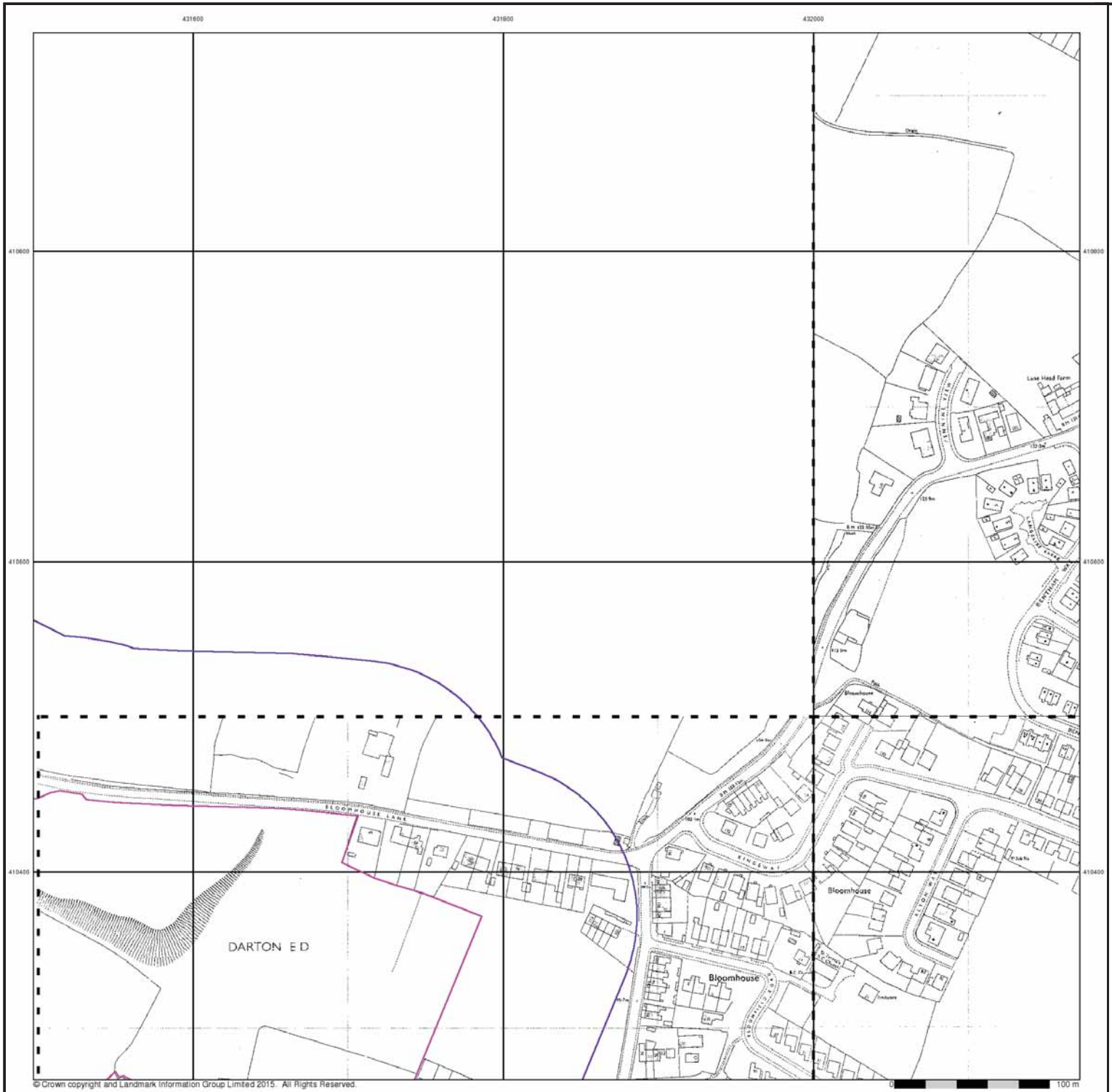
Order Number:	77520900_1_1
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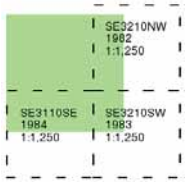
Additional SIMs

Published 1982 - 1984

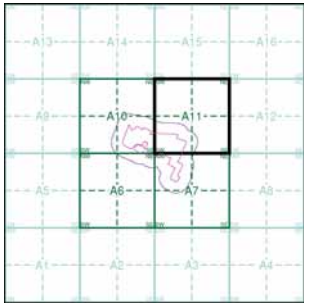
Source map scale - 1:1,250

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Map Name(s) and Date(s)



Historical Map - Segment A11



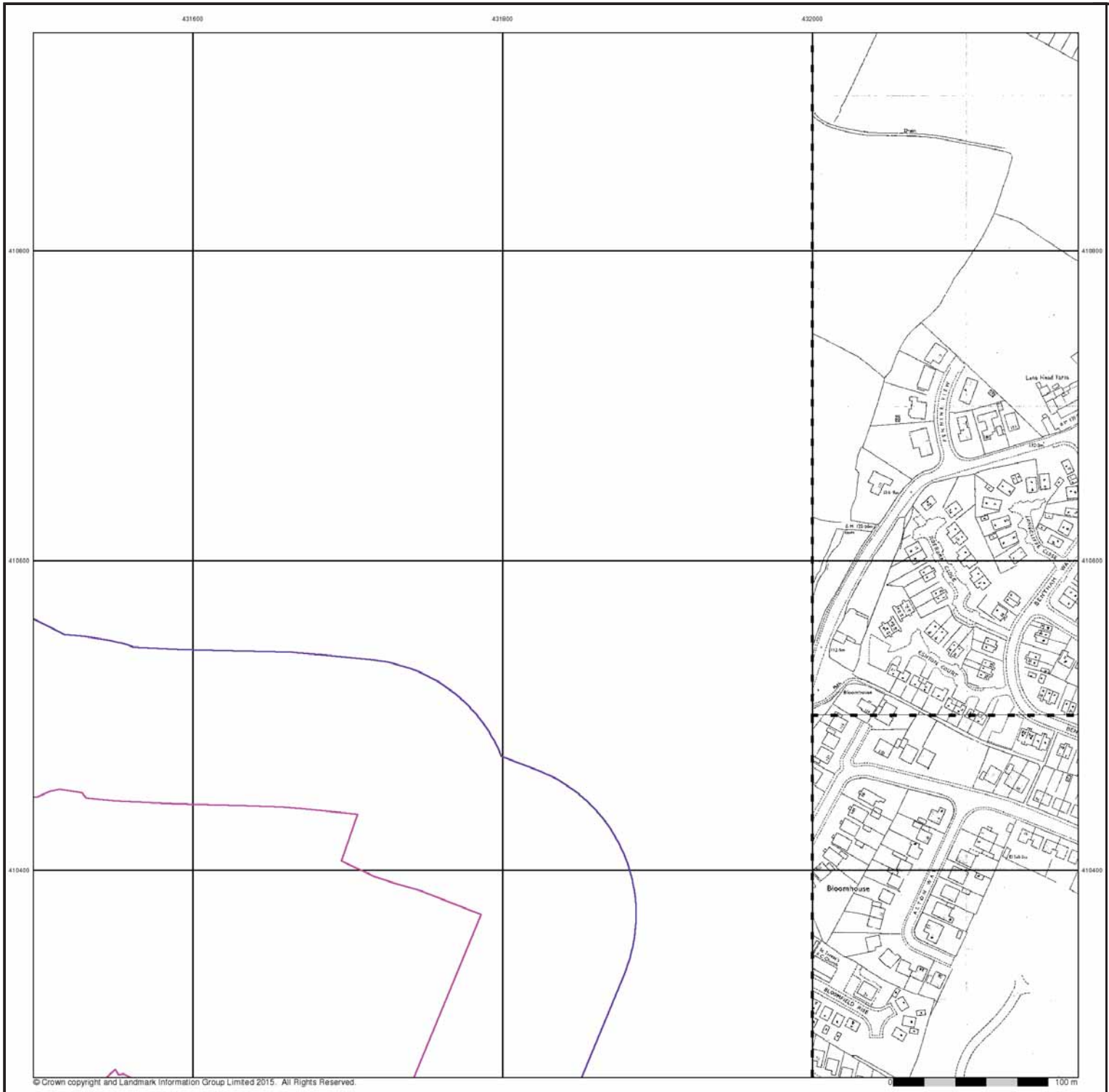
Order Details

Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	100

Site Details

Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

Landmark Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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RSK

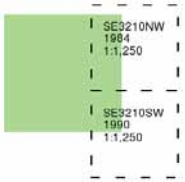
Additional SIMs

Published 1984 - 1990

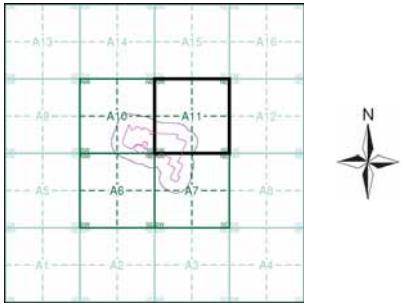
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A11



Order Details

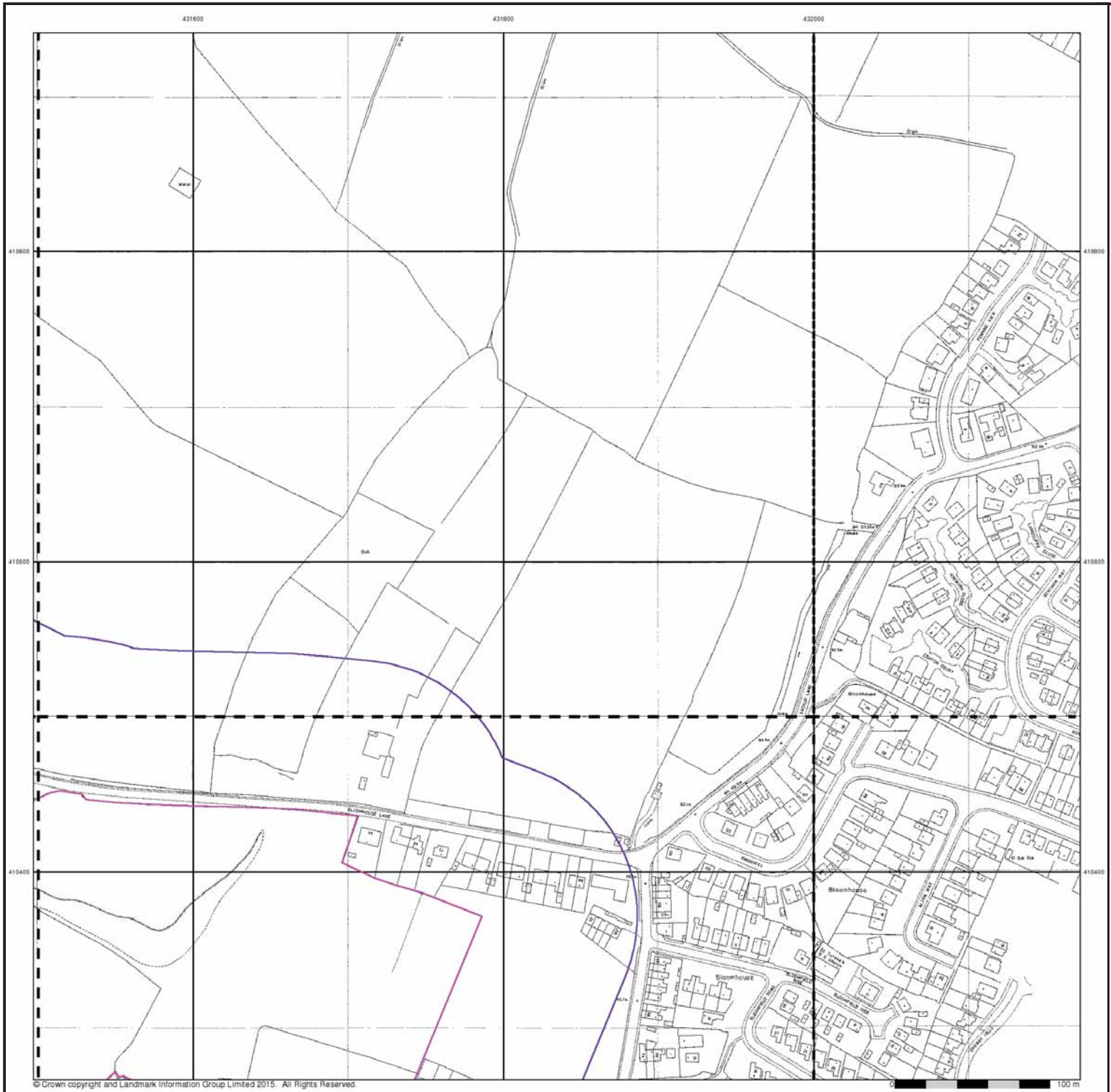
Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
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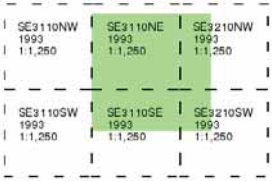
Large-Scale National Grid Data

Published 1993

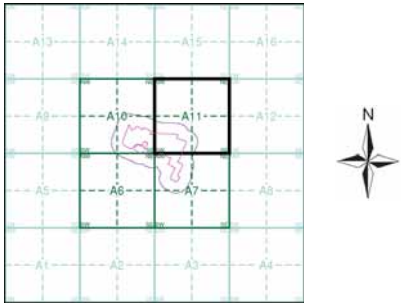
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A11



Order Details

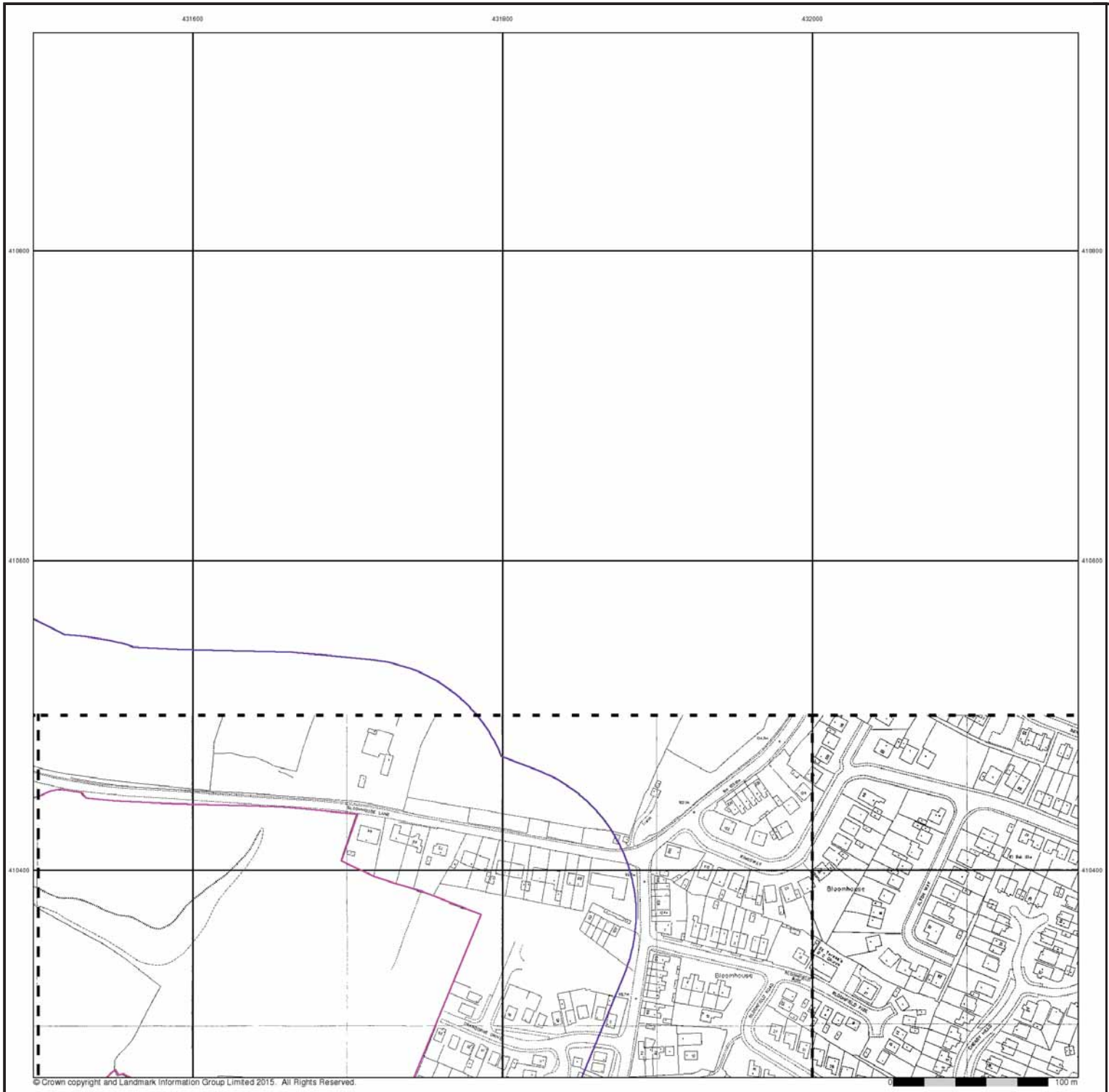
Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
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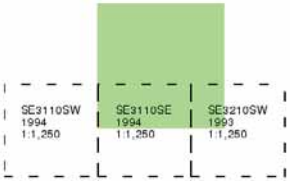
Large-Scale National Grid Data

Published 1993 - 1994

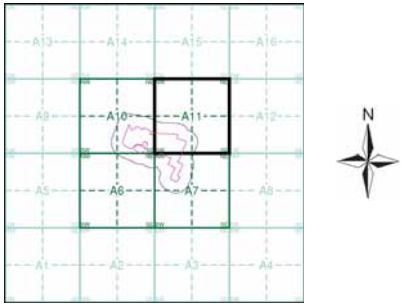
Source map scale - 1:1,250

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Map Name(s) and Date(s)



Historical Map - Segment A11



Order Details

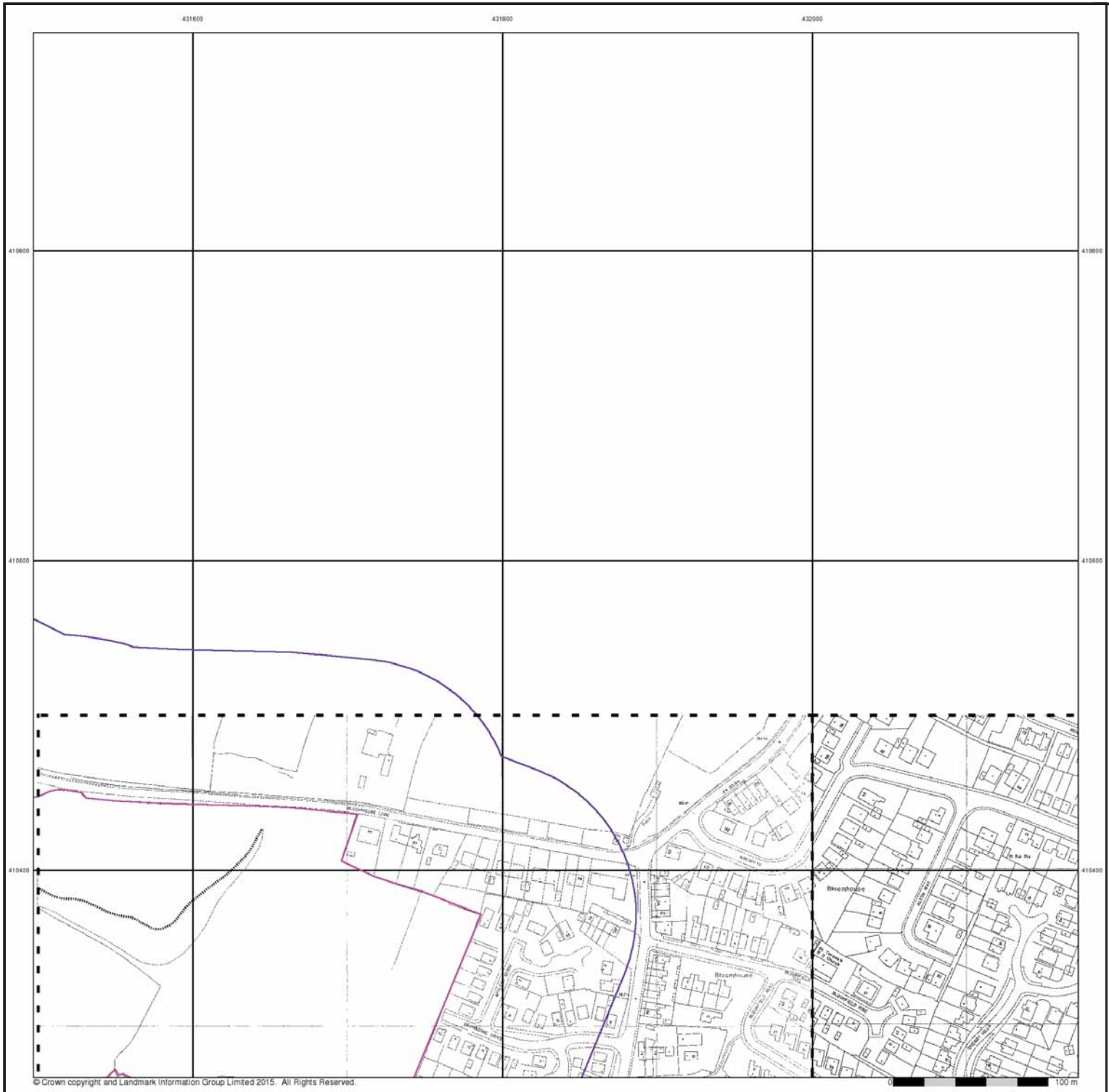
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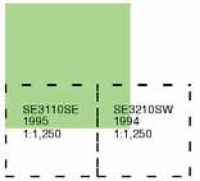
Large-Scale National Grid Data

Published 1994 - 1995

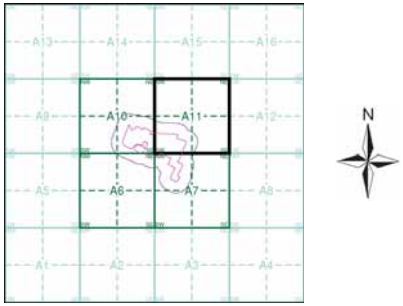
Source map scale - 1:1,250

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Map Name(s) and Date(s)



Historical Map - Segment A11



Order Details

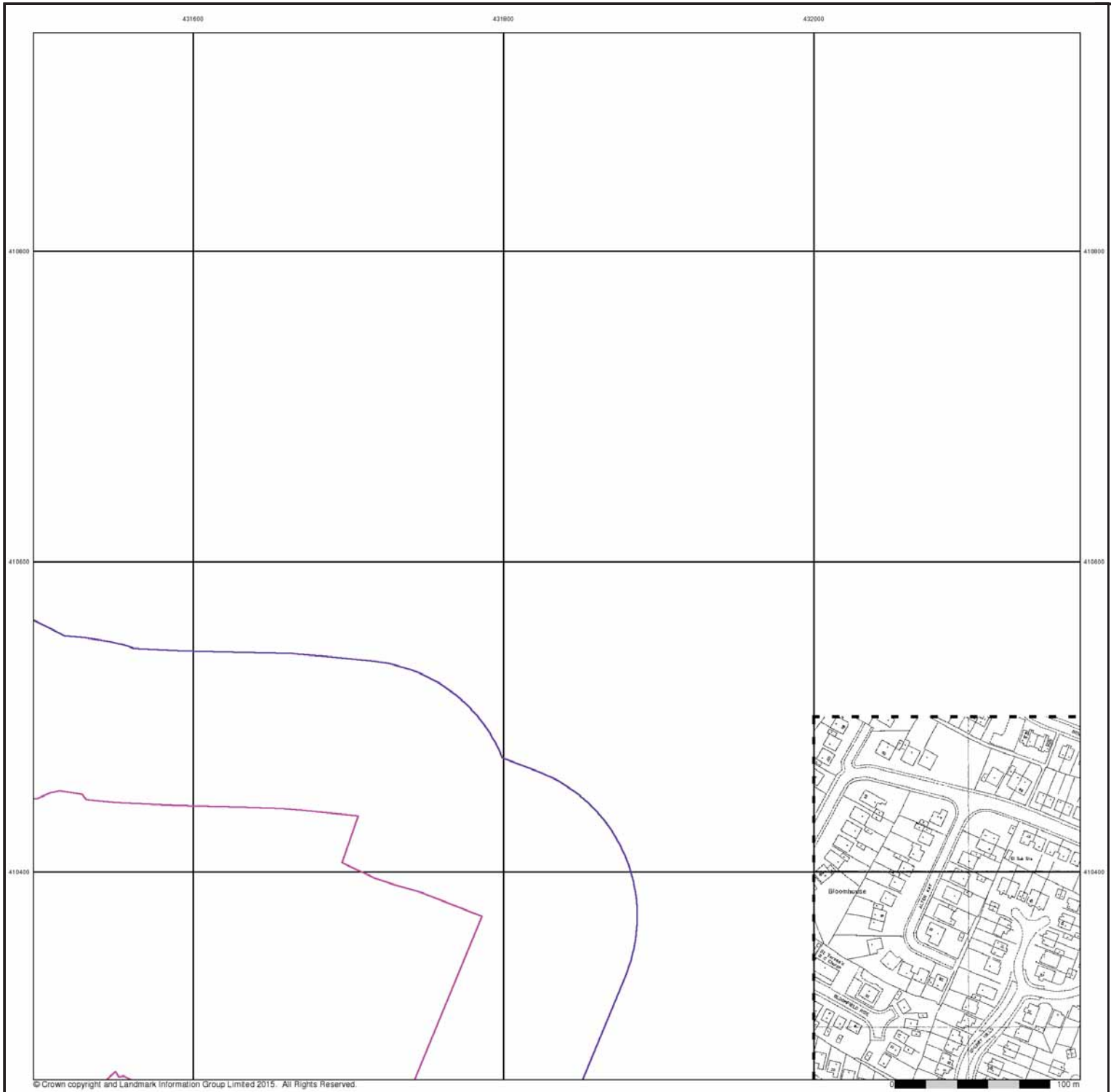
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Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
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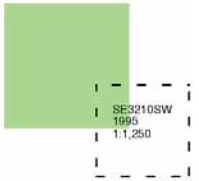
Large-Scale National Grid Data

Published 1995

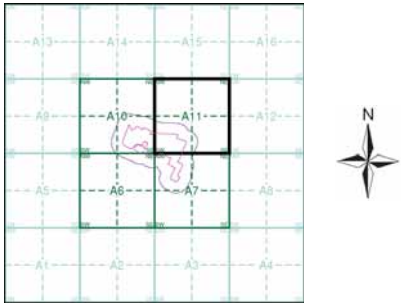
Source map scale - 1:1,250

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Map Name(s) and Date(s)



Historical Map - Segment A11



Order Details

Order Number:	77520900_1_1
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National Grid Reference:	431520, 410300
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RSK

Large-Scale National Grid Data

Published 1996

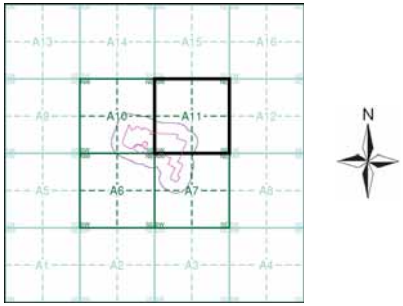
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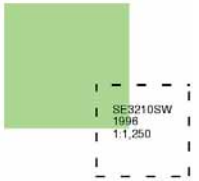
Large-Scale National Grid Data

Published 1996

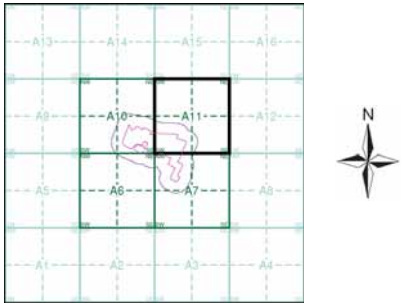
Source map scale - 1:1,250

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Map Name(s) and Date(s)



Historical Map - Segment A11



Order Details

Order Number:	77520900_1_1
Customer Ref:	301645
National Grid Reference:	431520, 410300
Slice:	A
Site Area (Ha):	11.89
Search Buffer (m):	100

Site Details

Bloomhouse Lane, Darton, BARNSLEY, South Yorkshire, S75 5HJ

Landmark Information Group

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

SE31SW 275

Curtins
CONSULTING ENGINEERS

Date : 20/5/88

Job N° DN45

Weather: Today:

Recently:

3179
1037

Level :

Trial Pit N° 1

Depth	Description	Shear Vane Reading Ave of 3
0	Course Grass	
	Dark Brown Topsoil	
	Firm Light Brown Mottled Silty Clay	55, 70 & 55
1000		
	Coal	
2000		
3000		
4000		
5000		

Ground Water: Yes ☐ Level: _____ Rate: _____
No ☑

Soil Sample : Yes ☑ Level: 1.0m
No ☐

Excavation Stable: Yes ☑ _____
No ☐ _____

Comments :

SE31SW 278

Curtins
CONSULTING ENGINEERS

Date :

Job No DN45

3187
1031

Weather: Today: Recently:

Level :

Trial Pit No 4

Depth	Description	Shear Vane Reading Ave of 3
0	Course Grass	
	Brown Topsoil	
1000	Firm Orangey Brown Mottled Silty Clay With Traces of Coal, & Pockets of Firm Grey Clayey Silt.	
2000	Compact Mottled Brown Clayey Shale	
3000	Rock Could Not Excavate Further.	
4000		
5000		

Ground Water: Yes ☐ No ☑ Level: _____ Rate: _____

Soil Sample: Yes ☑ No ☐ Level: 0.9m

Excavation Stable: Yes ☑ No ☐

Comments: Fragments of Shale Could Be Crushed Into Powder In Hand.

SE31SW 280

Curtins
CONSULTING ENGINEERS

Date :

Job No DN45

Weather: Today:

Recently:

3179
1034

Level :

Trial Pit No 6

Depth	Description	Shear Vane Reading Ave of 3
0		
	Brown Topsoil	
	Firm Orangey Brown Mottled Silty Clay, With Traces of Coal, Becoming Shaley With Depth.	64, 70 & 70
1000		
2000		
	Compact Mottled Brown Clayey Shale	
3000		
4000		
5000		

Ground Water: Yes ☐ Level: _____ Rate: _____
No ☑

Soil Sample : Yes ☐ Level: _____
No ☑

Excavation Stable: Yes ☑ _____
No ☐ _____

Comments :

SE31SW 286

Curtins
CONSULTING ENGINEERS

Date :

Job No DN45

Weather: Today:

Recently:

3178
1027

Level :

Trial Pit No 12

Depth	Description	Shear Vane Reading Ave of 3
0	Course Grass	
	Brown Topsoil With Some Broken Tiles, Pot & Pieces of Glass	
1000	Soft to Firm SIlty Clay Fill With Traces Of Ash & Pieces Of Coal, Rusty Tin Can. Piece of Rotting Cloth In Fill at 2.0m Pieces Of Rotting TImber In Fill at 2.6m Rotting Leather Sole From Shoe at 2.7m Some Pieces of Brick.	
2000		
3000		
4000		
5000		

Ground Water: Yes ☐ Level: _____ Rate: _____
No ☑

Soil Sample : Yes ☐ Level: _____
No ☑

Excavation Stable: Yes ☑ _____
No ☐ _____

Comments : Clay Fill Broke Up Into Fragments Varying In Size & Shape When Excavated.

Norwest Holst Soil Engineering Ltd.

Borehole No. 2

BOREHOLE LOG

Contract No. E8032
Location. Station Road DARTON
Client. BARNSLEY M.B.C.
Method of Boring. Rotary coring
Diameter of Borehole. 76mm core

Sheet 1 of 1
Chainage. 63.0m;10.0mS
Ground Level. 104.91 m.A.O.D.
Date. 16 & 17/11/88

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D.%	Daily Progress
MADE GROUND: Concrete and sandstone setts		0.20	104.71				
Light grey brown very thinly bedded highly to moderately weathered very silty MUDSTONE very weak to moderately weak ...with very closely spaced iron stained jointing ...bedding dips ≃ 45°					OPEN HOLE TCR (%) SCR (%) 3.00		17/11
		4.50	100.41		75 8	5	
Grey laminated moderately to highly weathered MUDSTONE weak ...bedding dips at 40° reducing to 20° with depth					5.00 38 2	0	
					7.00		
Black laminated moderately weathered carbonaceous MUDSTONE weak ... with very closely spaced discontinuities, some polished		8.50	96.41				
					50 3	0	
Grey laminated moderately weathered MUDSTONE weak ...with closely spaced jointing ...bedding dips at 35°		9.50	95.41				
		10.00	94.91		10.00		

Type of Sample

Is	S.P.T.	■	Undisturbed
Ic.	C.P.T.	×	Vane
O	Jar	Δ	Water
●	Bulk		Piezometer

Remarks (Observations of Ground Water etc.)

Borehole dry during drilling

Water levels are subject to seasonal or tidal variations and should not be taken as constant

Norwest Holst Soil Engineering Ltd.

Borehole No. 1

BOREHOLE LOG

Contract No. E8032
Location Station Road DARTON
Client BARNSLEY M.B.C.
Method of Boring Rotary coring
Diameter of Borehole 76mm core

Sheet 1 of 2
Chainage 133.4m:9.4m S
Ground Level 111.27 m.A.O.D.
Date 16/11/88

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D.%	Daily Progress
MADE GROUND: Tarmacadam and Hardcore		0.30	110.97		Open Hole		
Brown, grey/brown very thinly bedded highly weathered muddy fine grained SANDSTONE weak to moderately weak with very closely spaced iron stained jointing -- bedding dips ≃30°					TCR (%) SCR (%) 2.00 42 0	0	
		5.00	106.27		5.00		
Grey laminated moderately weathered MUDSTONE very weak to moderately weak with very closely spaced iron stained jointing -- bedding dips vary 30° to 70° (possible fault zone)					38 0 7.00 72 20	0 18	
Black laminated highly weathered highly carbonaceous MUDSTONE, very weak.		8.50	102.77				
		9.00	102.27		9.00		
Light grey thinly bedded highly weathered variably sandy clayey MUDSTONE, very weak (SEAT EARTH)					53 13	7	

Type of Sample

- Is S.P.T.
- Undisturbed
- Ic. C.P.T.
- × Vane
- O Jar
- Δ Water
- ● Bulk
- Piezometer

Remarks (Observations of Ground Water etc.)

Water seepage at 9.00m
Strata damp below below 18.00m

Water levels are subject to seasonal or tidal variations and should not be taken as constant

Norwest Holst Soil Engineering Ltd.

Borehole No. 1

BOREHOLE LOG

Contract No. F8032
Location Station Road DARTON
Client BARNSLEY M.B.C.
Method of Boring Rotary coring
Diameter of Borehole 76mm core

Sheet 2 of 2
Chainage 133.4m; 9.4mS
Ground Level 111.27 m.A.O.D.
Date 16/11/88

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	TCR (%)	SCR (%)	"N"/ R.Q.D.%	Daily Progress
Light grey thinly bedded highly weathered variably sandy, clayey MUDSTONE, very weak (SEAT EARTH)					10.50				
					95	38		30	
					12.50				
		13.00	98.27						
Grey, light grey thinly bedded moderately to highly weathered fine grained SANDSTONE weak to moderately strong ...bedding dips ⏥ 60°					90	28		18	
		15.00	96.27		15.00				
Grey laminated highly to completely weathered clayey MUDSTONE very weak to moderately weak ... bedding dips 0° to 60° (Probable Fault Zone)					75	35		25	
		17.30	93.97		17.00				
Light grey very thinly bedded moderately weathered fine to medium grained SANDSTONE moderately strong with very closely spaced fracturing (shattered)					100	0		0	
					18.20				
					Open Hole				
		20.00	91.27		20.00				

Type of Sample

Is S.P.T. ■ Undisturbed
Ic. C.P.T. × Vane
O Jar △ Water
● Bulk Piezometer

Remarks (Observations of Ground Water etc.)

See sheet 1

Water levels are subject to seasonal or tidal variations and should not be taken as constant

APPENDIX E
NON-RESIDENTIAL COAL AUTHORITY REPORT AND RADON REPORT

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: 0345 762 6848 DX 716176 MANSFIELD 5

LANDMARK INFORMATION GROUP LIMITED
SOWTON INDUSTRIAL ESTATE
ABBEY COURT
UNIT 5/7 EAGLE WAY
EXETER
DEVON
EX2 7HY

Our reference:	**51001059098001**
Your reference:	**77520900_2|**
Date of your enquiry:	**04 January 2016**
Date we received your enquiry:	**04 January 2016**
Date of issue:	**04 January 2016**

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

Non-Residential Coal Authority Mining Report

SITE AT BLOOMHOUSE LANE, DARTON, BARNSLEY, SOUTH YORKSHIRE,

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 7 seams of coal at shallow to 290m depth, and last worked in 1979.

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.

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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 5 mine entries, the approximate positions of which are shown on the attached plan.

Our records disclose the following information:

431410-015. No treatment details.

431410-035. No treatment details.

431410-046. No treatment details.

431410-036. was not encountered during drilling and grouting operations carried out beneath plot 15 Sackup Lane by the developers Marsh Homes 63-73 Commonside Sheffield S10 1GF. We have no record of what steps if any have been taken to treat this mine entry..

431410-047. 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 0345 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 not 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.

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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 not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

Withdrawal of support

The property is in an area for which notices of entitlement to withdraw support were published in 1947, 1978, 1982.

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 0345 762 6848.

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 637225. 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

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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.

A site investigation was carried out in January 1993 by Amco. Drilling Ltd On behalf of Marsh Homes, 63-73 Commonside, Sheffield. S10 1GF..

Information from the Cheshire Brine Subsidence Compensation Board

The property lies outside the Cheshire Brine Compensation District.

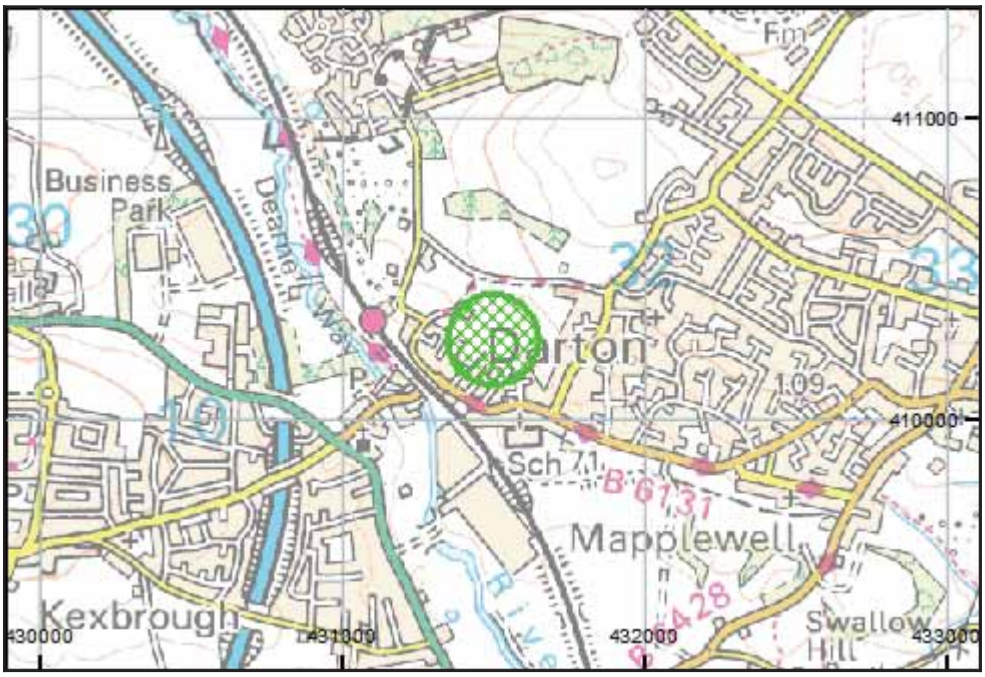
Additional Remarks

Information provided by the Coal Authority in this report is compiled in response to the Law Society's Con29M Coal Mining and Brine Subsidence Claim enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL. Please note that Brine Subsidence Claim enquiries are only relevant for England and Wales. 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 applicable at the time the report was produced.

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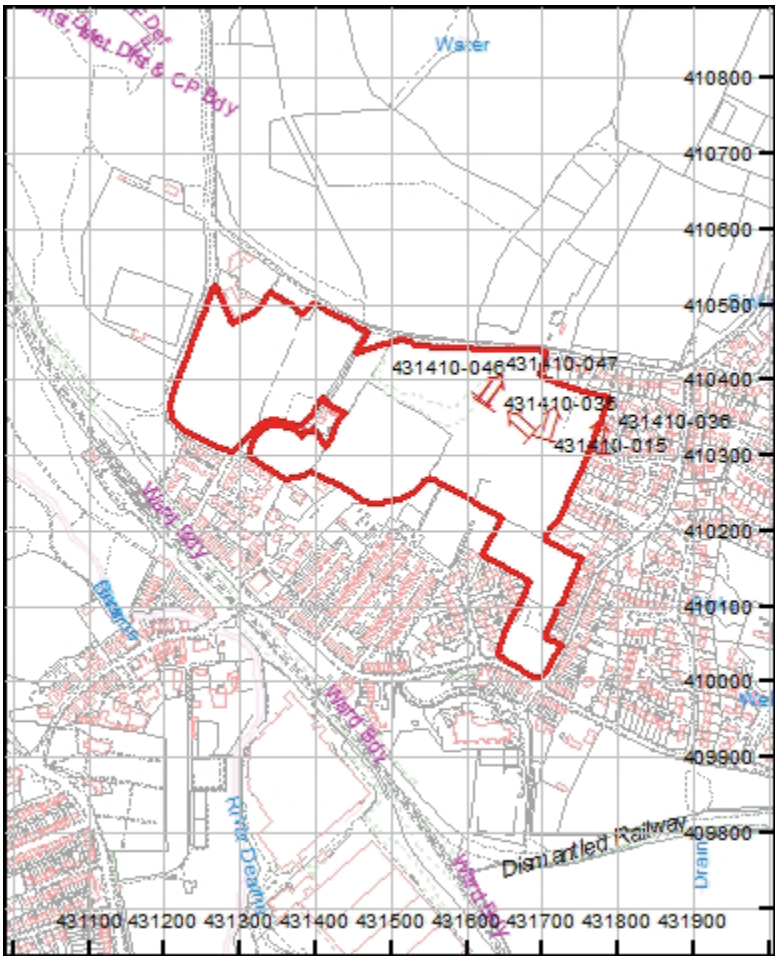
Location map

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



Katie Foster
RSK Environment Limited
RSK Environment Limited
Fourways House, 57 Hilton Street
Manchester
Manchester
Lancashire
M1 2EJ

Radon Report: England and Wales

Advisory report on the requirement for radon protective measures in new buildings, conversions and extensions to existing buildings. The report also indicates whether a site is located within a radon Affected Area

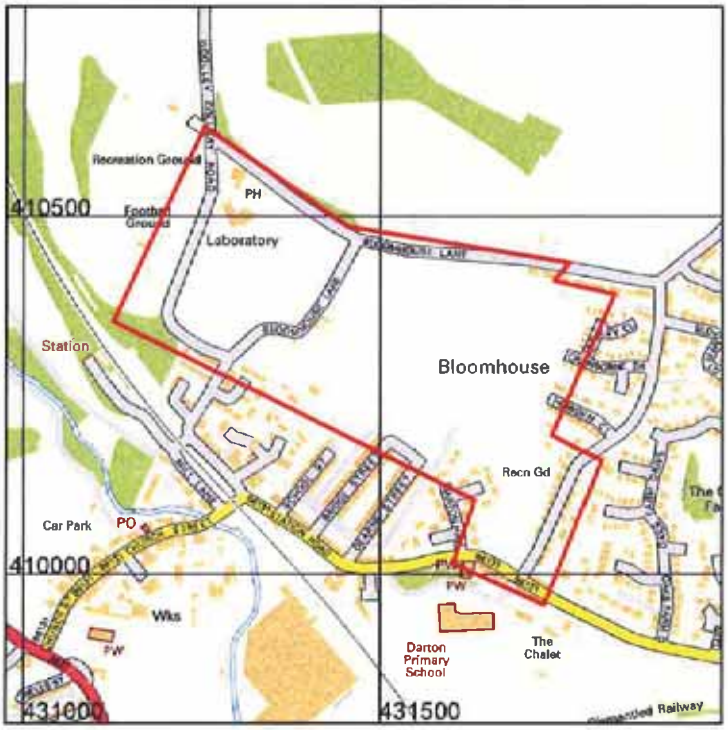
Report Id: ***GR_213248/1***

Client reference: Darton - 301645

Search location



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Scale: 1:10 000 (1cm = 100 m)



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OS Street View: Scale: 1:10 000 (1cm = 100 m)

This report describes a site located at National Grid Reference 431477, 410292. Note that for sites of irregular shape, this point may lie outside the site boundary. Where the client has submitted a site plan the assessment will be based on the area given.

Search location indicated in red

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Radon Report: England and Wales

This is an advisory report on the requirement for radon protective measures in new buildings, conversions and extensions. The report also indicates whether a site is located within a radon Affected Area

Requirement for radon protective measures
The determination below follows advice in *BR211 Radon: Guidance on protective measures for new buildings (2007 edition)*, which also provides guidance on what to do if the result indicates that protective measures are required.

BASIC RADON PROTECTIVE MEASURES ARE REQUIRED FOR THE REPORT AREA.

The BGS is not able to provide advice on the technical specifications of 'basic' and 'full' radon protective measures. This information is detailed in **BRE Report BR211 Radon: guidance on protective measures for new buildings** which may be purchased from **brebookshop.com.** This report offers guidance on the technical solutions that are required to satisfy Building Regulations requirements.

Technical solutions to radon protection in new build and existing dwellings in radon affected areas are available on the BRE web site at:
http://www.bre.co.uk/page.jsp?id=1626 and http://www.bre.co.uk/radon/ and in a range of technical reports available from **brebookshop.com;** Tel: 01923 664262, email: bookshop@bre.co.uk.
Summary guidance is available on the web at:
http://www.bre.co.uk/radon/protect.html.

If you require further information or guidance, you should contact your local authority building control officer or approved inspector.

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Radon in existing buildings

Is this property in a radon affected area – YES

The answer to the standard enquiry on house purchase known as **CON29 Standard Enquiry of Local Authority 3.13 Radon Gas: Location of the Property in a radon Affected Area is YES** this property is in a Radon Affected Area as defined by Public Health England (PHE).

The estimated probability of the property being above the Action Level for radon is: 3-5% (INTERMEDIATE PROBABILITY).

The result informs you of the estimated probability that this particular property is above the Action Level for radon. This does not necessarily mean there is a radon problem in the property. The only way to determine whether it is above or below the Action Level is to carry out a radon measurement within the existing property.

Radon Affected Areas are designated by Public Health England. They advise that radon gas should be measured in all properties within Radon Affected Areas.

If you are buying a new build property in a Radon Affected Area, you should ask the builder whether radon protective measures were incorporated in the construction of the property.

If you are buying a currently occupied property in a Radon Affected Area you should ask the present owner whether radon levels have been measured in the property. If they have, ask whether the results were above the Radon Action Level and if so whether remedial measures were installed, radon levels were retested, and the that the results of re-testing confirmed the effectiveness of the measures.

In radon affected homes, the problem of radon can usually be tackled with simple, effective and relatively inexpensive measures. These measures are comparable in cost to work such as damp-proofing and timber treatment. You can get practical advice about construction work to reduce radon levels from the Building Control Officer at your local council.

For further information, advice about radon, its health risks and details of how to order the radon test, please contact the PHE Radon Helpline on 01235 822622 or go online at www.ukradon.org or write to Radon Survey, Public Health England, Centre for Radiation, Chemical and Environmental Hazards, Chilton, Didcot, Oxon, OX11 0RQ, email: radon@hpa.org.uk. You can obtain an information pack from the PHE free Radon answerphone on 0800 614529

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What is radon?

Radon is a naturally occurring radioactive gas, which is produced by the radioactive decay of radium which, in turn, is derived from the radioactive decay of uranium. Uranium is found in small quantities in all soils and rocks, although the amount varies from place to place. Radon released from rocks and soils is quickly diluted in the atmosphere. Concentrations in the open air are normally very low and do not present a hazard. Radon that enters enclosed spaces such as some buildings (particularly basements), caves, mines, and tunnels may reach high concentrations in some circumstances. The construction method and degree of ventilation will influence radon levels in individual buildings. A person's exposure to radon will also vary according to how particular buildings and spaces are used.

Inhalation of the radioactive decay products of radon gas increases the chance of developing lung cancer. If individuals are exposed to high concentrations for significant periods of time, there may be cause for concern. In order to limit the risk to individuals, the Government has adopted an Action Level for radon in homes of 200 becquerels per cubic metre (Bq m^{-3}). The Government advises householders that, where the radon level exceeds the Action Level, measures should be taken to reduce the concentration.

Radon in workplaces

The Ionising Radiation Regulations, 1999, require employers to take action when radon is present above a defined level in the workplace. Advice may be obtained from your local Health and Safety Executive Area Office or the Environmental Health Department of your local authority. The BRE publishes a guide (BR293)**: Radon in the workplace.** BRE publications may be obtained from the BRE Bookshop, Tel: 01923 664262, email: bookshop@bre.co.ukwebsite: www.brebookshop.com

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Contact Details

Keyworth (KW) Office
British Geological Survey
Environmental Science Centre
Nicker Hill
Keyworth
Nottingham
NG12 5GG
Tel: 0115 9363143
Fax: 0115 9363276
Email: enquiries@bgs.ac.uk

Wallingford (WL) Office
British Geological Survey
Maclean Building
Wallingford
Oxford
OX10 8BB
Tel: 01491 838800
Fax: 01491 692345
Email: hydroenq@bgs.ac.uk

Murchison House (MH) Office
British Geological Survey
Murchison House
West Mains Road
Edinburgh
EH9 3LA
Tel: 0131 650 0207
Fax: 0131 650 0252
Email: enquiry@bgs.ac.uk

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- The data, information and related records supplied in this Report by BGS can only be indicative and should not be taken as a substitute for specialist interpretations, professional advice and/or detailed site investigations. You must seek professional advice before making technical interpretations on the basis of the materials provided.
- Geological observations and interpretations are made according to the prevailing understanding of the subject at the time. The quality of such observations and interpretations may be affected by the availability of new data, by subsequent advances in knowledge, improved methods of interpretation, and better access to sampling locations.
- Raw data may have been transcribed from analogue to digital format, or may have been acquired by means of automated measuring techniques. Although such processes are subjected to quality control to ensure reliability where possible, some raw data may have been processed without human intervention and may in consequence contain undetected errors.
- Detail, which is clearly defined and accurately depicted on large-scale maps, may be lost when small-scale maps are derived from them.
- Although samples and records are maintained with all reasonable care, there may be some deterioration in the long term.
- The most appropriate techniques for copying original records are used, but there may be some loss of detail and dimensional distortion when such records are copied.
- Data may be compiled from the disparate sources of information at BGS's disposal, including material donated to BGS by third parties, and may not originally have been subject to any verification or other quality control process.
- Data, information and related records, which have been donated to BGS, have been produced for a specific purpose, and that may affect the type and completeness of the data recorded and any interpretation. The nature and purpose of data collection, and the age of the resultant material may render it unsuitable for certain applications/uses. You must verify the suitability of the material for your intended usage.
- If a report or other output is produced for you on the basis of data you have provided to BGS, or your own data input into a BGS system, please do not rely on it as a source of information about other areas or geological features, as the report may omit important details.
- The topography shown on any map extracts is based on the latest OS mapping and is not necessarily the same as that used in the original compilation of the BGS geological map, and to which the geological linework available at that time was fitted.
- Note that for some sites, the latest available records may be quite historical in nature, and while every effort is made to place the analysis in a modern geological context, it is possible in some cases that the detailed geology at a site may differ from that described.

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APPENDIX F
COAL MINING RISK ASSESSMENT SUPPORTING INFORMATION

The Coal Authority

Mining Records Office

Search Results

Search Criteria:

OS Easting: 431517 **OS Northing:** 410330

Radius: 200 metres

Colliery Selection:

All collieries were selected

Seam Selection:

All seams were selected

Working Types Selection:

Underground

Opencast

Dirt Tip

Other Minerals

Total number of entries found: 23

Search Results:

Cat_No	Colliery	Seam	Date Abandoned
12079	OAKS FARM	BARNSLEY	29.04.1937
12647	BLOOMHOUSE	BARNSLEY	18/1/1940

16548	BLOOMHOUSE LANE & EXTENSION LOM OC	BARNSLEY	27/7/1991
16548	BLOOMHOUSE LANE & EXTENSION LOM OC	BARNSLEY RIDER	27/7/1991
17564	DARTON HOTEL OPENCAST	BARNSLEY BED	1963
2281	DARTON HALL	BARNSLEY	31/12/1888
5770	PYE WOOD	BARNSLEY	8/11/1911
7081	OAKS FARM	BARNSLEY	10.02.1920
7368	PYE WOOD	BOTTOM HAIGH MOOR	4/1/1922
7368	PYE WOOD	TOP HAIGH MOOR	4/1/1922
NE1034	WOOLLEY REDBROOK [INCLUDING WOOLLEY, REDBROOK AND DODWORTH]	WHINMOOR	08.08.1988
NE158	WOOLLEY BARNSLEY, NORTH GAWBER AND WHEATLEY WOOD COLLIERIES	BARNSLEY (INCLUDING BARNSLEY SOFTS)	5/4/1955
NE695	NORTH GAWBER	LIDGETT	23.10.1969
NE784	OAKS FARM (OPENCAST)	BARNSLEY	6/1948
NE816	WOOLLEY	SILKSTONE FOUR FOOT	21.09.1974
NE868	NORTH GAWBER [INCLUDING DARTON]	TOP HAIGH MOOR	22.12.1979
NE978	WOOLLEY (FORMERLY NORTH GAWBER)	TOP HAIGH MOOR (NETHERTON THICK)	5/3/1986
NE979	WOOLLEY [FORMER NORTH GAWBER]	LOW HAIGH MOOR [NETHERTON THICK]	05.03.1986
NE996	WOOLLEY	THORNCLIFFE [NEW HARDS]	05.10.1986
PO0	BLOOMHOUSE GREEN	BARNSLEY	1859
PO0	DARTON HALL	BARNSLEY	1886
SCC1	BLOOMHOUSE GREEN	BARNSLEY	1878
SCC12	MAPPLEWELL COLLIERY (1) MAPPLEWELL MINE (2)	BARNSLEY, KENTS THICK OR MAPPLEWELL	1850

The Coal Authority

Mining Records Office

Search Results

Search Criteria:

OS Easting: 431517 **OS Northing:** 410330

Radius: 300 metres

Colliery Selection:

All collieries were selected

Seam Selection:

All seams were selected

Working Types Selection:

Underground

Opencast

Dirt Tip

Other Minerals

Total number of entries found: 31

Search Results:

Cat_No	Colliery	Seam	Date Abandoned
10504	BLOOMHOUSE	MAPPLEWELL OR KENTS THICK	31/3/1931
12079	OAKS FARM	BARNSLEY	29.04.1937

12647	BLOOMHOUSE	BARNSLEY	18/1/1940
16016	DENBY GRANGE, WOOLLEY, REDBROOK, WHEATLEY WOOD, PYE WOOD	SPOIL TIPS (NOS. 270/054, 320/055, 270/058)	1990
16548	BLOOMHOUSE LANE & EXTENSION LOM OC	BARNSLEY	27/7/1991
16548	BLOOMHOUSE LANE & EXTENSION LOM OC	BARNSLEY RIDER	27/7/1991
17564	DARTON HOTEL OPENCAST	BARNSLEY BED	1963
2281	DARTON HALL	BARNSLEY	31/12/1888
5770	PYE WOOD	BARNSLEY	8/11/1911
7081	OAKS FARM	BARNSLEY	10.02.1920
7368	PYE WOOD	BOTTOM HAIGH MOOR	4/1/1922
7368	PYE WOOD	TOP HAIGH MOOR	4/1/1922
FGB795	WOOLLEY COAL CO.	BARNSLEY SEAM	1853
M726	AT NORTH GAWBER, HAIGH, HAIGH, HIGH HOYLAND, SWALLOW HILL, FALCONER	MAPPLEWELL	
NE1034	WOOLLEY REDBROOK [INCLUDING WOOLLEY, REDBROOK AND DODWORTH]	WHINMOOR	08.08.1988
NE158	WOOLLEY BARNSLEY, NORTH GAWBER AND WHEATLEY WOOD COLLIERIES	BARNSLEY (INCLUDING BARNSLEY SOFTS)	5/4/1955
NE378	STAINCROSS COMMON O.C.	KENTS THIN	29/5/1953
NE378	STAINCROSS COMMON O.C.	LOW BEAMSHAW	29/5/1953
NE695	NORTH GAWBER	LIDGETT	23.10.1969
NE784	OAKS FARM (OPENCAST)	BARNSLEY	6/1948
NE816	WOOLLEY	SILKSTONE FOUR FOOT	21.09.1974
NE868	NORTH GAWBER [INCLUDING DARTON]	TOP HAIGH MOOR	22.12.1979
NE978	WOOLLEY (FORMERLY	TOP HAIGH MOOR	5/3/1986

	NORTH GAWBER)	(NETHERTON THICK)	
NE979	WOOLLEY [FORMER NORTH GAWBER]	LOW HAIGH MOOR [NETHERTON THICK]	05.03.1986
NE996	WOOLLEY	THORNCLIFFE [NEW HARDS]	05.10.1986
PO0	BLOOMHOUSE GREEN	BARNSLEY	1859
PO0	DARTON HALL	BARNSLEY	1886
PO0	WHEATLEY WOOD	PROBABLY WINTER	
SCC1	BLOOMHOUSE GREEN	BARNSLEY	1878
SCC1	BLOOMHOUSE GREEN	MAPPLEWELL	1874
SCC12	MAPPLEWELL COLLIERY (1) MAPPLEWELL MINE (2)	BARNSLEY, KENTS THICK OR MAPPLEWELL	1850

Issued by:
The Coal Authority, Property Search Services, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire, NG18 4RG
Website: www.groundstability.com Phone: 0345 762 6848 DX 716176 MANSFIELD 5

RSK ENVIRONMENT LIMITED
SPRING LODGE
172 CHESTER ROAD
HELSBY
FRODSHAM
WA6 0AR

Our reference:	**51001072291001**
Your reference:	**51001059098001**
Date of your enquiry:	**19 January 2016**
Date we received your enquiry:	**19 January 2016**
Date of issue:	**19 January 2016**

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

Shaft Plan and Data Sheets

LAND AT BLOOMHOUSE LANE, DARTON, BARNSLEY, SOUTH YORKSHIRE,

I refer to the enquiry dated 19 January 2016, received 19 January 2016, 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:	Adit
Reference:	431410-015
Source:	OSCS 4th Ed. 1/2500 Yorks 262-14 Ab Plan 12647
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:	312
Treatment details:	Unknown
Conveyance:	Not Applicable
Easting:	431686
Northing:	410329
Other information:	None

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Mine Entry Data (continued)

Shaft/adit:	Adit
Reference:	431410-047
Source:	Former British Coal Records (Barnsley SMP)
Colliery name:	Unknown
Entry name:	Bloomhouse Colliery Adit
Date abandoned:	Unknown
Depth of superficial deposits (m):	Unknown
Depth of shaft (m):	Unknown
Diameter of shaft (m):	Unknown
Probable adit azimuth:	38
Treatment details:	Unknown
Conveyance:	Not Applicable
Easting:	431621
Northing:	410374
Other information:	None

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Mine Entry Data (continued)

Shaft/adit:	Adit
Reference:	431410-046
Source:	Former British Coal Records (Barnsley SMP)
Colliery name:	Unknown
Entry name:	Bloomhouse Colliery Adit
Date abandoned:	Unknown
Depth of superficial deposits (m):	Unknown
Depth of shaft (m):	Unknown
Diameter of shaft (m):	Unknown
Probable adit azimuth:	34
Treatment details:	Unknown
Conveyance:	Not Applicable
Easting:	431626
Northing:	410369
Other information:	None

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Mine Entry Data (continued)

Shaft/adit:	Adit
Reference:	431410-036
Source:	Ab Plan 12647
Colliery name:	Unknown
Entry name:	Bloomhouse Colliery Adit
Date abandoned:	Unknown
Depth of superficial deposits (m):	Unknown
Depth of shaft (m):	Unknown
Diameter of shaft (m):	Unknown
Probable adit azimuth:	8
Treatment details:	was not encountered during drilling and grouting operations carried out beneath plot 15 Sackup Lane by the developers Marsh Homes 63-73 Commonside Sheffield S10 1GF. We have no record of what steps if any have been taken to treat this mine entry.
Conveyance:	Not Applicable
Easting:	431774
Northing:	410306
Other information:	Yes

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Mine Entry Data (continued)

Shaft/adit:	Adit
Reference:	431410-035
Source:	Ab Plan 12647
Colliery name:	Unknown
Entry name:	Bloomhouse Colliery Adit
Date abandoned:	Unknown
Depth of superficial deposits (m):	Unknown
Depth of shaft (m):	Unknown
Diameter of shaft (m):	Unknown
Probable adit azimuth:	17
Treatment details:	Unknown
Conveyance:	Not Applicable
Easting:	431705
Northing:	410325
Other information:	None

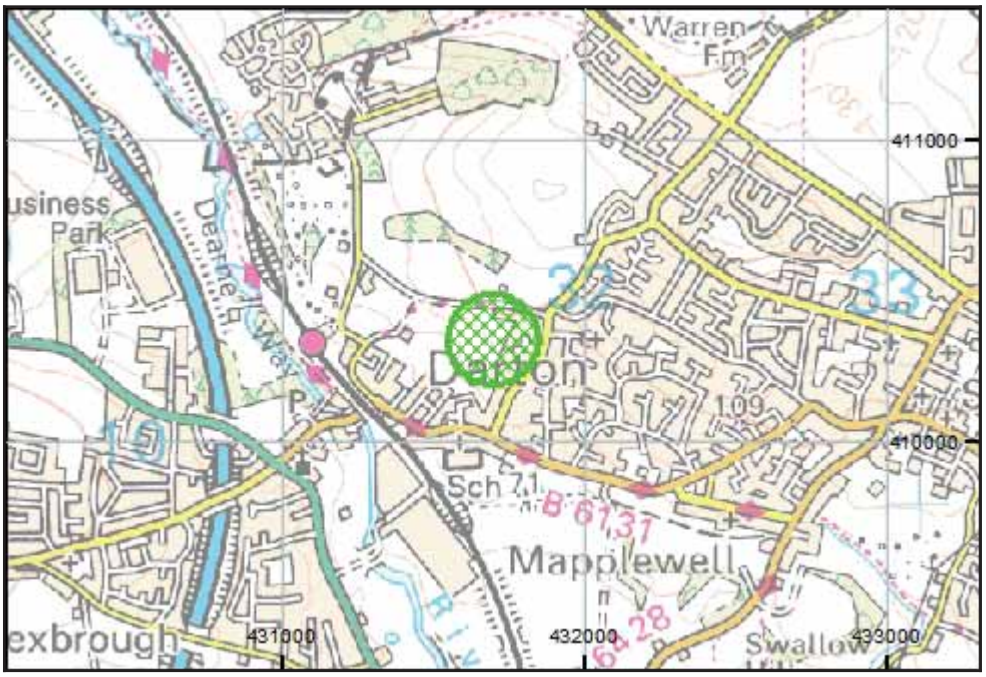
© The Coal Authority

Issued by:	The Coal Authority, 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG
Tax Point Date:	19 January 2016
Issued to:	RSK ENVIRONMENT LIMITED SPRING LODGE 172 CHESTER ROAD HELSBY FRODSHAM WA6 0AR
Property Search for:	LAND AT BLOOMHOUSE LANE, DARTON, BARNSLEY, SOUTH YORKSHIRE,
Reference Number:	51001072291001
Date of Issue:	19 January 2016
Cost:	£63.00
VAT @ 20%:	£12.60
Total Received:	£75.60
VAT Registration	598 5850 68

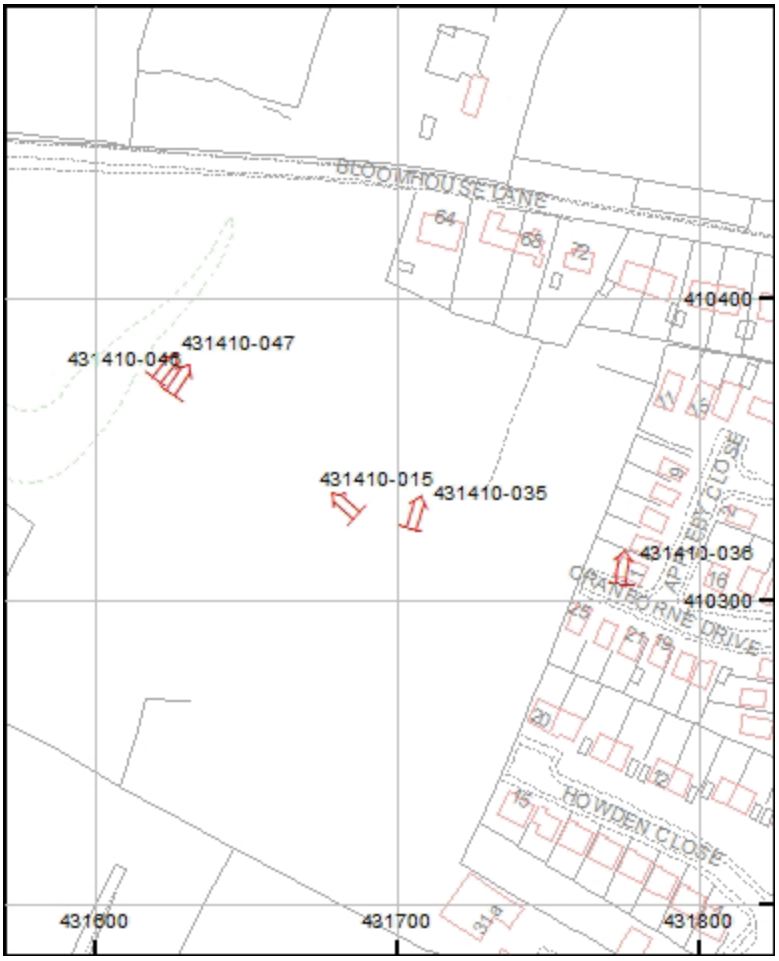
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Location map

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 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 0345 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 637225. 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).

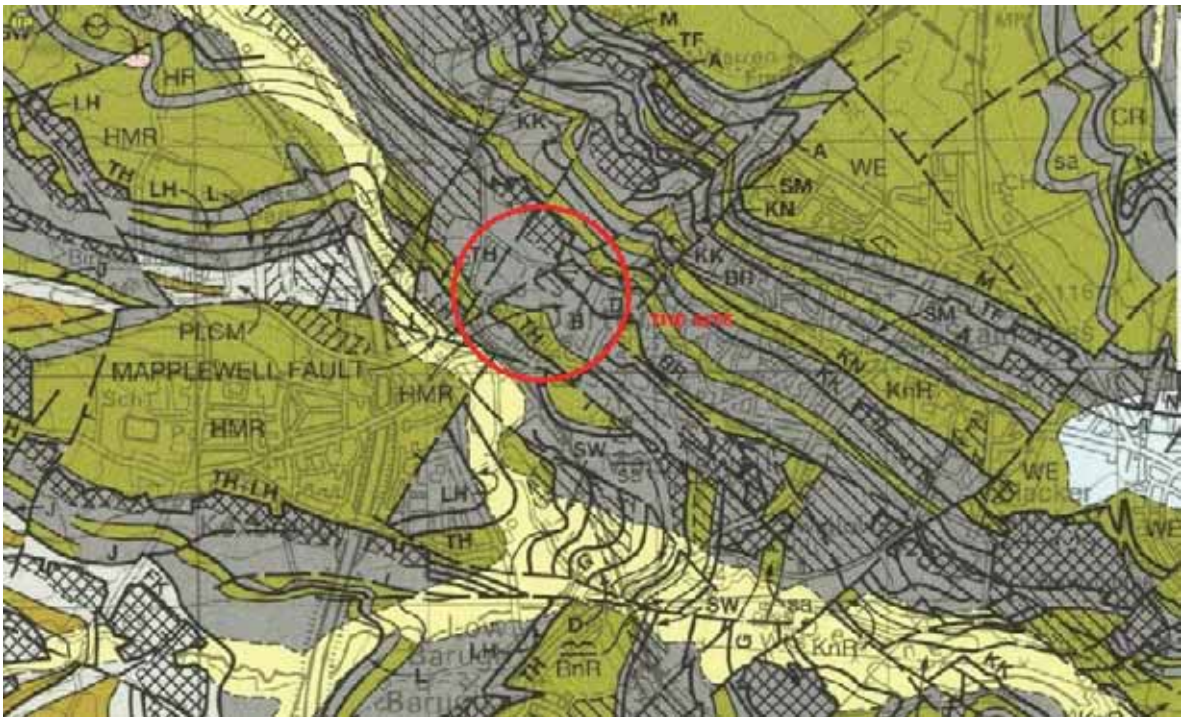
Our emergency telephone number at all times is 01623 646333.

Key

Disused Adit or Mineshaft

Mapping sourced from Ordnance Survey

FIGURE F1: GEOLOGICAL SURVEY OF ENGLAND AND WALES 1:63,360/1:50,000 GEOLOGICAL MAP SERIES SHEET 87 BEDROCK AND SUPERFICIAL 2011



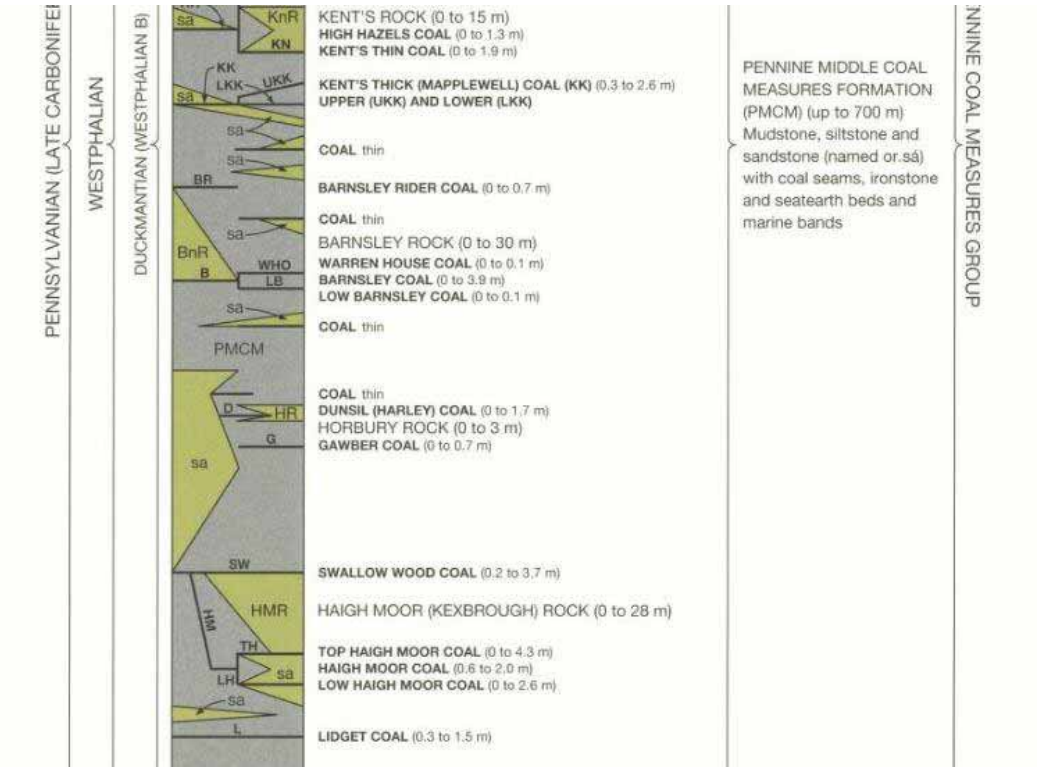
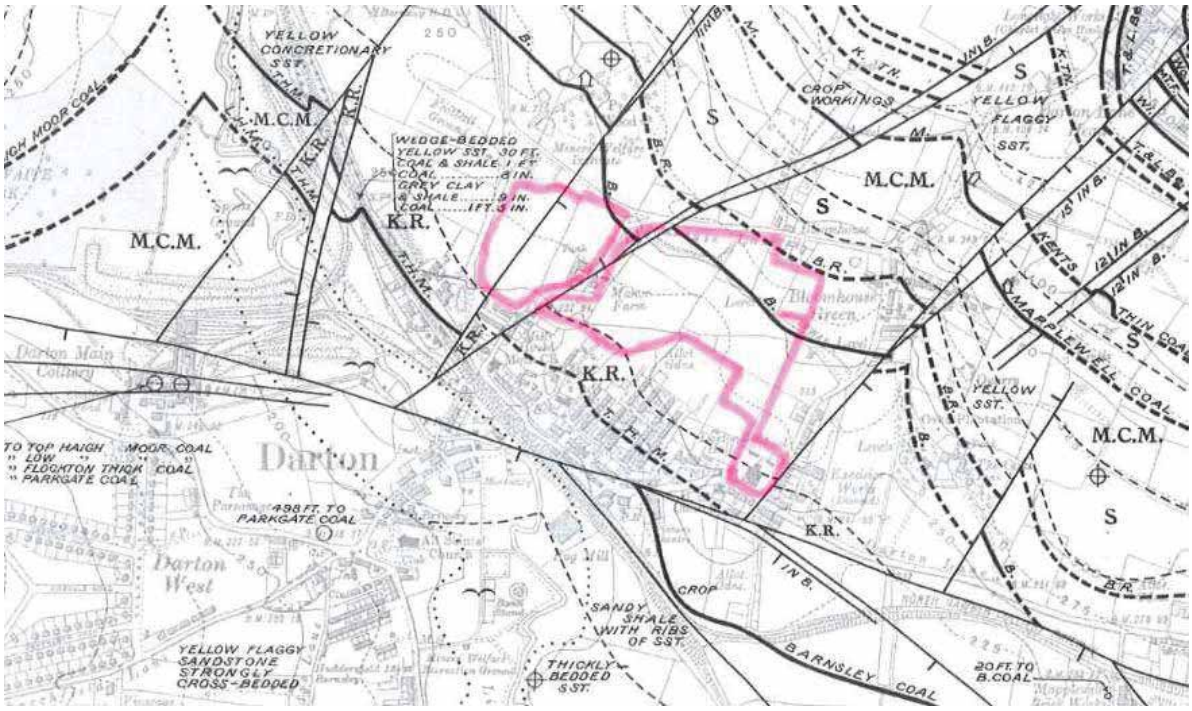


FIGURE F2: GEOLOGICAL SURVEY OF ENGLAND AND WALES SIX INCH TO ONE MILE GEOLOGICAL MAP



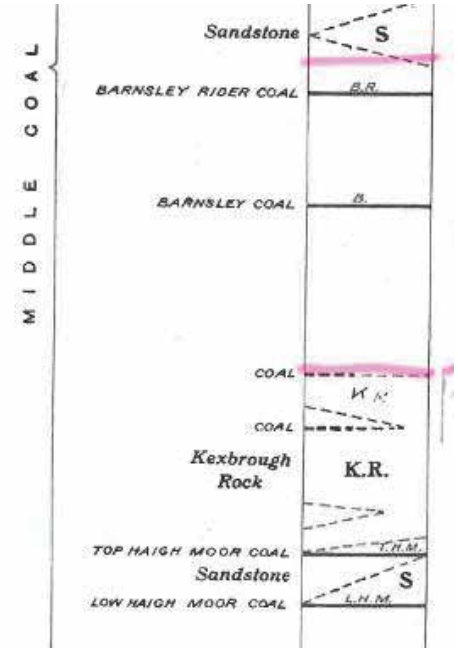


FIGURE F3: MINERAL RESOURCES INFORMATION IN SUPPORT OF NATIONAL, REGIONAL AND LOCAL PLANNING REPORT CR/04/173N SOUTH YORKSHIRE (COMPRISING METROPOLITAN BOROUGHS OF BARNSLEY, DONCASTER AND ROTHERHAM AND CITY OF SHEFFIELD) DATED 2006

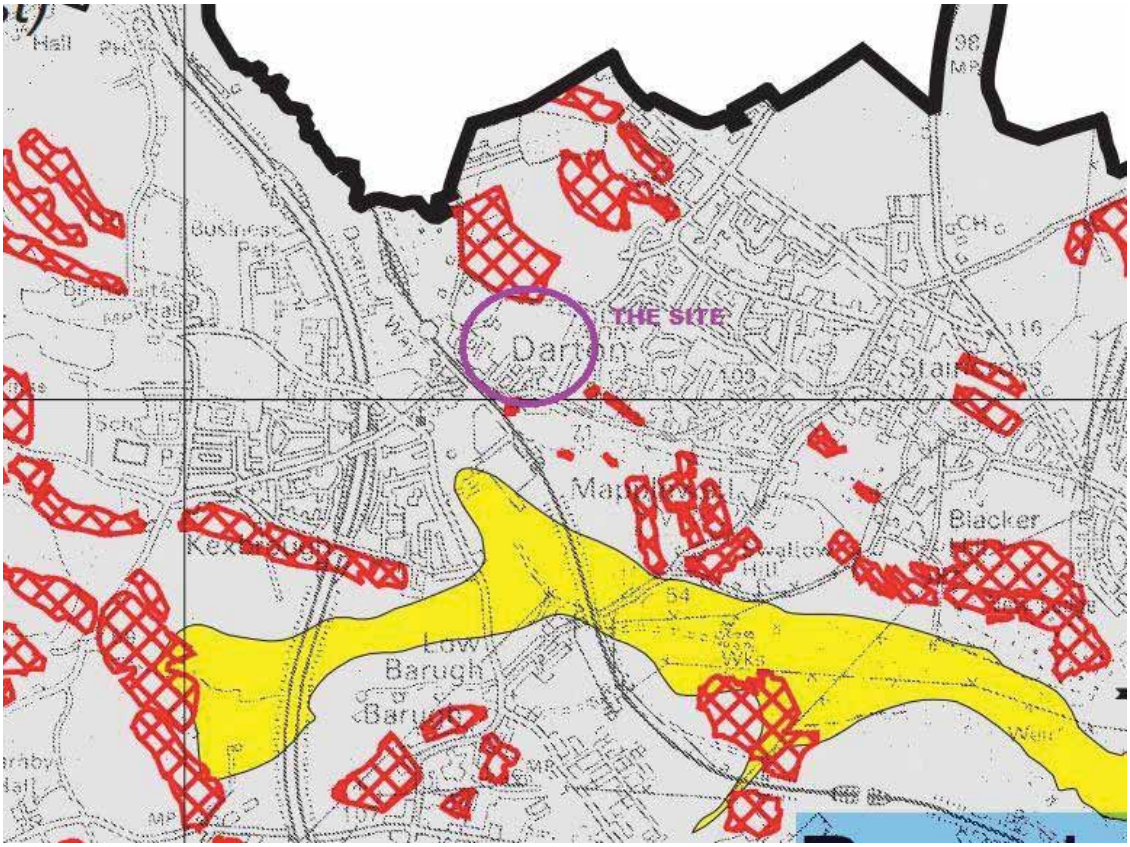
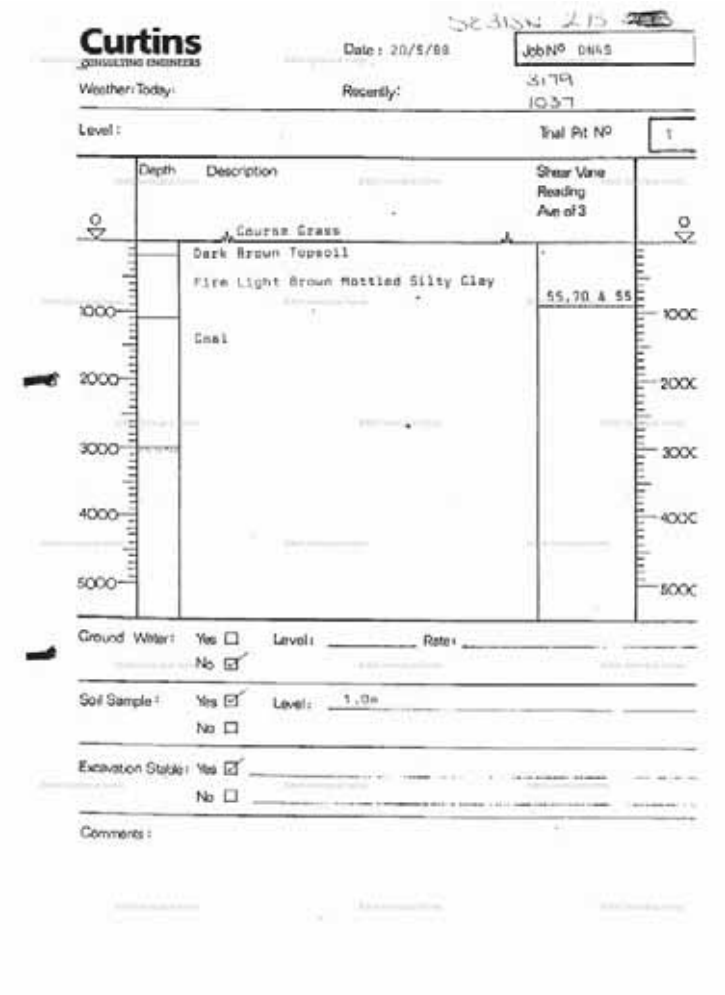


FIGURE F4: BGS ONLINE MAP AND DATA VIEWER: BOREHOLE RECORD SE31SW275



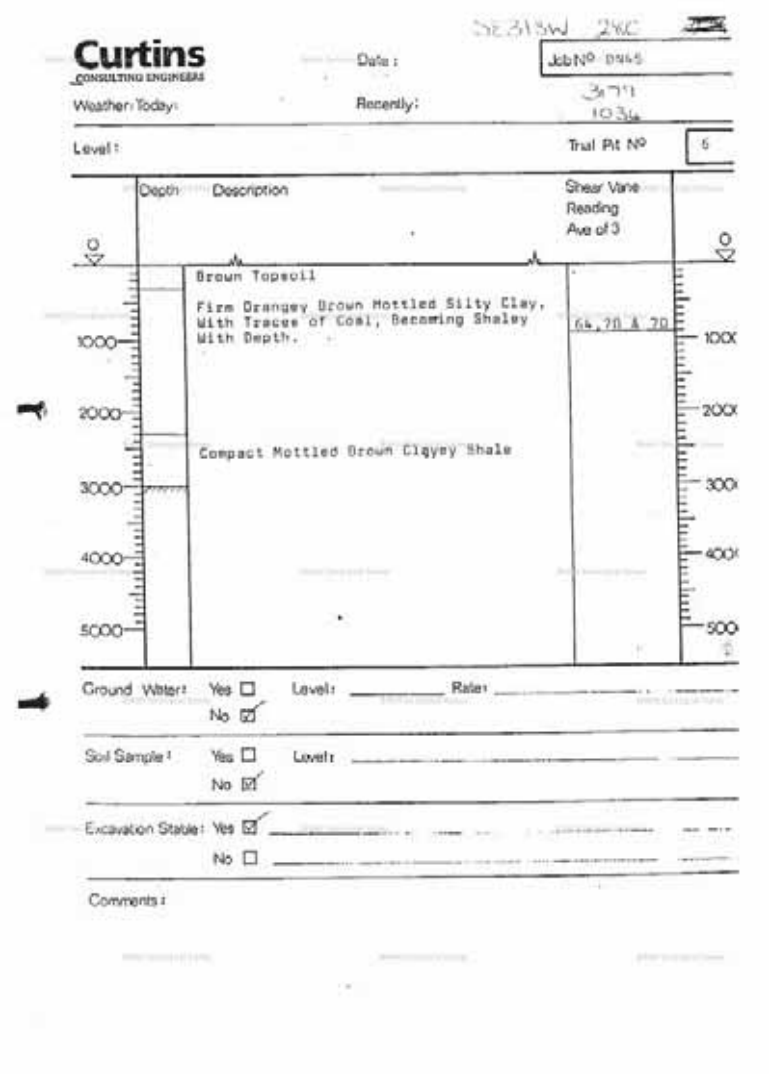
Curtins
CONSULTING ENGINEERS

Date : 20/5/88
Job N° 0445
Weather: Today:
Recently:
3179
1037
Level :
Trial Pit N° 1

Depth	Description	Shear Vane Reading Ave of 3
0	Course Grass	
	Dark Brown Topsoil	
	Firm Light Brown Mottled Silty Clay	55,70 & 55
1000	Coal	
2000		
3000		
4000		
5000		

Ground Water: Yes ☐ Level: _____ Rate: _____
No ☑
Soil Sample: Yes ☑ Level: 1.0m
No ☐
Excavation Stable: Yes ☑
No ☐
Comments :

FIGURE F5: BGS online map and data viewer: borehole record SE31SW280



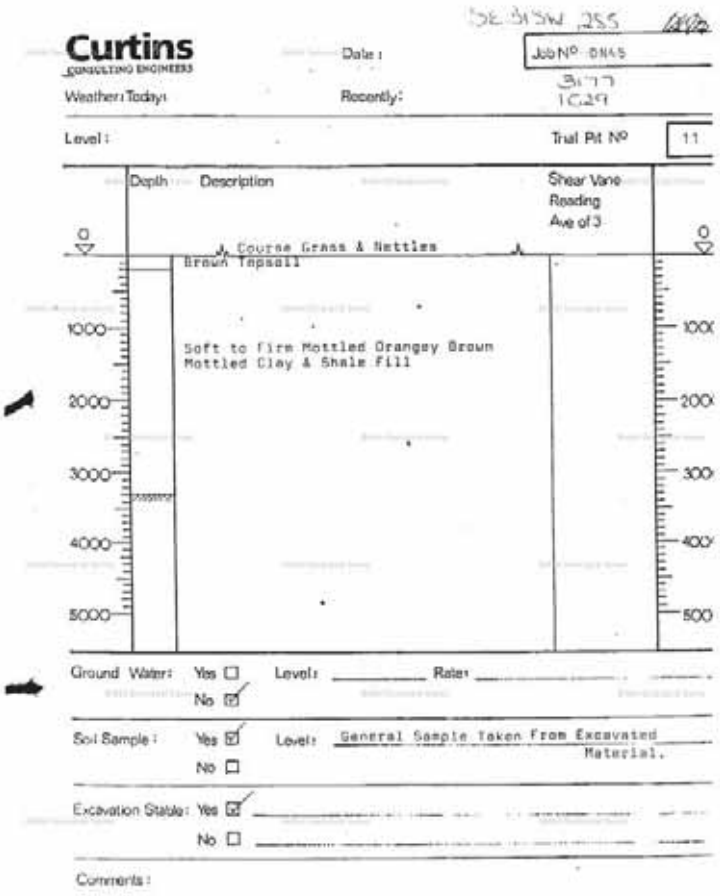
Curtins
CONSULTING ENGINEERS

Date :
Job No 0945
Weather: Today:
Recently:
Level :
Trial Pit No 6

Depth	Description	Shear Vane Reading Ave of 3
0	Brown Topsoil	
1000	Firm Orangey Brown Mottled Silty Clay, With Traces of Coal, Becoming Shaley With Depth.	64, 70 & 70
2000	Compact Mottled Brown Clayey Shale	
3000		
4000		
5000		

Ground Water: Yes ☐ No ☑ Level: _____ Rate: _____
Soil Sample: Yes ☐ No ☑ Level: _____
Excavation Stable: Yes ☑ No ☐ _____
Comments:

FIGURE F6: BGS online map and data viewer: borehole record SE31SW285



SE 31 SW 255

Curtins
CONSULTING ENGINEERS

Date :

Job No. 0945

317
1029

Weather: Today:

Recently:

Level :

Trial Pit No 11

Depth	Description	Shear Vane Reading Ave of 3
0	Course Grass & Nettles	
	Brown Topsoil	
1000	Soft to firm Mottled Orangey Brown Mottled Clay & Shale Fill	
2000		
3000		
4000		
5000		

Ground Water: Yes ☐ No ☑ Level: _____ Rate: _____

Soil Sample : Yes ☑ No ☐ Level: General Sample Taken From Excavated Material.

Excavation Stable: Yes ☑ No ☐

Comments :

Coal Authority archive abandonment records search

FIGURE F7: Extract From Coal Authority Archive Abandonment Catalogue No. 12647: workings in Barnsley Seam

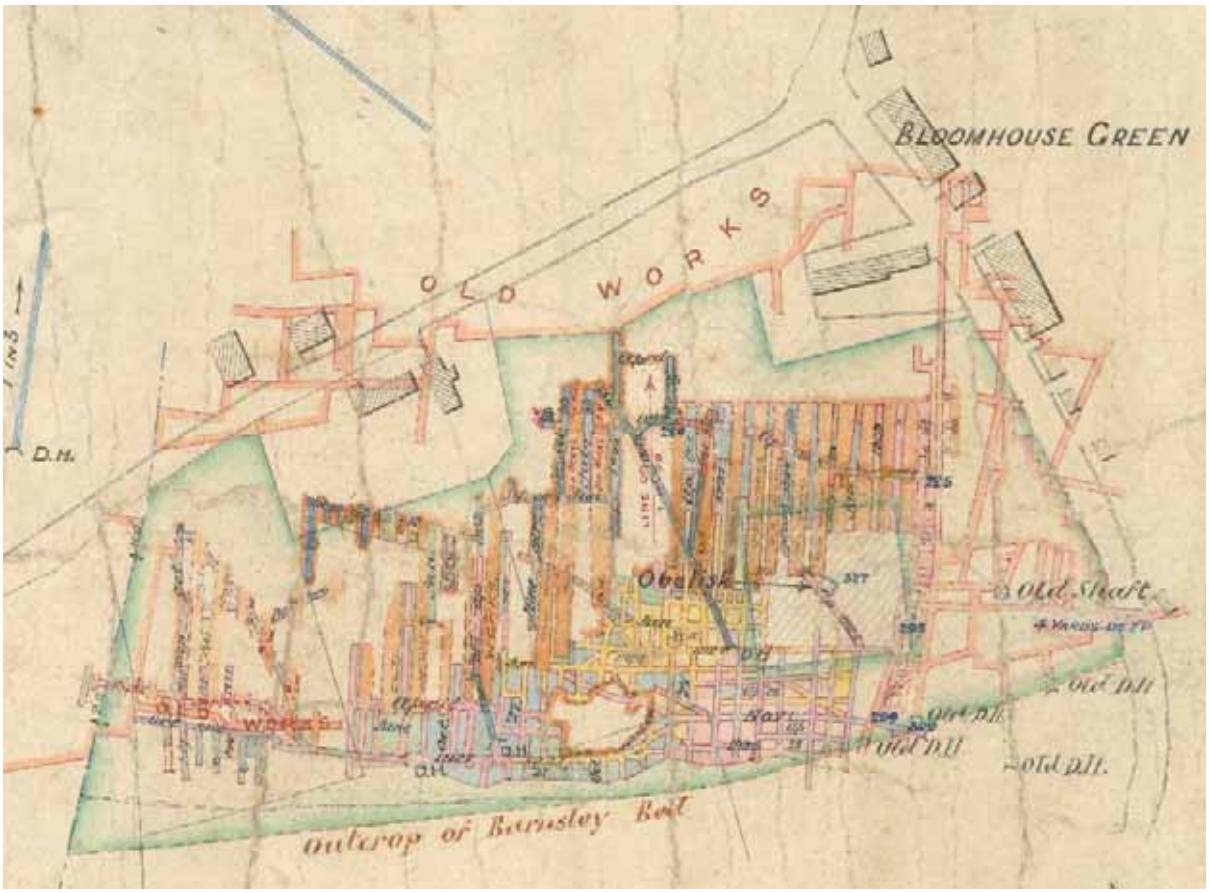
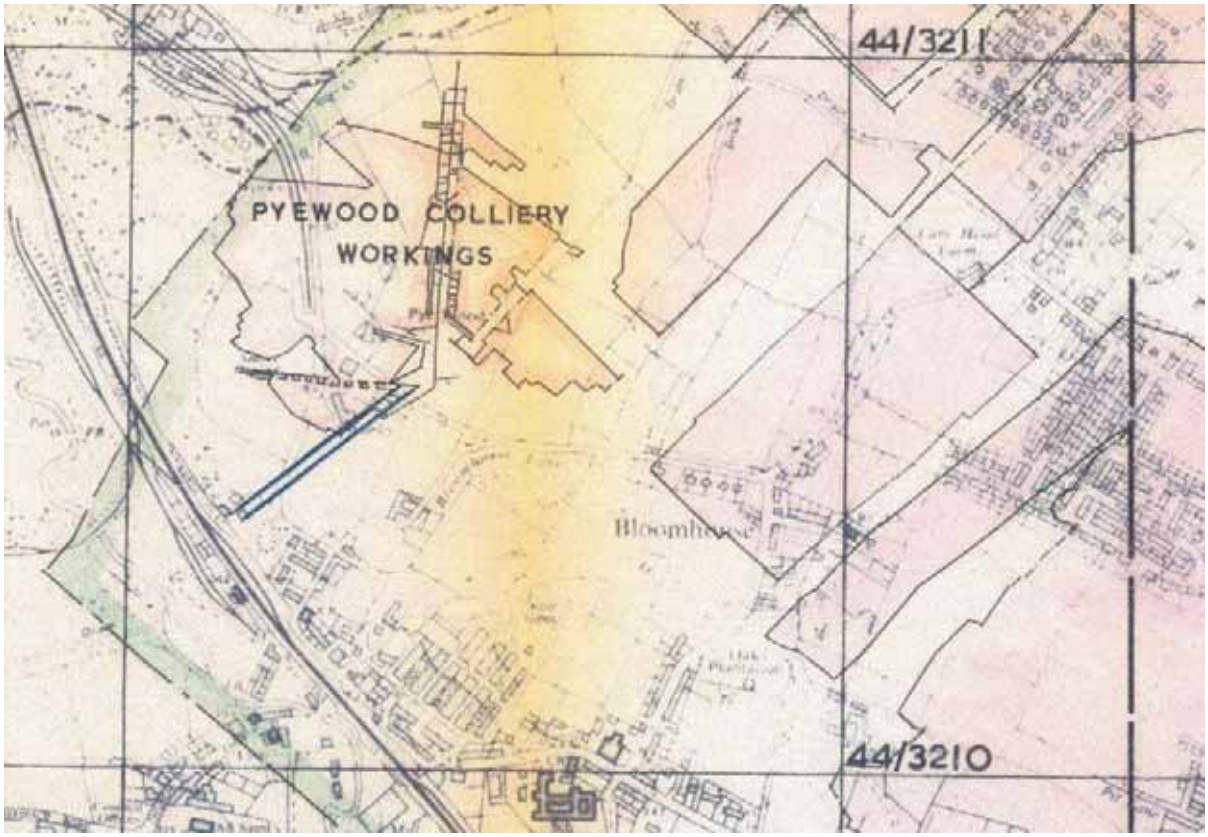


FIGURE F8: Extract From Coal Authority Archive Abandonment Catalogue No. NE979: workings in Low Haigh Moor (Netherton Thick)



APPENDIX G
RISK ASSESSMENT METHODOLOGY

CLR11 outlines the framework to be followed for risk assessment in the UK. The framework is designed to be consistent with UK legislation and policies including planning. Under CLR11, three stages of risk assessment exist: preliminary, generic quantitative and detailed quantitative. An outline conceptual model should be formed at the preliminary risk assessment stage that collates all the existing information pertaining to a site in text, tabular or diagrammatic form. The outline conceptual model identifies potentially complete (termed possible) pollutant linkages (contaminant–pathway–receptor) and is used as the basis for the design of the site investigation. The outline conceptual model is updated as further information becomes available, for example as a result of the site investigation.

Production of a conceptual model requires an assessment of risk to be made. Risk is a combination of the likelihood of an event occurring and the magnitude of its consequences. Therefore, both the likelihood and the consequences of an event must be taken into account when assessing risk. RSK has adopted guidance provided in CIRIA C552 for use in the production of conceptual models.

The likelihood of an event can be classified on a four-point system using the following terms and definitions based on CIRIA C552:

- highly likely: the event appears very likely in the short term and almost inevitable over the long term or there is evidence at the receptor of harm or pollution
- likely: it is probable that an event will occur or circumstances are such that the event is not inevitable, but possible in the short term and likely over the long term
- low likelihood: circumstances are possible under which an event could occur, but it is not certain even in the long term that an event would occur and it is less likely in the short term
- unlikely: circumstances are such that it is improbable the event would occur even in the long term.

The severity can be classified using a similar system also based on CIRIA C552. The terms and definitions relating to severity are:

- severe: short term (acute) risk to human health likely to result in ‘significant harm’ as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resources. Catastrophic damage to buildings or property. Short-term risk to an ecosystem or organism forming part of that ecosystem (note definition of ecosystem in ‘Draft Circular on Contaminated Land’, DETR 2000)
- medium: chronic damage to human health (‘significant harm’ as defined in ‘Draft Circular on Contaminated Land’, DETR 2000), pollution of sensitive water resources, significant change in an ecosystem or organism forming part of that ecosystem

- mild: pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000). Damage to sensitive buildings, structures or the environment
- minor: harm, not necessarily significant, but that could result in financial loss or expenditure to resolve. Non-permanent human health effects easily prevented by use of personal protective clothing. Easily repairable damage to buildings, structures and services.

Once the probability of an event occurring and its consequences have been classified, a risk category can be assigned according to the table below.

		Consequences			
		Severe	**Medium**	**Mild**	**Minor**
Probability	**Highly likely**	Very high	High	Moderate	Moderate/low
	Likely	High	Moderate	Moderate/low	Low
	Low likelihood	Moderate	Moderate/low	Low	Very low
	Unlikely	Moderate/low	Low	Very low	Very low

Definitions of these risk categories are as follows together with an assessment of the further work that may be required:

- Very high: there is a high probability that severe harm could occur or there is evidence that severe harm is currently happening. This risk, if realised, could result in substantial liability; urgent investigation and remediation are likely to be required.
- High: harm is likely to occur. Realisation of the risk is likely to present a substantial liability. Urgent investigation is required. Remedial works may be necessary in the short term and are likely over the long term.
- Moderate: it is possible that harm could arise, but it is unlikely that the harm would be severe and it is more likely that the harm would be relatively mild. Investigation is normally required to clarify the risk and determine the liability. Some remedial works may be required in the longer term.
- Low: it is possible that harm could occur, but it is likely that if realised this harm would at worst normally be mild.
- Very low: there is a low possibility that harm could occur and if realised the harm is unlikely to be severe.

APPENDIX H
EXPLORATORY HOLE RECORDS

KEY TO EXPLORATORY HOLE LOGS - SUMMARY OF ABBREVIATIONS

SAMPLING

Sample type codes

D	=	Small disturbed sample.
ES	=	Soil sample for environmental testing.

IN-SITU TESTING

HP	=	Hand Penetrometer Test. Value given as shear strength c_u, in kPa.

ADDITIONAL NOTES

1. All soil and rock descriptions and legends in general accordance with BS EN ISO 14688-1, 14688-2, 14689-1, and BS5930:2015.
2. Material types divided by a broken line (- - -) indicates an unclear boundary.
3. The data on any sheet within the report showing the AGS icon is available in the AGS format.

GINT_LIBRARY_V8_06.GLB|GrfcText G - LEGEND - 1 OF 2 | 301645 DARTON.GPJ - v8_06 | 22/3/16 - 16:42 | KF.
RSK Environment Ltd, Fourways House, 57 Hilton Street, Piccadilly, Manchester, M1 2EJ. Tel: 0161 236 2757, Fax: 0161 236 7029, Web: www.rsk.co.uk.

Contract Reference: **301645**

KEY TO EXPLORATORY HOLE LOGS - SUMMARY OF GRAPHIC SYMBOLS

WATER COLUMN SYMBOLS



First water strike, second water strike etc.

Standing water level following first strike, standing water level following second strike etc.

Seepage.

Standing water level recorded at documented date.

MATERIAL GRAPHIC LEGENDS


CLAY


Clayey GRAVEL


Coal


Gravelly CLAY


Gravelly CLAY with COBBLES


MADE GROUND


Mudstone


Possible MADE GROUND


Sandstone


Sandy CLAY


Sandy gravelly CLAY


Siltstone


Topsoil



Void


SAND


MUDSTONE

INSTRUMENTATION SYMBOLS


Backfill


Bentonite seal


Concrete


Gravel filter


Plain pipe


Slotted pipe

GINT_LIBRARY_V8_06.GLB|GrfcText G - LEGEND - 2 OF 2 | 301645 DARTON.GPJ - v8_06 | 22/3/16 - 16:42 | KF
RSK Environment Ltd, Fourways House, 57 Hilton Street, Piccadilly, Manchester, M1 2EJ. Tel: 0161 236 2757, Fax: 0161 236 7029, Web: www.rsk.co.uk.

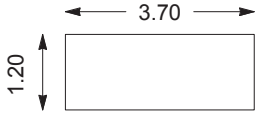
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP01**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**27.1.16**	**84.48**	**E:431268.6 N:410477.1**	**1** of **1**
	End: **27.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	1	D				Possible MADE GROUND: Grass over dark brown gravelly CLAY. Gravel is subangular to subrounded fine to coarse weak to strong iron oxide cemented sandstone. (POSSIBLE MADE GROUND)	(0.30) 0.30	
						Soft orangish brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse sandstone. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)	0.50	
0.70	3	D		≈		Stiff dark grey and black gravelly CLAY. Gravel is subangular fine to coarse mudstone and coal. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)	(0.30) 0.80	
0.70		HP	c_u=156/156/142					
1.00		HP	c_u=151/140/144			Firm to stiff light grey and orange mottled gravelly CLAY. Gravel is subangular to subrounded fine to coarse moderately strong mudstone/siltstone. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)	(0.70) 1.50	
						Stiff light grey, with slight orange mottling, slightly gravelly CLAY. Gravel is subangular fine to coarse mudstone and coal. (Class D PENNINE MIDDLE COAL MEASURES FORMATION)	(0.50) 2.00	
2.20		HP	c_u=170/201/162			Dark greyish brown gravelly distinctly weathered thinly laminated MUDSTONE. Recovered as grey clayey gravel of mudstone. (Class C PENNINE MIDDLE COAL MEASURES FORMATION)	(0.40) 2.40	
2.50	6	D				Friable black vitreous cubic COAL. Recovered as subangular fine to coarse gravel of coal. (PENNINE MIDDLE COAL MEASURES FORMATION)	(0.30) 2.70	
						Grey and orangish grey distinctly weathered thinly laminated MUDSTONE with laminations of interbedded siltstone. (Class C PENNINE MIDDLE COAL MEASURES FORMATION)	(0.60) 3.30	
						Trial pit terminated at 3.30m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Groundwater seepage encountered at 0.80m.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.
6. Trial pit backfilled with arisings and compacted on completion.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

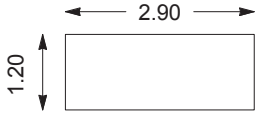
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RSK Environment Ltd, Fourways House, 57 Hilton Street, Piccadilly, Manchester, M1 2EJ. Tel: 0161 236 2757, Fax: 0161 236 7029, Web: www.rsk.co.uk. | 22/3/16 - 16:14 | KF |

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Bloomhouse Lane, Darton		**Jones Homes (Yorkshire) Limited**		**TP02**
Contract Ref:	Start: **27.1.16**	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	End: **27.1.16**	**85.53**	**E:431316.1 N:410471.9**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.35	1	ES				MADE GROUND: Grass over dark brown slightly gravelly CLAY. Gravel is subrounded fine to medium sandstone. (MADE GROUND)	(0.35)	
							0.35	
0.35-0.45	2	D				Weak black and dark grey laminations of MUDSTONE and COAL. (Class D PENNINE MIDDLE COAL MEASURES FORMATION)	0.45	
0.50		HP	c_u=121/142/148			Stiff to firm light grey and orange mottled slightly gravelly CLAY. Gravel is subangular fine to medium sandstone and mudstone with occasional fine coal fragments. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)	0.65	
						Weak black friable cubic COAL. Recovered as fine to medium gravel of coal. (PENNINE MIDDLE COAL MEASURES FORMATION)	0.80	
1.00		HP	c_u=128/130/118			Firm grey and orange gravelly CLAY. Gravel is subangular fine to medium sandstone and mudstone with occasional fine coal fragments. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)	(0.40)	
						Interbedded weak brown MUDSTONE, grey moderately strong SILTSTONE and orangish brown moderately strong SANDSTONE. (Class C PENNINE MIDDLE COAL MEASURES FORMATION)	1.20	
							(1.70)	
							2.90	
						Trial pit terminated at 2.90m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log TRIAL PIT LOG - A4P | 301645 DARTON.GPJ - v8_06.
RSK Environment Ltd, Fourways House, 57 Hilton Street, Piccadilly, Manchester, M1 2EJ. Tel: 0161 236 2757, Fax: 0161 236 7029, Web: www.rsk.co.uk. | 22/3/16 - 16:15 | KF |

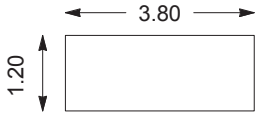
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP03**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**27.1.16**	**78.65**	**E:431233.2 N:410388.5**	**1** of **1**
	End: **27.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						Grass/vegetation over soft brown slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse mudstone and sandstone with occasional coal fragments. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)	(0.60) 0.60	
0.80 0.80	2	D HP	c_u=138/142/142			Firm grey, with slight orange mottling, slightly gravelly CLAY. Gravel is subrounded fine to medium mudstone and coal. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)	(0.80) 1.40	
1.60 1.60	4	D HP	c_u=160/166/188			Stiff light grey mottled orange gravelly CLAY. Frequent interbedded thin laminations of weak grey mudstone and moderately strong sandstone with red iron oxide inclusions. (Class D PENNINE MIDDLE COAL MEASURES FORMATION)	(0.70) 2.10	
1.90	5	D				Firm orange and grey mottled gravelly CLAY. Gravel of subangular fine to coarse mudstone. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)	2.30	
						Weak greyish brown MUDSTONE interbedded with moderately strong fine grained sandstone. Recovered as gravel and cobbles of mudstone and sandstone. (Class D PENNINE MIDDLE COAL MEASURES FORMATION)	(0.30) 2.60	
						Strong thinly bedded fine grained SANDSTONE with iron oxide cementation. Recovered as cobbles of sandstone. (Class C PENNINE MIDDLE COAL MEASURES FORMATION)	2.80	
						Trial pit terminated at 2.80m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log TRIAL PIT LOG - A4P | 301645 DARTON.GPJ - v8_06.
RSK Environment Ltd, Fourways House, 57 Hilton Street, Piccadilly, Manchester, M1 2EJ. Tel: 0161 236 2757, Fax: 0161 236 7029, Web: www.rsk.co.uk. | 22/3/16 - 16:15 | KF |

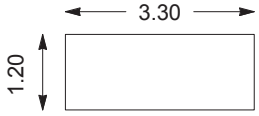
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP04**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**27.1.16** End: **27.1.16**	**80.90**	**E:431317.6 N:410402.1**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.35	1	ES				MADE GROUND: Grass over soft black and brownish grey gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone, brick, pottery and coal. With occasional pieces of wood and abundant roots. (MADE GROUND)	(0.35) 0.35	
0.60		HP	c_u=126/102/125			Firm to stiff light grey mottled orange slightly gravelly CLAY. Gravel is subrounded fine to medium sandstone and mudstone. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)	(0.70)	
0.90		HP	c_u=126/104/128				1.05	
1.00	4	D				Very weak black laminated and thinly bedded clayey COAL interbedded with thin bands of dark grey weak mudstone. (PENNINE MIDDLE COAL MEASURES FORMATION)	1.20	
1.60	6	D				Stiff grey mottled orange slightly gravelly laminated CLAY. Gravel is weak subangular fine to medium mudstone. With occasional pieces of wood and fragments of fine black coal. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)		
1.60		HP	c_u=119/100/102			. . . 1.70m, becoming gravelly fine sandstone gravel/mudstone with orange staining.	(1.25)	
						. . . 2.00m, with cobble sized reddish orange iron-rich sandstone nodules (approx 10cm) with occasional thin (<3mm) bands of weak coal.	2.45	
						Moderately weak black laminated and thinly bedded clayey COAL. (PENNINE MIDDLE COAL MEASURES FORMATION)	(0.25) 2.70	
						Weak interbedded greyish brown MUDSTONE with moderately strong siltstone beds <5mm thick and occasional thin <3mm coal beds. Recovered as greyish brown and reddish orange (iron) stained fine to coarse subangular gravel and coal. (Class C PENNINE MIDDLE COAL MEASURES FORMATION)	(0.50) 3.20	
						Strong orange (iron) stained greyish and orange fine SANDSTONE/SILTSTONE. (Class C PENNINE MIDDLE COAL MEASURES FORMATION)	3.25	
						Weak interbedded greyish brown distinctly weathered MUDSTONE with moderately strong siltstone beds <5mm thick and occasional thin <3mm coal beds. Recovered as greyish brown and reddish iron stained subangular fine to coarse gravel of mudstone and coal fragments. (Class C PENNINE MIDDLE COAL MEASURES FORMATION)	(0.45) 3.70	
						Trial pit terminated at 3.70m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log TRIAL PIT LOG - A4P | 301645 DARTON.GPJ - v8_06.
RSK Environment Ltd, Fourways House, 57 Hilton Street, Piccadilly, Manchester, M1 2EJ. Tel: 0161 236 2757, Fax: 0161 236 7029, Web: www.rsk.co.uk. | 22/3/16 - 16:15 | KF |

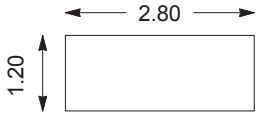
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP05**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**27.1.16** End: **27.1.16**	**85.51**	**E:431398.9 N:410440.2**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Grass over soft black and brownish grey gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone, brick, pottery and fragments of coal. With occasional pieces of wood with abundant roots. (MADE GROUND)	(0.60) 0.60	
0.60-1.00	1	ES				Firm orange brown sandy gravelly friable laminated CLAY. Gravel is subrounded to subangular fine to coarse fine laminated weak sandstone and mudstone. (Class E PENNINE MIDDLE COAL MEASURES FORMATION) . . . 1.40m, becoming slightly clayey gravel of mudstone/sandstone.	(1.20) 1.80	
						Moderately weak interbedded orangish brown and grey thinly laminated SILTSTONE fine sandstone and mudstone. Recovered as cobbles of siltstone, sandstone and mudstone. (Class D PENNINE MIDDLE COAL MEASURES FORMATION) . . . 2.30m, becoming thickly laminated.	(0.80) 2.60	
						Strong well cemented grey with orange brown thinly bedded coarse grained SANDSTONE. Recovered as cobbles and boulders in sandy matrix. (Class C PENNINE MIDDLE COAL MEASURES FORMATION) Trial pit terminated at 2.80m depth.	2.80	

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.
6. No hand vane tests completed due to friable clay.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

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RSK Environment Ltd, Fourways House, 57 Hilton Street, Piccadilly, Manchester, M1 2EJ. Tel: 0161 236 2757, Fax: 0161 236 7029, Web: www.rsk.co.uk. | 22/3/16 - 16:15 | KF |

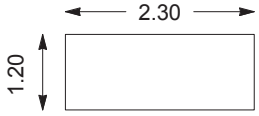
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP06**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**29.1.16**	**81.34**	**E:431390.4 N:410371.8**	**1** of **1**
	End: **29.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Concrete.	0.10	
						(MADE GROUND)	0.15	
0.30-0.50	1	D				MADE GROUND: Soft dark brown slightly sandy gravelly CLAY. Gravel is angular fine to coarse sandstone, brick and concrete. (MADE GROUND)		
0.60		HP	c_u=111/136/151			Stiff grey mottled orange slightly sandy gravelly CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse sandstone and mudstone. Cobbles are coarse sandstone and thinly laminated mudstone.	(0.55)	
						(Class E PENNINE MIDDLE COAL MEASURES FORMATION)	0.70	
						Weak to very weak grey and orangish brown laminated clayey MUDSTONE with occasional interlaminations of siltstone and sandstone. Recovered as gravel and cobbles within clayey matrix. (Class C PENNINE MIDDLE COAL MEASURES FORMATION)	(1.60)	
						. . . 2.00m, with <7cm thick strong orange brown medium grained sandstone band. With reddish brown iron staining/laminations, occasional coal fragments and very strong iron-rich sandstone nodules.	2.30	
						Trial pit terminated at 2.30m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

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RSK Environment Ltd, Fourways House, 57 Hilton Street, Piccadilly, Manchester, M1 2EJ. Tel: 0161 236 2757, Fax: 0161 236 7029, Web: www.rsk.co.uk. | 22/3/16 - 16:15 | KF |

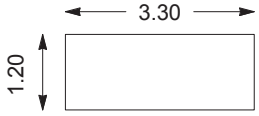
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP07**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**29.1.16**	**80.87**	**E:431365.0 N:410351.8**	**1** of **1**
	End: **29.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Concrete.	0.10	
						(MADE GROUND)		
0.30-0.50	1	ES				MADE GROUND: Dark brown clayey gravelly COBBLES with low boulder content. Gravel is subrounded to angular fine to coarse sandstone and brick. Cobbles and boulders are sandstone, whole bricks, concrete and sandstone flags with some pieces of wood. Assessed as loose as fairly easy to excavate with spade. (MADE GROUND)	(0.50) 0.60	
0.80-1.00	2	ES				Firm to stiff light grey mottled orange gravelly CLAY. Gravel is subangular to subrounded fine to coarse mudstone and occasional sandstone. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)		
1.20		HP	c_u=111/128/136			. . . 1.20m, becoming grey and thickly laminated, with rare boulder of coarse orange brown sandstone.	(1.20) 1.80	
						Very weak medium grey clayey interlaminated MUDSTONE and SILTSTONE. Recovered as clayey subrounded fine to coarse gravel of mudstone and siltstone. (Class D PENNINE MIDDLE COAL MEASURES FORMATION)		
						. . . 3.00m, becoming weak grey thickly laminated mudstone with occasional iron cemented and orange stained sandstone gravel.	(1.50) 3.30	
						Trial pit terminated at 3.30m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy becoming difficult below 3.00m.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

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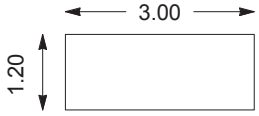
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP08**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**29.1.16**	**80.70**	**E:431384.2 N:410351.8**	**1** of **1**
	End: **29.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Concrete.	0.10	
						(MADE GROUND)		
						MADE GROUND: Dark brown sandy gravelly clay. Gravel is angular fine to coarse sandstone, brick and concrete. Brick footing at northeast edge. Assessed as loose as fairly easy to excavate with spade.	(0.45)	
						(MADE GROUND)	0.55	
1.00	1	D				Weak to very weak grey clayey thickly laminated MUDSTONE with occasional orangish brown interbedded siltstone. Recovered as grey thickly laminated subrounded to subangular fine to coarse gravel within clayey matrix and occasional cobbles of reddish brown stained and iron cemented sandstone/siltstone. (Class C PENNINE MIDDLE COAL MEASURES FORMATION)	(2.35)	
						Trial pit terminated at 2.90m depth.	2.90	

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log TRIAL PIT LOG - A4P | 301645 DARTON.GPJ - v8_06.
RSK Environment Ltd, Fourways House, 57 Hilton Street, Piccadilly, Manchester, M1 2EJ. Tel: 0161 236 2757, Fax: 0161 236 7029, Web: www.rsk.co.uk. | 22/3/16 - 16:15 | KF |

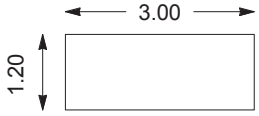
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP09**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**29.1.16**	**87.15**	**E:431462.5 N:410417.3**	**1** of **1**
	End: **29.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20-0.50	1	ES				Possible MADE GROUND: Grass over soft dark brown and brown slightly gravelly slightly organic CLAY. Gravel is subrounded fine to coarse sandstone with abundant rootlets. Occasional dark brown/black clay bands, possible higher organic content. (POSSIBLE MADE GROUND)	(0.50) 0.50	
						Grey mottled orange gravelly CLAY with occasional mudstone laminations. Gravel is subrounded fine to coarse mudstone and siltstone. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)	(0.80) 1.30	
1.60	2	D				Very weak to weak greyish brown clayey thinly laminated MUDSTONE. With occasional orangish brown interbedded siltstone. Recovered as clayey subrounded fine to coarse gravel of mudstone. (Class C PENNINE MIDDLE COAL MEASURES FORMATION)	(0.90) 2.20	
						Weak to moderately strong MUDSTONE with interbedded siltstone and sandstone. (Class B PENNINE MIDDLE COAL MEASURES FORMATION)	2.30	
						Trial pit terminated at 2.30m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log TRIAL PIT LOG - A4P | 301645 DARTON.GPJ - v8_06.
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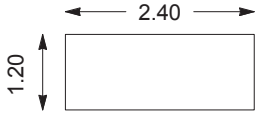
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP10**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**28.1.16**	**80.46**	**E:431438.9 N:410328.0**	**1** of **1**
	End: **28.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						Grass over soft dark brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to medium sandstone. With abundant rootlets. (TOPSOIL)	(0.30) 0.30	
0.50-0.75	1	ES				Firm orange mottled grey slightly sandy gravelly CLAY. Gravel is subrounded fine to coarse sandstone and very weak mudstone. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)		
0.90		HP	c_u=93/89/80			. . . 0.90m, With occasional laminations of moderately weak sandstone. . . . 1.00m, Becoming slightly gravelly, with occasional organic matter/wood. . . . 1.20m, Becoming grey.	(1.60) 1.90	
1.50		HP	c_u=96/93/74					
2.00		HP	c_u=151/160/141			Stiff grey mottled orange slightly sandy gravelly CLAY with low cobble content. Gravel is subrounded to subangular fine to coarse sandstone with orange stained (iron) cement and weak mudstone. Cobbles are angular to subrounded of sandstone and mudstone. Grades into interbedded weak mudstone, siltstone and sandstone with iron staining. Recovered as gravel and cobbles within clayey matrix. (Class D PENNINE MIDDLE COAL MEASURES FORMATION)	(0.70) 2.60	
						Trial pit terminated at 2.60m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log TRIAL PIT LOG - A4P | 301645 DARTON.GPJ - v8_06.
RSK Environment Ltd, Fourways House, 57 Hilton Street, Piccadilly, Manchester, M1 2EJ. Tel: 0161 236 2757, Fax: 0161 236 7029, Web: www.rsk.co.uk. | 22/3/16 - 16:15 | KF |

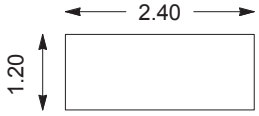
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP11**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**28.1.16**	**80.30**	**E:431486.9 N:410324.0**	**1** of **1**
	End: **28.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						Grass over soft brown slightly sandy slightly gravelly slightly organic CLAY. Gravel is fine to medium sandstone and mudstone with many rootlets and pieces of wood. (TOPSOIL)	(0.30) 0.30	
0.30-0.60	1	D				Firm orange brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to medium mudstone with many rootlets. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)	(0.30) 0.60	
						Firm orange and grey slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to coarse sandstone and mudstone. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)	(0.40) 1.00	
1.00 1.00	2	D HP	c_u=111/74/100			Stiff grey, occasionally mottled orange, slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to coarse sandstone and mudstone with occasional fine to medium cubic coal fragments and occasional pieces of wood. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)	(0.80) 1.80	
1.60		HP	c_u=118/130/109					
						Very weak to weak interbedded grey thickly laminated MUDSTONE and SILTSTONE`. Recovered as gravel and clay. Gravel is subangular to subrounded fine to coarse brown mudstone and siltstone with occasional cobbles of mudstone. (Class C PENNINE MIDDLE COAL MEASURES FORMATION) . . . 2.00m, Becoming weak to moderately weak.	(0.60) 2.40	
						Trial pit terminated at 2.40m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy becoming difficult below 2.00m.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

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RSK Environment Ltd, Fourways House, 57 Hilton Street, Piccadilly, Manchester, M1 2EJ. Tel: 0161 236 2757, Fax: 0161 236 7029, Web: www.rsk.co.uk. | 22/3/16 - 16:15 | KF |

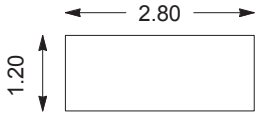
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP12**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**28.1.16**	**74.93**	**E:431482.8 N:410259.6**	**1** of **1**
	End: **28.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.60	1	ES				MADE GROUND: Grass over dark brown slightly sandy gravelly CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse sandstone and brick. Cobbles are angular whole brick. With some pieces of pottery, metal and pipes. (MADE GROUND)	(0.60) 0.60	
						Firm orange mottled grey slightly sandy gravelly CLAY with occasional laminations of mudstone/siltstone. Gravel is subrounded fine to coarse mudstone and occasional sandstone. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)	(0.70) 1.30	
1.60 1.60	3	D HP	c_u=118/136/134			Orange mottled grey gravelly CLAY with occasional laminations of mudstone/siltstone. Gravel is subrounded fine to coarse mudstone. With occasional boulders and cobbles or sandstone. (Class D PENNINE MIDDLE COAL MEASURES FORMATION) . . . 1.70m, Becoming grey and thinly interlaminated with weak siltstone and orange stained iron cemented sandstone. . . . .190m, With fragments of cubic coal.	(0.70) 2.00	
						Weak to moderately strong grey interbedded distinctly weathered MUDSTONE and SILTSTONE with occasional bands of fine sandstone. Recovered as greyish brown gravel within greyish orange clayey matrix. (Class C PENNINE MIDDLE COAL MEASURES FORMATION) Trial pit terminated at 2.20m depth.	2.20	

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy becoming difficult below 2.00m.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

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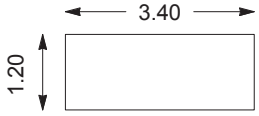
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP13**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**28.1.16**	**94.14**	**E:431539.9 N:410410.9**	**1** of **2**
	End: **28.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.25	1	ES				MADE GROUND: Grass over soft dark brown sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse sandstone and brick. With some pieces of glass, pottery/tiles and plastic and abundant roots.	(0.25)	
							0.25	
0.30-0.50	2	ES				(MADE GROUND)		
						MADE GROUND: Soft reddish brown sandy gravelly CLAY. Gravel is angular to subangular fine to coarse brick. With occasional pieces of glass, plastic and tile and occasional whole bricks.	(0.35)	
							0.60	
						(MADE GROUND)		
0.80		HP	c_u=93/93/38			MADE GROUND: Firm reddish orange gravelly CLAY. Gravel is angular to subangular fine to coarse brick. With some pieces of glass and occasional cobble of brick. (MADE GROUND)	(0.50)	
							1.10	
1.50	4	D				MADE GROUND: Firm dark brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse brick and sandstone with occasional cobbles of brick and sandstone with many pieces of twigs, glass, tarmac and fragments of coal with abundant rootlets with strong organic odour). (MADE GROUND)	(1.60)	
							2.70	
2.70		HP	c_u=104/118/70			MADE GROUND: Firm to stiff multicoloured (dark brown, grey, greyish yellow, orange) slightly sandy gravelly organic CLAY. Gravel is subangular to subrounded fine to coarse sandstone, mudstone, occasional brick and fragments of coal. With some pieces of glass, plastic bottles with strong organic odour. (MADE GROUND)		
3.00	6	D					(1.90)	

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered, becoming damp at base of pit.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

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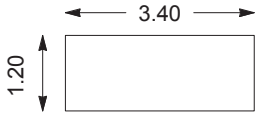
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP13**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**28.1.16**	**94.14**	**E:431539.9 N:410410.9**	**2** of **2**
	End: **28.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Firm to stiff multicoloured (dark brown, grey, greyish yellow, orange) slightly sandy gravelly organic CLAY. Gravel is subangular to subrounded fine to coarse sandstone, mudstone, occasional brick and fragments of coal. With some pieces of glass, plastic bottles with strong organic odour. (MADE GROUND) *(stratum copied from 2.70m from previous sheet)*	4.60	
						Trial pit terminated at 4.60m depth.		

Plan (Not to Scale)



General Remarks

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

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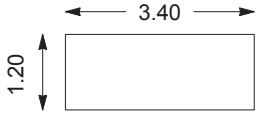
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP14**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**28.1.16**	**92.74**	**E:431583.6 N:410383.2**	**1** of **1**
	End: **28.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Grass over soft dark brown slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse sandstone, mudstone, and brick. With some pieces of glass and tile/pottery. (MADE GROUND)	(0.40)	
							0.40	
						MADE GROUND: Soft to firm orangish red sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse brick. With occasional pieces of glass. (MADE GROUND)	(0.30)	
							0.70	
						MADE GROUND: Firm dark brown, light grey and reddish orange slightly sandy gravelly CLAY with low cobble content. Gravel is subangular fine to coarse mudstone, sandstone, coal and brick. Cobbles are angular brick. With occasional glass bottles. (MADE GROUND)	(2.50)	
1.50-1.80	1	ES						
2.50	3	D						
2.50		HP	c_u=102/84/89					
3.00		HP	c_u=120/96/96					
							3.20	
3.40		HP	c_u=178/174/134			Stiff light grey and orangish brown, locally mottled orange, slightly gravelly s;lightly organic CLAY with thin very weak mudstone laminations. Gravel is subrounded fine to coarse mudstone and siltstone with occasional pieces of organic matter. (Class C PENNINE MIDDLE COAL MEASURES FORMATION)	(0.60)	
3.60	6	D						
							3.80	
						Trial pit terminated at 3.80m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

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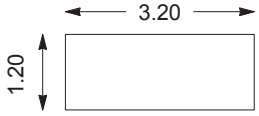
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP15**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**28.1.16**	**89.09**	**E:431624.9 N:410426.2**	**1** of **1**
	End: **28.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Grass over dark brown slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone, mudstone and brick. With occasional pieces of pottery and abundant roots. (MADE GROUND)	(1.00) 1.00	
						MADE GROUND: Soft to firm dark brown/black and reddish orange sandy very gravelly CLAY. Gravel is angular to subrounded fine to coarse sandstone, brick, coal and mudstone. With occasional pieces of glass. (MADE GROUND)	(0.80) 1.80	
2.00		HP	c_u=140/118/168			Firm to stiff light grey mottled orange gravelly CLAY. Gravel is subrounded fine to coarse mudstone and siltstone. (Class E WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	(0.70) 2.50	
2.40		HP	c_u=162/174/201			Firm to stiff light grey mottled orange gravelly CLAY. Gravel is subrounded fine to coarse mudstone and siltstone. Interbedded with thinly laminated mudstone and brown siltstone. Recovered as gravel within clay matrix. (Class D WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	(0.40) 2.90	
						Weak to moderately strong interbedded light brown SILTSTONE and MUDSTONE. Recovered as gravel and cobbles. (Class C WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	(0.30) 3.20	
						Trial pit terminated at 3.20m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

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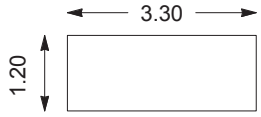
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP16**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**28.1.16**	**85.59**	**E:431566.8 N:410346.6**	**1** of **1**
	End: **28.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Grass over soft dark brown slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone, siltstone and brick. With abundant roots. (MADE GROUND)	(0.60) 0.60	
						MADE GROUND: Reddish orange sandy clayey GRAVEL. Gravel is angular to subangular fine to coarse burnt shale and brick. With some pieces of clay pipe and metal. Assessed as medium dense as difficult to excavate with a spade. (MADE GROUND)	(1.10) 1.70	
1.10-1.40	1	ES						
1.80-2.00 1.80	3	ES HP				Firm brown gravelly CLAY with occasional laminations of friable mudstone. Gravel is subangular fine to coarse sandstone, mudstone and siltstone with occasional coal fragments. (Class D WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	(0.60) 2.30	
			c_u=125/96/140					
2.60		HP	c_u=128/128/130			Firm to stiff brown, becoming light greyish brown, gravelly CLAY. With occasional laminations of friable mudstone. Gravel is subangular fine to coarse sandstone, mudstone and siltstone with occasional coal fragments. (Class D WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	(0.50) 2.80	
						Trial pit terminated at 2.80m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Groundwater seepage encountered at 0.60m to 1.70m.
3. Stability: Trial pit unstable between 0.60m and 1.70m.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.
6. Trial pit backfilled with arisings and compacted on completion.
7. Trial pit excavated on steep slope, thickness of made ground reduces to south end down the slope.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

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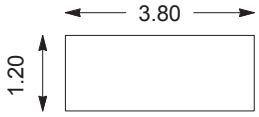
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP17**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**27.1.16**	**78.39**	**E:431580.0 N:410280.9**	**1** of **2**
	End: **27.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	1	ES				MADE GROUND: Grass over dark brown and light brown slightly sandy occasionally gravelly CLAY. Gravel is fine subrounded sandstone and mudstone. With many pieces of plastic, tyres and glass. With abundant rootlets.	(0.30)	
						(MADE GROUND)	0.30	
						Firm orange mottled grey slightly gravelly CLAY. Gravel is subrounded fine to medium sandstone and mudstone. (Class E WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)		
						. . . 0.60m, Becoming grey.	(1.30)	
1.40	3	D						
1.40		HP	c_u=80/52/74				1.60	
						Light grey and grey gravelly CLAY. Gravel is subrounded fine to medium mudstone with some pieces of wood and organic matter. (Class E WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)		
2.00		HP	c_u=68/58/42				(0.90)	
						. . . 2.30m, Becoming very gravelly, gravel is thinly laminated weak mudstone and moderately strong pale brown siltstone.	2.50	
						Weak dark grey/black thinly laminated MUDSTONE. Recovered as clayey subangular medium to coarse gravel. (Class C WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)		
						. . . 3.00m, Becoming thickly laminated, recovered as gravel and cobbles.	(2.00)	

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Groundwater seepage encountered at 2.55m.
3. Stability: Trial pit moderately unstable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.
6. Trial pit backfilled with arisings and compacted on completion.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

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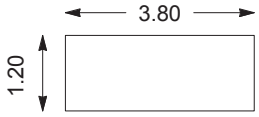
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP17**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**27.1.16**	**78.39**	**E:431580.0 N:410280.9**	**2** of **2**
	End: **27.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						Weak dark grey/black thinly laminated MUDSTONE. Recovered as clayey subangular medium to coarse gravel. (Class C WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION) *(stratum copied from 2.50m from previous sheet)*	4.50	
						Moderately strong medium grey thinly laminated MUDSTONE. Recovered as cobbles of mudstone. (Class C WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	(0.45) 4.95	
						Trial pit terminated at 4.95m depth.		

Plan (Not to Scale)



General Remarks

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

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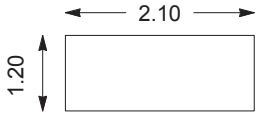
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP18**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**29.1.16**	**98.12**	**E:431767.9 N:410358.7**	**1** of **1**
	End: **29.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	1	ES				Vegetation over soft dark brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to coarse sandstone. With abundant roots. (TOPSOIL)	(0.30) 0.30	
						Stiff orange mottled grey slightly gravelly CLAY with laminations of weak mudstone. Gravel is subrounded fine to coarse mudstone and occasional siltstone. (Class E WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	(0.40) 0.70	
						Weak to moderately weak grey interbedded thinly laminated MUDSTONE and moderately strong brownish grey laminated SILTSTONE and strong orange SANDSTONE with orange staining iron cement. With occasional iron sandstone nodules. Recovered as gravel and cobbles of sandstone, mudstone and siltstone with high boulder content of strong sandstone with orangish red iron staining. (Class B WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	(1.40) 2.10	
						Trial pit terminated at 2.10m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

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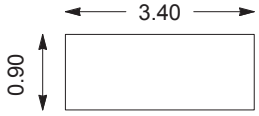
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP19**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**26.1.16**	**87.77**	**E:431681.4 N:410264.5**	**1** of **1**
	End: **26.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.50	1	ES				MADE GROUND: Grass over light brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to medium mudstone and sandstone. With abundant rootlets. (MADE GROUND)	(0.50) 0.50	
1.00		HP	c_u=128/142/142			Firm light grey mottled orange slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone and thinly laminated mudstone. (Class E WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION) . . . 1.10m, With occasional thin laminations of moderately strong greyish brown mudstone.	(1.40) 1.90	
						Moderately strong brownish grey thinly laminated MUDSTONE. Recovered as gravel and cobbles within clayey matrix. Weathered grey with occasional dark red iron stained between laminations. (Class C WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION) . . . 2.40m, Becoming interbedded with thickly laminated siltstone and sandstone, with occasional gravel and cobble sized iron-rich orange stained nodules.	(2.00) 3.90	
						Trial pit terminated at 3.90m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log TRIAL PIT LOG - A4P | 301645 DARTON.GPJ - v8_06.
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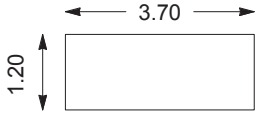
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP20**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**29.1.16**	**78.98**	**E:431688.8 N:410023.5**	**1** of **1**
	End: **29.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.40	1	ES				MADE GROUND: Vegetation and brick rubble over firm orangish brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to medium mudstone and sandstone with abundant rootlets. (MADE GROUND)	(0.40)	
						. . . Brick footing noted to 1.20m depth along side of trial pit.	0.40	
0.60		HP	c_u=118/88/114			Firm grey mottled orange gravelly CLAY with siltstone laminations. Gravel is subangular fine to coarse mudstone and siltstone. (Class E WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	(0.80)	
1.00	3	D		≈			1.20	
1.30		HP	c_u=148/136/142			Strong grey and brown thickly laminated partially weathered SILTSTONE with orange stained iron cement on laminations. Recovered as cobbles and boulders of siltstone. (Class C WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	(0.40)	
							1.60	
						Interbedded grey weak MUDSTONE and brownish grey moderately strong SILTSTONE. (Class C WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	1.80	
						Weak grey laminated MUDSTONE with occasional siltstone laminations and cobbles with iron cement. Recovered as grey clayey gravel and cobbles of laminated mudstone. (Class C WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	(0.40)	
							2.20	
						Trial pit terminated at 2.20m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Groundwater seepage encountered at 0.80m.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.
6. Trial pit backfilled with arisings and compacted on completion.
7. Brick footing to approximately 1.20m bgl, water seepage under footing at 1.00m.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

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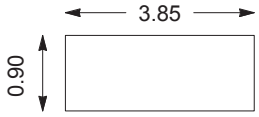
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP21**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**26.1.16**	**79.40**	**E:431666.3 N:410067.4**	**1** of **1**
	End: **26.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.50	1	ES				MADE GROUND: Grass/scrub over black and brown sandy clayey GRAVEL with high cobble content. Gravel is subangular fine to coarse tarmac, brick and sandstone. Cobbles are angular sandstone/paving slabs, tarmac and red burnt shale. (MADE GROUND)	0.20	
0.50	2	D				MADE GROUND: Firm brown slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse tarmac, sandstone and occasional brick. (MADE GROUND)	(0.45) 0.65	
0.80		HP	c_u=128/126/125			MADE GROUND: Brownish grey mottled orange slightly sandy CLAY. (MADE GROUND) . . . brick basement/wall from 0.65m to 3.00m at northern edge of trial pit.	(1.25) 1.90	
1.40	5	D						
1.40		HP	c_u=93/140/142					
1.80		HP	c_u=102/180/232					
2.30		HP	c_u=182/156/199			MADE GROUND: Stiff light grey mottled orange slightly friable CLAY. With occasional thinly laminated black organic matter and occasional fragments of coal. (MADE GROUND)	(1.10) 3.00	
3.60	8	D				Moderately strong brown and light grey thinly laminated SILTSTONE and MUDSTONE. Recovered as gravel and cobbles within a fine sand and clay matrix. (Class C WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	(0.85) 3.85	
						Trial pit terminated at 3.85m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

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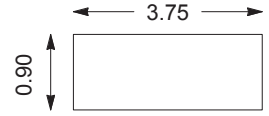
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP22**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**26.1.16**	**82.06**	**E:431711.5 N:410113.7**	**1** of **1**
	End: **26.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.20	1	ES				MADE GROUND: Grass over dark brown slightly organic CLAY. With abundant rootlets. (MADE GROUND)	0.20	
0.40		HP	c_u=111/134/118			Firm orange mottled grey slightly gravelly CLAY. Gravel is subrounded fine to medium sandstone and mudstone. (Class E WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	(0.40)	
							0.60	
0.70	4	D				Light bluish grey mottled orange slightly gravelly CLAY. Gravel is subangular to subrounded fine mudstone. (Class E WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	0.80	
0.70		HP	c_u=128/138/111					
0.80		HP	c_u=151/140/144					
1.10		HP	c_u=180/192/148			Medium grey mottled orange gravelly CLAY. Gravel is subangular to subrounded fine to medium mudstone. (Class E WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	(0.40)	
						. . . 0.90m, Becoming grey.	1.20	
1.40	7	D				Weak dark grey/black thinly laminated MUDSTONE with orange stained iron-rich cement on lamination surfaces. Recovered as subangular medium gravel. (Class C WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	(0.60)	
							1.80	
						Moderately weak thinly laminated greyish brown MUDSTONE and SILTSTONE. Recovered as subangular fine to medium gravel with rare cobbles of iron nodules. With orange stained iron-rich cement on lamination surfaces. (Class C WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)		
						. . . 2.50m, Becoming thickly laminated.	(1.95)	
							3.75	
						Trial pit terminated at 3.75m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

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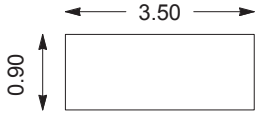
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP23**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**26.1.16**	**83.81**	**E:431716.6 N:410151.9**	**1** of **1**
	End: **26.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	1	ES				MADE GROUND: Grass over dark brown slightly sandy slightly gravelly CLAY. Gravel is subangular fine brick and occasional pieces of plastic. With abundant rootlets. (MADE GROUND)	(0.30) 0.30	
						Stiff orange mottled light grey CLAY. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)	0.45	
0.60		HP	c_u=111/82/91			Firm to stiff orange mottled light grey slightly sandy CLAY. With occasional subrounded fine laminated mudstone gravel, occasional orange iron staining. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)	(0.45) 0.90	
0.90-1.25	3	D				Stiff black sandy gravelly CLAY. Gravel is subrounded fine to medium coal and thinly laminated mudstone. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)	(0.35) 1.25	
1.30	5	D				Firm to stiff orange mottled light grey slightly sandy CLAY. Gravel is subangular fine to coarse mudstone. (Class E PENNINE MIDDLE COAL MEASURES FORMATION)	(0.45) 1.70	
1.30		HP	c_u=114/119/96			Light grey and orangish brown clayey GRAVEL. Gravel is subangular to subrounded fine to coarse moderately weak thinly laminated mudstone and siltstone. (Class D PENNINE MIDDLE COAL MEASURES FORMATION)	1.90	
						Weak medium grey with occasional orange iron staining laminated MUDSTONE. Recovered as gravel. (Class C PENNINE MIDDLE COAL MEASURES FORMATION)	(0.40) 2.30	
						Weak interbedded grey, with occasional orange iron staining, thinly laminated MUDSTONE and fine grained orange SANDSTONE/SILTSTONE. Recovered as medium gravel with occasional dark red/black iron bands. (Class E PENNINE MIDDLE COAL MEASURES FORMATION) . . . 2.60m, Becoming moderately strong. . . . 3.00m, With occasional nodules of hematite (deep orange/red strong siltstone).	(1.00) 3.30	
						Trial pit terminated at 3.30m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.
6. Laminations/beds dip approximately 10° north.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

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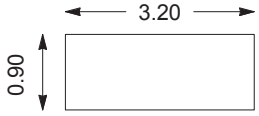
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**TP24**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**26.1.16**	**83.61**	**E:431653.6 N:410184.5**	**1** of **1**
	End: **26.1.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Grass over soft dark brown slightly gravelly CLAY. Gravel is subangular fine brick with occasional pieces of plastic. With abundant rootlets (MADE GROUND)	(0.30) 0.30	
0.50	1	ES				Firm light grey mottled orange slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone and thinly laminated mudstone. (Class E WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	(0.30) 0.60	
						Firm very light grey and orange mottled slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded iron (orange) stained fine to medium sandstone and grey fine to medium subrounded laminated mudstone. (Class D WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION) . . . becoming very light grey mottled orange at 0.60m.	(0.70) 1.30	
1.50		HP	c_u=125/134/125			Stiff grey mottled orange laminated gravelly friable CLAY. Gravel is subangular to subrounded fine to medium sandstone and laminated mudstone. With occasional hematite nodules and iron cemented sandstone cobbles. (Class D WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	(0.50) 1.80	
						Interbedded moderately weak greyish brown thinly laminated MUDSTONE, moderately strong thinly laminated orangish brown/grey SILTSTONE and strong dark red/orange stained medium grained SANDSTONE. Recovered as gravel and cobbles. (Class C WEATHERED PENNINE MIDDLE COAL MEASURES FORMATION)	(1.90) 3.70	
						Trial pit terminated at 3.70m depth.		

Plan (Not to Scale)



General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. No groundwater encountered during excavation.
3. Stability: All sides remained stable during excavation.
4. Similarity: All sides were similar during excavation.
5. Ease of excavation: Moderately easy excavation.
6. No hand vane tests completed due to friable clay.

All dimensions in metres | Scale: **1:22**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Komatsu PC200-8 Excavator**	**JDuckering**	KF

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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**BH1**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**11.2.16** End: **11.2.16**	**87.33**	**E:431341.4 N:410494.3**	**1** of **2**

Drilling Progress Log		Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Grass over brown sandy CLAY. (TOPSOIL).	(0.80) 0.80	
				Yellowish brown sandy CLAY. (WEATHERED PENNINE MIDDLE COAL MEASURES)	(0.70) 1.50	
				Orangish brown SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	(4.30) 5.80	
				Black COAL (flash). (PENNINE MIDDLE COAL MEASURES)	6.00	
				Probably very strong yellowish brown SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	(3.00) 9.00	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Slow drilling progress between 6.00m and 9.00m.
3. Standpipe installed to 9.00m: 6.00m plain 3.00m slotted.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**BH1**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**11.2.16**	**87.33**	**E:431341.4 N:410494.3**	**2** of **2**
	End: **11.2.16**			

Drilling Progress Log		Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Probably very strong SANDSTONE.	9.10	
				Rotary borehole terminated at 9.10m depth due to unable to progress further.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**BH2**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**11.2.16** End: **11.2.16**	**76.54**	**E:431227.1 N:410353.3**	**1** of **2**

Drilling Progress Log		Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Grass over soft brown slightly sandy CLAY. (TOPSOIL).	(0.70)	
					0.70	
				Soft yellow slightly sandy CLAY. (WEATHERED PENNINE MIDDLE COAL MEASURES)	(1.00)	
					1.70	
				Orangish yellow SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	(9.30)	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Standpipe installed to 9.00m: 3.00m plain, 6.00m slotted.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**BH2**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**11.2.16** End: **11.2.16**	**76.54**	**E:431227.1 N:410353.3**	**2** of **2**

Drilling Progress Log		Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Orangish yellow SANDSTONE. (PENNINE MIDDLE COAL MEASURES) *(stratum copied from 1.70m from previous sheet)*	11.00	
				Black COAL. (PENNINE MIDDLE COAL MEASURES)	(0.60) 11.60	
				Brownish grey MUDSTONE. (PENNINE MIDDLE COAL MEASURES)	11.80	
				Black COAL. (PENNINE MIDDLE COAL MEASURES)	(0.50) 12.30	
				Grey MUDSTONE. (PENNINE MIDDLE COAL MEASURES)	(2.70) 15.00	
				Rotary borehole terminated at 15.00m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**BH3**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**11.2.16** End: **11.2.16**	**90.06**	**E:431447.8 N:410470.7**	**1** of **3**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Grass over brown sandy CLAY. (TOPSOIL).	(0.70)	
					0.70	
				Yellowish brown sandy CLAY. (WEATHERED PENNINE MIDDLE COAL MEASURES)	(0.90)	
					1.60	
				Greyish brown MUDSTONE. (PENNINE MIDDLE COAL MEASURES)	(3.40)	
					5.00	
				Black COAL (flash). (PENNINE MIDDLE COAL MEASURES)	5.20	
				Grey and brownish interbedded MUDSTONE and SANDSTONE. (PENNINE MIDDLE COAL MEASURES)		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Backfilled with bentonite on completion.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**BH3**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**11.2.16** End: **11.2.16**	**90.06**	**E:431447.8 N:410470.7**	**2** of **3**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Grey and brownish interbedded MUDSTONE and SANDSTONE. (PENNINE MIDDLE COAL MEASURES) *(stratum copied from 5.20m from previous sheet)*	(12.80)	
					18.00	

Rotary borehole terminated at 18.00m depth.

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**BH3**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**11.2.16** End: **11.2.16**	**90.06**	**E:431447.8 N:410470.7**	**3** of **3**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**BH3A**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**11.2.16** End: **11.2.16**	**90.06**	**E:431453.3 N:410462.1**	**1** of **2**

Drilling Progress Log		Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Grass over dark brown gravelly CLAY. (TOPSOIL).	(0.70) 0.70	
				Dark brown/grey black CLAY (possible coal). (WEATHERED PENNINE MIDDLE COAL MEASURES)	(0.90) 1.60	
				Dark grey MUDSTONE. (WEATHERED PENNINE MIDDLE COAL MEASURES)	(1.40) 3.00	
				Light grey MUDSTONE. (PENNINE MIDDLE COAL MEASURES)	(2.00) 5.00	
				Black COAL (flash). (PENNINE MIDDLE COAL MEASURES)	5.20	
				Grey and orangish yellow interbedded MUDSTONE and SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	(6.80)	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Standpipe installed to 6.00m: 3.00m plain, 3.00m slotted.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**BH3A**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**11.2.16** End: **11.2.16**	**90.06**	**E:431453.3 N:410462.1**	**2** of **2**

Drilling Progress Log		Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Grey and orangish yellow interbedded MUDSTONE and SANDSTONE. (PENNINE MIDDLE COAL MEASURES) *(stratum copied from 5.20m from previous sheet)*	12.00	
				Rotary borehole terminated at 12.00m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**BH4**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**10.2.16** End: **10.2.16**	**100.30**	**E:431682.7 N:410420.5**	**1** of **3**

Drilling Progress Log		Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Vegetation over soft brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of various lithologies. (TOPSOIL).	(0.70) 0.70	
				COAL. (PENNINE MIDDLE COAL MEASURES)	1.10	
				Yellowish brown sandy CLAY. (PENNINE MIDDLE COAL MEASURES)	(0.90) 2.00	
				Yellow brown SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	(8.80)	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Water present in void.
3. Standpipe installed to 2.00m: 1.00m plain, 1.00m slotted.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**EUpton**	KF

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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**BH4**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**10.2.16** End: **10.2.16**	**100.30**	**E:431682.7 N:410420.5**	**2** of **3**

Drilling Progress Log		Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Yellow brown SANDSTONE. (PENNINE MIDDLE COAL MEASURES) *(stratum copied from 2.00m from previous sheet)*	10.80	
				Grey MUDSTONE. (PENNINE MIDDLE COAL MEASURES)	(6.20) 17.00	
				VOID (loss of flush).	(2.00)	VOID

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**EUpton**	KF

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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**BH4**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**10.2.16** End: **10.2.16**	**100.30**	**E:431682.7 N:410420.5**	**3** of **3**

Drilling Progress Log		Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				VOID (loss of flush). *(stratum copied from 17.00m from previous sheet)*	19.00	VOID
				Solid (no return).	(2.00) 21.00	
				Rotary borehole terminated at 21.00m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**EUpton**	KF

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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**BH5**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**8.2.16** End: **8.2.16**	**79.73**	**E:431573.9 N:410283.4**	**1** of **2**

Drilling Progress Log		Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Possible MADE GROUND: Grass over soft brown CLAY. (POSSIBLE MADE GROUND)	(3.00) 3.00	
				Grey MUDSTONE. (WEATHERED PENNINE MIDDLE COAL MEASURES)	(3.70) 6.70	
				Black COAL. (PENNINE MIDDLE COAL MEASURES)	(0.50) 7.20	
				Light grey and brownish interbedded MUDSTONE and SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	(1.80) 9.00	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Slight groundwater seepage noted between 3.00m and 6.00m bgl.
3. Standpipe installed to 9.00m: 6.00m plain, 3.00m slotted.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**BH5**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**8.2.16** End: **8.2.16**	**79.73**	**E:431573.9 N:410283.4**	**2** of **2**

Drilling Progress Log		Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Black COAL (flash). (PENNINE MIDDLE COAL MEASURES)	9.10	
				Light grey MUDSTONE. (PENNINE MIDDLE COAL MEASURES)	(5.90)	
				Rotary borehole terminated at 15.00m depth.	15.00	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**BH6**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**8.2.16** End: **8.2.16**	**77.71**	**E:431653.3 N:410034.2**	**1** of **4**

Drilling Progress Log		Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				MADE GROUND: tarmac. (MADE GROUND)	0.10	
				MADE GROUND: soft brown sandy gravelly CLAY. Gravel is angular to subangular fine to coarse brick. (MADE GROUND)	(0.90) 1.00	
				Orange brown sandy CLAY. (WEATHERED PENNINE MIDDLE COAL MEASURES)	(1.00) 2.00	
				Light grey sandy interbedded MUDSTONE and SANDSTONE. (WEATHERED PENNINE MIDDLE COAL MEASURES)	(2.70) 4.70	
				Black COAL (flash). (PENNINE MIDDLE COAL MEASURES)	5.00	
				Light grey MUDSTONE. (PENNINE MIDDLE COAL MEASURES)	(0.50) 5.50	
				Grey SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	(1.00) 6.50	
				Medium to dark grey interbedded MUDSTONE and SANDSTONE. (PENNINE MIDDLE COAL MEASURES)		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Slow drilling progress from 30.50m bgl.
3. Standpipe installed to 6.00m: 3.00m plain, 3.00m slotted.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**BH6**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**8.2.16** End: **8.2.16**	**77.71**	**E:431653.3 N:410034.2**	**2** of **4**

Drilling Progress Log		Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Medium to dark grey interbedded MUDSTONE and SANDSTONE. (PENNINE MIDDLE COAL MEASURES) *(stratum copied from 6.50m from previous sheet)*	(6.00)	
					12.50	
				Dark grey MUDSTONE with black coal trace. (PENNINE MIDDLE COAL MEASURES)	12.90	
				Light grey interbedded MUDSTONE and SANDSTONE. (PENNINE MIDDLE COAL MEASURES)		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**BH6**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**8.2.16** End: **8.2.16**	**77.71**	**E:431653.3 N:410034.2**	**3** of **4**

Drilling Progress Log		Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Light grey interbedded MUDSTONE and SANDSTONE. (PENNINE MIDDLE COAL MEASURES) *(stratum copied from 12.90m from previous sheet)*	(17.60)	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**BH6**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**8.2.16** End: **8.2.16**	**77.71**	**E:431653.3 N:410034.2**	**4** of **4**

Drilling Progress Log		Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Light grey interbedded MUDSTONE and SANDSTONE. (PENNINE MIDDLE COAL MEASURES) *(stratum copied from 12.90m from previous sheet)*		
					30.50	
				Probably very strong grey SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	(0.50)	
					31.00	
				Rotary borehole terminated at 31.00m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH1**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**11.2.16** End: **11.2.16**	**75.05**	**E:431288.7 N:410322.4**	**1** of **2**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Grass over brown clay. (TOPSOIL).	(0.70) 0.70	
				Yellowish brown sandy CLAY. (WEATHERED PENNINE MIDDLE COAL MEASURES)	(0.80) 1.50	
				Orange brown SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	(11.50)	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Backfilled with arisings and sealed with concrete on completion.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH1**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**11.2.16** End: **11.2.16**	**75.05**	**E:431288.7 N:410322.4**	**2** of **2**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Orange brown SANDSTONE. (PENNINE MIDDLE COAL MEASURES) *(stratum copied from 1.50m from previous sheet)*		
				Probably very strong SANDSTONE.	13.00 13.10	
				Rotary probehole terminated at 13.10m depth due to unable to progress further.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
RSK Environment Ltd, Fourways House, 57 Hilton Street, Piccadilly, Manchester, M1 2EJ. Tel: 0161 236 2757, Fax: 0161 236 7029, Web: www.rsk.co.uk. | 22/3/16 - 16:39 | KF |

BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH2**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**10.2.16** End: **10.2.16**	**97.36**	**E:431667.0 N:410380.8**	**1** of **2**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Grass over soft brown sandy clay. (TOPSOIL).	(1.00) 1.00	
				Yellowish brown CLAY. (WEATHERED PENNINE MIDDLE COAL MEASURES)	(0.50) 1.50	
				Weathered yellowish brown SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	(1.50) 3.00	
				VOID (loss of flush).	(4.50) 7.50	VOID
				Solid (no return).	(1.50) 9.00	

Rotary probehole terminated at 9.00m depth.

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Backfilled with arisings and sealed with concrete on completion.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**EUpton**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH2**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**10.2.16** End: **10.2.16**	**97.36**	**E:431667.0 N:410380.8**	**2** of **2**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**EUpton**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH3**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**10.2.16** End: **10.2.16**	**97.36**	**E:431672.7 N:410388.0**	**1** of **3**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Grass over soft brown sandy clay. (TOPSOIL).	(0.50) 0.50	
				Yellowish brown CLAY. (COMPLETELY WEATHERED PENNINE MIDDLE COAL MEASURES)	(1.00) 1.50	
				Yellowish brown SANDSTONE and MUDSTONE. (PENNINE MIDDLE COAL MEASURES)	(8.50)	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Backfilled with arisings and sealed with concrete on completion.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**EUpton**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH3**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**10.2.16** End: **10.2.16**	**97.36**	**E:431672.7 N:410388.0**	**2** of **3**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Yellowish brown SANDSTONE and MUDSTONE. (PENNINE MIDDLE COAL MEASURES) *(stratum copied from 1.50m from previous sheet)*	10.00	
				Soft infilled ground (partial returns).	(4.50)	
					14.50	
				Solid (no returns).	(3.50)	
					18.00	

Rotary probehole terminated at 18.00m depth.

Drilling Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**EUpton**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH3**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**10.2.16**	**97.36**	**E:431672.7 N:410388.0**	**3** of **3**
	End: **10.2.16**			

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**EUpton**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH4**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**10.2.16** End: **10.2.16**	**98.26**	**E:431678.6 N:410390.1**	**1** of **3**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Grass over soft brown sandy clay. (TOPSOIL).	(0.70)	
					0.70	
				Yellowish brown CLAY. (COMPLETELY WEATHERED PENNINE MIDDLE COAL MEASURES)	(1.10)	
					1.80	
				Grey and yellowish brown interbedded MUDSTONE and SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	(10.20)	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Backfilled with arisings and sealed with concrete on completion.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**EUpton**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH4**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**10.2.16** End: **10.2.16**	**98.26**	**E:431678.6 N:410390.1**	**2** of **3**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Grey and yellowish brown interbedded MUDSTONE and SANDSTONE. (PENNINE MIDDLE COAL MEASURES) *(stratum copied from 1.80m from previous sheet)*	12.00	
				Black COAL. (PENNINE MIDDLE COAL MEASURES)	(3.80) 15.80	
				Grey MUDSTONE. (PENNINE MIDDLE COAL MEASURES)	(2.20) 18.00	

Rotary probehole terminated at 18.00m depth.

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**EUpton**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH4**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**10.2.16** End: **10.2.16**	**98.26**	**E:431678.6 N:410390.1**	**3** of **3**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**EUpton**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH5**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**10.2.16**	**96.69**	**E:431756.0 N:410329.8**	**1** of **3**
	End: **10.2.16**			

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Vegetation over brown sandy clay. (TOPSOIL).	(0.70) 0.70	
				Yellowish brown CLAY. (COMPLETELY WEATHERED PENNINE MIDDLE COAL MEASURES)	(0.50) 1.20	
				Orange/brown and grey interbedded SANDSTONE and MUDSTONE. (PENNINE MIDDLE COAL MEASURES)	(7.60) 8.80	
				Description on next sheet		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Backfilled with arisings and sealed with concrete on completion.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**EUpton**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
RSK Environment Ltd, Fourways House, 57 Hilton Street, Piccadilly, Manchester, M1 2EJ. Tel: 0161 236 2757, Fax: 0161 236 7029, Web: www.rsk.co.uk. | 22/3/16 - 16:39 | KF |

BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH5**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**10.2.16** End: **10.2.16**	**96.69**	**E:431756.0 N:410329.8**	**2** of **3**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Soft infilled ground (partial returns). *(stratum copied from 8.80m from previous sheet)*	(6.40) 15.20	
				Solid (no returns).	(2.80) 18.00	

Rotary probehole terminated at 18.00m depth.

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**EUpton**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH5**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**10.2.16**	**96.69**	**E:431756.0 N:410329.8**	**3** of **3**
	End: **10.2.16**			

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**EUpton**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH6**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**10.2.16** End: **10.2.16**	**93.43**	**E:431738.3 N:410305.2**	**1** of **2**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Vegetation over brown sandy clay. (TOPSOIL).	(0.70) 0.70	
				Yellowish brown CLAY. (COMPLETELY WEATHERED PENNINE MIDDLE COAL MEASURES)	(0.50) 1.20	
				Yellowish brown weathered SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	(0.80) 2.00	
				Very soft infilled ground (no returns).	(6.00) 8.00	
				Solid (no return).		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Backfilled with arisings and sealed with concrete on completion.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**EUpton**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH6**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**10.2.16** End: **10.2.16**	**93.43**	**E:431738.3 N:410305.2**	**2** of **2**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Solid (no return). *(stratum copied from 8.00m from previous sheet)*	(4.00) 12.00	
				Rotary probehole terminated at 12.00m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**EUpton**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH7**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**10.2.16** End: **10.2.16**	**94.39**	**E:431745.1 N:410312.3**	**1** of **2**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Vegetation over brown sandy clay. (TOPSOIL).	(0.80) 0.80	
				Yellowish brown CLAY. (COMPLETELY WEATHERED PENNINE MIDDLE COAL MEASURES)	1.20	
				Grey and yellowish brown interbedded MUDSTONE and SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	(3.30) 4.50	
				Soft infilled ground (no returns).	(4.50) 9.00	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Backfilled with arisings and sealed with concrete on completion.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**EUpton**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
RSK Environment Ltd, Fourways House, 57 Hilton Street, Piccadilly, Manchester, M1 2EJ. Tel: 0161 236 2757, Fax: 0161 236 7029, Web: www.rsk.co.uk. | 22/3/16 - 16:40 | KF |

BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH7**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**10.2.16** End: **10.2.16**	**94.39**	**E:431745.1 N:410312.3**	**2** of **2**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Solid (no returns).	(3.00) 12.00	
				Rotary probehole terminated at 12.00m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**EUpton**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH8**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**8.2.16** End: **8.2.16**	**80.17**	**E:431708.9 N:410054.0**	**1** of **4**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				MADE GROUND: Tarmac. (MADE GROUND)	0.10	
				MADE GROUND: Orange brown sandy gravelly CLAY. Gravel is angular to subangular fine to coarse brick. (MADE GROUND)	(0.90) 1.00	
				Light brown sandy CLAY. (WEATHERED PENNINE MIDDLE COAL MEASURES)	(2.00) 3.00	
				Light grey MUDSTONE. (PENNINE MIDDLE COAL MEASURES)	(7.00)	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

1. Position was scanned and cleared with CAT and GPR. No services encountered.
2. Backfilled with arisings and sealed with concrete on completion.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
RSK Environment Ltd, Fourways House, 57 Hilton Street, Piccadilly, Manchester, M1 2EJ. Tel: 0161 236 2757, Fax: 0161 236 7029, Web: www.rsk.co.uk. | 22/3/16 - 16:40 | KF |

BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH8**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**8.2.16** End: **8.2.16**	**80.17**	**E:431708.9 N:410054.0**	**2** of **4**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Light grey MUDSTONE. (PENNINE MIDDLE COAL MEASURES) *(stratum copied from 3.00m from previous sheet)*	10.00	
				Dark grey MUDSTONE. (PENNINE MIDDLE COAL MEASURES)	10.30	
				Black COAL (flash). (PENNINE MIDDLE COAL MEASURES)	10.50	
				Medium grey/light grey interbedded MUDSTONE and SANDSTONE. (PENNINE MIDDLE COAL MEASURES)	(10.30)	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
RSK Environment Ltd, Fourways House, 57 Hilton Street, Piccadilly, Manchester, M1 2EJ. Tel: 0161 236 2757, Fax: 0161 236 7029, Web: www.rsk.co.uk. | 22/3/16 - 16:40 | KF |

BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH8**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**8.2.16** End: **8.2.16**	**80.17**	**E:431708.9 N:410054.0**	**3** of **4**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Medium grey/light grey interbedded MUDSTONE and SANDSTONE. (PENNINE MIDDLE COAL MEASURES) *(stratum copied from 10.50m from previous sheet)*	20.80	
				Black COAL (flash). (PENNINE MIDDLE COAL MEASURES)	21.00	
				Light grey MUDSTONE. (PENNINE MIDDLE COAL MEASURES)	(5.50)	
					26.50	
				Black COAL (flash). (PENNINE MIDDLE COAL MEASURES)	26.80	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
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BOREHOLE LOG

Contract:	Client:	Borehole:
Bloomhouse Lane, Darton	**Jones Homes (Yorkshire) Limited**	**PH8**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
301645	**8.2.16** End: **8.2.16**	**80.17**	**E:431708.9 N:410054.0**	**4** of **4**

Drilling Progress Log		Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	Drill Time (hh:mm)					
				Description on next sheet Medium grey MUDSTONE with sandstone. (PENNINE MIDDLE COAL MEASURES) *(stratum copied from 26.80m from previous sheet)*	(3.20) 30.00	
				Rotary probehole terminated at 30.00m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Rotary openhole drilling	**Casagrande C6**	**GDC**	**JDuckering**	KF

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_008 PrjVersion: v8_06 - Core+Logs - 001 | Log ROTARY OPENHOLE LOG - A4P | 301645 DARTON.GPJ - v8_06.
RSK Environment Ltd, Fourways House, 57 Hilton Street, Piccadilly, Manchester, M1 2EJ. Tel: 0161 236 2757, Fax: 0161 236 7029, Web: www.rsk.co.uk. | 22/3/16 - 16:40 | KF |

APPENDIX I
TRIAL TRENCH PHOTOGRAPHS

Photo No.	Date:
1	1.02.2016

Description:

Trial trench 1 – coal strata dips steeply to the north – no evidence of mine adit



Photo No.	Date:
2	1.02.2016

Description:

Trial trench 2 - No evidence of mine adit. Coal strata, shallow dip to the south



Photo No.	Date:
3	1.02.2016

Description:

Trial trench 3 - Evidence of Mine Adit. Void extending north through coal measures. Rapidly increases in depth towards the north



Photo No.	Date:
4	1.02.2016

Description:

Trial trench 3 – evidence of mine adit – in filled with mine waste including kettles, pots, pans and glass bottles. Evidence suggested bottles from 1907 indicating age of fill.



Photo No.	Date:
5	1.02.2016

Description:

Trial trench 4 – no evidence of mine adit. Coal strata approximately 2m thick



Photo No.	Date:
6	1.02.2016

Description:

Trial Trench 5 - no evidence of mine adit.

Area of fill identified by irregular contact with coal. Fill is of reddish granular and cohesive material as indicated. Similar waste as evident in trench 3 was noted at the base.



Photo No.	Date:
7	1.02.2016

Description:

Trial trench 6 – no evidence of mine adit. No coal found. Possible made ground to 4m bgl



Photo No.	Date:
8	1.02.2016

Description:

Trial trench 5 and 7 adjoined into large pit up to >4m deep.

Shows same fill material as seen in photo 6, excavated out to prove bottom.

Pit collapsed due to unstable nature of fill material.

No evidence of mine adit. In tact coal directly below fill material to >4m bgl



Photo No.	Date:
9	1.02.2016

Description:

Trial trench 8 – no evidence of mine adit. In tact coal seam



Photo No.	Date:
10	1.02.2016

Description:

Trial trench 9 – no evidence of mine adit. In tact coal seam



Photo No.	Date:
11	2.02.2016

Description:

Trial trench 10 – no evidence of mine adit, however possible railway sleeper identified as indicated in red. Coal in tact.



Photo No.	Date:
12	2.02.2016

Description:

Trial trench 11 – pit collapsed. Coal seam in tact

Top: general photo of pit.

Middle; 1 of 2 railway steels exposed during excavation. Both found lying in E-W orientation.

Bottom; Close up of railway steel once excavated.



Photo No.	Date:
13	2.02.2016

Description:

Extended area of trial trench 12. Timber exposed at approximately 2.2m depth, with E-W orientation. In line with previous timbers and railway steels discovered in trial trenches 11 (Photo 12) and 13 (Photo 14).



Photo No.	Date:
14	2.02.2016

Description:

Trial trench 13

Top: Water seepage at approximately 1.5m below potential made ground

Middle: Timber. Possible railway sleeper lying at approximately 2.2m bgl

Bottom: full depth 3.2m no evidence of adit. No coal seam.







Photo No.	Date:
15	2.02.2016

Description:

Trial trench 14 – no evidence of mine adit



Photo No.	Date:
16	2.02.2016

Description:

Trial trench 15 – no evidence of mine adit



Photo No.	Date:
17	2.02.2016

Description:

Trial trench 16 – no evidence of mine adit



Photo No.	Date:
18	2.02.2016

Description:

Trial trench 18 – no evidence of mine adit



Photo No.	Date:
19	1.02.2016

Description:

Suspected ACM close to Trial trench 4. Corrugate cement sheeting. Partially buried. Mostly on surface, covering approximately 3 x 5m area







APPENDIX J
GROUND GAS MONITORING DATA

IN-SITU GAS MONITORING RESULTS

[Pressures]	Previous	During	Start	End	Equipment Used & Remarks
Round 1	Fluctuating	Rising	997	996	GA2000 + Dipmeter MGS SN-2048 + Weather: Blue skies + Ground: Dry + Wind: Light + Air Temp: 8DegC
Round 2	Fluctuating	Fluctuating	1018	1021	LMSxi + Dipmeter MGS SN-2048 + Weather: Sunny + Ground: Dry + Wind: Light + Air Temp: 10DegC

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH1	1	50	1	9.00	8.95	6.00 to 9.00	22/02/2016 15:30:00	996	996	0.9$_{(I)}$	8.40	0.0$_{(I)}$	0.0$_{(I)}$	20.8$_{(I)}$	0.0$_{(I)}$	-	-
BH1	1	50	1		---	6.00 to 9.00	15 secs	-	-	2.4$_{(SS)}$	-	0.0$_{(SS)}$	0.0$_{(SS)}$	20.9$_{(SS)}$	0.0$_{(SS)}$	-	-
BH1	1	50	1		---	6.00 to 9.00	45 secs	-	-	2.4$_{(SS)}$	-	0.0	0.0	20.9	0.0	-	-
BH1	1	50	1		---	6.00 to 9.00	75 secs	-	-	2.4$_{(SS)}$	-	0.0	0.0	20.9	0.0	-	-
BH1	1	50	1		---	6.00 to 9.00	105 secs	-	-	2.4$_{(SS)}$	-	0.0	0.0	20.9	0.0	-	-
BH1	1	50	2	9.00	8.96	6.00 to 9.00	16/03/2016 16:50:00	1018	1018	0.3$_{(I)}$	8.50	0.0$_{(I)}$	0.0$_{(I)}$	21.1$_{(I)}$	0.0$_{(I)}$	-	-
BH1	1	50	2		---	6.00 to 9.00	15 secs	-	-	0.3$_{(SS)}$	-	0.0$_{(SS)}$	0.0$_{(SS)}$	21.5$_{(SS)}$	0.0$_{(SS)}$	-	-
BH1	1	50	2		---	6.00 to 9.00	30 secs	-	-	0.3$_{(SS)}$	-	0.0	0.0	21.5	0.0	-	-
BH1	1	50	2		---	6.00 to 9.00	60 secs	-	-	0.3$_{(SS)}$	-	0.0	0.0	21.5	0.0	-	-
BH1	1	50	2		---	6.00 to 9.00	90 secs	-	-	0.3$_{(SS)}$	-	0.0	0.0	21.5	0.0	-	-
BH1	1	50	2		---	6.00 to 9.00	120 secs	-	-	0.3$_{(SS)}$	-	0.0	0.0	21.5	0.0	-	-
BH1	1	50	2		---	6.00 to 9.00	180 secs	-	-	0.3$_{(SS)}$	-	0.0	0.0	21.5	0.0	-	-
BH2	1	50	1	9.00	---	3.00 to 9.00	22/02/2016 15:15:00	997	997	0.1$_{(I)}$	-	0.0$_{(I)}$	0.0$_{(I)}$	21.5$_{(I)}$	0.0$_{(I)}$	0.0$_{(I)}$	0.0$_{(I)}$
BH2	1	50	1		---	3.00 to 9.00	15 secs	-	-	0.0$_{(SS)}$	-	0.3	0.0$_{(SS)}$	21.5$_{(SS)}$	0.0$_{(SS)}$	0.0$_{(SS)}$	0.0$_{(SS)}$
BH2	1	50	1		---	3.00 to 9.00	45 secs	-	-	-	-	0.2	0.0	21.5	0.0	0.0	0.0
BH2	1	50	1		---	3.00 to 9.00	105 secs	-	-	-	-	0.1$_{(SS)}$	0.0	21.5	0.0	0.0	0.0
BH2	1	50	1		---	3.00 to 9.00	135 secs	-	-	-	-	0.1	0.0	21.5	0.0	0.0	0.0

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

RSK Environment Ltd
Fourways House
57 Hilton Street
Piccadilly
Manchester M1 2EJ

Compiled By	Date	Checked By	Date	Contract Ref:
K. Foster	22/3/16			301645

Contract: **Bloomhouse Lane, Darton**

GINT_LIBRARY_V8_06.GLB : E - GAS MON - STANDARD - 6A - A4L : 301645 DARTON.GPJ : 22/3/16 09:56 : KF :

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH2	1	50	1		---	3.00 to 9.00	165 secs	-	-	-	-	0.1	0.0	21.5	0.0	0.0	0.0
BH2	1	50	1		---	3.00 to 9.00	225 secs	-	-	-	-	0.1	0.0	21.5	0.0	0.0	0.0
BH2	1	50	2	9.00	8.85	3.00 to 9.00	16/03/2016 16:30:00	1018	-	0.2$_{(I)}$	8.05	0.0$_{(I)}$	0.0$_{(I)}$	20.7$_{(I)}$	0.0$_{(I)}$	-	-
BH2	1	50	2		---	3.00 to 9.00	15 secs	-	-	0.0$_{(SS)}$	-	1.2	0.0$_{(SS)}$	18.9	0.0$_{(SS)}$	-	-
BH2	1	50	2		---	3.00 to 9.00	30 secs	-	-	-	-	1.8	0.0	18.8	0.0	-	-
BH2	1	50	2		---	3.00 to 9.00	60 secs	-	-	-	-	1.9$_{(SS)}$	0.0	18.8	0.0	-	-
BH2	1	50	2		---	3.00 to 9.00	90 secs	-	-	-	-	1.9	0.0	18.7$_{(SS)}$	0.0	-	-
BH2	1	50	2		---	3.00 to 9.00	120 secs	-	-	-	-	1.9	0.0	18.7	0.0	-	-
BH2	1	50	2		---	3.00 to 9.00	180 secs	-	-	-	-	1.9	0.0	18.7	0.0	-	-
BH2	1	50	2		---	3.00 to 9.00	240 secs	-	-	-	-	1.9	0.0	18.7	0.0	-	-
BH3A	1	50	1	6.00	5.86	3.00 to 6.00	22/02/2016 15:45:00	996	996	0.0$_{(I)}$	3.74	0.0$_{(I)}$	0.0$_{(I)}$	21.6$_{(I)}$	0.0$_{(I)}$	-	-
BH3A	1	50	1		---	3.00 to 6.00	15 secs	-	-	0.0$_{(SS)}$	-	0.0$_{(SS)}$	0.0$_{(SS)}$	21.6	0.0$_{(SS)}$	-	-
BH3A	1	50	1		---	3.00 to 6.00	45 secs	-	-	0.0$_{(SS)}$	-	0.0	0.0	21.7	0.0	-	-
BH3A	1	50	1		---	3.00 to 6.00	60 secs	-	-	0.0$_{(SS)}$	-	0.0	0.0	21.7	0.0	-	-
BH3A	1	50	1		---	3.00 to 6.00	90 secs	-	-	0.0$_{(SS)}$	-	0.0	0.0	21.8$_{(SS)}$	0.0	-	-
BH3A	1	50	1		---	3.00 to 6.00	135 secs	-	-	0.0$_{(SS)}$	-	0.0	0.0	21.8	0.0	-	-
BH3A	1	50	2	6.00	5.86	3.00 to 6.00	16/03/2016 17:05:00	1018	-	0.2$_{(I)}$	3.60	0.0$_{(I)}$	0.0$_{(I)}$	21.1$_{(I)}$	0.0$_{(I)}$	-	-
BH3A	1	50	2		---	3.00 to 6.00	15 secs	-	-	0.0$_{(SS)}$	-	0.0$_{(SS)}$	0.0$_{(SS)}$	21.5	0.0$_{(SS)}$	-	-
BH3A	1	50	2		---	3.00 to 6.00	30 secs	-	-	0.0$_{(SS)}$	-	0.0	0.0	21.5	0.0	-	-
BH3A	1	50	2		---	3.00 to 6.00	60 secs	-	-	0.0$_{(SS)}$	-	0.0	0.0	21.4$_{(SS)}$	0.0	-	-
BH3A	1	50	2		---	3.00 to 6.00	90 secs	-	-	0.0$_{(SS)}$	-	0.0	0.0	21.4	0.0	-	-
BH3A	1	50	2		---	3.00 to 6.00	120 secs	-	-	0.0$_{(SS)}$	-	0.0	0.0	21.4	0.0	-	-
BH3A	1	50	2		---	3.00 to 6.00	180 secs	-	-	0.0$_{(SS)}$	-	0.0	0.0	21.4	0.0	-	-

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

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Compiled By	Date	Checked By	Date	Contract Ref:
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Contract: **Bloomhouse Lane, Darton**

GINT_LIBRARY_V8_06.GLB : E - GAS MON - STANDARD - 6A - A4L : 301645 DARTON.GPJ : 22/3/16 09:56 : KF :

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH4	1	50	1	2.00	1.96	1.00 to 2.00	22/02/2016 16:00:00	995	995	0.0(I)	1.88	0.0(I)	0.0(I)	21.7(I)	0.0(I)	-	-
BH4	1	50	1		---	1.00 to 2.00	15 secs	-	-	0.0(SS)	-	1.2	0.0(SS)	21.7	0.0(SS)	-	-
BH4	1	50	1		---	1.00 to 2.00	30 secs	-	-	-	-	1.4(SS)	0.0	21.0	0.0	-	-
BH4	1	50	1		---	1.00 to 2.00	60 secs	-	-	-	-	1.4	0.0	20.9(SS)	0.0	-	-
BH4	1	50	1		---	1.00 to 2.00	90 secs	-	-	-	-	1.4	0.0	20.9	0.0	-	-
BH4	1	50	1		---	1.00 to 2.00	120 secs	-	-	-	-	1.4	0.0	20.9	0.0	-	-
BH4	1	50	1		---	1.00 to 2.00	180 secs	-	-	-	-	1.4	0.0	20.9	0.0	-	-
BH4	1	50	2	2.00	1.99	1.00 to 2.00	16/03/2016 17:25:00	1018	1018	0.0(SS)	1.48	0.0(I)	0.0(I)	21.1(I)	0.0(I)	-	-
BH4	1	50	2		---	1.00 to 2.00	15 secs	-	-	0.0(SS)	-	0.8	0.0(SS)	20.5	0.0(SS)	-	-
BH4	1	50	2		---	1.00 to 2.00	30 secs	-	-	-	-	1.2	0.0	20.4	0.0	-	-
BH4	1	50	2		---	1.00 to 2.00	60 secs	-	-	-	-	1.3	0.0	20.4	0.0	-	-
BH4	1	50	2		---	1.00 to 2.00	90 secs	-	-	-	-	1.3	0.0	20.4	0.0	-	-
BH4	1	50	2		---	1.00 to 2.00	120 secs	-	-	-	-	1.3	0.0	20.3(SS)	0.0	-	-
BH4	1	50	2		---	1.00 to 2.00	180 secs	-	-	-	-	1.3	0.0	20.3	0.0	-	-
BH4	1	50	2		---	1.00 to 2.00	240 secs	-	-	-	-	1.2(SS)	0.0	20.3	0.0	-	-
BH5	1	50	1	9.00	---	3.00 to 9.00	22/02/2016 14:40:00	997	997	0.0(I)	-	0.0(I)	0.0(I)	21.5(I)	0.0(I)	0.0(I)	0.0(I)
BH5	1	50	1		---	3.00 to 9.00	15 secs	-	-	0.0(SS)	-	0.3	0.0(SS)	21.5(SS)	0.0(SS)	0.0(SS)	0.0(SS)
BH5	1	50	1		---	3.00 to 9.00	30 secs	-	-	0.0(SS)	-	0.2	0.0	21.5	0.0	0.0	0.0
BH5	1	50	1		---	3.00 to 9.00	75 secs	-	-	0.0(SS)	-	0.1(SS)	0.0	21.5	0.0	0.0	0.0
BH5	1	50	1		---	3.00 to 9.00	105 secs	-	-	0.0(SS)	-	0.1	0.0	21.5	0.0	0.0	0.0
BH5	1	50	1		---	3.00 to 9.00	135 secs	-	-	0.0(SS)	-	0.1	0.0	21.5	0.0	0.0	0.0
BH5	1	50	1		---	3.00 to 9.00	255 secs	-	-	0.0(SS)	-	0.1	0.0	21.5	0.0	0.0	0.0
BH5	1	50	2	9.00	8.68	3.00 to 9.00	16/03/2016 16:08:00	1020	1020	0.2(I)	0.88	0.0(I)	0.0(I)	21.1(I)	0.0(I)	-	-
BH5	1	50	2		---	3.00 to 9.00	15 secs	-	-	0.0(SS)	-	0.0(SS)	0.0(SS)	21.6	0.0(SS)	-	-

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

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Manchester M1 2EJ

Compiled By	Date	Checked By	Date	Contract Ref:
K. Foster	22/3/16			301645

Contract: **Bloomhouse Lane, Darton**

AGS

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH5	1	50	2		---	3.00 to 9.00	30 secs	-	-	0.0(SS)	-	0.0	0.0	21.5(SS)	0.0	-	-
BH5	1	50	2		---	3.00 to 9.00	60 secs	-	-	0.0(SS)	-	0.0	0.0	21.5	0.0	-	-
BH5	1	50	2		---	3.00 to 9.00	90 secs	-	-	0.0(SS)	-	0.0	0.0	21.5	0.0	-	-
BH5	1	50	2		---	3.00 to 9.00	120 secs	-	-	0.0(SS)	-	0.0	0.0	21.5	0.0	-	-
BH5	1	50	2		---	3.00 to 9.00	180 secs	-	-	0.0(SS)	-	0.0	0.0	21.5	0.0	-	-
BH6	1	50	1	6.00	5.76	3.00 to 6.00	22/02/2016 14:15:00	-	997	0.2(I)	-	0.0(I)	0.0(I)	21.9(I)	0.0(I)	-	-
BH6	1	50	1		---	3.00 to 6.00	15 secs	-	-	0.3(SS)	-	0.1	0.0	21.9	0.0	-	-
BH6	1	50	1		---	3.00 to 6.00	30 secs	-	-	0.3(SS)	-	0.9	0.1	18.6	1.0	-	-
BH6	1	50	1		---	3.00 to 6.00	60 secs	-	-	0.3(SS)	-	0.5	0.0(SS)	20.0	0.0(SS)	-	-
BH6	1	50	1		---	3.00 to 6.00	90 secs	-	-	0.3(SS)	-	0.4	0.0	20.5	0.0	-	-
BH6	1	50	1		---	3.00 to 6.00	120 secs	-	-	0.3(SS)	-	0.3	0.0	20.7	0.0	-	-
BH6	1	50	1		---	3.00 to 6.00	180 secs	-	-	0.3(SS)	-	0.2(SS)	0.0	21.2	0.0	-	-
BH6	1	50	1		---	3.00 to 6.00	240 secs	-	-	0.3(SS)	-	0.2	0.0	21.3(SS)	0.0	-	-
BH6	1	50	1		---	3.00 to 6.00	300 secs	-	-	0.3(SS)	-	0.2	0.0	21.3	0.0	-	-
BH6	1	50	2	6.00	5.76	3.00 to 6.00	16/03/2016 15:45:00	1021	1021	-0.4(I)	DRY	0.1(I)	0.0(I)	20.8(I)	0.0(I)	-	-
BH6	1	50	2		---	3.00 to 6.00	15 secs	-	-	0.0(SS)	-	0.0(SS)	0.0(SS)	21.5(SS)	0.0(SS)	-	-
BH6	1	50	2		---	3.00 to 6.00	30 secs	-	-	0.0(SS)	-	0.0	0.0	21.5	0.0	-	-
BH6	1	50	2		---	3.00 to 6.00	60 secs	-	-	0.0(SS)	-	0.0	0.0	21.5	0.0	-	-
BH6	1	50	2		---	3.00 to 6.00	90 secs	-	-	0.0(SS)	-	0.0	0.0	21.5	0.0	-	-
BH6	1	50	2		---	3.00 to 6.00	120 secs	-	-	0.0(SS)	-	0.0	0.0	21.5	0.0	-	-
BH6	1	50	2		---	3.00 to 6.00	180 secs	-	-	0.0(SS)	-	0.0	0.0	21.5	0.0	-	-

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

RSK Environment Ltd
Fourways House
57 Hilton Street
Piccadilly
Manchester M1 2EJ

Compiled By	Date	Checked By	Date	Contract Ref:
K. Foster	22/3/16			301645

Contract: **Bloomhouse Lane, Darton**

GINT_LIBRARY_V8_06.GLB : E - GAS MON - STANDARD - 6A - A4L : 301645 DARTON.GPJ : 22/3/16 09:56 : KF :

APPENDIX K
LABORATORY CERTIFICATES FOR SOIL ANALYSIS

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT
SUPPLEMENT TO TEST REPORT 16/00914/1

Envirolab Job Number: 16/00914
Issue Number: 2 **Date:** 15 March, 2016

Client:
RSK Environment Ltd Manchester
Fourways House
57 Hilton Street
Manchester
Lancashire
UK
M1 2EJ

Project Manager: Katie Foster
Project Name: Darton
Project Ref: 301645
Order No: N/A
Date Samples Received: 16/02/16
Date Instructions Received: 16/02/16
Date Analysis Completed: 15/03/16

Prepared by:

Kate Ellison
Administrative Assistant

Approved by:

Gill Scott
Laboratory Manager

UKAS TESTING 1247

Envirolab Job Number: 16/00914

Client Project Name: Darton

Client Project Ref: 301645

Lab Sample ID	16/00914/1	16/00914/2	16/00914/3	16/00914/4	16/00914/5	16/00914/6	16/00914/7	16/00914/8	Units	Method ref
Client Sample No	6	1	2	4	1	1	2	1		
Client Sample ID	TP01	TP02	TP03	TP03	TP05	TP07	TP07	TP09		
Depth to Top	2.50	0.00	0.80	1.60	0.60	0.30	0.80	0.20		
Depth To Bottom		0.35			1.00	0.50	1.00	0.50		
Date Sampled	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	29-Jan-16	29-Jan-16	29-Jan-16		
Sample Type	Solid	Soil - ES	Soil - D	Soil - D	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	7	6AE	5E	5	4A	4ABE	5	4E		
% Stones >10mm$_A^{\#}$	<0.1	<0.1	<0.1	<0.1	5.9	34.8	<0.1	<0.1	% w/w	A-T-044
pH$_D^{M\#}$	-	7.19	-	-	-	8.66	-	-	pH	A-T-031s
pH BRE$_D^{M\#}$	4.74	-	5.25	5.01	-	-	-	-	pH	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	-	0.09	-	-	-	0.03	-	-	g/l	A-T-026s
Sulphate BRE (water sol 2:1)$_D^{M\#}$	58	-	33	36	-	-	-	-	mg/l	A-T-026s
Sulphate (acid soluble)$_D^{M\#}$	-	870	-	-	-	710	-	-	mg/kg	A-T-028s
Sulphate BRE (acid sol)$_D^{M\#}$	0.03	-	0.03	<0.02	-	-	-	-	% w/w	A-T-028s
Sulphur BRE (total)$_D$	0.31	-	0.03	<0.01	-	-	-	-	% w/w	A-T-024s
Total Organic Carbon$_D^{M\#}$	-	6.87	-	-	-	2.60	-	-	% w/w	A-T-032s
Arsenic$_D^{M\#}$	-	20	-	-	3	7	3	16	mg/kg	A-T-024s
Cadmium$_D^{M\#}$	-	1.6	-	-	1.9	0.9	1.0	1.5	mg/kg	A-T-024s
Copper$_D^{M\#}$	-	35	-	-	21	20	22	34	mg/kg	A-T-024s
Chromium$_D^{M\#}$	-	23	-	-	18	9	19	19	mg/kg	A-T-024s
Lead$_D^{M\#}$	-	55	-	-	15	74	14	88	mg/kg	A-T-024s
Mercury$_D$	-	0.21	-	-	<0.17	0.35	0.23	<0.17	mg/kg	A-T-024s
Nickel$_D^{M\#}$	-	26	-	-	38	12	25	21	mg/kg	A-T-024s
Selenium$_D$	-	3	-	-	<1	<1	<1	<1	mg/kg	A-T-024s
Zinc$_D^{M\#}$	-	87	-	-	72	80	55	65	mg/kg	A-T-024s

Envirolab Job Number: 16/00914

Client Project Name: Darton

Client Project Ref: 301645

Lab Sample ID	16/00914/1	16/00914/2	16/00914/3	16/00914/4	16/00914/5	16/00914/6	16/00914/7	16/00914/8	Units	Method ref
Client Sample No	6	1	2	4	1	1	2	1		
Client Sample ID	TP01	TP02	TP03	TP03	TP05	TP07	TP07	TP09		
Depth to Top	2.50	0.00	0.80	1.60	0.60	0.30	0.80	0.20		
Depth To Bottom		0.35			1.00	0.50	1.00	0.50		
Date Sampled	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	29-Jan-16	29-Jan-16	29-Jan-16		
Sample Type	Solid	Soil - ES	Soil - D	Soil - D	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	7	6AE	5E	5	4A	4ABE	5	4E		
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_A^{\#}$	-	-	-	-	-	NAD	-	-		A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	-	-	-	-	-	N/A	-	-		Gravimetry

Envirolab Job Number: 16/00914

Client Project Name: Darton

Client Project Ref: 301645

Lab Sample ID	16/00914/1	16/00914/2	16/00914/3	16/00914/4	16/00914/5	16/00914/6	16/00914/7	16/00914/8	Units	Method ref
Client Sample No	6	1	2	4	1	1	2	1		
Client Sample ID	TP01	TP02	TP03	TP03	TP05	TP07	TP07	TP09		
Depth to Top	2.50	0.00	0.80	1.60	0.60	0.30	0.80	0.20		
Depth To Bottom		0.35			1.00	0.50	1.00	0.50		
Date Sampled	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	29-Jan-16	29-Jan-16	29-Jan-16		
Sample Type	Solid	Soil - ES	Soil - D	Soil - D	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	7	6AE	5E	5	4A	4ABE	5	4E		
PAH 16										
Acenaphthene$_A^{M\#}$	-	<0.01	-	-	<0.01	0.02	<0.01	0.04	mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	-	0.01	-	-	<0.01	0.02	<0.01	0.07	mg/kg	A-T-019s
Anthracene$_A^{M\#}$	-	0.06	-	-	<0.02	0.11	<0.02	0.58	mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	0.39	-	-	<0.04	0.61	<0.04	1.91	mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	0.35	-	-	<0.04	0.67	<0.04	1.50	mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	-	0.43	-	-	<0.05	0.75	<0.05	1.82	mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	0.20	-	-	<0.05	0.39	<0.05	0.71	mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	-	0.21	-	-	<0.07	0.32	<0.07	0.79	mg/kg	A-T-019s
Chrysene$_A^{M\#}$	-	0.44	-	-	<0.06	0.67	<0.06	1.97	mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	-	0.05	-	-	<0.04	0.09	<0.04	0.21	mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	-	0.66	-	-	<0.08	0.96	<0.08	4.07	mg/kg	A-T-019s
Fluorene$_A^{M\#}$	-	<0.01	-	-	<0.01	0.02	<0.01	0.10	mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	-	0.25	-	-	<0.03	0.46	<0.03	0.95	mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	-	<0.03	-	-	<0.03	0.04	<0.03	0.07	mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	-	0.26	-	-	<0.03	0.43	<0.03	2.34	mg/kg	A-T-019s
Pyrene$_A^{M\#}$	-	0.56	-	-	<0.07	0.94	<0.07	3.44	mg/kg	A-T-019s
PAH (total 16)$_A^{M\#}$	-	3.89	-	-	<0.08	6.50	<0.08	20.6	mg/kg	A-T-019s

Envirolab Job Number: 16/00914

Client Project Name: Darton

Client Project Ref: 301645

Lab Sample ID	16/00914/1	16/00914/2	16/00914/3	16/00914/4	16/00914/5	16/00914/6	16/00914/7	16/00914/8	Units	Method ref
Client Sample No	6	1	2	4	1	1	2	1		
Client Sample ID	TP01	TP02	TP03	TP03	TP05	TP07	TP07	TP09		
Depth to Top	2.50	0.00	0.80	1.60	0.60	0.30	0.80	0.20		
Depth To Bottom		0.35			1.00	0.50	1.00	0.50		
Date Sampled	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	27-Jan-16	29-Jan-16	29-Jan-16	29-Jan-16		
Sample Type	Solid	Soil - ES	Soil - D	Soil - D	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	7	6AE	5E	5	4A	4ABE	5	4E		
TPH CWG										
Ali >C5-C6$_A^\#$	-	<0.01	-	-	-	<0.01	-	-	mg/kg	A-T-022s
Ali >C6-C8$_A^\#$	-	<0.01	-	-	-	<0.01	-	-	mg/kg	A-T-022s
Ali >C8-C10$_A^\#$	-	<0.01	-	-	-	<0.01	-	-	mg/kg	A-T-022s
Ali >C10-C12$_A^\#$	-	<0.1	-	-	-	<0.1	-	-	mg/kg	A-T-023s
Ali >C12-C16$_A^\#$	-	<0.1	-	-	-	<0.1	-	-	mg/kg	A-T-023s
Ali >C16-C21$_A^\#$	-	<0.1	-	-	-	<0.1	-	-	mg/kg	A-T-023s
Ali >C21-C35$_A^\#$	-	<0.1	-	-	-	<0.1	-	-	mg/kg	A-T-023s
Total Aliphatics$_A$	-	<0.1	-	-	-	<0.1	-	-	mg/kg	A-T-022+23s
Aro >C5-C7$_A^\#$	-	<0.01	-	-	-	<0.01	-	-	mg/kg	A-T-022s
Aro >C7-C8$_A^\#$	-	<0.01	-	-	-	<0.01	-	-	mg/kg	A-T-022s
Aro >C8-C9$_A^\#$	-	<0.01	-	-	-	<0.01	-	-	mg/kg	A-T-022s
Aro >C9-C10$_A^\#$	-	<0.01	-	-	-	<0.01	-	-	mg/kg	A-T-022s
Aro >C10-C12$_A^\#$	-	<0.1	-	-	-	<0.1	-	-	mg/kg	A-T-023s
Aro >C12-C16$_A^\#$	-	<0.1	-	-	-	<0.1	-	-	mg/kg	A-T-023s
Aro >C16-C21$_A^\#$	-	1.1	-	-	-	1.5	-	-	mg/kg	A-T-023s
Aro >C21-C35$_A^\#$	-	1.5	-	-	-	1.4	-	-	mg/kg	A-T-023s
Total Aromatics$_A$	-	2.8	-	-	-	2.9	-	-	mg/kg	A-T-022+23s
TPH (Ali & Aro)$_A$	-	2.8	-	-	-	2.9	-	-	mg/kg	A-T-022+23s
BTEX - Benzene$_A^\#$	-	<0.01	-	-	-	<0.01	-	-	mg/kg	A-T-022s
BTEX - Toluene$_A^\#$	-	<0.01	-	-	-	<0.01	-	-	mg/kg	A-T-022s
BTEX - Ethyl Benzene$_A^\#$	-	<0.01	-	-	-	<0.01	-	-	mg/kg	A-T-022s
BTEX - m & p Xylene$_A^\#$	-	<0.01	-	-	-	<0.01	-	-	mg/kg	A-T-022s
BTEX - o Xylene$_A^\#$	-	<0.01	-	-	-	<0.01	-	-	mg/kg	A-T-022s
MTBE$_A^\#$	-	<0.01	-	-	-	<0.01	-	-	mg/kg	A-T-022s

Envirolab Job Number: 16/00914

Client Project Name: Darton

Client Project Ref: 301645

Lab Sample ID	16/00914/9	16/00914/10	16/00914/11	16/00914/12	16/00914/13	16/00914/14	16/00914/15	16/00914/16	Units	Method ref
Client Sample No	1	3	1	2	1	3	1	3		
Client Sample ID	TP12	TP12	TP13	TP13	TP14	TP14	TP16	TP16		
Depth to Top	0.00	1.60	0.00	0.30	1.50	2.50	1.10	1.80		
Depth To Bottom	0.60		0.25	0.50	1.80		1.40	2.00		
Date Sampled	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16		
Sample Type	Soil - ES	Soil - D	Soil - ES	Soil - ES	Soil - ES	Soil - D	Soil - ES	Soil - ES		
Sample Matrix Code	6AE	5	4A	4AB	5A	5E	5A	5		
% Stones >10mm$_A^{\#}$	<0.1	<0.1	21.7	5.5	15.9	<0.1	8.5	<0.1	% w/w	A-T-044
pH$_D^{M\#}$	-	-	6.29	6.57	7.55	-	7.33	-	pH	A-T-031s
pH BRE$_D^{M\#}$	7.66	6.47	-	-	7.55	7.39	-	6.22	pH	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	-	-	0.03	0.05	0.53	-	1.43	-	g/l	A-T-026s
Sulphate BRE (water sol 2:1)$_D^{M\#}$	12	98	-	-	528	298	-	1120	mg/l	A-T-026s
Sulphate (acid soluble)$_D^{M\#}$	-	-	2300	6300	2500	-	19000	-	mg/kg	A-T-028s
Sulphate BRE (acid sol)$_D^{M\#}$	0.07	<0.02	-	-	0.25	0.10	-	0.24	% w/w	A-T-028s
Sulphur BRE (total)$_D$	0.04	0.02	-	-	0.08	0.08	-	0.13	% w/w	A-T-024s
Total Organic Carbon$_D^{M\#}$	-	-	9.35	7.96	3.58	-	1.06	-	% w/w	A-T-032s
Arsenic$_D^{M\#}$	13	-	47	45	16	-	34	-	mg/kg	A-T-024s
Cadmium$_D^{M\#}$	2.0	-	1.8	2.1	1.4	-	2.8	-	mg/kg	A-T-024s
Copper$_D^{M\#}$	56	-	104	133	38	-	91	-	mg/kg	A-T-024s
Chromium$_D^{M\#}$	26	-	21	24	17	-	23	-	mg/kg	A-T-024s
Lead$_D^{M\#}$	62	-	111	141	48	-	382	-	mg/kg	A-T-024s
Mercury$_D$	0.42	-	0.38	0.60	<0.17	-	<0.17	-	mg/kg	A-T-024s
Nickel$_D^{M\#}$	26	-	31	32	22	-	50	-	mg/kg	A-T-024s
Selenium$_D$	1	-	2	2	<1	-	<1	-	mg/kg	A-T-024s
Zinc$_D^{M\#}$	647	-	143	124	81	-	606	-	mg/kg	A-T-024s

Envirolab Job Number: 16/00914

Client Project Name: Darton

Client Project Ref: 301645

Lab Sample ID	16/00914/9	16/00914/10	16/00914/11	16/00914/12	16/00914/13	16/00914/14	16/00914/15	16/00914/16	Units	Method ref
Client Sample No	1	3	1	2	1	3	1	3		
Client Sample ID	TP12	TP12	TP13	TP13	TP14	TP14	TP16	TP16		
Depth to Top	0.00	1.60	0.00	0.30	1.50	2.50	1.10	1.80		
Depth To Bottom	0.60		0.25	0.50	1.80		1.40	2.00		
Date Sampled	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16		
Sample Type	Soil - ES	Soil - D	Soil - ES	Soil - ES	Soil - ES	Soil - D	Soil - ES	Soil - ES		
Sample Matrix Code	6AE	5	4A	4AB	5A	5E	5A	5		
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_A^{\#}$	-	-	NAD	-	NAD	-	NAD	-		A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	-	-	N/A	-	N/A	-	N/A	-		Gravimetry

Envirolab Job Number: 16/00914

Client Project Name: Darton

Client Project Ref: 301645

Lab Sample ID	16/00914/9	16/00914/10	16/00914/11	16/00914/12	16/00914/13	16/00914/14	16/00914/15	16/00914/16	Units	Method ref
Client Sample No	1	3	1	2	1	3	1	3		
Client Sample ID	TP12	TP12	TP13	TP13	TP14	TP14	TP16	TP16		
Depth to Top	0.00	1.60	0.00	0.30	1.50	2.50	1.10	1.80		
Depth To Bottom	0.60		0.25	0.50	1.80		1.40	2.00		
Date Sampled	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16		
Sample Type	Soil - ES	Soil - D	Soil - ES	Soil - ES	Soil - ES	Soil - D	Soil - ES	Soil - ES		
Sample Matrix Code	6AE	5	4A	4AB	5A	5E	5A	5		
PAH 16										
Acenaphthene$_A^{M\#}$	0.11	-	0.02	0.02	<0.01	-	<0.01	-	mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	0.02	-	0.03	0.02	<0.01	-	<0.01	-	mg/kg	A-T-019s
Anthracene$_A^{M\#}$	0.44	-	0.13	0.16	0.03	-	<0.02	-	mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	1.48	-	0.67	0.55	0.09	-	<0.04	-	mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	1.28	-	0.68	0.47	0.09	-	<0.04	-	mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	1.48	-	0.83	0.54	0.11	-	<0.05	-	mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.67	-	0.42	0.27	0.06	-	<0.05	-	mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	0.67	-	0.40	0.24	<0.07	-	<0.07	-	mg/kg	A-T-019s
Chrysene$_A^{M\#}$	1.46	-	0.75	0.53	0.10	-	<0.06	-	mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	0.16	-	0.11	0.07	<0.04	-	<0.04	-	mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	3.23	-	1.18	0.96	0.17	-	<0.08	-	mg/kg	A-T-019s
Fluorene$_A^{M\#}$	0.09	-	0.03	0.03	<0.01	-	<0.01	-	mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	0.86	-	0.54	0.33	0.07	-	<0.03	-	mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	0.07	-	0.06	<0.03	<0.03	-	<0.03	-	mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	1.37	-	0.41	0.45	0.06	-	<0.03	-	mg/kg	A-T-019s
Pyrene$_A^{M\#}$	2.82	-	1.03	0.82	0.15	-	<0.07	-	mg/kg	A-T-019s
PAH (total 16)$_A^{M\#}$	16.2	-	7.26	5.49	0.93	-	<0.08	-	mg/kg	A-T-019s

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Lab Sample ID	16/00914/9	16/00914/10	16/00914/11	16/00914/12	16/00914/13	16/00914/14	16/00914/15	16/00914/16	Units	Method ref
Client Sample No	1	3	1	2	1	3	1	3		
Client Sample ID	TP12	TP12	TP13	TP13	TP14	TP14	TP16	TP16		
Depth to Top	0.00	1.60	0.00	0.30	1.50	2.50	1.10	1.80		
Depth To Bottom	0.60		0.25	0.50	1.80		1.40	2.00		
Date Sampled	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16	28-Jan-16		
Sample Type	Soil - ES	Soil - D	Soil - ES	Soil - ES	Soil - ES	Soil - D	Soil - ES	Soil - ES		
Sample Matrix Code	6AE	5	4A	4AB	5A	5E	5A	5		
TPH CWG										
Ali >C5-C6$_A^{\#}$	-	-	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	A-T-022s
Ali >C6-C8$_A^{\#}$	-	-	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	A-T-022s
Ali >C8-C10$_A^{\#}$	-	-	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	A-T-022s
Ali >C10-C12$_A^{\#}$	-	-	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	A-T-023s
Ali >C12-C16$_A^{\#}$	-	-	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	A-T-023s
Ali >C16-C21$_A^{\#}$	-	-	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	A-T-023s
Ali >C21-C35$_A^{\#}$	-	-	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	A-T-023s
Total Aliphatics$_A$	-	-	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	A-T-022+23s
Aro >C5-C7$_A^{\#}$	-	-	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	A-T-022s
Aro >C7-C8$_A^{\#}$	-	-	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	A-T-022s
Aro >C8-C9$_A^{\#}$	-	-	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	A-T-022s
Aro >C9-C10$_A^{\#}$	-	-	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	A-T-022s
Aro >C10-C12$_A^{\#}$	-	-	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	A-T-023s
Aro >C12-C16$_A^{\#}$	-	-	<0.1	<0.1	<0.1	-	<0.1	-	mg/kg	A-T-023s
Aro >C16-C21$_A^{\#}$	-	-	1.1	1.0	<0.1	-	<0.1	-	mg/kg	A-T-023s
Aro >C21-C35$_A^{\#}$	-	-	1.4	0.5	<0.1	-	<0.1	-	mg/kg	A-T-023s
Total Aromatics$_A$	-	-	2.4	1.5	<0.1	-	<0.1	-	mg/kg	A-T-022+23s
TPH (Ali & Aro)$_A$	-	-	2.4	1.5	<0.1	-	<0.1	-	mg/kg	A-T-022+23s
BTEX - Benzene$_A^{\#}$	-	-	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	A-T-022s
BTEX - Toluene$_A^{\#}$	-	-	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	-	-	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	-	-	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	A-T-022s
BTEX - o Xylene$_A^{\#}$	-	-	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	A-T-022s
MTBE$_A^{\#}$	-	-	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	A-T-022s

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Lab Sample ID	16/00914/17	16/00914/18	16/00914/19	16/00914/20	16/00914/21	16/00914/22	16/00914/23		Units	Method ref
Client Sample No	1	1	1	1	4	7	1			
Client Sample ID	TP17	TP18	TP20	TP21	TP22	TP22	TP23			
Depth to Top	0.00	0.00	0.00	0.00	0.70	1.40	0.00			
Depth To Bottom	0.30	0.30	0.40	0.50			0.30			
Date Sampled	27-Jan-16	29-Jan-16	29-Jan-16	26-Jan-16	26-Jan-16	26-Jan-16	26-Jan-16			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - D	Solid	Soil - ES			
Sample Matrix Code	4AE	4E	5	6AE	5	7	4E			
% Stones >10mm$_A^{\#}$	<0.1	<0.1	<0.1	12.7	<0.1	<0.1	<0.1		% w/w	A-T-044
pH$_D^{M\#}$	5.10	-	6.43	6.65	-	-	6.64		pH	A-T-031s
pH BRE$_D^{M\#}$	-	-	-	-	7.19	6.97	-		pH	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	0.05	-	0.08	0.13	-	-	0.03		g/l	A-T-026s
Sulphate BRE (water sol 2:1)$_D^{M\#}$	-	-	-	-	98	23	-		mg/l	A-T-026s
Sulphate (acid soluble)$_D^{M\#}$	810	-	380	1000	-	-	830		mg/kg	A-T-028s
Sulphate BRE (acid sol)$_D^{M\#}$	-	-	-	-	0.02	<0.02	-		% w/w	A-T-028s
Sulphur BRE (total)$_D$	-	-	-	-	0.01	0.01	-		% w/w	A-T-024s
Total Organic Carbon$_D^{M\#}$	3.49	-	0.31	4.58	-	-	4.27		% w/w	A-T-032s
Arsenic$_D^{M\#}$	13	15	5	12	-	-	11		mg/kg	A-T-024s
Cadmium$_D^{M\#}$	1.6	1.5	1.7	<0.5	-	-	0.6		mg/kg	A-T-024s
Copper$_D^{M\#}$	26	34	13	24	-	-	14		mg/kg	A-T-024s
Chromium$_D^{M\#}$	20	20	22	21	-	-	16		mg/kg	A-T-024s
Lead$_D^{M\#}$	40	77	19	152	-	-	40		mg/kg	A-T-024s
Mercury$_D$	<0.17	0.28	0.22	<0.17	-	-	<0.17		mg/kg	A-T-024s
Nickel$_D^{M\#}$	21	20	18	18	-	-	17		mg/kg	A-T-024s
Selenium$_D$	2	2	3	<1	-	-	2		mg/kg	A-T-024s
Zinc$_D^{M\#}$	98	141	55	57	-	-	73		mg/kg	A-T-024s

Envirolab Job Number: 16/00914

Client Project Name: Darton

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Lab Sample ID	16/00914/17	16/00914/18	16/00914/19	16/00914/20	16/00914/21	16/00914/22	16/00914/23		Units	Method ref
Client Sample No	1	1	1	1	4	7	1			
Client Sample ID	TP17	TP18	TP20	TP21	TP22	TP22	TP23			
Depth to Top	0.00	0.00	0.00	0.00	0.70	1.40	0.00			
Depth To Bottom	0.30	0.30	0.40	0.50			0.30			
Date Sampled	27-Jan-16	29-Jan-16	29-Jan-16	26-Jan-16	26-Jan-16	26-Jan-16	26-Jan-16			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - D	Solid	Soil - ES			
Sample Matrix Code	4AE	4E	5	6AE	5	7	4E			
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_A^{\#}$	NAD	-	NAD	NAD	-	-	NAD			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	N/A	-	N/A	N/A	-	-	N/A			Gravimetry

Envirolab Job Number: 16/00914

Client Project Name: Darton

Client Project Ref: 301645

Lab Sample ID	16/00914/17	16/00914/18	16/00914/19	16/00914/20	16/00914/21	16/00914/22	16/00914/23		Units	Method ref
Client Sample No	1	1	1	1	4	7	1			
Client Sample ID	TP17	TP18	TP20	TP21	TP22	TP22	TP23			
Depth to Top	0.00	0.00	0.00	0.00	0.70	1.40	0.00			
Depth To Bottom	0.30	0.30	0.40	0.50			0.30			
Date Sampled	27-Jan-16	29-Jan-16	29-Jan-16	26-Jan-16	26-Jan-16	26-Jan-16	26-Jan-16			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - D	Solid	Soil - ES			
Sample Matrix Code	4AE	4E	5	6AE	5	7	4E			
PAH 16										
Acenaphthene$_A^{M\#}$	<0.01	0.01	<0.01	3.92	-	-	<0.01		mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	2.09	-	-	<0.01		mg/kg	A-T-019s
Anthracene$_A^{M\#}$	<0.02	0.07	<0.02	30.2	-	-	0.03		mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	0.33	<0.04	42.1	-	-	0.14		mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	0.26	<0.04	35.6	-	-	0.12		mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	0.31	<0.05	*40.8*	-	-	*0.16*		mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	0.16	<0.05	16.6	-	-	<0.05		mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	0.16	<0.07	23.1	-	-	<0.07		mg/kg	A-T-019s
Chrysene$_A^{M\#}$	<0.06	0.34	<0.06	50.6	-	-	0.14		mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	3.81	-	-	<0.04		mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	0.55	<0.08	197	-	-	0.22		mg/kg	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	7.52	-	-	<0.01		mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	0.20	<0.03	18.8	-	-	0.04		mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	<0.03	<0.03	<0.03	0.41	-	-	<0.03		mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	0.04	0.24	<0.03	81.6	-	-	0.11		mg/kg	A-T-019s
Pyrene$_A^{M\#}$	<0.07	0.46	<0.07	137	-	-	0.19		mg/kg	A-T-019s
PAH (total 16)$_A^{M\#}$	<0.08	3.06	<0.08	692	-	-	1.13		mg/kg	A-T-019s

Envirolab Job Number: 16/00914

Client Project Name: Darton

Client Project Ref: 301645

Lab Sample ID	16/00914/17	16/00914/18	16/00914/19	16/00914/20	16/00914/21	16/00914/22	16/00914/23		Units	Method ref
Client Sample No	1	1	1	1	4	7	1			
Client Sample ID	TP17	TP18	TP20	TP21	TP22	TP22	TP23			
Depth to Top	0.00	0.00	0.00	0.00	0.70	1.40	0.00			
Depth To Bottom	0.30	0.30	0.40	0.50			0.30			
Date Sampled	27-Jan-16	29-Jan-16	29-Jan-16	26-Jan-16	26-Jan-16	26-Jan-16	26-Jan-16			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - D	Solid	Soil - ES			
Sample Matrix Code	4AE	4E	5	6AE	5	7	4E			
TPH CWG										
Ali >C5-C6$_A^\#$	<0.01	-	<0.01	<0.05	-	-	0.10		mg/kg	A-T-022s
Ali >C6-C8$_A^\#$	<0.01	-	<0.01	<0.01	-	-	<0.01		mg/kg	A-T-022s
Ali >C8-C10$_A^\#$	<0.01	-	<0.01	<0.01	-	-	<0.01		mg/kg	A-T-022s
Ali >C10-C12$_A^\#$	<0.1	-	<0.1	<0.1	-	-	<0.1		mg/kg	A-T-023s
Ali >C12-C16$_A^\#$	<0.1	-	<0.1	<0.1	-	-	<0.1		mg/kg	A-T-023s
Ali >C16-C21$_A^\#$	<0.1	-	<0.1	<0.1	-	-	<0.1		mg/kg	A-T-023s
Ali >C21-C35$_A^\#$	<0.1	-	<0.1	<0.1	-	-	<0.1		mg/kg	A-T-023s
Total Aliphatics$_A$	<0.1	-	<0.1	<0.1	-	-	<0.1		mg/kg	A-T-022+23s
Aro >C5-C7$_A^\#$	<0.01	-	<0.01	<0.01	-	-	<0.01		mg/kg	A-T-022s
Aro >C7-C8$_A^\#$	<0.01	-	<0.01	<0.01	-	-	<0.01		mg/kg	A-T-022s
Aro >C8-C9$_A^\#$	<0.01	-	<0.01	<0.01	-	-	<0.01		mg/kg	A-T-022s
Aro >C9-C10$_A^\#$	<0.01	-	<0.01	<0.01	-	-	<0.01		mg/kg	A-T-022s
Aro >C10-C12$_A^\#$	<0.1	-	<0.1	<0.1	-	-	<0.1		mg/kg	A-T-023s
Aro >C12-C16$_A^\#$	<0.1	-	<0.1	15.9	-	-	<0.1		mg/kg	A-T-023s
Aro >C16-C21$_A^\#$	<0.1	-	<0.1	222	-	-	<0.1		mg/kg	A-T-023s
Aro >C21-C35$_A^\#$	<0.1	-	<0.1	137	-	-	<0.1		mg/kg	A-T-023s
Total Aromatics$_A$	<0.1	-	<0.1	375	-	-	<0.1		mg/kg	A-T-022+23s
TPH (Ali & Aro)$_A$	<0.1	-	<0.1	375	-	-	<0.1		mg/kg	A-T-022+23s
BTEX - Benzene$_A^\#$	<0.01	-	<0.01	<0.01	-	-	<0.01		mg/kg	A-T-022s
BTEX - Toluene$_A^\#$	<0.01	-	<0.01	<0.01	-	-	<0.01		mg/kg	A-T-022s
BTEX - Ethyl Benzene$_A^\#$	<0.01	-	<0.01	<0.01	-	-	<0.01		mg/kg	A-T-022s
BTEX - m & p Xylene$_A^\#$	<0.01	-	<0.01	<0.01	-	-	<0.01		mg/kg	A-T-022s
BTEX - o Xylene$_A^\#$	<0.01	-	<0.01	<0.01	-	-	<0.01		mg/kg	A-T-022s
MTBE$_A^\#$	<0.01	-	<0.01	<0.01	-	-	<0.01		mg/kg	A-T-022s

REPORT NOTES

Notes - Soil chemical analysis
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones and brick and concrete fragments >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis. For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General
This report shall not be reproduced, except in full, without written approval from Envirolab.
Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.
All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supersedes any "A" subscripts.
All analysis is performed on the sample as received for soil samples which are positive for asbestos and/or if they are from outside the European Union and this supercedes any "D" subscripts.
Superscript "M" indicates method accredited to MCERTS.
If results are in italic font they are associated with an AQC failure. These are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

TPH analysis of water by method A-T-007
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Asbestos in soil
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if present as discrete fibres/fragments. Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations.

Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

APPENDIX L
HUMAN HEALTH GENERIC ASSESSMENT CRITERIA

Generic assessment criteria for human health: residential scenario with home-grown produce

Background

RSK's generic assessment criteria (GAC) were initially prepared following the publication by the Environment Agency (EA) of soil guideline value (SGV) and toxicological (TOX) reports, and associated publications in 2009[1]. RSK GAC were updated following the publication of GAC by LQM/CIEH in 2009[2]. RSK GAC are periodically revised when updated information on toxicological, land use or receptor parameters is published.

Updates to the RSK GAC: 2015

In 2014, the publication of Category 4 Screening Levels (C4SL)[3,4], as part of the Defra-funded research project SP1010, included modifications to certain exposure assumptions documented within EA Science Report SC050221/SR3 (herein after referred to as SR3)[5] used in the generation of SGVs.

C4SL were published for six substances (cadmium, arsenic, benzene, benzo(a)pyrene, chromium VI and lead) for a sandy loam soil type with 6% soil organic matter, based on a low level of toxicological concern (LLTC; see Section 2.3 of research project report SP1010[3]). Where a C4SL has been published, the RSK GAC duplicates the C4SL published values using all input parameters within the SP1010 final project report[3] and associated appendices[6], and adopts them as GAC for these six substances.

For all other substances the C4SL exposure modifications, with the exception of the "top two" produce type approach taken in the C4SL, have been applied to the current RSK GAC. These include alterations to daily inhalation rates for residential and commercial scenarios, reducing soil adherence factors in children (age classes 1 to 12 only) for residential land use, reducing exposure frequency for dermal contact outdoors for residential land use, and updated produce type consumption rates (90th percentile) based on recent data from the National Diet and Nutrition Survey.

The RSK GAC have also been revised with updated toxicology published by LQM/CIEH in 2015[7], where a C4SL has not been published.

RSK GAC derivation for metals and organic compounds

Model selection

Soil assessment criteria (SAC) were calculated using the Contaminated Land Exposure Assessment (CLEA) tool v1.06, supporting EA guidance[5,8,9] and revised exposure scenarios published for the C4SL[3]. Groundwater assessment criteria (GrAC) protective of human health via the inhalation pathway were derived using the RBCA 1.3b model. RSK has updated the inputs within RBCA to reflect EA guidance[1,5,8,9]. The SAC and GrAC collectively are termed GAC.

Conceptual model

In accordance with SR3[5], the residential with home-grown produce scenario considers risks to a female child between the ages of 0 and 6 years old as the highest risk scenario. In accordance

with Box 3.1 of SR3[5], the pathways considered for production of the SAC in the residential with home-grown produce scenario are

- direct soil and dust ingestion
- consumption of home-grown produce
- consumption of soil attached to home-grown produce
- dermal contact with soil and indoor dust
- inhalation of indoor and outdoor dust and vapours.

Figure 1 is a conceptual model illustrating these linkages.

In line with guidance in the EA SGV report for cadmium[1], the RSK GAC for cadmium has been derived based on estimates representative of lifetime exposure. Although young children are generally more likely to have higher exposures to soil contaminants, the renal toxicity of cadmium, and the derivation of the TDI_{oral} and TDI_{inh}, are based on considerations of the kidney burden accumulated over 50 years or so. It is therefore reasonable to consider exposure not just in childhood but averaged over a longer period.

The pathway considered in production of the GrAC is the volatilisation of compounds from groundwater and subsequent vapour inhalation by residents while indoors. Figure 2 illustrates this linkage. Although the outdoor air inhalation pathway is also valid, this contributes little to the overall risks owing to the dilution in outdoor air. Within RBCA, the solubility limit of the chemical restricts the extent of volatilisation, which in turn drives the indoor air inhalation pathway. While the same restriction is not built into the CLEA model, the CLEA model output cells are flagged red where the soil saturation limit has been exceeded.

With respect to volatilisation, the CLEA model assumes a simple linear partitioning of a chemical in the soil between the sorbed, dissolved and vapour phase[9]. The upper boundaries of this partitioning are represented by the maximum aqueous solubility and pure saturated vapour concentration of the chemical. The CLEA model estimates saturated soil concentrations where these limits are reached[9]. The CLEA software uses a traffic light system to identify when individual and/or combined assessment criteria exceed the lower of either the aqueous- or vapour-based soil saturation limits. Model output cells are flagged red where the saturated soil concentration has been exceeded and the contribution of the indoor and outdoor vapour pathway to total exposure is greater than 10%. In this case, further consideration of the following is required[9]:

- Free phase contamination may be present.
- Exposure from the vapour pathways will be over-predicted by the model, as in reality the vapour phase concentration will not increase at concentrations above saturation limits
- Where the vapour pathway contribution is greater than 90%, it is unlikely the relevant health criteria value (HCV) will be exceeded at soil concentrations at least a factor of ten higher than the relevant HCV.

Where the vapour pathway is the predominant pathway (contributes greater than 90% of exposure) or the only exposure route considered and the cell is highlighted red (SAC exceeds saturation limit), the risk based on the assumed conceptual model is likely to be negligible as the vapour risk is assumed to be tolerable at maximum possible soil concentrations. In such circumstances, the vapour pathway exposure should be considered based on the presence of free phase or non-aqueous phase liquid sources and the measured concentrations of volatile organic compounds (VOC) in the vapour phase. Screening could be considered based on setting

the SAC as the modelled soil saturation limits. However, as stated within the CLEA handbook[9], this is likely to not be practical in many cases because of the very low saturation limits and, in any case, is highly conservative.

It should also be noted that for mixtures of compounds, free phase may be present where soil (or groundwater) concentrations are well below saturation limits for individual compounds.

Where the vapour pathway is only one of the exposure pathways considered, an additional approach can then be utilised as detailed within Section 4.12 of the CLEA model handbook[9], which explains how to calculate an effective assessment criterion manually.

SR3[5] states that, as a general rule of thumb, it is recognised that estimating vapour phase concentrations from dissolved and sorbed phase contamination by petroleum hydrocarbons are at least a factor of ten higher than those likely to be measured on-site. RSK has therefore applied an empirical subsurface to indoor air correction factor of 10 into the CLEA model chemical database for all petroleum hydrocarbon fractions (including BTEX, trimethylbenzenes and the polycyclic aromatic hydrocarbons (PAH) naphthalene, acenaphthene and acenaphthylene) to reduce this conservatism.

Input selection

The most up-to-date published chemical and toxicological data was obtained from EA Report SC050021/SR7[10], the EA TOX[1] reports, the C4SL SP1010 project report and associated appendices[3,6] or the 2015 LQM/CIEH report[7]. Where a C4SL has been published, the RSK GAC have duplicated the C4SL published values using all input parameters within the SP1010 final project report[3] and associated appendices[6], and has adopted them as GAC for these six substances. Toxicological and specific chemical parameters for aromatic hydrocarbon C_8–C_9 (styrene), 1,2,4-trimethylbenzene and methyl tertiary-butyl ether (MTBE) were obtained from the CL:AIRE Soil Generic Assessment Criteria report[11].

For TPH, aromatic hydrocarbons C_5–C_8 were not modelled, as this range comprises benzene and toluene, which are modelled separately. The aromatic C_8–C_9 hydrocarbon fraction comprises ethylbenzene, xylene and styrene. As ethylbenzene and xylene are being modelled separately, the physical, chemical and toxicological data for aromatic C_8–C_9 have been taken from styrene.

For the GrAC, owing to the lack of UK-specific data, default information in the RBCA model was used to evaluate MTBE. No published UK data was available for 1,3,5-trimethylbenzene, so information was obtained from the RBCA model. RBCA uses toxicity data for the inhalation pathway in different units to the CLEA model and cannot consider separately the mean daily intake (MDI), occupancy periods or breathing rates. Therefore, the HCV in RBCA was amended to take account of

- amendments to the MDI using Table 3.4 of SR2[8]
- a child weighing 13.3kg (average of 0–6 year old female in accordance with Table 4.6 of SR3[5]) and breathing 11.85m^3 (average daily inhalation rate for a 0–6-year old female in accordance with Table 4.14 of SR3[5]). Inhalation rates used in the derivation of the GrAC have not been updated in line with the 2011 USEPA published values[12]; these will be updated in subsequent revisions of the RSK GAC. The lower inhalation rates presented by the USEPA in 2011 for ages classes 1 to 11 (values are higher for age classes 12 to 18) are not considered to make a significant difference.
- the 50% rule (for petroleum hydrocarbons, trimethylbenzenes and MTBE)[8,9] where MDI data is not available but background exposure is considered important in the overall exposure.

Physical parameters

For the residential with home-grown produce scenario, the CLEA default building is a small, two-storey terrace house with a concrete ground-bearing slab. The house is assumed to have a 100m^2 private garden consisting of lawn and flowerbeds, incorporating a 20m^2 plot for growing fruit and vegetables consumed by the residents. SR3[5] notes this residential building type to be the most conservative in terms of potential for vapour intrusion. The building parameters used in the production of the RSK GACs are the default CLEA v1.06 inputs presented in Table 3.3 of SR3[3], with a dust loading factor detailed in Section 9.3 of SR3[5]. The parameters for a sandy loam soil type were used in line with Table 4.4 of SR3[5]. This includes a value of 6% for the percentage of soil organic matter (SOM) within the soil. In RSK's experience, this is rather high for many sites. To avoid undertaking site-specific risk assessments for SOM, RSK has produced an additional set of GAC for SOM of 1% and 2.5% for all substances using the CLEA tool.

For the GrAC, the depth to groundwater was taken as 2.5m based on RSK's experience of assessing the volatilisation pathway from groundwater. The GrAC were produced using the input parameters in Table 4.

Summary of modifications to the default CLEA 1.06/SR3[5] input parameters for residential with home-grown produce land-use scenario

In summary, the RSK GAC were produced using the default input parameters for soil properties, the air dispersion model, building properties and the vapour model detailed in SR3[5]. Modifications to the default SR3[5] exposure scenarios based on the C4SL exposure scenarios[3] are presented in Tables 2 and 3 below.

The final selected GAC are presented by pathway in Table 5 and the combined GAC in Table 6.

Figure 1: Conceptual model for residential scenario with home-grown produce

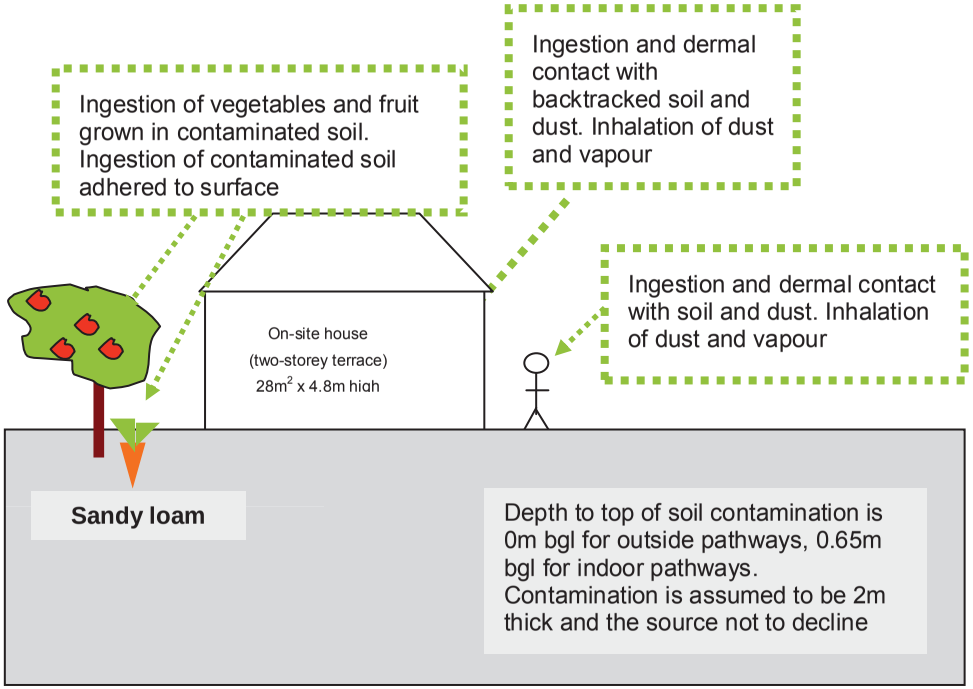


Table 1: Exposure assessment parameters for residential scenario with home-grown produce – inputs for CLEA model

Parameter	Value	Justification
Land use	Residential with homegrown produce	Chosen land use
Receptor	Female child age 1 to 6	Key generic assumption given in Box 3.1, SR3[5]
Building	Small terraced house	Key generic assumption given in Box 3.1, SR3. Small, two-storey terraced house chosen, as it is the most conservative residential building type in terms of protection from vapor intrusion (Section 3.4.6, SR3)[5]
Soil type	Sandy Loam	Most common UK soil type (Section 4.3.1, from Table 3.1, SR3)[5]
Start AC (age class)	1	Range of age classes corresponding to key generic assumption that the critical receptor is a young female child aged 0–6. From Box 3.1, SR3[5]
End AC (age class)	6	
SOM (%)	6	Representative of sandy loamy soil according to EA guidance note dated January 2009 entitled 'Changes We Have Made to the CLEA Framework Documents'[13]
	1	To provide SAC for sites where SOM <6% as often observed by RSK
	2.5	
pH	7	Model default

Table 2: Residential with home-grown produce – modified home-grown produce data

Name	Consumption rate 90th percentile (g FW kg^{-1} BW day^{-1}) by age class						Dry weight conversion factor (g DW g^{-1} FW)	Home-grown fraction (average)	Home-grown fraction (high end)	Soil loading factor (g g^{-1} DW)	Preparation correction factor
	1	2	3	4	5	6					
Green vegetables	7.12	5.87	5.87	5.87	4.53	4.53	0.096	0.05	0.33	1.00E-03	2.00E-01
Root vegetables	10.7	2.83	2.83	2.83	2.14	2.14	0.103	0.06	0.4	1.00E-03	1.00E+00
Tuber vegetables	16	6.6	6.6	6.6	4.95	4.95	0.21	0.02	0.13	1.00E-03	1.00E+00
Herbaceous fruit	1.83	3.39	3.39	3.39	2.24	2.24	0.058	0.06	0.4	1.00E-03	6.00E-01
Shrub fruit	2.23	0.46	0.46	0.46	0.19	0.19	0.166	0.09	0.6	1.00E-03	6.00E-01
Tree fruit	3.82	10.3	10.3	10.3	5.16	5.16	0.157	0.04	0.27	1.00E-03	6.00E-01
Justification	Table 3.4, SP1010 (3)						Table 6.3, SR3(5)	Table 4.19, SR3(5)		Table 6.3, SR3(5)	

Table 3: Residential with home-grown produce – modified and use and receptor data

Parameter	Unit	Age class					
		1	2	3	4	5	6
EF (soil and dust ingestion)	day yr^{-1}	180	365	365	365	365	365
EF (consumption of home-grown produce)	day yr^{-1}	180	365	365	365	365	365
EF (skin contact, indoor)	day yr^{-1}	180	365	365	365	365	365
EF (skin contact, outdoor)	day yr^{-1}	170	170	170	170	170	170
EF (inhalation of dust and vapour, indoor)	day yr^{-1}	365	365	365	365	365	365
EF (inhalation of dust and vapour, outdoor)	day yr^{-1}	365	365	365	365	365	365
Justification		Table 3.5, SP1010(3); Table 3.1, SR3(5)					
Soil to skin adherence factor (outdoor)	mg cm^{-2} day^{-1}	0.1	0.1	0.1	0.1	0.1	0.1
Justification		Table 3.5, SP1010(3)					
Inhalation rate	m^3 day^{-1}	5.4	8.0	8.9	10.1	10.1	10.1
Justification		Mean value USEPA, 2011(12); Table 3.2, SP1010(3)					
Notes: For **cadmium**, the exposure assessment for a residential land use is based on estimates representative of lifetime exposure AC1-18. This is because the TDI_{oral} and TDI_{inh} are based on considerations of the kidney burden accumulated over 50 years. It is therefore reasonable to consider exposure not just in childhood but averaged over a longer period. See the Environment Agency Science Report SC05002/ TOX 3(1), Science Report SC050021/Cadmium SGV(1) and the project report SP1010(3) for more information.							

Figure 2: GrAC conceptual model for RBCA residential with home-grown produce scenario

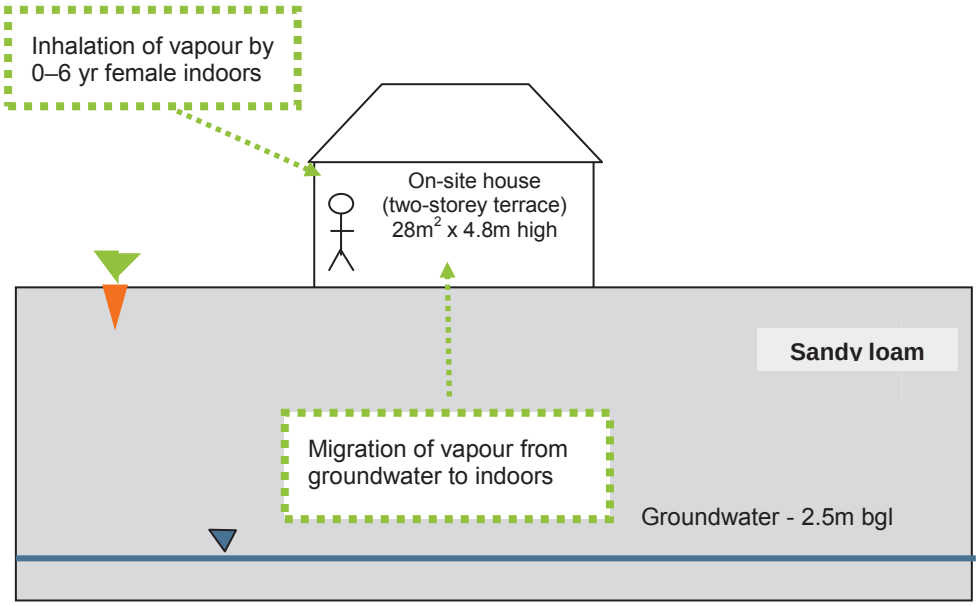


Table 4: Residential with home-grown produce – RBCA inputs

Parameter	Unit	Value	Justification
Receptor			
Averaging time	Years	6	From Box 3.1, SR3[5]
Receptor weight	kg	13.3	Average of CLEA 0–6 year old female data, Table 4.6, SR3[5]
Exposure duration	Years	6	From Box 3.1, report, SR3[5]
Exposure frequency	Days/yr	350	Weighted using occupancy period of 23 hours per day for 365 days of the year
Soil type – sandy loam			
Total porosity	-	0.53	CLEA value for sandy loam. Parameters for sandy loam from Table 4.4, SR3[5]
Volumetric water content	-	0.33	
Volumetric air content	-	0.20	
Dry bulk density	g cm^{-3}	1.21	
Vertical hydraulic conductivity	cm s^{-1}	3.56E-3	CLEA value for saturated conductivity of sandy loam, Table 4.4, SR3[5]
Vapour permeability	m^2	3.05E-12	Calculated for sandy loam using equations in Appendix 1, SR3[5]
Capillary zone thickness	m	0.1	Professional judgement
Fraction organic carbon	%	0.0348	Representative of sandy loam according to EA guidance note dated January 2009 entitled 'Changes We Have Made to the CLEA Framework Documents'[13]
Building			
Building volume/area ratio	m	4.8	Table 3.3, SR3[5]
Foundation area	m^2	28	
Foundation perimeter	m	22	Calculated assuming building measures 7m x 4m to give 28m^2 foundation area
Building air exchange rate	d^{-1}	12	Table 3.3, SR3[5]
Depth to bottom of foundation slab	m	0.15	
Foundation thickness	m	0.15	
Foundation crack fraction	-	0.0151	Calculated from floor crack area of 423 cm^2 and building footprint of 28m^2 in Table 4.21, SR3[5]
Volumetric water content of cracks	-	0.33	Assumed equal to underlying soil type in assumption that cracks become filled with soil over time. Parameters for sandy loam from Table 4.4, SR3[5]
Volumetric air content of cracks	-	0.2	
Indoor/outdoor differential pressure	Pa	3.1	From Table 3.3, SR3[5

References

1. Environment Agency (2009), 'Science Reports SC050021 - SGV and TOX reports for: benzene, toluene, ethylbenzene, xylene, mercury, selenium, nickel, arsenic, cadmium, phenol, dioxins, furans and dioxin-like PCBs'; 'Supplementary information for the derivation of SGV for: benzene, toluene, ethylbenzene, xylene, mercury, selenium, nickel, arsenic, cadmium, phenol, dioxins, furans and dioxin-like PCBs', and 'Contaminants in soil: updated collation of toxicological data and intake values for humans: benzene, toluene, ethylbenzene, xylene, mercury, selenium, nickel, arsenic, cadmium, phenol, dioxins, furans and dioxin-like PCBs'. Available at: https://www.gov.uk/government/publications/contaminants-in-soil-updated-collation-of-toxicological-data-and-intake-values-for-humans and https://www.gov.uk/government/publications/land-contamination-soil-guideline-values-sgvs (accessed 4 February 2015)

2. Nathanial, C. P., McCaffrey, C., Ashmore, M., Cheng, Y., Gillet, A. G., Ogden, R. C. and Scott, D. (2009), *LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment*, second edition (Nottingham: Land Quality Press).

3. Contaminated Land: Applications in Real Environment (CL:AIRE) (2014). 'Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination', Revision 2, DEFRA research project SP1010.

4. Department for Environment, Food and Rural Affairs (Defra) (2014), 'SP1010: Development of Category 4 Screening Levels for assessment of land affected by contamination – Policy Companion Document', Revision 2.

5. Environment Agency (2009), *Science Report – SC050021/SR3. Updated technical background to the CLEA model* (Bristol: Environment Agency).

6. Contaminated Land: Applications in Real Environment (CL:AIRE) (2014). 'Appendices C to H). DEFRA research project SP1010'.

7. Nathanial, C. P., McCaffrey, C., Gillet, A. G., Ogden, R. C. and Nathanial, J. F. (2015), *The LQM/CIEH S4ULs for Human Health Risk Assessment* (Nottingham: Land Quality Press).

8. Environment Agency (2009), *Human health toxicological assessment of contaminants in soil. Science Report – Final SC050021/SR2* (Bristol: Environment Agency).

9. Environment Agency (2009), *Science Report – SC050021/SR4 CLEA Software (version 1.05) Handbook* (Bristol: Environment Agency).

10. Environment Agency (2008), *Science Report SC050021/SR7. Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values* (Bristol: Environment Agency).

11. CL:AIRE (2009), *Soil Generic Assessment Criteria for Human Health Risk Assessment* (London: CL:AIRE).

12. USEPA (2011), *Exposure factors handbook*, EPA/600/R-090/052F (Washington, DC: Office of Research and Development).

13. Environment Agency (2009), 'Changes made to the CLEA framework documents after the three-month evaluation period in 2008', released January 2009.

GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITH HOME-GROWN PRODUCE

Table 5

Human Health Generic Assessment Criteria by Pathway for Residential With Home-Grown Produce Scenario

Compound	Notes	GrAC (mg/l)	SAC Appropriate to Pathway SOM 1% (mg/kg)			Soil Saturation Limit (mg/kg)	SAC Appropriate to Pathway SOM 2.5% (mg/kg)			Soil Saturation Limit (mg/kg)	SAC Appropriate to Pathway SOM 6% (mg/kg)			Soil Saturation Limit (mg/kg)
			Oral	Inhalation	Combined		Oral	Inhalation	Combined		Oral	Inhalation	Combined	
Metals														
Arsenic	(a,b)	-	3.71E+01	5.26E+02	NR	NR	3.71E+01	5.26E+02	NR	NR	3.71E+01	5.26E+02	NR	NR
Cadmium	(a)	-	NR	NR	2.60E+01	NR	NR	NR	2.60E+01	NR	NR	NR	2.60E+01	NR
Chromium (III) - trivalent	(c)	-	1.84E+04	9.07E+02	8.85E+02	NR	1.84E+04	9.07E+02	8.85E+02	NR	1.84E+04	9.07E+02	8.85E+02	NR
Chromium (VI) - hexavalent	(a,d)	-	2.92E+01	2.06E+01	NR	NR	2.92E+01	2.06E+01	NR	NR	2.92E+01	2.06E+01	NR	NR
Copper		-	2.72E+03	1.41E+04	2.47E+03	NR	2.72E+03	1.41E+04	2.47E+03	NR	2.72E+03	1.41E+04	2.47E+03	NR
Lead	(a)	-	2.01E+02	NR	NR	NR	2.01E+02	NR	NR	NR	2.01E+02	NR	NR	NR
Elemental Mercury (Hg^0)	(d)	9.40E-03	NR	2.35E-01	NR	4.31E+00	NR	5.60E-01	NR	1.07E+01	NR	1.22E+00	NR	2.58E+01
Inorganic Mercury (Hg^{2+})		-	3.95E+01	3.63E+03	3.91E+01	NR	3.95E+01	3.63E+03	3.91E+01	NR	3.95E+01	3.63E+03	3.91E+01	NR
Methyl Mercury (Hg^{4+})		2.00E+01	1.26E+01	1.87E+01	7.52E+00	7.33E+01	1.26E+01	3.62E+01	9.34E+00	1.42E+02	1.26E+01	7.68E+01	1.08E+01	3.04E+02
Nickel	(d)	-	1.27E+02	1.81E+02	NR	NR	1.27E+02	1.81E+02	NR	NR	1.27E+02	1.81E+02	NR	NR
Selenium	(b)	-	2.58E+02	NR	NR	NR	2.58E+02	NR	NR	NR	2.58E+02	NR	NR	NR
Zinc	(b)	-	3.86E+03	3.63E+07	NR	NR	3.86E+03	3.63E+07	NR	NR	3.86E+03	3.63E+07	NR	NR
Cyanide		-	2.74E+01	4.09E+00	3.78E+00	NR	2.74E+01	4.09E+00	3.78E+00	NR	2.74E+01	4.09E+00	3.78E+00	NR
Volatile Organic Compounds														
Benzene	(a)	7.20E+00	2.62E-01	9.01E-01	2.03E-01	1.22E+03	5.39E-01	1.68E+00	4.08E-01	2.26E+03	1.16E+00	3.48E+00	8.72E-01	4.71E+03
Toluene		5.90E+02	1.53E+02	9.08E+02	1.31E+02	8.69E+02	3.49E+02	2.00E+03	2.97E+02	1.92E+03	7.95E+02	4.55E+03	6.77E+02	4.36E+03
Ethylbenzene		1.80E+02	1.10E+02	8.34E+01	4.74E+01	5.18E+02	2.61E+02	1.96E+02	1.12E+02	1.22E+03	6.00E+02	4.58E+02	2.60E+02	2.84E+03
Xylene - m		8.40E+01	2.10E+02	8.25E+01	5.92E+01	6.25E+02	5.01E+02	1.95E+02	1.40E+02	1.47E+03	1.15E+03	4.56E+02	3.27E+02	3.46E+03
Xylene - o		1.00E+02	1.92E+02	8.87E+01	6.07E+01	4.78E+02	4.56E+02	2.08E+02	1.43E+02	1.12E+03	1.05E+03	4.86E+02	3.32E+02	2.62E+03
Xylene - p		8.70E+01	1.98E+02	7.93E+01	5.66E+01	5.76E+02	4.70E+02	1.86E+02	1.33E+02	1.35E+03	1.08E+03	4.36E+02	3.10E+02	3.17E+03
Total xylene		8.40E+01	1.92E+02	7.93E+01	5.66E+01	6.25E+02	4.56E+02	1.86E+02	1.33E+02	1.47E+03	1.05E+03	4.36E+02	3.10E+02	3.46E+03
Methyl tertiary-Butyl ether (MTBE)		2.20E+03	1.54E+02	1.04E+03	1.34E+02	2.04E+04	2.97E+02	1.69E+03	2.53E+02	3.31E+04	6.03E+02	3.21E+03	5.08E+02	6.27E+04
Trichloroethene		1.80E+00	2.83E-01	1.72E-02	1.62E-02	1.54E+03	6.26E-01	3.59E-02	3.40E-02	3.22E+03	1.41E+00	7.98E-02	7.55E-02	7.14E+03
Tetrachloroethene		3.60E+00	4.49E+00	1.79E-01	1.76E-01	4.24E+02	1.04E+01	4.02E-01	3.94E-01	9.51E+02	2.38E+01	9.21E-01	9.04E-01	2.18E+03
1,1,1-Trichloroethane		2.60E+01	3.33E+02	9.01E+00	8.77E+00	1.43E+03	7.26E+02	1.84E+01	1.80E+01	2.92E+03	1.62E+03	4.04E+01	3.94E+01	6.39E+03
1,1,1,2 Tetrachloroethane		1.40E+01	5.39E+00	1.54E+00	1.20E+00	2.60E+03	1.27E+01	3.56E+00	2.78E+00	6.02E+03	2.92E+01	8.29E+00	6.46E+00	1.40E+04
1,1,2,2-Tetrachloroethane		1.40E+01	2.81E+00	3.92E+00	1.64E+00	2.67E+03	6.09E+00	8.04E+00	3.47E+00	5.46E+03	1.36E+01	1.76E+01	7.67E+00	1.20E+04
Carbon Tetrachloride		5.50E-02	3.10E+00	2.58E-02	2.57E-02	1.52E+03	7.11E+00	5.65E-02	5.62E-02	3.32E+03	1.62E+01	1.28E-01	1.27E-01	7.54E+03
1,2-Dichloroethane		3.00E-01	3.17E-02	9.20E-03	7.13E-03	3.41E+03	5.73E-02	1.33E-02	1.08E-02	4.91E+03	1.09E-01	2.28E-02	1.88E-02	8.43E+03
Vinyl Chloride		1.90E-02	3.82E-03	7.73E-04	6.43E-04	1.36E+03	6.87E-03	1.00E-03	8.73E-04	1.76E+03	1.25E-02	1.53E-03	1.36E-03	2.69E+03
1,2,4-Trimethylbenzene		7.50E-02	NR	1.76E+00	NR	4.74E+02	NR	4.26E+00	NR	1.16E+03	NR	9.72E+00	NR	2.76E+03
1,3,5-Trimethylbenzene	(e)	4.70E-02	NR	NR	NR	2.30E+02	NR	NR	NR	5.52E+02	NR	NR	NR	1.30E+03
Semi-Volatile Organic Compounds														
Acenaphthene		3.20E+00	2.27E+02	4.86E+04	2.26E+02	5.70E+01	5.41E+02	1.18E+05	5.38E+02	1.41E+02	1.18E+03	2.68E+05	1.17E+03	3.36E+02
Acenaphthylene		4.20E+00	1.85E+02	4.59E+04	1.84E+02	8.61E+01	4.42E+02	1.11E+05	4.40E+02	2.12E+02	9.78E+02	2.53E+05	9.74E+02	5.06E+02
Anthracene		2.10E-02	2.43E+03	1.53E+05	2.39E+03	1.17E+00	5.53E+03	3.77E+05	5.45E+03	2.91E+00	1.10E+04	8.76E+05	1.09E+04	6.96E+00
Benzo(a)anthracene		3.80E-03	1.01E+01	2.47E+01	7.18E+00	1.71E+00	1.42E+01	4.37E+01	1.07E+01	4.28E+00	1.69E+01	6.26E+01	1.33E+01	1.03E+01
Benzo(b)fluoranthene		2.00E-03	2.96E+00	1.93E+01	2.56E+00	1.22E+00	3.89E+00	2.13E+01	3.29E+00	3.04E+00	4.43E+00	2.22E+01	3.69E+00	7.29E+00
Benzo(g,h,i)perylene		2.60E-04	3.77E+02	1.87E+03	3.14E+02	1.54E-02	4.09E+02	1.94E+03	3.38E+02	3.85E-02	4.23E+02	1.97E+03	3.48E+02	9.23E-02
Benzo(k)fluoranthene		8.00E-04	8.92E+01	5.41E+02	7.66E+01	6.87E-01	1.10E+02	5.76E+02	9.22E+01	1.72E+00	1.21E+02	5.91E+02	1.00E+02	4.12E+00
Chrysene		2.00E-03	1.66E+01	1.19E+02	1.46E+01	4.40E-01	2.54E+01	1.49E+02	2.17E+01	1.10E+00	3.19E+01	1.66E+02	2.67E+01	2.64E+00
Dibenzo(a,h)anthracene		6.00E-04	2.90E-01	1.45E+00	2.41E-01	3.93E-03	3.43E-01	1.64E+00	2.84E-01	9.82E-03	3.69E-01	1.74E+00	3.04E-01	2.36E-02
Fluoranthene		2.30E-01	2.87E+02	3.83E+04	2.85E+02	1.89E+01	5.63E+02	8.87E+04	5.60E+02	4.73E+01	9.00E+02	1.83E+05	8.96E+02	1.13E+02
Fluorene		1.90E+00	1.77E+02	6.20E+03	1.72E+02	3.09E+01	4.19E+02	1.53E+04	4.07E+02	7.65E+01	8.98E+02	3.62E+04	8.76E+02	1.83E+02
Indeno(1,2,3-cd)pyrene		2.00E-04	3.09E+01	2.12E+02	2.70E+01	6.13E-02	4.22E+01	2.38E+02	3.59E+01	1.53E-01	4.92E+01	2.50E+02	4.11E+01	3.68E-01
Phenanthrene		5.30E-01	9.85E+01	7.17E+03	9.72E+01	3.60E+01	2.24E+02	1.76E+04	2.22E+02	8.96E+01	4.48E+02	4.07E+04	4.43E+02	2.14E+02
Pyrene		1.30E-01	6.25E+02	8.79E+04	6.20E+02	2.20E+00	1.25E+03	2.04E+05	1.24E+03	5.49E+00	2.05E+03	4.23E+05	2.04E+03	1.32E+01
Benzo(a)pyrene	(a)	3.80E-03	4.91E+00	3.51E+01	4.30E+00	9.11E-01	4.91E+00	3.77E+01	4.34E+00	2.28E+00	4.91E+00	3.89E+01	4.36E+00	5.46E+00
Naphthalene		1.90E+01	2.78E+01	2.33E+01	1.27E+01	7.64E+01	6.66E+01	5.58E+01	3.04E+01	1.83E+02	1.53E+02	1.31E+02	7.06E+01	4.32E+02
Phenol		-	1.60E+02	4.58E+02	1.20E+02	2.42E+04	2.96E+02	6.95E+02	2.09E+02	3.81E+04	5.86E+02	1.19E+03	3.93E+02	7.03E+04

GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITH HOME-GROWN PRODUCE

Table 5

Human Health Generic Assessment Criteria by Pathway for Residential With Home-Grown Produce Scenario

Compound	Notes	GrAC (mg/l)	SAC Appropriate to Pathway SOM 1% (mg/kg)			Soil Saturation Limit (mg/kg)	SAC Appropriate to Pathway SOM 2.5% (mg/kg)			Soil Saturation Limit (mg/kg)	SAC Appropriate to Pathway SOM 6% (mg/kg)			Soil Saturation Limit (mg/kg)
			Oral	Inhalation	Combined		Oral	Inhalation	Combined		Oral	Inhalation	Combined	
Total Petroleum Hydrocarbons														
Aliphatic hydrocarbons EC_5-EC_6		1.00E+01	4.96E+03	4.24E+01	4.23E+01	3.04E+02	1.12E+04	7.79E+01	7.78E+01	5.58E+02	2.41E+04	1.61E+02	1.60E+02	1.15E+03
Aliphatic hydrocarbons >EC_6-EC_8		5.40E+00	1.46E+04	1.04E+02	1.03E+02	1.44E+02	3.27E+04	2.31E+02	2.31E+02	3.22E+02	6.47E+04	5.29E+02	5.28E+02	7.36E+02
Aliphatic hydrocarbons >EC_8-EC_{10}		2.30E-01	1.45E+03	2.68E+01	2.67E+01	7.77E+01	2.42E+03	6.55E+01	6.50E+01	1.90E+02	3.29E+03	1.56E+02	1.54E+02	4.51E+02
Aliphatic hydrocarbons >EC_{10}-EC_{12}		3.40E-02	3.47E+03	1.33E+02	1.32E+02	4.75E+01	3.98E+03	3.31E+02	3.24E+02	1.18E+02	4.23E+03	7.93E+02	7.52E+02	2.83E+02
Aliphatic hydrocarbons >EC_{12}-EC_{16}		7.60E-04	4.36E+03	1.11E+03	1.03E+03	2.37E+01	4.40E+03	2.78E+03	2.22E+03	5.91E+01	4.41E+03	6.67E+03	3.47E+03	1.42E+02
Aliphatic hydrocarbons >EC_{16}-EC_{35}	(b)	-	5.28E+04	NR	NR	8.48E+00	6.95E+04	NR	NR	2.12E+01	7.94E+04	NR	NR	5.09E+01
Aliphatic hydrocarbons >EC_{35}-EC_{44}	(b)	-	5.28E+04	NR	NR	8.48E+00	6.95E+04	NR	NR	2.12E+01	7.94E+04	NR	NR	5.09E+01
Aromatic hydrocarbons >EC_8-EC_9 (styrene)		7.40E+00	1.07E+01	5.22E+02	1.05E+01	6.26E+02	2.51E+01	1.20E+03	2.46E+01	1.44E+03	5.72E+01	2.79E+03	5.60E+01	3.35E+03
Aromatic hydrocarbons >EC_9-EC_{10}		7.40E+00	5.71E+01	4.74E+01	3.44E+01	6.13E+02	1.35E+02	1.16E+02	8.29E+01	1.50E+03	2.91E+02	2.77E+02	1.89E+02	3.58E+02
Aromatic hydrocarbons >EC_{10}-EC_{12}		2.50E+01	8.17E+01	2.58E+02	7.42E+01	3.64E+02	1.90E+02	6.39E+02	1.74E+02	8.99E+02	3.95E+02	1.52E+03	3.67E+02	2.15E+03
Aromatic hydrocarbons >EC_{12}-EC_{16}		5.80E+00	1.43E+02	2.85E+03	1.41E+02	1.69E+02	3.18E+02	7.07E+03	3.14E+02	4.19E+02	6.09E+02	1.68E+04	6.03E+02	1.00E+03
Aromatic hydrocarbons >EC_{16}-EC_{21}	(b)	-	2.48E+02	NR	NR	5.37E+01	4.84E+02	NR	NR	1.34E+02	7.68E+02	NR	NR	3.21E+02
Aromatic hydrocarbons >EC_{21}-EC_{35}	(b)	-	8.72E+02	NR	NR	4.83E+00	1.10E+03	NR	NR	1.21E+01	1.22E+03	NR	NR	2.90E+01
Aromatic hydrocarbons >EC_{35}-EC_{44}	(b)	-	8.72E+02	NR	NR	4.83E+00	1.10E+03	NR	NR	1.21E+01	1.22E+03	NR	NR	2.90E+01

Notes:

EC - equivalent carbon. GrAC - groundwater assessment criteria. SAC - soil assessment criteria.

The CLEA model output is colour coded depending upon whether the soil saturation limit has been exceeded.

Calculated SAC exceeds soil saturation limit and may significantly effect the interpretation of any exceedances since the contribution of the indoor and outdoor vapour pathway to total exposure is >10%. This shading has also been used for the RBCA output where the theoretical solubility limit has been exceeded.

Calculated SAC exceeds soil saturation limit but will not effect the SSV significantly since the contribution of the indoor and outdoor vapour pathway to total exposure is <10%.

Calculated SAC does not exceed the soil saturation limit.

For consistency where the theoretical solubility limit within RBCA has been exceeded in production of the GrAC, these cells have also been hatched red.

The SAC for organic compounds are dependant upon soil organic matter (SOM) (%) content. To obtain SOM from total organic carbon (TOC) (%) divide by 0.58. 1% SOM is 0.58% TOC. DL Rowell Soil Science: Methods and Applications, Longmans, 1994.

SAC for TPH fractions, polycyclic aromatic hydrocarbons, MTBE, BTEX and trimethylbenzene compounds were produced using an attenuation factor for the indoor air inhalation pathway of 10 to reduce conservatism associated with the vapour inhalation pathway (Section 10.1.1, SR3)

(a) SAC for arsenic, benzene, benzo(a)pyrene, cadmium, chromium VI and lead are derived using the C4SL toxicology data.

(b) SAC for selenium should not include the inhalation pathway as no expert group HCV has been derived; aliphatic and aromatic hydrocarbons >EC16 should not include inhalation pathway due to their non-volatile nature and inhalation exposure being minimal (oral, dermal and inhalation exposure is compared to the oral HCV); arsenic should only be based on oral contribution (rather than combined) owing to the relative small contribution from inhalation in accordance with the SGV report. The Oral SAC should be adopted for zinc and benzo(a)pyrene.

(c) SAC for CrIII should be based on the lower of the oral and inhalation SAC (see LQM/CIEH 2015 Section 6.8)

(d) SAC for elemental mercury, chromium VI and nickel should be based on the inhalation pathway only.

(e) SAC for 1,3,5-trimethylbenzene is not recorded owing to the lack of toxicological data, SAC for 1,2,4 trimethylbenzene may be used.

GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITH HOME-GROWN PRODUCE

Table 6
Human Health Generic Assessment Criteria for Residential with home-grown produce

Compound	GrAC for Groundwater (mg/l)	SAC for Soil SOM 1% (mg/kg)	SAC for Soil SOM 2.5% (mg/kg)	SAC for Soil SOM 6% (mg/kg)
Metals				
Arsenic	-	37	37	37
Cadmium	-	30	30	30
Chromium (III) - trivalent	-	910	910	910
Chromium (VI) - hexavalent	-	21	21	21
Copper	-	2,500	2,500	2,500
Lead	-	200	200	200
Elemental Mercury (Hg^0)	0.0094	0.2	0.6	1.2
Inorganic Mercury (Hg^{2+})	-	39	39	39
Methyl Mercury (Hg^{4+})	20	10	10	10
Nickel	-	130	130	130
Selenium	-	258	258	258
Zinc	-	3,900	3,900	3,900
Cyanide	-	3.8	3.8	3.8
Volatile Organic Compounds				
Benzene	7.2	0.20	0.41	0.87
Toluene	590	130	300	680
Ethylbenzene	180	50	110	260
Xylene - m	84	59	140	327
Xylene - o	100	61	143	332
Xylene - p	87	57	133	310
Total xylene	84	57	133	310
Methyl tertiary-Butyl ether (MTBE)	2200	130	250	510
Trichloroethene	1.8	0.02	0.03	0.08
Tetrachloroethene	3.6	0.2	0.4	0.9
1,1,1-Trichloroethane	26	9	18	39
1,1,1,2 Tetrachloroethane	14	1.2	2.8	6.5
1,1,2,2-Tetrachloroethane	14	1.6	3.5	7.7
Carbon Tetrachloride	0.055	0.026	0.056	0.127
1,2-Dichloroethane	0.3	0.007	0.011	0.019
Vinyl Chloride	0.019	0.0006	0.0009	0.0014
1,2,4-Trimethylbenzene	0.075	1.8	4.3	9.7
1,3,5-Trimethylbenzene	0.047	NR	NR	NR
Semi-Volatile Organic Compounds				
Acenaphthene	3.2	230	540	1,170
Acenaphthylene	4.2	180	440	970
Anthracene	0.021	2,400	5,500	10,900
Benzo(a)anthracene	0.0038	7	11	13
Benzo(b)fluoranthene	0.002	2.6	3.3	3.7
Benzo(g,h,i)perylene	0.00026	310	340	350
Benzo(k)fluoranthene	0.0008	77	92	100
Chrysene	0.002	15	22	27
Dibenzo(a,h)anthracene	0.0006	0.24	0.28	0.30
Fluoranthene	0.23	280	560	900
Fluorene	1.9	170	410	880
Indeno(1,2,3-cd)pyrene	0.0002	27	36	41
Phenanthrene	0.53	100	220	440
Pyrene	0.13	620	1,240	2,040
Benzo(a)pyrene	0.0038	5	5	5
Naphthalene	19	13	30	71
Phenol	-	120	210	390
Total Petroleum Hydrocarbons				
Aliphatic hydrocarbons EC_5-EC_6	10	42	78	160
Aliphatic hydrocarbons >EC_6-EC_8	5.4	100	230	530
Aliphatic hydrocarbons >EC_8-EC_{10}	0.23	27	65	154
Aliphatic hydrocarbons >EC_{10}-EC_{12}	0.034	130 (48)	320 (118)	750 (283)
Aliphatic hydrocarbons >EC_{12}-EC_{16}	0.00076	1,000 (24)	2,200 (59)	3,500 (142)
Aliphatic hydrocarbons >EC_{16}-EC_{35}	-	53,000 (8)	70,000 (21)	79,000
Aliphatic hydrocarbons >EC_{35}-EC_{44}	-	53,000 (8)	70,000 (21)	79,000
Aromatic hydrocarbons >EC_8-EC_9 (styrene)	7.4	11	25	56
Aromatic hydrocarbons >EC_9-EC_{10}	7.4	34	83	189
Aromatic hydrocarbons >EC_{10}-EC_{12}	25	74	174	367
Aromatic hydrocarbons >EC_{12}-EC_{16}	5.8	100	300	600
Aromatic hydrocarbons >EC_{16}-EC_{21}	-	200	500	800
Aromatic hydrocarbons >EC_{21}-EC_{35}	-	900	1,100	1,200
Aromatic hydrocarbons >EC_{35}-EC_{44}	-	900	1,100	1,200
Minerals				
Asbestos	-	No asbestos detected with ID or <0.001% dry weight[1]		

Notes:

'-' Generic assessment criteria not calculated owing to low volatility of substance and therefore no pathway, or an absence of toxicological data.

NR - SAC for 1,3,5-trimethylbenzene is not recorded owing to the lack of toxicological data, SAC for 1,2,4 trimethylbenzene may be used

EC - equivalent carbon. GrAC - groundwater assessment criteria. SAC - soil assessment criteria.

[1] LOD for weight of asbestos per unit weight of soil calculated on a dry weight basis using PLM, handpicking and gravimetry.

The SAC for organic compounds are dependent on Soil Organic Matter (SOM) (%) content. To obtain SOM from total organic carbon (TOC) (%) divide by 0.58.
1% SOM is 0.58% TOC. DL Rowell Soil Science: Methods and Applications, Longmans, 1994.

SAC for TPH fractions, polycyclic aromatic hydrocarbons, MTBE, BTEX and trimethylbenzene compounds were produced using an attenuation factor for the indoor air inhalation pathway of 10 to reduce conservatism associated with the vapour inhalation pathway, section 10.1.1, SR3.

(VALUE IN BRACKETS) The SAC has been set as the model calculated SAC with the saturation limit shown in brackets.
RSK has adopted an approach for petroleum hydrocarbons in accordance with LQM/CIEH whereby the concentration modelled for each petroleum hydrocarbon fraction has been tabulated as the SAC with the corresponding solubility or vapour saturation limits given in brackets.

(VALUE IN BRACKETS) For consistency where the GrAC exceeds the solubility limit, GrAC has been set at the solubility limit. The GrAC is conservative since concentrations of the chemical are very unlikely to be at sufficient concentration to result in an exceedance of the health criteria value at the point of exposure (i.e. indoor air) provided free-phase product is absent.

APPENDIX M
COMPARISON OF SOIL LABORTORY DATA TO HUMAN HEALTH GAC

301645 - Darton - Human Health Risk Assessment Soil Results Summary Table and Direct Comparison to RSK GAC for residential with plant uptake end use scenario

Sample Identity		Residential with Plant Uptake (2.5% SOM)	TP02	TP03	TP03	TP05	TP07	TP07	TP09	TP12	TP12	TP13	TP13	TP14	TP14	TP16	TP16
Depth		SGV/GACs	0.00 - 0.35	0.80	1.60	0.60 - 1.00	0.30 - 0.50	0.80 - 1.00	0.20 - 0.0	0.00 - 0.60	1.60	0.00 - 0.25	0.30 - 0.50	1.50 - 1.80	2.50	1.10 - 1.40	1.80 - 2.00
Strata			MG	PMCM	PMCM	PMCM	MG	PMCM	PossibleMG	MG	PMCM	MG	MG	MG	MG	MG	PMCM
Determinants	**Units**																
Visual Fibre Screen							NAD					NAD		NAD		NAD	
pH	pH		7.19	5.25	5.01		8.66			7.66	6.47	6.29	6.57	7.55	7.39	7.33	6.22
Sulphate BRE (water sol 2:1)	g/l		0.09	0.033	0.036		0.03			0.012	0.098	0.03	0.05	0.53	0.298	1.43	1.12
Cyanide (free)	mg/kg	3.8															
Phenols - Total by HPLC	mg/kg	210															
Loss on ignition (550 °C)[1]	% w/w	10%															
Total Organic Carbon	% w/w		6.87				2.6					9.35	7.96	3.58		1.06	
Metals																	
Arsenic	mg/kg	37	20			3	7	3	16	13		47	45	16		34	
Boron (water soluble)	mg/kg																
Cadmium	mg/kg	30	1.6			1.9	0.9	1	1.5	2		1.8	2.1	1.4		2.8	
Copper	mg/kg	2500	35			21	20	22	34	56		104	133	38		91	
Chromium	mg/kg	910	23			18	9	19	19	26		21	24	17		23	
Chromium (hexavalent)	mg/kg	21															
lead (C4SL)	mg/kg	200	55			15	74	14	88	62		111	141	48		382	
Mercury	mg/kg	39	0.21			<0.17	0.35	0.23	<0.17	0.42		0.38	0.6	<0.17		<0.17	
Nickel	mg/kg	180	26			38	12	25	21	26		31	32	22		50	
Selenium	mg/kg	258	3			<1	<1	<1	<1	1		2	2	<1		<1	
Zinc	mg/kg	3900	87			72	80	55	65	647		143	124	81		606	
Total Petroleum Hydrocarbons Criteria Working Group (TPHCWG)																	
Ali >C5-C6	mg/kg	78	<0.01				<0.01					<0.01	<0.01	<0.01		<0.01	
Ali >C6-C8	mg/kg	230	<0.01				<0.01					<0.01	<0.01	<0.01		<0.01	
Ali >C8-C10	mg/kg	65	<0.01				<0.01					<0.01	<0.01	<0.01		<0.01	
Ali >C10-C12	mg/kg	320	<0.1				<0.1					<0.1	<0.1	<0.1		<0.1	
Ali >C12-C16	mg/kg	2200	<0.1				<0.1					<0.1	<0.1	<0.1		<0.1	
Ali >C16-C21	mg/kg	Assess as sum	<0.1				<0.1					<0.1	<0.1	<0.1		<0.1	
Ali >C21-C35	mg/kg	below	<0.1				<0.1					<0.1	<0.1	<0.1		<0.1	
Ali >C16-C35	mg/kg	70,000	<0.1				<0.1					<0.1	<0.1	<0.1		<0.1	
Total Aliphatics	mg/kg		<0.1				<0.1					<0.1	<0.1	<0.1		<0.1	
Aro >C5-C7	mg/kg	0.41	<0.01				<0.01					<0.01	<0.01	<0.01		<0.01	
Aro >C7-C8	mg/kg	300	<0.01				<0.01					<0.01	<0.01	<0.01		<0.01	
Aro >C8-C9	mg/kg	25	<0.01				<0.01					<0.01	<0.01	<0.01		<0.01	
Aro >C9-C10	mg/kg	83	<0.01				<0.01					<0.01	<0.01	<0.01		<0.01	
Aro >C10-C12	mg/kg	174	<0.1				<0.1					<0.1	<0.1	<0.1		<0.1	
Aro >C12-C16	mg/kg	300	<0.1				<0.1					<0.1	<0.1	<0.1		<0.1	
Aro >C16-C21	mg/kg	500	1.1				1.5					1.1	1	<0.1		<0.1	
Aro >C21-C35	mg/kg	1100	1.5				1.4					1.4	0.5	<0.1		<0.1	
Total Aromatics	mg/kg		2.8				2.9					2.4	1.5	<0.1		<0.1	
TPH (Ali & Aro)	mg/kg		2.8				2.9					2.4	1.5	<0.1		<0.1	
BTEX - Benzene	mg/kg	0.41	<0.01				<0.01					<0.01	<0.01	<0.01		<0.01	
BTEX - Toluene	mg/kg	300	<0.01				<0.01					<0.01	<0.01	<0.01		<0.01	
BTEX - Ethyl Benzene	mg/kg	110	<0.01				<0.01					<0.01	<0.01	<0.01		<0.01	
BTEX - m & p Xylene	mg/kg	133	<0.01				<0.01					<0.01	<0.01	<0.01		<0.01	
BTEX - o Xylene	mg/kg	143	<0.01				<0.01					<0.01	<0.01	<0.01		<0.01	
MTBE	mg/kg	250	<0.01				<0.01					<0.01	<0.01	<0.01		<0.01	
PAHs (Polycyclic Aromatic Hydrocarbons)																	
Acenapthene	mg/kg	540	<0.01			<0.01	0.02	<0.01	0.04	0.11		0.02	0.02	<0.01		<0.01	
Acenapthylene	mg/kg	440	0.01			<0.01	0.02	<0.01	0.07	0.02		0.03	0.02	<0.01		<0.01	
Anthracene	mg/kg	5500	0.06			<0.02	0.11	<0.02	0.58	0.44		0.13	0.16	0.03		<0.02	
Benzo(a)anthracene	mg/kg	11	0.39			<0.04	0.61	<0.04	1.91	1.48		0.67	0.55	0.09		<0.04	
Benzo(a)pyrene	mg/kg	5	0.35			<0.04	0.67	<0.04	1.5	1.28		0.68	0.47	0.09		<0.04	
Benzo(b)fluoranthene	mg/kg	3.3	0.43			<0.05	0.75	<0.05	1.82	1.48		0.83	0.54	0.11		<0.05	
Benzo(ghi)perylene	mg/kg	340	0.2			<0.05	0.39	<0.05	0.71	0.67		0.42	0.27	0.06		<0.05	
Benzo(k)fluoranthene	mg/kg	92	0.21			<0.07	0.32	<0.07	0.79	0.67		0.4	0.24	<0.07		<0.07	
Chrysene	mg/kg	22	0.44			<0.06	0.67	<0.06	1.97	1.46		0.75	0.53	0.1		<0.06	
Dibenzo(ah)anthracene	mg/kg	0.28	0.05			<0.04	0.09	<0.04	0.21	0.16		0.11	0.07	<0.04		<0.04	
Fluoranthene	mg/kg	560	0.66			<0.08	0.96	<0.08	4.07	3.23		1.18	0.96	0.17		<0.08	
Fluorene	mg/kg	410	<0.01			<0.01	0.02	<0.01	0.1	0.09		0.03	0.03	<0.01		<0.01	
Indeno(123-cd)pyrene	mg/kg	36	0.25			<0.03	0.46	<0.03	0.95	0.86		0.54	0.33	0.07		<0.03	
Napthalene	mg/kg	30	<0.03			<0.03	0.04	<0.03	0.07	0.07		0.06	<0.03	<0.03		<0.03	
Phenanthrene	mg/kg	220	0.26			<0.03	0.43	<0.03	2.34	1.37		0.41	0.45	0.06		<0.03	
Pyrene	mg/kg	1240	0.56			<0.07	0.94	<0.07	3.44	2.82		1.03	0.82	0.15		<0.07	
Total PAH	mg/kg		3.89			<0.08	6.5	<0.08	20.6	16.2		7.26	5.49	0.93		<0.08	

= Exceedence of GAC for a residential (with plant uptake)

All GACs calculated by RSK or taken from EIC/AGS/CLAIRE Generic Assessment Criteria; and LQM/CIEH Generic Assessment Criteria

301645 - Darton - Human Health Risk Assessment Soil Results Summary Table and Direct Comparison to RSK GAC for residential with plant uptake end use scenario

Sample Identity		Residential with Plant Uptake (2.5% SOM)	TP17	TP18	TP20	TP21	TP22	TP22	TP23
Depth		SGV/GACs	0.00 - 0.30	0.00 - 0.30	0.00 - 0.40	0.00 - 0.50	0.70	1.40	0.00 - 0.30
Strata			MG	Topsoil	MG	MG	PMCM	PMCM	MG
Determinants	**Units**								
Visual Fibre Screen			NAD		NAD	NAD			NAD
pH	pH		5.1		6.43	6.65	7.19	6.97	6.64
Sulphate BRE (water sol 2:1)	g/l		0.05		0.08	0.13	0.98	0.23	0.03
Cyanide (free)	mg/kg	3.8							
Phenols - Total by HPLC	mg/kg	210							
Loss on ignition (550°C)[1]	% w/w	10%							
Total Organic Carbon	% w/w		3.49		0.31	4.58			4.27
Metals									
Arsenic	mg/kg	37	13	15	5	12			11
Boron (water soluble)	mg/kg								
Cadmium	mg/kg	30	1.6	1.5	1.7	<0.5			0.6
Copper	mg/kg	2500	26	34	13	24			14
Chromium	mg/kg	910	20	20	22	21			16
Chromium (hexavalent)	mg/kg	21							
lead (C4SL)	mg/kg	200	40	77	19	152			40
Mercury	mg/kg	39	<0.17	0.28	0.22	<0.17			<0.17
Nickel	mg/kg	180	21	20	18	18			17
Selenium	mg/kg	258	2	2	3	<1			2
Zinc	mg/kg	3900	98	141	55	57			73
Total Petroleum Hydrocarbons Criteria Working Group (TPHCWG)									
Ali >C5-C6	mg/kg	78	<0.01		<0.01	<0.05			0.1
Ali >C6-C8	mg/kg	230	<0.01		<0.01	<0.01			<0.01
Ali >C8-C10	mg/kg	65	<0.01		<0.01	<0.01			<0.01
Ali >C10-C12	mg/kg	320	<0.1		<0.1	<0.1			<0.1
Ali >C12-C16	mg/kg	2200	<0.1		<0.1	<0.1			<0.1
Ali >C16-C21	mg/kg	Assess as sum	<0.1		<0.1	<0.1			<0.1
Ali >C21-C35	mg/kg	below	<0.1		<0.1	<0.1			<0.1
Ali >C16-C35	mg/kg	70,000	<0.1		<0.1	<0.1			<0.1
Total Aliphatics	mg/kg		<0.1		<0.1	<0.1			<0.1
Aro >C5-C7	mg/kg	0.41	<0.01		<0.01	<0.01			<0.01
Aro >C7-C8	mg/kg	300	<0.01		<0.01	<0.01			<0.01
Aro >C8-C9	mg/kg	25	<0.01		<0.01	<0.01			<0.01
Aro >C9-C10	mg/kg	83	<0.01		<0.01	<0.01			<0.01
Aro >C10-C12	mg/kg	174	<0.1		<0.1	<0.1			<0.1
Aro >C12-C16	mg/kg	300	<0.1		<0.1	15.9			<0.1
Aro >C16-C21	mg/kg	500	<0.1		<0.1	222			<0.1
Aro >C21-C35	mg/kg	1100	<0.1		<0.1	137			<0.1
Total Aromatics	mg/kg		<0.1		<0.1	375			<0.1
TPH (Ali & Aro)	mg/kg		<0.1		<0.1	375			<0.1
BTEX - Benzene	mg/kg	0.41	<0.01		<0.01	<0.01			<0.01
BTEX - Toluene	mg/kg	300	<0.01		<0.01	<0.01			<0.01
BTEX - Ethyl Benzene	mg/kg	110	<0.01		<0.01	<0.01			<0.01
BTEX - m & p Xylene	mg/kg	133	<0.01		<0.01	<0.01			<0.01
BTEX - o Xylene	mg/kg	143	<0.01		<0.01	<0.01			<0.01
MTBE	mg/kg	250	<0.01		<0.01	<0.01			<0.01
PAHs (Polycyclic Aromatic Hydrocarbons)									
Acenapthene	mg/kg	540	<0.01	0.01	<0.01	3.92			<0.01
Acenapthylene	mg/kg	440	<0.01	<0.01	<0.01	2.09			<0.01
Anthracene	mg/kg	5500	<0.02	0.07	<0.02	30.2			0.03
Benzo(a)anthracene	mg/kg	11	<0.04	0.33	<0.04	42.1			0.14
Benzo(a)pyrene	mg/kg	5	<0.04	0.26	<0.04	35.6			0.12
Benzo(b)fluoranthene	mg/kg	3.3	<0.05	0.31	<0.05	40.8			0.16
Benzo(ghi)perylene	mg/kg	340	<0.05	0.16	<0.05	16.6			<0.05
Benzo(k)fluoranthene	mg/kg	92	<0.07	0.16	<0.07	23.1			<0.07
Chrysene	mg/kg	22	<0.06	0.34	<0.06	50.6			0.14
Dibenzo(ah)anthracene	mg/kg	0.28	<0.04	<0.04	<0.04	3.81			<0.04
Fluoranthene	mg/kg	560	<0.08	0.55	<0.08	197			0.22
Fluorene	mg/kg	410	<0.01	<0.01	<0.01	7.52			<0.01
Indeno(123-cd)pyrene	mg/kg	36	<0.03	0.2	<0.03	18.8			0.04
Napthalene	mg/kg	30	<0.03	<0.03	<0.03	0.41			<0.03
Phenanthrene	mg/kg	220	0.04	0.24	<0.03	81.6			0.11
Pyrene	mg/kg	1240	<0.07	0.46	<0.07	137			0.19
Total PAH	mg/kg		<0.08	3.06	<0.08	692			1.13

= Exceedence of GAC for a residential (with plant uptake)

All GACs calculated by RSK or taken from EIC/AGS/CLAIRE Generic Assessment Criter

APPENDIX N
GENERIC ASSESSMENT CRITERIA FOR PHYTOTOXIC EFFECTS

Several compounds can inhibit plant growth; hence it is important to have generic assessment criteria (GAC) to promote healthy plant growth. In the absence of other published GAC, the GAC have been obtained from legislation (UK and European) and guidance related to the use of sewage sludge on agricultural fields.

The Council of European Communities Sewage Sludge Directive (86/278/EEC) dated 1986, has been transposed into UK law by Statutory Instrument No. 1263, The Sludge (use in Agriculture) Regulations 1989 (Public Health England, Wales and Scotland), as ammended in 1990 and The Sludge (use in Agriculture) Regulations (Northern Ireland) SR No, 245, 1990. In addition the Department of Environment (DoE) produced a Code of Practice (CoP) (Updated 2nd Edition) in 2006 which provided guidance on the application of sewage sludge on agricultural land (however the status of this document is unclear as it is on the archive section of the Defra website).

The directive seeks to encourage the use of sewage sludge in agriculture and to regulate its use in such a way as to "***prevent harmful effects on soil, vegetation, animals and man".*** To this end, it prohibits the use of untreated sludge on agricultural land unless it is injected or incorporated into the soil. Treated sludge is defined as having undergone "biological, chemical or heat treatment, long-term storage or any other appropriate process so as significantly to reduce its fermentability and the health hazards resulting from its use". To provide protection against potential health risks from residual pathogens, sludge must not be applied to soil in which fruit and vegetable crops are growing, or less than ten months before fruit and vegetable crops are to be harvested. Grazing animals must not be allowed access to grassland or forage land less than three weeks after the application of sludge.

The specified limits of concentrations of selected elements in soil are presented in Table 4 of the updated 2nd Edition of the DoE Code of Practice and are designed to protect plant growth. It is noted that these values are more stringent than the values set in current UK regulations. However since they were ammended following recommendations from the Independent Scientific Committee in 1993. (MAFF/DOE 1993). The GAC are presented in Table 1.

Table 1: Generic assessment criteria

Determinant	Generic assessment criteria (mg/kg)			
	pH 5.0 < 5.5	pH 5.5 < 6.0	pH 6.0 < 7.0	pH >7.0
Zinc	200	200	200	300
Copper	80	100	135	200
Nickel	50	60	75	110
Lead	300	300	300	300
Cadmium	3	3	3	3
Mercury	1	1	1	1
Note: Only compounds with assessment criteria documented within the Directive 86/278/EEC have been included, although criteria for 5 additional compounds have been presented within the 2006 CoP.				

APPENDIX O
GENERIC ASSESSMENT CRITERIA FOR POTABLE WATER SUPPLY PIPES

A range of pipe materials is available and careful selection, design and installation is required to ensure that water supply pipes are satisfactorily installed and meet the requirements of the Water Supply (Water Fittings) Regulations 1999 in England and Wales, the Byelaws 2000 in Scotland and the Northern Ireland Water Regulations. The regulations include a requirement to use only suitable materials when laying water pipes and laying water pipes without protection is not permitted at contaminated sites. The water supply company has a statutory duty to enforce the regulations.

Contaminants in the ground can pose a risk to human health by permeating potable water supply pipes. To fulfil their statutory obligation, UK water supply companies require robust evidence from developers to demonstrate either that the ground in which new plastic supply pipes will be laid is free from specific contaminants, or that the proposed remedial strategy will mitigate any existing risk. If these requirements cannot be demonstrated to the satisfaction of the relevant water company, it becomes necessary to specify an alternative pipe material on the whole development or in specific zones.

In 2010, UK Water Industry Research (UKWIR) published *Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites* (Report Ref. No. 10/WM/03/21). This report reviewed previously published industry guidelines and threshold concentrations adopted by individual water supply companies.

The focus of the UKWIR research project was to develop clear and concise procedures, which provide consistency in the pipe selection decision process. It was intended to provide guidance that can be used to ensure compliance with current regulations and to prevent water supply pipe failing prematurely due to the presence of contamination.

The report concluded that in most circumstances only organic contaminants pose a potential risk to plastic pipe materials and Table 3.1 of the report provides threshold concentrations for polyethylene (PE) and polyvinyl chloride (PVC) pipes for the organic contaminants of concern. The report also makes recommendations for the procedures to be adopted in the design of site investigations and sampling strategies, and the assessment of data, to ensure that the ground through which water supply pipes will be laid is adequately characterised.

Risks to water supply pipes have therefore been assessed against the threshold concentrations for PE and PVC pipe specified in Table 3.1 of Report 10/WM/03/21, which have been adopted as the GAC for this linkage and are reproduced in Table A3 below.

Since water supply pipes are typically laid at a minimum depth of 0.75m below finished ground levels, sample results from depths between 0.5m and 1.5m below finished level are generally considered suitable for assessing risks to water supply. Samples outside these depths can be

used, providing the stratum is the same as that in which water supply pipes are likely to be located. The report specifies that sampling should characterise the ground conditions to a minimum of 0.5m below the proposed depth of the pipe.

It should be noted that the assessment provided in this report is a guide and the method of assessment and recommendations should be checked with the relevant water supply company.

Table A3: Generic assessment criteria for water supply pipes

		Pipe material	
		GAC (mg/kg)	
	Parameter group	**PE**	**PVC**
1	Extended VOC suite by purge and trap or head space and GC-MS with TIC (Not including compounds within group 1a)	0.5	0.125
1a	• BTEX + MTBE	0.1	0.03
2	SVOCs TIC by purge and trap or head space and GC-MS with TIC (aliphatic and aromatic C_5–C_{10}) (Not including compounds within group 2e and 2f)	2	1.4
2e	• Phenols	2	0.4
2f	• Cresols and chlorinated phenols	2	0.04
3	Mineral oil C_{11}–C_{20}	10	Suitable
4	Mineral oil C_{21}–C_{40}	500	Suitable
5	Corrosive (conductivity, redox and pH)	Suitable	Suitable
Specific suite identified as relevant following site investigation			
2a	Ethers	0.5	1
2b	Nitrobenzene	0.5	0.4
2c	Ketones	0.5	0.02
2d	Aldehydes	0.5	0.02
6	Amines	Not suitable	Suitable
Notes: where indicated as 'suitable', the material is considered resistant to permeation or degradation and no threshold concentration has been specified by UKWIR.			

APPENDIX P
GROUND GAS RISK ASSESSMENT SHEETS

Generic NHBC Traffic Lights Ground Gas Risk Assessment

Job No.:	301645
Client:	Jones Homes (Yorkshire) Limited
Site:	Land off Bloomhouse Lane, Darton

For low-rise residential developments with a clear ventilated sub-floor void ONLY

Traffic Light	Methane		Carbon Dioxide	
	TMV (%v/v)	GSV (l/hr)	TMV (%v/v)	GSV (l/hr)
Green	1	**0.16**	5	**0.78**
Amber 1	5	**0.63**	10	**1.56**
Amber 2	20	**1.56**	30	**3.13**
Red				

From NHBC (2007, Edition No.: 04) "Guidance On Evaluation Of Development Proposals On Sites Where Methane And Carbon Dioxide Are Present", Boyle & Witherington

KEY:
TMV Typical Maximum Value
GSV Gas Screening Value

GSV can be calculated on a site-specific basis

GSV within Green Traffic Light
GSV within Amber 1 Traffic Light
GSV within Amber 2 Traffic Light
GSV within Red Traffic Light / TMV exceeded

Oxygen concentration ≤10%v/v
Total ground gas concentrations >100%v/v

BH NO.	DATE	Water Level	CH4 I %v/v	CH4 SS %v/v	CO2 I %v/v	CO2 SS %v/v	O2 I %v/v	O2 SS %v/v	Flow l/hr	Baro mbar	BH Press mbar	I SUM %v/v	SS SUM %v/v	GSV CH4	GSV CO2
BH01	22/02/2016	8.400	<0.1	<0.1	<0.1	<0.1	20.8	20.9	**2.4**	996	996	20.8	20.9	**0.00**	**0.00**
	16/03/2016	8.500	<0.1	<0.1	<0.1	<0.1	21.1	21.5	**0.3**	1018	1018	21.1	21.5	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
BH02	22/02/2016	-	<0.1	<0.1	<0.1	0.1	21.5	21.5	**0.1**	997	997	21.5	21.6	**0.00**	**0.00**
	16/03/2016	8.050	<0.1	<0.1	<0.1	1.9	20.7	18.7	**0.2**	1018	1018	20.7	20.6	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
BH03A	22/02/2016	3.740	<0.1	<0.1	<0.1	<0.1	21.6	21.8	**0**	996	996	21.6	21.8	**0.00**	**0.00**
	16/03/2016	3.600	<0.1	<0.1	<0.1	<0.1	21.1	21.4	**0.2**	1018	1018	21.1	21.4	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
BH04	22/02/2016	1.880	<0.1	<0.1	<0.1	1.4	21.7	20.9	**0**	995	995	21.7	22.3	**0.00**	**0.00**
	16/03/2016	1.480	<0.1	<0.1	<0.1	1.2	21.1	20.3	**0**	1018	1018	21.1	21.5	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
BH05	22/02/2016	-	<0.1	<0.1	<0.1	0.1	21.5	21.5	**0**	997	997	21.5	21.6	**0.00**	**0.00**
	16/03/2016	0.880	<0.1	<0.1	<0.1	<0.1	21.1	21.5	**0**	1020	1020	21.1	21.5	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
BH06	22/02/2016	-	<0.1	<0.1	<0.1	0.2	21.9	21.3	**0.3**	997	997	21.9	21.5	**0.00**	**0.00**
	16/03/2016	Dry	<0.1	<0.1	0.1	<0.1	20.8	21.5	**0**	1021	1021	20.9	21.5	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**
												0.0	0.0	**0.00**	**0.00**

WORST-CASE VALUES PER BOREHOLE

			Maximum CH4		Maximum CO2		Minimum O2		Max Flow	Not Applicable		Maximum Total		Maximum GSVs	
BH01			<0.1	<0.1	<0.1	<0.1	20.8	20.9	2.4			20.8	20.9	**0.00**	**0.00**
BH02			<0.1	<0.1	<0.1	1.9	20.7	18.7	0.2			20.7	20.6	**0.00**	**0.00**
BH03A			<0.1	<0.1	<0.1	<0.1	21.1	21.4	0.2			21.1	21.4	**0.00**	**0.00**
BH04			<0.1	<0.1	<0.1	1.4	21.1	20.3	<0.1			21.1	21.7	**0.00**	**0.00**
BH05			<0.1	<0.1	<0.1	0.1	21.1	21.5	<0.1			21.1	21.6	**0.00**	**0.00**
BH06			<0.1	<0.1	0.1	0.2	20.8	21.3	0.3			20.9	21.5	**0.00**	**0.00**
Total across all boreholes			<0.1	<0.1	0.1	1.9	20.7	18.7	2.4			20.8	20.6	**0.00**	**0.05**

Revised Wilson and Card Classification Ground Gas Risk Assessment

Job No.:	301645
Client:	Jones Homes (Yorkshire) Limited
Site:	Land off Bloomhouse Lane, Darton

For low-rise residential developments without a clear ventilated sub-floor void, flats and commercial / industrial sites

Characteristic Situation	Risk	GSV
1	Very Low	0.07
2	Low	0.7
3	Moderate	3.5
4	Moderate to High	15
5	High	70
6	Very High	>70

From CIRIA Report 659 (2006) "Assessing Risks Posed By Hazardous Ground Gases To Buildings", Wilson et al.

KEY:

GSV Gas Screening Value

GSV cannot be calculated on a site-specific basis

GSV indicates very low risk

GSV indicates low to moderate risk

GSV indicates moderate or greater risk; Concentrations of CH4 ≥20%V/V; CO2 ≥30%V/V

Oxygen concentration ≤10%v/v

Total ground gas concentrations >100%v/v

BH NO.	DATE	CH4 I %v/v	CH4 SS %v/v	CO2 I %v/v	CO2 SS %v/v	O2 I %v/v	O2 SS %v/v	Flow l/hr	Baro mbar	BH Press mbar	I SUM %v/v	SS SUM %v/v	GSV CH4	GSV CO2	CS No.
BH1	22/02/2016	<0.1	<0.1	<0.1	<0.1	20.8	20.9	2.4	996	996	20.8	20.9	0.00	0.00	CS1
	16/03/2016	<0.1	<0.1	<0.1	<0.1	21.1	21.5	0.3	1018	1018	21.1	21.5	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
BH2	22/02/2016	<0.1	<0.1	<0.1	0.1	21.5	21.5	0.1	997	997	21.5	21.6	0.00	0.00	CS1
	16/03/2016	<0.1	<0.1	<0.1	1.9	20.7	18.7	0.2	1018	1018	20.7	20.6	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
BH3A	22/02/2016	<0.1	<0.1	<0.1	<0.1	21.6	21.8	0	996	996	21.6	21.8	0.00	0.00	CS1
	16/03/2016	<0.1	<0.1	<0.1	<0.1	21.1	21.4	0.2	1018	1018	21.1	21.4	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
BH4	22/02/2016	<0.1	<0.1	<0.1	1.4	21.7	20.9	0	995	995	21.7	22.3	0.00	0.00	CS1
	16/03/2016	<0.1	<0.1	<0.1	1.2	21.1	20.3	0	1018	1018	21.1	21.5	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
BH5	22/02/2016	<0.1	<0.1	<0.1	0.1	21.5	21.5	0	997	997	21.5	21.6	0.00	0.00	CS1
	16/03/2016	<0.1	<0.1	<0.1	<0.1	21.1	21.5	0	1020	1020	21.1	21.5	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
BH6	22/02/2016	<0.1	<0.1	<0.1	0.2	21.9	21.3	0.3	997	997	21.9	21.5	0.00	0.00	CS1
	16/03/2016	<0.1	<0.1	0.1	<0.1	20.8	21.5	0	1021	1021	20.9	21.5	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	CS1

WORST-CASE VALUES PER BOREHOLE

	Maximum CH4		Maximum CO2		Minimum O2		Max Flow	Not Applicable		Maximum Total		Maximum GSVs		CS No
BH1	<0.1	<0.1	<0.1	<0.1	20.8	20.9	2.4			20.8	20.9	0.00	0.00	CS1
BH2	<0.1	<0.1	<0.1	1.9	20.7	18.7	0.2			20.7	20.6	0.00	0.00	CS1
BH3	<0.1	<0.1	<0.1	<0.1	21.1	21.4	0.2			21.1	21.4	0.00	0.00	CS1
BH4	<0.1	<0.1	<0.1	1.4	21.1	20.3	<0.1			21.1	21.7	0.00	0.00	CS1
BH5	<0.1	<0.1	<0.1	0.1	21.1	21.5	<0.1			21.1	21.6	0.00	0.00	CS1
BH6	<0.1	<0.1	0.1	0.2	20.8	21.3	0.3			20.9	21.5	0.00	0.00	CS1
Total across all boreholes	<0.1	<0.1	0.1	1.9	20.7	18.7	2.4			20.8	20.6	0.00	0.05	CS1

APPENDIX Q
CERTIFICATES OF GEOTECHNICAL ANALYSIS

STRUCTURAL SOILS LTD

TEST REPORT

Report No. 781975 R1

Date 02-March-2016 Contract Darton

Client RSK Environment Ltd
Address Spring Lodge
172 Chester Road
Helsby
Cheshire WA6 0AR

For the Attention of Josh Duckering

Samples submitted by client	15/02/2016	Client Reference	301645
Testing Started	16/02/2016	Client Order No.	
Testing Completed	02/03/2016	Instruction Type	Written

Ukas Accredited Tests Underatken

Moisture Content (oven drying method) BS1377:Part 2:1990,clause 3.2 (superseded)**
Liquid Limit (one point method) BS1377:Part 2:1990,clause 4.4
Plastic Limit BS1377:Part 2:1990,clause 5.3
Plasticity Index Derivation BS1377:Part 2:1990,clause 5.4

* Tests were undertaken on sampes 'as received' unless otherwise stated
** This clause of BS1377 no lnoger most up-to-date due to publication of ISO 17892

Please Note: Remaining samples will be retained for a period of one month from today and will then be disposed of

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
TP01	2	D	0.70	24	57	26	31	100	Orange grey mottled CLAY
TP04	3	D	1.60	27	61	28	33	99	Grey brown slightly sandy slightly gravelly CLAY
TP08	2	SPTLS	0.80	12	38	21	17	82	Grey bown weathered MUDSTONE
TP09	1	D	1.60	19	36	21	15	79	Orange grey brown CLAY
TP11	1	D	0.30	28	49	27	22	85	Brown slightly sandy slightly gravelly CLAY
TP14	3	D	3.60	24	45	23	22	90	Brown slightly sandy slightly gravelly CLAY
TP17	2	D	1.40	35	51	26	25	94	Orange grey slightly sandy slightly gravelly CLAY
TP20	2	D	1.00	13	33	20	13	91	Orange grey slightly sandy slightly gravelly CLAY

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
TP23	2	D	0.90	40	61	36	25	69	Dark brown slightly sandy slightly gravelly CLAY
TP24	1	D	0.50	17	38	21	17	94	Orange grey mottled slightly gravelly CLAY

STRUCTURAL SOILS LTD

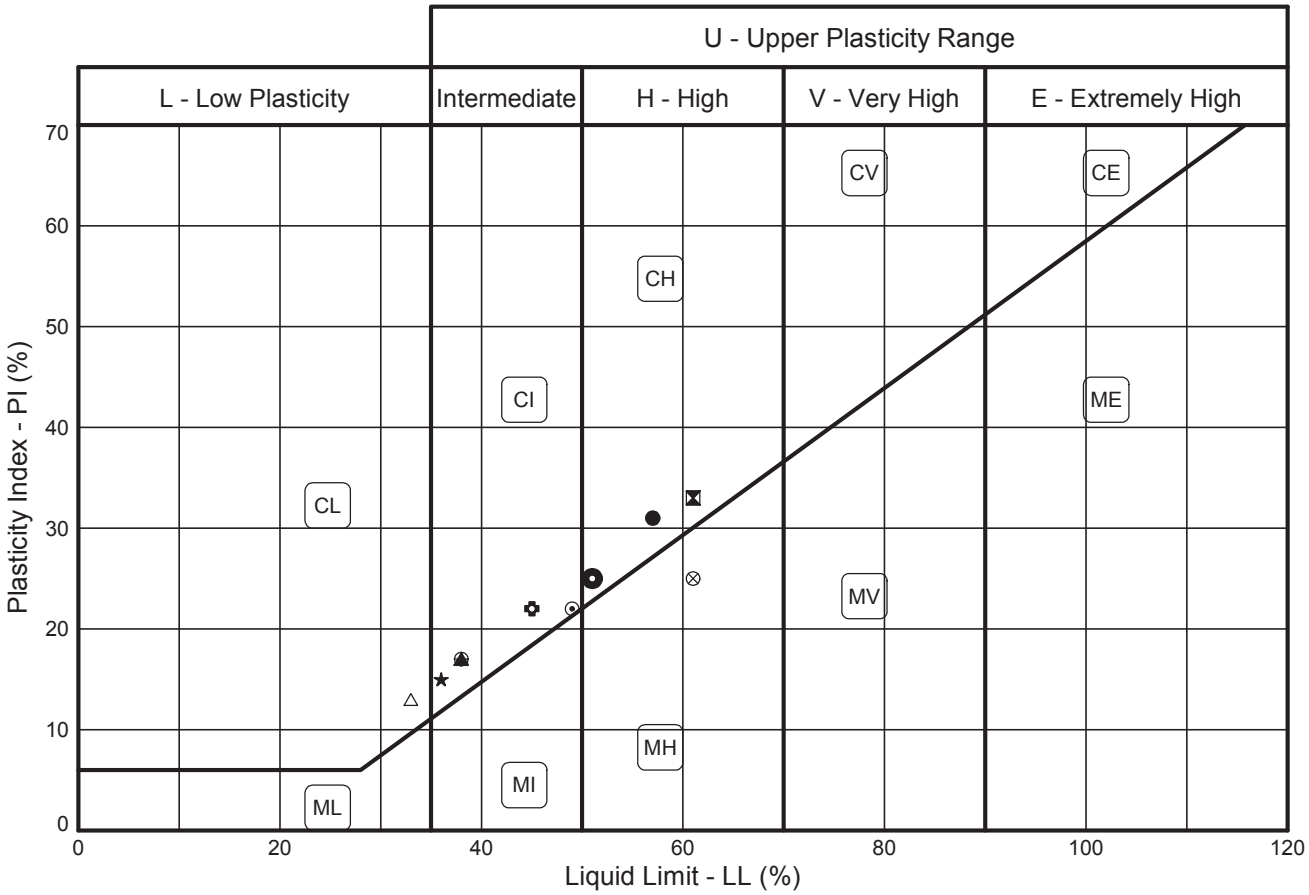
Contract: Darton

Contract Ref: 781975

AGS

PLASTICITY CHART - PI Vs LL

In accordance with clause 42.3 of BS5930:1999
Testing in accordance with BS1377-2:1990



Sample Identification				BS Test Method #	Preparation Method +	MC	LL	PL	PI	<425um	Lab location	
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	TP01	2D	0.70	3.2/4.4/5.3/5.4	4.2.3	24	57	26	31	100	C	
⊠	TP04	3D	1.60	3.2/4.4/5.3/5.4	4.2.4	27	61	28	33	99	C	
▲	TP08	2SPTLS	0.80	3.2/4.4/5.3/5.4	4.2.4	12	38	21	17	82	C	
★	TP09	1D	1.60	3.2/4.4/5.3/5.4	4.2.4	19	36	21	15	79	C	
⊙	TP11	1D	0.30	3.2/4.4/5.3/5.4	4.2.4	28	49	27	22	85	C	
✿	TP14	3D	3.60	3.2/4.4/5.3/5.4	4.2.4	24	45	23	22	90	C	
◉	TP17	2D	1.40	3.2/4.4/5.3/5.4	4.2.4	35	51	26	25	94	C	
△	TP20	2D	1.00	3.2/4.4/5.3/5.4	4.2.4	13	33	20	13	91	C	
⊗	TP23	2D	0.90	3.2/4.4/5.3/5.4	4.2.4	40	61	36	25	69	C	
⊕	TP24	1D	0.50	3.2/4.4/5.3/5.4	4.2.4	17	38	21	17	94	C	

Tested in accordance with the following clauses of BS1377-2:1990.

3.2 - Moisture Content
4.3 - Cone Penetrometer Method
4.4 - One Point Cone Penetrometer Method
4.6 - One Point Casagrande Method
5.3 - Plastic Limit Method
5.4 - Plasticity Index

+ Tested in accordance with the following clauses of BS1377-2:1990.

4.2.3 - Natural State
4.2.4 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT)

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By		Date
M. Fisher	MAUREEN FISHER	02/03/16

Contract	Contract Ref:
Darton	781975

AGS

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_007 PrjVersion: v8_06 - Core+Geotech Lab-Castleford - Dev 025 | Graph L - ALINE STANDARD - A4P | 781975 - DARTON.GPJ - v8_06.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 02/03/16 - 13:38 | MF1 |

TESTING VERIFICATION CERTIFICATE

1774

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **02/03/2016 16:08:19**.

Testing reported after this date is not covered by this Verification Certificate.



Approved Signatory
Mark Athorne (Laboratory Quality Manager)

(Head Office)
Bristol Laboratory
Unit 1A, Princess Street
Bedminster
Bristol
BS3 4AG

Castleford Laboratory
The Potteries, Pottery Street
Castleford
West Yorkshire
WF10 1NJ

Hemel Laboratory
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

STRUCTURAL SOILS LTD	Contract: **Darton**	Job No: **781975**

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_007 PrjVersion: v8_06 - Core+Geotech Lab-Castleford - Dev 025 | GrfcText L - LAB VERIFICATION REPORT - V01 - A4P | 781975 - DARTON.GPJ - v8_06.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 02/03/16 - 16:08 | MAA1 |

APPENDIX R
HASWASTE ASSESSMENT SHEET

envirolab

Haswaste, developed by Dr. Iain Haslock.

301645 Bloomhouse Lane, Darton

TP/WS/BH		TP02	TP05	TP07	TP07	TP09	TP12	TP13	TP13	TP14
Depth (m)		0.00	0.60	0.30	0.80	0.20	0.00	0.00	0.30	1.50
Envirolab reference		16/00914/2	16/00914/5	16/00914/6	16/00914/7	16/00914/8	16/00914/9	16/00914/11	16/00914/12	16/00914/13
% Moisture	%									
pH (soil)		7.19		8.66			7.66	6.29	6.57	7.55
pH (leachate)										
Arsenic	mg/kg	20	3	7	3	16	13	47	45	16
Cadmium	mg/kg	1.6	1.9	0.9	1.0	1.5	2.0	1.8	2.1	1.4
Copper	mg/kg	35	21	20	22	34	56	104	133	38
CrVI or Chromium	mg/kg	23	18	9	19	19	26	21	24	17
Lead	mg/kg	55	15	74	14	88	62	111	141	48
Mercury	mg/kg	0.21	0.17	0.35	0.23	0.17	0.42	0.38	0.60	0.17
Nickel	mg/kg	26	38	12	25	21	26	31	32	22
Selenium	mg/kg	3	1	1	1	1	1	2	2	1
Zinc	mg/kg	87	72	80	55	65	647	143	124	81
Barium	mg/kg									
Beryllium	mg/kg									
Vanadium	mg/kg									
Cobalt	mg/kg									
Manganese	mg/kg									
Molybdenum	mg/kg									
Antimony	NEW v5.4di mg/kg									
Tin	NEW v5.4di mg/kg									
PAH (Input Total PAH **OR** individual PAH results)										
Acenaphthene	mg/kg	0.01	0.01	0.02	0.01	0.04	0.11	0.02	0.02	0.01
Acenaphthylene	mg/kg	0.01	0.01	0.02	0.01	0.07	0.02	0.03	0.02	<0.01
Anthracene	mg/kg	0.06	0.02	0.11	0.02	0.58	0.44	0.13	0.16	0.03
Benzo(a)anthracene	mg/kg	0.39	0.04	0.61	0.04	1.91	1.48	0.67	0.55	0.09
Benzo(a)pyrene	mg/kg	0.35	0.04	0.67	0.04	1.50	1.28	0.68	0.47	0.09
Benzo(b)fluoranthene	mg/kg	0.43	0.05	0.75	0.05	1.82	1.48	0.83	0.54	0.11
Benzo(ghi)perylene	mg/kg	0.20	0.05	0.39	0.05	0.71	0.67	0.42	0.27	0.06
Benzo(k)fluoranthene	mg/kg	0.21	0.07	0.32	0.07	0.79	0.67	0.40	0.24	0.07
Chrysene	mg/kg	0.44	0.06	0.67	0.06	1.97	1.46	0.75	0.53	0.10
Dibenzo(ah)anthracene	mg/kg	0.05	0.04	0.09	0.04	0.21	0.16	0.11	0.07	0.04
Fluoranthene	mg/kg	0.66	0.08	0.96	0.08	4.07	3.23	1.18	0.96	0.17
Fluorene	mg/kg	0.01	0.01	0.02	0.01	0.10	0.09	0.03	0.03	0.01
Indeno(123cd)pyrene	mg/kg	0.25	0.03	0.46	0.03	0.95	0.86	0.54	0.33	0.07
Naphthalene	mg/kg	0.03	0.03	0.04	0.03	0.07	0.07	0.06	0.03	0.03
Phenanthrene	mg/kg	0.26	0.03	0.43	0.03	2.34	1.37	0.41	0.45	0.06
Pyrene	mg/kg	0.56	0.07	0.94	0.07	3.44	2.82	1.03	0.82	0.15
Coronene	mg/kg									
Total PAHs (16 or 17)	mg/kg	3.89	0.08	6.50	0.08	20.60	16.20	7.26	5.49	0.93
TPH										
Petrol	mg/kg									
Diesel	mg/kg									
Lube Oil	mg/kg									
White Spirit / Kerosene	mg/kg									
Creosote	mg/kg									
Unknown TPH with ID	mg/kg									
Unknown TPHCWG	mg/kg	2.8		2.9				2.4	1.5	0.1
Total Sulphide	mg/kg									
Complex Cyanide	mg/kg									
Free (or Total) Cyanide	mg/kg									
Thiocyanate	mg/kg									
Elemental/Free Sulphur	mg/kg									
Phenols Input Total Phenols HPLC **OR** individual Phenol results.										
Phenol	mg/kg									
Cresols	mg/kg									
Xylenols	mg/kg									
Resourcinol	mg/kg									
Phenols Total by HPLC	mg/kg									
BTEX Input Total BTEX **OR** individual BTEX results.										
Benzene	mg/kg	0.01		0.01				0.01	0.01	0.01
Toluene	mg/kg	0.01		0.01				0.01	0.01	0.01
Ethylbenzene	mg/kg	0.01		0.01				0.01	0.01	0.01
Xylenes	mg/kg	0.01		0.01				0.01	0.01	0.01
Total BTEX	mg/kg	0.01		0.01				0.01	0.01	0.01
PCBs (POPs)										
PCBs Total (eg EC7/WHO12)	mg/kg									
PBBs (POPs)										
Hexabromobiphenyl (Total or PBB153; 2,2',4,4',5,5'- if only available)	mg/kg									
POPs Dioxins and Furans Input Total Dioxins and Furans **OR** individual Dioxin and Furan results.										
2,3,7,8-TeCDD	mg/kg									
1,2,3,7,8-PeCDD	mg/kg									
1,2,3,4,7,8-HxCDD	mg/kg									
1,2,3,6,7,8-HxCDD	mg/kg									
1,2,3,7,8,9-HxCDD	mg/kg									
1,2,3,4,6,7,8-HpCDD	mg/kg									
OCDD	mg/kg									
2,3,7,8-TeCDF	mg/kg									
1,2,3,7,8-PeCDF	mg/kg									
2,3,4,7,8-PeCDF	mg/kg									
1,2,3,4,7,8-HxCDF	mg/kg									
1,2,3,6,7,8-HxCDF	mg/kg									
2,3,4,6,7,8-HxCDF	mg/kg									
1,2,3,7,8,9-HxCDF	mg/kg									
1,2,3,4,6,7,8-HpCDF	mg/kg									
1,2,3,4,7,8,9-HpCDF	mg/kg									
OCDF	mg/kg									
Total Dioxins and Furans	mg/kg									

Haswaste, developed by Dr. Iain Haslock.

301645 Bloomhouse Lane, Darton

TP/WS/BH	TP02	TP05	TP07	TP07	TP09	TP12	TP13	TP13	TP14
Depth (m)	0.00	0.60	0.30	0.80	0.20	0.00	0.00	0.30	1.50
Envirolab reference	16/00914/2	16/00914/5	16/00914/6	16/00914/7	16/00914/8	16/00914/9	16/00914/11	16/00914/12	16/00914/13

Some Pesticides (POPs unless otherwise stated)

Aldrin		mg/kg								
α Hexachlorocyclohexane (alpha-HCH) *(leave empty if total HCH results used)*		mg/kg								
β Hexachlorocyclohexane (beta-HCH) *(leave empty if total HCH results used)*		mg/kg								
α Cis-Chlordane (alpha) ***OR*** *Total Chlordane*		mg/kg								
δ Hexachlorocyclohexane (delta-HCH) *(leave empty if total HCH results used)*	New v5.4di	mg/kg								
Dieldrin		mg/kg								
Endrin		mg/kg								
χ Hexachlorocyclohexane (gamma-HCH) (lindane) ***OR*** *Total HCH*		mg/kg								
Heptachlor		mg/kg								
Hexachlorobenzene		mg/kg								
o,p'-DDT *(leave empty if total DDT results used)*		mg/kg								
p,p'-DDT ***OR*** *Total DDT*		mg/kg								
χ Trans-Chlordane (gamma) *(leave empty if total Chlordane results used)*		mg/kg								
Chlordecone (kepone)		mg/kg								
Pentachlorobenzene		mg/kg								
Mirex		mg/kg								
Toxaphene (camphechlor)		mg/kg								
Asbestos in Soil	Thresholds									
Asbestos detected in Soil (enter Y or N)	Y				N				N	
Asbestos % Composition in Soil (Matrix Loose Fibres or Microscopic Identifiable Pieces only)	see "Carc HP7 % Asbestos in Soil (Fibres)" below	%								
Carcinogenic HP7 % Asbestos in Soil (fibres or micro pieces)	≥0.1%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Asbestos Identifiable Pieces visible with the naked eye detected in the Soil (enter Y or N)	Y									
Hazardous Property	Thresholds	Cut Off Value								
Corrosive HP8	≥5%	<1%	0.00264	0.00040	0.00092	0.00040	0.00211	0.00172	0.00620	0.00594	0.00211
Irritant HP4	≥10%	<1%	0.00264	0.00040	0.00092	0.00040	0.00211	0.00172	0.00620	0.00594	0.00211
Irritant HP4	≥20%	<1%	0.00969	0.01007	0.00549	0.00756	0.01079	0.01368	0.01891	0.02219	#VALUE!
Specifc Target Organ Toxicity HP5	≥1%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Specifc Target Organ Toxicity HP5	≥20%		0.00039	0.00001	0.00065	0.00001	0.00206	0.00162	0.00073	0.00055	0.00009
Specifc Target Organ Toxicity HP5	≥1%		0.00525	0.00768	0.00242	0.00505	0.00424	0.00525	0.00626	0.00646	0.00444
Specifc Target Organ Toxicity HP5	≥10%		0.01088	0.00900	0.01000	0.00688	0.00880	0.08088	0.01788	0.01550	0.01013
Aspiration Toxicity HP5	≥10%		0.00029	0.00000	0.00030	0.00000	0.00000	0.00000	0.00025	0.00016	0.00002
Acute Toxicity HP6	≥0.1%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.25%	<0.1%	0.00266	0.00041	0.00096	0.00042	0.00213	0.00176	0.00624	0.00600	0.00213
Acute Toxicity HP6	≥5%	<0.1%	0.00042	0.00014	0.00014	0.00014	0.00014	0.00014	0.00028	0.00028	0.00014
Acute Toxicity HP6	≥25%	<1%	0.02623	0.02076	0.02297	0.01593	0.02787	0.10094	0.04806	0.05200	#VALUE!
Acute Toxicity HP6	≥0.25%	<0.1%	0.00002	0.00002	0.00004	0.00002	0.00002	0.00004	0.00004	0.00006	0.00002
Acute Toxicity HP6	≥2.5%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥15%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥55%	<1%	0.00016	0.00019	0.00009	0.00010	0.00015	0.00020	0.00018	0.00021	0.00014
Acute Toxicity HP6	≥0.1%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.5%	<0.1%	0.00018	0.00021	0.00013	0.00012	0.00017	0.00024	0.00022	0.00027	0.00016
Acute Toxicity HP6	≥3.5%	<0.1%	0.00042	0.00014	0.00014	0.00014	0.00014	0.00014	0.00028	0.00028	0.00014
Acute Toxicity HP6	≥22.5%	<1%	0.02163	0.01818	0.01983	0.01333	0.02117	0.09233	0.03524	0.03607	0.01937
Carcinogenic HP7	≥0.1%		0.00679	0.00768	0.00740	0.00561	0.00880	0.00767	0.01110	0.01410	0.00502
Carcinogenic HP7	≥0.1%		0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000
Carcinogenic HP7	≥1%		0.00039	0.00001	0.00065	0.00001	0.00206	0.00162	0.00073	0.00055	0.00009
Carcinogenic HP7 Unknown TPH with ID	≥1,000mg/kg		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carcinogenic HP7 b(a)p marker test (Unknown TPH with ID only)	≥0.01%		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
pH Corrosive HP8 pH (soil or leachate)	H8 ≥11.5		7.19	0.00	8.66	0.00	0.00	7.66	6.29	6.57	7.55
pH Corrosive HP8 pH (soil or leachate)	H8 ≤2		7.19	0.00	8.66	0.00	0.00	7.66	6.29	6.57	7.55
Toxic for Reproduction HP10	≥0.3%		0.01088	0.00900	0.01000	0.00688	0.00880	0.08088	0.01788	0.01550	0.01013
Toxic for Reproduction HP10	≥3%		0.00028	0.00019	0.00029	0.00010	0.00015	0.00020	0.00024	0.00021	0.00014
Mutagenic HP11	≥0.1%		0.00039	0.00001	0.00065	0.00001	0.00206	0.00162	0.00073	0.00055	0.00009

If Asbestos in Soil above is "Y", but Asbestos % above is "<0.1%", the soil is Non Hazardous Waste. You can only use Asbestos % results where loose fibres or micro pieces are only present. You cannot use Asbestos % results when visual identifiable pieces are present.

Asbestos in Soil above is "Y", the soil is Hazardous Waste HP5 and HP7

If visual identifiable pieces of asbestos are present, you cannot use Asbestos % results and the whole soil sample is Hazardous Waste HP5 and HP7 Construction material containing Asbestos 17 06 05. Therefore, if Asbestos in Soil above is "Y", the Asbestos % above is "<0.1%", but the Asbestos Identifiable Pieces visible with the naked eye is "Y", the soil is Hazardous Waste.

Identifiable Pieces are Cement, Fragments, Board, Rope etc. ie anything ACM that is not Loose Fibres.

All visual asbestos pieces need to be removed leaving only fibres (or micro pieces) with an Asbestos % Composition in Soil result of <0.1% for the soil to become non-hazardous waste.

Table 3.1 of the CLP, CL Inventory, ATPs, IARC, Concawe, MSDSs, REACH + Pesticide Properties databases. Worst case REACH + MSDS's used for "*" STOT + Acute Toxicity.

Haswaste, developed by Dr. Iain Haslock.

301645 Bloomhouse Lane, Darton

TP/WS/BH			TP02	TP05	TP07	TP07	TP09	TP12	TP13	TP13	TP14
Depth (m)			0.00	0.60	0.30	0.80	0.20	0.00	0.00	0.30	1.50
Envirolab reference			16/00914/2	16/00914/5	16/00914/6	16/00914/7	16/00914/8	16/00914/9	16/00914/11	16/00914/12	16/00914/13
Mutagenic HP11 Unknown TPH with ID	≥1,000mg/kg		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mutagenic HP11 b(a)p marker test (Unknown TPH with ID only)	≥0.01%		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Mutagenic HP11	≥1%		0.00525	0.00768	0.00242	0.00505	0.00424	0.00525	0.00626	0.00646	0.00444
Produces Toxic Gases HP12 Sulphide	≥1,400mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases HP12 Cyanide	≥1,200mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases HP12 Thiocyanate	≥2,600mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HP13 Sensitising	≥10%		0.00679	0.00768	0.00266	0.00561	0.00561	0.00767	0.00626	0.00708	0.00502
Ecotoxic HP14	≥1.0	<0.1% (except CompCN + Thiocyanate + Xylene + BTEX 1%).	0.14547	0.10667	0.10867	0.08856	0.14726	0.44576	0.24508	0.26279	0.12511
Ecotoxic HP14	≥25%	<0.1%	0.03637	0.02667	0.02718	0.02214	0.03705	0.11158	0.06129	0.06573	0.03128
Ecotoxic HP14	≥25%	<0.1% (except CompCN + Thiocyanate + Xylene + BTEX 1%).	0.03662	0.02667	0.02743	0.02214	0.03682	0.11144	0.06149	0.06584	0.03129
Ecotoxic HP14 individual substance specific thresholds (Benzo(a)anthracene, Dibenz(ah)anthracene (or Total PAH if only used))	≥0.0025%		0.000389	0.000008	0.000650	0.000008	0.002060	0.001620	0.000726	0.000549	0.000093
Ecotoxic HP14 individual substance specific thresholds (Co, γ-HCH)	≥0.025%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Persistant Organic Pollutant (PCB, PBB or POP Pesticides)	>0.005%		0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
Persistant Organic Pollutant (Total Dioxins+Furans)	>0.0000015%		0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000
Persistant Organic Pollutant (Individual Dioxins+Furans)	>0.0000015%		0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000

If other contaminants need adding to Haswaste, please contact Envirolab.

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Haswaste, developed by Dr. Iain Haslock.

301645 Bloomhouse Lane, Darton

TP/WS/BH		TP16	TP17	TP18	TP20	TP21	TP23			
Depth (m)		1.10	0.00	0.00	0.00	0.00	0.00			
Envirolab reference		16/00914/15	16/00914/17	16/00914/18	16/00914/19	16/00914/20	16/00914/23			
% Moisture	%									
pH (soil)		7.33	5.10		6.43	6.65	6.64			
pH (leachate)										
Arsenic	mg/kg	34	13	15	5	12	11			
Cadmium	mg/kg	2.8	1.6	1.5	1.7	0.5	0.6			
Copper	mg/kg	91	26	34	13	24	14			
CrVI or Chromium	mg/kg	23	20	20	22	21	16			
Lead	mg/kg	382	40	77	19	152	40			
Mercury	mg/kg	0.02	0.02	0.28	0.22	0.17	0.17			
Nickel	mg/kg	50	21	20	18	18	17			
Selenium	mg/kg	1	2	2	3	1	2			
Zinc	mg/kg	606	98	141	55	57	73			
Barium	mg/kg									
Beryllium	mg/kg									
Vanadium	mg/kg									
Cobalt	mg/kg									
Manganese	mg/kg									
Molybdenum	mg/kg									
Antimony	NEW v5.4di mg/kg									
Tin	NEW v5.4di mg/kg									
PAH (Input Total PAH **OR** individual PAH results)										
Acenaphthene	mg/kg	0.01	0.01	0.01	0.01	3.92	0.01			
Acenaphthylene	mg/kg	0.01	0.01	0.01	0.01	2.09	0.01			
Anthracene	mg/kg	0.02	0.02	0.07	0.02	30.20	0.03			
Benzo(a)anthracene	mg/kg	0.04	0.04	0.33	0.04	42.10	0.14			
Benzo(a)pyrene	mg/kg	0.04	0.04	0.26	0.04	35.60	0.12			
Benzo(b)fluoranthene	mg/kg	0.05	0.05	0.31	0.05	40.80	0.16			
Benzo(ghi)perylene	mg/kg	0.05	0.05	0.16	0.05	16.60	0.05			
Benzo(k)fluoranthene	mg/kg	0.07	0.07	0.16	0.07	23.10	0.07			
Chrysene	mg/kg	0.06	0.06	0.34	0.06	50.60	0.14			
Dibenzo(ah)anthracene	mg/kg	0.04	0.04	0.04	0.04	3.81	0.04			
Fluoranthene	mg/kg	0.08	0.08	0.55	0.08	197.00	0.22			
Fluorene	mg/kg	0.01	0.01	0.01	0.01	7.52	0.01			
Indeno(123cd)pyrene	mg/kg	0.03	0.03	0.20	0.03	18.80	0.04			
Naphthalene	mg/kg	0.03	0.03	0.03	0.03	0.41	0.03			
Phenanthrene	mg/kg	0.03	0.03	0.24	0.03	81.60	0.11			
Pyrene	mg/kg	0.07	0.07	0.46	0.07	137.00	0.19			
Coronene	mg/kg									
Total PAHs (16 or 17)	mg/kg	0.08	0.08	3.06	0.08	692.00	1.13			
TPH										
Petrol	mg/kg									
Diesel	mg/kg									
Lube Oil	mg/kg									
White Spirit / Kerosene	mg/kg									
Creosote	mg/kg									
Unknown TPH with ID	mg/kg									
Unknown TPHCWG	mg/kg	0.1	0.1		0.1	375.0	0.1			
Total Sulphide	mg/kg									
Complex Cyanide	mg/kg									
Free (or Total) Cyanide	mg/kg									
Thiocyanate	mg/kg									
Elemental/Free Sulphur	mg/kg									
Phenols Input Total Phenols HPLC **OR** individual Phenol results.										
Phenol	mg/kg									
Cresols	mg/kg									
Xylenols	mg/kg									
Resourcinol	mg/kg									
Phenols Total by HPLC	mg/kg									
BTEX Input Total BTEX **OR** individual BTEX results.										
Benzene	mg/kg	0.01	0.01		0.01	0.01	0.01			
Toluene	mg/kg	0.01	0.01		0.01	0.01	0.01			
Ethylbenzene	mg/kg	0.01	0.01		0.01	0.01	0.01			
Xylenes	mg/kg	0.01	0.01		0.01	0.01	0.01			
Total BTEX	mg/kg	0.01	0.01		0.01	0.01	0.01			
PCBs (POPs)										
PCBs Total (eg EC7/WHO12)	mg/kg									
PBBs (POPs)										
Hexabromobiphenyl (Total or PBB153; 2,2',4,4',5,5'- if only available)	mg/kg									
POPs Dioxins and Furans Input Total Dioxins and Furans **OR** individual Dioxin and Furan results.										
2,3,7,8-TeCDD	mg/kg									
1,2,3,7,8-PeCDD	mg/kg									
1,2,3,4,7,8-HxCDD	mg/kg									
1,2,3,6,7,8-HxCDD	mg/kg									
1,2,3,7,8,9-HxCDD	mg/kg									
1,2,3,4,6,7,8-HpCDD	mg/kg									
OCDD	mg/kg									
2,3,7,8-TeCDF	mg/kg									
1,2,3,7,8-PeCDF	mg/kg									
2,3,4,7,8-PeCDF	mg/kg									
1,2,3,4,7,8-HxCDF	mg/kg									
1,2,3,6,7,8-HxCDF	mg/kg									
2,3,4,6,7,8-HxCDF	mg/kg									
1,2,3,7,8,9-HxCDF	mg/kg									
1,2,3,4,6,7,8-HpCDF	mg/kg									
1,2,3,4,7,8,9-HpCDF	mg/kg									
OCDF	mg/kg									
Total Dioxins and Furans	mg/kg									

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TP/WS/BH	TP16	TP17	TP18	TP20	TP21	TP23			
Depth (m)	1.10	0.00	0.00	0.00	0.00	0.00			
Envirolab reference	16/00914/15	16/00914/17	16/00914/18	16/00914/19	16/00914/20	16/00914/23			

Some Pesticides (POPs unless otherwise stated)

Aldrin		mg/kg								
α Hexachlorocyclohexane (alpha-HCH) *(leave empty if total HCH results used)*		mg/kg								
β Hexachlorocyclohexane (beta-HCH) *(leave empty if total HCH results used)*		mg/kg								
α Cis-Chlordane (alpha) ***OR*** *Total Chlordane*		mg/kg								
δ Hexachlorocyclohexane (delta-HCH) *(leave empty if total HCH results used)*	New v5.4di	mg/kg								
Dieldrin		mg/kg								
Endrin		mg/kg								
χ Hexachlorocyclohexane (gamma-HCH) (lindane) ***OR*** *Total HCH*		mg/kg								
Heptachlor		mg/kg								
Hexachlorobenzene		mg/kg								
o,p'-DDT *(leave empty if total DDT results used)*		mg/kg								
p,p'-DDT ***OR*** *Total DDT*		mg/kg								
χ Trans-Chlordane (gamma) *(leave empty if total Chlordane results used)*		mg/kg								
Chlordecone (kepone)		mg/kg								
Pentachlorobenzene		mg/kg								
Mirex		mg/kg								
Toxaphene (camphechlor)		mg/kg								

Asbestos in Soil	Thresholds									
Asbestos detected in Soil (enter Y or N)	Y		N	N		N	N	N			
Asbestos % Composition in Soil (Matrix Loose Fibres or Microscopic Identifiable Pieces only)	see "Carc HP7 % Asbestos in Soil (Fibres)" below	%								
Carcinogenic HP7 % Asbestos in Soil (fibres or micro pieces)	≥0.1%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Asbestos in Soil above is "Y", the soil is Hazardous Waste HP5 and HP7

If Asbestos in Soil above is "Y", but Asbestos % above is "<0.1%", the soil is Non Hazardous Waste. You can only use Asbestos % results where loose fibres or micro pieces are only present. You cannot use Asbestos % results when visual identifiable pieces are present.

Asbestos Identifiable Pieces visible with the naked eye detected in the Soil (enter Y or N)	Y								

If visual identifiable pieces of asbestos are present, you cannot use Asbestos % results and the whole soil sample is Hazardous Waste HP5 and HP7 Construction material containing Asbestos 17 06 05. Therefore, if Asbestos in Soil above is "Y", the Asbestos % above is "<0.1%", but the Asbestos Identifiable Pieces visible with the naked eye is "Y", the soil is Hazardous Waste.

Identifiable Pieces are Cement, Fragments, Board, Rope etc. ie anything ACM that is not Loose Fibres.

All visual asbestos pieces need to be removed leaving only fibres (or micro pieces) with an Asbestos % Composition in Soil result of <0.1% for the soil to become non-hazardous waste.

Hazardous Property	Thresholds	Cut Off Value								
Corrosive HP8	≥5%	<1%	0.00449	0.00172	0.00198	0.00066	0.00158	0.00145	0.00000	0.00000	0.00000
Irritant HP4	≥10%	<1%	0.00449	0.00172	0.00198	0.00066	0.00158	0.00145	0.00000	0.00000	0.00000
Irritant HP4	≥20%	<1%	0.02041	0.00721	0.00827	0.00513	0.10103	0.00517	0.00000	0.00000	0.00000
Specifc Target Organ Toxicity HP5	≥1%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Specifc Target Organ Toxicity HP5	≥20%		0.00001	0.00001	0.00031	0.00001	0.06920	0.00011	0.00000	0.00000	0.00000
Specifc Target Organ Toxicity HP5	≥1%		0.01010	0.00424	0.00404	0.00364	0.00364	0.00343	0.00000	0.00000	0.00000
Specifc Target Organ Toxicity HP5	≥10%		0.07575	0.01225	0.01763	0.00688	0.03750	0.00913	0.00000	0.00000	0.00000
Aspiration Toxicity HP5	≥10%		0.00002	0.00002	0.00000	0.00002	0.03751	0.00002	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.1%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.25%	<0.1%	0.00449	0.00172	0.00201	0.00068	0.00160	0.00147	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥5%	<0.1%	0.00014	0.00028	0.00028	0.00042	0.00014	0.00028	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥25%	<1%	0.13464	0.02361	0.03375	0.01407	0.12603	0.01835	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.25%	<0.1%	0.00000	0.00000	0.00003	0.00002	0.00002	0.00002	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥2.5%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥15%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥55%	<1%	0.00028	0.00016	0.00015	0.00017	0.00005	0.00006	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.1%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.5%	<0.1%	0.00028	0.00016	0.00018	0.00019	0.00007	0.00008	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥3.5%	<0.1%	0.00014	0.00028	0.00028	0.00042	0.00014	0.00028	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥22.5%	<1%	0.12405	0.02050	0.02937	0.01241	0.02596	0.01656	0.00000	0.00000	0.00000
Carcinogenic HP7	≥0.1%		0.03820	0.00590	0.00770	0.00649	0.06920	0.00472	0.00000	0.00000	0.00000
Carcinogenic HP7	≥0.1%		0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000
Carcinogenic HP7	≥1%		0.00001	0.00001	0.00031	0.00001	0.06920	0.00011	0.00000	0.00000	0.00000
Carcinogenic HP7 Unknown TPH with ID	≥1,000mg/kg		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carcinogenic HP7 b(a)p marker test (Unknown TPH with ID only)	≥0.01%		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
pH Corrosive HP8 pH (soil or leachate)	H8 ≥11.5		7.33	5.10	0.00	6.43	6.65	6.64	0.00	0.00	0.00
pH Corrosive HP8 pH (soil or leachate)	H8 ≤2		7.33	5.10	0.00	6.43	6.65	6.64	0.00	0.00	0.00
Toxic for Reproduction HP10	≥0.3%		0.07575	0.01225	0.01763	0.00688	0.06920	0.00913	0.00000	0.00000	0.00000
Toxic for Reproduction HP10	≥3%		0.00028	0.00016	0.00015	0.00017	0.03750	0.00006	0.00000	0.00000	0.00000
Mutagenic HP11	≥0.1%		0.00001	0.00001	0.00031	0.00001	0.06920	0.00011	0.00000	0.00000	0.00000

Table 3.1 of the CLP, CL Inventory, ATPs, IARC, Concawe, MSDSs, REACH + Pesticide Properties databases. Worst case REACH + MSDS's used for "*" STOT + Acute Toxicity.

Haswaste, developed by Dr. Iain Haslock.

301645 Bloomhouse Lane, Darton

TP/WS/BH			TP16	TP17	TP18	TP20	TP21	TP23			
Depth (m)			1.10	0.00	0.00	0.00	0.00	0.00			
Envirolab reference			16/00914/15	16/00914/17	16/00914/18	16/00914/19	16/00914/20	16/00914/23			
Mutagenic HP11 Unknown TPH with ID	≥1,000mg/kg		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mutagenic HP11 b(a)p marker test (Unknown TPH with ID only)	≥0.01%		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Mutagenic HP11	≥1%		0.01010	0.00424	0.00404	0.00364	0.06920	0.00343	0.00000	0.00000	0.00000
Produces Toxic Gases HP12 Sulphide	≥1,400mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases HP12 Cyanide	≥1,200mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases HP12 Thiocyanate	≥2,600mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HP13 Sensitising	≥10%		0.01010	0.00590	0.00590	0.00649	0.06920	0.00472	0.00000	0.00000	0.00000
Ecotoxic HP14	≥1.0	<0.1% (except CompCN + Thiocyanate + Xylene + BTEX 1%).	0.58438	0.12622	0.16850	0.08684	0.67390	0.09963	0.00000	0.00000	0.00000
Ecotoxic HP14	≥25%	<0.1%	0.14610	0.03156	0.04215	0.02171	0.17289	0.02492	0.00000	0.00000	0.00000
Ecotoxic HP14	≥25%	<0.1% (except CompCN + Thiocyanate + Xylene + BTEX 1%).	0.14611	0.03157	0.04213	0.02172	0.20223	0.02492	0.00000	0.00000	0.00000
Ecotoxic HP14 individual substance specific thresholds (Benzo(a)anthracene, Dibenz(ah)anthracene (or Total PAH if only used))	≥0.0025%		0.000008	0.000008	0.000306	0.000008	**0.069200**	0.000113	0.000000	0.000000	0.000000
Ecotoxic HP14 individual substance specific thresholds (Co, γ-HCH)	≥0.025%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Persistant Organic Pollutant (PCB, PBB or POP Pesticides)	>0.005%		0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
Persistant Organic Pollutant (Total Dioxins+Furans)	>0.0000015%		0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000
Persistant Organic Pollutant (Individual Dioxins+Furans)	>0.0000015%		0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000

If other contaminants need adding to Haswaste, please contact Envirolab.