



**COMBINED STAGE 1/STAGE 2
GEO-ENVIRONMENTAL REPORT**

**AT
COCKLEY HILL LANE
KIRKHEATON

ON BEHALF OF
GLEESON HOMES LTD**

ARP GEOTECHNICAL LTD

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1.0 EXECUTIVE SUMMARY

The pertinent conclusions of the report are tabulated below. However, the information below is not exhaustive, and it is recommended the report is read in its entirety.

Proposed Development	Residential dwellings with private gardens.
Existing Site Description	Mainly a large sloping grassed agricultural field. In the eastern corner is a triangular shaped wooded area, separated from the field area by a gravel access road. In the southwestern corner is a cover of hardstanding, and sporadic young to mature trees. Ground levels slope downwards from northeast to southwest. The site is steeper in the northeast, and less steep in the southwest, with a maximum gradient of around 1 in 5.
Site History	Majority of site has remained undeveloped. A coal seam has been worked by opencasting, across the central portion, and a small portion of the southwest was quarried for sandstone, which later had a small building and associated car parking. A triangular area on the east once had cluster of small buildings. A well (and later trough) was present at or close to where the site abuts Shop Lane.
Published Geology	Majority of the site underlain by undifferentiated strata of the Lower Coal Measures. Southwestern and northwestern areas of the site shown to be underlain by Grenoside Sandstone. Better Bed Coal seam outcrops on the site. Fault crosses the south of the site, from west to northeast.
Coal Mining	Deep fill present from opencast coal mining, with potential shallow underground workings north and west of this. Also potential for crop workings and bell pits. 9m drill and grout grid recommended for parts of the site, closing to 3m where workings with insufficient cover are found.
Hydrogeology	'Secondary A' Aquifer. No sensitive abstractions within 1km.
Hydrology	Nearest watercourse is 800m to the southwest. No active abstractions within 1km. Not at risk of river flooding.

Harmful Gases	CS2 gas protection measures required, comprising a membrane and ventilated sub floor void. This will also protect against radon.
Ground Conditions	Up to 0.35m of topsoil across most of site, overlying clays and gravels from weathering of solid strata (mudstone and sandstone). Backfilled opencast across the centre. Backfilled sandstone quarry across the southwest. Rubble present on the eastern triangle.
Contamination	Only confirmed soil contamination source is demolition rubble in the eastern triangle - elevated arsenic, copper, lead, PAH. Slab in southwest corner of the site prevented sampling.
Remediation Strategy	Affected area is proposed for POS. Where only turf is proposed, provide 0.3m thickness of clean soil. In any proposed planted areas, 0.6m thickness should be provided. Alternatively, the made ground could be removed from site. Investigate below the slab in the southwest if the slab is to be removed.
Foundations	Strip/trench fill foundations across majority of the site (reinforced if/where coal workings treated). Piles in the opencast area.
Excavations	Likely to remain stable in natural strata, unstable in made ground. Localised groundwater should be controllable by pumping.
Concrete	GEN1 designation for unreinforced buried concrete away from any made ground. FND3z designation for unreinforced buried concrete in contact with made ground. For any reinforced concrete, other design-specific mixes will apply.
Soakaways	Disposal of surface water using soakaways is unlikely to be feasible on the site due to the widespread presence of clay soils, and the potential for soakaway drainage to reappear downslope
Road Pavement	A formation on natural strata is unlikely to be possible on the backfilled opencast area. On the rest of the site, a design CBR value of 2% is considered applicable on the clays and 20% on the weathered sandstone gravel areas on the west. If considered necessary, this should be confirmed by testing at proposed subgrade level before construction.

Slope Stability	If the slopes are steepened or subjected to unusual localised loads, stability may be affected and retaining walls required.
Old Well	A well was once indicated at the far southwestern boundary, later becoming a "trough". If present on the site, and if the feature is a well, depending on its condition, it may need to be filled with single size stone and provided with a reinforced concrete cap. If the feature is producing water at the surface, this will need to be picked up as part of any drainage design for the site.

2.0 TERMS OF REFERENCE

- 2.1 Gleeson Homes Ltd is considering developing the site at Cockley Hill, Lane, Kirkheaton with residential properties. It was considered appropriate to implement a desk study and ground investigation to provide information to aid the planning process, viability assessment, and design of any subsequent development.
- 2.2 ARP Geotechnical Ltd was appointed by Gleeson Homes Ltd to carry out the investigation, which involved a desk study assessment of the geological and coal mining aspects, Ordnance Survey archive maps, radon gas, indicative flood risk, hydrogeology, landfill, and other environmental issues, primarily by assessment of a Landmark Envirocheck Report. This was supplemented by an intrusive investigation to assess the ground conditions.
- 2.3 To assist with the investigation, information within two previous reports by ARP were permitted by the landowner to be used; "Stage 2 Geo-environmental Report" dated January 2017 (report reference CKD/01r1) and "Combined Stage 1/Stage 2 Geo-environmental Report" dated March 2019 (reference CKD/02r1). These reports covered two smaller adjacent sites than the current site. Along with additional area, these two sites are now to form a single development site. Information from the two reports has, therefore, been compiled and updated, along with information from further recent investigation (August 2025) to form a single report (this report).
- 2.4 The investigations were implemented generally in accordance with BS 5930:2015 +A1:2020 "Code of practice for site investigations", NHBC Standard Chapter 4.1 "Land quality - managing ground conditions", Environment Agency LCRM "Land Contamination Risk Management" and BS10175: 2011 + A2 : 2017 "Investigation of potentially contaminated sites - Code of practice". This report is limited to the data obtained as part of this investigation. It should be noted that there is a possibility of variation in ground conditions between test locations and interpretation of strata is given for guidance only. No liability is accepted for changes to site conditions, including groundwater levels, after the preparation of this report.

- 2.5 The general observation and assessment of the ground surface, and the identification/classification of vegetation is made in general terms only. It would be prudent for a specialist to undertake a more detailed survey, including for any invasive/harmful weeds.
- 2.6 The assessment of any topsoil is carried out in terms of potential chemical effects on human health only, and no account is taken of aesthetic or horticultural properties. Such considerations should be referred to a horticulturist or landscape architect.
- 2.7 The report has been prepared for the use and reliance of the Client only. The report shall not be relied upon or transferred to any other parties without the written agreement of ARP Geotechnical Ltd. For the avoidance of any doubt, where ARP Geotechnical Ltd enters into a letter of reliance for the benefit of a third party, that third party will be permitted to rely on the report. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party without ARP Geotechnical Ltd.'s consent.
- 2.8 Attention is drawn to the requirements of the Construction Design and Management Regulations 2015, and in particular the duties and obligation of the Client.
- 2.9 The report refers to, and includes a copy of an indicative proposed layout. This is only for the purposes of generating a conceptual site model for the contamination risk assessment. Unless the proposed layout changes significantly, such that the conceptual model and risk assessment is affected, there is no requirement to re-issue this report when the layout is revised.

3.0 SITE DESCRIPTION

Site Location

- 3.1 The site, which is centred on Ordnance Survey Grid Reference 41827, 41794, is located between Cockley Hill Lane and Shop Lane, in the village of Kirkheaton, approximately 4km to the east of Huddersfield Town centre.
- 3.2 A site location plan and aerial photograph are presented in Appendix A.
- 3.3 Walkover surveys were carried out by ARP on all but the southeastern area of the site (which did not previously form part of the proposed site) during the ground investigations on the other areas of the site, in the summer of 2016 and February 2019, and in August 2025.
- 3.4 The site is irregular in shape, with the southeastern area (approximately 80m x 100m) proposed to be occupied by public open space and a surface water attenuation pond, and the southwestern protruding area (approximately 120m x 50m) proposed to comprise an area of public open space. The main development area (approximately 210m x 70m) is to the north of these areas.

On-Site Features

- 3.5 At the time of the investigation, the site mainly comprised a large sloping grassed agricultural field which was grazed by cattle. The site was accessed through the field gate in the north of the site, from Cockley Hill Lane, which is adjacent to the northeast.
- 3.6 In the eastern corner of the site is a triangular shaped wooded area (approximately 2,000m² in size), which is separated from the field area by a gravel covered access road to a third-party residential property located adjacent to the southeast of the site. In the central and southern portions of the site, the slope has a lower gradient, and the ground surface is waterlogged, with reed beds present. On the southwestern corner of the site, there is a cover of hardstanding, with a sporadic covering of young to mature trees. The maximum site gradient is around 1 in 5.

Site Boundaries and Surrounding Land Use

- 3.7 The site is mainly surrounded by residential properties, except for some fields to the south. Cockley Hill Lane forms most of the northeastern boundary, and the southwestern corner of the site adjoins Shop Lane and Orchard Road (the junction of which is adjacent to the site).

Site History

- 3.8 Ordnance Survey archive maps were obtained for the site as part of the 2019 report by ARP. Copies of the maps are included in Appendix B, and a summary of the findings is given below. It should be noted that the pink boundary shown on the maps is the site boundary as proposed in 2019, and the 2025 boundary covers a much larger area. This has been taken into account for the summary below.

Map Date	On-Site	Off-Site
1854-1855	No development is shown on the site, which comprises several agricultural fields.	Residential development of Kirkheaton village is shown to the north, west and south. 'Sandstone Quarry' is shown at 20m to the west of the site but does not encroach on to the site. A 'Well' is shown, just beyond the southwestern corner of the site.
1893	Access road to 'Broom Field' is shown to cross the eastern corner of the site. A public footpath is shown to cross the southern area of the site from northeast to southwest (from Cockley Hill Lane to Shop Lane). The adjacent 'Quarry' is now shown to encroach onto the southwest portion of the site.	Further residential development is shown, associated with Kirkheaton village, including 'The Knowle', comprising a large detached property with several smaller buildings, located adjacent to the west of the site. A 'Cloth Mill' is now shown at 160m to the west, comprising several large buildings and a well. A 'Quarry' extends to the south from the site's southwest corner. The 'Well', at the southwest corner of the site, is now shown as 'Trough'.
1894	No significant changes.	The quarry which extended to the south of the site is no longer shown.

1907	There is no longer any indication of quarrying on the site.	The quarry to the west is no longer shown and the area is now occupied by trees and provides access to 'The Knowle' from Shop Lane.
1919	A small roofed building can be seen on the eastern triangular area of the site, which abuts Cockley Hill Lane.	No significant changes.
1930-1931	On the southwest corner of the site, on the western tip of the former quarried area, a small roofed building is shown.	Further residential development is shown associated with Kirkheaton village typically to the north, west and southwest of the site.
1961	Further development is shown on the northeastern triangular area of the site, possibly comprising small agricultural buildings associated with 'Jidroyd' adjacent to the east.	No significant changes.
1970	No significant changes.	'Cuckstool' is no longer shown. Further residential development is shown around Kirkheaton village, including adjacent and to the south of the site at 'Orchard Road'.
1989	On the southwest of the site, to the northeast of the small building, an enclosed area, extends around 50m into the site from the rear of the building. A small (bus) 'Shelter' is shown on the southwestern tip of the site.	No significant changes.
2009 (Aerial Imagery)	The small building on the southwest of the site is no longer shown and the area adjacent to the northeast is shown with a cover of hardstanding and used for car parking.	The cloth/textile mill, on the opposite side of Shop Lane to the west of the site, is shown as demolished to slab level.
2016 and later	The hardstanding in the southwest appears overgrown and no longer in use as a car park.	No significant changes.

3.9 In summary, the maps indicate the majority of the site has remained undeveloped. A coal seam has been worked by opencast across the central portion and a small portion of the southwest of the site was quarried for sandstone rock, later occupied by a small building and associated car parking. A triangular area on the east of the site was developed with a cluster of small buildings, demolished sometime prior to 1994. A well (and later trough) was present at or close to where the site abuts Shop Lane.

4.0 ENVIRONMENTAL SETTING

Geology

- 4.1 Extracts from the British Geological Survey 1:50,000 Series Geology Maps are included within the Envirocheck Geology Report in Appendix C. It should be noted that the pink site boundary marked on the maps only marks the southern portion of the site, with the remainder of the current site boundary adjacent to the north of this. In addition, publicly available digital data, and the 1:10,000 scale paper geological map SE11NE have been assessed. The maps show the majority of the site to be underlain by undifferentiated strata of the Pennine Lower Coal Measures (mudstone, siltstone and sandstone). The southwestern area of the site is shown to be underlain by Grenoside Sandstone, as well as the northwestern margins of the site. Drift deposits are shown to be absent from the site.
- 4.2 A curving geological fault is shown to cross the south of the site, aligned west to east-northeast, with the downthrown strata to the south of the fault.
- 4.3 A coal seam (The Better Bed) is conjectured to outcrop roughly north to south, in the western half of the site, and dipping to the east. The seam is reported to be 0.5m thick on the vertical section provided with the 1:10,000 scale map. The seam will underlie the site east of the outcrop. A rectangular area of made ground is indicated to be present on the eastern half of the site, with repetition of the Better Bed seam outcrop around its edges. This is consistent with the Better Bed having been worked by opencasting in the area of made ground.

Coal Mining

- 4.4 A CON29M Coal Mining Report was obtained by ARP in 2019 for the southern part of the site, and by Sirius for the north of the site, as part of their 2013 Desk Study. For the Sirius area, the report stated that the site was not affected by any recorded underground coal workings, but there was believed to be coal at or close to the surface which may have been worked

(before statutory mine plans were required, therefore unrecorded). There were no known coal mine entries on or within 20m of the site, but unrecorded entries may exist. The site was recorded as being affected by opencast mining (confirming the geological maps). Sirius obtained an abandonment plan from the Coal Authority, and this is stated to show the seam is 0.5m thick and was opencast to depths of between 5m and 12m on the site. There is also a 0.75m thick fireclay band 1m beneath the seam, and the dip is recorded as 2 degrees to the southeast. There is no indication the fireclay has been worked.

- 4.5 For the southern area of the site, the CON29M report is presented in Appendix D. The report essentially repeats the findings of the report obtained by Sirius, as the geology is similar, and both areas are affected by opencasting.
- 4.6 It was evident from the above that there was the possibility of unrecorded shallow workings, and it was concluded that this would need to be assessed by an intrusive investigation using a rotary drilling rig. The investigation was subsequently carried out and is discussed in detail in later sections of this report.

Coal Recovery

- 4.7 The Better Bed coal seam is likely to be present at shallow depth east of the outcrop on the site. However, as the seam has already been worked by underground methods on the site, followed by opencast workings, it is unlikely that any commercially viable deposits remain. If viable deposits were available during the opencast workings, they are highly likely to have been taken at that time.

Mineral Workings

- 4.8 The Envirocheck Report indicates that there are several BGS Recorded Mineral Sites close to the area, typically relating to the Pennine Lower Coal Measures Formation and associated strata. However, the site itself is not within such a zone, and the nearest confirmed recorded activity is over 50m distance from the site. Although not indicated in the Envirocheck Report, a small portion of the southwest of the site is recorded as being worked at the surface for sandstone rock.

Hydrogeology

- 4.9 The Landmark Envirocheck Report, included in Appendix E, indicates the Bedrock Aquifer Designation to be 'Secondary A' Aquifer. These Aquifers comprise "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"
- 4.10 There are no sensitive groundwater abstractions within 1km of the site.
- 4.11 The site is not within a groundwater Source Protection Zone.

Hydrology

- 4.12 The ground on the site and surrounding area, slopes down to the south and southwest. Any surface water run-off is likely to be intercepted by the road drainage of Shop Lane, or adjoined residential side roads, probably eventually reaching Oxfield Beck approximately 800m to the southwest.
- 4.13 The site is not in an area at risk from river flooding. The risks of flooding from other causes such as adverse topography or insufficient surface water drainage, are not considered here. If such risk needs to be quantified, a separate specialist Flood Risk and Drainage Report should be commissioned, if not already available. BGS data indicates the general area has "limited potential for groundwater flooding to occur".
- 4.14 There are no surface water abstractions within 1km of the site.

Other Environmental Data

- 4.15 The Landmark Envirocheck Report, included in Appendix E, contains information on numerous environmental aspects. A summary of the pertinent findings, not already covered, with additional comments, is given below.
- 4.15.1 There are no Pollution Control Authorisations within 500m of the site.
- 4.15.2 There are no discharge consents relating to, or adjacent to, the site.
- 4.15.3 There are no closed or currently licenced landfills within 250m of the site.
- 4.15.4 No radon protective measures are stated to be necessary for new dwellings on the site, although the southwestern portion of the site is in an intermediate probability radon area, as between 1% and 3% of homes are above the action level. In these circumstances of apparent conflict, conveyancing difficulties can sometimes occur during sale of properties. It may be prudent to assume basic radon protection is required, to prevent such difficulties. This is normally achieved by incorporating a radon barrier within a solid floor system and extending the barrier through the cavity wall.
- 4.15.5 There are no contemporary trade directory entries relating to any activities which could have significant impact on the site.
- 4.15.6 There is one fuel station entry within 250m of the site located at 215m to the southwest, however, the status is shown as 'obsolete'.

5.0 PRELIMINARY RISK ASSESSMENT AND CONCEPTUAL MODEL

5.1 Part II A of the Environmental Protection Act (EPA) 1990 became effective from 1st April 2000. The Regime was introduced by the Contaminated Land (England) Regulations 2000 (SI 2000, No. 227) along with the associated DEFRA Circular February 2000.

5.2 Section 78A (2) of the Act defines "Contaminated land is any land in such a condition, by reason of substances in, on or under that land that –

(a) significant harm is being caused or there is a significant possibility of such harm being caused; or

(b) pollution of controlled waters is being caused, or there is a significant possibility of such pollution being caused".

From S78A (4) "Harm" : means harm to the health of living organisms or other interference with the ecological systems of which they form part and, in the case of man, includes harm to his property.

Controlled waters are defined as "..the waters in any relevant lake or pond, or of so much of any relevant river or watercourse as is above the freshwater limit, and ground waters, that is to say, any waters contained in underground strata". From the 1st October 2004, the definition of groundwater in relation to Part IIA was amended, by the Second Water Act Commencement Order SI 2004 No 2528. This makes clear that "ground waters" does not include waters above the saturation zone, i.e. does not include any soil water and pore water present in the unsaturated zone.

5.3 The objectives of the regime are to ensure that risks associated with contaminated land are reduced to an acceptable level, having regard to the costs of doing so. The costs should be proportionate, manageable and economically sustainable.

- 5.4 In assessing risk, it is necessary to consider the probability, or frequency, of occurrence of the hazard and the magnitude/seriousness of the consequences. Consequently, for land to be classified as contaminated, it must have, or be very likely to have, a detrimental effect on humans or the environment before it can be classified as contaminated land.
- 5.5 In establishing risk, the concept of the pollutant source/pathway/receptor linkage model, based on current and proposed site use, is to be considered. Therefore, for a site to be deemed contaminated under the Regime, all three linkages must be in place i.e. the site must not only contain harmful substances, but the substances must have a pathway by which to leak out and cause significant harm to a receptor.
- 5.6 The Environment Agency has published guidance on contaminated land, in the form of online documents referred to as LCRM "Land Contamination Risk Management". The documents are intended to provide the technical framework for structured decision making about land contamination, and to assist all those involved in "managing" the land, in particular landowners, developers, financial service providers, planners and regulators. As the documents currently provide the framework for best practice, the general principles are, therefore, followed in conducting the assessment below.
- 5.7 The categorisations of risk adopted in this report are adapted from CIRIA Report C552 (Contaminated Land Risk Assessment: A Guide to Good Practice, 2001). This approach assesses the potential severity of any pollution event and the probability of the event occurring, to arrive at a risk category, for the various potential source - pathway - receptor linkages. The relevant tables used, with the definitions, are presented in Appendix F.

Conceptual Site Model

- 5.8 It is known that the site is proposed for residential properties with private gardens. An indicative proposed site layout is presented in Appendix G. The site is shown to be underlain by undifferentiated strata of the Pennine Lower Coal Measures, with no drift cover, except for areas on the west, which are underlain by sandstone. The solid strata beneath the site

are designated a 'Secondary A' Aquifer. There are no sensitive groundwater abstractions within 1km of the site. The nearest surface water is Oxfield Beck located approximately 800m to the southwest. There are no surface water abstractions within 1km of the site.

5.9 The maps indicate the majority of the site has remained undeveloped. A small portion of the southwest of the site was quarried for sandstone rock and later occupied by a small building and associated car parking. A triangular area on the east of the site was developed with a cluster of small buildings, demolished sometime prior to 1994. A well (and later trough) was present at, or close to where the site abuts Shop Lane. Although not indicated on the Ordnance Survey archive maps, the geological records and Coal Authority abandonment plans indicate that opencast coal mining has been carried out on the eastern half of the site. The most likely contamination sources are considered to be:

5.9.1 Possible contaminated material placed in the backfilled opencast workings across the central portion of the site (although unlikely - the material is probably inert natural arisings) - metals, inorganics, TPH, PAH, phenol, asbestos.

5.9.2 Possible contaminated material placed in the backfilled sandstone workings encroaching on the southwest of the site (although unlikely - the material is probably inert sandstone arisings of less economic value i.e. sand, gravel and cobbles of sandstone) - metals, inorganics, TPH, PAH, phenol, asbestos.

5.9.3 Possible made ground associated with the limited areas of former development on the southwest and east of the site - metals, inorganics, TPH, PAH, phenol, asbestos.

5.9.4 Possible (unlikely) made ground on the rest of the site - metals, inorganics, TPH, PAH, phenol, asbestos.

5.9.5 Possible landfill and mine gases from historical backfilled opencast workings and shallow mining - carbon dioxide, methane.

5.10 The conceptual model needs to consider sources of contamination, pathways along which contaminants could migrate and the receptors, which may become exposed. Guidance published by the Environment Agency has been consulted with regard to pathways and receptors. The potential sources, pathways, and receptors, applicable to the proposed development are identified on the table below. Any pathways in italics are deemed not to be viable, and the reason given.

Potential Source - Pathway - Receptor Matrix (Finished Development)

Contamination Sources	Pathways	Receptors	Severity of Consequence	Probability of Event	Risk
Backfilled opencast coal and sandstone workings: - metals, inorganics, TPH, phenols Possible made ground on areas of former development: - metals, inorganics, TPH, phenols Possible (unlikely) general made ground: - metals, inorganics, TPH, phenols	<ul style="list-style-type: none"> Inhalation, ingestion and dermal contact with soil and dust 	Humans: - <ul style="list-style-type: none"> Future occupants Maintenance workers Adjacent residents and general public 	Medium	Low Likelihood	Moderate/Low
	<ul style="list-style-type: none"> Fruit and vegetable intake, with soil 	Humans (as above)	Medium	Low Likelihood	Moderate/Low
	<ul style="list-style-type: none"> Vapour inhalation outdoor 	Humans (as above)	Medium	Low Likelihood	Moderate/Low
	<ul style="list-style-type: none"> Vapour inhalation indoor 	Humans (as above)	Medium	Low Likelihood	Moderate/Low
	<ul style="list-style-type: none"> Migration in surface water 	<ul style="list-style-type: none"> Surface water (nearest downslope 800m away). No abstractions 	Mild	Unlikely	Very Low
	<ul style="list-style-type: none"> Migration in groundwater (old well to southwest is a potential pathway) 	<ul style="list-style-type: none"> Groundwater (Secondary A Aquifer, no sensitive abstractions) 	Mild	Unlikely	Very Low
	<ul style="list-style-type: none"> Root uptake 	Vegetation: - <ul style="list-style-type: none"> Landscape areas Private gardens 	Medium	Low Likelihood	Moderate/Low
	<ul style="list-style-type: none"> Migration 	Services/Utilities: - <ul style="list-style-type: none"> Potable water supply 	Medium	Low Likelihood	Moderate/Low
Backfilled opencast, possible shallow workings/coal: - methane, carbon dioxide	<ul style="list-style-type: none"> Asphyxiation Explosive risk 	<ul style="list-style-type: none"> Construction/demolition workers Future occupants Buildings 	Severe	Low Likelihood	Moderate
Possible asbestos within any made ground	<ul style="list-style-type: none"> Inhalation 	<ul style="list-style-type: none"> Future occupants Maintenance workers Adjacent residents and general public 	Severe	Low Likelihood	Moderate

- 5.11 The above matrix indicates there are several potential source – pathway – receptor linkages applicable to the proposed development, ranging from moderate to very low risk.
- 5.12 The assessment was used to inform the design of the subsequent ground investigations. To fully characterise the site, in accordance with BS10175: 2011 + A2: 2017 "Investigation of potentially contaminated sites - Code of practice", and to address the above concerns, it was decided that, in addition to geotechnical information required, the site investigation should include:
- 5.12.1 Trial pit and windowless sampling borehole implemented on a grid basis, preferably 25m spacing.
 - 5.12.2 Samples of the made ground issued for testing for a broad suite of determinands, including metals, inorganics, asbestos, phenols, speciated PAH, and TPH.
 - 5.12.3 Landfill gas monitoring, due to the presence of historical backfilled opencast coal and sandstone workings and shallow coal seams/mining.
 - 5.12.4 Upon receipt of contamination test results, any elevated TPH would be speciated to allow further risk assessment, and leachability testing undertaken on all elevated determinands, to give indication of mobility.

6.0 SITE INVESTIGATIONS

July 2016

- 6.1 A site investigation was undertaken by ARP Geotechnical Ltd in July 2016. The investigation covered the northwestern half of the current site area. The purpose of the investigation was to produce an assessment of the site in accordance with BS10175: "Investigation of potentially contaminated sites - Code of practice", and to provide geotechnical information to aid design of the development.
- 6.2 Trial pits were excavated and sampled on a 25m to 50m spacing, to satisfy the requirements of the British Standard. Twelve trial pits (TP1 to TP12) were excavated, to depths of between 1.1m and 3.5m. Three hand-excavated trial pits (H1 to H3), were excavated to 0.2m depth. The trial pits were organised, supervised and logged by an Engineer from ARP Geotechnical Ltd. The rationale for the trial pit locations is given below.

LOCATION	REASON
TP1	Target backfilled opencast
TP2 to TP4	Part of grid
TP5	Target edge of backfilled opencast
TP6 to TP11	Part of grid
TP12	Target line of conjectured outcrop (Better Bed coal)
H1 to H3	Part of grid, and to obtain soil samples to be tested for arsenic bio accessibility

- 6.3 Two cable percussive boreholes were drilled within the backfilled opencast workings in the east, primarily in order to determine the geotechnical properties of the deeper made ground, to depths of 5.5m and 7.8m.

- 6.4 Thirteen rotary boreholes (R1 to R10 and R1A, R3A and R5A) were drilled, by Ground Support Services (UK) Ltd, on 2nd August 2016, to depths of between 3m and 18m below existing ground levels, to check for the presence of any coal seams and associated coal workings. Due to the risk of mines/coal gas migration to adjacent dwellings, boreholes were drilled using full water flush techniques. The boreholes were organised and supervised by an Engineer from ARP Geotechnical Ltd and logged by the foreman driller.
- 6.5 Five gas monitoring wells were installed in R1A, R3A, R5A, CP1 and CP2, and subsequently monitored by ARP Geotechnical Ltd. The wells in the rotary boreholes were installed to 3m depth, with the bottom 2m comprising slotted pipe with gravel surround, and the upper 1m comprising plain pipe with bentonite seal and lockable flush cover. Wells were also installed into the cable percussive boreholes – one well to 5m depth, with the bottom 4m comprising slotted pipe with gravel surround, the upper 1m comprising plain pipe with bentonite seal, and one well to 7.5m depth, with the bottom 4.5m comprising slotted pipe with gravel surround and the upper 3m comprising plain pipe with bentonite seal. All wells were provided with lockable flush covers.
- 6.6 The Investigation Location Plan and logs are included in Appendix H.
- 6.7 Chemical analysis of twelve soil samples for metals, inorganics, speciated PAH, TPH, phenols, and asbestos was undertaken by the UKAS accredited Derwentside Environmental Testing Services (DETS) laboratory in Consett. Elevated determinands were tested further for leachability to determine the potential mobility of the contaminants. Chemical analysis of a further three soil samples was undertaken for arsenic bio accessibility. The test certificates are included in Appendix J.
- 6.8 Analysis for Atterberg Limits and moisture content was undertaken by the UKAS accredited Professional Soils Laboratory (PSL) in Doncaster. Geochemical testing comprising pH and water-soluble sulphate was undertaken by DETS. The test certificates are included in Appendix J.

February 2019

- 6.9 A site investigation was undertaken by ARP Geotechnical Ltd in February 2019. The investigation covered approximately three quarters of the southeastern half of the current site area. The purpose of the investigation was to produce an assessment of the site in accordance with BS10175: 2011 + A2: 2017 "Investigation of potentially contaminated sites - Code of practice", and to provide geotechnical information to aid design of the development.
- 6.10 To satisfy the requirements of the British Standard, the site was gridded on a maximum 25m spacing and trial pits and windowless sampling boreholes were implemented and sampled on the grid, along with any targeted locations. Eight trial pits (TP1 to TP8) were excavated, to depths of between 0.7m and 3.2m. Seven window sample boreholes (WS1 to WS7) were drilled, to depths of between 2.1m and 5.45m. One dynamic probe (DP1) was carried out, to 10m depth. The investigation was organised, supervised and logged by an Engineer from ARP Geotechnical Ltd. The rationale for the investigation locations is given below.

LOCATION	REASON
All TP & WS	Part of the grid
TP1 & WS7	Also targeting the area of former buildings on the east
TP2 & TP4	Also defining the lateral extent of the infilled opencast workings
TP3 & WS5	Also targeting the centre of the infilled opencast workings
TP5 to TP7	Also defining the lateral extent of the infilled sandstone quarry
TP8 & WS1	Also targeting the deeper area of the infilled sandstone quarry
DP1	Targeting the infilled opencast workings, adjacent to WS5

- 6.11 Four gas monitoring wells were installed, in WS1, WS3, WS5 and WS7, and subsequently monitored by ARP Geotechnical Ltd. The wells were installed to depths of between 2m and 5m, with the upper 1m comprising plain pipe with bentonite seal and lockable flush cover and the lower sections comprising slotted pipe with gravel surround.

- 6.12 The trial pit, borehole and dynamic probe logs are included in Appendix H, along with the location plan.
- 6.13 Chemical analysis of 19 soil samples for metals, inorganics, speciated PAH, TPH, phenols, and asbestos was undertaken by the UKAS accredited Chemtech Environmental Ltd laboratory in Consett, County Durham. Elevated determinands were tested further for leachability to determine the potential mobility of the contaminants. The test certificates are included in Appendix J.
- 6.14 Analysis for Atterberg Limits, moisture content, pH and water-soluble sulphate was undertaken by the UKAS accredited Professional Soils Laboratory (PSL) in Doncaster. The test certificates are included in Appendix J.

May 2019

- 6.15 Fourteen rotary boreholes (R101 to R114) were drilled by Groundsource Drilling and Contracting Ltd on 9th and 10th May 2019, to depths of between 9m and 18m below existing ground level. The investigation was designed, organised and supervised by ARP, and boreholes were logged by both the Engineer and the lead driller. The borehole location plan and logs are included in Appendix H, along with indicative cross sections.
- 6.16 All rotary borehole locations were well over 50m distance from occupied buildings, and as a consequence they were drilled using air flush techniques. No elevated gas levels were detected during the drilling works.

September 2025

- 6.17 A site investigation was undertaken by ARP Geotechnical Ltd on 1st September 2025. The purpose of the investigation was to provide additional information on a new area of land added to the site since 2019, in which a surface water attenuation basin was to be constructed as part of the proposed development, and to improve the resolution of the previous investigations. In addition, surface water monitoring pipes would be installed into boreholes to provide information on groundwater levels.

- 6.18 Seven windowless sample boreholes were implemented, referenced WS08 to WS14, to depths of between 1.36m and 5.43m below existing ground levels. The borehole location plan and logs are included in Appendix H.
- 6.19 Monitoring wells were installed into WS08 to WS11, to depths of between 1.5m and 5.0m. The response zones comprising slotted pipe with gravel surround, from a depth of 0.5m to the base of each hole. The upper 0.5m comprised plain pipe with bentonite seal surround, capped by a bung, tap, and locking flush cover.

7.0 SUMMARY OF GROUND CONDITIONS

7.1 The trial pits revealed between 0.1m and 0.35m cover of dark greyish brown slightly clayey, sandy, sometimes gravelly topsoil, in which the gravel component included sandstone, to a lesser extent mudstone and siltstone. In the southwest of the site, where reeds were present, the ground surface was waterlogged, and the topsoil was spongy. Topsoil was locally absent in the southwest and east of the site, where previous development had occurred.

Area of Former Opencasting (South-Central Area of the Site)

7.2 As anticipated, made ground was encountered below the topsoil (2016 TP1, TP5, CP1 and CP2, 2019 TP2, TP3, TP4, WS3, WS5, R101, R102, R103 and R104, and 2025 WS11), to proven depths of up to 11.5m (generally deepest in the southeast). There is evidence of a stepped or shelved profile to the edge of the opencast, for example R101 found made ground to only 3.7m, far shallower than the underlying coal seam, which was opencasted to 11.5m in R102 nearby.

7.3 The made ground typically comprised soft/loose (min. SPT N=4) to medium dense/firm (max. SPT N=20) clayey gravel and gravelly clay, in which the gravel component included angular and subangular sandstone, mudstone and siltstone, with a medium angular cobble content of sandstone and siltstone, and locally brick (2019 TP4). At CP1 and CP2, the made ground was underlain by (at least) very weak siltstone bedrock. At TP4 (2019) and WS3 (2019), toward the outcrop, the made ground was found to be underlain by firm (medium strength) silty sandy laminated clay. Elsewhere, the base of the made ground could not be reached in the trial pits or window sample holes.

7.4 A dynamic probe (DP1) was undertaken from the base of WS5 (2019) in an attempt to determine the base of the opencast at this location (WS5 had not found the base of the made ground by 5.45m depth). The probe hole indicated the opencast backfill to be typically loose, only becoming 'medium dense' from around 9.6m depth. The full extent of the dynamic probe was reached at 10m depth, and rock head had still not been encountered.

7.5 Trial pits TP4 2019 (southwestern side of the opencast, at the approximate coal outcrop position) and TP2 2019 (approximate northeastern extent of the opencast), were used to define the approximate extent of the opencast workings. The two points, roughly aligned southwest to northeast, were in excess of 100m apart. The approximate extent of the opencast coal workings is shown on the plan in Appendix H titled "Made Ground Depths & Approximate Extent of Opencast and Quarry".

Former Sandstone Quarry in the Southwest

7.6 The area of quarrying in the southwest, identified by the Ordnance Survey archive maps, was confirmed in this area in the 2019 investigation (no investigation was carried out in this area in 2016). As anticipated, below any topsoil, made ground was present (excluding the very southwest tip of the site), revealed in TP5, TP8 and WS1. The made ground was proven to depths of between 1.5m and at least 3.2m, but the base of the made ground was not reached in TP8, by the maximum depth achieved of 3.2m. The made ground typically comprised loose (unconsolidated) to medium dense (maximum SPT N=21) sand, gravel and cobbles, in which the gravel component comprised angular and subangular sandstone, siltstone and mudstone, and the cobble component subangular sandstone and siltstone. At WS1, from 0.25m to 1.3m depth, fragments of wood were also noted.

7.7 At WS1 (in the southwest of the workings), the made ground was underlain by gravel of mudstone over what was interpreted as very weak dark grey laminated mudstone bedrock. At TP5 (on the northeast of the workings), the made ground was underlain by at least very weak sandstone bedrock.

7.8 The historical maps indicate the workings were irregular in shape. Trial pits TP5 and TP6 define, approximately, the northeast extent of the of the backfilled sandstone quarry. The backfilled sandstone quarry is shown to extend to the southwest corner of the site. The approximate extent of the backfilled quarry is shown on the plan in Appendix H titled "Made Ground Depths & Approximate Extent of Opencast and Quarry".

Limited Areas of Former Development – Eastern Triangle and Southwest Corner

- 7.9 On the eastern triangular area of the site, which was formerly developed with a cluster of small buildings, made ground was encountered at both locations (TP1 & WS7), to depths of between 0.35m and 0.5m, respectively, and typically comprised made ground topsoil at TP1, and gravelly sand with cobbles of brick and concrete (i.e. construction/demolition rubble) at WS7. Relict footings and/or low-lying brick structures were visible at the surface which, in some locations, created stepped level changes of around 0.9m. The area was heavily wooded with low-lying overhead electricity cables and as such was generally inaccessible. The made ground was underlain by firm (medium strength) slightly sandy silty clay, becoming stiff (high strength), and overlying extremely weak mudstone and siltstone bedrock. The eastern triangle is now not shown to form part of any proposed development.
- 7.10 On the southwest of the site, beneath the former car parking area, made ground was encountered at both locations (TP7 & WS1). At TP7, a surface covering of bitmac, overlying residual soils derived from the weathering of solid strata, was present. At WS1, the made ground associated with the backfilled former sandstone quarry workings was present, to a depth of 1.5m.
- 7.11 On the southwest tip of the site, a concrete slab remained intact, approximately 20m x 15m in size, of unknown thickness, and with an unknown depth of fill beneath. The slab was bounded to the north, west and south by a metal palisade fence and there was a stepped level change formed by a retaining wall of around 1m in height on the east side. The surface of the intact slab, and the materials directly beneath, were, therefore, inaccessible during the investigation.

Remaining Areas (Excluding Areas of Opencast, Quarrying and Previous Development)

- 7.12 Beneath the topsoil in these areas, made ground was only encountered at two locations (TP3 2016 and TP9 2016), on the north/northeast of the site, and one location in the far south (2025 WS08, close to the western edge of the opencast). The made ground at these locations was present to depths of between 0.6m and 1.8m, and typically comprised gravelly clay (re-worked natural material), in which the gravel component included mainly sandstone, mudstone and siltstone. In TP9, the bottom 0.4m thickness of made ground comprised tabular cobbles of sandstone. The made ground was underlain at TP3 by gravelly clay (completely weathered mudstone), and at TP9 by thin coal seam, interpreted to be the Better Bed. This location is therefore at/close to the outcrop position of the seam. In TP9, the made ground was probably associated with a land drain encountered within the pit, orientated northeast to southwest. In WS08, firm natural clay was present beneath, and mudstone from 2.3m depth.
- 7.13 Natural cohesive subsoils were present directly beneath the topsoil in the rest of the trial pits and boreholes, where made ground was not encountered. In the southwest, and the western margins of the site (2016 locations TP6, TP11, TP12, and 2019 locations TP6, TP7 & WS2), this comprised sands and gravels derived from weathering of the underlying solid sandstone (which was encountered from depths of between 0.6m and 1.5m). On the rest of the site, a profile typical of weathering of underlying solid mudstone was encountered, generally comprising medium strength (firm) to very high strength (very stiff) clays over gravels of mudstone. Solid mudstone was generally present from depths of between 0.7m and 2.9m.

Groundwater Ingress, and Stability and Difficulty of Excavations

- 7.14 Excavations through the natural strata generally remained stable. Some instability was recorded within made ground, including moderate instability below 2.1m in TP5 (2016), from 2m to 2.5m depth in TP5 (2019), and to 3.2m depth in TP8 (2019). Slight instability was noted in TP2 (2019) to 1.2m depth and TP3 (2019) to 3.2m depth.

7.15 At TP4 (2016), and at TP4, TP5 and TP6 (all 2019), the surface was waterlogged. Slight groundwater seepages were recorded at locations TP4 (2016), TP7 (2016), and TP10 (2016), at depths of 1.5m, 1.6m and 1.3m, respectively. A moderate groundwater seepage was recorded at TP5 (2016), at a depth of 1.6m, with a rapid seepage recorded below 2m. A slight groundwater seepage was noted in TP5 (2019), from 2.5m depth (below the base of the made ground). In the borehole wells in the natural strata, the shallowest groundwater resting levels recorded in the 2016 investigation were 1.39m (R1A), 0.52m (R3A) and 0.87m (R5A), and in the made ground 3.43m (CP1) and 0.89m (CP2). In the 2019 investigation, in the borehole wells in the natural strata, the shallowest groundwater resting levels recorded were 0.6m (WS3) and 1.83m (WS1); although these likely reflect perched groundwater rather than the geological water table.

Coal Mining Investigation of August 2016 (Northwestern Half of Site)

7.16 Rotary boreholes were carried out in 2016, on the northwestern half of the site (outside the opencast area), to investigate possible shallow underground coal workings. All the boreholes recorded sandstone at depths of between 0.6m and 1.4m, with the exception of borehole R05, which recorded coal at a depth of 1.2m to 2.0m, with sandstone bedrock below.

7.17 In most rotary boreholes, a coal seam (interpreted to be the "Better Bed") was encountered, between 0.2m and 2.2m in thickness, and at a depth of between 1.2m and 7.2m, with the exception of R06 and R04 where it was absent. The location of R06 may have been beyond the line of the conjectured outcrop (orientated approximately north-south), whilst in the location of R04, the borehole may have intercepted a buried soakaway, which would account for the loss of flush at relatively shallow depth (from 1.3m to 3m depth). The depth of the coal generally increased from northwest to southeast (base at 2.0m in R05, 3.3m in R08, 8.6m in R09).

- 7.18 Boreholes R01 and R10 were drilled on the northeastern part of the site, where ground levels rise up toward Cockley Hill Lane. This area is to the northeast of an area of backfilled opencast workings. The boreholes revealed workings in the Better Bed seam, comprising broken ground (partial voiding with a loss of flush and no returns), at 10.7m (with a thickness of 2.6m) in R01 and at 14.0m (with a thickness of 2.1m) in R10. Underlying the workings, hard strata were proven to 18.0m and 15.0m depth, respectively. There were no returns from the hard strata below the broken ground.
- 7.19 The base of the Better Bed seam was proven in R05 to be at 2.0m, and in R02 to be at 4.0m, which corresponds in depth to the base of the adjacent opencast workings. In boreholes R02, R03, R05, R07, R08, and R09, intact coal was encountered, with no indication of workings.
- 7.20 No other coal seams were encountered during the rotary borehole investigation.

May 2019 Coal Mining Investigation (Southeastern Half of Site)

- 7.21 A curving geological fault, trending west to east-northeast, is shown to cross the south of the site, with the downthrown strata to the south of the fault. The northern side of the fault comprises the vast majority of the site and was targeted with 11 rotary boreholes. In 2019, only a small part of the site was south of the fault, with three rotary boreholes in this area.
- 7.22 In six out of eleven rotary boreholes drilled north of the fault, a coal seam was encountered (interpreted to be the "Better Bed"). Its depth increases towards the northeast as the land rises up in this direction. The dip is likely to be just south of southeast. In the southwest, close to the conjectured seam outcrop, the (intact) seam was between 0.3m and 0.6m in thickness, and at depths of between 2m and 6.8m. In borehole R104, two 0.2m thick leaves of coal are separated by a mudstone band (also 0.2m thick). Borehole R110, even further west, did not encounter a coal seam, consistent with its position beyond the line of the conjectured coal outcrop.

7.23 In the northeast of the site, where ground levels rise up toward Cockley Hill Lane, thin coal seam traces interbedded with hard black mudstone were encountered between around 11.0m and 15.0m depth (R101, R111 and R113). Full flush returns were maintained. Soft and broken ground, coinciding with flush loss, was encountered in borehole R112 (12.7m depth, thickness 1.3m) and borehole R114 (15.5m depth, thickness of 0.5m), interpreted to be coal mine workings (and void migration). Underlying the workings, hard strata ("solid ground") were proven to 15m and 18m depth, respectively, although flush loss continued, probably into the workings above.

Assessment of Ground Stability

7.24 It is a generally accepted rule of thumb that, unless there is at least 10 times the seam thickness of rock cover above any workings, they have the potential to adversely affect ground stability on the site. A critical factor, therefore, for assessment of stability is the original seam thickness that could be extracted. There is a wide range of reported thicknesses of the seam from the boreholes across the site, probably as a result of the presence of dark, hard mudstone in combination with the seam, instead of actual variation in the seam thickness. The actual thickness will be difficult to determine in these circumstances, using openhole drilling. The most reliable measure of thickness is concluded to be from the BGS geological maps and the Coal Authority abandonment plan records for the backfilled opencast on the site. These both record the seam thickness as 0.5m and this, therefore, forms the basis of the assessment presented on the table below. The seam was a good quality seam of high economic value.

BH	Depth to Rock on Log (m)	Depth to Rock (m) (ARP Estimate)	Depth (m) to base of coal or workings	Depth to Original Roof (m)	Rock Cover to Original Seam Roof (m)	Comment on Rock Cover Thickness
RO1	0.6	2.0	13.3 (B)	12.8	10.8	Sufficient
RO2	1.4	2.0	4.0 (IC)	3.5	1.5	Insufficient
RO3	0.8	1.7	4.3 (IC)	3.8	2.1	Insufficient
RO5	1.2	2.0	2.0 (WC)	1.5	0	Insufficient
RO6	1.3	1.1	No Coal	N/A	N/A	West of Outcrop
RO7	1.2	1.8	4.2 (IC)	3.7	1.9	Insufficient
RO8	1.1	2.5	3.3 (IC)	2.8	0.3	Insufficient
RO9	1.4	2.9	8.6 (IC)	8.1	5.2	Sufficient
RO10	1.1	1.7	16.1 (B)	15.6	13.9	Sufficient
R101	3.7	3.7	12.5 (IC Traces)	12.0	8.3	Sufficient
R102	11.5	11.5	11.5 (OC)	11.0	0.0	Opencast
R103	5.3	5.3	5.3 (OC)	4.8	0.0	Opencast
R104	3.5	3.5	6.8 (IC)	6.3	2.8	Insufficient
R105	1.0	1.8	4.7 (IC)	4.2	2.4	Insufficient
R106	1.0	1.65	3.2 (IC)	2.7	1.05	Insufficient
R107	1.0	1.5	3.2 (IC)	2.7	1.2	Insufficient
R108	0.8	1.5	2.4 (IC)	1.9	0.4	Insufficient
R109	0.7	1.5	1.9 (IC)	1.4	0.0	Insufficient
R110	0.8	1.5	No coal	N/A	N/A	West of Outcrop
R111	1.0	1.9	14.5 (IC Traces)	14.0	12.1	Sufficient
R112	1.2	1.9	14.0 (S)	13.5	11.6	Sufficient
R113	1.2	1.9	16.2 (IC Traces)	15.7	13.8	Sufficient
R114	1.5	1.9	16.0 (S)	15.5	13.6	Sufficient

B = Broken Ground S = Soft IC = Intact coal WC = Weathered coal
OC = Coal removed already by opencasting

7.25 The locations and depths of coal and/or workings have been annotated onto the plan in Appendix H titled "Map Showing Coal & Workings Depths, Where Encountered & Drill/Grout Area". In areas where there is sufficient cover, based on a 0.5m extraction thickness, a green font has been used for the depths, and where there is insufficient cover, a purple font. It can be seen from the distribution that there are areas north/northwest, and southwest of the backfilled opencast area where coal is present with insufficient cover, although there is no evidence of workings from the limited number of holes carried out. In these areas, it is recommended that holes should be drilled on a 9m grid and, where there is any evidence of workings with insufficient cover, the grid closed to 3m. If found to be necessary by the results of the drilling, the treatment area should be extended beyond the shaded areas. All the holes should be injected with grout in accordance with CIRIA 32 "Construction Over Abandoned Mine Workings".

7.26 No evidence of mine entries (shafts or adits), or bell pits, was encountered during the investigation. However, the surface area of investigation locations is very small in proportion to the total site area, and this does not guarantee the absence of mine entries or bell pits. It is recommended that, on areas east of the coal outcrop (excluding the opencast), the surface should be inspected by a suitably qualified engineer following the topsoil strip, to check for any suspect features. Vigilance should also be maintained during the proposed development works and any suspect feature should be inspected by the engineer.

Gas Monitoring

7.27 From the 2016 investigation, gas monitoring wells were installed into boreholes R1A, R3A and R5A (each offset 1m to the south of the corresponding rotary boreholes RO1, RO3 and RO5) along with CP1 and CP2. From the 2019 investigation, gas monitoring wells were installed into WS1, WS3, WS5 and WS7. Each position was located to target a potential hazardous gas generation potential source, as well as locations away from the potential source, to determine migration. CP1, CP2, and WS5, were located within the deep backfilled opencast area. WS1 was located within the backfilled quarry in the southwest, and the remaining positions were distributed around the site. The gas well positions are shown on the plan titled "Gas Well Location Plan" in Appendix L.

7.28 Monitoring has been undertaken in accordance with BS 8576: 2013 "Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs)". Ground gas risk assessment was carried out in accordance with BS 8485: 2015 + A1: 219 "Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings". The monitoring was carried out from October 2016 to April 2017 for CP1, CP2, R1A, R2A and R3A, and from March 2019 for WS1, WS3, WS5 and WS7. In general, monitoring visits were at least two weeks apart.

7.29 The monitoring showed methane (CH₄) up to 0.9%, a maximum carbon dioxide (CO₂) concentration of 7.4% v/v, and a maximum flow rate of 1.8l/h.

7.30 The British Standard, BS 8485: 2015 + A1: 2019, utilises the concept of borehole hazardous gas flow rates (Q_{hg}), in litres/hour (l/hr), which are obtained by multiplying flow rate by concentrations in the air stream of the particular gas being considered for each borehole. The Q_{hg} is used to derive a gas screening value (GSV), which is defined as the "flow rate of a specific hazardous gas representative of a site or zone, derived from assessment of borehole concentration and flow rate measurements and taking account of all other influencing factors, in accordance with a conceptual site model".

7.31 The table below allows the selection of the 'Characteristic Situation' (CS) based on the GSV, using a numbering system of 1 to 6, where 1 equates to a very low hazard potential and 6 equates to a very high hazard potential.

Characteristic Gas Situation (CS)	Hazard Potential	Gas Screening Value - l/hr - (GSV)	Additional Factors
1	Very Low	<0.07	Typically, <1% CH ₄ and <5% CO ₂ , otherwise consider an increased Characteristic Gas Regime
2	Low	>0.07 to <0.7	Typical Measured Flow Rate <70 l/hr, otherwise consider an increase to CS 3
3	Moderate	>0.7 to <3.5	
4	Moderate to high	>3.5 to <15	
5	High	>15 to <70	
6	Very High	>70	

Based on Table 2 of BS 8485: 2015 + A1: 2019

7.32 A summary of the results obtained from the ground gas monitoring investigation, together with the Q_{hg} for carbon dioxide and methane, is presented in the table on the following page:-

Borehole ref.	Max Recorded Steady Flow (l/hr)	Max. CO ₂ (% v/v)	Max CH ₄ (% v/v)	Max BH Qhg (CO ₂)	Max BH Qhg (CH ₄)
CP1	0.1	4.8	0.1	0.005	0.000
CP2	0.1	2.9	0.0	0.003	0.000
R1A	0.1	6.0	0.0	0.006	0.000
R3A	0.1	6.0	0.5	0.006	0.001
R5A	0.1	5.0	0.1	0.005	0.000
WS1	1.0	1.8	1.0	0.018	0.010
WS3	1.0	0.9	0.3	0.009	0.003
WS5	1.0	7.4	0.0	0.074	0.000
WS7	1.8	0.8	0.9	0.014	0.016

Worst-credible Qhg (l/hr) *	0.074	0.016
Worst-possible Qhg (l/hr) +	0.074	0.016

* Based on maximum recorded concentration and maximum flow rate applicable to any individual borehole.

+ Based on maximum recorded concentration and maximum flow rate across the whole site (any borehole)

7.33 Up to 1.0% methane was recorded and the maximum concentration of carbon dioxide was 7.4%. The worst credible gas regime identified on the site (based on the maximum recorded flow rate and concentration detected together within an individual borehole) is a Q_{hg} of 0.074l/hr for carbon dioxide and 0.016l/hr for methane. This equates to a Characteristic Situation of CS2 (by a small margin). The CS1 tentative limits of 5% for carbon dioxide and 1% for methane should also be considered. Four boreholes have readings at or above these values and reinforce the CS2 classification.

7.34 It is also a requirement of the British Standard to check the very worst-case combination of the highest flow and the highest detected concentrations, of any borehole, with values not necessarily from the same borehole. If the worst-case conditions indicate a higher hazard could reasonably exist, then this should be adopted as the GSV, unless further monitoring or other justification is provided for it not to be used. In this case, the worst possible Q_{hg} for both carbon dioxide and methane remain the same and, therefore, a CS of 2 for the site remains applicable.

Proposed Attenuation Basin Area (In the Far South of the Site)

- 7.35 WS8 and WS9 were located in the proposed position of a large attenuation basin in the south of the site. WS8 revealed firm to very stiff clay with mudstone beneath (from 2.3m depth), with no groundwater ingress. WS9 encountered firm clay to 0.6m depth, over thinly laminated mudstone, which contained a coal seam between 0.95m and 1.3m depth. No groundwater ingress occurred.
- 7.36 The monitoring wells in WS8 and WS9 will be monitored on three occasions, along with those installed in WS10 and WS11, to give an indication of general groundwater levels across the site, as the equilibrium level is unlikely to be established in low permeability materials during the course of a ground investigation.

8.0 CONTAMINATION ASSESSMENT

Screening Values - Soils

- 8.1 In March 2014, DEFRA published Category 4 Screening Levels (C4SLs) for six contaminants: arsenic, benzene, benzo(a)pyrene, cadmium, chromium VI and lead for soils which should be used in contamination assessment for proposed development. Two further C4SLs for naphthalene and inorganic mercury were added in 2024. The values are based on the toxicological benchmark of a "low level of toxicological concern" (LLTC) rather than the previous regulatory approach of "minimal or tolerable level of risk". As the C4SLs are less protective of health than the previous approach, the Chartered Institute of Environmental Health (CIEH) has advocated an alternative approach based on minimal risk, but with some adjustment of exposure parameters to more realistic scenarios than those previously used. To this end, the CIEH has collaborated with Land Quality Management to publish "Suitable 4 Use Levels" (S4ULs) "The LQM/CIEH S4ULs for Human Health Risk Assessment", November 2014 (LQM/CIEH). However, DEFRA has reiterated its intention that the C4SLs should be used in generic risk assessment for proposed development, and there is indication that other parties will collaborate, in the near future, to extend the range of C4SL determinands beyond the eight published so far.
- 8.2 Soil contamination test results in this report have been compared first against the more conservative S4UL, and where a C4SL exists for the same determinand, consideration given to the use of the C4SL for any exceedances of the S4UL, within the site-specific context (including the use of benzo(a)pyrene as a surrogate marker for genotoxic PAH compounds, where appropriate). Where no S4UL exists for a determinand, for example lead, the C4SL has been used. The LQM/CIEH screening values have been calculated for soil organic matter contents of 1% and 2.5%, as well as 6%, and the appropriate screening value is used for the organic matter content of the soil. All the C4SL values published are for a soil organic matter content of 6%.
- 8.3 A table showing the screening values utilised is included in Appendix J.

Screening Values - Leachability and Groundwater

8.4 In order of preference, the Environmental Quality Standards (EQS) annual averages for freshwater have been used as generic screening values for these results. Where no EQS is available, the stringent UK Drinking Water Standards (DWS) have been used, and other sources in the absence of EQS and DWS, as indicated on the groundwater screening values table in Appendix J.

Soils Analysis

8.5 Twenty-five soil samples were issued to the UKAS accredited Derwentside Environmental Testing Services in Consett for a suite of testing (As, Cd, Cr (VI), Cr (III), Cu, Hg, Ni, Pb, Se, Zn, Total Sulphate, Water Soluble Sulphate, pH, Phenol-monohydric, Speciated PAH, Total TPH, Asbestos, and Organic Matter). The testing comprised:

- 22No. samples of Topsoil, 13No. comprising Natural Topsoil from TP2, TP4, TP6, TP7, TP8, TP10, TP11, TP12 (all 2016), from WS2, WS4 and WS6 (all 2019), and from WS9 and WS14 (2025). 9No. samples comprised Made Ground Topsoil from TP3 and TP9 (both 2016), from TP1, TP2, TP3, TP5, WS1 and WS3 (all 2019), and from WS11 (2025).
- 1No. sample of general granular made ground from WS7 (2019) in the far eastern triangular area of the site.
- 3No. samples of granular made ground from the quarry in the southwest (all 2019), from TP5, TP8 and WS1.
- 8No. samples of opencast backfill (three granular and five cohesive) from TP1 (x 2, 2016), TP4, WS5 (x3), TP2 (all 2019).
- 1No sample of clay made ground from the far south of the site (WS8, 2025)

8.6 For the topsoil, any determinands with exceedances of screening values were subjected to statistical analysis to determine the 95% Upper Confidence Level (UCL). The other materials were not present in a sufficient number of samples to allow reliable statistical analysis.

Topsoil

8.7 A results summary table for determinands within the topsoil found to be above screening values is given below

BH/TP	Depth	Arsenic	Lead
TP2	0.00-0.20	50	75
TP4	0.00-0.20	46	81
TP6	0.00-0.20	47	90
TP7	0.00-0.20	39	66
TP8	0.00-0.20	57	110
TP10	0.00-0.20	66	110
TP11	0.00-0.20	51	110
TP12	0.00-0.30	61	140
WS2	0.10-0.20	49	107
WS4	0.10-0.20	36	104
WS6	0.10-0.20	49	70
TP3	0.00-0.30	51	75
TP9	0.00-0.30	54	120
TP1	0.00-0.35	50	227
TP2	0.10-0.20	51	68
TP3	0.00-0.15	38	78
TP5	0.00-0.10	24	94
WS1	0.10-0.20	9.0	39
WS3	0.10-0.20	48	106
WS9	0.10	32	74
WS11	0.10	40	56
WS14	0.10	61	90
Screen Values		37	200
95% UCL		51	110

All values in mg/kg unless indicated otherwise

Exceedance

Acceptable

8.8 It can be seen from the table that the 95% UCL concentration of lead is below the screening value, despite the presence of one elevated concentration above the screening value (TP1, which is in the eastern triangle, not proposed for development. The lead concentration is well within limits for public open space near residential sites. However, the concentration of arsenic will need to be considered further in the risk assessment, as the 95% UCL concentration is above the screening value.

- 8.9 The above arsenic assessment is based on the use of a generic screening value, which assumes 100% bio accessibility of the arsenic. However, it is acceptable to use a site-specific screening value, taking into account arsenic bio accessibility.
- 8.10 Arsenic bio accessibility testing was, therefore, subsequently undertaken in 2016, on three samples of topsoil (H1, H2 and H3), and in 2019, on two samples of topsoil (TP1 and WS2). The CLEA software model can accept bio accessibility corrections for both ingestion of soil and inhalation of dust, and the software is the most appropriate way to correct for bio accessibility. Following the guidance given in the CLEA handbook for this circumstance, the user needs to insert the bio accessible fraction in the "soil" column only (in the advanced settings area), and not in the "Airborne dust" column. The value for airborne dust should remain at 1 (i.e. 100%). The results are presented in Appendix K, along with the detailed model settings.
- 8.11 The corrected site-specific screening value for arsenic is 83mg/kg for the 2016 data and 85mg/kg for the 2019 data. All the arsenic concentrations measured in the topsoil on the site are below this corrected screening value and, therefore, the topsoil can be suitable for re-use on the site, in terms of human health.

General Made Ground in Far Eastern Triangle (WS7)

8.12 A results summary table for determinands within the made ground (demolition rubble) in this area found to be above screening values is given below

Determinand	WS7	Screening	Screening
	0.20-0.50	Value	Value
		Resi Garden	Resi POS
Arsenic (total)	67	37	79
Copper (total)	5032	80	12000
Lead (total)	331	200	630
Nickel (total)	51	50	230
Zinc (total)	1910	200	81000
Benzo(a)anthracene	7.58	7.2	29
Benzo(b)fluoranthene	9.55	2.6	7.1
Benzo(a)pyrene	8.30	5	10.0
Dibenz(ah)anthracene	1.23	0.24	0.57
EPH (>C10-C35)	1350	500	500
TOC	16.2	N/A	N/A

All values in mg/kg unless indicated otherwise

Exceedance - Residential Garden

Exceedance – Residential Garden & POS

8.13 It can be seen from the table that several determinands are above the screening value for residential gardens, and some also above the screening values for public open space (POS) near residential sites. None of the elevated PAH determinands has significant volatility (naphthalene was not found to be present above the screening value). The PAH concentrations are typically shown, by their PAH component ratios, to be derived from a petrogenic source such as coal, or possibly coal ash. The ratio plots are presented in Appendix J. The TOC content appears high at 16.2%, however; the detailed borehole log description indicates the material to comprise predominantly sand, gravel and cobble of brick and concrete (i.e. relict demolition rubble), with a negligible degradable content. The elevated TOC is attributable to non-degradable coal/ash fragments within the laboratory subsample, as indicated by the PAH component ratios.

- 8.14 The elevated EPH within the sample from WS7, at 1,350mg/kg, was tested further for aliphatic/aromatic split speciation testing, for individual carbon bands ranging from C5 to C44. The results indicate that none of the individual aliphatic or aromatic carbon bands were found to be elevated above the S4UL residential screening values. Potentially volatile petroleum hydrocarbon fractions were shown to be below the laboratory limit of detection.
- 8.15 No asbestos was identified in the sample tested.

Backfilled Former Opencast, Former Quarry, and Far South

- 8.16 In the 11 samples of the backfilled former opencast/quarry workings tested, none of the determinands tested were present in concentrations above the "Residential With Home-Grown Produce" screening values. Two of the 11 samples did have slight exceedances of the Ministry of Agriculture, Food and Fisheries screening value for agricultural land, of 50mg/kg with 53mg/kg and 68mg/kg obtained in TP5 (2019) and TP8 (2019) respectively. However, both locations are in public open space, and the slight exceedances are not, therefore, considered significant in this context. The single sample of made ground clay on the far south (WS8) did not reveal any exceedances of screening values.
- 8.17 No asbestos was detected in the samples of the backfilled former opencast/quarry workings tested, or within WS8 in the far south.

Leachability Analysis

- 8.18 Leachability testing was carried out on two samples of topsoil from 2016, showing elevated arsenic, and the sample of made ground from WS7 in the 2019 investigation for arsenic, copper and lead. The laboratory test certificates are presented in Appendix J. The analysis shows the determinands have negligible leachability, i.e. effectively immobile with respect to water/groundwater transport.

Updated Risk Assessment and Conceptual Model

8.19 The updated source – pathway – receptor matrix is presented below, taking into account the findings of the investigation. Any pathways in italics are deemed not to be viable, and the reason given.

Viable Source - Pathway - Receptor Matrix (Finished Development)

Contamination Sources	Pathways	Receptors	Severity of Consequence	Probability of Event	Risk
<p>Made ground (demolition rubble) at WS7 only: - Elevated arsenic, copper, lead, PAH</p> <p>All applies ONLY to eastern triangle area, proposed for POS. Rest of site uncontaminated</p>	<ul style="list-style-type: none"> Inhalation, ingestion and dermal contact with soil and dust 	Humans: - <ul style="list-style-type: none"> Maintenance workers Adjacent residents and general public 	Minor	Low Likelihood	Very Low
	<ul style="list-style-type: none"> Fruit and vegetable intake, with soil (not applicable to POS) 	Humans (as above)	Pathway Not Applicable		
	<ul style="list-style-type: none"> Vapour inhalation outdoor (not applicable) 	Humans (as above)	Pathway Not Applicable		
	<ul style="list-style-type: none"> Vapour inhalation indoor (not applicable) 	Humans (as above)	Pathway Not Applicable		
	<ul style="list-style-type: none"> Migration in surface water (not applicable) 	<ul style="list-style-type: none"> Surface water (nearest downslope 800m away). No abstractions. 	Pathway Not Applicable		
	<ul style="list-style-type: none"> Migration in groundwater (not applicable) 	<ul style="list-style-type: none"> Groundwater (Secondary A Aquifer, no abstractions) 	Pathway Not Applicable		
	<ul style="list-style-type: none"> Root uptake 	Vegetation: - <ul style="list-style-type: none"> Landscape areas 	Mild	Low Likelihood	Very Low
	<ul style="list-style-type: none"> Migration 	Services/Utilities: - <ul style="list-style-type: none"> Potable water supply 	Medium	Low Likelihood	Moderate/Low
<p>Backfilled opencast, shallow workings/coal: - methane and carbon dioxide</p>	<ul style="list-style-type: none"> Asphyxiation Explosive risk 	<ul style="list-style-type: none"> Construction/demolition workers Future occupants Buildings 	Severe	Low Likelihood	Moderate

- 8.20 It can be seen from the above matrix that on the vast majority of the site, the soils are uncontaminated and suitable for reuse on a residential development, in terms of human health risks. On the eastern enclosed corner only, which is assumed to be proposed for public open space, some form of remedial action is necessary to prevent excess risk to the public and future maintenance workers. There is also a risk from ground gases.

Risk Based Assessment of Remedial Options

Ground Gases

- 8.21 The risk from ground gases can be addressed by provision of CS₂ gas protection. This usually comprises a gas barrier lapping through the cavity walls, in conjunction with passively vented underfloor voids.
- 8.22 The specific design of the protection measures, and the verification required, is dependent on the detailed foundation design, the selection of products/suppliers, the gas regime, and who installs the protection. Once more detail of these factors are known (as a minimum following foundation design and design of the protection measures), a Statement on Gas Protection should be prepared. The document should provide information for the Client and other interested parties, such as the regulatory authorities, outlining how gas protection measures for properties on the site will be implemented and the installation verified as satisfactory. The document should be agreed, prior to implementation, with the relevant Regulatory Authorities, usually the local Planning Authority and NHBC or other building control provider.

Made Ground (Demolition Rubble) in Eastern Triangular Area - Ingestion, Dust Inhalation, Dermal Contact, Root Uptake

- 8.23 This area of the site is proposed for public open space (POS). Where only turf is proposed, provision of clean topsoil of a minimum 0.3m thickness is likely to provide adequate protection. In any proposed planted areas, 0.6m thickness should be provided, and may include subsoil as well as topsoil. Alternatively, the made ground could be removed from site.

8.24 There is also a risk of contaminated material in the southwestern tip of the site, where an intact concrete ground slab was present, preventing access to the underlying material for sampling. The underlying fill materials (excluding any backfilled natural arisings) must be assumed at this stage, in the absence of any further sampling or testing, to be similarly contaminated to the relict demolition rubble at/around WS7. As the area is proposed for POS, it may be the case that the slabs can remain in situ, and then no action is likely to be necessary.

Migration to Utilities

8.25 Any migration to utilities is unlikely to be significant and will only apply to utilities running through made ground in the eastern triangular area (e.g. WS7). If any proposed water supply pipes are to pass through this area, the local water company are likely to require details of the contaminants present on the site, to make a judgment on any requirement for protection of buried water supply pipes from chemical attack/ingress.

Risks During Construction Period

8.26 It is also necessary to consider the effects of the contamination present on the site in relation to the risks to adjacent residents, construction workers and the general public during construction. This is assessed in the following matrix.

Source	Pathway	Potential risk	Risk after employing suitable Health and Safety plan.
Existing made ground (eastern triangle only)	Inhalation	Moderate	Damping down of the site during dry periods and timely placement of the existing made ground below barriers should block this pathway and reduce the risk to negligible.
Existing made ground (eastern triangle only)	Ingestion	Moderate	Site fencing will exclude access to members of the public. Existing made ground will be contained within the site boundary, and placed below barriers as soon as possible. Washing facilities and a clean mess room from which work boots and overalls are excluded should be provided. These measures should block this pathway and reduce the risk to negligible.

Existing made ground (eastern triangle only)	Contact	Moderate	Education of workers to use adequate hygiene and PPE should block this pathway and reduce the risk to negligible.
Soils in general	Particulates in surface water	Moderate	Provided a suitable surface water run off management plan is employed, the risk of particulate pollution of watercourses should be negligible.

8.27 Provision of all the above measures will ensure that all the identified pathways for the contamination will be blocked.

Summary of Contamination Assessment and Remedial Options

8.28 The majority of the site is generally underlain by up to 0.35m thickness of made ground, overlying natural residual soils derived from in situ weathering of solid strata. In the south-central area of the site, opencast backfill material is present (made ground of reworked natural material) to proven depths of up to 11.5m. In the southwest, a backfilled quarry is present to depths of at least 3.2m, again generally infilled with reworked natural material.

8.29 The topsoil and made ground was found to be essentially uncontaminated and compatible with the proposed residential development. An exception was demolition rubble in the eastern triangle (WS7), which contained elevated copper at 5,032mg/kg, lead at 331mg/kg, and elevated PAH compounds, including benzo(a)pyrene at 8.3mg/kg. There was no significant leachability.

8.30 The contamination risk assessment, and assessment of remedial options, has indicated that, provided that the following remedial measures are adopted then the risks to the identified receptors are deemed acceptable for the proposed development of residential properties with private gardens, and areas of POS.

- 8.31 The eastern triangle is proposed for POS. Therefore, where only turf is proposed, provision of clean topsoil of a minimum 0.3m thickness is likely to provide adequate protection. In any proposed planted areas, 0.6m thickness should be provided, and may include subsoil as well as topsoil. Alternatively, the made ground could be removed from site. It would be inadvisable to move the material to proposed residential plot areas, but if this was to occur, 0.6m cover would be required in the garden areas.
- 8.32 In the southwestern tip of the site, an intact concrete ground slab was present, preventing access to the underlying material for sampling. The underlying fill materials (excluding any backfilled natural arisings) must be assumed, in the absence of any further sampling or testing, to be similarly contaminated to the relict demolition rubble at/around WS7. As the area is proposed for POS, it may be the case that the slabs can remain in situ, and then no action is likely to be necessary. If the slab is to be removed, sampling and testing would be required of the underlying material.
- 8.33 Any imported soils used within the cover blanket will need to be verified as suitable by inspection and testing, in accordance with guidance supplied in the document produced by the Yorkshire and Lincolnshire Pollution Advisory Group (YALPAG): "Guidance on the Verification Requirements for Cover Systems".
- 8.34 If any water supply pipes are proposed that pass through the eastern triangular area (WS7), the local water company are likely to require details of the contaminants present on the site, to make a judgment on any requirement for protection of buried water supply pipes from chemical attack/ingress.
- 8.35 If any artificially hard materials (i.e. brick and concrete), from the limited areas of former development on the northeast and southwest of the site, are processed for retention as engineered fill material, this will require testing to confirm its chemical (and/or geotechnical) suitability for its proposed end use prior to placement, in accordance with current best-practice guidance.

- 8.36 If any contaminated material is removed from site, the receiving tip may require Waste Acceptance Criteria testing. Independent validation inspection will be required, to verify removal of all the affected material. The disposal/transfer documents should be retained for inclusion in the Validation Report.
- 8.37 Any imported or site-won soils used within the cover blanket will need to be verified as suitable by inspection and testing, in accordance with guidance supplied in the document produced by the Yorkshire and Lincolnshire Pollution Advisory Group (YALPAG): "Guidance on the Verification Requirements for Cover Systems".
- 8.38 A Contamination Remediation Statement is included in Appendix M.

9.0 GEOTECHNICAL TESTING

9.1 Selected samples of the natural strata were delivered to PSL in Doncaster for testing with regard to plasticity indices and moisture content. Test certificates are presented in Appendix J and a summary of the results, including Modified Plasticity Indices, is given below.

Location	Depth (m)	MC	LL	PL	PI	% <425µm	I'p
TP3	1.5-1.8	21	54	25	29	100	29
TP4	0.5-0.8	21	57	26	31	100	31
TP8	1.2-1.4	24	51	24	27	100	27
TP10	1.6-1.8	22	50	23	27	100	27
TP1	0.9-1.0	28	72	31	41	100	41
WS2	0.2-0.5	30	69	28	41	100	41
WS4	1.7-1.8	28	72	30	42	100	42
WS6	1.8-1.9	22	70	29	41	100	41
WS8	1.20	16	49	20	29	99	29
WS11	1.60	11	35	18	17	96	16
	No. of results	10	10	10	10	10	10
	Min.	11	35	18	17	96	16
	Max.	30	72	31	42	100	42

I'p	VCP
>40%	High
20% - <40%	Medium
10% - <20%	Low

MC= Moisture Content (%) LL= Liquid Limit (%) PL= Plastic Limit (%)
 PI= Plasticity Index (%) I'p= Modified PI (%) VCP= NHBC Standard Chapter 4.2
 Volume Change Potential

9.2 The plasticity test data shows the clay strata to be of high to very high plasticity, in accordance with BS 5930: 2015 "Code of Practice for Site Investigations". When the percentage retained on the 425-micron BS sieve is considered, the Modified Plasticity Index, in accordance with NHBC Standard Chapter 4.2 "Building Near Trees" is a maximum of 42. In accordance with the Standard, this equates to High Volume Change Potential.

9.3 Geochemical testing (water soluble sulphate and pH) was undertaken on selected samples by DETS, comprising 17 samples of natural strata and 15 samples of made ground. In accordance with the BRE Special Digest 1 "Concrete in aggressive ground", the characteristic values for the two materials are given below:

Characteristic Values

Material	pH	SO₄
Made Ground	5.6	439
Natural Strata	5.6	140

SO₄ = Sulphate content in mg/l on a 2:1 water: soil extract pH = Acidity

9.4 The geochemical analyses show the natural undisturbed strata to have low water-soluble sulphate content and slightly acidic pH. The Aggressive Chemical Environment for Concrete (ACEC) class is AC-1. Testing on the made ground indicates class AC-3z. Therefore, the use of FND3z designated concrete will be necessary for unreinforced buried concrete in contact with made ground, in accordance with BS 8500-1:2015+A2:2019. For unreinforced buried concrete away from any made ground, the use of GEN1 designated concrete will be satisfactory. For any reinforced buried concrete, other design-specific mixes will apply.

10.0 GEOTECHNICAL ASSESSMENT

Coal Mining and Coal Recovery

- 10.1 There is a coal seam outcrop (the Better Bed Coal Seam) running approximately north to south through the site. In the central area of the site, this seam is recorded to have been worked by opencast methods, and this has been proved by the ARP ground investigations. There are no specific Coal Authority records of underground workings, but unrecorded workings are suspected. Two phases of rotary borehole investigation by ARP found underground workings generally in areas east of the eastern side of the opencast, but the opencast records do also show some evidence of old underground workings encountered further west, although none were intersected in the boreholes implemented by ARP.
- 10.2 There is a wide range of reported thicknesses of the seam from the boreholes across the site, probably exacerbated by the presence of dark, hard mudstone in combination with the seam. The two independently produced previous reports interpreted the thicknesses differently. In the light of this, therefore, the most reliable measure of thickness is concluded to be from the BGS geological maps and the Coal Authority abandonment plan records for the backfilled opencast on the site. These both record the seam thickness as 0.5m. Based on this, there are areas north/northwest, and southwest, of the backfilled opencast area where coal is present with insufficient cover, as annotated onto the plan in Appendix H titled "Map Showing Coal & Workings Depths, Where Encountered & Drill/Grout Area". In these areas, it is recommended that holes should be drilled on a 9m grid and, where there is any evidence of workings with insufficient cover, the grid closed to 3m. If found to be necessary by the results of the drilling, the treatment area should be extended beyond the shaded areas. In addition, as there was indication of a shallower shelf of the opencast base on its eastern edge, with the seam at a greater depth below the shelf. To ensure full support to piled foundations (which would still need to be bored through to the base of the workings) this area should also be drilled and grouted. All the holes should be injected with grout in accordance with CIRIA 32 "Construction Over Abandoned Mine Workings".

- 10.3 No evidence of mine entries (shafts or adits), or bell pits, was encountered during the investigation. However, it is recommended that, on areas east of the coal outcrop (excluding the opencast), the surface should be inspected by a suitably qualified engineer following the topsoil strip, to check for any suspect features. Vigilance should also be maintained during the proposed development works and any suspect feature should be inspected by the engineer.

Foundations

- 10.4 All foundations will need to be supported by natural strata, with the existing made ground penetrated where it occurs. For the majority of the site, traditional strip/trench fill foundations will be suitable, with an allowable bearing pressure of 100kN/m² considered applicable, onto either clays of at least firm consistency (medium strength), or the granular material of highly weathered rock (sands and gravels). Higher allowable bearing pressures are usually available with increasing depth, to 300kN/m² on the underlying intact rock.
- 10.5 Where shallow underground mine workings are present within influencing distance of the surface then, following grout treatment of the workings, any strip foundations will need to be 300mm thick and reinforced with two layers of B503 mesh - one near the top and one near the bottom.
- 10.6 Where any foundation penetrates a coal seam (if present), the foundation should be surrounded by a membrane to prevent sulphate attack, and there should be 250mm thickness of concrete on the outer face of the foundation, outside the membrane. This is a sacrificial barrier in the unlikely event of a fire in the seam approaching the house from the outside. The risk of combustion from inside is considered very remote, so there is no requirement for additional concrete on the inside of the footprint. Where the foundation may step back up above the coal elsewhere on the plot, there is no requirement for these measures. The above recommendations assume that coal will not be extracted prior to construction.

- 10.7 In the area of backfilled opencast coal mining, the depth to natural strata (where proved) has been up to 11.5m. Piled foundations are likely to be the favoured solution, and these should be bored or predrilled in the vicinity of high wall lines or shelved edges. It should be ensured that these bored piles are taken to a level below the seam/workings.
- 10.8 There is a slight possibility of localised opencast coal excavations elsewhere on the site, along with, bell pits, and mine entries. Any suspect features, identified during site clearance or excavations, should be inspected by a Geotechnical Engineer.
- 10.9 The clays were shown to be of high-volume change potential. Therefore, in accordance with NHBC Standard Chapter 4.2 "Building Near trees", in the absence of trees, a minimum foundation depth of 0.9m below existing or proposed ground level is applicable, whichever is the lower. However, in the presence of any proposed, existing or removed trees, the foundation may need to be deepened, depending on the type of tree and its distance from the face of the foundation. If not already available, a tree survey may be required to enable a foundation schedule to be prepared. The tree survey will also need to consider trees on third party properties.
- 10.10 Where the founding strata are non-plastic, the minimum foundation depths given in NHBC Standard Chapter 4.2 "Building Near Trees" do not apply. However, to protect against fines washing subsidence in the event of a burst water supply pipe, it is recommended that a foundation depth of 0.9m is adopted in proximity to any such pipes.
- 10.11 Where piles are used, it is recommended that the guidance contained within NHBC Standard Chapter 4.2 "Building Near trees" is observed in relation to any requirement for heave protection.
- 10.12 For strip/trench fill foundations, the whole plan area of the building should be placed on similar natural material. Foundations should be reinforced where it is necessary to transition from suitable granular to suitable cohesive strata within a proposed building footprint.

- 10.13 If bedrock is encountered on part of a foundation excavation, the rest of the plot should be deepened to ensure founding on similar material. However, if rock is not encountered by 2.5m depth on the remainder of the plot, then the Engineer should be contacted for further advice.
- 10.14 Foundations within 20m either side of the geological fault indicated to cross the site will need to be 300mm thick and reinforced with two layers of B503 mesh – one near the bottom and one near the top, to mitigate any potential differential settlement associated with more deeply weathered zones or tilted/stepped strata.

Excavations

- 10.15 It is likely that excavations into the natural strata will remain stable in the short term, requiring minimal trench support, in accordance with the prevailing statutory guidance. However, slight to moderate instability may be anticipated within the made ground.
- 10.16 In some areas of the backfilled opencast/quarry workings, the surface was waterlogged. Slight groundwater seepages were recorded locally across the site. Slight, moderate and rapid groundwater seepages were recorded in the opencast area. Any such encounters, within typical excavation depths, should be controllable by pumping from an artificial sump.
- 10.17 Excavations should be readily achieved using conventional hydraulic plant. However, excavations into intact bedrock are likely to require a hydraulic breaker. A breaker might be required to penetrate any buried foundations and structures in the eastern triangular area, although this area is not currently proposed for development.

Chemical Precautions

- 10.18 The Aggressive Chemical Environment for Concrete (ACEC) class is AC-1 for the natural strata, but testing on the made ground indicates class AC-3z. Therefore, the use of FND3z designated concrete will be necessary for unreinforced buried concrete in contact with any made ground. For unreinforced buried concrete away from any made ground, the use of GEN1 designated concrete will be satisfactory. For any reinforced buried concrete, other design-specific mixes will apply.

Road Pavement Construction

- 10.19 For any areas of road pavement, including parking areas, the formation across the majority of the site will be the clay soils (derived from the in-situ weathering of underlying mudstone/siltstone strata). Below any obvious soft spots, and at equilibrium moisture content, a design California Bearing Ratio (CBR) value of 2% is considered applicable. Where sands and gravels are present (derived from the in-situ weathering of underlying sandstone strata), in the west of the site, below any obvious soft spots and at equilibrium moisture content, a design CBR value of 20% is considered applicable. If considered necessary, this should be confirmed by testing at proposed subgrade level before construction. Formation of roads on the existing made ground will not be acceptable.
- 10.20 In the backfilled opencast area, a formation for road pavement on natural strata is likely to be impractical. There are several potential solutions for this situation, but the most economical is likely to comprise partial excavation and replacement, with appropriate layers of geogrid. The geogrid suppliers are normally able to provide a warranted design. The proposed measures will need to be agreed with the adopting authority, where applicable, and, therefore, consultations with the relevant authority should be undertaken at the earliest stage.

Flooding

- 10.21 The site is not in an area at risk from river flooding. The risks of flooding from other causes such as adverse topography or insufficient surface water drainage, are not considered here. If such risk needs to be quantified, a separate specialist Flood Risk and Drainage Report should be commissioned, if not already available. BGS data indicates the general area has "limited potential for groundwater flooding to occur".

Soakaways

- 10.22 The disposal of surface water using soakaways is unlikely to be feasible on the site due to the widespread presence of clay soils, and the potential for soakaway drainage to reappear downslope.

Old Well

- 10.23 A well was once indicated at the far southwestern boundary, later becoming a "trough" (probably for watering animals). The precise location is uncertain. If present on the site, and if the feature is a well, depending on its condition, it may need to be filled with single size stone and provided with a reinforced concrete cap. If the feature is producing water at the surface, this will need to be picked up as part of any drainage design for the site.

Gas Protection

- 10.24 CS2 Gas protection is required for proposed properties on the site. The specific design of the protection measures, and the verification required, is dependent on the detailed foundation design, the selection of products/suppliers, and who installs the protection. Once more of these factors are known, as a minimum following foundation design and design of the protection measures, a Statement on Gas Protection should be prepared. The document should provide information for the Client and other interested parties, such as the regulatory authorities, including detailed drawings of the gas protection, how the

design has been arrived at, how the protection will be installed, and how the installation will be verified as satisfactory. The document should be agreed, prior to implementation, with the relevant Regulatory Authorities, usually the local Planning Authority and NHBC or other building control provider.

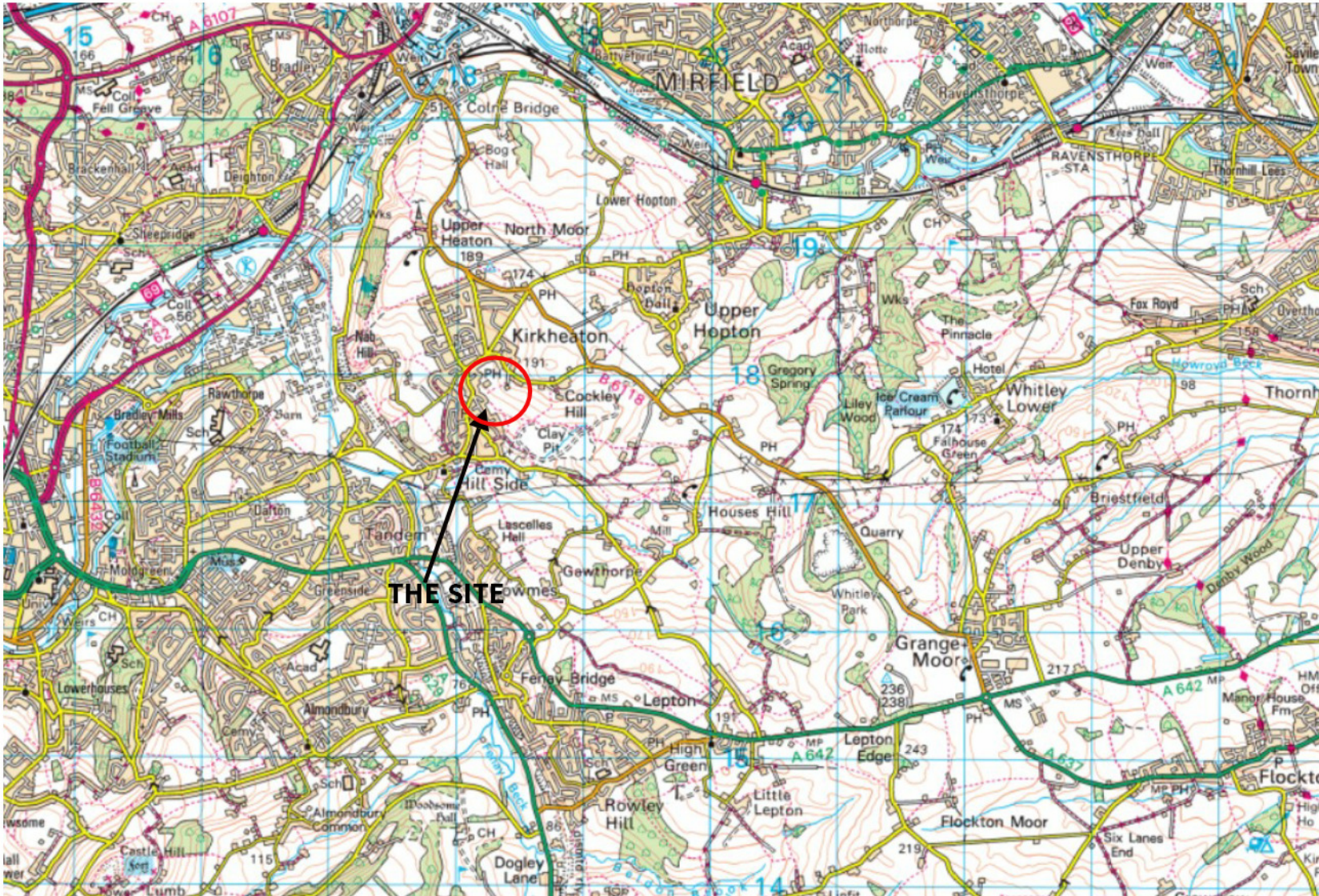
10.25 CS2 gas protection will also provide the equivalent of Basic Radon Protection.

Slope Stability

10.26 The site is sloping, with gradients up to around 1 in 6. Such slopes are unlikely to encounter instability in their present state. However, if the slopes are steepened or subjected to unusual localised loads, stability may be affected and retaining walls required. These should be suitably designed, and incorporate an assessment of global stability.

APPENDIX A

SITE LOCATION PLAN AND AERIAL PHOTOGRAPH



0m 1000m

Approximate Scale



ARP GEOTECHNICAL LTD
CHARTERED CONSULTING ENGINEERS

Northwest House, 5-6 Northwest Business Park, Senva Hill, Leeds LS6 2QH
Telephone: 0113 245 8498 Fax: 0113 244 3864 E-Mail: leeds@arpassociates.co.uk

Project	COCKLEY HILL, KIRKHEATON	
Client	GLEESON HOMES LTD	
Title	SITE LOCATION PLAN	
Date	AUGUST 2025	
Drawn	OG	Scale AS SHOWN
Job No.	GHO/11	



0m 200m

Approximate Scale



ARP GEOTECHNICAL LTD
CHARTERED CONSULTING ENGINEERS

Northwest House · 5-6 Northwest Business Park · Servia Hill · Leeds LS6 2QH
 Telephone : 0113 245 8498 Fax : 0113 244 3864 E-Mail : leeds@arpassociates.co.uk

Project
**COCKLEY HILL LANE,
 KIRKHEATON**

Client
GLEESON HOMES LTD

Title
AERIAL PHOTOGRAPH

Date
AUGUST 2025

Drawn OG	Scale AS SHOWN
--------------------	--------------------------

Job No.
GHO/11

A P P E N D I X B

ORDNANCE SURVEY ARCHIVE MAPS

Historical Mapping Legends

Ordnance Survey County Series 1:10,560

	Gravel Pit		Sand Pit		Other Pits
	Quarry		Shingle		Orchard
	Osiers		Reeds		Marsh
	Mixed Wood		Deciduous		Brushwood
	Fir		Furze		Rough Pasture
	Arrow denotes flow of water		Trigonometrical Station		
	Site of Antiquities		Bench Mark		
	Pump, Guide Post, Signal Post		Well, Spring, Boundary Post		
	-285 Surface Level				
	Sketched Contour		Instrumental Contour		
	Main Roads		Minor Roads		
	Sunken Road		Raised Road		
	Road over Railway		Railway over River		
	Railway over Road		Level Crossing		
	Road over River or Canal		Road over Stream		
	Road over Stream				
	County Boundary (Geographical)				
	County & Civil Parish Boundary				
	Administrative County & Civil Parish Boundary				
	County Borough Boundary (England)				
	County Burgh Boundary (Scotland)				
	Rural District Boundary				
	Civil Parish Boundary				

Ordnance Survey Plan 1:10,000

	Chalk Pit, Clay Pit or Quarry		Gravel Pit
	Sand Pit		Disused Pit or Quarry
	Refuse or Slag Heap		Lake, Loch or Pond
	Dunes		Boulders
	Coniferous Trees		Non-Coniferous Trees
	Orchard		Scrub
	Coppice		Heath
	Rough Grassland		Marsh
	Reeds		Saltings
	Building		Glasshouse
	Sloping Masonry		Pylon
	Electricity Transmission Line		Pole
	Cutting		Embankment
	Standard Gauge Multiple Track		Standard Gauge Single Track
	Siding, Tramway or Mineral Line		Narrow Gauge
	Geographical County		
	Administrative County, County Borough or County of City		
	Municipal Borough, Urban or Rural District, Burgh or District Council		
	Borough, Burgh or County Constituency Shown only when not coincident with other boundaries		
	Civil Parish Shown alternately when coincidence of boundaries occurs		
	BP, BS Boundary Post or Stone		Pol Sta Police Station
	Ch Church		PO Post Office
	CH Club House		PC Public Convenience
	F E Sta Fire Engine Station		PH Public House
	FB Foot Bridge		SB Signal Box
	Fn Fountain		Spr Spring
	GP Guide Post		TCB Telephone Call Box
	MP Mile Post		TCP Telephone Call Post
	MS Mile Stone		W Well

1:10,000 Raster Mapping

	Gravel Pit		Refuse tip or slag heap
	Rock		Rock (scattered)
	Boulders		Boulders (scattered)
	Shingle		Mud
	Sand		Sand Pit
	Slopes		Top of cliff
	General detail		Underground detail
	Overhead detail		Narrow gauge railway
	Multi-track railway		Single track railway
	County boundary (England only)		Civil, parish or community boundary
	District, Unitary, Metropolitan, London Borough boundary		Constituency boundary
	Area of wooded vegetation		Non-coniferous trees
	Non-coniferous trees (scattered)		Coniferous trees
	Coniferous trees (scattered)		Positioned tree
	Orchard		Coppice or Osiers
	Rough Grassland		Heath
	Scrub		Marsh, Salt Marsh or Reeds
	Water feature		Flow arrows
	MHW(S) Mean high water (springs)		MLW(S) Mean low water (springs)
	Telephone line (where shown)		Electricity transmission line (with poles)
	Bench mark (where shown)		Triangulation station
	Point feature (e.g. Guide Post or Mile Stone)		Pylon, flare stack or lighting tower
	Site of (antiquity)		Glasshouse
	General Building		Important Building

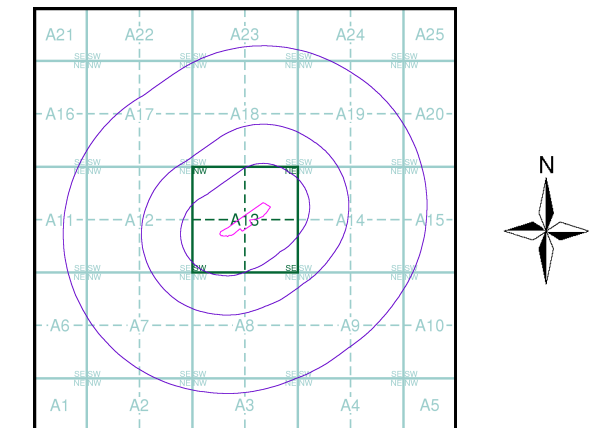


ARP GEOTECHNICAL LTD

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	1908	4
Yorkshire	1:10,560	1930 - 1931	5
Yorkshire	1:10,560	1938	6
Yorkshire	1:10,560	1948	7
Ordnance Survey Plan	1:10,000	1956	8
Ordnance Survey Plan	1:10,000	1965	9
Ordnance Survey Plan	1:10,000	1976	10
Ordnance Survey Plan	1:10,000	1989	11
10K Raster Mapping	1:10,000	2000	12
Street View	Variable		13

Historical Map - Slice A



Order Details

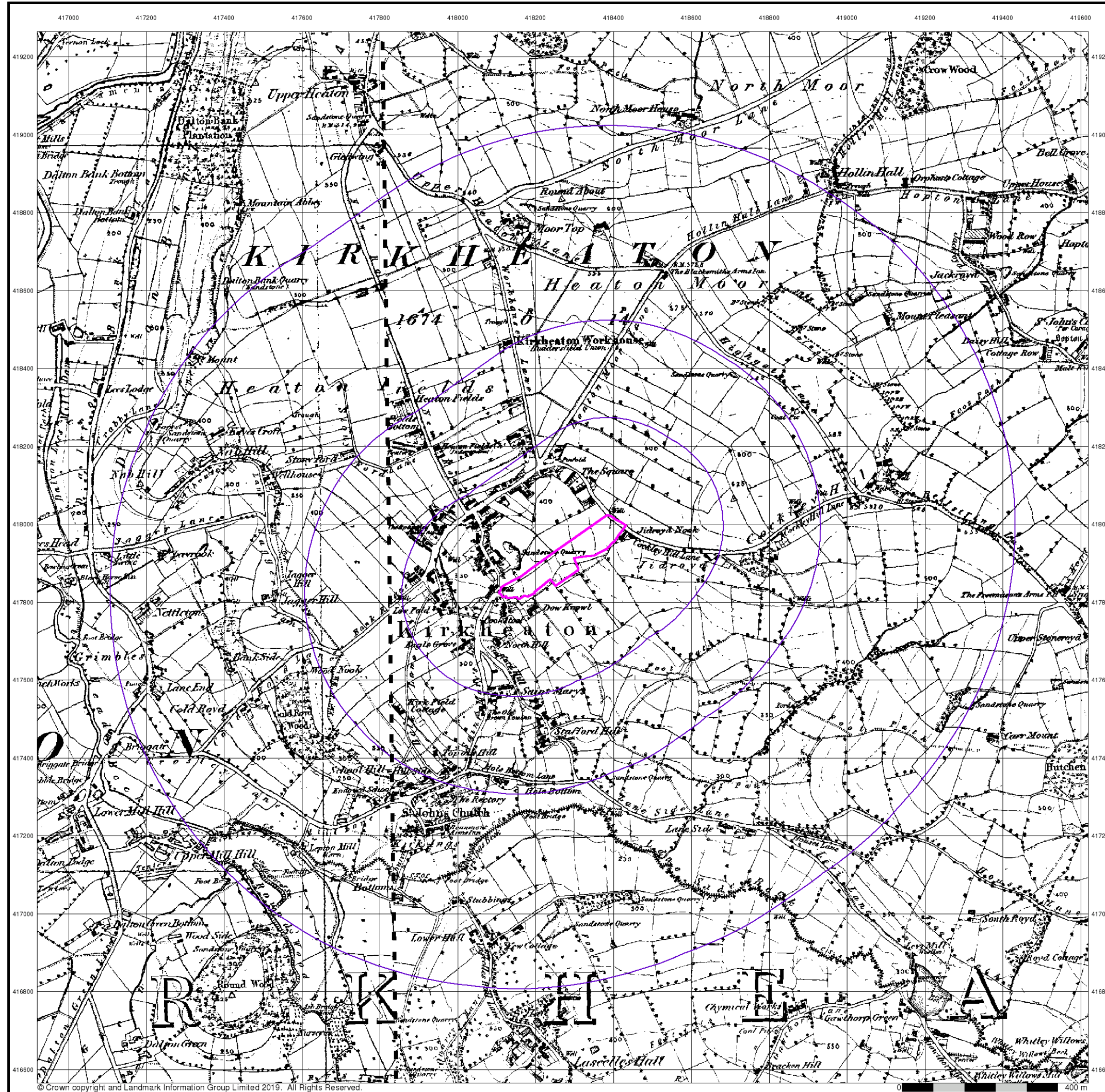
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 Customer Ref: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 1000

Site Details

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



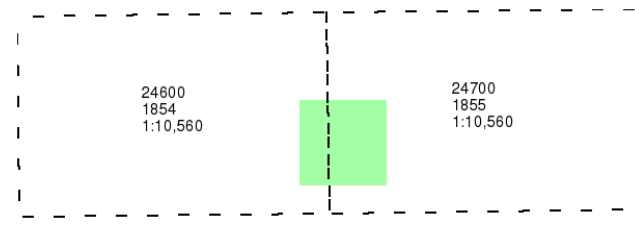
Tel: 0844 844 9952
 Fax: 0844 844 9951
 Web: www.envirocheck.co.uk



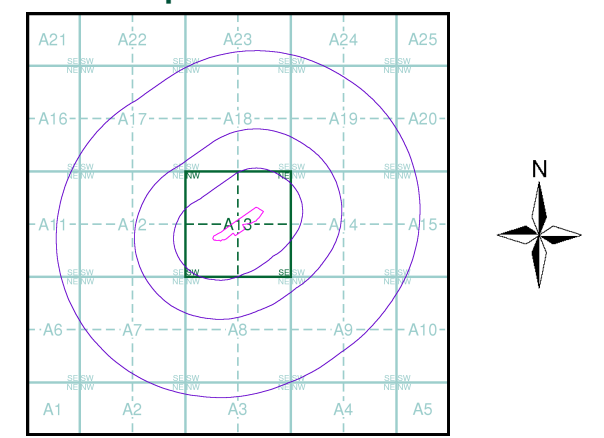
Yorkshire
Published 1854 - 1855
Source map scale - 1:10,560

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)

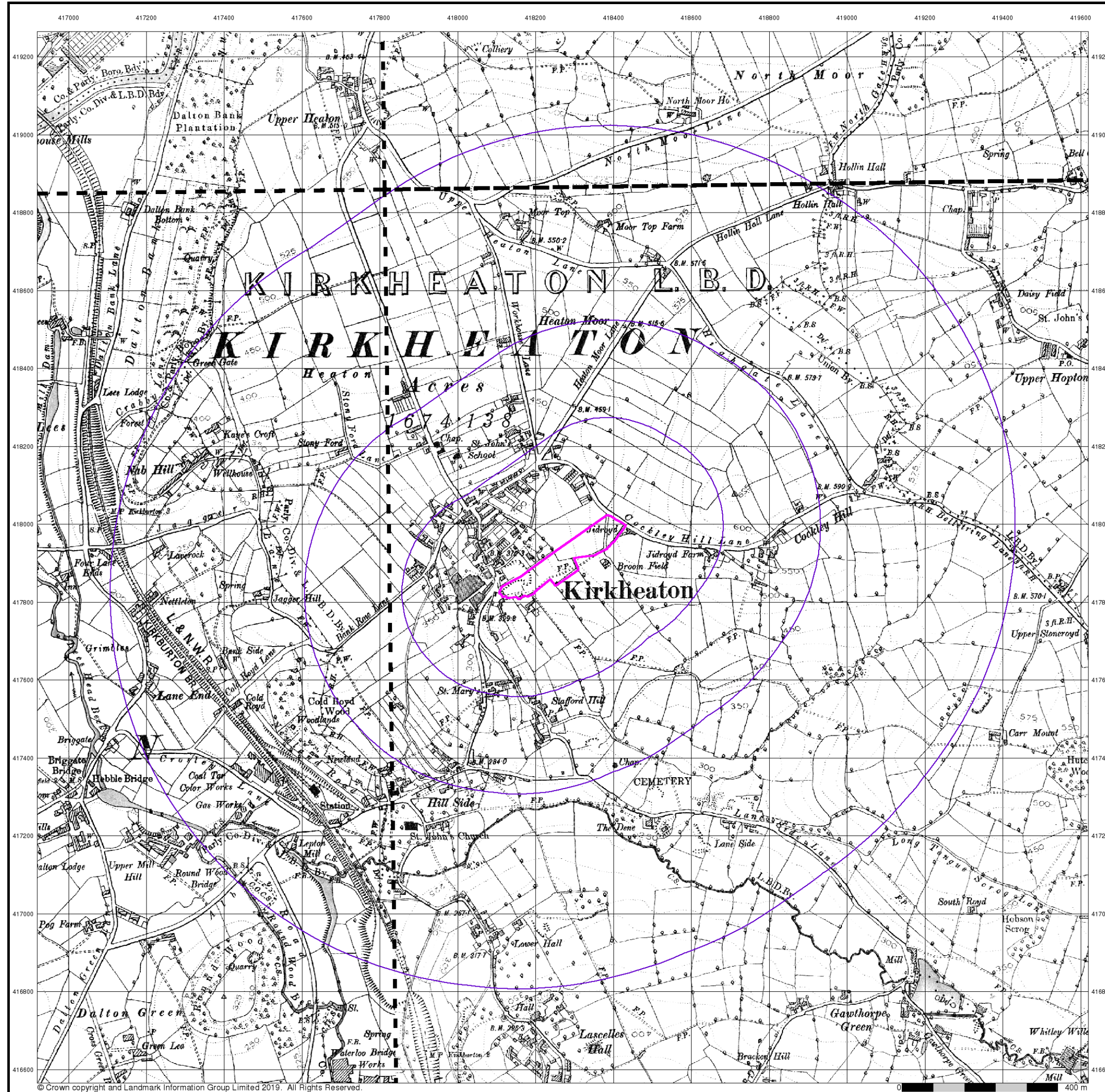


Historical Map - Slice A



Order Details
Order Number: 193766422_1_1
Customer Ref: CKD/02
National Grid Reference: 418270, 417910
Slice: A
Site Area (Ha): 2.08
Search Buffer (m): 1000

Site Details
Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



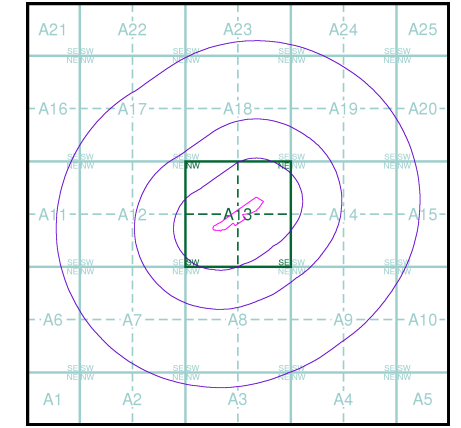
Yorkshire
Published 1894
Source map scale - 1:10,560

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)

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246SE 1894 1:10,560	247SW 1894 1:10,560

Historical Map - Slice A

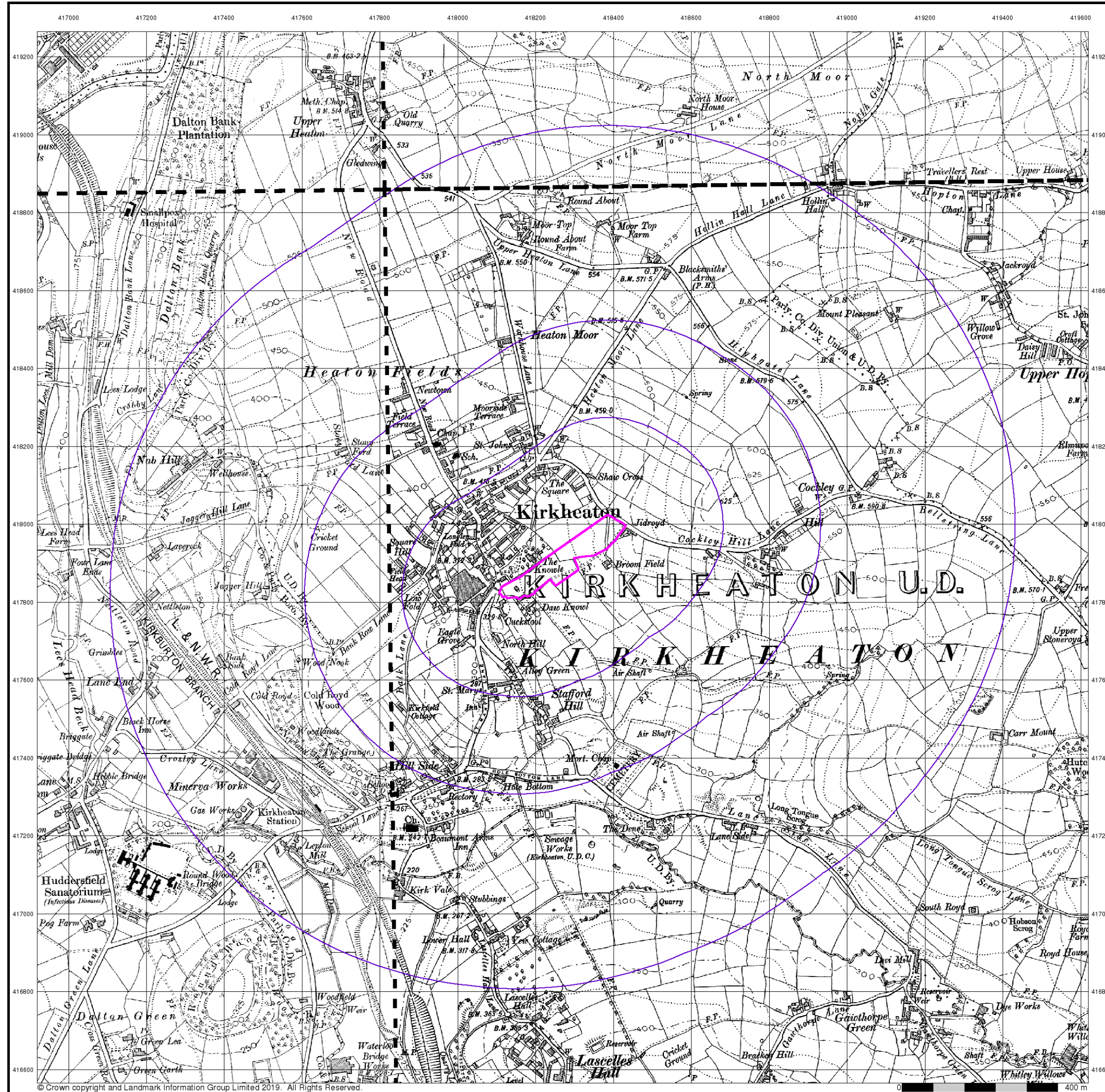


Order Details

Order Number: 193766422_1_1
Customer Ref: CKD/02
National Grid Reference: 418270, 417910
Slice: A
Site Area (Ha): 2.08
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Site Details

Cockey Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



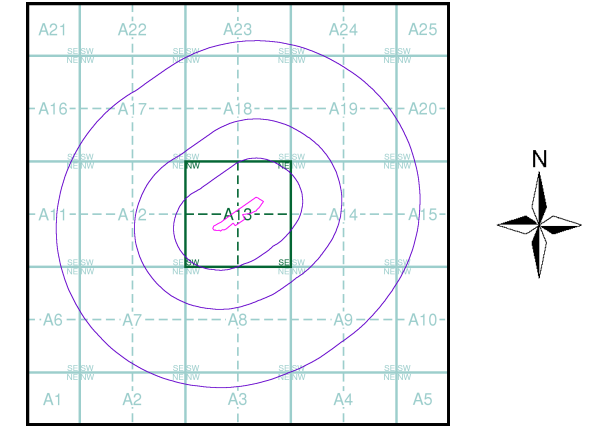
Yorkshire
Published 1908
Source map scale - 1:10,560

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)

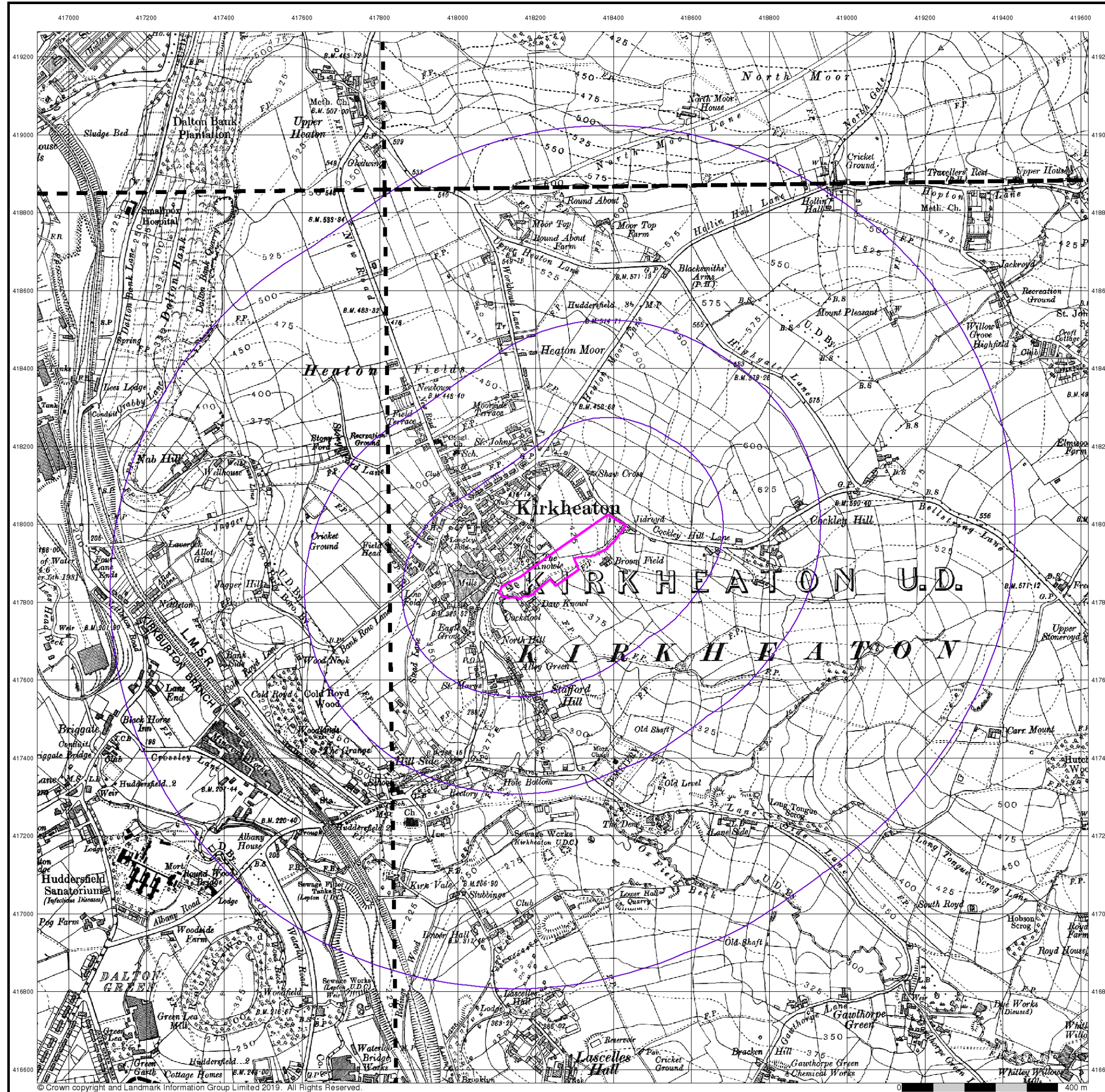
246NE 1908 1:10,560	247NW 1908 1:10,560
246SE 1908 1:10,560	247SW 1908 1:10,560

Historical Map - Slice A



Order Details
Order Number: 193766422_1_1
Customer Ref: CKD/02
National Grid Reference: 418270, 417910
Slice: A
Site Area (Ha): 2.08
Search Buffer (m): 1000

Site Details
Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



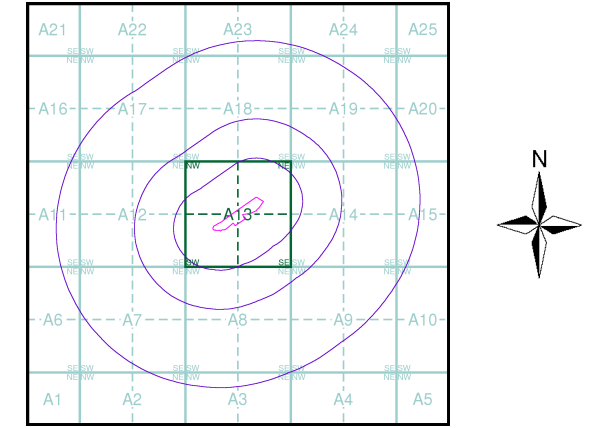
Yorkshire
Published 1930 - 1931
Source map scale - 1:10,560

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Map Name(s) and Date(s)

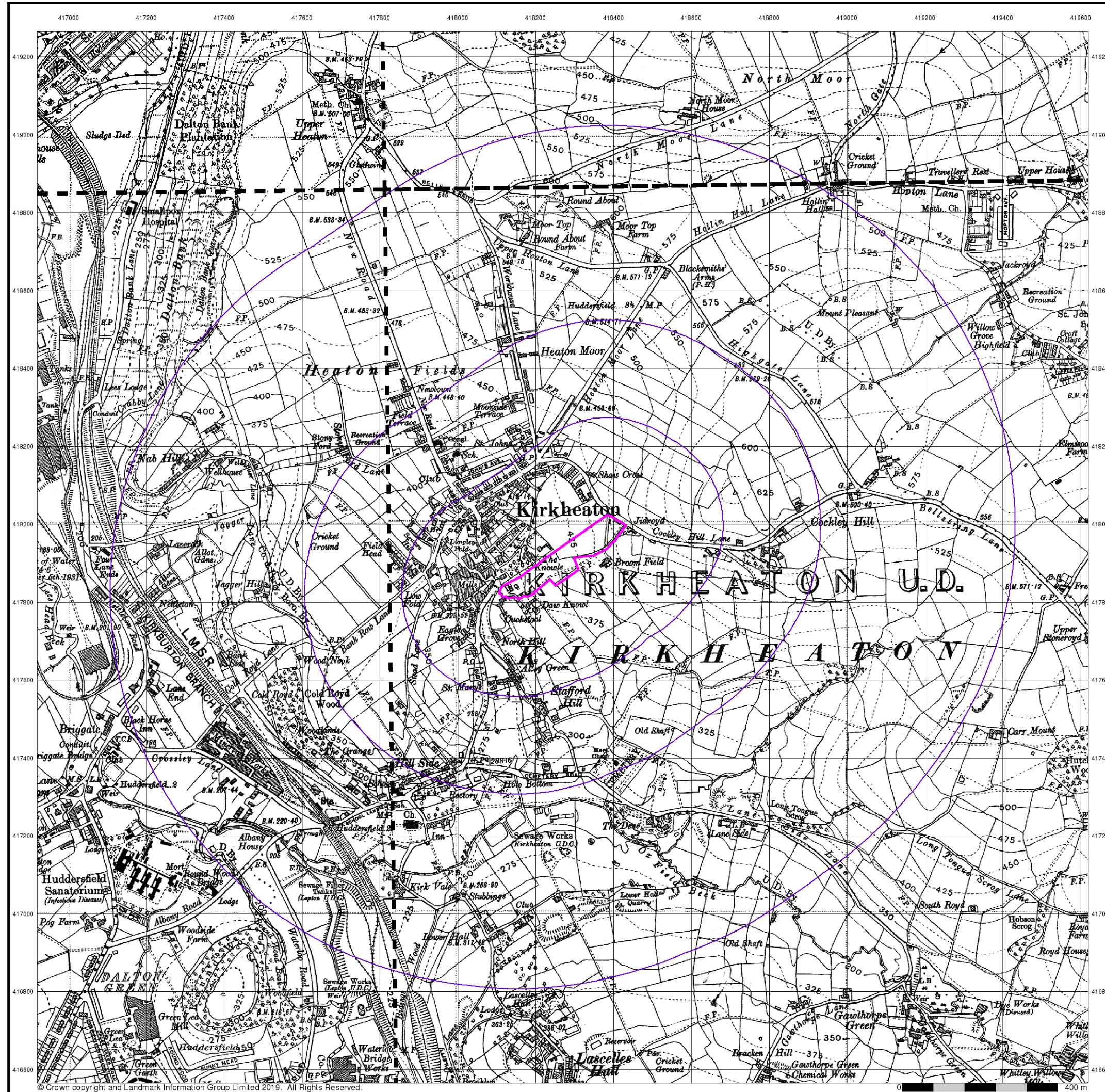
246NE 1930 1:10,560	247NW 1931 1:10,560
246SE 1930 1:10,560	247SW 1930 1:10,560

Historical Map - Slice A



Order Details
Order Number: 193766422_1_1
Customer Ref: CKD/02
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Site Area (Ha): 2.08
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Site Details
Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



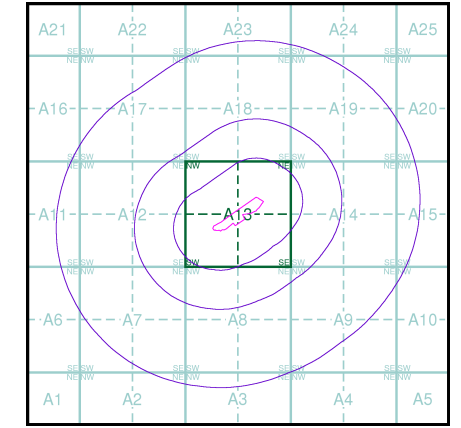
Yorkshire
Published 1938
Source map scale - 1:10,560

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Map Name(s) and Date(s)

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Historical Map - Slice A

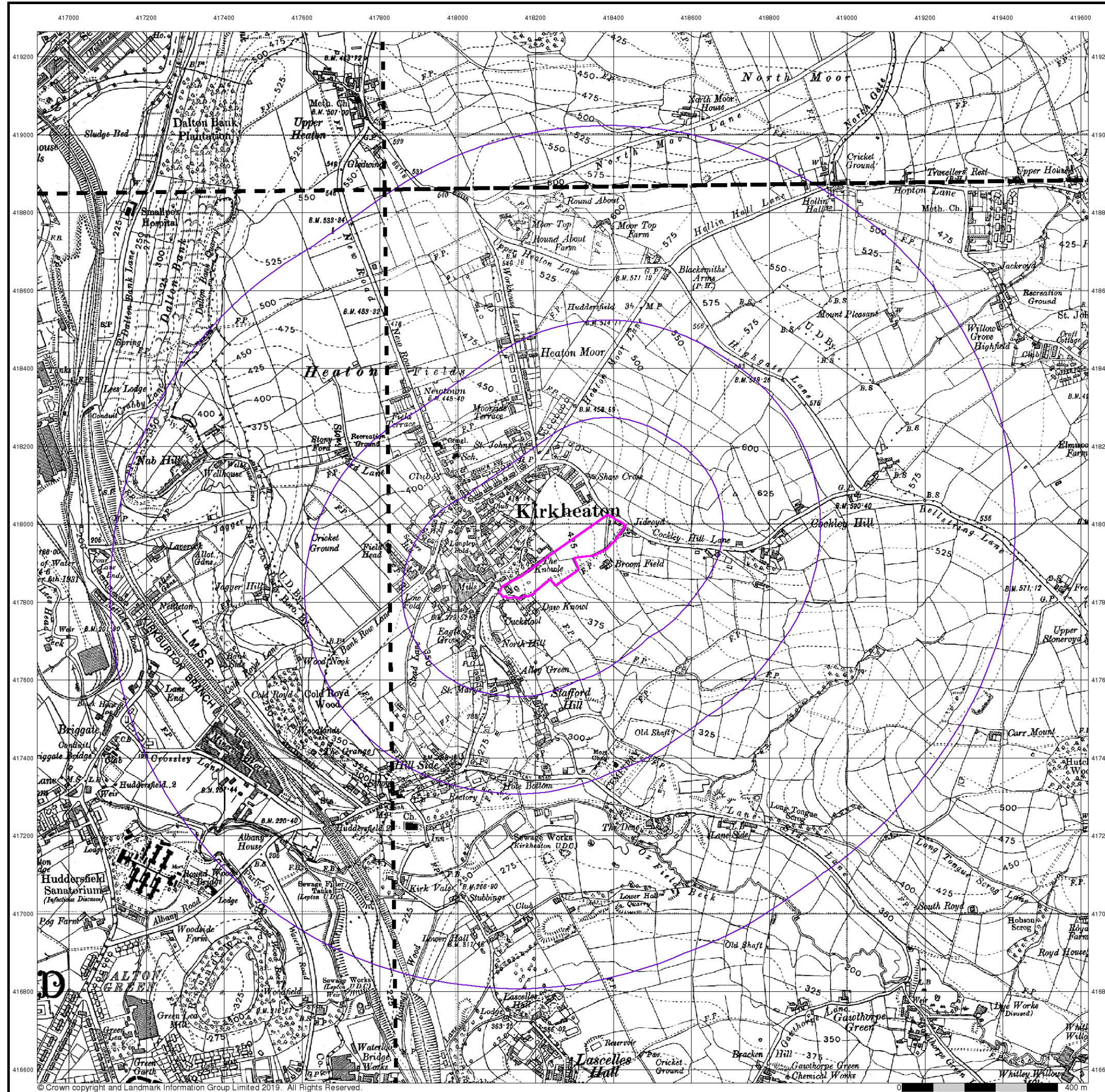


Order Details

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Site Details

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



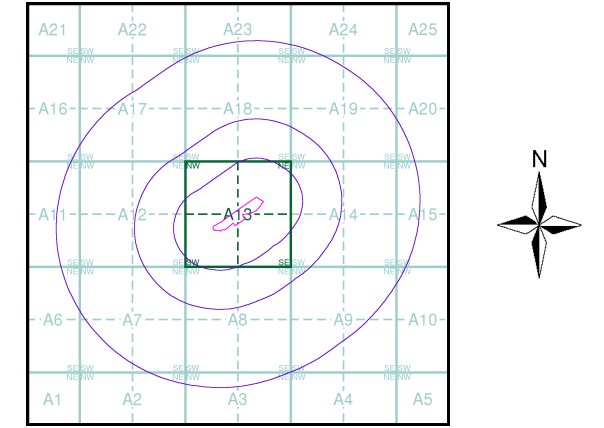
Yorkshire
Published 1948
Source map scale - 1:10,560

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Map Name(s) and Date(s)

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246SE 1948 1:10,560	247SW 1948 1:10,560

Historical Map - Slice A

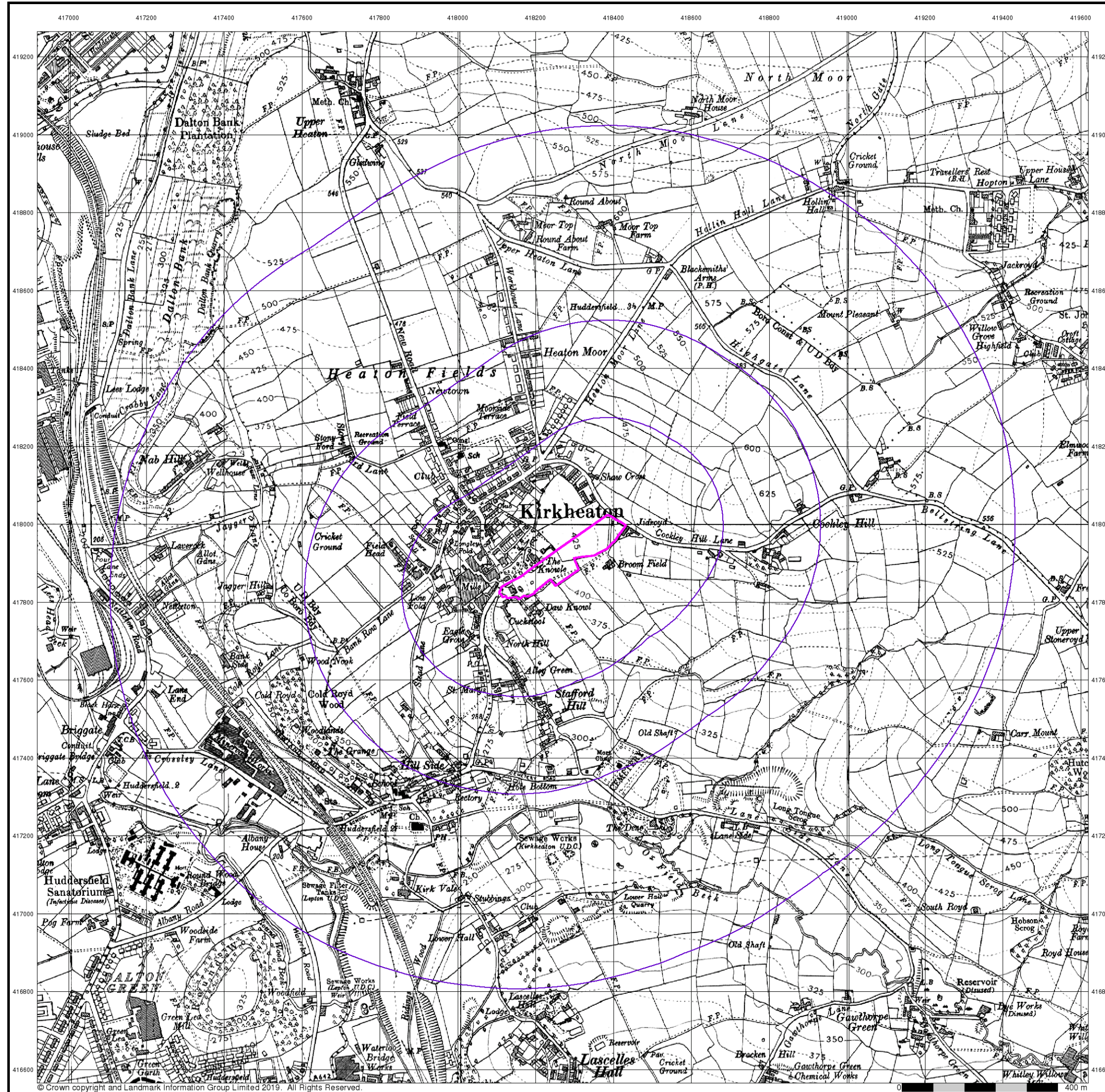


Order Details

Order Number: 193766422_1_1
Customer Ref: CKD/02
National Grid Reference: 418270, 417910
Slice: A
Site Area (Ha): 2.08
Search Buffer (m): 1000

Site Details

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



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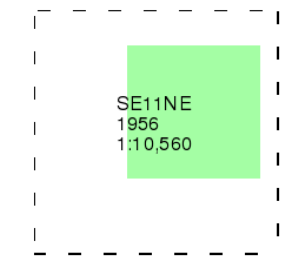
Ordnance Survey Plan

Published 1956

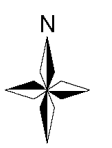
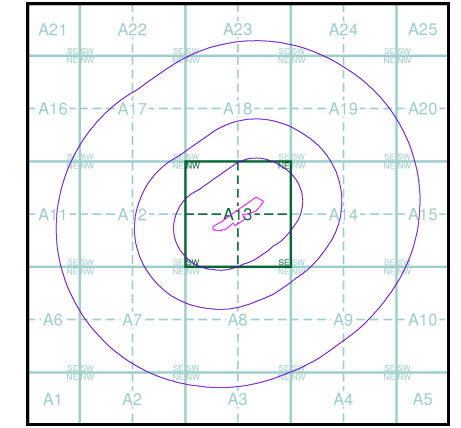
Source map scale - 1:10,000

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

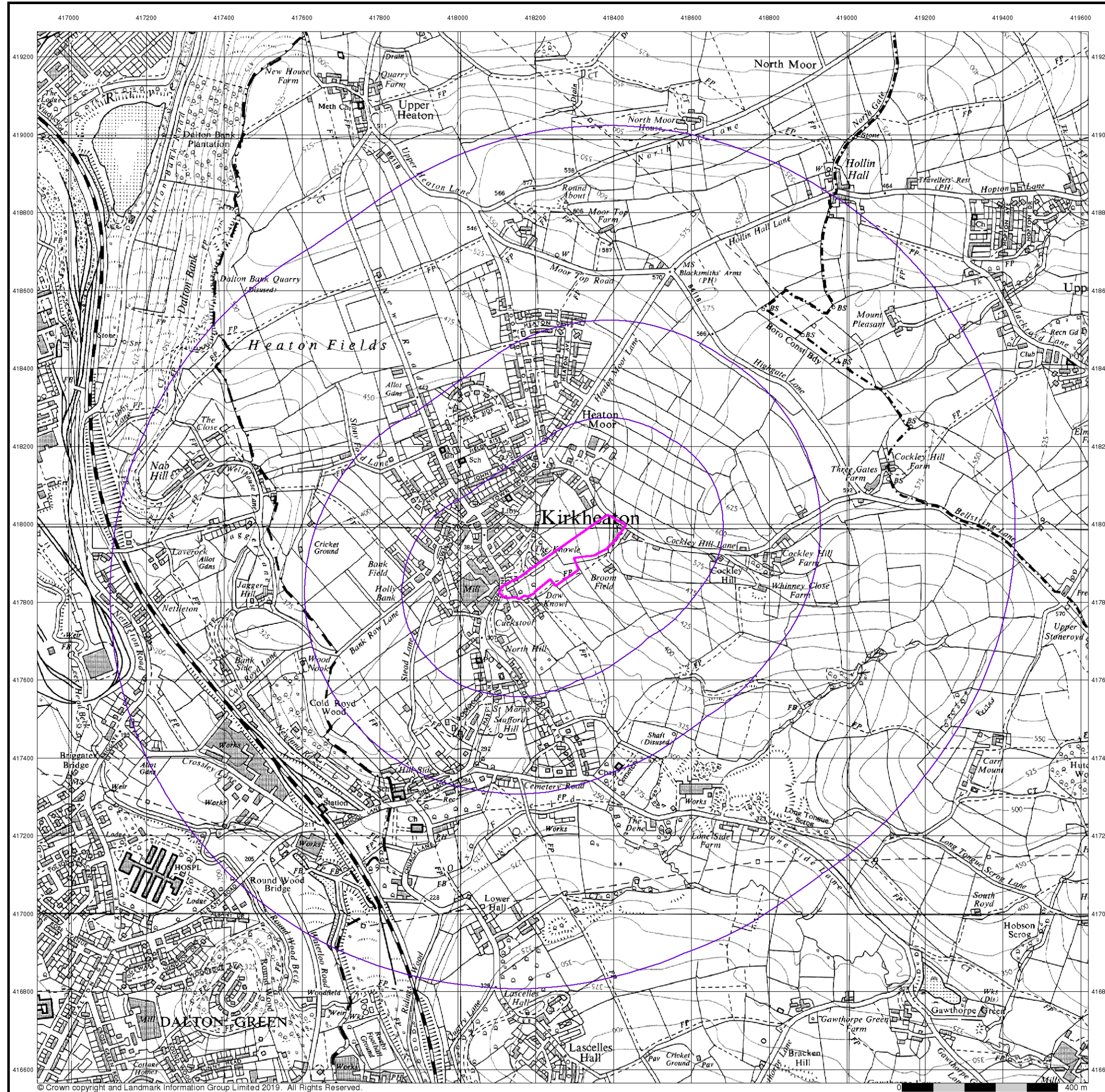
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 Customer Ref: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
 Site Area (Ha): 2.08
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Site Details

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



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

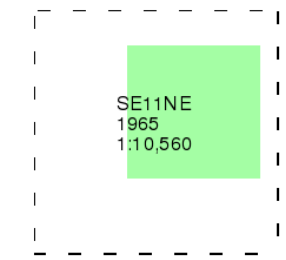


ARP GEOTECHNICAL LTD

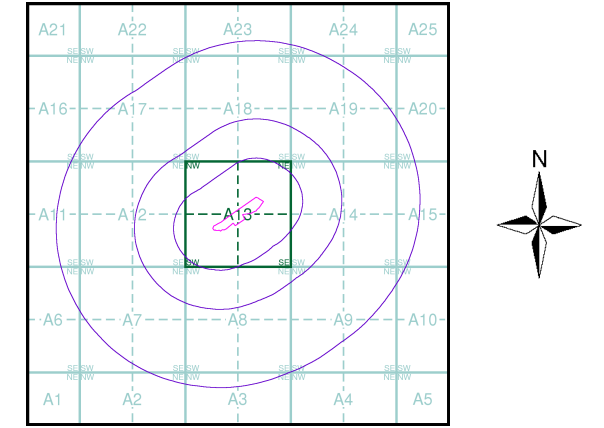
Ordnance Survey Plan
Published 1965
Source map scale - 1:10,000

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

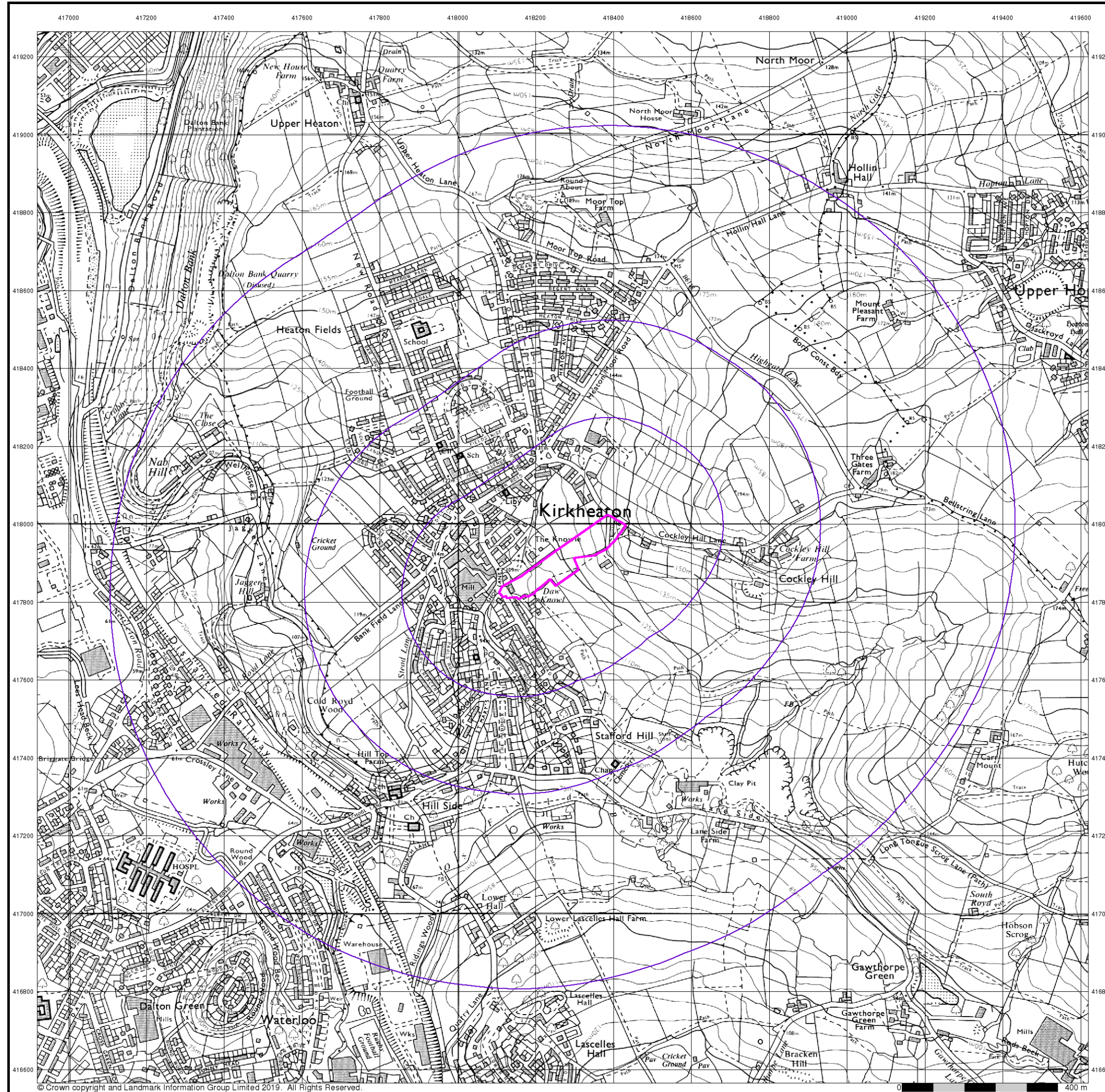
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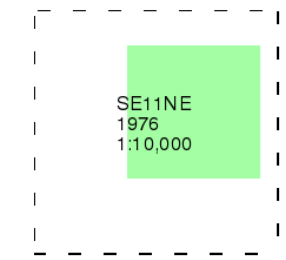


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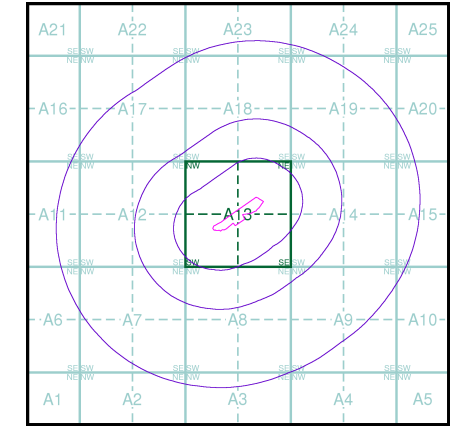
Ordnance Survey Plan
Published 1976
Source map scale - 1:10,000

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

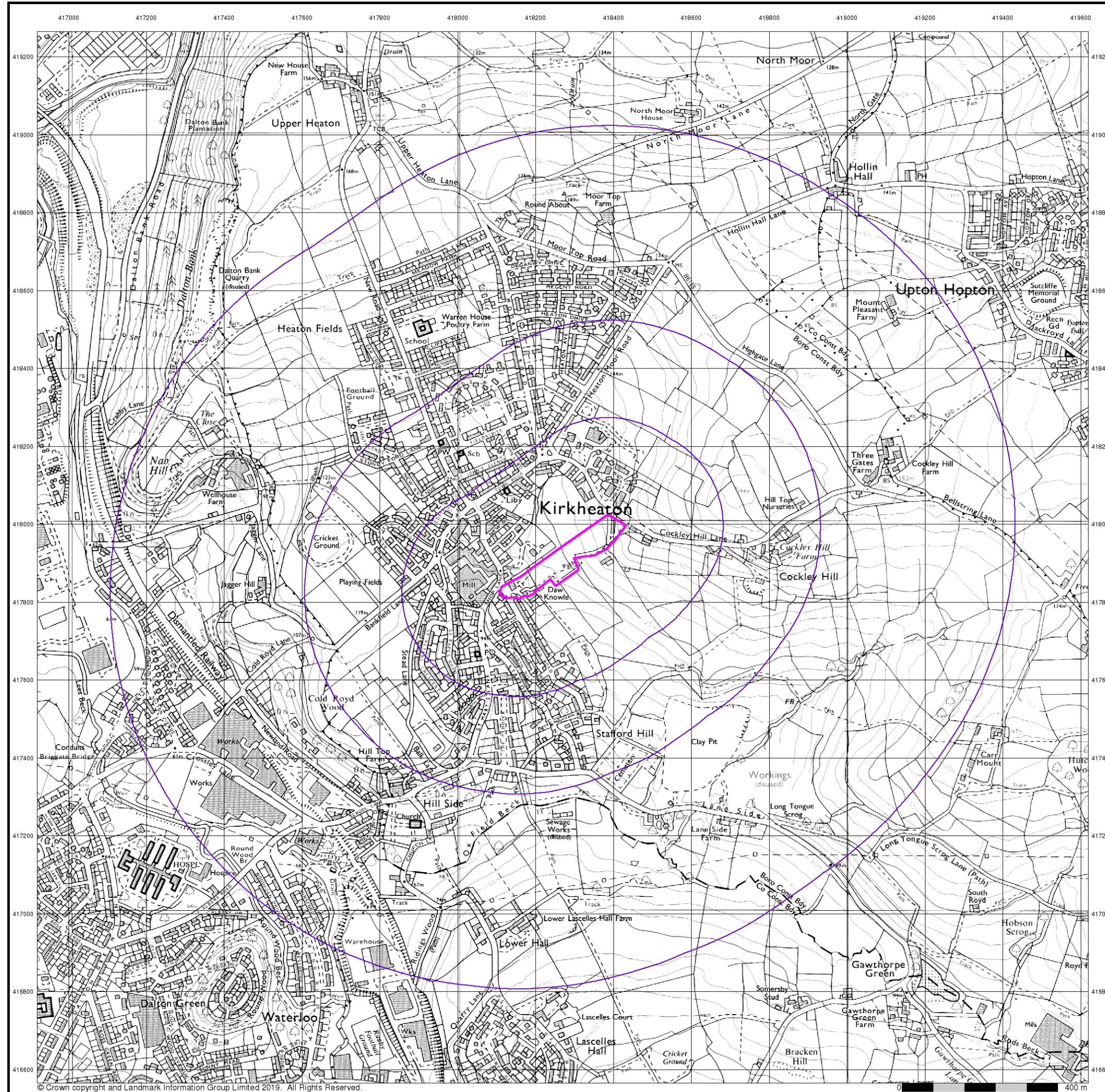
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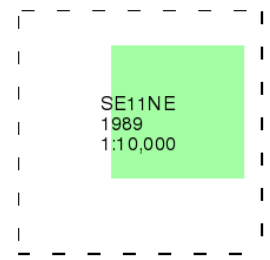
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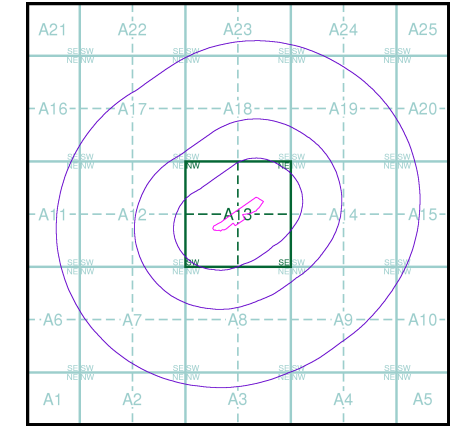
Ordnance Survey Plan
Published 1989
Source map scale - 1:10,000

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)



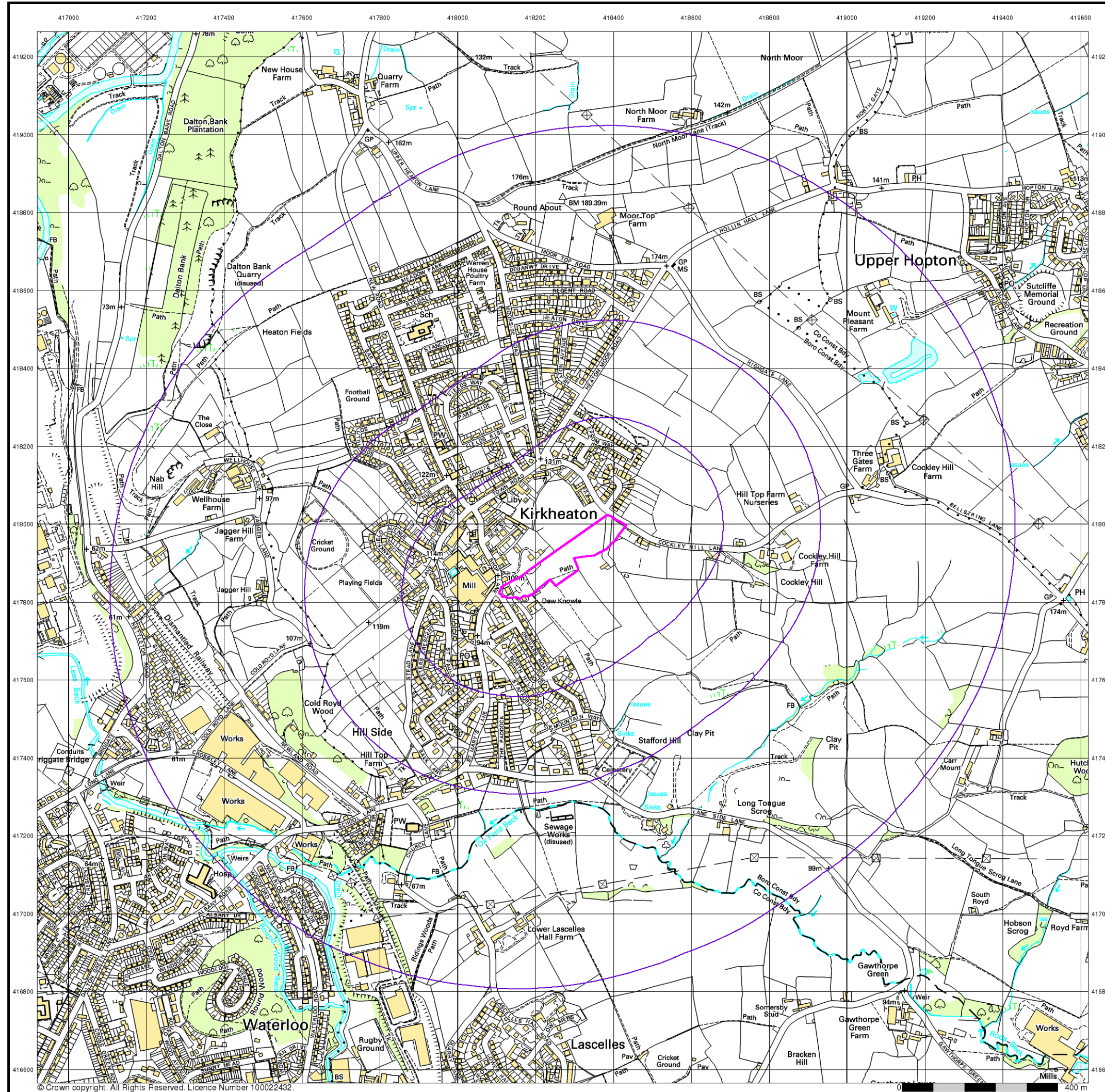
Historical Map - Slice A



Order Details
 Order Number: 193766422_1_1
 Customer Ref: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 1000

Site Details
 Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH





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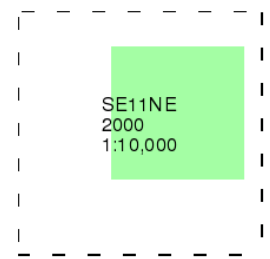
10k Raster Mapping

Published 2000

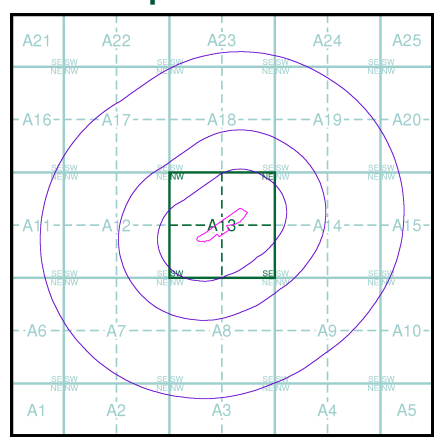
Source map scale - 1:10,000

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)



Historical Map - Slice A



Order Details

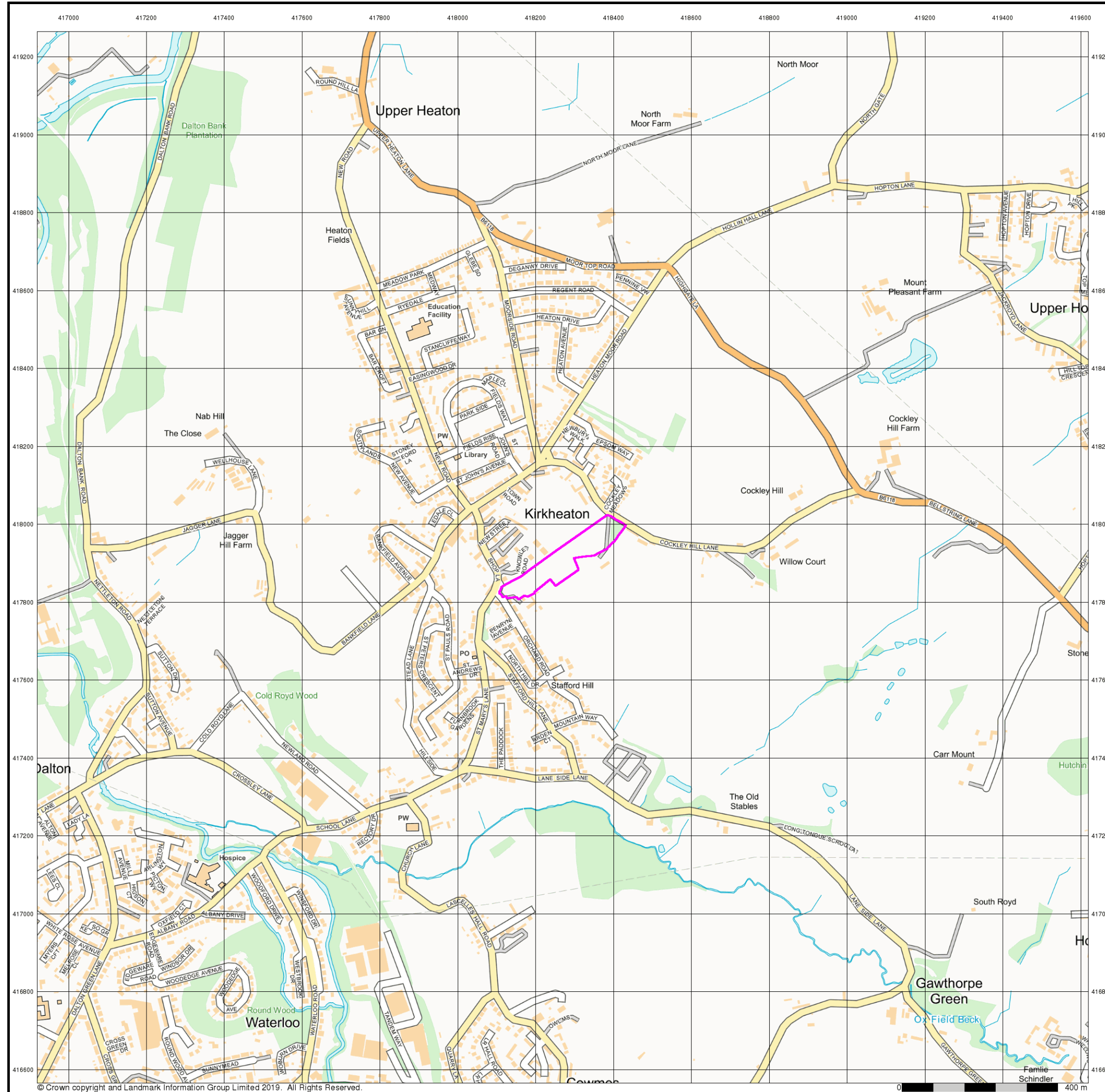
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 Customer Ref: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 1000

Site Details

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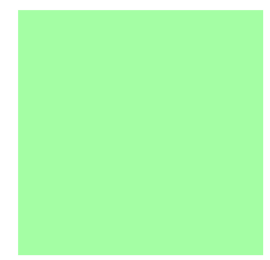
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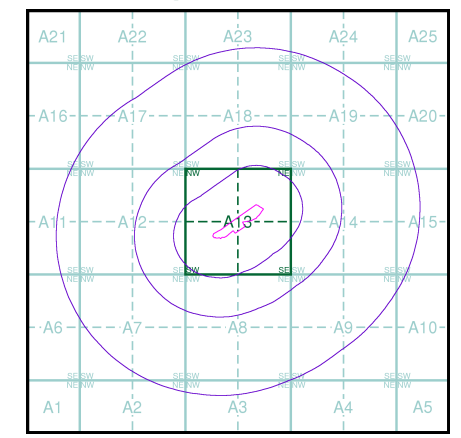
Street View
Published 2019
Source map scale - 1:10,000

Street View is a street-level map for the whole of Great Britain produced by the Ordnance Survey. These maps are provided at a nominal scale of 1:10,000

Map Name(s) and Date(s)



Street View Map - Slice A



Order Details
 Order Number: 193766422_1_1
 Customer Ref: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
 Site Area (Ha): 2.08
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Site Details
 Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH

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Historical Mapping Legends

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

Quarry **Gravel Pit** **Sand Pit**
Clay Pit **Shingle** **Refuse Heap**
Sloping Masonry **Flat Rock**
Marsh **Reeds** **Osiers**
Rough Pasture **Furze** **Wood**
Mixed Wood **Brushwood** **Orchard**
Fir **Ford** **Stepping Stones**
Ferry **Waterfall** **Lock**
Trig. Station **Altitude at Trig. Station**
B.M. 325.9 **Bench Mark** **Surface Level**
Arrow denotes flow of water **Antiquities (site of)**
Cutting **Embankment**
Railway crossing Road **Level Crossing** **Road crossing Railway**
Railway crossing River or Canal **Road over single stream** **Road over River or Canal**
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
County Borough Boundary (England)
County Burgh Boundary (Scotland)
Co. Boro. Bdy.
Co. Burgh Bdy.
BP BS 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 **SL** 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

Inactive Quarry, Chalk Pit or Clay Pit **Active Quarry, Chalk Pit or Clay Pit**
Rock **Boulders**
Cliff **Slopes** **Top**
Roofed Building **Glazed Roof Building**
Sloping Masonry **Archway**
Non-Coniferous Tree (surveyed) **Coniferous Tree (surveyed)**
Non-Coniferous Trees (not surveyed) **Coniferous Trees (not surveyed)**
Orchard Tree **Scrub** **Bracken**
Coppice, Osier **Reeds** **Marsh, Saltings**
Rough Grassland **Heath** **Culvert**
Direction of water flow **Bench Mark** **Antiquity (site of)**
Cave Entrance **Triangulation Station** **Electricity Pylon**
Electricity Transmission Line
County Boundary (Geographical)
County & Civil Parish Boundary
Civil Parish Boundary
Admin. County or County Bor. Boundary
London Borough Boundary
Symbol marking point where boundary mereing changes
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
EI 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

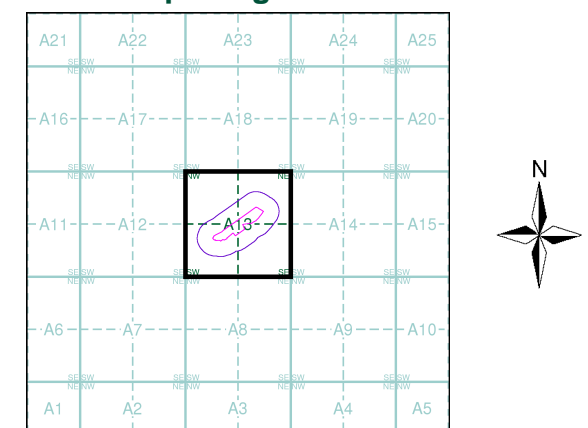
Cliff **Slopes** **Top**
Rock **Rock (scattered)**
Boulders **Boulders (scattered)**
Positioned Boulder **Scree**
Non-Coniferous Tree (surveyed) **Coniferous Tree (surveyed)**
Non-Coniferous Trees (not surveyed) **Coniferous Trees (not surveyed)**
Orchard Tree **Scrub** **Bracken**
Coppice, Osier **Reeds** **Marsh, Saltings**
Rough Grassland **Heath** **Culvert**
Direction of water flow **Triangulation Station** **Antiquity (site of)**
Electricity Transmission Line **Electricity Pylon**
B.M. 231.60m Bench Mark **Buildings with Building Seed**
Roofed Building **Glazed Roof Building**
Civil parish/community boundary
District boundary
County boundary
Boundary post/stone
Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)
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
EI Gen Sta Electricity Generating Station **Sewage Ppg Sta** Sewage Pumping Station
EI P Electricity Pole, Pillar **SB, S Br** Signal Box or Bridge
EI 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 Governor **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



Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Yorkshire	1:2,500	1893	2
Yorkshire	1:2,500	1907	3
Yorkshire	1:2,500	1919	4
Ordnance Survey Plan	1:2,500	1961	5
Ordnance Survey Plan	1:2,500	1968 - 1971	6
Ordnance Survey Plan	1:2,500	1977	7
Additional SIMs	1:2,500	1977 - 1989	8
Ordnance Survey Plan	1:1,250	1984	9
Additional SIMs	1:1,250	1992	10
Large-Scale National Grid Data	1:1,250	1993	11
Large-Scale National Grid Data	1:1,250	1994	12
Large-Scale National Grid Data	1:1,250	1995	13

Historical Map - Segment A13



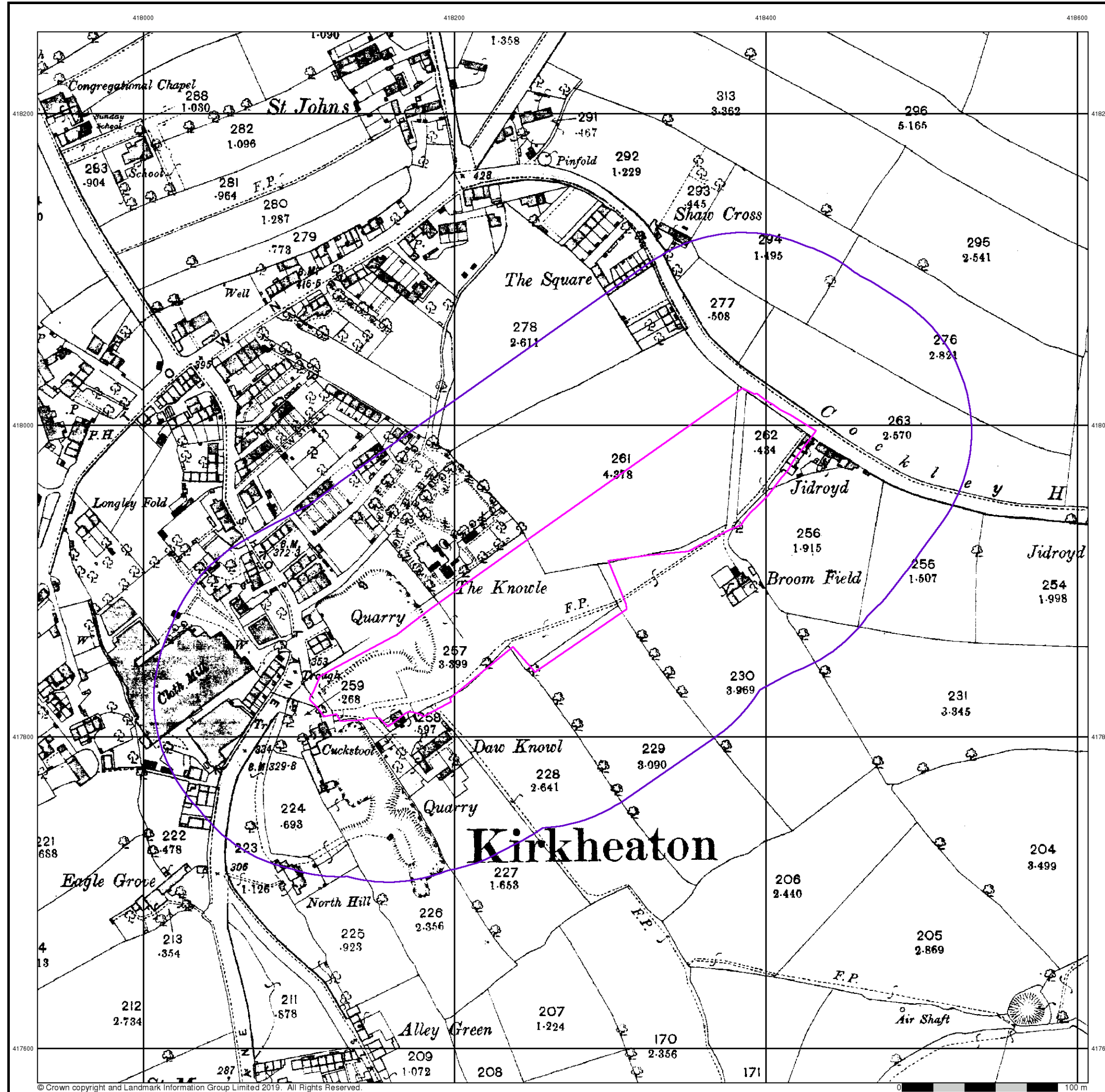
Order Details

Order Number: 193766422_1_1
Customer Ref: CKD/02
National Grid Reference: 418270, 417910
Slice: A
Site Area (Ha): 2.08
Search Buffer (m): 100

Site Details

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH

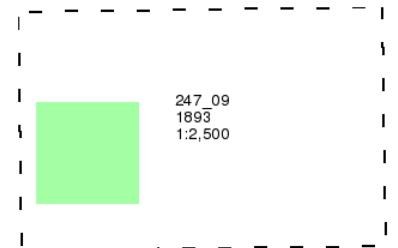
Landmark
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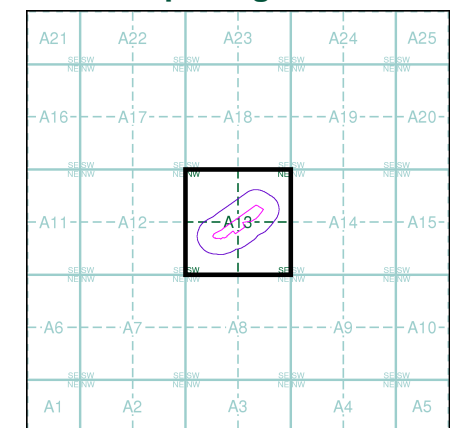
Yorkshire
Published 1893
Source map scale - 1:2,500

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 A13



Order Details

Order Number: 193766422_1_1
Customer Ref: CKD/02
National Grid Reference: 418270, 417910
Slice: A
Site Area (Ha): 2.08
Search Buffer (m): 100

Site Details

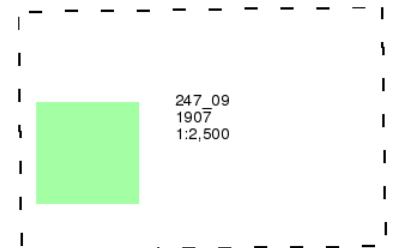
Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



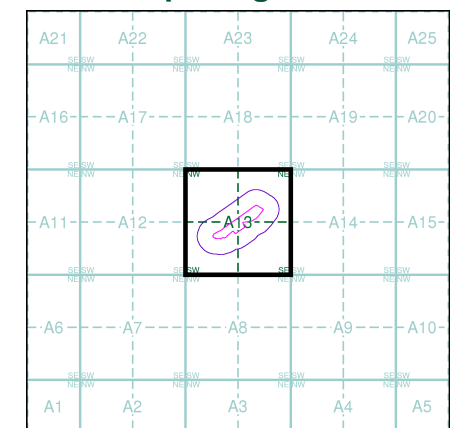
Yorkshire
Published 1907
Source map scale - 1:2,500

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 A13

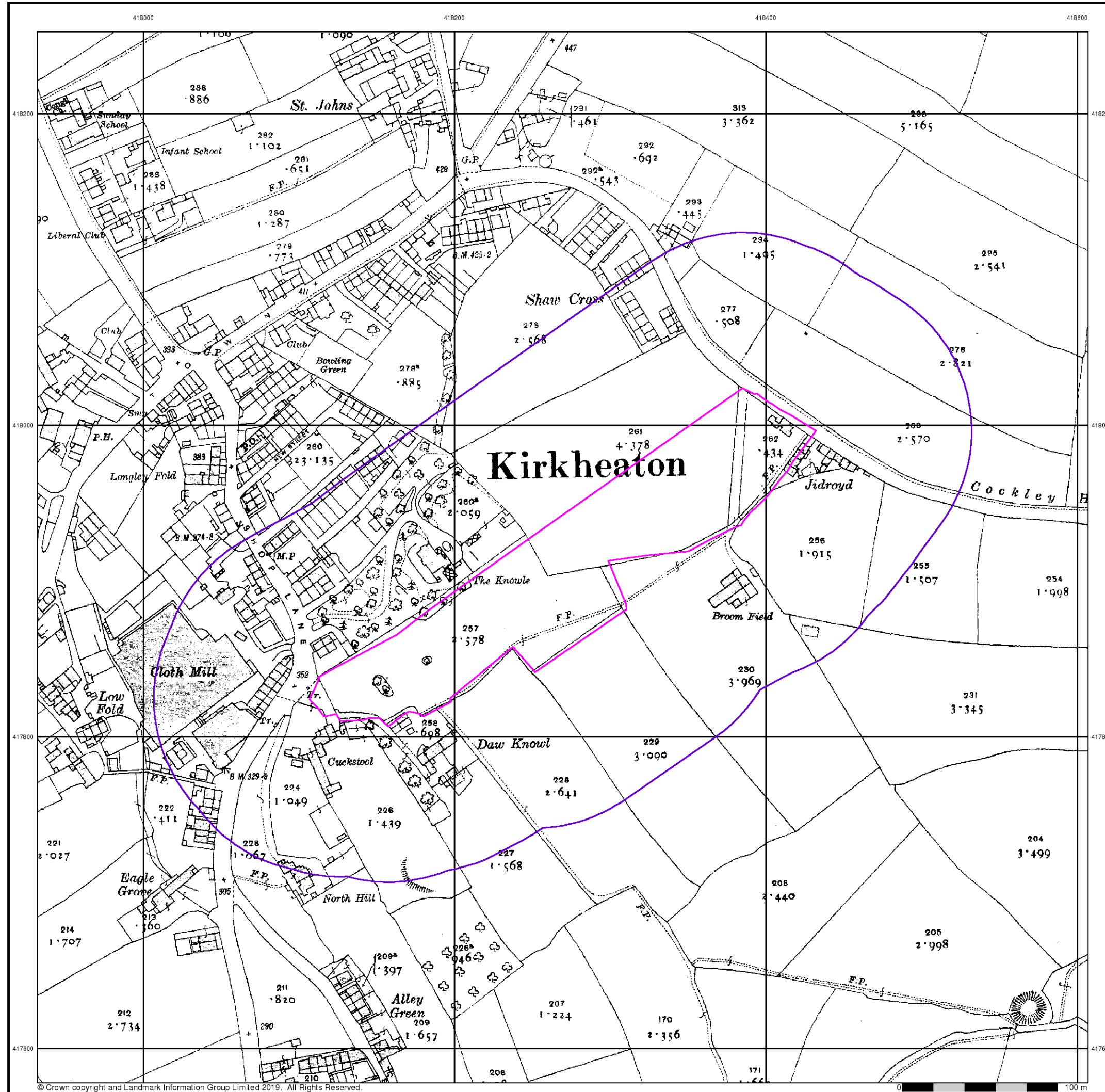


Order Details

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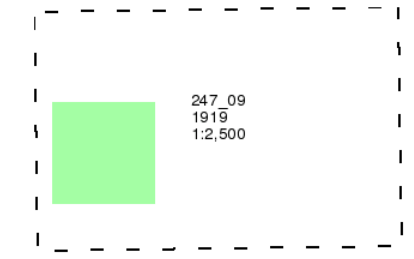
Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



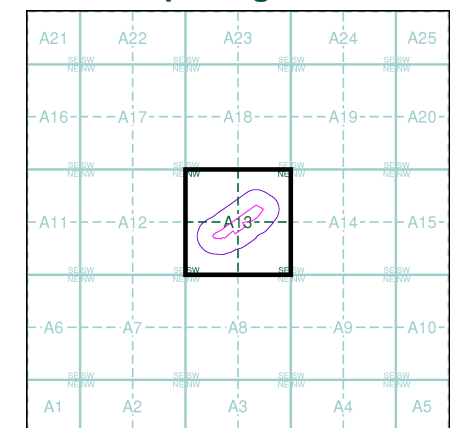
Yorkshire
Published 1919
Source map scale - 1:2,500

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)

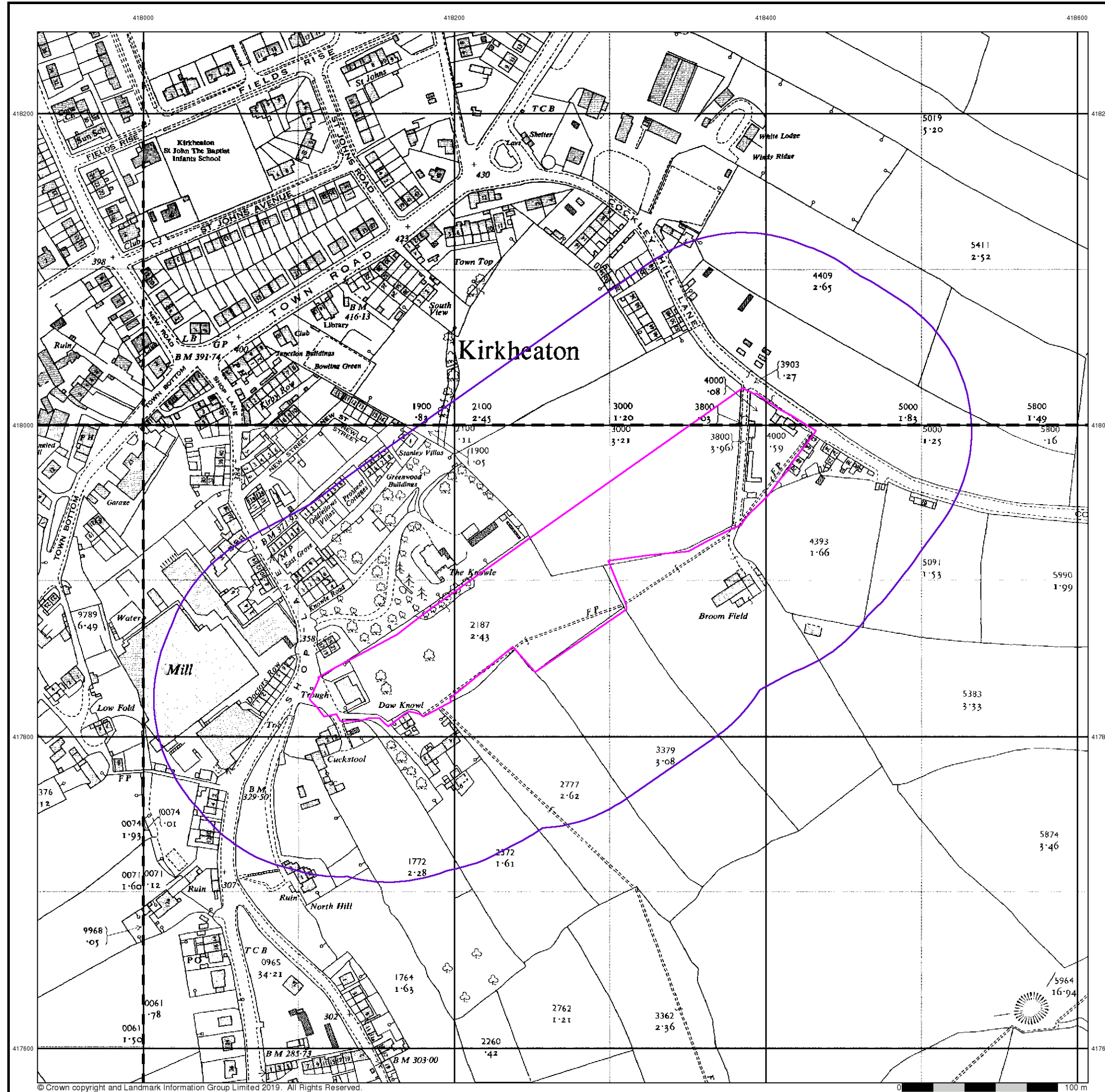


Historical Map - Segment A13



Order Details
Order Number: 193766422_1_1
Customer Ref: CKD/02
National Grid Reference: 418270, 417910
Slice: A
Site Area (Ha): 2.08
Search Buffer (m): 100

Site Details
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Ordnance Survey Plan

Published 1961

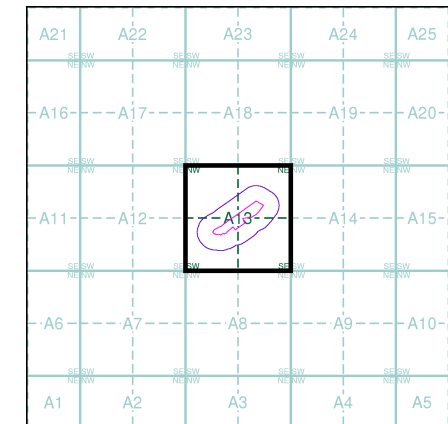
Source map scale - 1:2,500

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)

SE 1718 1961 1:2,500	SE 1818 1961 1:2,500
SE 1717 1961 1:2,500	SE 1817 1961 1:2,500

Historical Map - Segment A13



Order Details

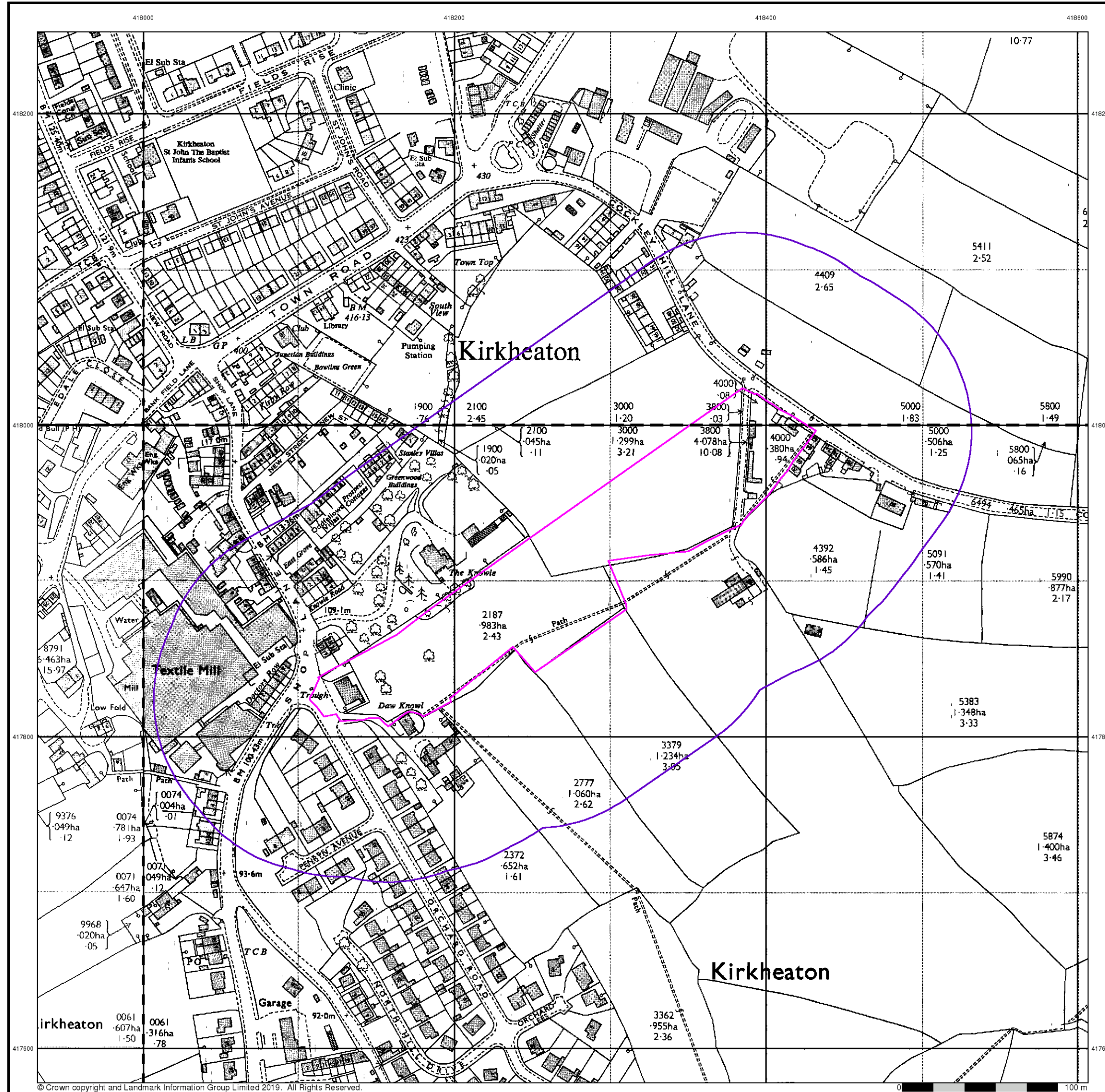
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 Customer Ref: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 100

Site Details

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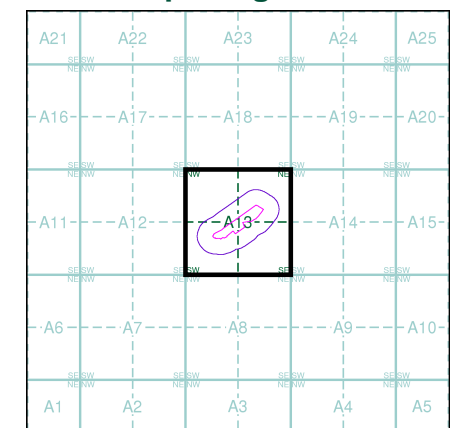
Ordnance Survey Plan
Published 1968 - 1971
Source map scale - 1:2,500

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)

SE 1718 1971 1:2,500	SE 1818 1968 1:2,500
SE 1717 1970 1:2,500	SE 1817 1970 1:2,500

Historical Map - Segment A13



Order Details

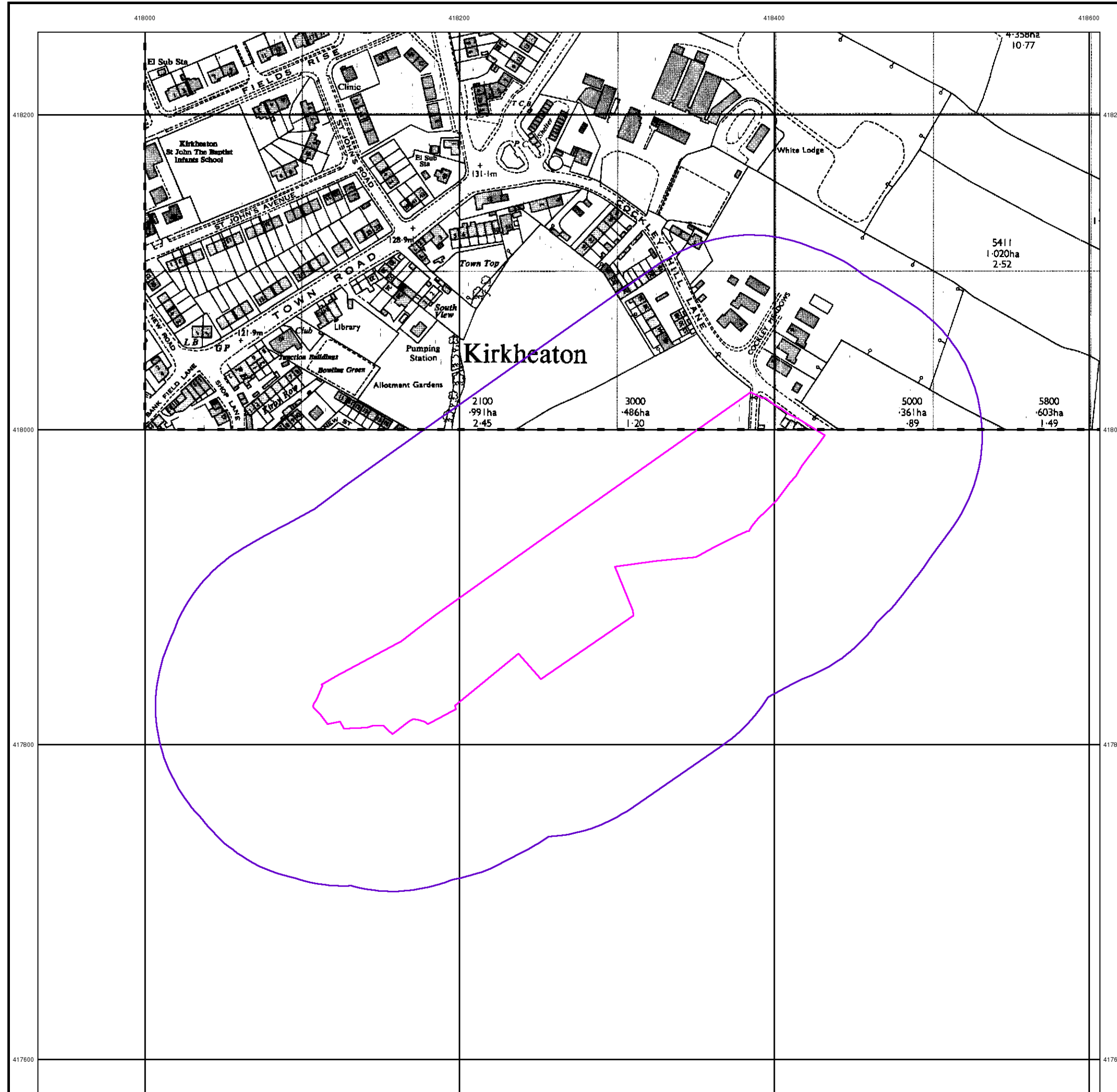
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Site Details

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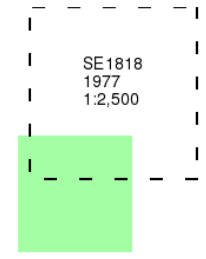
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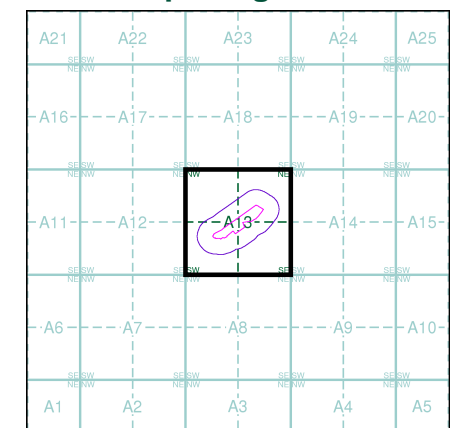
Ordnance Survey Plan
Published 1977
Source map scale - 1:2,500

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)

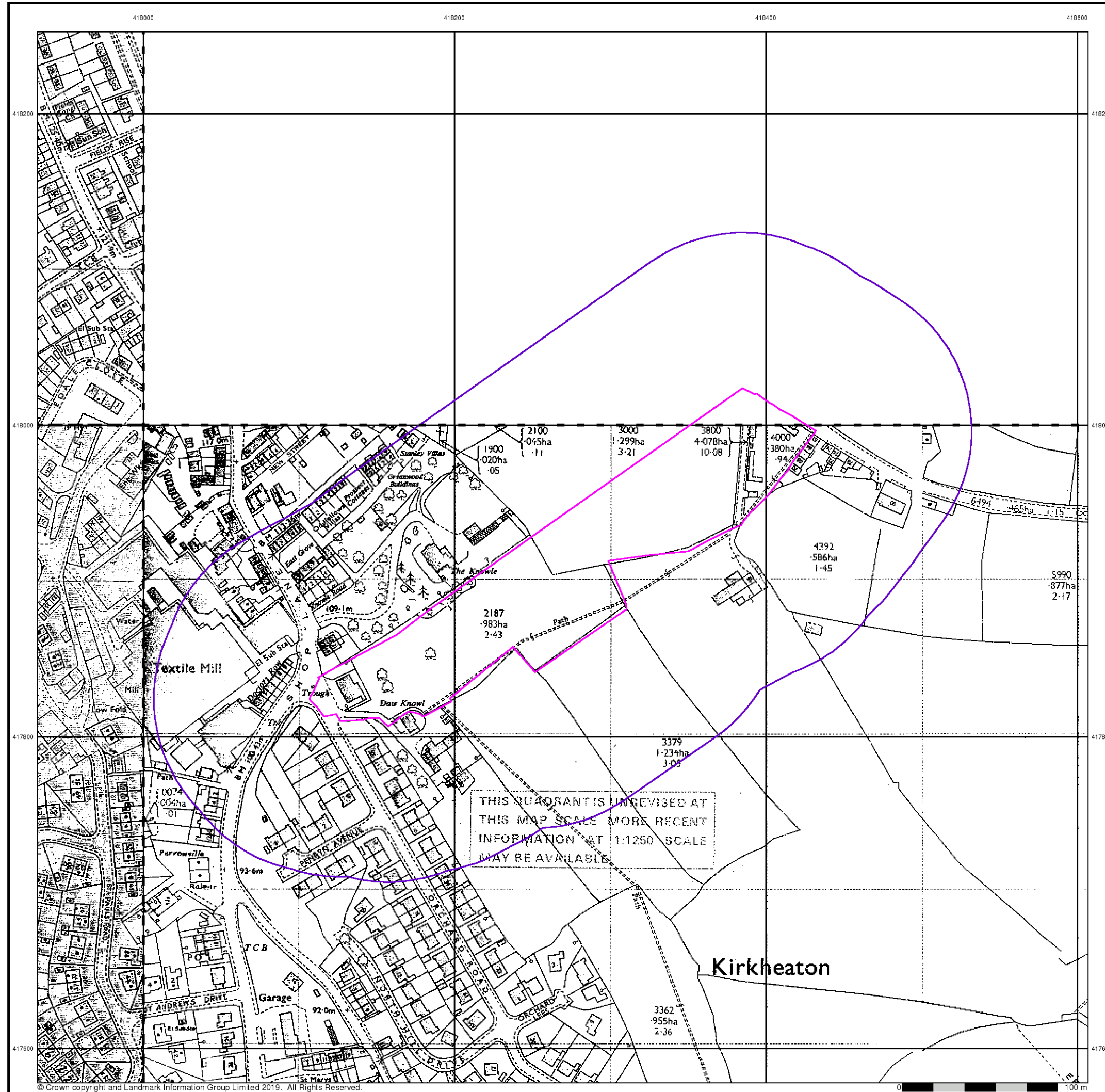


Historical Map - Segment A13



Order Details
 Order Number: 193766422_1_1
 Customer Ref: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 100

Site Details
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Additional SIMs

Published 1977 - 1989

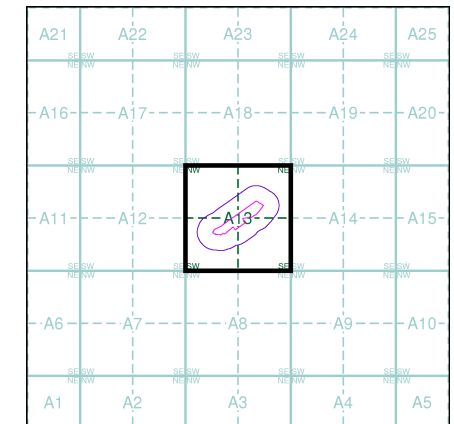
Source map scale - 1:2,500

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)

SE 1718	1977	12,500
SE 1717	1977	12,500
SE 1817	1989	12,500

Historical Map - Segment A13



Order Details

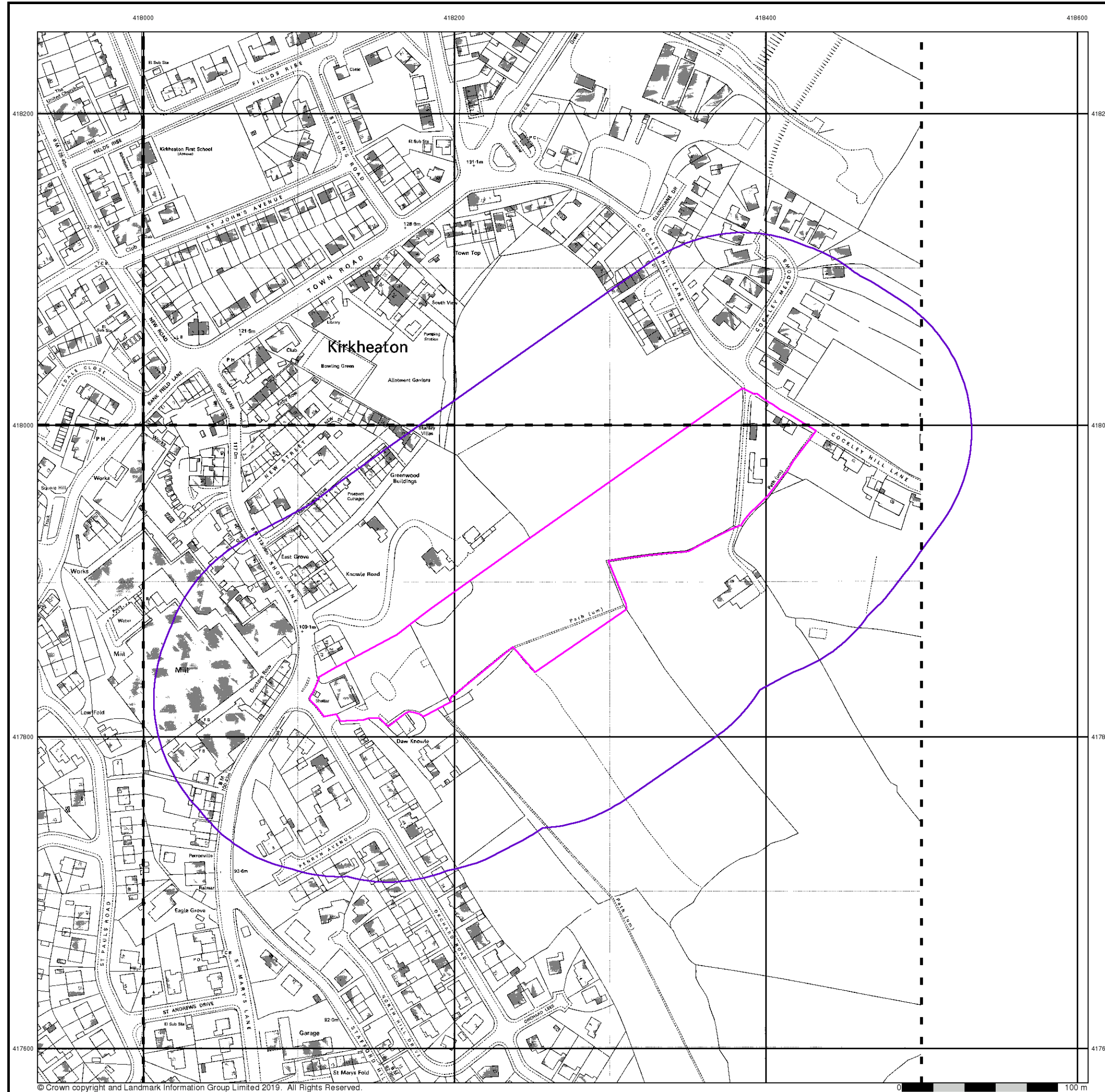
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 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 100

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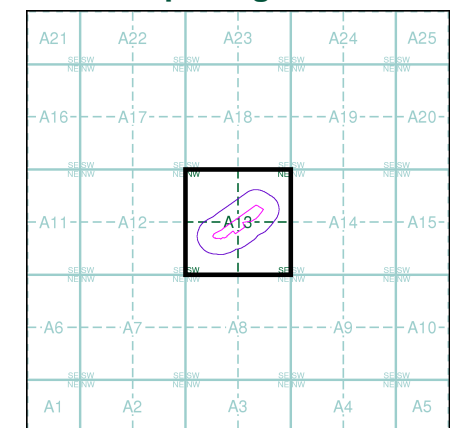
Ordnance Survey Plan
Published 1984
Source map scale - 1:1,250

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)

SE1718SE 1984 1:1,250	SE1818SW 1984 1:1,250
SE1717NE 1984 1:1,250	SE1817NW 1984 1:1,250

Historical Map - Segment A13



Order Details

Order Number: 193766422_1_1
Customer Ref: CKD/02
National Grid Reference: 418270, 417910
Slice: A
Site Area (Ha): 2.08
Search Buffer (m): 100

Site Details

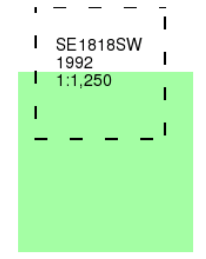
Cockerley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



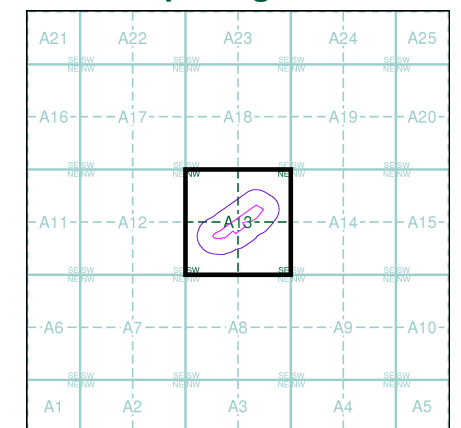
**Additional SIMs
Published 1992
Source map scale - 1:1,250**

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 A13



Order Details

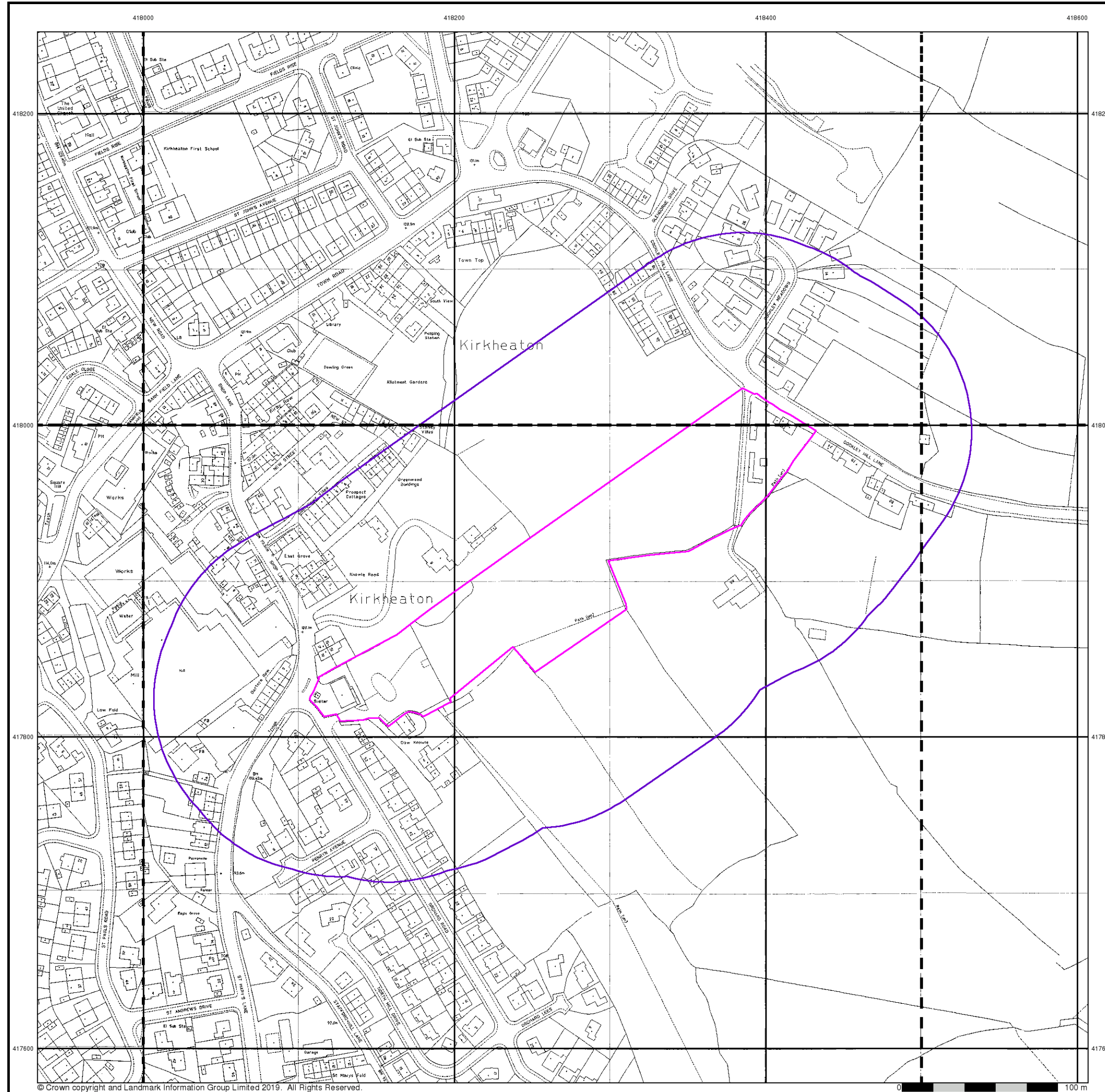
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 Customer Ref: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
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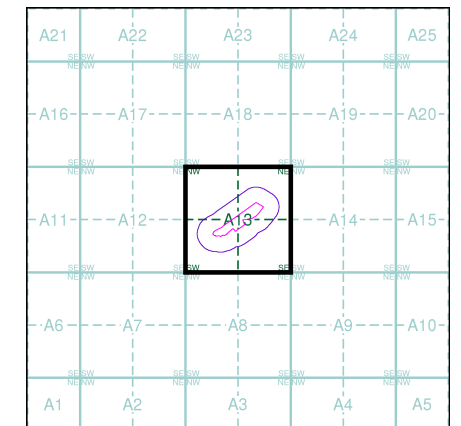
Large-Scale National Grid Data
Published 1993
Source map scale - 1:1,250

'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)

SE1718SE 1993 1:1,250	SE1818SW 1993 1:1,250	SE1818SE 1993 1:1,250
SE1717NE 1993 1:1,250	SE1817NW 1993 1:1,250	SE1817NE 1993 1:1,250

Historical Map - Segment A13



Order Details

Order Number: 193766422_1_1
Customer Ref: CKD/02
National Grid Reference: 418270, 417910
Slice: A
Site Area (Ha): 2.08
Search Buffer (m): 100

Site Details

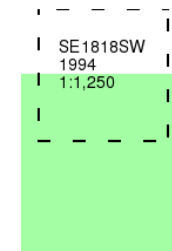
Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



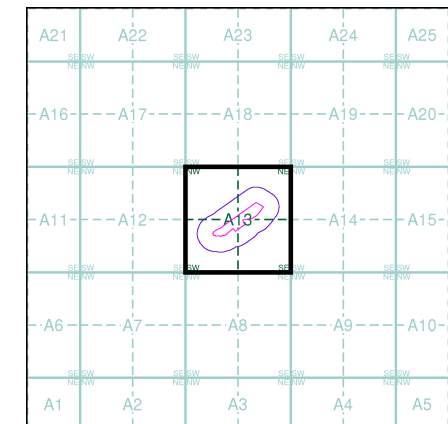
Large-Scale National Grid Data
Published 1994
Source map scale - 1:1,250

'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 A13



Order Details

Order Number: 193766422_1_1
Customer Ref: CKD/02
National Grid Reference: 418270, 417910
Slice: A
Site Area (Ha): 2.08
Search Buffer (m): 100

Site Details

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH

418000

418200

418400

418600



ARP GEOTECHNICAL LTD

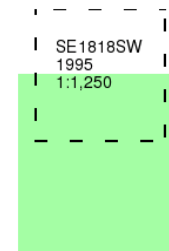
Large-Scale National Grid Data

Published 1995

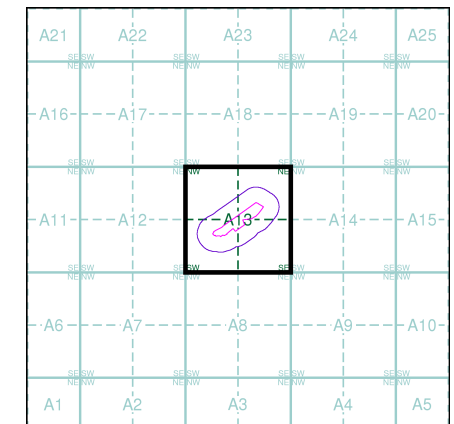
Source map scale - 1:1,250

'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 A13



Order Details

Order Number: 193766422_1_1
Customer Ref: CKD/02
National Grid Reference: 418270, 417910
Slice: A
Site Area (Ha): 2.08
Search Buffer (m): 100

Site Details

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



Tel: 0844 844 9952
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APPENDIX C

LANDMARK GEOLOGY MAPS

Geology 1:50,000 Maps Legends

Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	WMGR	Infilled Ground	Artificial Deposit	Not Supplied - Holocene
	MGR	Made Ground (Undivided)	Artificial Deposit	Not Supplied - Holocene
	SLIP	Landslide Deposit	Unknown/Unclassified Entry	Not Supplied - Quaternary

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
		Faults		

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Not Supplied - Holocene
	GFDMP	Glaciofluvial Deposits, Mid Pleistocene	Sand and Gravel	Not Supplied - Cromerian
	LDE	Lacustrine Deposits	Clay and Silt	Not Supplied - Quaternary
	HEAD	Head	Clay, Silt, Sand and Gravel	Not Supplied - Quaternary

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	PLCM	Pennine Lower Coal Measures Formation	Mudstone, Siltstone and Sandstone	Not Supplied - Westphalian
	GR	Grenoside Sandstone	Sandstone	Not Supplied - Westphalian
	PLCM	Pennine Lower Coal Measures Formation	Sandstone	Not Supplied - Westphalian
	TKS	Thick Stone	Sandstone	Not Supplied - Westphalian
	GM	Greenmoor Rock	Sandstone	Not Supplied - Westphalian
	CLRK	Clifton Rock	Sandstone	Not Supplied - Westphalian
	EF	Elland Flags	Sandstone	Not Supplied - Westphalian
	KKBS	Kirkburton Sandstone	Sandstone	Not Supplied - Westphalian
	EYR	80 Yard Rock	Sandstone	Not Supplied - Westphalian
	FHR	Falhouse Rock	Sandstone	Not Supplied - Westphalian
		Rock Segments		



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Geology 1:50,000 Maps

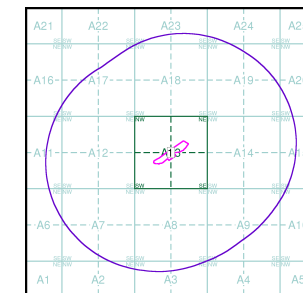
This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.

The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

Map ID: 1
 Map Sheet No: 077
 Map Name: Huddersfield
 Map Date: 2003
 Bedrock Geology: Available
 Superficial Geology: Available
 Artificial Geology: Available
 Faults: Not Supplied
 Landslip: Available
 Rock Segments: Not Supplied

Geology 1:50,000 Maps - Slice A



Order Details:

Order Number: 193766422_1_1
 Customer Reference: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 1000

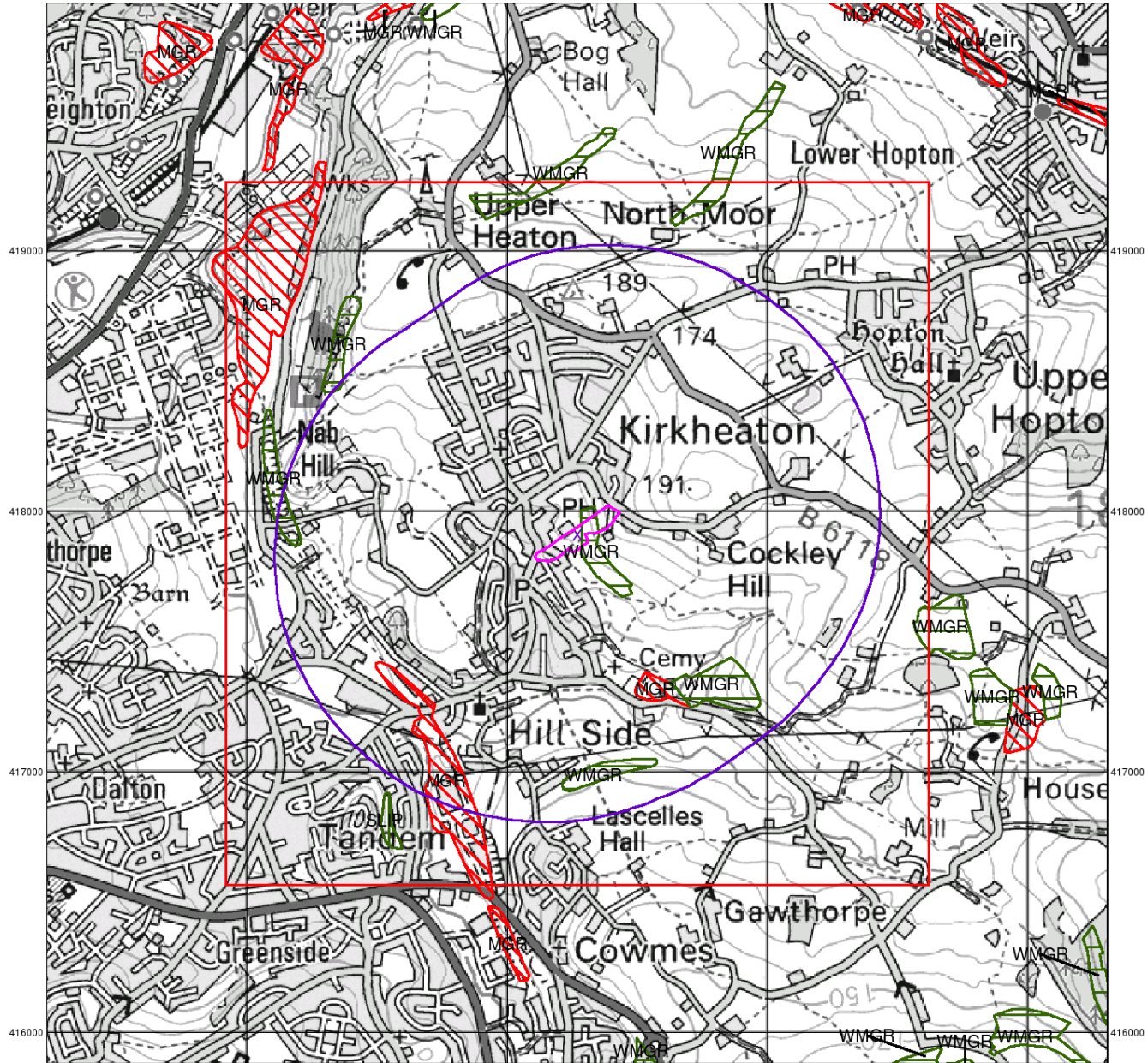
Site Details:

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH

Landmark
 INFORMATION GROUP

Tel: 0844 844 9952
 Fax: 0844 844 9951
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417000 418000 419000 420000



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ARP GEOTECHNICAL LTD

Artificial Ground and Landslip

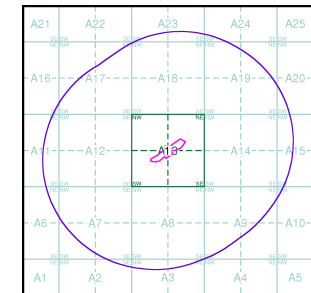
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground - man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground - areas where the ground has been cut away such as quarries and road cuttings.
- Infilled ground - areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground - areas where the surface has been reshaped.
- Disturbed ground - areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes foundered strata, where the ground has collapsed due to subsidence.

Artificial Ground and Landslip Map - Slice A



Order Details:

Order Number:	193766422_1_1
Customer Reference:	CKD/02
National Grid Reference:	418270, 417910
Slice:	A
Site Area (Ha):	2.08
Search Buffer (m):	1000

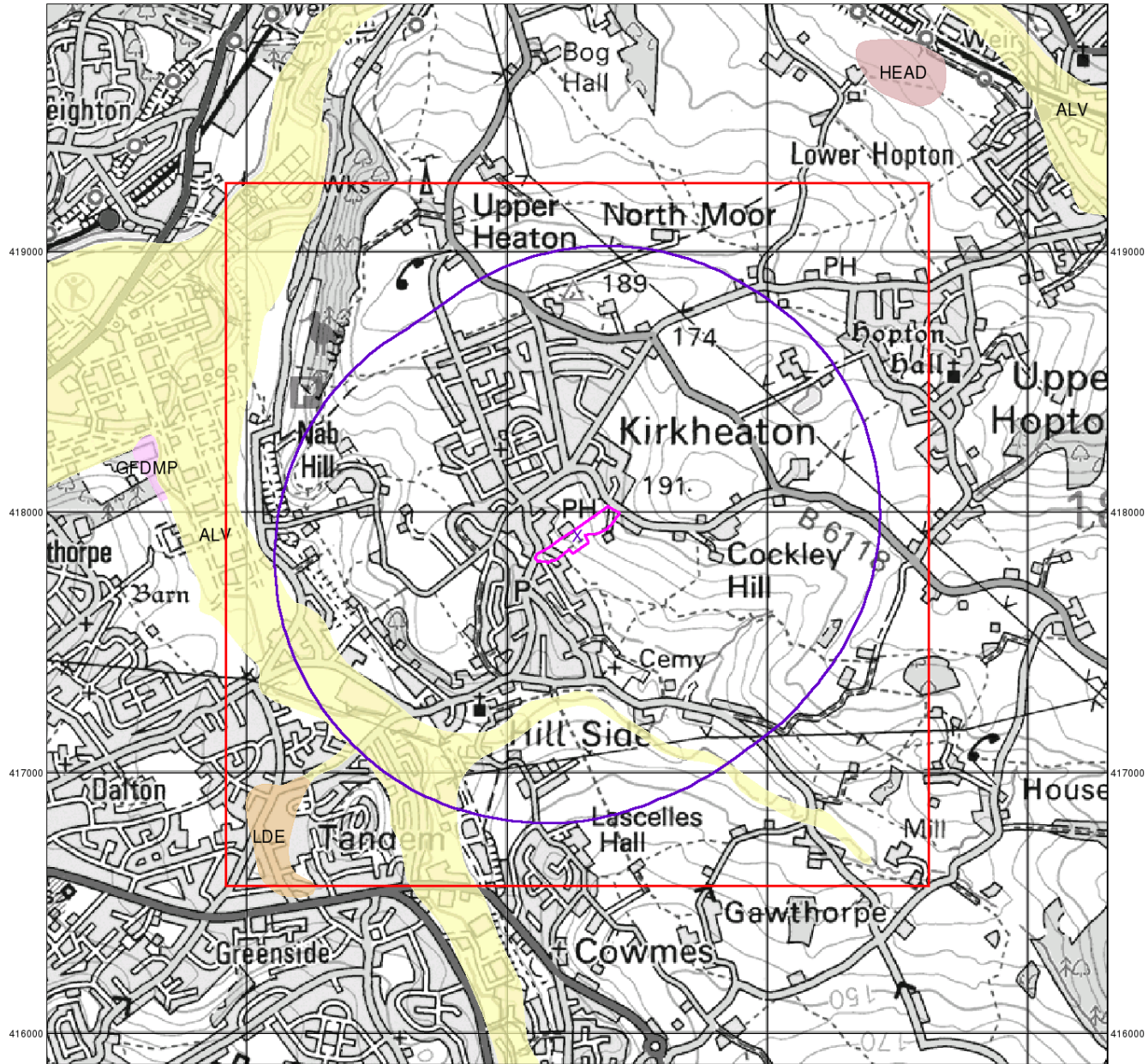
Site Details:

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



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ARP GEOTECHNICAL LTD

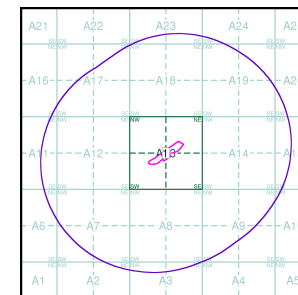
Superficial Geology

Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, the Quaternary, which extends back about 1.8 million years from the present.

They rest on older deposits or rocks referred to as Bedrock. This dataset contains Superficial deposits that are of natural origin and 'in place'. Other superficial strata may be held in the Mass Movement dataset where they have been moved, or in the Artificial Ground dataset where they are of man-made origin.

Most of these Superficial deposits are unconsolidated sediments such as gravel, sand, silt and clay, and onshore they form relatively thin, often discontinuous patches or larger spreads.

Superficial Geology Map - Slice A



Order Details:

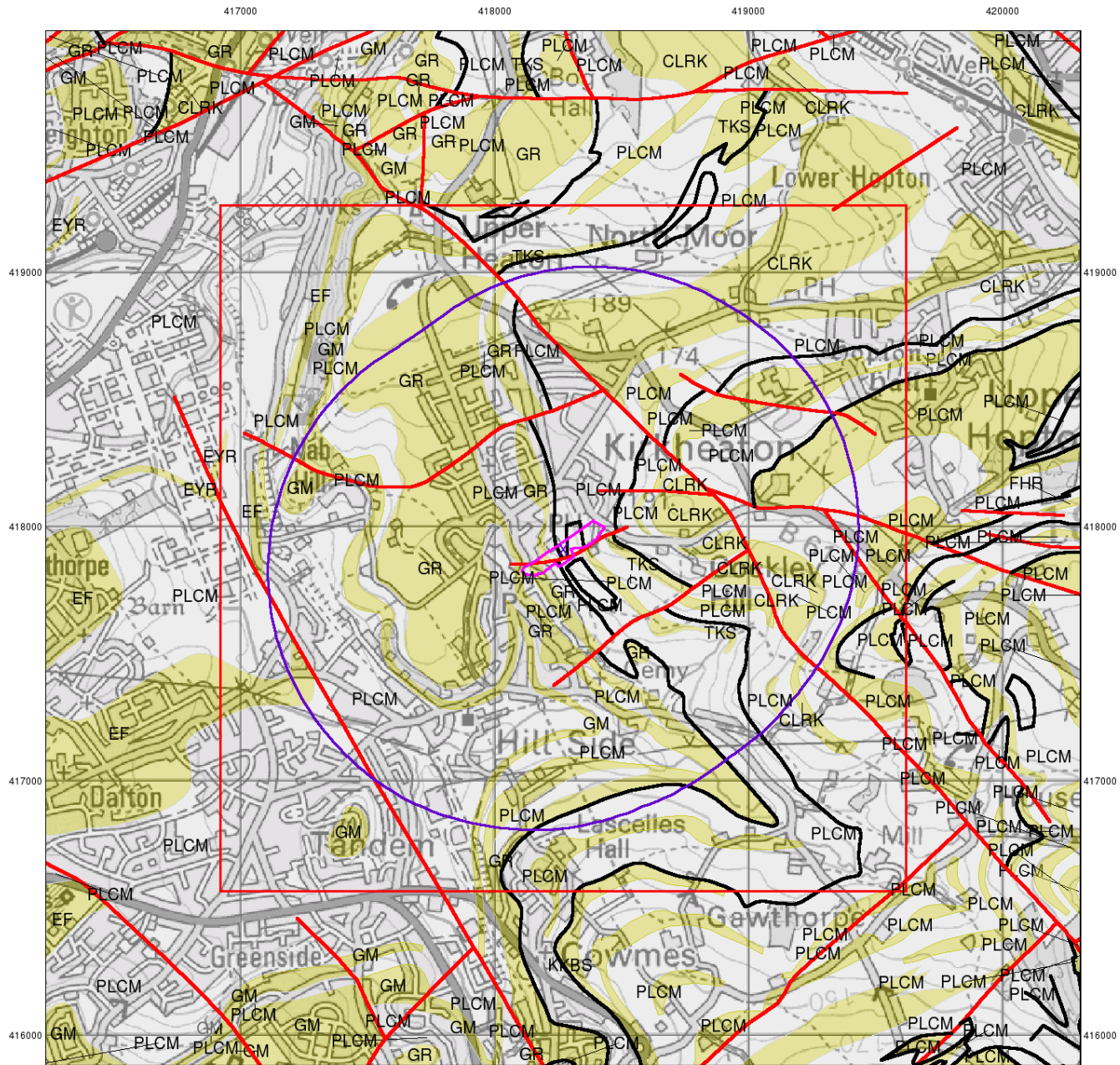
Order Number: 193766422_1_1
 Customer Reference: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 1000

Site Details:

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



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



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Bedrock and Faults

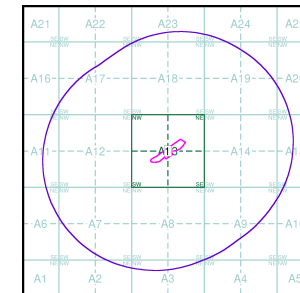
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults (e.g. normal, thrust), and thin beds mapped as lines (e.g. coal seam, gypsum bed). Some of these are linked to other particular 1:50,000 Geology datasets, for example, coal seams are part of the bedrock sequence, most faults and mineral veins primarily affect the bedrock but cut across the strata and post date its deposition.

Bedrock and Faults Map - Slice A

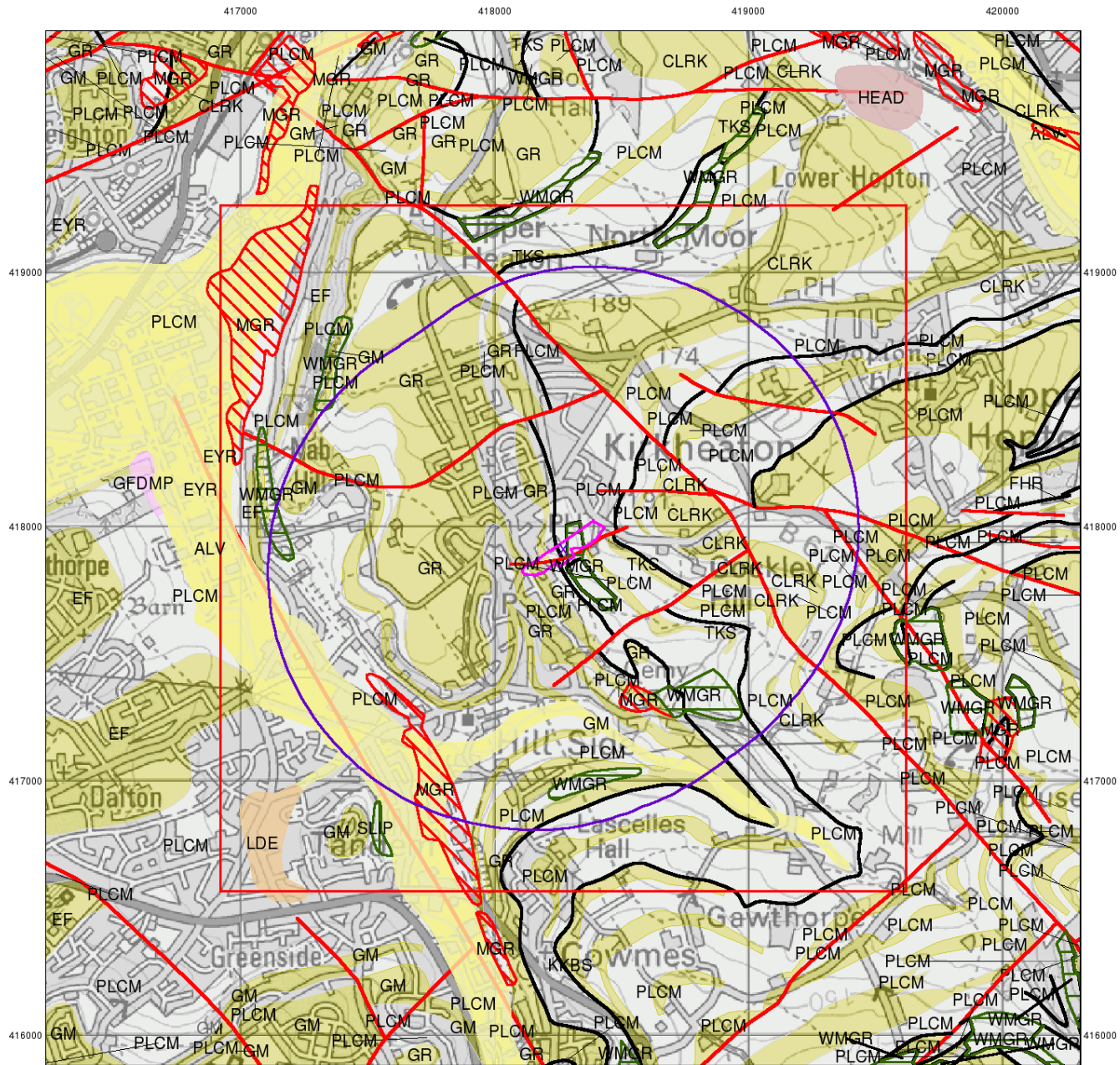


Order Details:

Order Number: 193766422_1_1
 Customer Reference: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 1000

Site Details:

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



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Combined Surface Geology

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

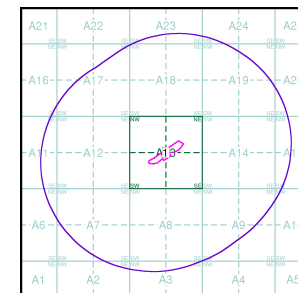
Additional Information

More information on 1:50,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

Contact

British Geological Survey
 Kingsley Dunham Centre
 Keyworth
 Nottingham
 NG12 5GG
 Telephone: 0115 936 3143
 Fax: 0115 936 3276
 email: enquiries@bgs.ac.uk
 website: www.bgs.ac.uk

Combined Geology Map - Slice A



Order Details:

Order Number: 193766422_1_1
 Customer Reference: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 1000

Site Details:

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



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

APPENDIX D

COAL MINING REPORT



The Coal
Authority

CON29M Non-Residential Mining Report

COCKLEY HILL LANE
KIRKHEATON
HUDDERSFIELD
WEST YORKSHIRE

Date of enquiry: 12 February 2019
Date enquiry received: 12 February 2019
Issue date: 12 February 2019

Our reference: 51002042950001
Your reference: 193766422_2|



CON29M Non-Residential Mining Report

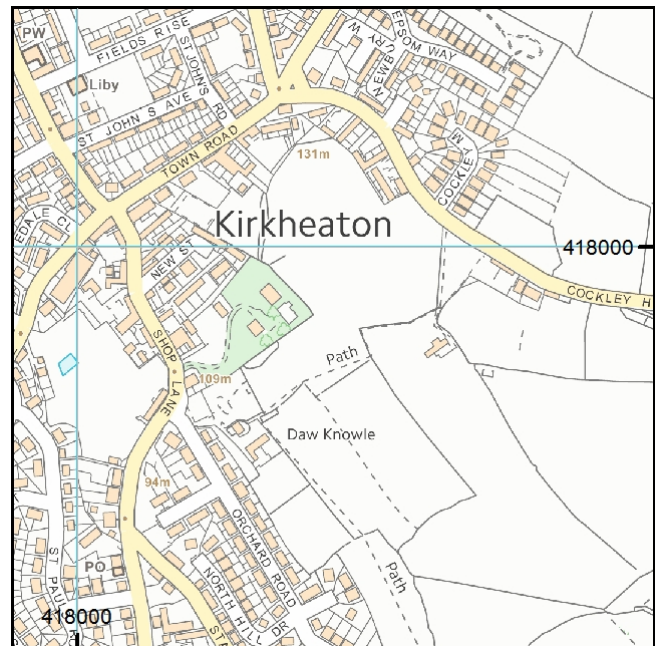
This report is based on, and limited to, the records held by the Coal Authority, at the time we answer the search.

Client name

LANDMARK INFORMATION GROUP LIMITED

Enquiry address

COCKLEY HILL LANE
KIRKHEATON
HUDDERSFIELD
WEST YORKSHIRE



Approximate position of property

How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

 [@coalauthority](https://twitter.com/coalauthority)

 [/company/the-coal-authority](https://www.linkedin.com/company/the-coal-authority)

 [/thecoalauthority](https://www.facebook.com/thecoalauthority)

 [/thecoalauthority](https://www.youtube.com/thecoalauthority)



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Summary

Has the search report highlighted evidence or potential of		
1	Past underground coal mining	Yes
2	Present underground coal mining	No
3	Future underground coal mining	Yes
4	Mine entries	Yes
5	Coal mining geology	No
6	Past opencast coal mining	Yes
7	Present opencast coal mining	No
8	Future opencast coal mining	No
9	Coal mining subsidence	No
10	Mine gas	No
11	Hazards related to coal mining	No
12	Withdrawal of support	Yes
13	Working facilities order	No
14	Payments to owners of former copyhold land	No

For detailed findings, please go to page 4.

Detailed findings

1. Past underground coal mining

The property is not within a surface area that could be affected by any past recorded underground coal mining.

However the property is in an area where the Coal Authority believes there is coal at or close to the surface. This coal may have been worked at some time in the past. The potential presence of coal workings at or close to the surface should be considered, particularly prior to any site works or future development activity, as ground movement could still be a risk. Your attention is drawn to the Comments on the Coal Authority information section of the report.

2. Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3. Future underground coal mining

The property is not in an area where the Coal Authority has received an application for, and is currently considering whether to grant a licence to remove or work coal by underground methods.

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

The property is not in an area likely to be affected from any planned future underground coal mining.

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

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

4. Mine entries

There are no known coal mine entries within, or within 20 metres of, the boundary of the property.

There may however be mine entries/additional mine entries in the local area which the Coal Authority has no knowledge of.

5. Coal mining geology

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

6. Past opencast coal mining

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

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

7. Present opencast coal mining

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

8. Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

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.

9. Coal mining subsidence

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

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

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

10. Mine gas

The Coal Authority has no record of a mine gas emission requiring action.

11. Hazards related to coal mining

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

12. Withdrawal of support

The property is in an area where notices to withdraw support were given in 1951, 1952, 1953 and 1954.

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

13. Working facilities order

The property is not in an area where 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.

14. Payments to owners of former copyhold land

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

Comments on the Coal Authority information

The Coal Authority own the copyright in this report and the information used is protected by our database right.

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

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

Additional remarks

Information provided by the Coal Authority in this report is compiled in response to the Law Society's CON29M Coal Mining enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL. This report is prepared in accordance with the Law Society's Guidance Notes 2018, the User Guide 2018 and the Coal Authority's Terms and Conditions applicable at the time the report was produced.

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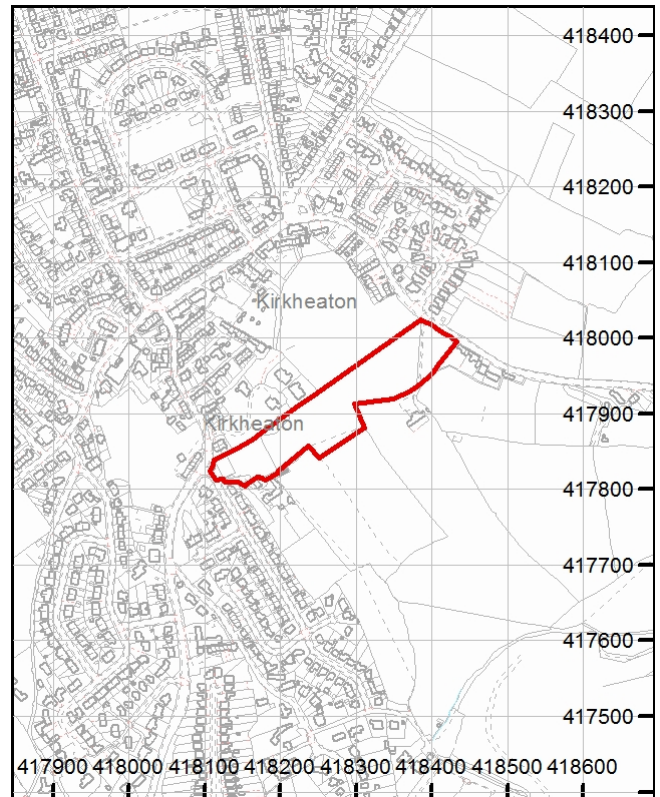
Alternative formats

If you would like this information in an alternative format, please contact our communications team on 0345 762 6848 or email communications@coal.gov.uk.

Enquiry boundary

Key

Approximate position of enquiry boundary shown



How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

 [@coalauthority](https://twitter.com/coalauthority)

 [/company/the-coal-authority](https://www.linkedin.com/company/the-coal-authority)

 [/thecoalauthority](https://www.facebook.com/thecoalauthority)

 [/thecoalauthority](https://www.youtube.com/thecoalauthority)



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APPENDIX E

LANDMARK ENVIROCHECK REPORT

Envirocheck[®] Report:

Datasheet

Order Details:

Order Number:

193766422_1_1

Customer Reference:

CKD/02

National Grid Reference:

418270, 417910

Slice:

A

Site Area (Ha):

2.08

Search Buffer (m):

1000

Site Details:

Cockley Hill Lane

Kirkheaton

Huddersfield

HD5 0HH

Client Details:

Mr J Race

ARP Geotechnical Ltd

Northwest House

5-6 Northwest Business Park

Servia Hill

Leeds

LS6 2QH

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	33
Hazardous Substances	-
Geological	36
Industrial Land Use	41
Sensitive Land Use	44
Data Currency	45
Data Suppliers	49
Useful Contacts	50

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 this 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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Peter Brett Associates Copyright Notice

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Radon Potential dataset Copyright Notice

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Report Version v53.0

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes	Yes	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1				5
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls	pg 2				5
Integrated Pollution Prevention And Control	pg 3				10
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 6				1
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 6			Yes	
Pollution Incidents to Controlled Waters	pg 6		2	2	21
Prosecutions Relating to Authorised Processes					
Registered Radioactive Substances					
River Quality	pg 10				2
River Quality Biology Sampling Points	pg 11				1
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register	pg 11				5
Water Abstractions	pg 12		5		1 (*52)
Water Industry Act Referrals	pg 26				1
Groundwater Vulnerability	pg 26	Yes	n/a	n/a	n/a
Drift Deposits			n/a	n/a	n/a
Bedrock Aquifer Designations	pg 26	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				n/a	n/a
Flooding from Rivers or Sea without Defences				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
OS Water Network Lines	pg 27			2	48

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 33				3
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)	pg 33			1	1
Licensed Waste Management Facilities (Locations)	pg 34				3
Local Authority Landfill Coverage	pg 34	1	n/a	n/a	n/a
Local Authority Recorded Landfill Sites					
Registered Landfill Sites	pg 35				2
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
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 36	Yes	n/a	n/a	n/a
BGS Recorded Mineral Sites	pg 36		1	3	9
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas	pg 38	Yes	n/a	n/a	n/a
Mining Instability	pg 38	Yes	n/a	n/a	n/a
Man-Made Mining Cavities	pg 38			1	
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 38	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 38	Yes		n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 38	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 39	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 39	Yes		n/a	n/a
Radon Potential - Radon Affected Areas	pg 40	Yes	n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a

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 41		11	2	11
Fuel Station Entries	pg 43		1		
Gas Pipelines					
Underground Electrical Cables					
Sensitive Land Use					
Ancient Woodland					
Areas of Adopted Green Belt	pg 44	1			
Areas of Unadopted Green Belt	pg 44	1			
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves	pg 44				1
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones					
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					
World Heritage Sites					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (E)	0	1	418300 417910
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (SW)	0	1	418270 417910
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (W)	7	1	418100 417900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SE (SE)	21	1	418300 417850
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (SE)	51	1	418350 417850
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SE (SE)	90	1	418350 417800
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (SE)	160	1	418400 417750
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (SE)	381	1	418500 417550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (SE)	410	1	418550 417550
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (SE)	441	1	418600 417550
1	Discharge Consents Operator: Yorkshire Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Lake Side Lane Sso Lake Side Lane, Kirkheaton, Huddersfield, West Yorkshire Authority: Environment Agency, North East Region Catchment Area: Calder Reference: 3681 Permit Version: 2 Effective Date: 31st March 2005 Issued Date: 28th February 2005 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: Oxfield Beck Status: Modified (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995) Positional Accuracy: Located by supplier to within 10m	A8NW (S)	557	2	418150 417250
1	Discharge Consents Operator: Yorkshire Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Lake Side Lane Sso Lake Side Lane, Kirkheaton, Huddersfield, West Yorkshire Authority: Environment Agency, North East Region Catchment Area: Calder Reference: 3681 Permit Version: 1 Effective Date: 14th March 1983 Issued Date: 14th March 1983 Revocation Date: 30th March 2005 Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: Oxfield Beck Status: Transferred from Rivers (Prevention of Pollution) Act 1951-1961 Positional Accuracy: Located by supplier to within 100m	A8NW (S)	557	2	418150 417250

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
2	<p>Discharge Consents</p> <p>Operator: Edwin Briggs Property Type: DOMESTIC PROPERTY (SINGLE) (INCL FARM HOUSE) Location: Cockley Hill Farm Bellstring Lane, Kirkheaton, Huddersfield, West Yorkshire Authority: Environment Agency, North East Region Catchment Area: Calder Reference: C3927 Permit Version: 2 Effective Date: 26th July 2012 Issued Date: 26th July 2012 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge: Land/Soakaway Environment: Receiving Water: Land Adj. To Cockley Hill Farm Status: Transferred from COPA 1974 Positional Accuracy: Approximate location provided by supplier</p>	A14NE (E)	569	2	419000 418000
2	<p>Discharge Consents</p> <p>Operator: Edwin Briggs Property Type: DOMESTIC PROPERTY (SINGLE) (INCL FARM HOUSE) Location: Cockley Hill Farm Bellstring Lane, Kirkheaton, Huddersfield, West Yorkshire Authority: Environment Agency, North East Region Catchment Area: Calder Reference: C3927 Permit Version: 1 Effective Date: 6th June 1985 Issued Date: 6th June 1985 Revocation Date: 25th July 2012 Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge: Land/Soakaway Environment: Receiving Water: Land Adj. To Cockley Hill Farm Status: Transferred from COPA 1974 Positional Accuracy: Approximate location provided by supplier</p>	A14NE (E)	569	2	419000 418000
3	<p>Discharge Consents</p> <p>Operator: Goulder Mikron Ltd, Property Type: Undefined Or Other Location: Goulder, Goulder, Goulder Authority: Environment Agency, North East Region Catchment Area: Calder Reference: 3573 Permit Version: 1 Effective Date: 13th September 1983 Issued Date: 13th September 1983 Revocation Date: 4th June 1991 Discharge Type: Trade Effluent Discharge: Freshwater Stream/River Environment: Receiving Water: Oxfield Beck Status: Authorisation revoked Positional Accuracy: Located by supplier to within 100m</p>	A7SW (SW)	845	2	417580 417160
4	<p>Integrated Pollution Controls</p> <p>Name: Jarmain And Son Ltd Location: Minerva Works, Kirkheaton, HUDDERSFIELD, West Yorkshire, HD5 0QP Authority: Environment Agency, North East Region Permit Reference: AU8407 Dated: 29th August 1996 Process Type: IPC new application Description: 6.5 A (B) Coating processes and Printing within Miscellaneous Industries Status: Authorisation superseded by a substantial or non substantial variation Positional Accuracy: Automatically positioned to the address</p>	A7NW (SW)	779	2	417425 417449
4	<p>Integrated Pollution Controls</p> <p>Name: Jarmain And Son Ltd Location: Minerva Works, Kirkheaton, HUDDERSFIELD, West Yorkshire, HD5 0QP Authority: Environment Agency, North East Region Permit Reference: AP4688 Dated: 22nd December 1994 Process Type: IPC minor (non-substantial) variation to previous variation Description: 4.4 A (B) processes involving Halogens within the Chemical Industry Status: Authorisation superseded by a substantial or non substantial variation Positional Accuracy: Manually positioned to the address or location</p>	A7NW (SW)	780	2	417420 417455

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
4	<p>Integrated Pollution Controls</p> <p>Name: Jarmain And Son Ltd Location: Minerva Works, Kirkheaton, HUDDERSFIELD, West Yorkshire, HD5 0QP Authority: Environment Agency, North East Region Permit Reference: AL8967 Dated: 26th April 1994 Process Type: IPC application for process that was regulated by HMIP for air releases under previous legislation Description: 4.4 A (B) processes involving Halogens within the Chemical Industry Status: Authorisation superseded by a substantial or non substantial variation Positional Accuracy: Automatically positioned to the address</p>	A7NW (SW)	782	2	417425 417444
4	<p>Integrated Pollution Controls</p> <p>Name: Jarmain And Son Ltd Location: Minerva Works, Crossley Lane, HUDDERSFIELD, West Yorkshire, HD5 0QP Authority: Environment Agency, North East Region Permit Reference: BD4945 Dated: 24th November 1998 Process Type: IPC minor (non-substantial) variation to previous variation Description: 6.5 A (B) Coating processes and Printing within Miscellaneous Industries Status: Authorisation revoked Positional Accuracy: Automatically positioned to the address</p>	A7NW (SW)	783	2	417420 417449
4	<p>Integrated Pollution Controls</p> <p>Name: Jarmain And Son Ltd Location: Minerva Works, Crossley Lane, HUDDERSFIELD, West Yorkshire, HD5 0QP Authority: Environment Agency, North East Region Permit Reference: BD0575 Dated: 24th November 1998 Process Type: IPC minor (non-substantial) variation to previous variation Description: 4.4 A (B) processes involving Halogens within the Chemical Industry Status: Authorisation revoked Positional Accuracy: Automatically positioned to the address</p>	A7NW (SW)	786	2	417420 417444
5	<p>Integrated Pollution Prevention And Control</p> <p>Name: Matrix-Direct-Recycle-Limited Location: Matrix-Direct-Recycle, Units 1-5 Newlands Trade Park, School Lane, Kirkheaton, HUDDERSFIELD, West Yorkshire, HD5 0JS Authority: Environment Agency, North East Region Permit Reference: FP3231XA Original Permit Ref: Jp3731my Effective Date: 24th December 2008 Status: Superseded By Variation Application Type: Variation App. Sub Type: Substantial Positional Accuracy: Manually positioned to the road within the address or location Activity Code: 5.4 A(1) (C) (III) Activity Description: Recovery Of Waste; Hazardous Waste Greater Than 10T/D By Recycling Inorganics (Not Metals) Primary Activity: Y Activity Code: 2.2 A(1) (F) Activity Description: Non-Ferrous Metals; Producing Etc Cadmium/Mercury And Alloys Containing Greater Than 0.05 Percent Primary Activity: N</p>	A7NE (SW)	660	2	417630 417367
6	<p>Integrated Pollution Prevention And Control</p> <p>Name: Sita (Lancashire) Ltd Location: Off Lane Side Lane, Kirkheaton, Huddersfield Authority: Environment Agency, North East Region Permit Reference: Bk4839 Original Permit Ref: Bk4839 Effective Date: Not Supplied Status: Application Validation (Application received by the Authority but is not yet authorised) Application Type: Not Supplied App. Sub Type: Not Supplied Positional Accuracy: Manually positioned to the road within the address or location Activity Code: 5.2 A(1) (A) Activity Description: Waste Landfilling; Greater Than 10 T/D With Capacity Greater Than 25,000T Excluding Inert Waste Primary Activity: Not Supplied Activity Code: 5.3 A(1) (C) (I) Activity Description: Other Waste Disposal; Non-Hazardous Waste >50T/D By Biological Treatment Primary Activity: Not Supplied</p>	A8NE (SE)	675	2	418602 417265

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
7	<p>Integrated Pollution Prevention And Control</p> <p>Name: P Casey Enviro Ltd Location: Lane Side Quarry Landfill Site, Lane Side Quarry Landfill Site, Off Bellstring Lane, Kirkheaton, Huddersfield, West Yorkshire Authority: Environment Agency, North East Region Permit Reference: DP3336JN Original Permit Ref: Rp3332ky Effective Date: 4th September 2018 Status: Effective Application Type: Variation App. Sub Type: Simple Standard Variation Positional Accuracy: Located by supplier to within 100m Activity Code: 5.2 A(1) (A) Activity Description: Waste Landfilling; Greater Than 10 T/D With Capacity Greater Than 25,000T Excluding Inert Waste Primary Activity: Y Activity Code: 5.4 A(1) a) (i) Activity Description: DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT Primary Activity: N</p>	A9NW (SE)	701	2	418700 417300
7	<p>Integrated Pollution Prevention And Control</p> <p>Name: P Casey Enviro Ltd Location: Lane Side Quarry Landfill Site, Lane Side Quarry Landfill Site, Off Bellstring Lane, Kirkheaton, Huddersfield, West Yorkshire Authority: Environment Agency, North East Region Permit Reference: PP3339VD Original Permit Ref: Rp3332ky Effective Date: 28th February 2014 Status: Superseded By Variation Application Type: Variation App. Sub Type: Minor Positional Accuracy: Located by supplier to within 100m Activity Code: 5.2 A(1) (A) Activity Description: Waste Landfilling; Greater Than 10 T/D With Capacity Greater Than 25,000T Excluding Inert Waste Primary Activity: Y Activity Code: 5.4 A(1) a) (i) Activity Description: DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING BIOLOGICAL TREATMENT Primary Activity: N</p>	A9NW (SE)	701	2	418700 417300
7	<p>Integrated Pollution Prevention And Control</p> <p>Name: P Casey Enviro Ltd Location: Lane Side Quarry Landfill Site, Lane Side Quarry Landfill Site, Off Bellstring Lane, Kirkheaton, Huddersfield, West Yorkshire Authority: Environment Agency, North East Region Permit Reference: RP3332KY Original Permit Ref: Rp3332ky Effective Date: 28th October 2011 Status: Superseded By Variation Application Type: Application App. Sub Type: New Positional Accuracy: Located by supplier to within 100m Activity Code: 5.2 A(1) (A) Activity Description: Waste Landfilling; Greater Than 10 T/D With Capacity Greater Than 25,000T Excluding Inert Waste Primary Activity: Y</p>	A9NW (SE)	701	2	418700 417300
8	<p>Integrated Pollution Prevention And Control</p> <p>Name: Electrical Waste Recycling Group Ltd Location: Matrix-Direct-Recycle, Units 1-5 Newlands Trade Park, School Lane, Kirkheaton, HUDDERSFIELD, West Yorkshire, HD5 0JS Authority: Environment Agency, North East Region Permit Reference: QP3034KA Original Permit Ref: Qp3034ka Effective Date: 23rd October 2009 Status: Superseded By Variation Application Type: Transfer App. Sub Type: Whole limited change in management Positional Accuracy: Manually positioned to the road within the address or location Activity Code: 5.4 A(1) (C) (III) Activity Description: Recovery Of Waste; Hazardous Waste Greater Than 10T/D By Recycling Inorganics (Not Metals) Primary Activity: Y Activity Code: 2.2 A(1) (F) Activity Description: Non-Ferrous Metals; Producing Etc Cadmium/Mercury And Alloys Containing Greater Than 0.05 Percent Primary Activity: N</p>	A7SE (SW)	706	2	417713 417234

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
9	<p>Integrated Pollution Prevention And Control</p> <p>Name: Electrical Waste Recycling Group Ltd Location: Electrical Waste Recycling Group Limited, Units 1-5 Newlands Trade Park, School Lane, Kirkheaton, HUDDERSFIELD, West Yorkshire, HD5 0JS Authority: Environment Agency, North East Region Permit Reference: YP3037NF Original Permit Ref: Qp3034ka Effective Date: 29th November 2013 Status: Effective Application Type: Variation App. Sub Type: Substantial Positional Accuracy: Automatically positioned to the address Activity Code: 2.2 A(1) (F) Activity Description: Non-Ferrous Metals; Producing Etc Cadmium/Mercury And Alloys Containing Greater Than 0.05 Percent Primary Activity: N Activity Code: 5.3 A(1) a) (vi) Activity Description: DISPOSAL OR RECOVERY OF HAZARDOUS WASTE WITH A CAPACITY EXCEEDING 10 TONNES PER DAY INVOLVING RECYCLING OR RECLAMATION OF INORGANIC MATERIALS OTHER THAN METALS OR METAL COMPOUNDS Primary Activity: Y Activity Code: 2.2 Part A (1) c) 2017 Activity Description: Producing, melting or recovering cadmium or mercury Primary Activity: N Activity Code: 5.3 A(1) a) (ii) Activity Description: DISPOSAL OR RECOVERY OF HAZARDOUS WASTE WITH A CAPACITY EXCEEDING 10 TONNES PER DAY INVOLVING PHYSICO-CHEMICAL TREATMENT Primary Activity: N</p>	A7NE (SW)	707	2	417637 417293
9	<p>Integrated Pollution Prevention And Control</p> <p>Name: Electrical Waste Recycling Group Ltd Location: Matrix-Direct-Recycle, Units 1-5 Newlands Trade Park, School Lane, Kirkheaton, HUDDERSFIELD, West Yorkshire, HD5 0JS Authority: Environment Agency, North East Region Permit Reference: GP3938CS Original Permit Ref: Qp3034ka Effective Date: 25th January 2013 Status: Superseded By Variation Application Type: Variation App. Sub Type: Standard Positional Accuracy: Automatically positioned to the address Activity Code: 5.4 A(1) (C) (III) Activity Description: Recovery Of Waste; Hazardous Waste Greater Than 10T/D By Recycling Inorganics (Not Metals) Primary Activity: Y Activity Code: 2.2 A(1) (F) Activity Description: Non-Ferrous Metals; Producing Etc Cadmium/Mercury And Alloys Containing Greater Than 0.05 Percent Primary Activity: N</p>	A7NE (SW)	707	2	417637 417293
10	<p>Integrated Pollution Prevention And Control</p> <p>Name: P Casey Enviro Ltd Location: Lane Side Quarry Landfill Site, Lane Side Quarry Landfill Site, Off Bellstring Lane, Kirkheaton, Huddersfield, West Yorkshire Authority: Environment Agency, North East Region Permit Reference: FP3338CZ Original Permit Ref: Rp3332ky Effective Date: 26th March 2012 Status: Superseded By Variation Application Type: Variation App. Sub Type: Minor Positional Accuracy: Manually positioned to the address or location Activity Code: 5.2 A(1) (A) Activity Description: Waste Landfilling; Greater Than 10 T/D With Capacity Greater Than 25,000T Excluding Inert Waste Primary Activity: Y</p>	A9NE (SE)	737	2	419035 417573

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
11	<p>Integrated Pollution Prevention And Control</p> <p>Name: Matrix-Direct-Recycle-Limited Location: Matrix House, School Lane, Kirkheaton, Huddersfield, HD5 0JS Authority: Environment Agency, North East Region Permit Reference: JP3731MY Original Permit Ref: Jp3731my Effective Date: 4th September 2007 Status: Superseded By Variation Application Type: Application App. Sub Type: New Positional Accuracy: Automatically positioned to the address Activity Code: 2.2 A(1) (F) Activity Description: Non-Ferrous Metals; Producing Etc Cadmium/Mercury And Alloys Containing Greater Than 0.05 Percent Primary Activity: N Activity Code: 5.4 A(1) (C) (III) Activity Description: Recovery Of Waste; Hazardous Waste Greater Than 10T/D By Recycling Inorganics (Not Metals) Primary Activity: Y</p>	A7SE (SW)	810	2	417615 417177
12	<p>Local Authority Pollution Prevention and Controls</p> <p>Name: Jarmain & Son Ltd Location: Minerva Works, Kirkheaton, HUDDERSFIELD, HD5 0QP Authority: Kirklees Metropolitan Borough Council, Environmental Health Department Permit Reference: AA8940 Dated: 23rd July 1991 Process Type: Application (pre- April 1991) under SI 318, 1989 The Control of Industrial Air Pollution (Registration of Works) Regulations 1989 Description: Processes registered under S. 9 of the Alkali Act 1906 and S. 5 of the Health & Safety at Work Act 1974 Status: Authorisation revoked Positional Accuracy: Automatically positioned to the address</p>	A7NW (SW)	784	3	417420 417449
	Nearest Surface Water Feature	A8NE (SE)	358	-	418440 417537
13	<p>Pollution Incidents to Controlled Waters</p> <p>Property Type: Industrial Premises Location: Stanley Ferry Rb, /Horbury Bridge Calder O2C Authority: Environment Agency, North East Region Pollutant: Miscellaneous - Vehicle Washings And De Waxing Note: Not Supplied Incident Date: 24th June 1993 Incident Reference: 145494 Catchment Area: Not Given Receiving Water: Groundwater Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m</p>	A13SW (W)	6	2	418200 417900
14	<p>Pollution Incidents to Controlled Waters</p> <p>Property Type: Other General Premises Location: Colne Afu Authority: Environment Agency, North East Region Pollutant: Unknown Note: Fish Killed: No Information; Colne Afu Incident Date: 13th September 1995 Incident Reference: SL950872 Catchment Area: Calder 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</p>	A13NE (NE)	177	2	418400 418200
15	<p>Pollution Incidents to Controlled Waters</p> <p>Property Type: Farm Location: Mouth/Source Fenay Beck Af Authority: Environment Agency, North East Region Pollutant: Silage Liquor Note: Not Supplied Incident Date: 13th September 1993 Incident Reference: 147602 Catchment Area: Not Given Receiving Water: Groundwater Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m</p>	A14SW (E)	381	2	418800 417900

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
16	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Foul Sewer Location: Oxfield Beck Authority: Environment Agency, North East Region Pollutant: Surcharged Sewage Note: Watercourse :Ox Field Beck; From Lepton Edge To Fenay Beck Incident Date: Not Supplied Incident Reference: SL980369 Catchment Area: Calder Tributaries Receiving Water: Freshwater Stream/River Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A8NW (S)	467	2	418250 417350
17	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Foul Sewer Location: Mouth/Huddersfld Colne Afl Authority: Environment Agency, North East Region Pollutant: Unknown Sewage Note: Not Supplied Incident Date: 29th December 1993 Incident Reference: 149310 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	A8NW (S)	509	2	418200 417300
17	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Foul Sewer Location: Mouth/Source Fenay Beck Af Authority: Environment Agency, North East Region Pollutant: Unknown Sewage Note: Not Supplied Incident Date: 6th July 1993 Incident Reference: 145826 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	A8NW (S)	514	2	418200 417295
18	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Foul Sewer Location: Mouth/Source Fenay Beck Af Authority: Environment Agency, North East Region Pollutant: Unknown Note: Not Supplied Incident Date: 11th April 1991 Incident Reference: 121268 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	A8NW (S)	510	2	418100 417300
19	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Foul Sewer Location: Road Bridge B6117, /Battyeford Bridge Calder 04C Authority: Environment Agency, North East Region Pollutant: Unknown Sewage Note: Not Supplied Incident Date: 2nd March 1994 Incident Reference: 150077 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	A8SW (S)	609	2	418200 417200
19	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Storm Overflow Location: Oxfield Beck, Kirkheaton, HUDDERSFIELD Authority: Environment Agency, North East Region Pollutant: Sewage - Storm Overflow Note: Ox Field Beck; No Fish Killed Incident Date: 12th June 1998 Incident Reference: SL980490 Catchment Area: Calder 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	A8SW (S)	614	2	418200 417195

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
20	Pollution Incidents to Controlled Waters Property Type: Industrial Premises Location: Mouth/Source Fenay Beck Af Authority: Environment Agency, North East Region Pollutant: Miscellaneous - Inert Suspended Solids Note: Not Supplied Incident Date: 8th November 1990 Incident Reference: 116598 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	A8SE (S)	688	2	418500 417200
21	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Storm Overflow Location: Fenay Beck Authority: Environment Agency, North East Region Pollutant: Sewage - Storm Overflow Note: Fish Killed: No Information Incident Date: 3rd January 1995 Incident Reference: SL950159 Catchment Area: Calder 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	A8SW (S)	722	2	418000 417100
22	Pollution Incidents to Controlled Waters Property Type: Highway/Car Park Location: Mouth/Huddersfld Colne Afl Authority: Environment Agency, North East Region Pollutant: Oils - Unknown Note: Not Supplied Incident Date: 13th April 1992 Incident Reference: 132173 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	728	2	417600 417300
23	Pollution Incidents to Controlled Waters Property Type: Clay (General) Location: Oxfield Beck Close To, Kirkheaton Church Authority: Environment Agency, North East Region Pollutant: Miscellaneous - Inert Suspended Solids Note: Fenay Beck/Shepley Dike; Fish Killed: No Information Incident Date: Not Supplied Incident Reference: SL990004 Catchment Area: Calder 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	A7SE (SW)	745	2	417900 417100
23	Pollution Incidents to Controlled Waters Property Type: Clay (General) Location: Oxfield Beck Close To, Kirkheaton Church Authority: Environment Agency, North East Region Pollutant: Miscellaneous - Inert Suspended Solids Note: Fenay Beck/Shepley Dike; Fish Killed: No Information Incident Date: Not Supplied Incident Reference: SL981078 Catchment Area: Calder 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	A7SE (SW)	750	2	417900 417095
24	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Sewage Treatment Works Location: Mouth/Huddersfld Colne Afl Authority: Environment Agency, North East Region Pollutant: Sewage - Septic Tank Effluent Note: Not Supplied Incident Date: 22nd October 1991 Incident Reference: 127313 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7SE (SW)	802	2	417600 417200

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
25	Pollution Incidents to Controlled Waters Property Type: Industrial Premises Location: Fenay Beck, /Dalton/Nab Hillrd Fenay Beck 01 Authority: Environment Agency, North East Region Pollutant: Oils - Diesel (Including Agricultural) Note: Not Supplied Incident Date: 5th February 1990 Incident Reference: 107439 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	A7NW (SW)	802	2	417500 417300
26	Pollution Incidents to Controlled Waters Property Type: Farm Location: Huddersfld/Source Colne Afu Authority: Environment Agency, North East Region Pollutant: Silage Liquor Note: Not Supplied Incident Date: 11th June 1991 Incident Reference: 123189 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	A12SW (W)	811	2	417300 417900
27	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Foul Sewer Location: Fenay Beck, /Dalton/Nab Hillrd Fenay Beck 01 Authority: Environment Agency, North East Region Pollutant: Unknown Sewage Note: Not Supplied Incident Date: 21st May 1990 Incident Reference: 110816 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	A7SW (SW)	870	2	417500 417200
28	Pollution Incidents to Controlled Waters Property Type: Industrial Premises Location: Mouth/Huddersfld Colne Afl Authority: Environment Agency, North East Region Pollutant: Industrial Effluent Note: Not Supplied Incident Date: 12th May 1992 Incident Reference: 132937 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	A7NW (SW)	880	2	417400 417300
28	Pollution Incidents to Controlled Waters Property Type: Construction/Demolition Location: Fenay Beck, /Dalton/Nab Hillrd Fenay Beck 01 Authority: Environment Agency, North East Region Pollutant: Mud/Clay/Soil Note: Not Supplied Incident Date: 28th May 1990 Incident Reference: 111031 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	A7NW (SW)	883	2	417400 417295
29	Pollution Incidents to Controlled Waters Property Type: Other General Premises Location: Colne Afl Authority: Environment Agency, North East Region Pollutant: Unknown Note: Fish Killed: No Information; Colne Afl Incident Date: 28th June 1995 Incident Reference: SL950699 Catchment Area: Calder 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	A7SE (SW)	914	2	417700 417000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
30	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Foul Sewer Location: Woodsome/Source Fenay Beck Afu Authority: Environment Agency, North East Region Pollutant: Unknown Sewage Note: Not Supplied Incident Date: 20th February 1992 Incident Reference: 130615 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	A7SW (SW)	943	2	417405 417195
30	Pollution Incidents to Controlled Waters Property Type: Industrial Premises Location: Fenay Bridge Road Authority: Environment Agency, North East Region Pollutant: Oils - Waste Oil Note: Not Supplied Incident Date: 2nd December 1991 Incident Reference: 128610 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	A7SW (SW)	943	2	417400 417200
30	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Storm Overflow Location: Roundwood Beck, Albany Road, HUDDERSFIELD Authority: Environment Agency, North East Region Pollutant: Sewage - Storm Overflow Note: No Fish Killed Incident Date: 28th March 1997 Incident Reference: SL970395 Catchment Area: Calder 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	A7SW (SW)	946	2	417400 417195
31	Pollution Incidents to Controlled Waters Property Type: Industrial: Other Location: Track - Albany Road/Long Lane, Fenay Beck, HUDDERSFIELD Authority: Environment Agency, North East Region Pollutant: Miscellaneous - Inert Suspended Solids Note: Watercourse :River Calder; From Spen Beck To Batley Beck Incident Date: Not Supplied Incident Reference: SL980091 Catchment Area: Calder Tributaries Receiving Water: Freshwater Stream/River Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7NW (SW)	963	2	417300 417300
	River Quality Name: Fenay_Beck/Shepley_Dike GQA Grade: River Quality B Reach: Woodsome_Rd_Ox_Field_Bec Estimated Distance (km): 2.6 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A7SE (SW)	882	2	417696 417038
	River Quality Name: Fenay_Beck/Shepley_Dike GQA Grade: River Quality B Reach: Ox_Field_Beck_River_Coln Estimated Distance (km): 1.4 Flow Rate: Flow less than 0.62 cumecs Flow Type: River Year: 2000	A7SW (SW)	883	2	417546 417140

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
32	River Quality Biology Sampling Points Name: Fenay Beck Reach: Ox Field Beck To River Colne Estimated Distance: 1.40 Positional Accuracy: Located by supplier to within 10m Year: 1990 GQA Grade: River Quality Biology GQA Grade E - Poor Year: 1995 GQA Grade: River Quality Biology GQA Grade C - Fairly Good Year: 2000 GQA Grade: River Quality Biology GQA Grade C - Fairly Good Year: 2002 GQA Grade: River Quality Biology GQA Grade C - Fairly Good Year: 2003 GQA Grade: River Quality Biology GQA Grade C - Fairly Good Year: 2004 GQA Grade: River Quality Biology GQA Grade E - Poor Year: 2005 GQA Grade: River Quality Biology GQA Grade E - Poor Year: 2006 GQA Grade: River Quality Biology GQA Grade E - Poor Year: 2007 GQA Grade: River Quality Biology GQA Grade E - Poor Year: 2008 GQA Grade: River Quality Biology GQA Grade E - Poor Year: 2009 GQA Grade: River Quality Biology GQA Grade E - Poor	A7SW (SW)	893	2	417576 417103
33	Substantiated Pollution Incident Register Authority: Environment Agency - North East Region, Yorkshire Area Incident Date: 11th January 2008 Incident Reference: 555198 Water Impact: Category 4 - No Impact Air Impact: Category 4 - No Impact Land Impact: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 10m Pollutant: Specific Waste MaterialsElectrical Equipment	A7NE (SW)	682	2	417651 417315
34	Substantiated Pollution Incident Register Authority: Environment Agency - North East Region, Yorkshire Area Incident Date: 27th April 2003 Incident Reference: 154301 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	A7SE (SW)	753	2	417835 417115
34	Substantiated Pollution Incident Register Authority: Environment Agency - North East Region, Yorkshire Area Incident Date: 22nd June 2007 Incident Reference: 506247 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	A7SE (SW)	758	2	417853 417103
35	Substantiated Pollution Incident Register Authority: Environment Agency - North East Region, Yorkshire Area Incident Date: 16th September 2004 Incident Reference: 266884 Water Impact: Category 2 - Significant Incident Air Impact: Category 3 - Minor Incident Land Impact: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 10m Pollutant: Crude Sewage	A7SE (SW)	852	2	417619 417122
36	Substantiated Pollution Incident Register Authority: Environment Agency - North East Region, Yorkshire Area Incident Date: 17th January 2007 Incident Reference: 462525 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: Inert Materials And Wastes: Soils And Clay	A14SE (E)	869	2	419257 417726

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
37	<p>Water Abstractions</p> <p>Operator: Huddersfield Fine Worsteds Ltd Licence Number: 2/27/11/172 Permit Version: 101 Location: Borehole - Millstone Grit - Kirkheaton Authority: Environment Agency, North East Region Abstraction: Textiles And Leather: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Kirkheaton Mills, Kirkheaton, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 17th May 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m</p>	A13SW (W)	110	2	418000 417800
37	<p>Water Abstractions</p> <p>Operator: Huddersfield Fine Worsteds Licence Number: 2/27/11/172 Permit Version: 100 Location: Borehole - Millstone Grit - Kirkheaton Authority: Environment Agency, North East Region Abstraction: Textiles And Leather: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 163 Yearly Rate (m3): 25000 Details: Kirkheaton Mills, Kirkheaton, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 30th October 1990 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m</p>	A13SW (W)	110	2	418000 417800
38	<p>Water Abstractions</p> <p>Operator: Huddersfield Fine Worsteds Ltd Licence Number: 2/27/11/039 Permit Version: 102 Location: Spring - Kirkheaton Mills Authority: Environment Agency, North East Region Abstraction: Textiles And Leather: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Kirkheaton Mills, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 17th May 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m</p>	A13SW (W)	129	2	418000 417900
38	<p>Water Abstractions</p> <p>Operator: Huddersfield Fine Worsteds Ltd (Branch Of Morris & Co Ltd) Licence Number: 2/27/11/039 Permit Version: 100 Location: Spring Authority: Environment Agency, North East Region Abstraction: Other Industrial/Commercial/Public Services: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 180 Yearly Rate (m3): 44005 Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 27th September 1977 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m</p>	A13SW (W)	129	2	418000 417900

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
38	<p>Water Abstractions</p> <p>Operator: Huddersfield Fine Worsteds Ltd (Branch Of Morris & Co Ltd) Licence Number: 2/27/11/039 Permit Version: 100 Location: Spring - Kirkheaton Mills Authority: Environment Agency, North East Region Abstraction: Textiles And Leather: General Use (Medium Loss) 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 January Authorised End: 31 December Permit Start Date: 27th September 1977 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A13SW (W)	129	2	418000 417900
39	<p>Water Abstractions</p> <p>Operator: Jarmain & Son Ltd Licence Number: 2/27/11/041 Permit Version: Not Supplied Location: Minerva Works, Crossley Lane, Kirkheaton, HUDDERSFIELD Authority: Environment Agency, North East Region Abstraction: General Industrial Abstraction Type: Not Supplied Source: Groundwater Daily Rate (m3): 436 Yearly Rate (m3): 27276 Details: Not Supplied 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</p>	A7NW (SW)	744	2	417500 417395
	<p>Water Abstractions</p> <p>Operator: Jarmain & Sons Ltd Licence Number: 2/27/11/040 Permit Version: Not Supplied Location: Minerva Works, Crossley Lane, Kirkheaton, HUDDERSFIELD Authority: Environment Agency, North East Region Abstraction: General Industrial Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): 2073 Yearly Rate (m3): 322766 Details: Not Supplied 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</p>	A2NE (SW)	1096	2	417700 416800
	<p>Water Abstractions</p> <p>Operator: Total Fitness 2010 Ltd Licence Number: 2/27/11/188 Permit Version: 3 Location: Borehole - Lower Coal Measures - Huddersfield Authority: Environment Agency, North East Region Abstraction: Sports Grounds/Facilities: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Total Fitness Uk Limited, Wakefield Road, Waterloo, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 8th February 2012 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A2SE (S)	1452	2	417880 416380

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Total Fitness Uk Ltd Licence Number: 2/27/11/188 Permit Version: 2 Location: Borehole - Lower Coal Measures - Huddersfield Authority: Environment Agency, North East Region Abstraction: Sports Grounds/Facilities: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Total Fitness Uk Limited, Wakefield Road, Waterloo, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 14th July 2004 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A2SE (S)	1452	2	417880 416380
	Water Abstractions Operator: Total Fitness Uk Ltd Licence Number: 2/27/11/188 Permit Version: 1 Location: Borehole - Lower Coal Measures - Huddersfield Authority: Environment Agency, North East Region Abstraction: Sports Grounds/Facilities: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Total Fitness Uk Limited, Wakefield Road, Waterloo, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 16th July 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A2SE (S)	1452	2	417880 416380
	Water Abstractions Operator: Syngenta Ltd Licence Number: 2/27/11/060 Permit Version: 103 Location: Borehole 1 - Millstone Grit - Huddersfield Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 23rd June 2017 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11NW (W)	1454	2	416690 418150
	Water Abstractions Operator: Syngenta Ltd Licence Number: 2/27/11/060 Permit Version: 103 Location: Borehole 1 - Millstone Grit - Huddersfield Authority: Environment Agency, North East Region Abstraction: Chemicals: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 23rd June 2017 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11NW (W)	1454	2	416690 418150

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<p>Water Abstractions</p> <p>Operator: Syngenta Ltd Licence Number: 2/27/11/060 Permit Version: 102 Location: Borehole 1 - Millstone Grit - Huddersfield Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 12th October 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A11NW (W)	1454	2	416690 418150
	<p>Water Abstractions</p> <p>Operator: Syngenta Ltd Licence Number: 2/27/11/060 Permit Version: 102 Location: Borehole 1 - Millstone Grit - Huddersfield Authority: Environment Agency, North East Region Abstraction: Chemicals: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 12th October 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A11NW (W)	1454	2	416690 418150
	<p>Water Abstractions</p> <p>Operator: Syngenta Ltd Licence Number: 2/27/11/060 Permit Version: 101 Location: Borehole 1 - Millstone Grit - Huddersfield Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I., Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 19th December 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A11NW (W)	1454	2	416690 418150
	<p>Water Abstractions</p> <p>Operator: Zeneca Fine Chemical Manufacturing Organisation Licence Number: 2/27/11/060 Permit Version: 100 Location: Borehole X4 - Carboniferous Millstone Grit Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Groundwater Daily Rate (m3): 6001 Yearly Rate (m3): 881924 Details: I.C.I., Ltd., Dalton Works, Leeds Road, Huddersfield 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 10m</p>	A11NW (W)	1454	2	416690 418150

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Zeneca Fine Chemical Manufacturing Organisation Licence Number: 2/27/11/060 Permit Version: 100 Location: Borehole 1 - Carboniferous Millstone Grit - Huddersfield Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I., Ltd., Dalton Works, Leeds Road, Huddersfield 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 10m	A11NW (W)	1454	2	416690 418150
	Water Abstractions Operator: Total Fitness Health Clubs Ltd Licence Number: 2/27/11/188/R01 Permit Version: 1 Location: Borehole - Lower Coal Measures - Huddersfield Authority: Environment Agency, North East Region Abstraction: Sports Grounds/Facilities: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Total Fitness Uk Limited, Wakefield Road, Waterloo, Huddersfield Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st April 2015 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A2SE (S)	1459	2	417876 416373
	Water Abstractions Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 102 Location: River Colne & Tributaries - Point 1 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th July 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11NW (W)	1461	2	416690 418180
	Water Abstractions Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 102 Location: River Colne & Tributaries - Point 1 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th July 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11NW (W)	1461	2	416690 418180

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 101 Location: River Colne & Tributaries - Point 1 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 19th December 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11NW (W)	1461	2	416690 418180
	Water Abstractions Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 101 Location: River Colne & Tributaries - Point 1 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I. Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 19th December 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11NW (W)	1461	2	416690 418180
	Water Abstractions Operator: Zeneca Fine Chemical Manufacturing Organisation Licence Number: 2/27/11/059 Permit Version: 100 Location: River Colne & Tribs - Dalton Works Huddersfield - Point 1 Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 12th April 1985 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11NW (W)	1461	2	416690 418180
	Water Abstractions Operator: Zeneca Fine Chemical Manufacturing Organisation Licence Number: 2/27/11/059 Permit Version: 100 Location: River Colne & Tribs - Dalton Works Huddersfield - Point 1 Authority: Environment Agency, North East Region Abstraction: Chemicals: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I. Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 12th April 1985 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11NW (W)	1461	2	416690 418180

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<p>Water Abstractions</p> <p>Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 102 Location: River Colne And Tributaries Point 3 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th July 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A16SW (W)	1514	2	416660 418270
	<p>Water Abstractions</p> <p>Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 102 Location: River Colne And Tributaries Point 3 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th July 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A16SW (W)	1514	2	416660 418270
	<p>Water Abstractions</p> <p>Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 101 Location: River Colne And Tributaries Point 3 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 19th December 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A16SW (W)	1514	2	416660 418270
	<p>Water Abstractions</p> <p>Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 101 Location: River Colne And Tributaries Point 3 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I. Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 19th December 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A16SW (W)	1514	2	416660 418270

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<p>Water Abstractions</p> <p>Operator: Zeneca Fine Chemical Manufacturing Organisation Licence Number: 2/27/11/059 Permit Version: 100 Location: River Colne - Dalton Works Huddersfield Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): 120000 Yearly Rate (m3): 40000000 Details: I.C.I Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 12th April 1985 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m</p>	A16SW (W)	1514	2	416660 418270
	<p>Water Abstractions</p> <p>Operator: Zeneca Fine Chemical Manufacturing Organisation Licence Number: 2/27/11/059 Permit Version: 100 Location: River Colne & Tribs - Dalton Works Huddersfield - Point 3 Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 12th April 1985 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A16SW (W)	1514	2	416660 418270
	<p>Water Abstractions</p> <p>Operator: Zeneca Fine Chemical Manufacturing Organisation Licence Number: 2/27/11/059 Permit Version: 100 Location: River Colne & Tribs - Dalton Works Huddersfield - Point 3 Authority: Environment Agency, North East Region Abstraction: Chemicals: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I. Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 12th April 1985 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A16SW (W)	1514	2	416660 418270
	<p>Water Abstractions</p> <p>Operator: Zeneca Fine Chemical Manufacturing Organisation Licence Number: 2/27/11/059 Permit Version: 100 Location: River Colne Authority: Environment Agency, North East Region Abstraction: Chemicals: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I. Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 12th April 1985 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A16SW (W)	1514	2	416660 418270

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 102 Location: River Colne & Tributaries - Point 2 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th July 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16SW (W)	1519	2	416690 418370
	Water Abstractions Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 102 Location: River Colne & Tributaries - Point 2 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th July 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16SW (W)	1519	2	416690 418370
	Water Abstractions Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 101 Location: River Colne & Tributaries - Point 2 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 19th December 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16SW (W)	1519	2	416690 418370
	Water Abstractions Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 101 Location: River Colne & Tributaries - Point 2 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I. Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 19th December 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16SW (W)	1519	2	416690 418370

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<p>Water Abstractions</p> <p>Operator: Zeneca Fine Chemical Manufacturing Organisation Licence Number: 2/27/11/059 Permit Version: 100 Location: River Colne & Tribs - Dalton Works Huddersfield - Point 2 Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 12th April 1985 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A16SW (W)	1519	2	416690 418370
	<p>Water Abstractions</p> <p>Operator: Zeneca Fine Chemical Manufacturing Organisation Licence Number: 2/27/11/059 Permit Version: 100 Location: River Colne & Tribs - Dalton Works Huddersfield - Point 2 Authority: Environment Agency, North East Region Abstraction: Chemicals: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I. Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 12th April 1985 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A16SW (W)	1519	2	416690 418370
	<p>Water Abstractions</p> <p>Operator: Yorkshire Water Services Ltd Licence Number: 2/27/11/162 Permit Version: 100 Location: River Colne Authority: Environment Agency, North East Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 200 Yearly Rate (m3): 15000 Details: Yorkshire Water Plc Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 2nd March 1977 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m</p>	A21SE (NW)	1640	2	417200 419200
	<p>Water Abstractions</p> <p>Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 102 Location: River Colne & Tributaries - Point 4 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th July 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A16NW (NW)	1659	2	416830 418890

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<p>Water Abstractions</p> <p>Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 102 Location: River Colne & Tributaries - Point 4 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th July 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A16NW (NW)	1659	2	416830 418890
	<p>Water Abstractions</p> <p>Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 101 Location: River Colne & Tributaries - Point 4 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 19th December 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A16NW (NW)	1659	2	416830 418890
	<p>Water Abstractions</p> <p>Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 101 Location: River Colne & Tributaries - Point 4 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I. Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 19th December 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A16NW (NW)	1659	2	416830 418890
	<p>Water Abstractions</p> <p>Operator: Zeneca Fine Chemical Manufacturing Organisation Licence Number: 2/27/11/059 Permit Version: 100 Location: River Colne & Tribs - Dalton Works Huddersfield - Point 4 Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 12th April 1985 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A16NW (NW)	1659	2	416830 418890

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<p>Water Abstractions</p> <p>Operator: Zeneca Fine Chemical Manufacturing Organisation Licence Number: 2/27/11/059 Permit Version: 100 Location: River Colne & Tribs - Dalton Works Huddersfield - Point 4 Authority: Environment Agency, North East Region Abstraction: Chemicals: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I. Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 12th April 1985 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	A16NW (NW)	1659	2	416830 418890
	<p>Water Abstractions</p> <p>Operator: Syngenta Ltd Licence Number: 2/27/11/060 Permit Version: 103 Location: Borehole 2 - Millstone Grit - Huddersfield Authority: Environment Agency, North East Region Abstraction: Chemicals: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 23rd June 2017 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	(W)	1778	2	416370 418200
	<p>Water Abstractions</p> <p>Operator: Syngenta Ltd Licence Number: 2/27/11/060 Permit Version: 103 Location: Borehole 2 - Millstone Grit - Huddersfield Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 23rd June 2017 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	(W)	1778	2	416370 418200
	<p>Water Abstractions</p> <p>Operator: Syngenta Ltd Licence Number: 2/27/11/060 Permit Version: 102 Location: Borehole 2 - Millstone Grit - Huddersfield Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 12th October 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	(W)	1778	2	416370 418200

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<p>Water Abstractions</p> <p>Operator: Syngenta Ltd Licence Number: 2/27/11/060 Permit Version: 102 Location: Borehole 2 - Millstone Grit - Huddersfield Authority: Environment Agency, North East Region Abstraction: Chemicals: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 12th October 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	(W)	1778	2	416370 418200
	<p>Water Abstractions</p> <p>Operator: Syngenta Ltd Licence Number: 2/27/11/060 Permit Version: 101 Location: Borehole 2 - Millstone Grit - Huddersfield Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I., Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 19th December 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	(W)	1778	2	416370 418200
	<p>Water Abstractions</p> <p>Operator: Zeneca Fine Chemical Manufacturing Organisation Licence Number: 2/27/11/060 Permit Version: 100 Location: Borehole 2 - Carboniferous Millstone Grit - Huddersfield Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I., Ltd., Dalton Works, Leeds Road, Huddersfield 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 10m</p>	(W)	1778	2	416370 418200
	<p>Water Abstractions</p> <p>Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 102 Location: River Colne And Tributaries - Point 5 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th July 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m</p>	(W)	1845	2	416330 418320

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 102 Location: River Colne And Tributaries - Point 5 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th July 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(W)	1845	2	416330 418320
	Water Abstractions Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 101 Location: River Colne And Tributaries - Point 5 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 19th December 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(W)	1845	2	416330 418320
	Water Abstractions Operator: Syngenta Ltd Licence Number: 2/27/11/059 Permit Version: 101 Location: River Colne And Tributaries - Point 5 - Dalton Works Authority: Environment Agency, North East Region Abstraction: Chemicals: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I. Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 19th December 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(W)	1845	2	416330 418320
	Water Abstractions Operator: Zeneca Fine Chemical Manufacturing Organisation Licence Number: 2/27/11/059 Permit Version: 100 Location: River Colne & Tribs - Dalton Works Huddersfield - Point 5 Authority: Environment Agency, North East Region Abstraction: Chemicals: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 12th April 1985 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(W)	1845	2	416330 418320

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Zeneca Fine Chemical Manufacturing Organisation Licence Number: 2/27/11/059 Permit Version: 100 Location: River Colne & Tribs - Dalton Works Huddersfield - Point 5 Authority: Environment Agency, North East Region Abstraction: Chemicals: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: I.C.I. Ltd., Dalton Works, Leeds Road, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 12th April 1985 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(W)	1845	2	416330 418320
	Water Abstractions Operator: F Dews Licence Number: 2/27/13/090 Permit Version: 100 Location: Well - Coal Measures - Colnsbridge Bradley 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): 1 Yearly Rate (m3): 233 Details: Boyfe Hall Farm, Colnebridge, Bradley, Huddersfield Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 26th March 1974 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(NE)	1909	2	419300 419700
40	Water Industry Act Referrals Name: P Casey (Civil Engineering) Ltd Location: P CASEY (CIVIL ENGINEERING) LTD, LANESIDE QUARRY, LANESIDE ROAD, KIRKHEATON, HUDDERSFIELD, HUDDERSFIELD, HD5 OMT Authority: Environment Agency, North East Region Permit Reference: BG6359 Dated: 19th July 1999 Process Type: Permissions or amendments to discharge under the Water Industry Act 1991 Description: Processes which result in the discharge of Special Category effluents under The Trade Effluents (Prescribed Processes and Substances) Regulations Status: Application received by the EA but is not yet authorised Positional Accuracy: Manually positioned to the road within the address or location	A8NE (SE)	652	2	418546 417260
	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	A13SE (SW)	0	2	418270 417910
	Groundwater Vulnerability Soil Classification: Soils of High Leaching Potential (H3)- Coarse textured or moderately shallow soils which readily transmit non-absorbed pollutants and liquid discharges but which have some ability to attenuate absorbed pollutants because of their large clay or organic matter contents Map Sheet: Sheet 11 South Pennines Scale: 1:100,000	A13SE (E)	0	2	418274 417910
	Drift Deposits None				
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A13SE (SW)	0	4	418270 417910
	Superficial Aquifer Designations No Data Available				
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	Areas Benefiting from Flood Defences None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Flood Water Storage Areas None				
	Flood Defences None				
41	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 81.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A8NE (SE)	358	5	418440 417537
42	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 196.3 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A8NE (S)	403	5	418400 417468
43	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 324.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Ox Field Beck Catchment Name: Aire and Calder Primacy: 1	A8NE (S)	537	5	418297 417288
44	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 56.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A8NW (S)	553	5	418054 417262
45	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 8.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A8NE (S)	577	5	418380 417272
46	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 85.2 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A8NE (S)	577	5	418380 417272
47	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 3.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Ox Field Beck Catchment Name: Aire and Calder Primacy: 1	A8NE (S)	578	5	418372 417268
48	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 211.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Ox Field Beck Catchment Name: Aire and Calder Primacy: 1	A8NE (S)	581	5	418375 417266

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
49	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 42.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A8NE (S)	586	5	418485 417305
50	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 13.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Ox Field Beck Catchment Name: Aire and Calder Primacy: 1	A8SW (S)	603	5	418071 417210
51	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 410.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Ox Field Beck Catchment Name: Aire and Calder Primacy: 1	A8SW (S)	613	5	418061 417201
52	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 2.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A8SW (S)	613	5	418061 417201
53	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 360.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A9NW (SE)	626	5	418802 417471
54	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 78.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A9NW (SE)	637	5	418689 417370
55	OS Water Network Lines Watercourse Form: Lake Watercourse Length: 14.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A9NW (SE)	638	5	418697 417374
56	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 58.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A9NW (SE)	641	5	418710 417381
57	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 12.4 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A9NW (SE)	644	5	418766 417419

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
58	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 48.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A9NW (SE)	658	5	418648 417316
59	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 188.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A8NE (SE)	671	5	418605 417271
60	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 461.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A14SE (E)	685	5	419040 417682
61	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 59.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A14SE (E)	693	5	419022 417628
62	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 30.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A14SE (E)	698	5	419022 417624
63	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 31.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A14SE (E)	709	5	419058 417665
64	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 70.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A14SE (E)	709	5	419058 417665
65	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 465.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Ox Field Beck Catchment Name: Aire and Calder Primacy: 1	A8SE (S)	750	5	418518 417141
66	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 0.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A14SE (E)	759	5	419122 417680

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
67	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 5.3 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A14SE (E)	760	5	419122 417680
68	OS Water Network Lines Watercourse Form: Lake Watercourse Length: 20.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A14SE (E)	764	5	419127 417682
69	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 13.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A14SE (E)	777	5	419146 417692
70	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 120.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A12NW (W)	782	5	417338 417965
71	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 14.3 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Ox Field Beck Catchment Name: Aire and Calder Primacy: 1	A7SE (SW)	787	5	417740 417122
72	OS Water Network Lines Watercourse Form: Lake Watercourse Length: 21.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A14SE (E)	788	5	419159 417694
73	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 439.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Ox Field Beck Catchment Name: Aire and Calder Primacy: 1	A7SE (SW)	800	5	417727 417114
74	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 7.5 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A14SE (E)	805	5	419180 417700
75	OS Water Network Lines Watercourse Form: Lake Watercourse Length: 23.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A14SE (E)	811	5	419187 417702

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
76	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 4.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A14SE (E)	832	5	419208 417698
77	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 56.1 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A12SW (W)	833	5	417277 417894
78	OS Water Network Lines Watercourse Form: Lake Watercourse Length: 10.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A14SE (E)	837	5	419213 417698
79	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 41.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A14SE (E)	847	5	419223 417697
80	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 43.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A7SE (SW)	848	5	417684 417084
81	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 6.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A7NW (SW)	853	5	417347 417437
82	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 623.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Round Wood Beck Catchment Name: Aire and Calder Primacy: 1	A7SE (SW)	870	5	417634 417089
83	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 20.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A11SE (W)	874	5	417234 417858
84	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 280.2 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Aire and Calder Primacy: 1	A11SE (W)	887	5	417221 417844

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
85	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 32.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Ox Field Beck Catchment Name: Aire and Calder Primacy: 1	A7SW (SW)	961	5	417352 417230
86	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 126.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Round Wood Beck Catchment Name: Aire and Calder Primacy: 1	A7SW (SW)	974	5	417349 417212
87	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 14.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Round Wood Beck Catchment Name: Aire and Calder Primacy: 1	A7SW (SW)	979	5	417337 417220
88	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 30.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Round Wood Beck Catchment Name: Aire and Calder Primacy: 2	A7SW (SW)	982	5	417388 417155
89	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 573.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Round Wood Beck Catchment Name: Aire and Calder Primacy: 2	A7SW (SW)	985	5	417407 417130
90	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 251.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Lees Head Beck Catchment Name: Aire and Calder Primacy: 1	A7SW (SW)	987	5	417323 417226

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
91	Historical Landfill Sites Licence Holder: Not Supplied Location: Lane Side Lane, Kirkheaton Name: Kirkheaton Brickworks Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHL35077 First Input Date: 1st January 1975 Last Input Date: 31st December 1983 Specified Waste Type: Deposited Waste included Industrial, Commercial, Household and Special Waste, and Liquid Sludge EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: Not Supplied	A9NW (SE)	628	2	418694 417373
92	Historical Landfill Sites Licence Holder: Not Supplied Location: Off Waterloo Road, Waterloo, Huddersfield Name: Tandem Industrial Estate Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHL35052 First Input Date: 3rd July 1973 Last Input Date: Not Supplied Specified Waste Type: Deposited Waste included Inert Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: Not Supplied	A7SE (SW)	806	2	417738 417102
93	Historical Landfill Sites Licence Holder: National Rivers Authority Location: Dalton, Huddersfield Name: Land adjacent to Albany Road Bridge Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHL30222 First Input Date: 31st May 1990 Last Input Date: 31st December 1992 Specified Waste Type: Deposited Waste included Inert and Commercial Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 4700/0822 BGS Ref: Not Supplied Other Ref: 4700/0814	A7SW (SW)	850	2	417536 417193
94	Licensed Waste Management Facilities (Landfill Boundaries) Name: Lane Side Quarry Landfill Site Licence Number: 0 Location: Lane Side Quarry Landfill Site, Off Bellstring Lane, Kirkheaton, West Yorkshire Licence Holder: P Casey Enviro Ltd Authority: Environment Agency - North East Region, Yorkshire Area Site Category: Waste Landfilling; >10 T/D with Capacity >25,000T Excluding Inert Waste Max Input Rate: Not Supplied Licence Status: Effective Issued: 28th February 2014 Positional Accuracy: Positioned by the supplier Boundary Accuracy: As Supplied	A13SE (SE)	345	2	418513 417603
95	Licensed Waste Management Facilities (Landfill Boundaries) Name: C L M Properties Ltd Licence Number: 61025 Location: The Barn, Brook Lane, Golcar, Huddersfield, West Yorkshire, HD7 4JA Licence Holder: C L M Properties Limited Authority: Environment Agency - North East Region, Yorkshire Area Site Category: Landfills Taking Non-biodegradable Wastes (Not Construction) Max Input Rate: Not Supplied Licence Status: Closure Issued: 29th May 1992 Positional Accuracy: Positioned by the supplier Boundary Accuracy: As Supplied	A11NE (W)	976	2	417140 417947

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
96	Licensed Waste Management Facilities (Locations) Licence Number: 401385 Location: Laneside Quarry, Off Bellstrings Lane, Kirkheaton, Huddersfield, West Yorkshire, HD5 0NT Operator Name: P Casey Enviro Limited Operator Location: Not Supplied Authority: Environment Agency - North East Region, Yorkshire Area Site Category: Use of waste in construction <100,000 tps Licence Status: Surrendered Issued: 4th July 2014 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: 2nd November 2017 IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 100m	A9NW (SE)	701	2	418700 417300
96	Licensed Waste Management Facilities (Locations) Licence Number: 103496 Location: Laneside Quarry Landfill Site, Off Bellstring Lane, Kirkheaton, Huddersfield, West Yorkshire Operator Name: P Casey Enviro Limited Operator Location: Not Supplied Authority: Environment Agency - North East Region, Yorkshire Area Site Category: Use of waste for reclamation etc <100,000 tps Licence Status: Surrendered Issued: 4th May 2012 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: 2nd November 2017 IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 100m	A9NW (SE)	701	2	418700 417300
97	Licensed Waste Management Facilities (Locations) Licence Number: 65496 Location: Units 1-5 Newlands Trade Park, School Lane, Kirkheaton, Huddersfield, West Yorkshire, HD5 0JS Operator Name: Electrical Waste Recycling Group Ltd Operator Location: Not Supplied Authority: Environment Agency - North East Region, Yorkshire Area Site Category: Material Recycling Treatment Facilities Licence Status: Modified Issued: 20th October 2006 Last Modified: 25th January 2013 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A7SE (SW)	726	2	417675 417237
	Local Authority Landfill Coverage Name: Kirklees Metropolitan Borough Council - Has not been able to supply Landfill data		0	6	418270 417910

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
98	<p>Registered Landfill Sites</p> <p>Licence Holder: West Yorks Waste Management Licence Reference: WY 6 Site Location: Kirkheaton Brickworks, Kirkheaton, Huddersfield, West Yorkshire Licence Easting: 418800 Licence Northing: 417300 Operator Location: 54 Bradford Road, BRIGHOUSE, West Yorkshire, HD6 1RY Authority: Environment Agency - North East Region, Ridings Area Site Category: Landfill Max Input Rate: Undefined Waste Source: No known restriction on source of waste Restrictions: Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st July 1977 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste: House, Com + Ind.Waste Environment Agency Notifiable Wastes must give specific authorisation for this waste to be acceptedWaste requires prior approval</p>	A9NW (SE)	760	2	418800 417300
99	<p>Registered Landfill Sites</p> <p>Licence Holder: National Rivers Authority Licence Reference: 814 Site Location: Adj Albany Road Bridge, Dalton, Huddersfield, West Yorkshire Licence Easting: 417400 Licence Northing: 417200 Operator Location: 21 Park Square South, LEEDS, West Yorkshire, LS1 2QG 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: Waste produced/controlled by licence holder Restrictions: Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st June 1990 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Manually positioned to the road within the address or location Boundary Accuracy: Not Applicable Authorised Waste: Excavation Waste From Fenay Beck Prohibited Waste: Liable To Cause Environmental Hazards Poisonous, Noxious, Polluting Wastes</p>	A7SW (SW)	943	2	417400 417200

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Pennine Lower Coal Measures Formation And South Wales Lower Coal Measures Formation (Undifferentiated)	A13SE (SW)	0	1	418270 417910
100	BGS Recorded Mineral Sites Site Name: Kirkheaton Location: Kirkheaton, Huddersfield, West Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 109854 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A13NW (W)	52	1	418153 417923
101	BGS Recorded Mineral Sites Site Name: Kirkheaton Fireclay Mine Location: Kirkheaton, Huddersfield, West Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 13854 Type: Underground And Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Fireclay Positional Accuracy: Located by supplier to within 10m	A13SE (SE)	255	1	418430 417655
102	BGS Recorded Mineral Sites Site Name: Hill Top Location: Kirkheaton, Huddersfield, West Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 13855 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Grenoside Sandstone Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A12SE (SW)	329	1	417820 417665
103	BGS Recorded Mineral Sites Site Name: Heaton Moor Location: Kirkheaton, Huddersfield, West Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 109855 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A19SW (NE)	477	1	418708 418385
104	BGS Recorded Mineral Sites Site Name: Stafford Hill Location: Hill Side, Huddersfield, West Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 109869 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A8NE (S)	511	1	418384 417345

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
105	BGS Recorded Mineral Sites Site Name: Kirkheaton Location: Kirkheaton, Huddersfield, West Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 2568 Type: Opencast Status: Ceased Operator: Elliott'S Estates Ltd. Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Common Clay and Shale Positional Accuracy: Located by supplier to within 10m	A8NE (SE)	521	1	418600 417450
106	BGS Recorded Mineral Sites Site Name: Kirkheaton Brickworks Location: Kirkheaton, Huddersfield, West Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 43197 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Common Clay and Shale Positional Accuracy: Located by supplier to within 10m	A9NE (SE)	780	1	418960 417410
107	BGS Recorded Mineral Sites Site Name: Lower Hall Quarry Location: Lascelles, Huddersfield, West Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 13858 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Grenoside Sandstone Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A8SE (S)	804	1	418430 417050
108	BGS Recorded Mineral Sites Site Name: Moor Top Location: Kirkheaton, Huddersfield, West Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 109853 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Clifton Rock Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A18NW (N)	812	1	418187 418811
109	BGS Recorded Mineral Sites Site Name: Mount Pleasant Location: Kirkheaton, Huddersfield, West Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 109856 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A19SE (NE)	840	1	419026 418590
110	BGS Recorded Mineral Sites Site Name: Lower Hall Location: Lascelles, Hill Side, Huddersfield, West Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 109870 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Grenoside Sandstone Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A8SW (S)	854	1	418233 416957

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
111	BGS Recorded Mineral Sites Site Name: Nab Hill Location: Kirkheaton, Huddersfield, West Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 109792 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A11NE (W)	983	1	417206 418218
112	BGS Recorded Mineral Sites Site Name: Lower Hall Fireclay Mine Location: Lascelles, Huddersfield, West Yorkshire Source: British Geological Survey, National Geoscience Information Service Reference: 13857 Type: Underground And Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Fireclay Positional Accuracy: Located by supplier to within 10m	A3NE (S)	990	1	418480 416870
	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.	A13SE (SW)	0	7	418270 417910
	Mining Instability Mining Evidence: Inconclusive Coal Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A13NE (N)	0	-	418270 418000
	Mining Instability Mining Evidence: Inconclusive Coal Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A13SE (SW)	0	-	418270 417910
	Mining Instability Mining Evidence: Conclusive Rock Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A13SE (SW)	0	-	418270 417910
	Man-Made Mining Cavities Easting: 418500 Northing: 417500 Distance: 423 Quadrant Reference: A8 Quadrant Reference: NE Bearing Ref: SE Cavity Type: Not supplied Commodity: Clay Solid Geology Detail: No Details Superficial Geology: No Details Detail:	A8NE (SE)	423	8	418500 417500
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	418270 417910
	Potential for Compressible Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	1	418287 417911
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	418270 417910
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	418270 417910
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	0	1	418264 417911

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	1	418352 417908
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	0	1	418167 417858
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	418270 417910
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	7	1	418352 417908
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	28	1	418440 417938
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	28	1	418088 417852
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	41	1	418468 418015
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	53	1	418470 417959
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	80	1	418464 417906
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	120	1	418549 418022
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	140	1	418117 417668
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A8NW (SW)	246	1	418118 417564
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	1	418287 417911
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	418270 417910
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	0	1	418182 417857
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	0	1	418215 417878
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	418270 417910
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	1	1	418125 417853
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	7	1	418352 417908
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	28	1	418440 417938
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	120	1	418549 418022

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	122	1	418061 417701
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A14NW (E)	187	1	418618 418022
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A14NW (NE)	237	1	418620 418140
	Radon Potential - Radon Affected Areas Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	0	1	418275 417951
	Radon Potential - Radon Affected Areas Affected Area: The property is in an Intermediate probability radon area (1 to 3% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	418270 417910
	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	A13NE (N)	0	1	418275 417951
	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	A13SE (SW)	0	1	418270 417910

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
113	Contemporary Trade Directory Entries Name: Cem Cleaning Services Location: 18, Shop Lane, Huddersfield, HD5 0DB Classification: Cleaning Services - Domestic Status: Active Positional Accuracy: Automatically positioned to the address	A13NW (W)	102	-	418053 417920
114	Contemporary Trade Directory Entries Name: Huddersfield Fine Worsteds Ltd Location: Kirkheaton Mills, Huddersfield, HD5 0NS Classification: Clothing & Fabrics - Manufacturers Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SW (W)	102	-	418013 417863
114	Contemporary Trade Directory Entries Name: Learoyd Bros Location: Kirkheaton Mills, Huddersfield, HD5 0NS Classification: Textile Manufacturing Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SW (W)	102	-	418013 417863
114	Contemporary Trade Directory Entries Name: W E Yates Location: Kirkheaton Mills, Huddersfield, HD5 0NS Classification: Textile Manufacturing Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SW (W)	102	-	418013 417863
114	Contemporary Trade Directory Entries Name: Martin Sons & Co Location: Kirkheaton Mills, Huddersfield, West Yorkshire, HD5 0NS Classification: Textile Manufacturing Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SW (W)	102	-	418013 417863
115	Contemporary Trade Directory Entries Name: Lifes A Ball Location: 7, Low Fold, Huddersfield, West Yorkshire, HD5 0JJ Classification: Sports Equipment Manufacturers & Distributors Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SW (W)	127	-	417984 417798
116	Contemporary Trade Directory Entries Name: Kirkheaton Engineering Location: The Forge, Huddersfield, HD5 0JF Classification: Engineers - General Status: Active Positional Accuracy: Automatically positioned to the address	A13NW (W)	180	-	418006 417983
117	Contemporary Trade Directory Entries Name: Ponty Printers Location: 41, St. Peters Crescent, Huddersfield, HD5 0EY Classification: Printers Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SW (SW)	187	-	417934 417752
118	Contemporary Trade Directory Entries Name: Lanka Garage Location: St. Mary's Lane, Huddersfield, HD5 0EB Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SW (SW)	214	-	418094 417599
118	Contemporary Trade Directory Entries Name: Lanka Garage Location: St. Mary's Lane, Huddersfield, West Yorkshire, HD5 0EB Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SW (SW)	214	-	418094 417599
118	Contemporary Trade Directory Entries Name: Lanka Garage Location: St. Mary's Lane, Huddersfield, HD5 0EB Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A13SW (SW)	215	-	418094 417598
119	Contemporary Trade Directory Entries Name: Walkers Garage Location: 1c, New Road, Huddersfield, HD5 0JB Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A13NW (NW)	255	-	417986 418059

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
119	Contemporary Trade Directory Entries Name: Walkers Garage Location: 1c, New Road, Huddersfield, HD5 0JB Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A13NW (NW)	255	-	417986 418059
120	Contemporary Trade Directory Entries Name: Gone Flat Location: 63, Moorside Road, Huddersfield, West Yorkshire, HD5 0LR Classification: Tyre Repairs & Retreading Status: Inactive Positional Accuracy: Automatically positioned to the address	A18SW (N)	565	-	418122 418523
121	Contemporary Trade Directory Entries Name: Tali Uk Ltd Location: 18, School Lane, Kirkheaton, Huddersfield, HD5 0JS Classification: Fibre Optics Status: Active Positional Accuracy: Automatically positioned to the address	A7SE (SW)	673	-	417767 417238
122	Contemporary Trade Directory Entries Name: Well Polished Location: 148, Cockley Hill Lane, Huddersfield, HD5 0PE Classification: Cleaning Services - Domestic Status: Inactive Positional Accuracy: Automatically positioned to the address	A14NE (E)	679	-	419089 418165
123	Contemporary Trade Directory Entries Name: Electrical Waste Recycling Group Location: Newland Works, School Lane, Kirkheaton, Huddersfield, HD5 0JS Classification: Waste Disposal Services Status: Active Positional Accuracy: Automatically positioned to the address	A7NE (SW)	707	-	417637 417293
124	Contemporary Trade Directory Entries Name: Hydraulic Cylinder Repairs Ltd Location: Unit 33, Minerva Works, Crossley Lane, Huddersfield, HD5 9SA Classification: Hydraulic Engineers Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NW (SW)	802	-	417452 417363
124	Contemporary Trade Directory Entries Name: A & H Interiors Ltd Location: Unit 40, Minerva Works, Crossley Lane, Huddersfield, HD5 9SA Classification: Fireplaces & Mantelpieces Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NW (SW)	802	-	417452 417363
125	Contemporary Trade Directory Entries Name: Abr Sheet Metal Location: Unit L, Hartley Business Park, Crossley Lane, Huddersfield, HD5 0QP Classification: Sheet Metal Work Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NW (SW)	848	-	417367 417409
126	Contemporary Trade Directory Entries Name: Cartwrights Cars Location: 1, Albany House, Albany Road, Huddersfield, HD5 0QS Classification: Car Engine Tuning & Diagnostic Services Status: Active Positional Accuracy: Automatically positioned to the address	A7SW (SW)	851	-	417555 417173
127	Contemporary Trade Directory Entries Name: Plasticraft Displays Location: 56, Nettleton Road, Huddersfield, West Yorkshire, HD5 9TB Classification: Plastic Products - Manufacturers Status: Inactive Positional Accuracy: Manually positioned to the address or location	A11SE (W)	927	-	417185 417735
128	Contemporary Trade Directory Entries Name: Forteq Uk Ltd Location: Tandem Industrial Estate, Wakefield Road, Tandem, Huddersfield, HD5 0QR Classification: Plastics - Injection Moulding Status: Active Positional Accuracy: Automatically positioned to the address	A7SE (SW)	937	-	417772 416942
129	Contemporary Trade Directory Entries Name: Waterloo Blinds Location: 105, Waterloo Road, Huddersfield, HD5 0AB Classification: Blinds, Awnings & Canopies Status: Inactive Positional Accuracy: Automatically positioned to the address	A7SW (SW)	951	-	417518 417074

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
130	<p>Fuel Station Entries</p> <p>Name: Lanka Garage Location: St Marys Lane , Kirkheaton , Huddersfield, West Yorkshire, HD5 0EB Brand: Obsolete Premises Type: Not Applicable Status: Obsolete Positional Accuracy: Automatically positioned to the address</p>	A13SW (SW)	215	-	418094 417598

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
131	Areas of Adopted Green Belt Authority: Kirklees Metropolitan Borough Council Plan Name: Kirklees Unitary Development Plan Status: Adopted Plan Date: 1st March 1999	A13SE (SW)	0	10	418270 417910
132	Areas of Unadopted Green Belt Authority: Kirklees Metropolitan Borough Council Plan Name: Kirklees Local Plan Status: Submission Draft Plan Date: 25th April 2017	A13SE (E)	0	10	418310 417901
133	Local Nature Reserves Name: Dalton Bank Multiple Area: N Area (m2): 200673.79 Source: Natural England Designation Date: 4th December 1995	A12NW (W)	872	9	417309 418176

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices Wakefield City Metropolitan District Council - Environmental Health Kirklees Metropolitan Borough Council - Planning Services Calderdale Metropolitan Borough Council - Environmental Health	March 2015 November 2013 September 2014	Annual Rolling Update Annual Rolling Update Annual Rolling Update
Discharge Consents Environment Agency - North East Region	October 2018	Quarterly
Enforcement and Prohibition Notices Environment Agency - North East Region	March 2013	Annual Rolling Update
Integrated Pollution Controls Environment Agency - North East Region	October 2008	Variable
Integrated Pollution Prevention And Control Environment Agency - North East Region	October 2018	Quarterly
Local Authority Integrated Pollution Prevention And Control Kirklees Metropolitan Borough Council - Environmental Health Department Wakefield City Metropolitan District Council - Environmental Health Calderdale Metropolitan Borough Council - Environmental Health	April 2014 June 2014 October 2014	Variable Variable Variable
Local Authority Pollution Prevention and Controls Kirklees Metropolitan Borough Council - Environmental Health Department Wakefield City Metropolitan District Council - Environmental Health Calderdale Metropolitan Borough Council - Environmental Health	April 2014 June 2014 October 2014	Annual Rolling Update Annual Rolling Update Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements Kirklees Metropolitan Borough Council - Environmental Health Department Wakefield City Metropolitan District Council - Environmental Health Calderdale Metropolitan Borough Council - Environmental Health	April 2014 June 2014 October 2014	Variable Variable Variable
Nearest Surface Water Feature Ordnance Survey	September 2017	
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	Annual Rolling Update
Prosecutions Relating to Controlled Waters Environment Agency - North East Region	March 2013	Annual Rolling Update
Registered Radioactive Substances Environment Agency - North East Region	June 2016	
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 Environment Agency - North East Region - Yorkshire Area	October 2018 October 2018	Quarterly Quarterly
Water Abstractions Environment Agency - North East Region	October 2018	Quarterly
Water Industry Act Referrals Environment Agency - North East Region	October 2017	Quarterly
Groundwater Vulnerability Environment Agency - Head Office	April 2015	Not Applicable
Drift Deposits Environment Agency - Head Office	January 1999	Not Applicable

Agency & Hydrological	Version	Update Cycle
Bedrock Aquifer Designations Environment Agency - Head Office	January 2018	Annually
Superficial Aquifer Designations Environment Agency - Head Office	January 2018	Annually
Source Protection Zones Environment Agency - Head Office	January 2018	Quarterly
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	August 2018	Quarterly
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	August 2018	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	August 2018	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	August 2018	Quarterly
Flood Defences Environment Agency - Head Office	August 2018	Quarterly
OS Water Network Lines Ordnance Survey	October 2018	Quarterly
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	Annually
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	July 2018	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 Environment Agency - North East Region - Yorkshire Area	July 2018 July 2018	Quarterly Quarterly
Licensed Waste Management Facilities (Locations) Environment Agency - North East Region - Ridings Area Environment Agency - North East Region - Yorkshire Area	October 2018 October 2018	Quarterly Quarterly
Local Authority Landfill Coverage Calderdale Metropolitan Borough Council - Environmental Health Kirklees Metropolitan Borough Council - Planning Services Wakefield City Metropolitan District Council - Environmental Health	May 2000 May 2000 May 2000	Not Applicable Not Applicable Not Applicable
Local Authority Recorded Landfill Sites Calderdale Metropolitan Borough Council - Environmental Health Kirklees Metropolitan Borough Council - Planning Services Wakefield City Metropolitan District Council - Environmental Health	May 2000 May 2000 May 2000	Not Applicable Not Applicable Not Applicable
Registered Landfill Sites Environment Agency - North East Region - Ridings Area Environment Agency - North East Region - Yorkshire Area	March 2003 March 2003	Not Applicable Not Applicable
Registered Waste Transfer Sites Environment Agency - North East Region - Ridings Area Environment Agency - North East Region - Yorkshire Area	March 2003 March 2003	Not Applicable Not Applicable
Registered Waste Treatment or Disposal Sites Environment Agency - North East Region - Ridings Area Environment Agency - North East Region - Yorkshire Area	March 2003 March 2003	Not Applicable Not Applicable

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH) Health and Safety Executive	April 2018	Bi-Annually
Explosive Sites Health and Safety Executive	March 2017	Variable
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 Calderdale Metropolitan Borough Council Wakefield City Metropolitan District Council	August 2015 February 2016 February 2016	Variable Variable Variable
Planning Hazardous Substance Consents Kirklees Metropolitan Borough Council - Planning Services Calderdale Metropolitan Borough Council Wakefield City Metropolitan District Council	August 2015 February 2016 February 2016	Variable Variable Variable
Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	Not Applicable
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	November 2018	Bi-Annually
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011	Not Applicable
Coal Mining Affected Areas The Coal Authority - Property Searches	March 2014	Annual Rolling Update
Mining Instability Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	July 2011	Annually
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	July 2011	Annually

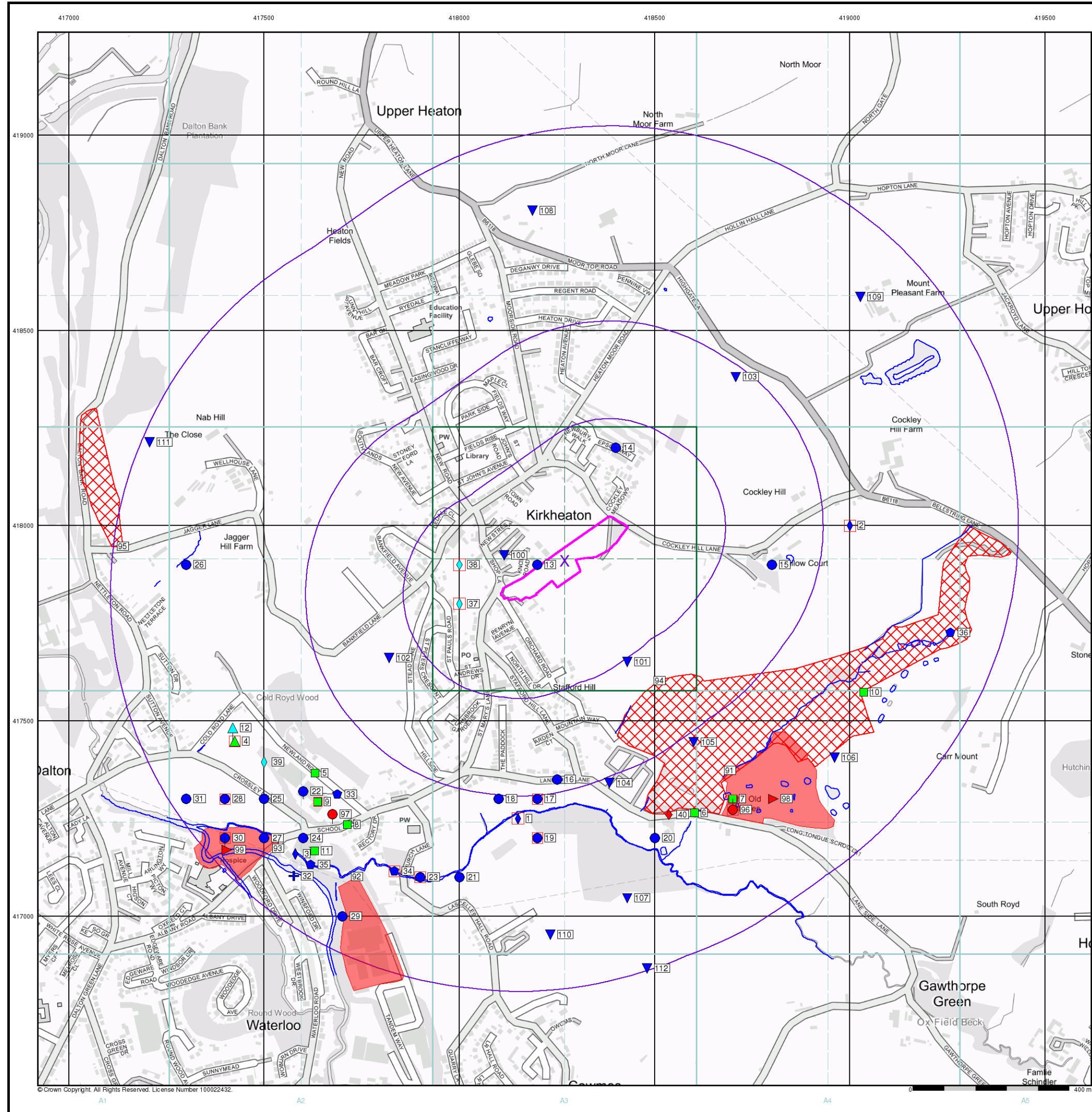
Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	January 2019	Quarterly
Fuel Station Entries Catalist Ltd - Experian	November 2018	Quarterly
Gas Pipelines National Grid	July 2014	
Underground Electrical Cables National Grid	December 2015	
Sensitive Land Use	Version	Update Cycle
Ancient Woodland Natural England	August 2018	Bi-Annually
Areas of Adopted Green Belt Calderdale Metropolitan Borough Council Kirklees Metropolitan Borough Council Wakefield City Metropolitan District Council	August 2018 August 2018 August 2018	As notified As notified As notified
Areas of Unadopted Green Belt Calderdale Metropolitan Borough Council Kirklees Metropolitan Borough Council Wakefield City Metropolitan District Council	August 2018 August 2018 August 2018	As notified As notified As notified
Areas of Outstanding Natural Beauty Natural England	August 2018	Bi-Annually
Environmentally Sensitive Areas Natural England	January 2017	
Forest Parks Forestry Commission	April 1997	Not Applicable
Local Nature Reserves Natural England	August 2018	Bi-Annually
Marine Nature Reserves Natural England	January 2018	Bi-Annually
National Nature Reserves Natural England	August 2018	Bi-Annually
National Parks Natural England	April 2017	Bi-Annually
Nitrate Vulnerable Zones Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	October 2015	
Ramsar Sites Natural England	August 2018	Bi-Annually
Sites of Special Scientific Interest Natural England	October 2018	Bi-Annually
Special Areas of Conservation Natural England	August 2018	Bi-Annually
Special Protection Areas Natural England	August 2018	Bi-Annually

A selection of organisations who provide data within this report

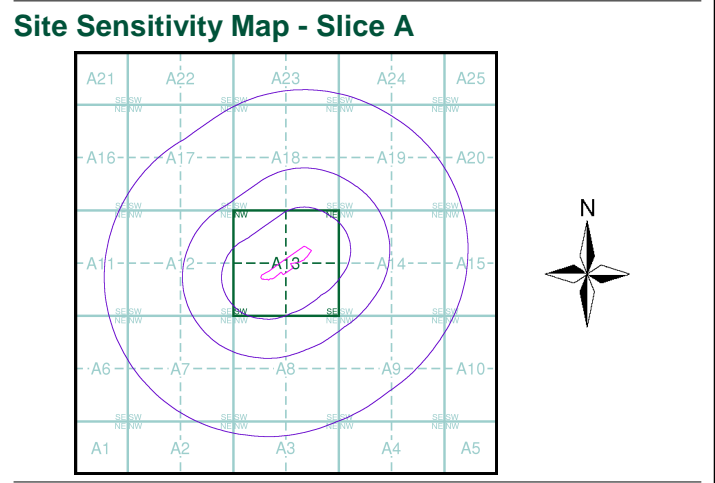
Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	 British Geological Survey <small>NATURAL ENVIRONMENT RESEARCH COUNCIL</small>
Centre for Ecology and Hydrology	 Centre for Ecology & Hydrology <small>NATURAL ENVIRONMENT RESEARCH COUNCIL</small>
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Peter Brett Associates	

Contact	Name and Address	Contact Details
1	British Geological Survey - Enquiry Service British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
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	Kirklees Metropolitan Borough Council - Environmental Health Department West Riding House, 9 Manchester Road, Huddersfield, West Yorkshire, HD1 3HH	Telephone: 01484 221000 Email: customer.relations@kirklees.gov.uk Website: www.kirklees.gov.uk
4	Environment Agency - Head Office Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, Avon, BS32 4UD	Telephone: 01454 624400 Fax: 01454 624409
5	Ordnance Survey Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk
6	Kirklees Metropolitan Borough Council - Planning Services PO BOX B93, Civic Centre III, Off Market Street, Huddersfield, West Yorkshire, HD1 2JR	Telephone: 01484 221000 Fax: 01484 221613 Website: www.kirklees.gov.uk
7	The Coal Authority - Property Searches 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG	Telephone: 0345 762 6848 Fax: 01623 637 338 Email: groundstability@coal.gov.uk Website: www2.groundstability.com
8	Peter Brett Associates Caversham Bridge House, Waterman Place, Reading, Berkshire, RG1 8DN	Telephone: 0118 950 0761 Fax: 0118 959 7498 Email: reading@pba.co.uk Website: www.pba.co.uk
9	Natural England County Hall, Spetchley Road, Worcester, WR5 2NP	Telephone: 0300 060 3900 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
10	Kirklees Metropolitan Borough Council Town Hall, Civic Centre, Huddersfield, West Yorkshire, HD1 2TA	Telephone: 01484 221000 Fax: 01484 442768 Website: www.kirklees.gov.uk
-	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.



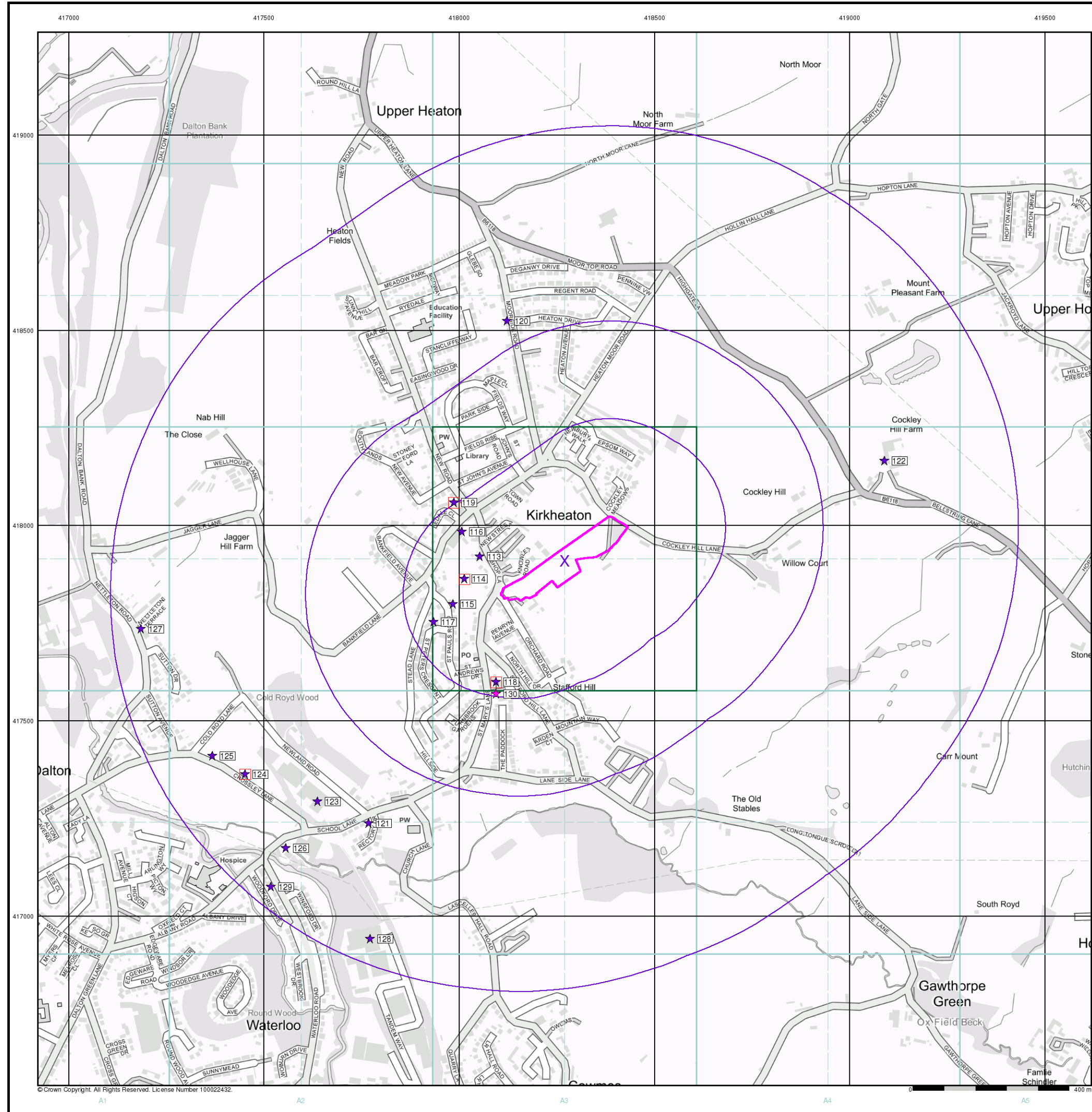
- General**
- Specified Site
 - Specified Buffer(s)
 - Bearing Reference Point
 - Map ID
 - Several of Type at Location
- Agency and Hydrological**
- Contaminated Land Register Entry or Notice (Location)
 - Contaminated Land Register Entry or Notice
 - Discharge Consent
 - Enforcement or Prohibition 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 (Buffered Point)
 - 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
- Hazardous Substances**
- COMAH Site
 - Explosive Site
 - NIHHS Site
 - Planning Hazardous Substance Consent
 - Planning Hazardous Substance Enforcement
- Geological**
- BGS Recorded Mineral Site
- Industrial Land Use**
- Contemporary Trade Directory Entry
 - Fuel Station Entry



Order Details

Order Number: 193766422_1_1
 Customer Ref: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 1000

Site Details
 Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



ARP GEOTECHNICAL LTD

Industrial Land Use Map

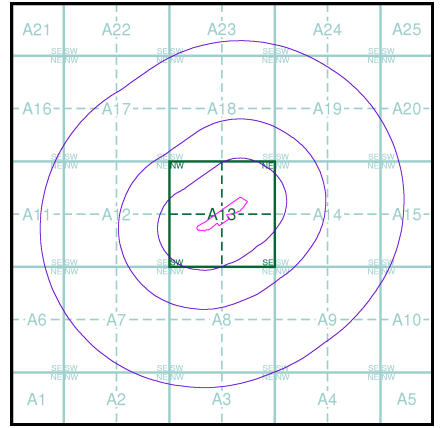
General

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

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry
- Gas Pipeline
- Underground Electrical Cables

Industrial Land Use Map - Slice A



Order Details

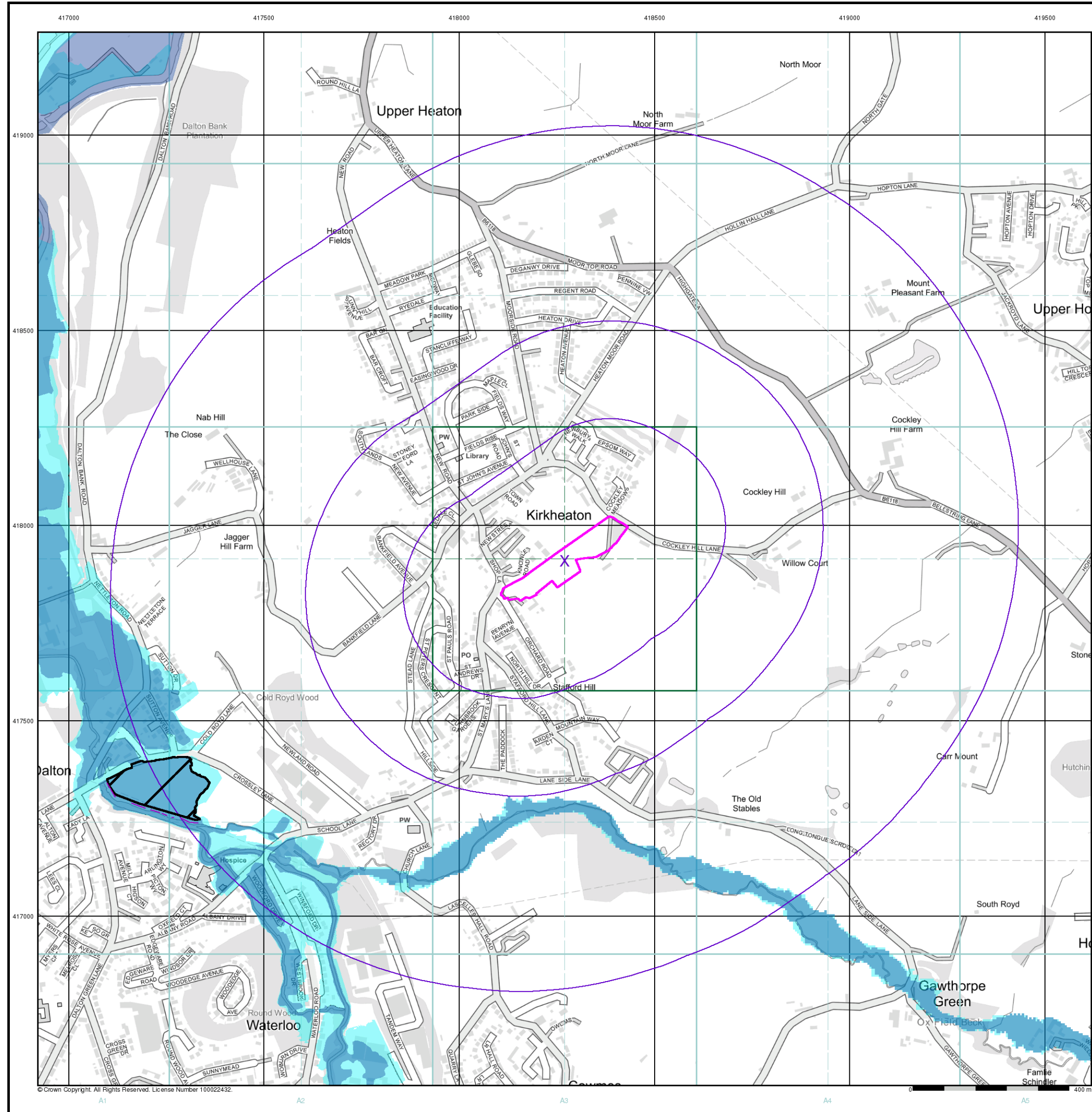
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Site Details

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



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



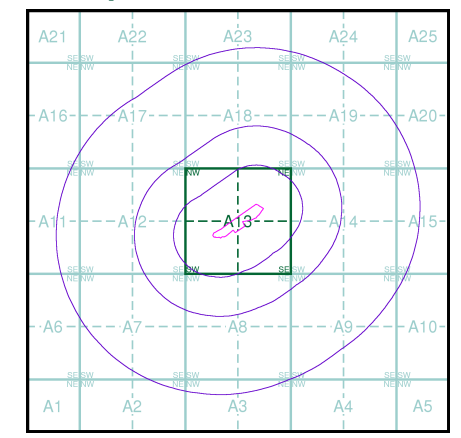
General

- Specified Site
- Specified Buffer(s)
- 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

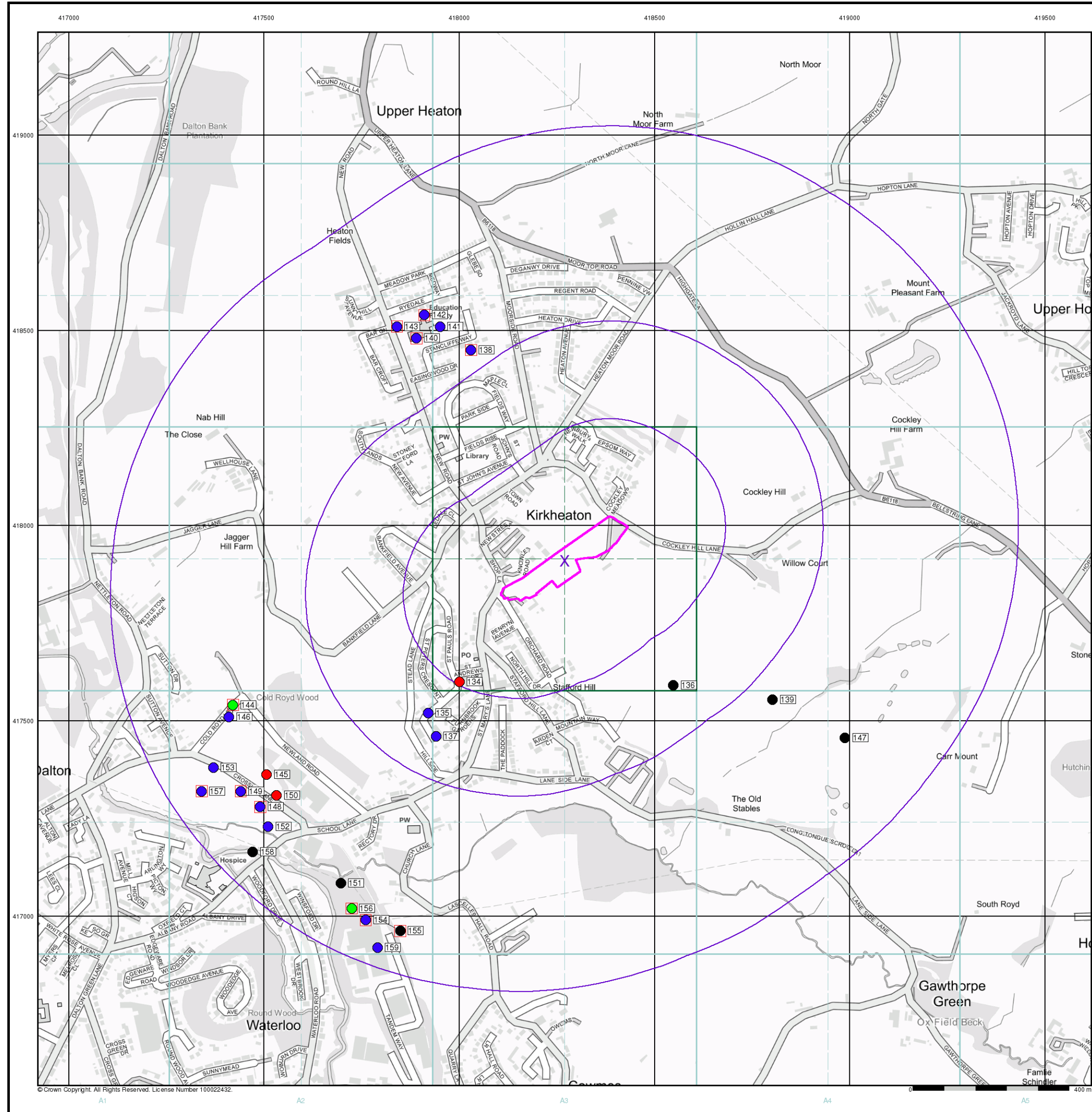


Order Details

Order Number: 193766422_1_1
 Customer Ref: CKD/02
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 Site Area (Ha): 2.08
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Site Details

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



General

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

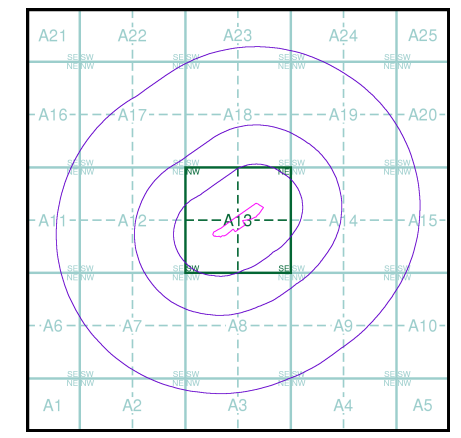
Agency and Hydrological (Boreholes)

- 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

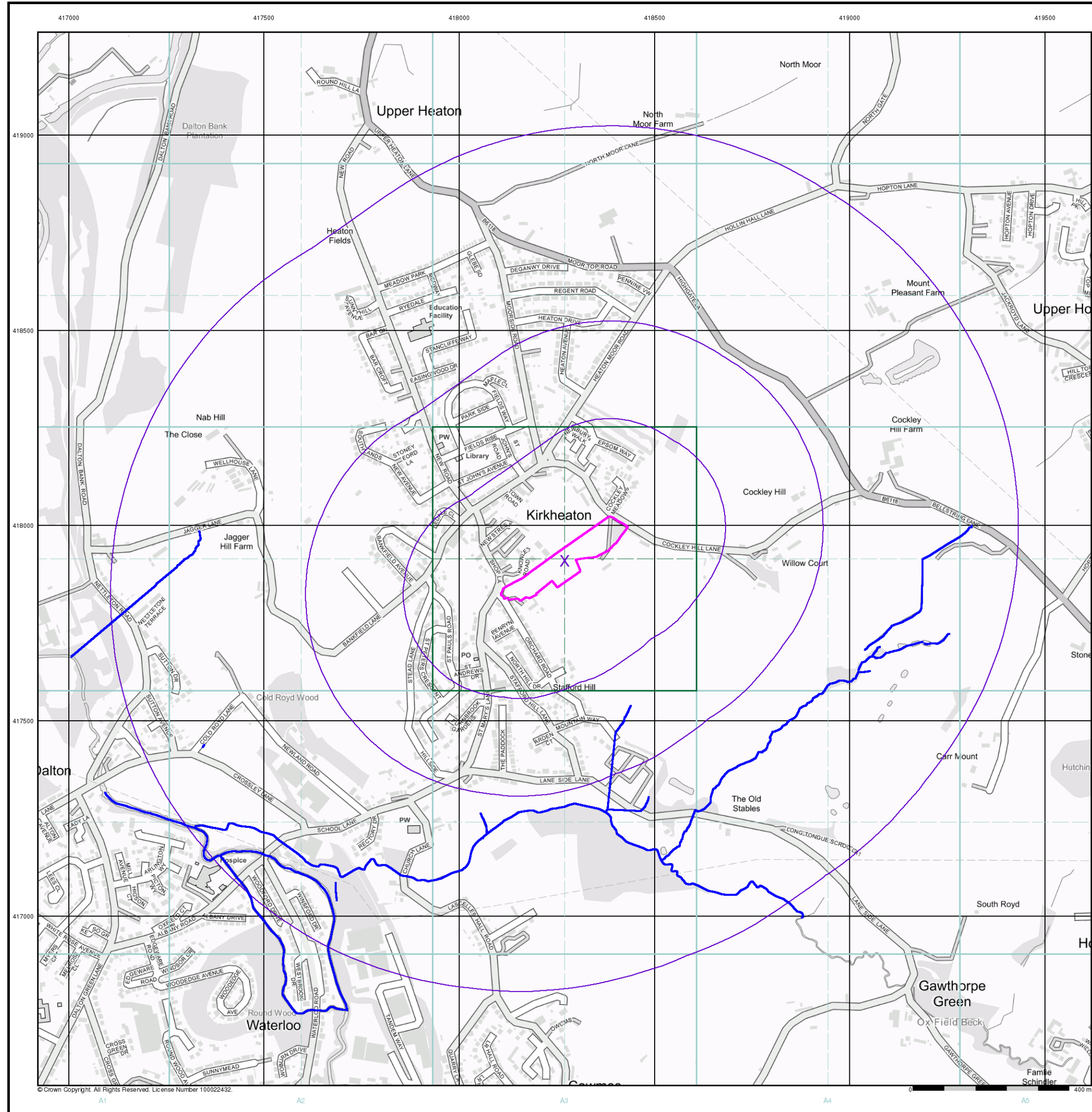


Order Details

Order Number: 193766422_1_1
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 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 1000

Site Details

Cockey Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



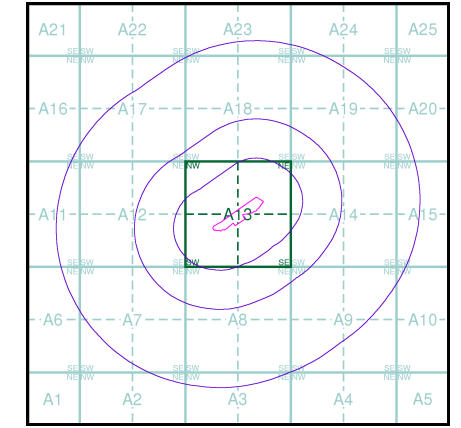
General

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

OS Water Network Data

- | | |
|--------------|-------------------------|
| Canal | Drain |
| Reservoir | Other |
| Foreshore | Lake |
| Marsh | Transfer |
| Tidal River | Lock Or Flight Of Locks |
| Inland River | Sea |

OS Water Network Map - Slice A



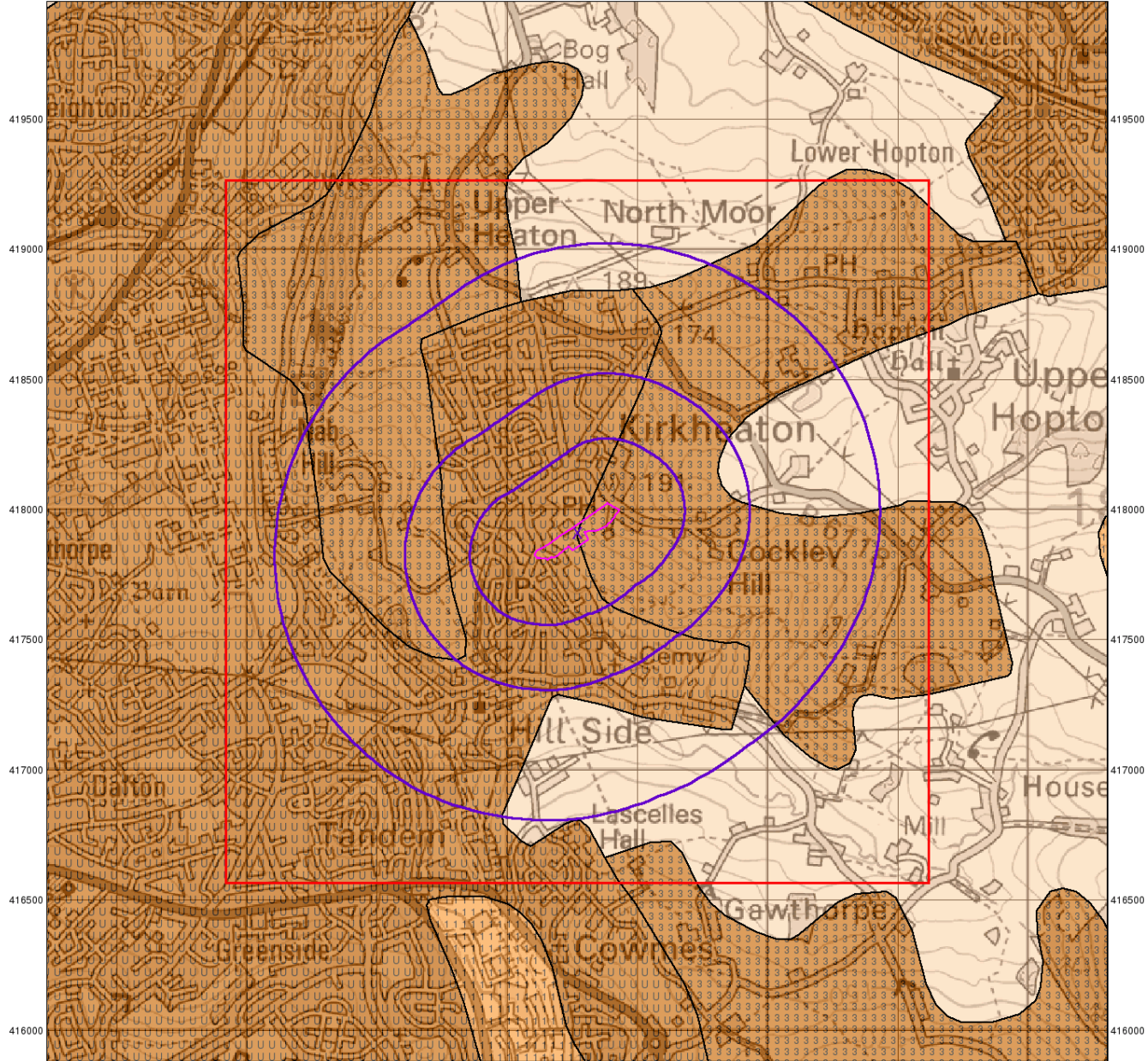
Order Details

Order Number: 193766422_1_1
 Customer Ref: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 1000

Site Details

Cockerly Hill Lane, Kirkheaton, Huddersfield, HD5 0HH

416500 417000 417500 418000 418500 419000 419500 420000



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0 1 km

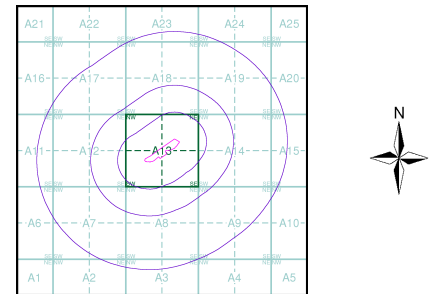


Groundwater Vulnerability

- 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: 193766422_1_1
 Customer Ref: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 1000

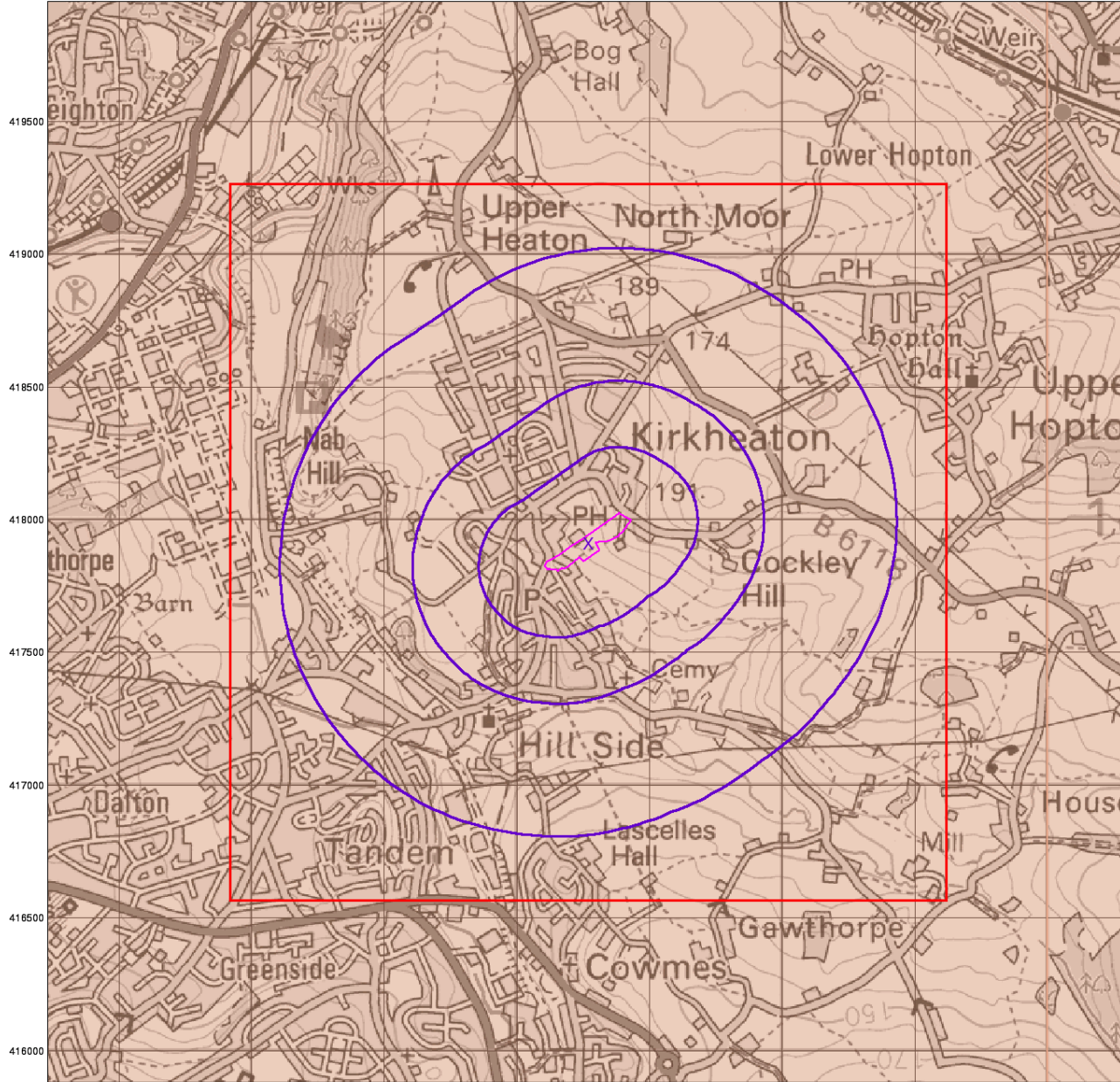
Site Details

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



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

416500 417000 417500 418000 418500 419000 419500 420000



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0 1 km



Bedrock Aquifer Designation

General

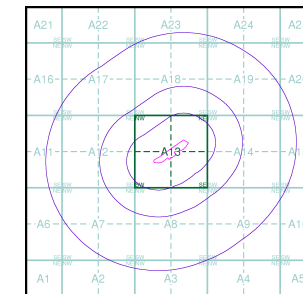
- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A



Order Details

Order Number: 193766422_1_1
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 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 1000

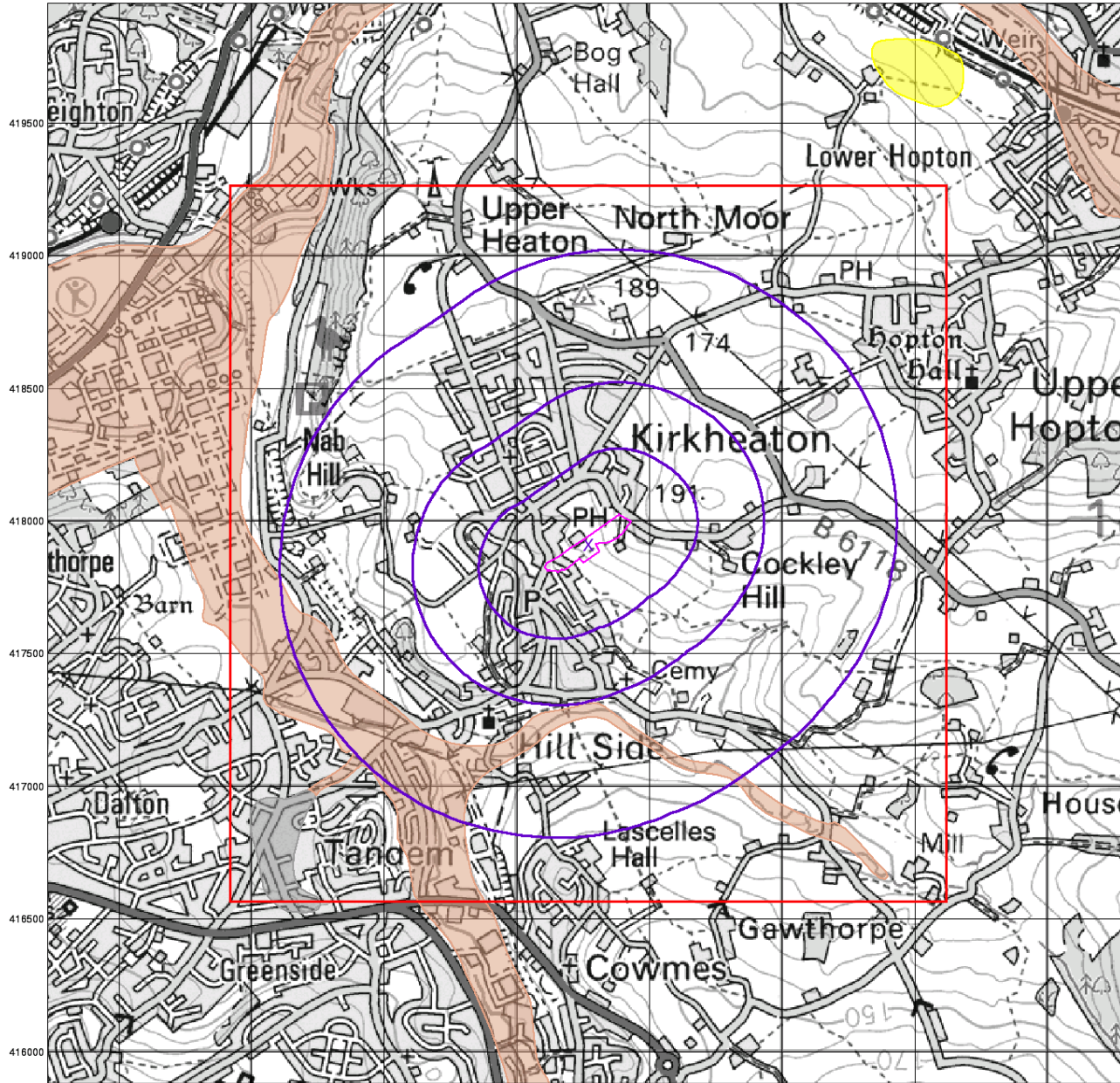
Site Details

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



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

416500 417000 417500 418000 418500 419000 419500 420000



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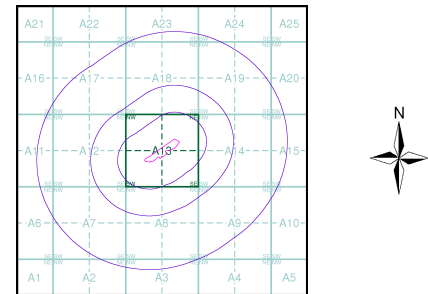
Superficial Aquifer Designation

- 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
 - Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A



Order Details

Order Number: 193766422_1_1
 Customer Ref: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 1000

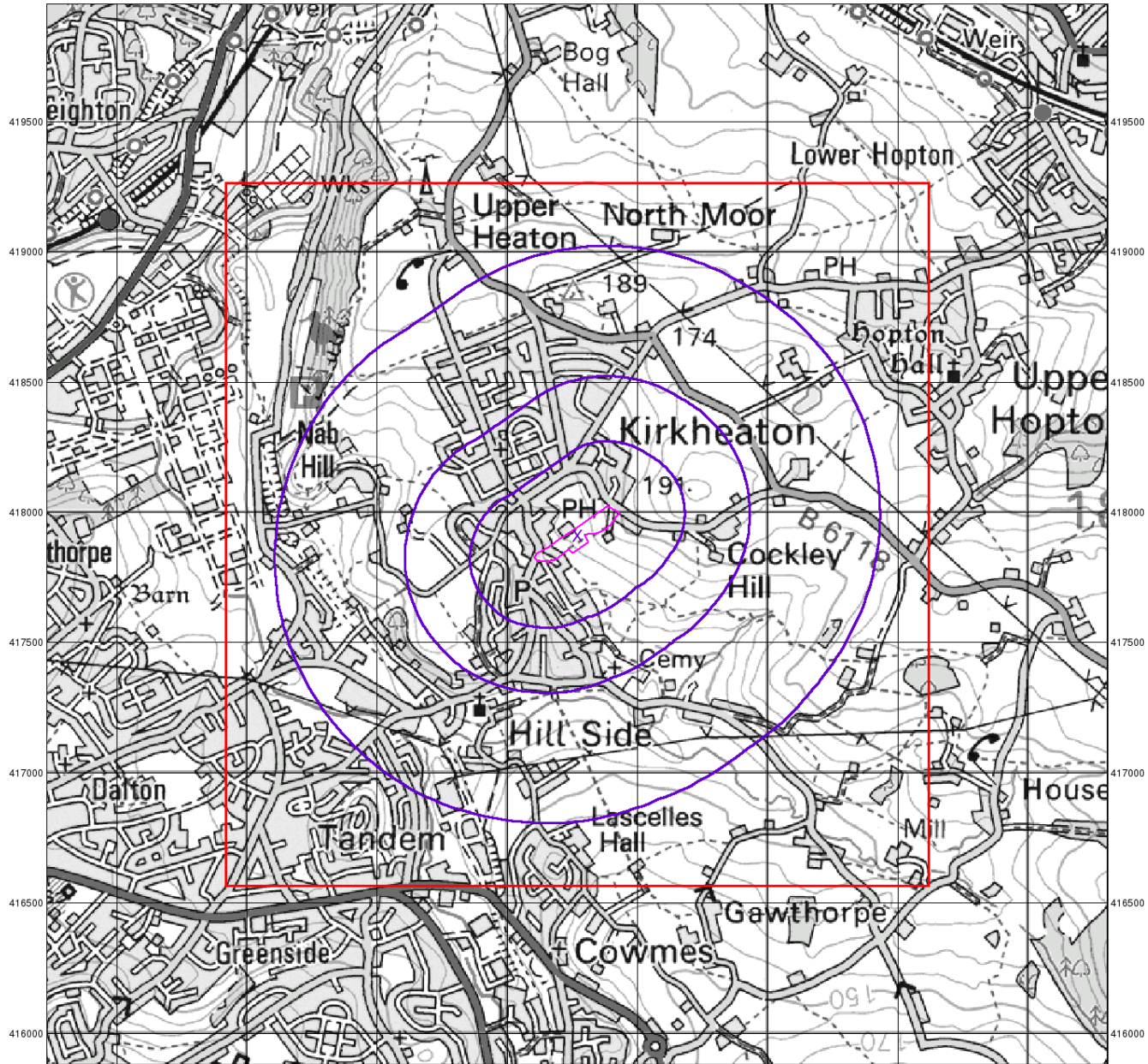
Site Details

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



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

416500 417000 417500 418000 418500 419000 419500 420000



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0 1 km



Source Protection Zones

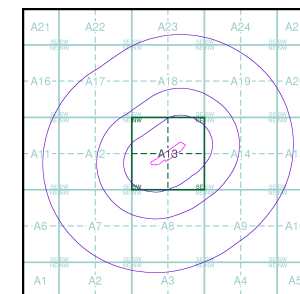
General

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

Site Sensitivity Context Map - Slice A



Order Details

Order Number: 193766422_1_1
 Customer Ref: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 1000

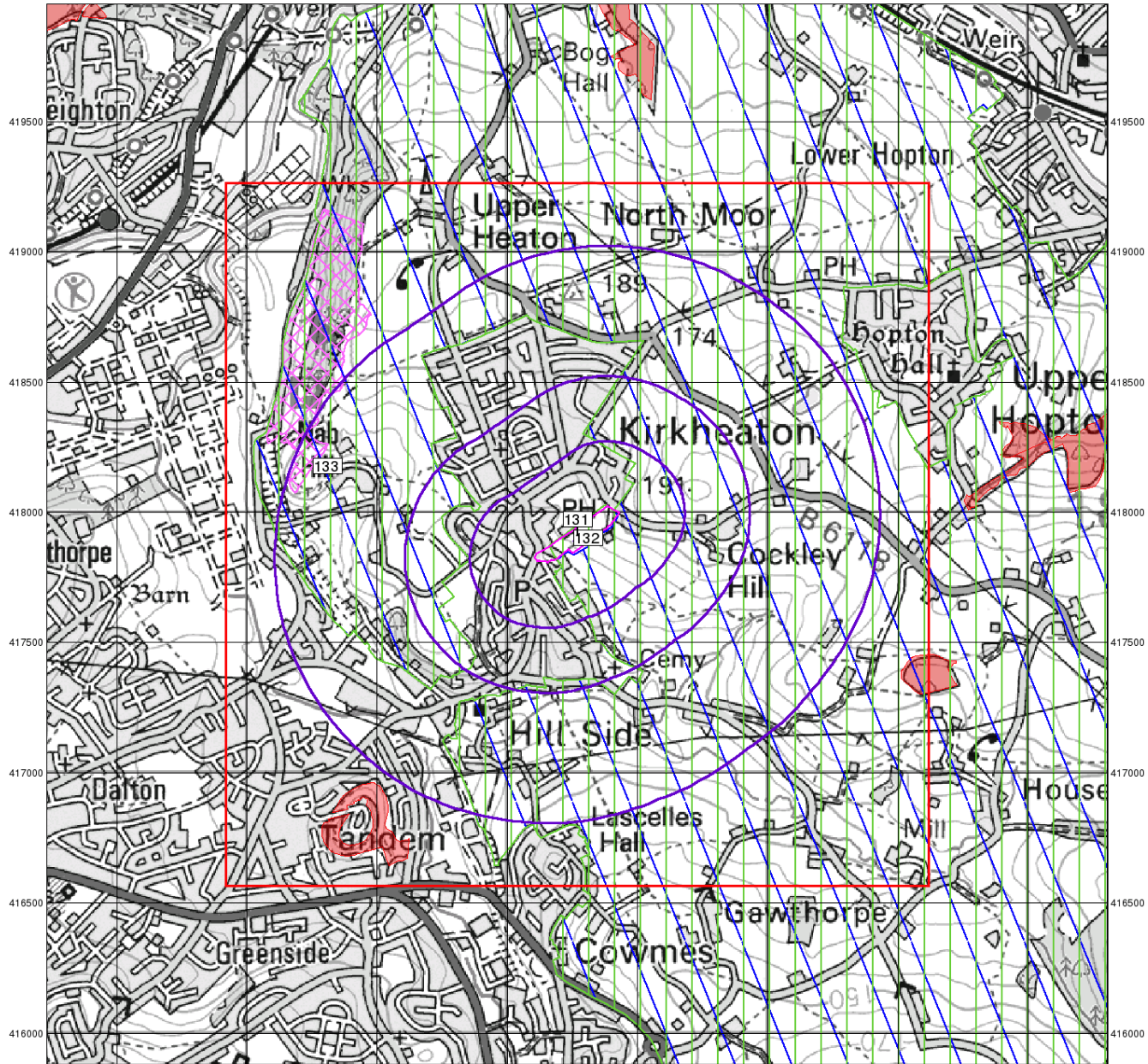
Site Details

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



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

416500 417000 417500 418000 418500 419000 419500 420000



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0 1 km



Sensitive Land Uses

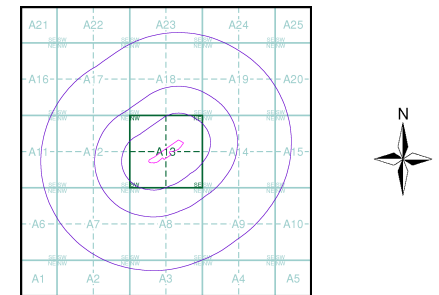
General

- ◆ Specified Site
- Specified Buffer(s)
- X Bearing Reference Point
- Slice
- B Map ID

Sensitive Land Uses

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

Site Sensitivity Context Map - Slice A



Order Details

Order Number: 193766422_1_1
 Customer Ref: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 1000

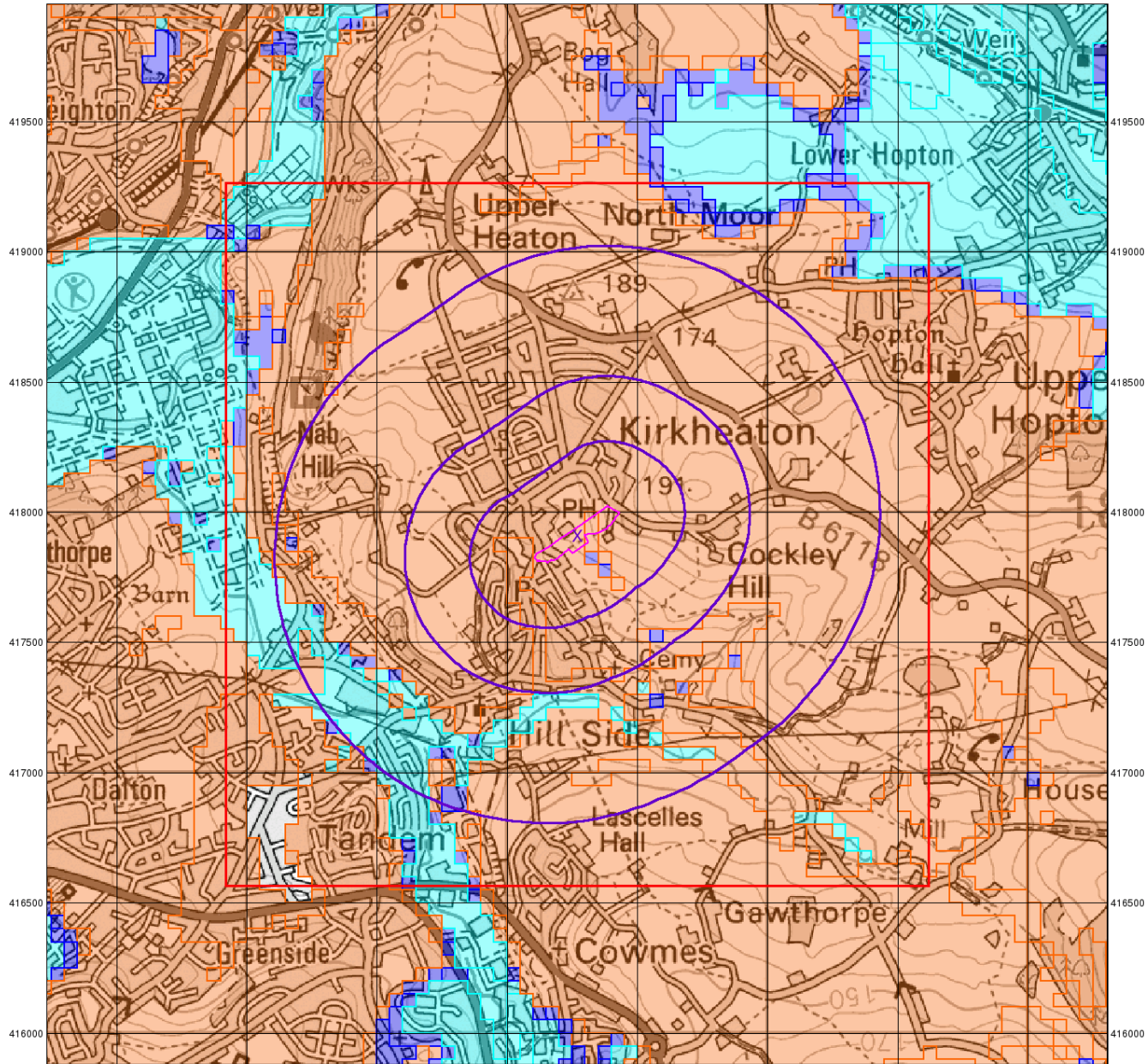
Site Details

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



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

416500 417000 417500 418000 418500 419000 419500 420000



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0 1 km



ARP GEOTECHNICAL LTD

BGS Flood GFS Data

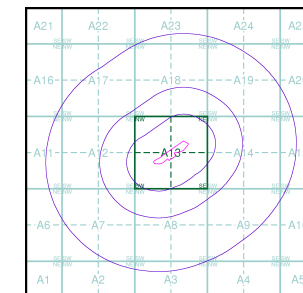
General

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

Agency and Hydrological (Flood)

- Limited Potential for Groundwater Flooding to Occur
- Potential for Groundwater Flooding of Property Situated Below Ground Level
- Potential for Groundwater Flooding to Occur at Surface

Site Sensitivity Context Map - Slice A



Order Details

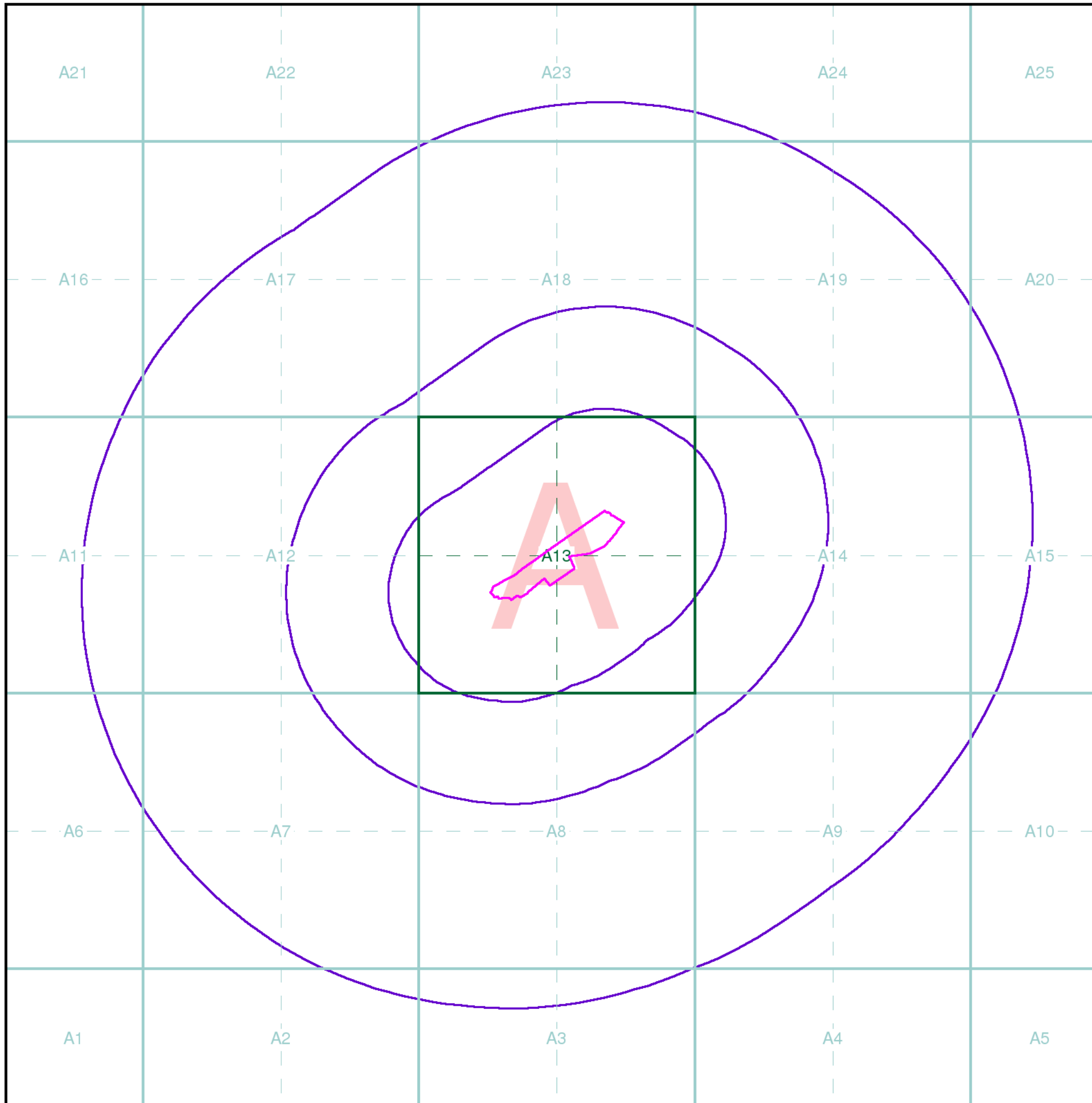
Order Number: 193766422_1_1
 Customer Ref: CKD/02
 National Grid Reference: 418270, 417910
 Slice: A
 Site Area (Ha): 2.08
 Search Buffer (m): 1000

Site Details

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH



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



ARP GEOTECHNICAL LTD

Index Map

For ease of identification, your site and buffer have been split into Slices, Segments and Quadrants. These are illustrated on the Index Map opposite and explained further below.

Slice

Each slice represents a 1:10,000 plot area (2.7km x 2.7km) for your site and buffer. A large site and buffer may be made up of several slices (represented by a red outline), that are referenced by letters of the alphabet, starting from the bottom left corner of the slice "grid". This grid does not relate to National Grid lines but is designed to give best fit over the site and buffer.

Segment

A segment represents a 1:2,500 plot area. Segments that have plot files associated with them are shown in dark green, others in light blue. These are numbered from the bottom left hand corner within each slice.

Quadrant

A quadrant is a quarter of a segment. These are labelled as NW, NE, SW, SE and are referenced in the datasheet to allow features to be quickly located on plots. Therefore a feature that has a quadrant reference of A7NW will be in Slice A, Segment 7 and the NW Quadrant.

A selection of organisations who provide data within this report:



Envirocheck reports are compiled from 136 different sources of data.

Client Details

Mr J Race, ARP Geotechnical Ltd, Northwest House, 5-6 Northwest Business Park, Servia Hill, Leeds, LS6 2QH

Order Details

Order Number: 193766422_1_1
 Customer Ref: CKD/02
 National Grid Reference: 418280, 417910
 Site Area (Ha): 2.08
 Search Buffer (m): 1000

Site Details

Cockley Hill Lane, Kirkheaton, Huddersfield, HD5 0HH

Full Terms and Conditions can be found on the following link:
<http://www.landmarkinfo.co.uk/Terms/Show/515>



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

APPENDIX F

RISK CATEGORISATION TABLES

Severity of Consequence

Severe	Short term (acute) risks to human health, likely to result in significant harm. Major pollution of (watercourses or groundwater)
Medium	Long-term (Chronic) damage (significant harm) to human health. Pollution of sensitive water resources.
Mild	Pollution of non-sensitive water resources.
Minor	Non-permanent health effects easily prevented by use of personal protective equipment during site works.

Probability of Risk Event Occurring

High Likelihood	There is a pollutant linkage and an event that either appears very likely in the short term, almost inevitable in the long term, or there is evidence of harm or pollution at the receptor.
Likely	There is a pollution linkage and all the elements are present and in the right place, so that a risk event is possible in the short term and likely over the long term.
Low Likelihood	There is a pollution linkage and circumstances are possible under which a risk event could occur. However, it is not certain that such an event would take place even over a longer period, and even less likely in the short term.
unlikely	There is a pollution linkage, but circumstances are such that it is improbable that an event would occur even in the very long term.

Comparison of Probability Against Severity of Consequence

		Severity of Consequence			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate/ Low Risk
	Likely	High Risk	Moderate Risk	Moderate/ Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate/ Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate/ Low Risk	Low Risk	Very Low Risk	Very Low Risk

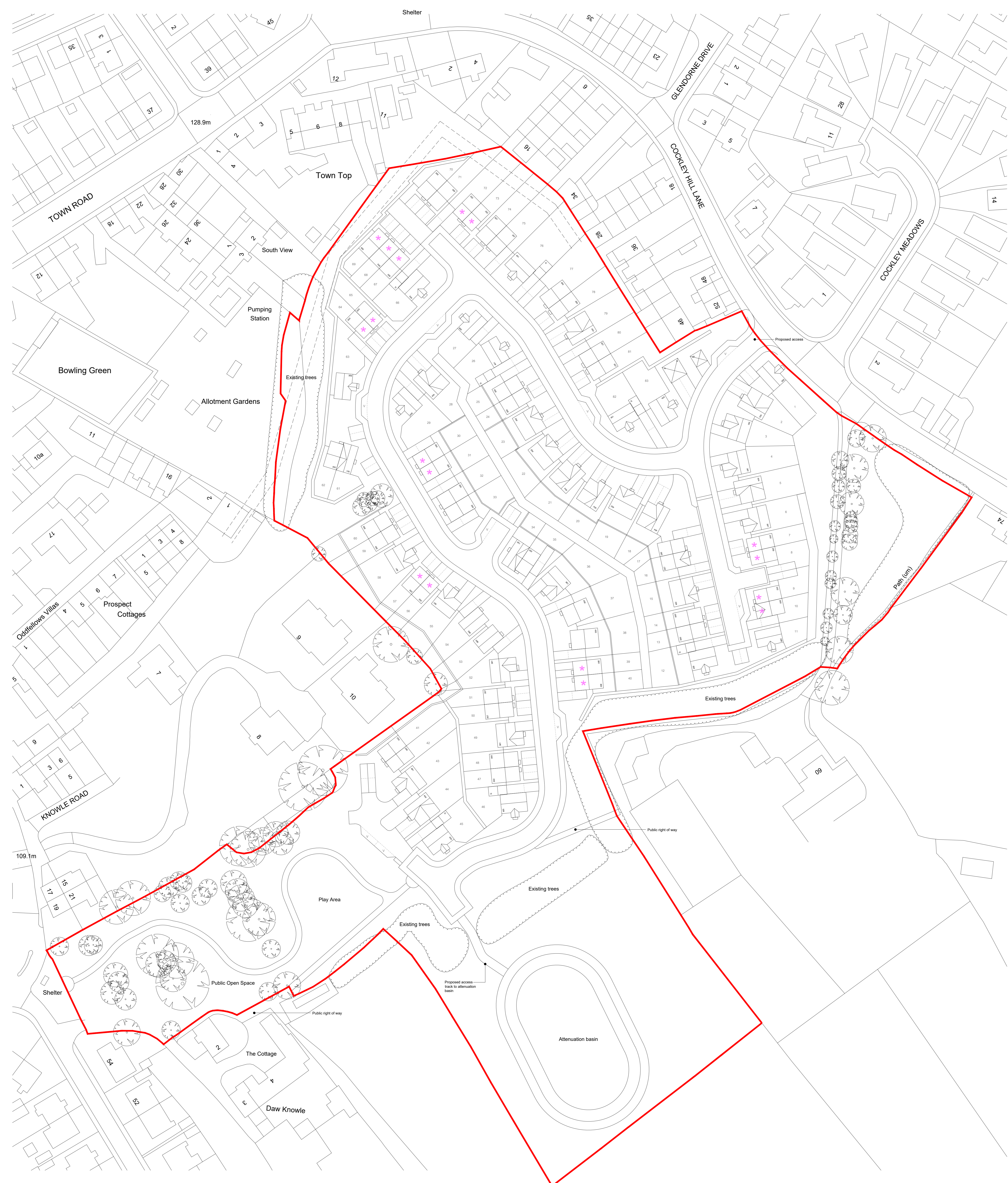
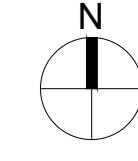
Risk Categories - Definitions

Very High Risk	High probability that severe harm could arise to a receptor, or there is evidence that severe harm is already occurring. Urgent investigation is required and urgent remediation is likely to be required.
High Risk	Harm is likely to arise to a receptor. Urgent investigation is required and remediation may be necessary in the short term and likely over the longer term.
Moderate Risk	Possible that harm could arise to a receptor, but low likelihood that such harm would be severe. Harm is likely to be mild. Investigation normally required to clarify risk. Some remedial works may be required in the long-term.
Moderate/ Low Risk	Possible that harm could arise to a receptor, but where a combination of likelihood and consequence results in a risk that is above low, but is not of sufficient concern to be classified as mild. Limited further investigation may be required to clarify the risk. If necessary, remediation works are likely to be limited in extent.
Low Risk	Possible that harm could arise to a receptor. Such harm, at worst, would normally be mild.
Very Low Risk	Low possibility that harm could arise to a receptor. Such harm is unlikely to be any worse than mild.

APPENDIX G

INDICATIVE PROPOSED SITE LAYOUT

Notes: Sketch schemes may be based on plan information of unknown origin and is subject to verification and survey. Construction cost and all dimensions are to be verified on site. Errors (other than those of a clerical nature) are not to be held against the architect. The architect is not to be held responsible for any errors or omissions in the information provided. The architect is not to be held responsible for any errors or omissions in the information provided. The architect is not to be held responsible for any errors or omissions in the information provided.

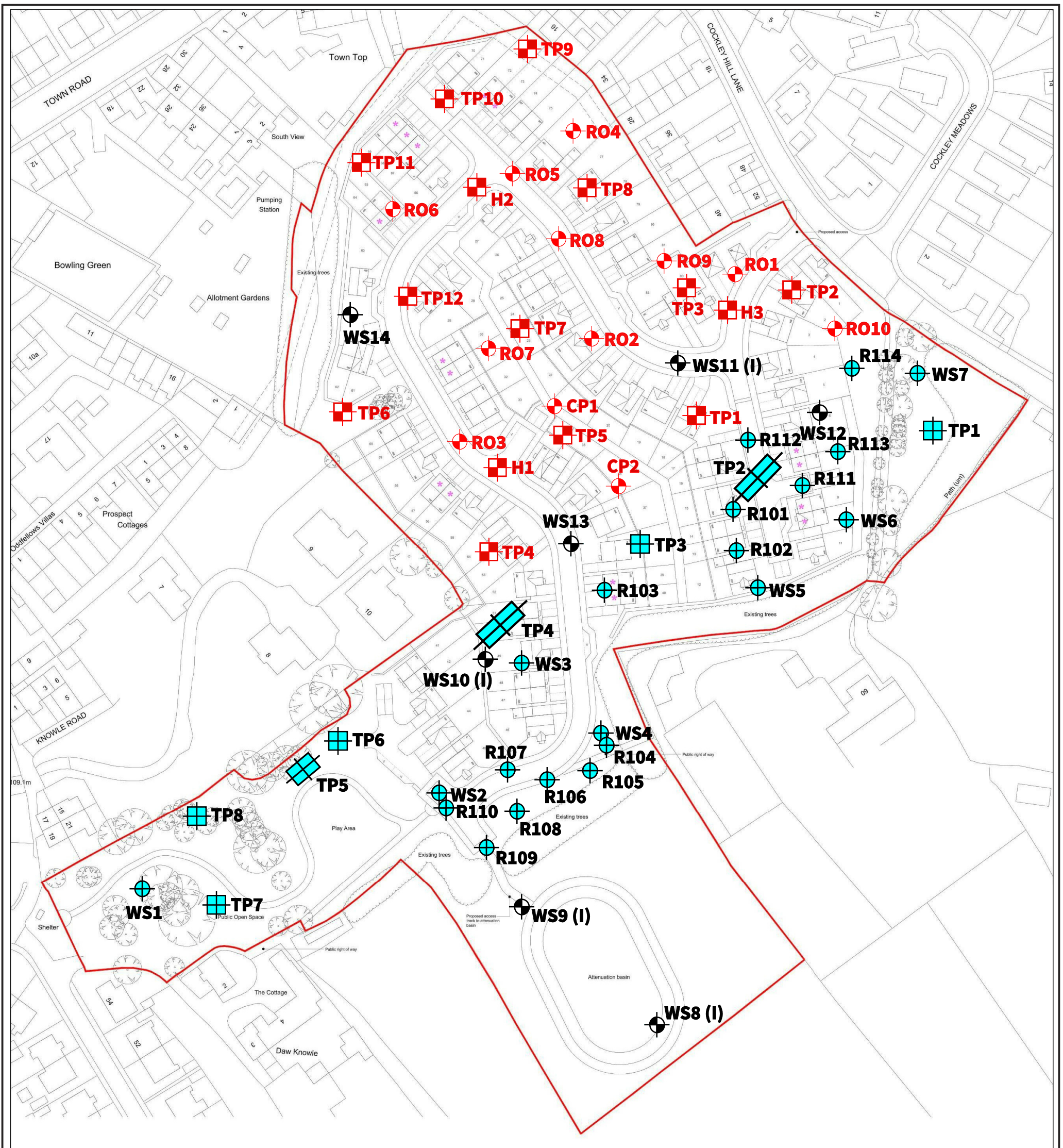


Accommodation Schedule				
House Type	Mobility		Quantity	Total Areas (sq.ft)
	M4(2)	M4(3)		
Affordable (denoted with *)				
250 2 bed semi detached		753	6	4,518
252 2 bed semi detached		753	3	2,259
350 3 bed semi detached		904	8	7,232
		Affordable Total	17	14,009 sq.ft
Open Market Sale				
250 2 bed semi detached		753	5	3,765
350 3 bed semi detached		904	14	12,656
351 3 bed semi detached corner		904	2	1,808
357 3 bed semi detached		904	7	6,328
359 3 bed detached corner		984	5	4,920
360 3 bed detached		919	2	1,838
361 3 bed detached integral garage		974	9	8,766
450 4 bed detached		1,156	2	2,312
451 4 bed detached		1,071	3	3,213
452 4 bed detached integral garage		1,211	4	4,844
454 4 bed detached integral garage		1,149	6	6,894
455 4 bed detached corner		1,139	5	5,695
		Open Market Sale Total	66	65,332 sq.ft
		Overall Total	83	79,341 sq.ft
		Net Developable Site Area	6.23 Acre	12,735 sq.ft/Acre
		Total Site Area	11.91 Acre	

E	Sales garage and substation added	CR	09.07.25
D	Red line amended to suit legal plan	CR	20.06.25
C	Red line amended	CR	09.05.25
B	Plot substitutions	LR	16.08.24
A	Plot numbers reduced to 83	CR	06.08.24
Rev	Description	Drawn	Date
<small>L05: Marshall's Mill, Marshall Street, Leeds, LS11 9YZ 0113 819 8041</small> <small>L106: 320 City Road, Angel, London, EC1Y 2NZ edwardarchitects.co.uk</small>			
Gleeson Cockley Hill Lane, Kirkheaton			
Preliminary		S2	
Proposed Site Layout		CR	
		GE	
1187 - EA - A - S001 - E 12.04.24 1:500 (A0)			

APPENDIX H

BOREHOLE AND TRIAL PIT LOCATION PLANS AND LOGS

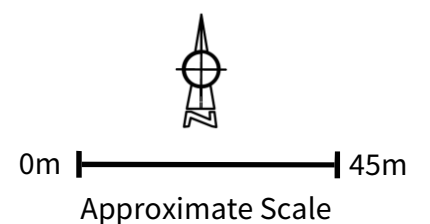


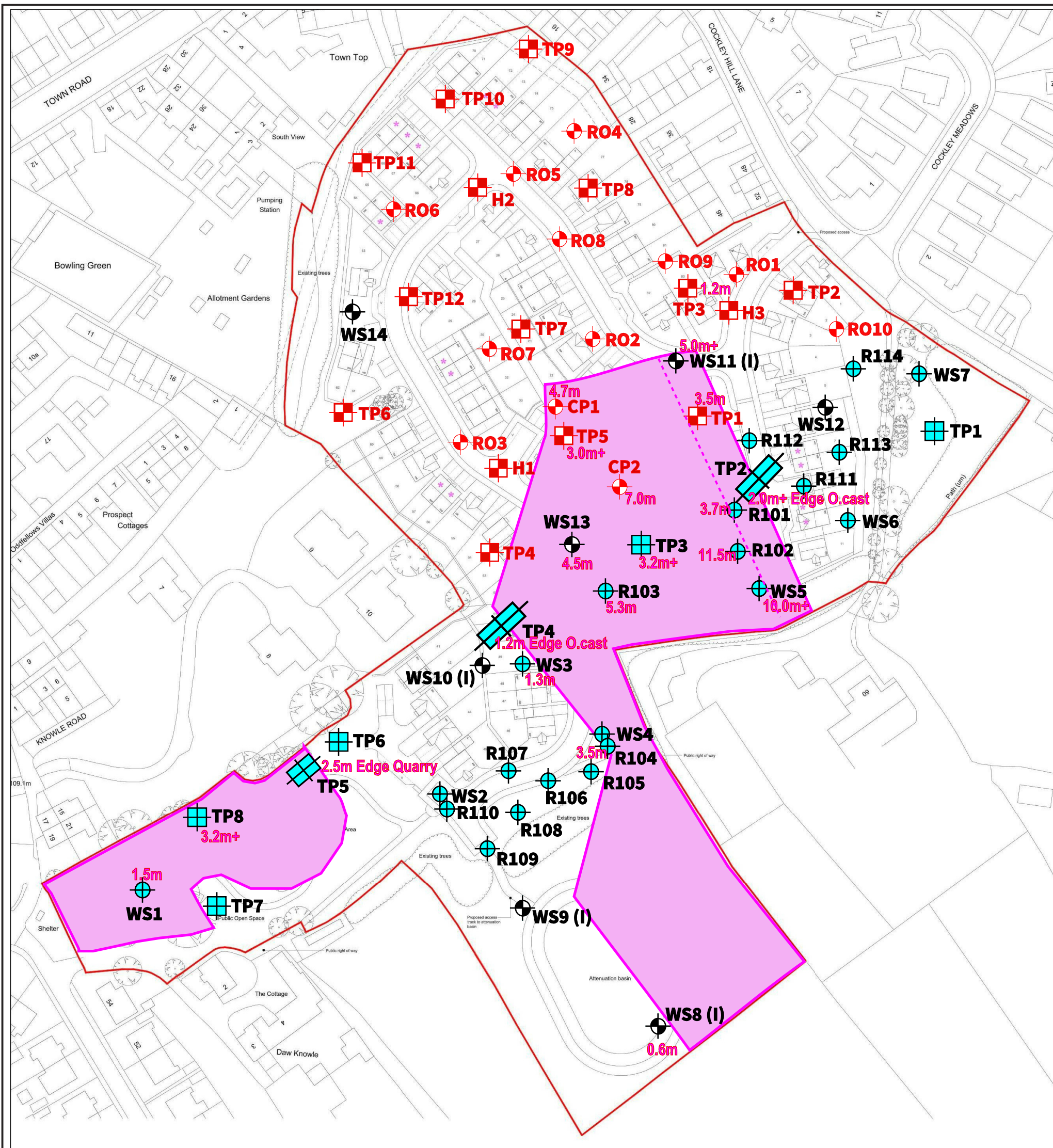
KEY:

- TP1** Trial pit location July 2016
- HP1** Hand pit location December 2016
- R01** Rotary borehole location August 2016
- CP1** Cable percussion borehole location August 2016
- TP1** Trial pit location February 2019
- WS1** Windowless sample borehole location February 2019
- R101** Rotary borehole location May 2019
- WS9** Windowless sample borehole location September 2025
- WS9 (I)** (I) Indicates monitoring well installed



Project	COCKLEY HILL LANE KIRKHEATON, HUDDERSFIELD	Title	EXPLORATORY HOLE LOCATION PLAN	Drawn	Scale
Client	GLEESON HOMES LTD	Date	OCTOBER 2025	Job No.	AS SHOWN
				GHO/11	



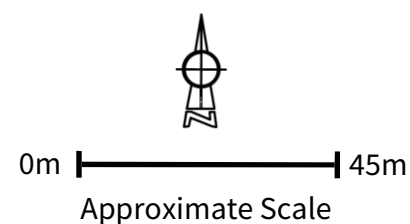


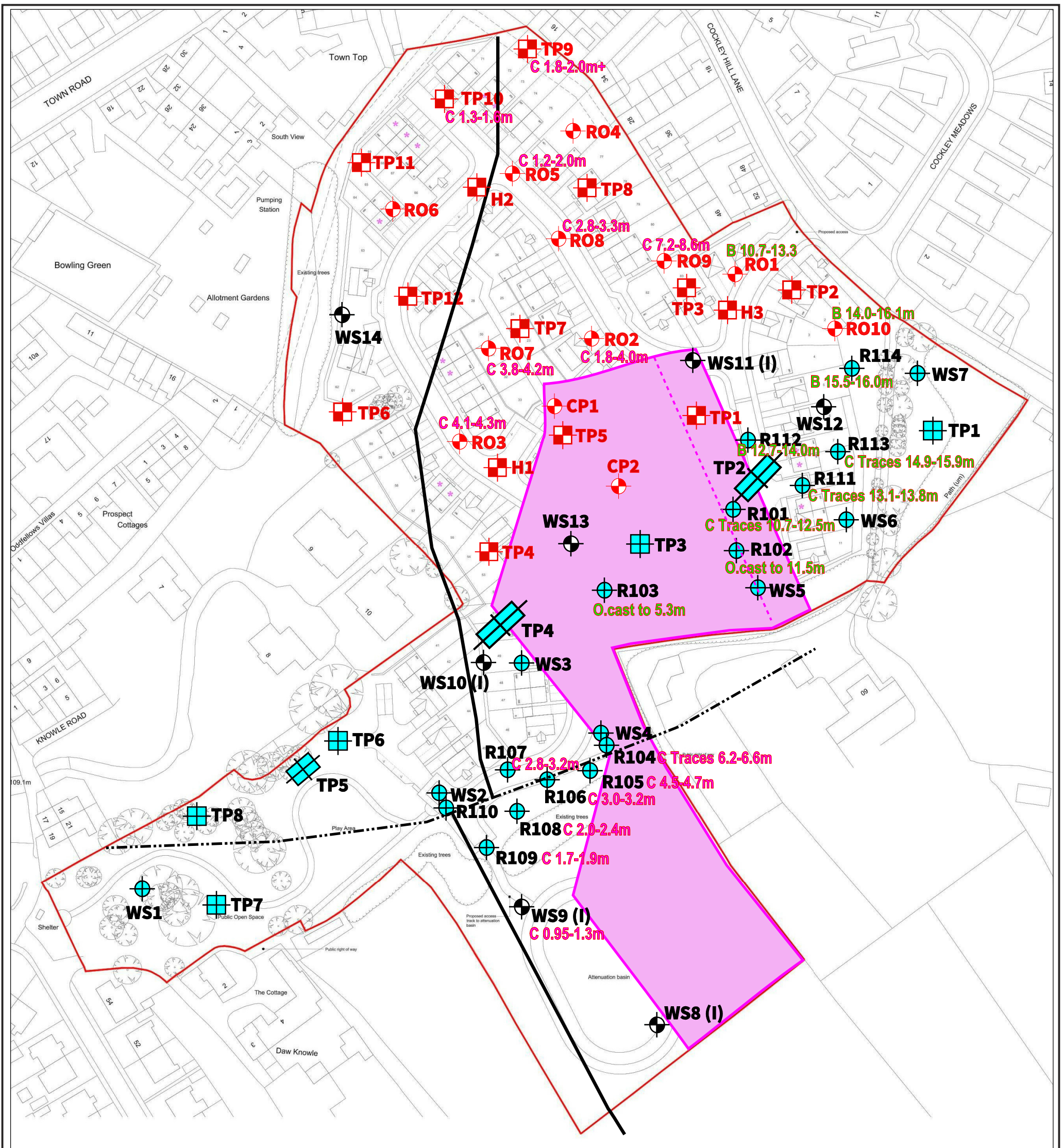
KEY:

- TP1** Trial pit location July 2016
- HP1** Hand pit location December 2016
- R01** Rotary borehole location August 2016
- CP1** Cable percussion borehole location August 2016
- TP1** Trial pit location February 2019
- WS1** Windowless sample borehole location February 2019
- R101** Rotary borehole location May 2019
- WS9** Windowless sample borehole location September 2025
- WS9 (I)** (I) Indicates monitoring well installed



Project COCKLEY HILL LANE KIRKHEATON, HUDDERSFIELD	Title MADE GROUND DEPTHS & APPROXIMATE EXTENT OF OPENCAST AND QUARRY	Drawn JR	Scale AS SHOWN
Client GLEESON HOMES LTD	Date OCTOBER 2025	Job No. GHO/11	



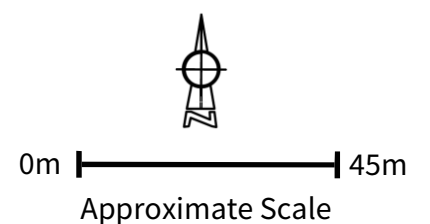


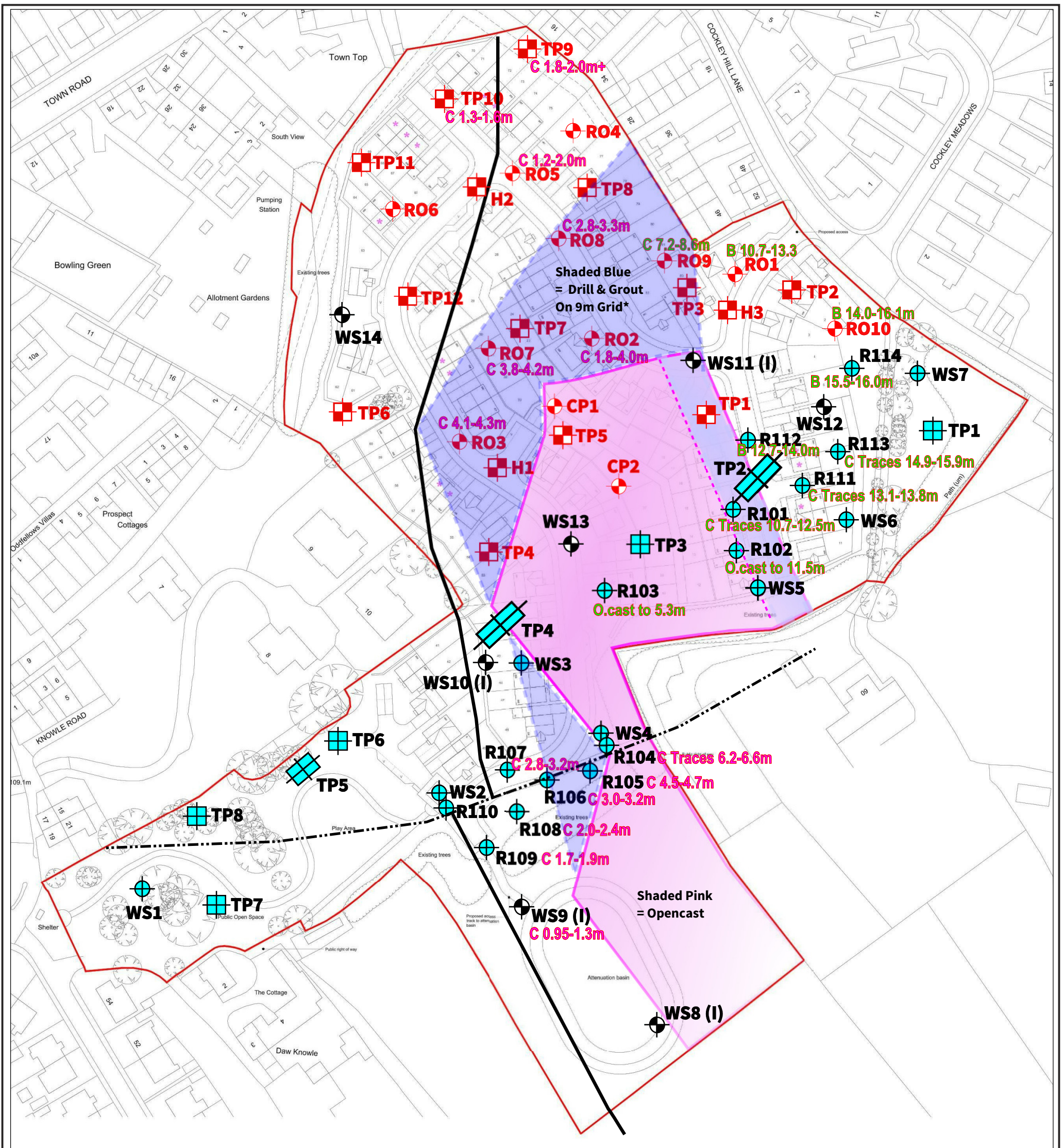
KEY:

- TP1** Trial pit location July 2016
- HP1** Hand pit location December 2016
- RO1** Rotary borehole location August 2016
- CP1** Cable percussion borehole location August 2016
- TP1** Trial pit location February 2019
- WS1** Windowless sample borehole location February 2019
- R101** Rotary borehole location May 2019
- WS9** Windowless sample borehole location September 2025
- WS9 (I)** (I) Indicates monitoring well installed
- C 3.0-3.2m** Intact coal depth
- B 14.0-16.1m** Broken ground depth (underground workings)
- Approximate line of coal seam outcrop
- Approximate line of fault



Project COCKLEY HILL LANE KIRKHEATON, HUDDERSFIELD	Title MAP SHOWING COAL & WORKINGS DEPTHS, WHERE ENCOUNTERED	Drawn JR	Scale AS SHOWN
Client GLEESON HOMES LTD	Date OCTOBER 2025	Job No. GHO/11	



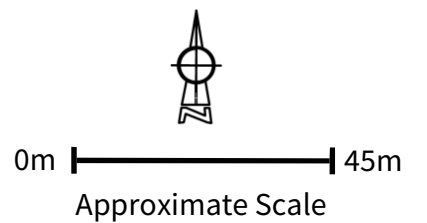


KEY:

- TP1** Trial pit location July 2016
- HP1** Hand pit location December 2016
- RO1** Rotary borehole location August 2016
- CP1** Cable percussion borehole location August 2016
- TP1** Trial pit location February 2019
- WS1** Windowless sample borehole location February 2019
- R101** Rotary borehole location May 2019
- WS9** Windowless sample borehole location September 2025
- WS9 (I)** (I) Indicates monitoring well installed
- C 3.0-3.2m** Intact coal depth. If not shaded green, insufficient cover would be present if the coal is worked. If shaded green, sufficient cover is present.
- B 14.0-16.1m** Broken ground depth (underground workings). If shaded green, then Sufficient cover is present and grout treatment is not needed.
- Approximate line of coal seam outcrop
- Approximate line of fault
- * Blue shaded area to be drilled and grouted on 9m grid to check for potential workings. Close the grid to 3m if any workings are detected.



Project COCKLEY HILL LANE KIRKHEATON, HUDDERSFIELD	Title MAP SHOWING COAL & WORKINGS DEPTHS, WHERE ENCOUNTERED & DRILL/GROUT AREA	Drawn JR	Scale AS SHOWN
Client GLEESON HOMES LTD	Date OCTOBER 2025	Job No. GHO/11	





ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS

Site
 Cockley Hill Lane, Kirkheaton

Borehole Number
CP1

Boring Method Trailer mounted cable percussive borehole drilling rig.	Casing Diameter		Ground Level (mOD) 130.00	Client Cockley Developments Ltd	Job Number CKD/01
	Location 418276 E 417994 N		Dates 02/08/2016	Engineer ARP	Sheet 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							MADE GROUND: Grass on to dark grey mudstone fill (Driller's Description) (Backfilled Opencast Workings).		
					125.30	4.70	Light grey SILTSTONE (Weathered) (LCM).		
					124.50	5.50	Terminated on hard strata. Complete at 5.50m		

Remarks
 Groundwater not encountered.
 Casing used from ground level to 5.5m.
 Gas monitoring well installed to 5m depth. With lower 4m comprising slotted pipe with gravel surround, and upper 1m comprising plain pipe with bentonite seal. Bung and tap provided, with lockable flush cover.

Scale (approx)
1:40

Logged By

Figure No.
CKD/01.CP1



ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS

Site
 Cockley Hill Lane, Kirkheaton

Borehole Number
CP2

Boring Method Trailer mounted cable percussive borehole drilling rig.	Casing Diameter		Ground Level (mOD) 131.10	Client Cockley Developments Ltd	Job Number CKD/01
	Location 418296 E 417953 N		Dates 02/08/2016	Engineer ARP	Sheet 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00-1.45	SPT N=7			1,2/2,2,1,2			MADE GROUND: Grass on to colliery waste (Driller's Description) (Backfilled Opencast Workings). From 1m: Loose.		
2.00-2.45	SPT N=10			1,3/3,3,3,1			From 2m: Borderline loose to medium dense.		
3.00-3.45	SPT N=6			1,1/2,1,2,1			From 3m: Loose.		
4.00-4.45	SPT N=8			2,2/1,2,2,3		(7.00)	From 5m: Medium dense.		
5.00-5.45	SPT N=11			2,3/3,2,3,3			From 6m: Borderline loose to medium dense.		
6.00-6.45	SPT N=10			2,2/2,2,3,3					
7.50-7.80	SPT 50/150			25/50	124.10	7.00	(At least) very weak, light grey SILTSTONE. (LCM).		
					123.30	7.80	Terminated in hard strata.		

Remarks
 Groundwater not encountered.
 Casing used from ground level to 5.5m.
 Gas monitoring well installed to 7.5m depth. With lower 4.5m comprising slotted pipe with gravel surround, and upper 3m comprising plain pipe with bentonite seal. Bung and tap provided, with lockable flush cover.

Scale (approx)
1:40

Logged By

Figure No.
CKD/01.CP2

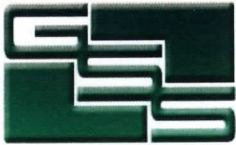


GROUND SUPPORT SERVICES (UK) LTD
GEOTECHNICAL AND GROUND SUPPORT FOUNDATION SPECIALISTS

Unit D2B Bryans Close, Harworth Industrial Estate, Harworth, South Yorkshire, DN11 8RY
 Phone: 01302 744 322 Email: thomas@groundssupportservices.net

Site Investigation Drillers log			Site: <u>Kirkheaton,</u>			Sheet: <u>1/2</u>				
Rig: <u>Casagrande C6</u>			Crew: <u>J. Stuart, D. Dobbs.</u>			Date: <u>2/8/16.</u>				
Hours on site:				Travelling Time:						
Equipment used:										
BH	Depth	Strata Description	BH	Depth	Strata Description					
1	0.00 - 0.60	Soil	5	0.00 - 1.20	clay					
	0.60 - 4.30	Sand Stone .		1.20 - 2.00	Coal					
	4.30 - 10.70	Grey mudstone		2.00 - 6.00	Sand Stone .					
	10.70 - 13.30	Broken Ground .								
	13.30 - 15.00	Hard Strata .	6.	0.00 - 1.30	clay					
				1.30 - 5.00	Sand Stone .					
2.	0.00 - 1.40	clay								
	1.40 - 1.80	Sand Stone .	7.	0.00 - 1.20	clay					
	1.80 - 4.00	Coal .		1.20 - 3.80	Sand Stone .					
	4.00 - 6.00	Grey mudstone .		3.80 - 4.20	Coal .					
				4.20 - 6.00	Grey mudstone .					
3.	0.00 - 0.80	clay								
	0.80 - 4.10	Sand Stone .	8.	0.00 - 1.10	clay					
	4.10 - 4.30	Coal .		1.10 - 2.80	Sand Stone .					
	4.30 - 6.00	Sand Stone .		2.80 - 3.30	Coal					
				3.30 - 4.20	Grey mudstone					
4	0.00 - 1.30	clay		4.20 - 6.00	Sand Stone					
	1.30 - 3.00	Hard Strata								
		no returns.	9	0.00 - 1.40	clay					
				1.40 - 4.30	Sand Stone .					
				4.30 - 7.20	Grey mudstone .					
				7.20 - 8.60	Coal .					
				8.60 - 10.00	Sand Stone .					
Casing / Water level details										
BH	Casing Die	Depth	Strike	Water Rise	Sealed	Totals	BH's	Drill	Case	Core
						Today				
						Previous				
						To date				

Signed J. Stuart Driller



GROUND SUPPORT SERVICES (UK) LTD
 GEOTECHNICAL AND GROUND SUPPORT FOUNDATION SPECIALISTS

Unit D2B Bryans Close, Harworth Industrial Estate, Harworth, South Yorkshire, DN11 8RY
 Phone: 01302 744 322 Email: thomas@groundssupportservices.net

Site Investigation Drillers log			Site: <i>Kirkheaton</i>			Sheet: <i>2/2</i>				
Rig: <i>Casagrande CG</i>			Crew: <i>J. Stuart, D. Dobbs</i>			Date: <i>2/8/16</i>				
Hours on site:				Travelling Time:						
Equipment used:										
BH	Depth	Strata Description	BH	Depth	Strata Description					
<i>10</i>	<i>0.00 - 1.10</i>	<i>clay</i>								
	<i>1.10 - 4.60</i>	<i>Sand Stone</i>								
	<i>4.60 - 14.00</i>	<i>Grey mudstone</i>								
	<i>14.00 - 16.10</i>	<i>Broken ground</i>								
	<i>16.10 - 18.00</i>	<i>Hard Strata</i>								
GW all Gas wells installed to										
<i>1</i>	<i>3M, from</i>	<i>3.00mt - 1.00mt</i>								
<i>3</i>	<i>we used</i>	<i>Slotted Pipe</i>								
<i>5</i>	<i>and from</i>	<i>1.00mt - 0.00mt</i>								
	<i>we used</i>	<i>Plain Pipe</i>								
	<i>3 Gas taps</i>	<i>3 end caps</i>								
	<i>3, Steel covers</i>									
Casing / Water level details										
BH	Casing Die	Depth	Strike	Water Rise	Sealed	Totals	BH's	Drill	Case	Core
						Today	<i>13</i>	<i>90</i>		
						Previous	<i>-</i>	<i>-</i>		
						To date	<i>13</i>	<i>90</i>		

Signed.....*Stuart*..... Driller



ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS

Site
Cockley Hill Lane, Kirkheaton

Trial Pit Number
TP01

Excavation Method JCB 3CX backhoe excavator with two foot wide toothed bucket.	Dimensions		Ground Level (mOD)	Client Cockley Developments Ltd	Job Number CKD/01
	Location		Dates 18/07/2016	Engineer ARP	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	D1				(0.20)	Turf over dark greyish brown slightly clayey sandy TOPSOIL. Abundant rootlets.		
0.30	HSV 66.67kPa		65,65,70/Av. 66.67		(0.20) (0.40)	MADE GROUND: Firm orangish brown and grey slightly gravelly CLAY. Gravel is angular and subangular, of sandstone, mudstone and siltstone.		
1.20-1.50	D2				(3.10)	MADE GROUND: Dark greyish and brown clayey fine to coarse angular and subangular (often tabular) GRAVEL of sandstone, mudstone and siltstone. Abundant gravel sized fragments of coal. Medium angular tabular cobble content, of sandstone and siltstone (Backfilled Opencast).		
3.20-3.50	D3				3.50	Terminated in made ground. Complete at 3.50m		

Plan .	Remarks		
	Groundwater not encountered. Pit sides generally remained stable for the short period of exposure. Backfilled with arisings on completion.		
	Scale (approx)	Logged By	Figure No.
	1:25	EGH	CKD/01.TP01



ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS

Site
 Cockley Hill Lane, Kirkheaton

Trial Pit Number
TP02

Excavation Method JCB 3CX backhoe excavator with two foot wide toothed bucket.	Dimensions		Ground Level (mOD)	Client Cockley Developments Ltd	Job Number CKD/01
	Location		Dates 18/07/2016	Engineer ARP	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	D1				(0.20)	Turf over dark greyish brown slightly clayey slightly sandy TOPSOIL.		
					0.20	Orangish brown and grey gravelly CLAY (with pockets of clayey gravel). Gravel is angular tabular, of sandstone. (Completely Weathered Mudstone).		
					(0.30)			
					0.50	Orangish brown and grey angular tabular GRAVEL of mudstone. (Highly Weathered Mudstone).		
					(1.20)			
					1.70	(At least) very weak, 40mm bedded, yellowish brown, fine to coarse grained SANDSTONE. Recovered as angular and subangular gravel and cobbles of sandstone (LCM). Terminated in hard strata.		
				(0.10)				
					1.80	Complete at 1.80m		

Plan .	Remarks Groundwater not encountered. Pit sides generally remained stable for the short period of exposure. Backfilled with arisings on completion.					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>EGH</td> <td>CKD/01.TP02</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	EGH
Scale (approx)	Logged By	Figure No.				
1:25	EGH	CKD/01.TP02				



ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS

Site
Cockley Hill Lane, Kirkheaton

Trial Pit Number
TP03

Excavation Method JCB 3CX backhoe excavator with two foot wide toothed bucket.	Dimensions		Ground Level (mOD)	Client Cockley Developments Ltd	Job Number CKD/01
	Location		Dates 18/07/2016	Engineer ARP	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.30	D1				(0.30)	Turf over dark greyish brown slightly clayey sandy TOPSOIL.		
0.40	HSV 80kPa		80,85,75/Av. 80.00		0.30 (0.90)	MADE GROUND: Orangish brown mottled grey slightly gravelly CLAY. Gravel is angular tabular, of siltstone, mudstone and sandstone. Medium angular to rounded cobble content, of siltstone.		
1.20	HSV 71.67kPa		70,75,70/Av. 71.67		1.20	Medium strength (firm) orangish brown mottled grey slightly gravelly CLAY. Gravel is angular tabular, of mudstone (Completely Weathered Mudstone).		
1.50-1.80	D2				(1.30)			
					2.50 (0.40)	Orangish brown and grey slightly clayey angular tabular GRAVEL of mudstone. (Highly Weathered Mudstone).		
					2.90 (0.40) 3.00	Weak, thickly laminated, dark greyish brown MUDSTONE. Recovered as angular tabular gravel. (LCM). Terminated in hard strata.		
						Complete at 3.00m		

Plan .	Remarks		
	Groundwater not encountered. Pit sides generally remained stable for the short period of exposure. Backfilled with arisings on completion.		
	Scale (approx)	Logged By	Figure No.
	1:25	EGH	CKD/01.TP03



ARP GEOTECHNICAL LIMITED
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Site
 Cockley Hill Lane, Kirkheaton

Trial Pit Number
TP04

Excavation Method JCB 3CX backhoe excavator with two foot wide toothed bucket.	Dimensions		Ground Level (mOD)	Client Cockley Developments Ltd	Job Number CKD/01
	Location		Dates 18/07/2016	Engineer ARP	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.25	D1				(0.25)	Turf over dark greyish brown slightly sandy clayey TOPSOIL.		
0.50-0.80	D2				0.25	Medium strength (firm) orangish brown and grey CLAY. (Completely Weathered Mudstone).		
0.60	HSV 68.33kPa		70,65,70/Av. 68.33		(1.25)			
1.50-1.80	D3				1.50	Dark greyish brown and dark brown angular tabular GRAVEL of mudstone. Medium angular tabular cobble content, of mudstone. (Highly Weathered Mudstone).		
					(1.00)	At 1.7m: Thin bed (40mm) of angular gravel and cobbles, of sandstone.		
					2.50 (0.20)	Weak, thickly laminated, dark greyish brown MUDSTONE. Recovered as angular tabular gravel and cobbles (LCM).		
					2.70	Terminated in hard strata.		
						Complete at 2.70m		

Plan .	Remarks Groundwater was present at the surface, underlain by natural clays. Slight groundwater seepage below 1.5m. Pit sides generally remained stable for the short period of exposure. Backfilled with arisings on completion.					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>EGH</td> <td>CKD/01.TP04</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	EGH
Scale (approx)	Logged By	Figure No.				
1:25	EGH	CKD/01.TP04				



ARP GEOTECHNICAL LIMITED
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Site
Cockley Hill Lane, Kirkheaton

Trial Pit Number
TP05

Excavation Method JCB 3CX backhoe excavator with two foot wide toothed bucket.	Dimensions		Ground Level (mOD)	Client Cockley Developments Ltd	Job Number CKD/01
	Location		Dates 18/07/2016	Engineer ARP	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	D1				(0.20) 0.20	Turf over dark greyish brown slightly sandy slightly clayey slightly gravelly TOPSOIL. Gravel is angular tabular, of mudstone and siltstone. Trace gravel sized fragments of coal.		
0.50-0.80	D2		Water strike(1) at 1.60m.		(1.90)	MADE GROUND: Dark grey and brownish grey gravelly CLAY. Gravel is angular tabular, of siltstone and mudstone (Backfilled Opencast).		1
2.10-2.40	D3		Water strike(2) at 2.10m.		2.10 (0.90)	MADE GROUND: Grey and greyish brown angular tabular GRAVEL of siltstone. Medium subangular to subrounded cobble content, of siltstone.		2
					3.00	Terminated due to rapid groundwater ingress through the coarse granular made ground. Complete at 3.00m		

Plan .	Remarks		
	Moderate groundwater ingress below 1.6m. Rapid groundwater ingress below 2.1m. Moderate instability of the pit sides below 2.1m. Backfilled with arisings on completion.		
	Scale (approx)	Logged By	Figure No.
	1:25	EGH	CKD/01.TP05



ARP GEOTECHNICAL LIMITED
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Site
 Cockley Hill Lane, Kirkheaton

Trial Pit Number
TP06

Excavation Method JCB 3CX backhoe excavator with two foot wide toothed bucket.	Dimensions		Ground Level (mOD)	Client Cockley Developments Ltd	Job Number CKD/01
	Location		Dates 18/07/2016	Engineer ARP	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	D1				(0.20)	Turf over dark greyish brown slightly clayey slightly sandy slightly gravelly TOPSOIL. Gravel is subangular, of sandstone. Trace gravel sized fragments of ceramic.		
					0.20			
					(0.30)	Orangish brown clayey fine to coarse SAND. (Completely Weathered Sandstone).		
					0.50			
					(0.50)	Orangish brown clayey sandy fine to coarse angular and subangular GRAVEL of sandstone. (Completely Weathered Sandstone).		
					1.00			
					(0.50)	Yellowish brown and dark brown sandy fine to coarse angular tabular GRAVEL of sandstone. Medium angular tabular cobble content, of sandstone. (Highly Weathered Sandstone).		
1.50-1.80	D2				1.50			
					(0.20)	Extremely weak, thickly laminated (up to 10mm bedded), yellowish brown and dark brown, fine to coarse grained, SANDSTONE. Recovered as angular tabular gravel of sandstone (LCM).		
					1.70	Terminated in hard strata.		
						Complete at 1.70m		

Plan .	Remarks No groundwater entries recorded. Trial pit sides remained stable for the short period of exposure. Backfilled with arisings on completion.					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>EGH</td> <td>CKD/01.TP06</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	EGH
Scale (approx)	Logged By	Figure No.				
1:25	EGH	CKD/01.TP06				



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Site
Cockley Hill Lane, Kirkheaton

Trial Pit Number
TP07

Excavation Method JCB 3CX backhoe excavator with two foot wide toothed bucket.	Dimensions		Ground Level (mOD)	Client Cockley Developments Ltd	Job Number CKD/01
	Location		Dates 18/07/2016	Engineer ARP	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	D1				0.20	Turf over dark greyish brown slightly clayey slightly sandy slightly gravelly TOPSOIL. Gravel is subangular, of sandstone.		
0.70	HSV 55kPa		60,55,50/Av. 55.00		1.40	Firm (medium strength) orangish brown and grey slightly sandy CLAY (Completely Weathered Mudstone). At 0.4m: Ceramic land drain identified at 0.4m depth, orientated north to south.		
1.60-1.80	D2				1.60 (0.20) 1.80 (0.20) 2.00	Grey angular tabular GRAVEL of mudstone. (Highly Weathered Mudstone). Extremely weak, thinly laminated (up to 6mm bedded), grey, MUDSTONE. Recovered as angular tabular gravel (LCM). Complete at 2.00m		

Plan 	Remarks		
	Slight groundwater seepage below 1.6m. Trial pit sides remained stable for the short period of exposure. Backfilled with arisings on completion.		
	Scale (approx)	Logged By	Figure No.
	1:25	EGH	CKD/01.TP07



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Site
Cockley Hill Lane, Kirkheaton

Trial Pit Number
TP08

Excavation Method JCB 3CX backhoe excavator with two foot wide toothed bucket.	Dimensions		Ground Level (mOD)	Client Cockley Developments Ltd	Job Number CKD/01
	Location		Dates 18/07/2016	Engineer ARP	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	D1				(0.30)	Turf over dark greyish brown slightly clayey slightly sandy slightly gravelly TOPSOIL. Gravel is subangular, of sandstone.		
0.70	HSV 75kPa		75,70,80/Av. 75.00		0.30	High strength (stiff) orangish brown and grey CLAY (Completely Weathered Mudstone).		
1.20 1.20-1.40	HSV 140kPa D2		140,140,140/Av. 140.00		(1.90)	From 1.2m: Very high strength (very stiff).		
					2.20 (0.50)	Greyish brown and orangish brown fine to coarse angular tabular GRAVEL of mudstone. (Highly Weathered Mudstone).		
					2.70 (0.10) 2.80	Extremely weak, thickly laminated (up to 10mm bedded), greyish brown and orangish brown, MUDSTONE. Recovered as angular tabular gravel (LCM). Complete at 2.80m		

Plan .	Remarks No groundwater entries recorded. Trial pit sides remained stable for the short period of exposure. Backfilled with arisings on completion.		
	<table border="1"> <tr> <td>Scale (approx) 1:25</td> <td>Logged By EGH</td> <td>Figure No. CKD/01.TP08</td> </tr> </table>	Scale (approx) 1:25	Logged By EGH
Scale (approx) 1:25	Logged By EGH	Figure No. CKD/01.TP08	



ARP GEOTECHNICAL LIMITED
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Site
Cockley Hill Lane, Kirkheaton

Trial Pit Number
TP09

Excavation Method JCB 3CX backhoe excavator with two foot wide toothed bucket.	Dimensions		Ground Level (mOD) 133.00	Client Cockley Developments Ltd	Job Number CKD/01
	Location 418267 E 418111 N		Dates 18/07/2016	Engineer ARP	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.30	D1			132.70	(0.30)	Turf over dark greyish brown slightly clayey slightly gravelly sandy TOPSOIL. Gravel is subangular, of sandstone.		
					0.30	MADE GROUND: Medium strength (firm) orangish brown and grey CLAY.		
0.70	HSV 71.67kPa		70,70,75/Av. 71.67		(1.10)			
				131.60	1.40	MADE GROUND: Yellowish brown (up to 100mm bedded) angular tabular COBBLES of sandstone.		
				131.20	1.80	From 1.6m: Buried ceramic land drain, orientated NE-SW, steeply inclined to the south, possibly leading to a soakaway.		
				131.00	2.00	Dark greyish black, lustrous, COAL. Recovered as angular gravel (Better Bed). Terminated due to drain intersecting pit.		
						Complete at 2.00m		

Plan .	Remarks		
	Groundwater not encountered. Pit sides generally remained stable for the short period of exposure. Backfilled with arisings on completion.		
	Scale (approx) 1:25	Logged By EGH	Figure No. CKD/01.TP09



ARP GEOTECHNICAL LIMITED
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Site
 Cockley Hill Lane, Kirkheaton
Trial Pit Number
TP10

Excavation Method JCB 3CX backhoe excavator with two foot wide toothed bucket.	Dimensions		Ground Level (mOD) 131.40	Client Cockley Developments Ltd	Job Number CKD/01
	Location 418255 E 418098 N		Dates 18/07/2016	Engineer ARP	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	D1			131.20	(0.20) 0.20	Turf over dark greyish brown slightly clayey slightly sandy TOPSOIL.		
0.70	HSV 80kPa		70,70,100/Av. 80.00		(1.10)	Borderline medium strength (firm) to high strength (stiff) orangish brown and grey slightly gravelly CLAY. Gravel is angular and subangular, of sandstone. (Completely Weathered Mudstone).		
1.60	HSV 76.67kPa D2		80,80,70/Av. 76.67	130.10	1.30 (0.30)	Dark greyish black, lustrous COAL. Recovered as angular gravel (slightly weathered in pockets) (Better Bed).		
1.60-1.80				129.80	1.60 (1.20)	High strength (stiff) dark grey CLAY. (Fireclay?).		
				128.60	2.80 (0.20)	Extremely weak, thickly laminated, pale grey and buff grey MUDSTONE. Recovered as angular tabular gravel (LCM).		
				128.40	3.00	Terminated in hard strata. Complete at 3.00m		

Plan .	Remarks		
	Slight groundwater seepage from 1.3m. Pit sides generally remained stable for the short period of exposure. Backfilled with arisings on completion.		
	Scale (approx) 1:25	Logged By EGH	Figure No. CKD/01.TP10



**ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS**

Site
Cockley Hill Lane, Kirkheaton

Trial Pit Number
TP11

Excavation Method JCB 3CX backhoe excavator with two foot wide toothed bucket.	Dimensions		Ground Level (mOD)	Client Cockley Developments Ltd	Job Number CKD/01
	Location 418255 E 418098 N		Dates 18/07/2016	Engineer ARP	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	D1				(0.20) 0.20 (0.80) 1.00 (0.10) 1.10	Turf over dark greyish brown slightly clayey slightly sandy slightly gravelly TOPSOIL. Gravel is subangular, of sandstone. Orangish brown slightly sandy clayey fine to coarse angular tabular GRAVEL of sandstone (Highly Weathered Sandstone). Medium strong, thinly bedded (up to 100mm bedded), yellowish brown, fine to coarse grained, SANDSTONE. Recovered as subangular tabular gravel and cobbles (LCM). Complete at 1.10m		

Plan .	Remarks No groundwater entries recorded. Pit sides generally remained stable for the short period of exposure. Backfilled with arisings on completion.		
	<table border="1"> <tr> <td>Scale (approx) 1:25</td> <td>Logged By EGH</td> <td>Figure No. CKD/01.TP11</td> </tr> </table>	Scale (approx) 1:25	Logged By EGH
Scale (approx) 1:25	Logged By EGH	Figure No. CKD/01.TP11	



ARP GEOTECHNICAL LIMITED
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Site
 Cockley Hill Lane, Kirkheaton
Trial Pit Number
TP12

Excavation Method JCB 3CX backhoe excavator with two foot wide toothed bucket.	Dimensions		Ground Level (mOD)	Client Cockley Developments Ltd	Job Number CKD/01
	Location		Dates 18/07/2016	Engineer ARP	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.30	D1				(0.30)	Turf over dark greyish brown slightly clayey slightly sandy TOPSOIL.		
					0.30	Orangish brown clayey fine to coarse SAND. (Completely Weathered Sandstone).		
					(0.90)			
					1.20	Medium strong, very thinly bedded (up to 30mm bedded), yellowish brown fine to coarse grained SANDSTONE. Recovered as angular tabular cobbles (LCM).		
					1.50	Complete at 1.50m		

Plan .	Remarks No groundwater entries recorded. Pit sides generally remained stable for the short period of exposure. Backfilled with arisings on completion. Pit extended to the east by 7m. Attempting to locate line of conjectured coal outcrop (Better Bed).					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>EGH</td> <td>CKD/01.TP12</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	EGH
Scale (approx)	Logged By	Figure No.				
1:25	EGH	CKD/01.TP12				



**ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS**

Site
Cockley Hill Lane, Kirkheaton
Trial Pit Number
H1

Excavation Method Excavated by hand.	Dimensions		Ground Level (mOD)	Client Cockley Developments Ltd	Job Number CKD/01
	Location		Dates 01/12/2016	Engineer ARP	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	D1				(0.20) 0.20 	Turf over dark greyish brown slightly clayey sandy TOPSOIL. Terminated at the base of the topsoil. Complete at 0.20m		

Plan 	Remarks Groundwater not encountered. Backfilled with arisings on completion.		
	Scale (approx) 1:25	Logged By EGH	Figure No. CKD/01.H1



**ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS**

Site
Cockley Hill Lane, Kirkheaton

Trial Pit Number
H2

Excavation Method Excavated by hand.	Dimensions		Ground Level (mOD)	Client Cockley Developments Ltd	Job Number CKD/01
	Location		Dates 01/12/2016	Engineer ARP	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	D1				(0.20) 0.20 	Turf over dark greyish brown slightly clayey slightly gravelly sandy TOPSOIL. Gravel is subangular, of sandstone. Terminated at the base of the topsoil. Complete at 0.20m		

Plan 	Remarks Groundwater not encountered. Backfilled with arisings on completion.		
	Scale (approx) 1:25	Logged By EGH	Figure No. CKD/01.H2



**ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS**

Site
Cockley Hill Lane, Kirkheaton
Trial Pit Number
H3

Excavation Method Excavated by hand.	Dimensions		Ground Level (mOD)	Client Cockley Developments Ltd	Job Number CKD/01
	Location		Dates 01/12/2016	Engineer ARP	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	D1				(0.20) 0.20 	Turf over dark greyish brown slightly clayey sandy TOPSOIL. Terminated at the base of the topsoil. Complete at 0.20m		

Plan 	Remarks Groundwater not encountered. Backfilled with arisings on completion.		
	Scale (approx) 1:25	Logged By EGH	Figure No. CKD/01.H3



ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS

Site
Cockley Hill Lane, Kirkheaton

Borehole Number
R01

Machine : Flush : Core Dia: mm Method : Rotary Cored	Casing Diameter 	Ground Level (mOD) 138.80	Client Cockley Developments Ltd	Job Number CKD/01
	Location 418333 E 418034 N	Dates 02/08/2016	Engineer ARP	Sheet 1/1

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						138.20	(0.60) 0.60	Clay (Driller's Description). SANDSTONE.		
						134.50	(3.70) 4.30	Grey MUDSTONE.		
						128.10	(6.40) 10.70	BROKEN GROUND (no returns).		
						125.50	(2.60) 13.30	Hard Strata (no returns).		
						123.80	(1.70) 15.00	Complete at 15.00m		

Remarks Groundwater not encountered. Casing not used. Borehole backfilled with arisings on completion.	Scale (approx) 1:100	Logged By JS and EGH
	Figure No. CKD/01.R01	



ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS

Site
 Cockley Hill Lane, Kirkheaton

Borehole Number
R01A

Machine :		Casing Diameter	Ground Level (mOD)		Client		Job Number	
Flush :			138.80		Cockley Developments Ltd		CKD/01	
Core Dia: mm		Location	Dates		Engineer		Sheet	
Method : Rotary Cored			418333 E 418034 N		02/08/2016		ARP	

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						138.20	(0.60) 0.60	Clay (Driller's Description).	—	
							(2.40)	SANDSTONE.	[Pattern]	
						135.80	3.00	Complete at 3.00m		

Remarks Groundwater not encountered. Casing not used. Gas monitoring well installed to 3m depth. With lower 2m comprising slotted pipe with gravel surround, and upper 1m comprising plain pipe with bentonite cap. Bung and tap provided, with locakable flush cover.	Scale (approx)	Logged By
	1:100	JS and EGH
	Figure No. CKD/01.R01A	



ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS

Site
Cockley Hill Lane, Kirkheaton

Borehole Number
R02

Machine : Flush : Core Dia: mm Method : Rotary Cored	Casing Diameter	Ground Level (mOD) 131.70	Client Cockley Developments Ltd	Job Number CKD/01
	Location 418288 E 418016 N	Dates 02/08/2016	Engineer ARP	Sheet 1/1

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
								Clay (Driller's Description).		
						130.30	1.40	SANDSTONE.		
						129.90	1.80	COAL (Better Bed).		
							(2.20)			
						127.70	4.00	Grey MUDSTONE.		
							(2.00)			
						125.70	6.00	Complete at 6.00m		

Remarks Groundwater not encountered. Casing not used. Borehole backfilled with arisings on completion.	Scale (approx) 1:100	Logged By JS and EGH
	Figure No. CKD/01.R02	



ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS

Site
 Cockley Hill Lane, Kirkheaton

Borehole Number
R03

Machine : Flush : Core Dia: mm Method : Rotary Cored	Casing Diameter 	Ground Level (mOD) 127.30	Client Cockley Developments Ltd	Job Number CKD/01
	Location 418245 E 417982 N	Dates 02/08/2016	Engineer ARP	Sheet 1/1

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						126.50	(0.80) 0.80	Clay.	---	
							(3.30)	SANDSTONE.	[Pattern]	
						123.20 123.00	4.10 4.30	COAL (Better Bed).	[Pattern]	
							(1.70)	SANDSTONE.	[Pattern]	
						121.30	6.00	Complete at 6.00m		

Remarks Groundwater not encountered. Casing not used. Borehole backfilled with arisings on completion.	Scale (approx) 1:100	Logged By JS and EGH
	Figure No. CKD/01.R03	



**ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS**

Site
Cockley Hill Lane, Kirkheaton

Borehole Number
R03A

Machine :	Casing Diameter	Ground Level (mOD)	Client	Job Number
Flush :		127.30	Cockley Developments Ltd	CKD/01
Core Dia: mm	Location	Dates	Engineer	Sheet
Method : Rotary Cored	418245 E 417982 N	02/08/2016	ARP	1/1

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						126.50	(0.80) 0.80	Clay.	---	
							(2.20)	SANDSTONE.	█	
						124.30	3.00	Complete at 6.00m		

Remarks Groundwater not encountered. Casing not used. Gas monitoring well installed to 3m. With lower 2m comprising slotted pipe with gravel surround, and upper 1m comprising plain pipe with bentonite cap. Bung and tap are provided, with a lockable flush cover.	Scale (approx)	Logged By
	1:100	JS and EGH
	Figure No. CKD/01.R03A	



ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS

Site
 Cockley Hill Lane, Kirkheaton

Borehole Number
R04

Machine : Flush : Core Dia: mm Method : Rotary Cored	Casing Diameter	Ground Level (mOD) 133.20	Client Cockley Developments Ltd	Job Number CKD/01
	Location 418277 E 418083 N	Dates 02/08/2016	Engineer ARP	Sheet 1/1

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						131.90	(1.30)	Clay.		
						130.20	(1.70)	Hard strata (no returns). From 1.3m to 3m: Loss of flush (no returns). Possibly due to a buried soakaway adjacent to the borehole.		
							3.00	Complete at 3.00m		

Remarks Groundwater not encountered. Casing not used. Borehole backfilled with arisings on completion.	Scale (approx) 1:100	Logged By JS and EGH
	Figure No. CKD/01.R04	



ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS

Site
 Cockley Hill Lane, Kirkheaton

Borehole Number
R05

Machine : Flush : Core Dia: mm Method : Rotary Cored	Casing Diameter	Ground Level (mOD) 133.10	Client Cockley Developments Ltd	Job Number CKD/01
	Location 418270 E 418076 N	Dates 02/08/2016	Engineer ARP	Sheet 1/1

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							(1.20)	Clay.	---	
						131.90	1.20 (0.80)	COAL (Better Bed).	■	
						131.10	2.00	SANDSTONE.	▒	
							(4.00)			
						127.10	6.00	Complete at 6.00m		

Remarks Groundwater not encountered. Casing not used. Borehole backfilled with arisings on completion.	Scale (approx) 1:100	Logged By JS and EGH
	Figure No. CKD/01.R05	



ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS

Site
 Cockley Hill Lane, Kirkheaton

Borehole Number
R05A

Machine : Flush : Core Dia: mm Method : Rotary Cored	Casing Diameter	Ground Level (mOD) 133.10	Client Cockley Developments Ltd	Job Number CKD/01
	Location 418270 E 418076 N	Dates 02/08/2016	Engineer ARP	Sheet 1/1

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						131.90	(1.20)	Clay.	---	
						131.10	1.20 (0.80)	COAL (Better Bed).	■	
							2.00	SANDSTONE.	▒	
							(4.00)			
						127.10	6.00	Complete at 6.00m		

Remarks Groundwater not encountered. Casing not used. Gas monitoring well installed to 3m. With lower 2m comprising slotted pipe with gravel surround, and upper 1m comprising plain pipe with bentonite cap. Bung and tap are provided, with a lockable flush cover.	Scale (approx) 1:100	Logged By JS and EGH
	Figure No. CKD/01.R05A	



ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS

Site
 Cockley Hill Lane, Kirkheaton

Borehole Number
R06

Machine : Flush : Core Dia: mm Method : Rotary Cored	Casing Diameter 	Ground Level (mOD) 128.00	Client Cockley Developments Ltd	Job Number CKD/01
	Location 418223 E 418059 N	Dates 02/08/2016	Engineer ARP	Sheet 1/1

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						126.70	(1.30) 1.30	Clay.		
							(4.70) 6.00	SANDSTONE.		
						122.00	6.00	Complete at 6.00m		

Remarks Groundwater not encountered. Casing not used. Borehole backfilled with arisings on completion.	Scale (approx) 1:100	Logged By JS and EGH
	Figure No. CKD/01.R06	



ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS

Site
Cockley Hill Lane, Kirkheaton

Borehole Number
R07

Machine : Flush : Core Dia: mm Method : Rotary Cored	Casing Diameter 	Ground Level (mOD) 128.70	Client Cockley Developments Ltd	Job Number CKD/01
	Location 418255 E 418013 N	Dates 02/08/2016	Engineer ARP	Sheet 1/1

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							(1.20)	Clay.	---	
						127.50	1.20	SANDSTONE.	▒	
							(2.60)			
						124.90	3.80	COAL (Better Bed).	■	
						124.50	(0.40) 4.20	Grey MUDSTONE.	▨	
							(1.80)			
						122.70	6.00	Complete at 6.00m		

Remarks Groundwater not encountered. Casing not used. Borehole backfilled with arisings on completion.	Scale (approx) 1:100	Logged By JS and EGH
	Figure No. CKD/01.R07	



ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS

Site
 Cockley Hill Lane, Kirkheaton

Borehole Number
R08

Machine : Flush : Core Dia: mm Method : Rotary Cored	Casing Diameter	Ground Level (mOD) 132.00	Client Cockley Developments Ltd	Job Number CKD/01
	Location 418278 E 418049 N	Dates 02/08/2016	Engineer ARP	Sheet 1/1

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							(1.10)	Clay.		
						130.90	1.10	SANDSTONE.		
							(1.70)			
						129.20	2.80 (0.50)	COAL (Better Bed).		
						128.70	3.30	Grey MUDSTONE.		
							(0.90)			
						127.80	4.20	SANDSTONE.		
							(1.80)			
						126.00	6.00	Complete at 6.00m		

Remarks Groundwater not encountered. Casing not used. Borehole backfilled with arisings on completion.	Scale (approx)	Logged By
	1:100	JS and EGH
	Figure No. CKD/01.R08	



ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS

Site
 Cockley Hill Lane, Kirkheaton

Borehole Number
R09

Machine : Flush : Core Dia: mm Method : Rotary Cored	Casing Diameter 	Ground Level (mOD) 135.10	Client Cockley Developments Ltd	Job Number CKD/01
	Location 418311 E 418042 N	Dates 02/08/2016	Engineer ARP	Sheet 1/1

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							(1.40)	Clay.		
						133.70	1.40	SANDSTONE.		
							(2.90)			
						130.80	4.30	Grey MUDSTONE.		
							(2.90)			
						127.90	7.20	COAL.		
							(1.40)			
						126.50	8.60	SANDSTONE.		
							(1.40)			
						125.10	10.00	Complete at 10.00m		

Remarks Groundwater not encountered. Casing not used. Borehole backfilled with arisings on completion.	Scale (approx) 1:100	Logged By JS and EGH
	Figure No. CKD/01.R09	



ARP GEOTECHNICAL LIMITED
CHARTERED CONSULTING ENGINEERS

Site
Cockley Hill Lane, Kirkheaton

Borehole Number
R10

Machine : Flush : Core Dia: mm Method : Rotary Cored	Casing Diameter 	Ground Level (mOD) 143.70	Client Cockley Developments Ltd	Job Number CKD/01
	Location 418369 E 418019 N	Dates 02/08/2016	Engineer ARP	Sheet 1/1

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						142.60	(1.10) 1.10	Clay.		
							(3.50) 4.60	SANDSTONE.		
						139.10	(9.40) 14.00	Grey MUDSTONE.		
						129.70	(2.10) 16.10	BROKEN GROUND (no returns).		
						127.60	(1.90) 18.00	Hard strata (no returns).		
						125.70		Complete at 18.00m		

Remarks Groundwater not encountered. Casing not used. Borehole backfilled with arisings on completion.	Scale (approx) 1:100	Logged By JS and EGH
	Figure No. CKD/01.R10	

Project Name: Cockley Hill Lane

 Project No.
CKD/02

Co-ords: -

 Date
18/02/2019

Location: Kirkheaton, Huddersfield

Level:

 Scale
1:40

Client: Cockley Developments Ltd

Rig Crew: RP Drilling

 Logged:
OG

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.20	ES		0.25		Dark brown slightly clayey sandy TOPSOIL.		
		0.50 - 0.60	ES				MADE GROUND: brown and grey locally black (0.5m to 0.6m) gravelly sand. Gravel is angular of sandstone, mudstone and occasional wood. (Possible backfilled quarry). 20mm diameter root at 0.25m. 40mm diameter root at 0.5m to 0.6m.	1	
		1.00	SPT	N=21 (3,3/4,5,6,6)	1.30 1.50		MADE GROUND: Stiff orangish brown slightly sandy silty CLAY. Dark grey sandy angular GRAVEL of thinly laminated mudstone. [Residual Soil Derived From the In-situ Weathering of the Underlying Solid Strata].	2	
		2.00	SPT	50 (10,13/50 for 125mm)	1.90 2.28		Very weak dark grey MUDSTONE. Recovered as angular gravel. [Pennine Lower Coal Measures]. End of Borehole at 2.280m Terminated on SPT refusal.	3 4 5 6 7 8	

Groundwater: No groundwater encountered.

Backfill: Backfilled with arisings.

Remarks:

Project Name: Cockley Hill Lane

 Project No.
CKD/02

Co-ords: -

 Date
18/02/2018

Location: Kirkheaton, Huddersfield

Level:

 Scale
1:40

Client: Cockley Developments Ltd

Rig Crew: RP Drilling

 Logged:
OG

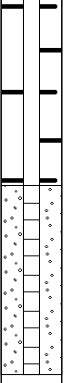

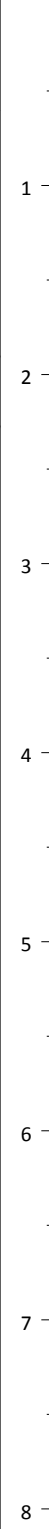





Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.20	ES		0.20		Dark brown slightly clayey sandy TOPSOIL with rare cobbles of sandstone.		
		0.20 - 0.50	D				Firm orangish brown and grey slightly gravelly slightly sandy silty CLAY. Gravel is sub angular to sub rounded fine to medium of mudstone. [Residual Soil Derived From the In-situ Weathering of the Underlying Solid Strata].		
		1.00	SPT	N=25 (2,3/5,6,6,8)	1.00		Medium dense orangish brown and grey silty gravelly SAND with rare orange staining. [Residual Soil Derived From the In-situ Weathering of the Underlying Solid Strata].	1	
		2.00	SPT	50 (7,14/50 for 20mm)	2.15		(At least) very weak, thinly laminated (up to 6mm), greyish brown, typically fine grained SANDSTONE. Recovered as gravelly silty sand. [Grenoside Sandstone].	2	
							End of Borehole at 2.150m Terminated on SPT refusal.		
								3	
								4	
								5	
								6	
								7	
								8	

Groundwater: No groundwater observed.

Backfill: Backfilled with arisings.

Remarks:

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: -	Date: 18/02/2019
Location: Kirkheaton, Huddersfield		Level:	Scale: 1:40
Client: Cockley Developments Ltd		Rig Crew: RP Drilling	Logged: OG

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.20	ES		0.25			Brown sandy clayey TOPSOIL.	
		0.30 - 0.40	D		0.60			MADE GROUND: (Firm) brown mottled grey slightly sandy clay with rare organic material. [Backfilled Opencast].	
		1.00	SPT	N=10 (1,1/1,2,3,4)	1.30			MADE GROUND: (Firm) grey and brown slightly sandy slightly gravelly clay. Gravel is angular of mudstone, with trace fragments of coal. [Backfilled Opencast].	
					1.70			Firm orangish brown laminated grey slightly sandy silty CLAY. [Residual Soil Derived From the In-situ Weathering of the Underlying Solid Strata].	
		2.00	SPT	50 (25 for 140mm/50 for 125mm)	1.90			Greyish brown and dark brown sandy angular and subangular GRAVEL of mudstone. [Residual Soil Derived From the In-situ Weathering of the Underlying Solid Strata].	
					2.27			Extremely weak, thinly laminated (up to 6mm), greyish brown MUDSTONE. Recovered as angular gravel. [Pennine Lower Coal Measures] End of Borehole at 2.270m Terminated on SPT refusal.	

Groundwater: No groundwater encountered.

Backfill: Backfilled with arisings.

Remarks:

Project Name: Cockley Hill Lane

 Project No.
CKD/02

Co-ords: -

 Date
18/02/2019

Location: Kirkheaton, Huddersfield

Level:

 Scale
1:40

Client: Cockley Developments Ltd

Rig Crew: RP Drilling

 Logged:
OG

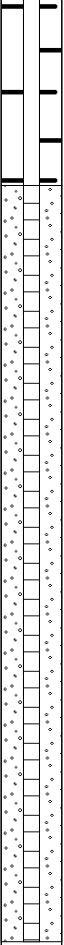
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.20	ES		0.20		Dark brown slightly clayey sandy TOPSOIL.		
							Stiff orangish brown and grey slightly gravelly silty CLAY. Gravel is subangular fine to medium sandstone. [Residual Soil Derived From the In-situ Weathering of the Underlying Solid Strata].		
		1.00	SPT	N=28 (3,4/5,6,7,10)	1.00			Medium dense orangish brown and grey gravelly SAND. Gravel is subangular of mudstone. [Residual Soil Derived From the In-situ Weathering of the Underlying Solid Strata].	1
		1.70 - 1.80	D		1.80			Extremely weak, thinly to thickly laminated (up to 20mm), dark brown and grey, MUDSTONE. Recovered as angular gravel. [Pennine Lower Coal Measures].	2
		2.00	SPT	50 (25 for 85mm/50 for 235mm)	2.10		End of Borehole at 2.100m Terminated on SPT refusal.		
								3	
								4	
								5	
								6	
								7	
								8	

Groundwater: No groundwater observed.

Backfill: Backfilled with arisings.

Remarks:

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: -	Date: 18/02/2019
Location: Kirkheaton, Huddersfield	Level:		Scale: 1:40
Client: Cockley Developments Ltd	Rig Crew: RP Drilling		Logged: OG

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.25		Dark brown sandy TOPSOIL.		
		0.50 - 0.60	ES		0.50		MADE GROUND: (Stiff) orangish brown and grey clay. (Backfilled opencast).		
							MADE GROUND: (Stiff) grey and brown gravelly sandy clay with cobbles of coal and sandstone. (Backfilled opencast).		
		1.00	SPT	N=20 (3,4/5,4,5,6)	1.00		MADE GROUND: Brown clayey sandy gravel with fragments of coal, mudstone and sandstone. (Backfilled opencast).	1	
		1.50 - 1.60	ES						
		2.00	SPT	N=12 (2,3/3,3,3,3)	2.00		MADE GROUND: Grey/dark brown sandy gravelly clay. Gravel is angular fine to coarse of coal, mudstone and sandstone. (Backfilled opencast).	2	
		2.50 - 2.60	ES						
		3.00	SPT	N=12 (1,2/3,3,3,3)				3	
		3.50 - 3.60	ES						
		4.00	SPT	N=4 (1,1/1,1,1,1)				4	
	4.50 - 4.60	ES							
	5.00	SPT	N=7 (1,1/1,1,1,4)				5		
				5.45			End of Borehole at 5.450m Borehole extended by dynamic probe (DP1) from the base to 10m depth.	6	
								7	
								8	

Groundwater: No groundwater observed.

Backfill: Installation.

Remarks: Borehole extended by dynamic probe (DP1) from the base to 10m depth.

Project Name: Cockley Hill Lane

 Project No.
CKD/02

Co-ords: -

 Date
18/02/2019

Location: Kirkheaton, Huddersfield



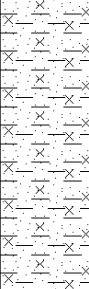

Level:

 Scale
1:40

Client: Cockley Developments Ltd

Rig Crew: RP Drilling

 Logged:
OG

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.20	ES		0.35		 Dark brown sandy TOPSOIL.		
		1.00	SPT	N=21 (2,3/4,5,5,7)			 Stiff (high strength) orangish brown mottled grey slightly sandy silty CLAY. [Residual Soil Derived From the In-situ Weathering of the Underlying Solid Strata].	1	
		1.80 - 1.90	D		1.90		 Extremely weak, thinly to thickly laminated (up to 20mm), brown MUDSTONE. Recovered as angular gravel. [Pennine Lower Coal Measures].	2	
		2.00	SPT	N=50 (8,9/50 for 285mm)	2.44		End of Borehole at 2.440m Terminated on SPT refusal.	3	
								4	
								5	
								6	
								7	
								8	

Groundwater: No groundwater observed.

Backfill: Backfilled with arisings.

Remarks:

Project Name: Cockley Hill Lane

 Project No.
CKD/02

Co-ords: -

 Date
18/02/2019

Location: Kirkheaton, Huddersfield

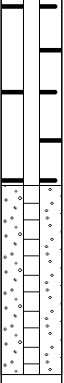





Level:

 Scale
1:40

Client: Cockley Developments Ltd

Rig Crew: RP Drilling

 Logged:
OG

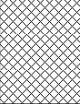
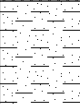
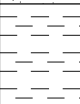

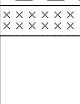
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20 - 0.50	ES		0.50		MADE GROUND: Dark brown gravelly sand. With subangular gravel of brick, concrete and sandstone. Trace fine gravel of mixed lithologies including dark mudstone and possible coal fragments. Medium subangular cobble content, of brick and concrete. [Relict Demolition Rubble].		
		0.80 - 1.00	D		1.00				Firm to stiff orangish brown and grey slightly sandy silty CLAY. [Residual Soil Derived From the In-situ Weathering of the Underlying Solid Strata].
		1.00	SPT	N=27 (3,2/4,5,8,10)	1.00		<i>Clay is friable from 0.9m to 1.0m.</i>	1	
		2.00	SPT	50 (8,12/50 for 220mm)	1.90 2.40		Medium dense brown and grey sandy GRAVEL of mudstone. [Residual Soil Derived From the In-situ Weathering of the Underlying Solid Strata].	2	
							Extremely weak, thickly laminated (up to 20mm), dark brown and grey, MUDSTONE. Recovered as angular gravel. [Pennine Lower Coal Measures].		
							End of Borehole at 2.400m Terminated on SPT refusal.		
								3	
								4	
								5	
								6	
								7	
								8	

Groundwater: No groundwater observed.

Backfill: Installation.

Remarks:

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: - Level:	Date 18/02/2019
Location: Kirkheaton, Huddersfield		Pit Dimensions (m) Length: m Width: m Depth: 2.20 m	Machine Type: Kubota KX080-4
Client: Cockley Developments Ltd			Scale 1:25 Logged: EGH

Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
Depth	Type	Results				
0.10 - 0.20	ES					MADE GROUND: Dark greyish brown slightly clayey slightly sandy fine to coarse angular and subangular organic GRAVEL of sandstone and siltstone, with occasional fragments of brick and concrete.
			0.35			Firm orangish brown, mottled grey, slightly sandy CLAY. [Residual Soil Derived From the In-situ Weathering of the Underlying Solid Strata].
0.90 - 1.00 0.90	D	HSV=108	0.70			Stiff (high strength) grey, mottled orange, CLAY. [Residual Soil Derived From the In-situ Weathering of the Underlying Solid Strata].
1.20		HSV=130				<i>From 1.2m: Very stiff (high strength).</i>
			2.10 2.20			Extremely weak, thickly laminated (up to 15mm), greyish brown to very dark grey, SILTSTONE. Recovered as angular gravel and cobbles. [Pennine Lower Coal Measures]. End of Pit at 2.200m Terminated on solid bedrock strata.

Groundwater: No groundwater entries recorded.


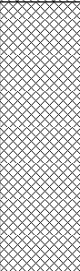
Backfill: Pit was backfilled with arisings on completion.

Stability: Pit sides generally remained stable for the short period of exposure.

Remarks:

RrTP_v1.053

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: - Level:	Date 18/02/2019
Location: Kirkheaton, Huddersfield		Pit Dimensions (m) Length: 8.00 m Width: 0.60 m Depth: 1.20 m	Machine Type: Kubota KX080-4
Client: Cockley Developments Ltd			Scale 1:25 Logged: EGH

Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
Depth	Type	Results				
0.90 - 1.00	ES		0.30			Turf over dark greyish brown slightly clayey slightly gravelly TOPSOIL. With subangular gravel, of sandstone.
						MADE GROUND: Grey, occasionally orangish brown, slightly sandy, gravelly CLAY. Gravel is mixed, typically subangular, of siltstone, sandstone and mudstone. Occasional cobbles of siltstone. [Reworked Natural Arisings - Infilled Opencast Workings].
						<i>At the northeast end of the pit: 0.3m TOPSOIL, over firm CLAY.</i>
			1.20			End of Pit at 1.200m Terminated once the upper lateral extent of the infilled opencast workings had been reached.

Groundwater: No groundwater entries recorded.


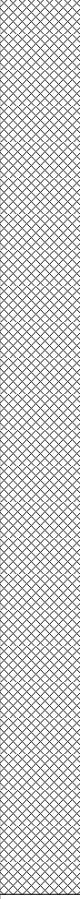
Backfill: Pit was backfilled with arisings on completion.

Stability: Slight instability to 1.2m depth.

Remarks: Pit extended through the made ground, 8m laterally to the northeast.

RrTP_v1.053

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: - Level:	Date 18/02/2019
Location: Kirkheaton, Huddersfield		Pit Dimensions (m) Length: m Width: m Depth: 3.20 m	Machine Type: Kubota KX080-4
Client: Cockley Developments Ltd			Scale 1:25 Logged: EGH

Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
Depth	Type	Results				
			0.15			Turf over dark greyish brown slightly clayey slightly gravelly TOPSOIL. Gravel is typically fine, subangular, of sandstone.
			3.20			MADE GROUND: Grey slightly sandy clayey fine to coarse subangular GRAVEL of siltstone, sandstone and mudstone. Occasional cobble sized fragments of siltstone and sandstone. [Reworked Natural Arisings - Infilled Opencast Workings].
						End of Pit at 3.200m Terminated once the full extent of the excavator had been reached.

Groundwater: No groundwater entries recorded.


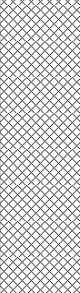

Backfill: Pit backfilled with arisings on completion.

Stability: Slight instability of the pit sides to 3.2m depth.

Remarks:

RrTP_v1.053

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: - Level:	Date 18/02/2019
Location: Kirkheaton, Huddersfield	Pit Dimensions (m) Length: 10.00 m Width: 0.60 m Depth: 1.30 m	Machine Type: Kubota KX080-4	Scale 1:25 Logged: EGH
Client: Cockley Developments Ltd			

Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
Depth	Type	Results				
0.00 - 0.10	ES		0.20			Turf and reeds over dark greyish brown slightly clayey slightly gravelly TOPSOIL. Gravel is typically fine, subangular, of sandstone.
1.00 - 1.20 1.10 - 1.20	ES ES		1.20 1.30			MADE GROUND: Grey to very dark grey, gravelly CLAY. Gravel is typically subangular, of siltstone, sandstone and mudstone. Occasional subangular cobbles of sandstone, siltstone and brick. Trace fine gravel sized fragments of coal at the base of the material. [Reworked Natural Arisings - Infilled Opencast Workings]. <i>At the southwest end of the pit: 0.3m TOPSOIL, over firm CLAY.</i>
						Firm light greyish brown sandy CLAY. [Residual Soil Derived From the In-situ Weathering of the Underlying Solid Strata]. End of Pit at 1.300m Terminated once the lower lateral extent of the infilled opencast workings had been reached.

Groundwater: No groundwater entries recorded. Ground surface waterlogged.


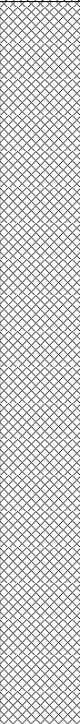

Backfill: Pit was backfilled with arisings on completion.

Stability: Pit sides generally remained stable for the short period of exposure.

Remarks: Pit extended through the made ground, 10m laterally to the southwest.

RrTP_v1.053

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: - Level:	Date 18/02/2019
Location: Kirkheaton, Huddersfield		Pit Dimensions (m) Length: 15.00 m Width: 0.60 m Depth: 2.60 m	Machine Type: Kubota KX080-4
Client: Cockley Developments Ltd			Scale 1:25 Logged: EGH

Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
Depth	Type	Results				
0.00 - 0.10	ES		0.10			Turf over greyish brown sandy spongy TOPSOIL.
1.00 - 1.10	ES					MADE GROUND: Brown and greyish brown, slightly clayey fine to coarse angular and subangular GRAVEL of sandstone, with occasional siltstone. Occasional subangular cobbles of sandstone and siltstone. [Reworked Natural Arisings - Infilled Quarry Workings].
			2.50 2.60			Extremely weak, very thinly bedded (up to 20mm), yellowish brown fine to coarse grained SANDSTONE. Recovered as angular tabular gravel. [Grenoside Sandstone]. End of Pit at 2.600m Terminated on solid bedrock strata.

Groundwater: Slight seepage noted from 2.5m depth.


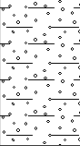

Backfill: Pit was backfilled with arisings on completion.

Stability: Moderate instability of the pit sides to between 2m and 2.5m depth.

Remarks: Pit extended through the made ground, 6m laterally to the northeast.

RrTP_v1.053

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: - Level:	Date 18/02/2019
Location: Kirkheaton, Huddersfield		Pit Dimensions (m) Length: m Width: m Depth: 0.70 m	Machine Type: Kubota KX080-4
Client: Cockley Developments Ltd			Scale 1:25 Logged: EGH

Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
Depth	Type	Results				
			0.10			Turf over greyish brown sandy spongy TOPSOIL.
			0.60			Light brown clayey fine to coarse angular tabular GRAVEL of sandstone. [Residual Soil Derived From the In-situ Weathering of the Underlying Solid Strata].
			0.70			Extremely weak, thickly laminated (up to 10mm), fine to coarse grained SANDSTONE. Recovered as angular tabular gravel and cobbles. [Grenoside Sandstone]. End of Pit at 0.700m Terminated on solid bedrock strata.




Groundwater: No groundwater entries recorded. Ground surface waterlogged.

Backfill: Pit was backfilled with arisings on completion.

Stability: Pit sides generally remained stable for the short period of exposure.

Remarks: Pit located 4m beyond the limit of TP5, to define the extent of the made ground.

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: - Level:	Date 18/02/2019
Location: Kirkheaton, Huddersfield		Pit Dimensions (m) Length: m Width: m Depth: 1.00 m	Machine Type: Kubota KX080-4
Client: Cockley Developments Ltd			Scale 1:25 Logged: EGH

Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
Depth	Type	Results				
			0.05			MADE GROUND: Bituminous macadam.
0.90 - 1.00	D		0.90 1.00			Light brown sandy fine to coarse angular tabular GRAVEL of sandstone. Up to 10mm bedded. Occasional micaceous crystals visible along bedding planes. [Residual Soil Derived From the In-situ Weathering of the Underlying Solid Strata].
						Extremely weak, thickly laminated (up to 10mm), fine to coarse grained SANDSTONE. Recovered as angular tabular gravel. [Grenoside Sandstone]. End of Pit at 1.000m Terminated on solid bedrock strata.

Groundwater: No groundwater entries recorded.

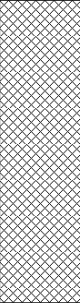
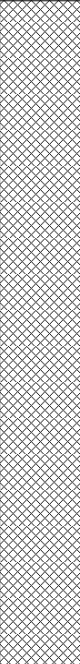
Backfill: Pit was backfilled with arisings on completion.

Stability: Pit sides generally remained stable for the short period of exposure.

Remarks:

RrTP_v1.053

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: - Level:	Date 18/02/2019
Location: Kirkheaton, Huddersfield		Pit Dimensions (m) Length: m Width: m Depth: 3.20 m	Machine Type: Kubota KX080-4
Client: Cockley Developments Ltd			Scale 1:25 Logged: EGH

Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
Depth	Type	Results				
1.00 - 1.20	ES		1.00			MADE GROUND: Leaf litter over orangish brown clayey fine to coarse angular and subangular GRAVEL of sandstone. [Reworked Natural Arisings - Infilled Quarry Workings].
						MADE GROUND: Grey fine to coarse angular tabular shaley GRAVEL of mudstone and occasional siltstone. Brown discolouration along bedding planes. Occasional subangular tabular cobbles of siltstone. [Reworked Natural Arisings - Infilled Quarry Workings].
			3.20			End of Pit at 3.200m Terminated once the full extent of the excavator had been reached.

Groundwater: No groundwater entries recorded.

Backfill: Pit was backfilled with arisings on completion.

Stability: Moderate instability of the pit sides noted to 3.2m depth.

Remarks:

RrTP_v1.053



Probe Log

Borehole No.

DP1

Sheet 2 of 2

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: -	Hole Type DP
Location: Kirkheaton, Huddersfield	Level:		Scale 1:25
Client: Cockley Developments Ltd	Dates: 18/02/2019 -		Logged By

Depth (m)	Blows/100mm				Torque (Nm)
	10	20	30	40	
0					
0					
0					
0.2					
0.4					
0.6					
0.8					
1.0					
1.2					
1.4					
1.6					
1.8					
2.0					
2.2					
2.4					
2.6					
2.8					
3.0					
3.2					
3.4					
3.6					
3.8					
4.0					
4.2					
4.4					
4.6					
4.8					
5.0					
5.2					
5.4					
5.6					
5.8					
6.0					
6.2					
6.4					
6.6					
6.8					
7.0					
7.2					
7.4					
7.6					
7.8					
8.0					
8.2					
8.4					
8.6					
8.8					
9.0					
9.2					
9.4					
9.6					
9.8					
10.0					

Remarks Dynamic probe extended from the base of WS5 to 10m depth.	Fall Height	760	Cone Base Diameter	
	Hammer Wt	64	Final Depth	10.00
	Probe Type		Log Scale	1:25



Excavation Method Dando Terrier Window Sampler Rig with Split Barrel SPT Sampler.	Dimensions		Ground Level (mOD)	Client Gleeson Developments Ltd	Job Number GH0-11
	Location		Dates 29/09/2025	Project Contractor RP Drilling	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.40-0.40	D				(0.20)	Brown mottled grey slightly sandy slightly gravelly clayey TOPSOIL. Sand is fine. Gravel is subangular, of mudstone. Frequent rootlets. Dry.			
					0.20	MADE GROUND. Firm dark brown gravelly clay. Gravel is fine to coarse subangular to angular of mudstone and iron stone. Dry.			
1.00-1.45	SPT N=15		2,2/2,3,4,6		(0.90)	Firm medium borderline high strength orangish brown grey mottled slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is subrounded to subangular fine to medium, of mudstone and ironstone. Rare remnant organics. Dry.			
1.20-1.20	D								
2.00-2.45	SPT N=31		6,5/6,7,8,10		(0.80)	Very stiff high borderline very high strength friable greyish brown slightly sandy gravelly CLAY. Sand is fine. Gravel is subangular medium to coarse, of mudstone. Dry.			
2.80-3.11	SPT 50/160		14,11/16,21,13		2.30	Extremely weak thinly laminated friable greyish brown MUDSTONE. Dry.			
					(0.81)				
					3.11	Complete at 3.11m			

Remarks Location scanned with CAT prior to drilling borehole. Borehole terminated due to SPT refusal at 3.11m. Borehole not cased. No ground water encountered. Monitoring well installed to 2.8m - slotted from base to 0.5m, with gravel surround, plain above, with bentonite seal. Bung, tap and locking cover provided.	Scale (approx)	Logged By
	1:25	WW
	Figure No. GH0-11.WS08	



Excavation Method Dando Terrier Window Sampler Rig with Split Barrel SPT Sampler.	Dimensions		Ground Level (mOD)	Client Gleeson Developments Ltd	Job Number GH0-11
	Location		Dates 29/09/2025	Project Contractor RP Drilling	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.10-0.10	D				0.15	Brown slightly clayey slightly gravelly sandy TOPSOIL. Sand is fine. Gravel is subrounded fine, of mudstone. Frequent rootlets. Dry.			
					0.45	Firm orangish brown grey mottled slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is subrounded to subangular fine to medium, of mudstone and ironstone. Rare remnant organics. Dry.			
					0.60	Extremely weak thinly laminated friable greyish brown shaley MUDSTONE. Dry.			
1.00-1.45	SPT N=48		6,9/9,11,13,15		0.95	COAL.			
1.00-1.30	D				1.30	Extremely weak thinly laminated friable greyish brown MUDSTONE. Dry.			
1.50-1.93	SPT 50/280		11,11/10,14,16,10		1.93	Complete at 1.93m			

Remarks Location scanned with CAT prior to drilling borehole. Borehole terminated due to SPT refusal at 1.93m. Borehole not cased. No ground water encountered. Monitoring well installed to 1.5m - slotted from base to 0.5m, with gravel surround, plain above, with bentonite seal. Bung, tap and locking cover provided.	Scale (approx) 1:25	Logged By WW
	Figure No. GH0-11.WS09	



Excavation Method Dando Terrier Window Sampler Rig with Split Barrel SPT Sampler.	Dimensions		Ground Level (mOD)	Client Gleeson Developments Ltd	Job Number GH0-11
	Location		Dates 01/09/2025	Project Contractor RP Drilling	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
1.00-1.45	SPT N=6		1,1/1,1,2,2		0.20	Brown mottled grey slightly sandy slightly gravelly clayey TOPSOIL. Sand is fine. Gravel is subangular of mudstone. Frequent rootlets. Dry.			
					0.60	Firm orangish brown grey mottled friable slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is subrounded to subangular fine to medium, of mudstone and ironstone. Rare remnant organics. Dry.			
2.00-2.45	SPT N=50		5,6/9,10,16,15		0.80	Soft low strength greyish brown sandy gravelly CLAY. Sand is fine. Gravel is subrounded to subangular fine to coarse, of mudstone. Dry.			
					2.00	At 1.9m: Cobble of Ironstone. Recovered as angular fine to coarse gravel.			
					0.45	Extremely weak thinly laminated friable greyish brown MUDSTONE. Dry.			
					2.45	Complete at 2.45m			

Remarks Location scanned with CAT prior to drilling borehole. Borehole terminated due to SPT refusal at 2.45m. Borehole not cased. No ground water encountered. Monitoring well installed to 2.0m - slotted from base to 0.5m, with gravel surround, plain above, with bentonite seal. Bung, tap and locking cover provided.	Scale (approx) 1:25	Logged By WW
	Figure No. GH0-11.WS10	



Excavation Method Dando Terrier Window Sampler Rig with SPT Sampler.	Dimensions		Ground Level (mOD)	Client Gleeson Developments Ltd	Job Number GH0-11
	Location		Dates 29/09/2025	Project Contractor RP Drilling	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.10-0.10	D				(0.20) 0.20 (0.30) 0.50	Brown slightly clayey slightly gravelly sandy TOPSOIL. Sand is fine. Gravel is subrounded, of mudstone. Frequent rootlets. Dry.			
1.00-1.45	SPT N=11		4,4/3,2,2,4			MADE GROUND. Firm dark brown slightly sandy gravelly clay with low cobble content. Gravel is fine to coarse subangular to angular of mudstone shale and iron stone. Cobbles are of subangular mudstone and ironstone. Occasional fragments of coal. Dry. At 1m: Firm medium strength.			
1.60-1.60	D								
2.00-2.45	SPT N=8		3,2/1,2,2,3			At 2m: Becoming low borderline medium strength.			
3.00-3.45	SPT N=8		2,1/2,1,2,3		(4.50)	From 3m - 4m: Poor Recovery. Pushing cobble down through madeground.			
4.00-4.45	SPT N=5		Water strike(1) at 4.00m. 2,2/1,2,1,1			At 4m: Becoming soft low strength. From 4m: Strata is wet.		Σ1	
5.00-5.43	SPT 50/280		6,9/12,12,14,12		5.00 (0.43) 5.43	NO RECOVERY. Solid Cone SPT Test. Hard/very dense strata.			
						Complete at 5.43m			

Remarks Location scanned with CAT prior to drilling borehole. Borehole terminated due to SPT refusal at 5.43m. SPT cone switched to solid. Borehole not cased. Strata wet from 4m depth.. Monitoring well installed to 5.0m - slotted from base to 0.5m, with gravel surround, plain above, with bentonite seal. Bung, tap and locking cover provided.	Scale (approx)	Logged By
	1:40	WW
	Figure No. GH0-11.WS11	



Excavation Method Dando Terrier Window Sampler Rig with SPT Sampler.	Dimensions		Ground Level (mOD)	Client Gleeson Developments Ltd	Job Number GH0-11
	Location		Dates 29/09/2025	Project Contractor RP Drilling	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00-1.40	SPT 50/250		14,11/11,14,18,7		0.20	Dark brown mottled grey slightly sandy slightly gravelly clayey TOPSOIL. Sand is fine. Gravel is subrounded of mudstone. Frequent rootlets. Dry.		
					0.50	Firm orangish brown slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is subrounded to subangular fine to medium, of mudstone and ironstone. Rare remnant organics. Dry.		
					0.70	Extremely weak thinly laminated grey silty MUDSTONE with occasional ironstone nodules. Dry.		
					1.00	NO RECOVERY. Solid Cone SPT Test. Hard/very dense strata.		
					1.40	Complete at 1.40m		

Remarks Location scanned with CAT prior to drilling borehole. Borehole terminated due to SPT refusal at 1.4m. SPT cone switched to solid. Borehole not cased. No ground water encountered. Borehole backfilled with arisings.	Scale (approx)	Logged By
	1:25	WW
	Figure No. GH0-11.WS12	



Excavation Method Dando Terrier Window Sampler Rig with Split Barrel SPT Sampler.	Dimensions	Ground Level (mOD)	Client Gleeson Developments Ltd	Job Number GH0-11
	Location	Dates 29/09/2025	Project Contractor RP Drilling	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00-1.45	SPT N=4		1,1/1,1,1,1		(0.15)	Brown slightly clayey slightly gravelly sandy TOPSOIL. Sand is fine. Gravel is subrounded, of mudstone. Frequent rootlets. Dry.		
					0.15	MADE GROUND. Firm greyish brown gravelly clay. Gravel is fine to coarse subangular to angular, of mudstone and iron stone. Dry. Occasional coal fragments.		
2.00-2.45	SPT N=2		1,0/0,1,0,1		(1.15)			
					1.30	MADE GROUND. Soft very low borderline low strength orangish brown grey mottled clay. Dry.		
3.00-3.45	SPT N=5		2,1/1,1,1,2		(3.00)	At 2m: Becoming very soft, extremely low borderline very low strength. From 2m: Strata damp.		
					1.50	MADE GROUND. Soft very low borderline low strength dark brown grey mottled gravelly clay. Gravel is fine to coarse subangular to angular of mudstone shale and iron stone. Occasional fragments of Coal. Dry.		
4.00-4.45	SPT N=7		Water strike(1) at 4.00m. 2,1/1,2,2,2			At 2m: Becoming soft, low strength.		∇1
4.60-4.65	SPT 75*/50		25,50/		4.50	Extremely weak thinly laminated friable greyish brown MUDSTONE. Dry.		
					4.65	Complete at 4.65m		

Remarks Location scanned with CAT prior to drilling borehole. Borehole terminated due to SPT refusal at 4.65m. Borehole not cased. Strata were damp from 3m, and wet from 4m depth.. Borehole backfilled with arisings.	Scale (approx) 1:25	Logged By WW
	Figure No. GH0-11.WS13	



Excavation Method Dando Terrier Window Sampler Rig with SPT Sampler.	Dimensions		Ground Level (mOD)	Client Gleeson Developments Ltd	Job Number GH0-11
	Location		Dates 29/09/2025	Project Contractor RP Drilling	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10-0.10	D				(0.20) 0.20	Brown mottled grey slightly clayey slightly gravelly sandy TOPSOIL. Sand is fine. Gravel is subangular of mudstone. Frequent rootlets. Dry.		
0.50-0.50	D				(0.60)	Firm laminated friable brown slightly sandy CLAY. Sand is fine. Dry.		
1.00-1.36	SPT 50/210		25,14/12,12,14,12		0.80 (0.20) 1.00 (0.36) 1.36	Extremely weak yellowish brown fine SANDSTONE. NO RECOVERY. Solid Cone SPT Test. Hard/very dense strata.		
						Complete at 1.36m		

Remarks Location scanned with CAT prior to drilling borehole. Borehole terminated due to SPT refusal at 1.36m. SPT cone switched to solid. Borehole not cased. No ground water encountered. Borehole backfilled with arisings.	Scale (approx)	Logged By
	1:25	WW
	Figure No. GH0-11.WS14	

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: 418339.00 - 417964.00	Hole Type RO
Location: Kirkheaton, Huddersfield		Level: 134.00	Date 09/05/2019
Client: Cockley Developments Ltd		Plant Used: Casagrande C6	Scale 1:100
Hole Dia.:	Bit Used:	Flush: Air	Rig Crew: CA,CB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					3.70	130.30	MADE GROUND. Brown and grey slightly clayey sandy fine to coarse subangular GRAVEL of mixed lithologies, including sandstone, mudstone and siltstone. [Natural Arisings - Infilled opencast workings]	1 2 3	
							Grey MUDSTONE. [Pennine Lower Coal Measures]	4 5 6 7 8 9 10	
	▼				10.70	123.30	Very dark grey MUDSTONE	11	
					11.00	123.00	[Pennine Lower Coal Measures]		
					11.10	122.90	COAL traces.		
					11.70	122.30	[Better Bed Coal seam]	12	
					11.80	122.20	Very dark grey MUDSTONE		
					12.50	121.50	COAL traces.	13	
							[Better Bed Coal seam]	14	
							Very dark grey MUDSTONE		
							[Pennine Lower Coal Measures]	15	
					15.00	119.00	Grey MUDSTONE.		
							[Pennine Lower Coal Measures]	16	
							End of Borehole at 15.000m Coal traces added for positional purposes only.	17 18 19 20	

Groundwater: Strata wet from 11m
 Backfill: Backfilled on completion, with a cementitious grout plug at the base, followed by arisings, with the upper 1m comprising a bentonite seal.
 Casing: Drill casing not used.
 Remarks: Strata description is based on drillers logs and adjusted by the engineers observations.

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: 418341.00 - 417947.00	Hole Type RO
Location: Kirkheaton, Huddersfield		Level: 133.00	Date 09/05/2019
Client: Cockley Developments Ltd		Plant Used: Casagrande C6	Scale 1:100
Hole Dia.:	Bit Used:	Flush: Air	Rig Crew: CA, CB
			Logged AH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							MADE GROUND. Brown and grey slightly clayey sandy fine to coarse subangular GRAVEL of mixed lithologies, including sandstone, mudstone and siltstone.		1
							[Natural Arisings - Infilled opencast workings]		2
									3
									4
									5
									6
									7
									8
	▼								9
					11.50	121.50		Grey MUDSTONE.	11
								[Pennine Lower Coal Measures]	12
									13
									14
					15.00	118.00		End of Borehole at 15.000m	15
									16
									17
									18
									19
									20

Groundwater: Strata wet from 9m

Backfill: Backfilled on completion, with a cementitious grout plug at the base, followed by arisings, with the upper 1m comprising a bentonite seal.

Casing: Drill casing not used.

Remarks: Strata description is based on drillers logs and adjusted by the engineers observations.

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: 418294.00 - 417935.00	Hole Type RO
Location: Kirkheaton, Huddersfield		Level: 128.00	Date 09/05/2019
Client: Cockley Developments Ltd		Plant Used: Casagrande C6	Scale 1:100
Hole Dia.:	Bit Used:	Flush: Air	Rig Crew: CA,CB
			Logged AH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
	▼						MADE GROUND. Brown and grey slightly clayey sandy fine to coarse subangular GRAVEL of mixed lithologies, including sandstone, mudstone and siltstone. [Natural Arisings - Infilled opencast workings]	1 2 3 4 5	
				5.30	122.70		Grey MUDSTONE. [Pennine Lower Coal Measures]	6 7 8	
				9.00	119.00		End of Borehole at 9.000m	9 10 11 12 13 14 15 16 17 18 19 20	

Groundwater:

Backfill: Backfilled on completion, with a cementitious grout plug at the base, followed by arisings, with the upper 1m comprising a bentonite seal.

Casing: Drill casing not used.

Remarks: Strata description is based on drillers logs and adjusted by the engineers observations.

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: 418291.00 - 417886.00	Hole Type RO
Location: Kirkheaton, Huddersfield		Level: 126.00	Date 09/05/2019
Client: Cockley Developments Ltd		Plant Used: Casagrande C6	Scale 1:100
Hole Dia.:	Bit Used:	Flush: Air	Rig Crew: CA,CB
			Logged AH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							MADE GROUND. Brown and grey slightly clayey sandy fine to coarse subangular GRAVEL of mixed lithologies, including sandstone, mudstone and siltstone.		1
							[Natural Arisings - Infilled opencast workings]		2
					3.50	122.50	Light grey MUDSTONE.		3
							[Pennine Lower Coal Measures]		4
					6.20	119.80	COAL. Intact. Full flush returns.		5
					6.40	119.60			6
					6.60	119.40	[Better Bed Coal Seam]		7
					6.80	119.20	Light grey MUDSTONE.		8
							[Pennine Lower Coal Measures]		9
					9.00	117.00	COAL. Intact. Full flush returns.		10
							[Better Bed Coal Seam]		11
							Light grey MUDSTONE.		12
							[Pennine Lower Coal Measures]		13
							End of Borehole at 9.000m		14
									15
									16
									17
									18
									19
									20

Groundwater:

Backfill: Backfilled on completion, with a cementitious grout plug at the base, followed by arisings, with the upper 1m comprising a bentonite seal.

Casing: Drill casing not used.

Remarks: Strata description is based on drillers logs and adjusted by the engineers observations.

Project Name: Cockley Hill Lane

 Project No.
CKD/02

Co-ords: 418291.00 - 417881.00

 Hole Type
RO

Location: Kirkheaton, Huddersfield

Level: 125.00

 Date
09/05/2019

Client: Cockley Developments Ltd

Plant Used: Casagrande C6

 Scale
1:100


Hole Dia.:

Bit Used:

Flush: Air

Rig Crew: CA,CB

 Logged
AH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.00	124.00		Dark grey/dark brown sandy gravelly CLAY. Gravel is fine to coarse and sub-angular of sandstone and mudstone. [Residual soil derived from weathered bedrock] Light grey MUDSTONE. [Pennine Lower Coal Measures]	1
					4.50	120.50			2
					4.70	120.30		COAL. Intact. Full flush returns. [Better Bed Coal Seam] Light grey MUDSTONE. [Pennine Lower Coal Measures]	3
									4
									5
									6
									7
									8
					9.00	116.00		End of Borehole at 9.000m	9
									10
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20

Groundwater:

Backfill: Backfilled on completion, with a cementitious grout plug at the base, followed by arisings, with the upper 1m comprising a bentonite seal.

Casing: Drill casing not used.

Remarks: Strata description is based on drillers logs and adjusted by the engineers observations.

Project Name: Cockley Hill Lane

 Project No.
CKD/02

Co-ords: 418276.00 - 417878.00

 Hole Type
RO

Location: Kirkheaton, Huddersfield

Level: 124.00

 Date
09/05/2019

Client: Cockley Developments Ltd

Plant Used: Casagrande C6

 Scale
1:100








Hole Dia.:

Bit Used:

Flush: Air

Rig Crew: CA, CB

 Logged
AH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.00	123.00		Dark grey/dark brown sandy gravelly CLAY. Gravel is fine to coarse and sub-angular of sandstone and mudstone.	1
								[Residual soil derived from weathered bedrock] Light grey MUDSTONE.	2
					3.00	121.00		[Pennine Lower Coal Measures]	3
					3.20	120.80		COAL. Intact. Full flush returns.	3
								[Better Bed Coal Seam]	4
								Light grey MUDSTONE.	4
								[Pennine Lower Coal Measures]	5
									6
									7
									8
					9.00	115.00		End of Borehole at 9.000m	9
									10
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20












Groundwater:

Backfill: Backfilled on completion, with a cementitious grout plug at the base, followed by arisings, with the upper 1m comprising a bentonite seal.

Casing: Drill casing not used.

Remarks: Strata description is based on drillers logs and adjusted by the engineers observations.

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: 418265.00 - 417867.00	Hole Type RO
Location: Kirkheaton, Huddersfield		Level: 123.00	Date 09/05/2019
Client: Cockley Developments Ltd		Plant Used: Casagrande C6	Scale 1:100
Hole Dia.:	Bit Used:	Flush: Air	Rig Crew: CA, CB
			Logged AH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.00	122.00		Dark grey/dark brown sandy gravelly CLAY. Gravel is fine to coarse and sub-angular of sandstone and mudstone.	1
								[Residual soil derived from weathered bedrock]	
					2.80	120.20		[Pennine Lower Coal Measures]	
					3.20	119.80		COAL. Intact. Full flush returns.	3
								[Better Bed Coal Seam]	
								Light grey MUDSTONE.	4
								[Pennine Lower Coal Measures]	5
									6
									7
									8
					9.00	114.00		End of Borehole at 9.000m	9
									10
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20













Groundwater:

Backfill: Backfilled on completion, with a cementitious grout plug at the base, followed by arisings, with the upper 1m comprising a bentonite seal.

Casing: Drill casing not used.

Remarks: Strata description is based on drillers logs and adjusted by the engineers observations.

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: 418265.00 - 417861.00	Hole Type RO
Location: Kirkheaton, Huddersfield		Level: 122.00	Date 09/05/2019
Client: Cockley Developments Ltd		Plant Used:	Scale 1:100
Hole Dia.:	Bit Used:	Flush: Air	Rig Crew: Casagrande C6
			Logged CA,CB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.80	121.20		Dark grey/dark brown sandy gravelly CLAY. Gravel is fine to coarse and sub-angular of sandstone and mudstone.	1
					2.00	120.00		[Residual soil derived from weathered bedrock]	
					2.40	119.60		Light grey MUDSTONE.	2
								[Pennine Lower Coal Measures]	
								COAL. Intact. Full flush returns.	3
								[Better Bed Coal Seam]	
								Light grey MUDSTONE.	4
								[Pennine Lower Coal Measures]	5
									6
									7
									8
					9.00	113.00			9
								End of Borehole at 9.000m	10
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20









Groundwater:

Backfill: Backfilled on completion, with a cementitious grout plug at the base, followed by arisings, with the upper 1m comprising a bentonite seal.

Casing: Drill casing not used.

Remarks: Strata description is based on drillers logs and adjusted by the engineers observations.

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: 418255.48 - 417849.09	Hole Type RO
Location: Kirkheaton, Huddersfield		Level: 121.00	Date 09/05/2019
Client: Cockley Developments Ltd		Plant Used: Casagrande C6	Scale 1:100
Hole Dia.:	Bit Used:	Flush: Air	Rig Crew: CA,CB
			Logged AH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.70	120.30		Dark grey/dark brown sandy gravelly CLAY. Gravel is fine to coarse and sub-angular of sandstone and mudstone.	1
					1.70	119.30		[Residual soil derived from weathered bedrock]	
					1.90	119.10		Light grey MUDSTONE.	2
								[Pennine Lower Coal Measures]	
								COAL. Intact. Full flush returns.	3
								[Better Bed Coal Seam]	
								Light grey MUDSTONE.	4
								[Pennine Lower Coal Measures]	5
									6
									7
									8
					9.00	112.00		End of Borehole at 9.000m	9
									10
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20


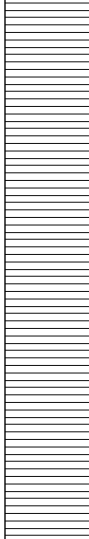
Groundwater:

Backfill: Backfilled on completion, with a cementitious grout plug at the base, followed by arisings, with the upper 1m comprising a bentonite seal.

Casing: Drill casing not used.

Remarks: Strata description is based on drillers logs and adjusted by the engineers observations.

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: 418244.00 - 417857.00	Hole Type RO
Location: Kirkheaton, Huddersfield		Level: 120.00	Date 09/05/2019
Client: Cockley Developments Ltd		Plant Used: Casagrande C6	Scale 1:100
Hole Dia.:	Bit Used:	Flush: Air	Rig Crew: CA,CB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.80	119.20		Dark grey/dark brown sandy gravelly CLAY. Gravel is fine to coarse and sub-angular of sandstone and mudstone. [Residual soil derived from weathered bedrock] Light grey MUDSTONE. [Pennine Lower Coal Measures]	1
					9.00	111.00		End of Borehole at 9.000m	2-9

Groundwater:


Backfill: Backfilled on completion, with a cementitious grout plug at the base, followed by arisings, with the upper 1m comprising a bentonite seal.

Casing: Drill casing not used.

Remarks: Strata description is based on drillers logs and adjusted by the engineers observations.

RrRO_v1.03

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: 418349.00 - 417979.00	Hole Type RO
Location: Kirkheaton, Huddersfield		Level: 134.00	Date 10/05/2019
Client: Cockley Developments Ltd		Plant Used: Casagrande C6	Scale 1:100
Hole Dia.:	Bit Used:	Flush: Air	Rig Crew: CA,CB
			Logged CA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.00	133.00		Dark grey/dark brown sandy gravelly CLAY (Drillers Description). [Residual soil derived from weathered bedrock] Grey MUDSTONE (Drillers Description). [Pennine Lower Coal Measures]	1
									2
									3
									4
									5
									6
									7
									8
									9
									10
									11
									12
					12.90	121.10		Dark MUDSTONE (Drillers Description).	13
					13.10	120.90			
					13.20	120.80		[Pennine Lower Coal Measures]	
					13.80	120.20		COAL traces. (Drillers Description)	14
					13.90	120.10			
					14.50	119.50		[Better Bed Coal Seam]	
								Dark MUDSTONE. (Drillers Description)	15
								[Pennine Lower Coal Measures]	
								COAL traces. (Drillers Description)	16
								[Better Bed Coal Seam]	
								Dark MUDSTONE. (Drillers Description)	17
								[Pennine Lower Coal Measures]	
					18.00	116.00		Grey MUDSTONE with sandstone bands (Drillers Description).	18
								[Pennine Lower Coal Measures]	
								End of Borehole at 18.000m Coal traces added for positional purposes only.	19
									20





Groundwater: Strata wet from 12m.

Backfill: Backfilled on completion, with a cementitious grout plug at the base, followed by arisings, with the upper 1m comprising a bentonite seal.

Casing: Drill casing not used.

Remarks: Strata description is based on drillers logs and adjusted by the engineers observations. Coal seams shown are indicative only.

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: 418342.00 - 417983.00	Hole Type RO
Location: Kirkheaton, Huddersfield		Level: 134.00	Date 10/05/2019
Client: Cockley Developments Ltd		Plant Used: Casagrande C6	Scale 1:100
Hole Dia.:	Bit Used:	Flush: Air	Rig Crew: CA,CB
			Logged CA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.20	132.80		Dark grey/dark brown sandy gravelly CLAY (Drillers Description). [Residual soil derived from weathered bedrock] Grey MUDSTONE (Drillers Description). [Lower Pennine Coal Measures]	1 2 3 4 5 6 7 8 9 10 11 12
	▼				12.70	121.30		SOFT GROUND. No returns, (Drillers Description).	13
					14.00	120.00		[Probable backfilled working in the Better Bed Coal Seam]	14
					15.00	119.00		SOLID GROUND. No returns, (Drillers Description). Probable Pennine Lower Coal Measures]	15
								End of Borehole at 15.000m	16 17 18 19 20


Groundwater: Strata wet from 9m.

Backfill: Backfilled on completion, with a cementitious grout plug at the base, followed by arisings, with the upper 1m comprising a bentonite seal.

Casing: Drill casing not used.

Remarks: Strata description is based on drillers logs and adjusted by the engineers observations.

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: 418365.00 - 417989.00	Hole Type RO
Location: Kirkheaton, Huddersfield		Level: 137.00	Date 10/05/2019
Client: Cockley Developments Ltd		Plant Used: Casagrande C6	Scale 1:100
Hole Dia.:	Bit Used:	Flush: Air	Rig Crew: CA,CB
			Logged CA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.20	135.80		Dark grey/dark brown sandy gravelly CLAY (Drillers Description). [Residual soil derived from weathered bedrock] Grey MUDSTONE (Drillers Description). [Pennine Lower Coal Measures]	1
									2
									3
									4
									5
									6
									7
									8
									9
									10
									11
	▼								12
									13
									14
				14.60	122.40			Dark MUDSTONE (Drillers Description).	15
				14.90	122.10				
				15.00	122.00			[Pennine Lower Coal Measures]	
				15.80	121.20			COAL traces (Drillers Description).	16
				15.90	121.10				
				16.20	120.80			[Better Bed Coal Seam]	17
								Dark MUDSTONE (Drillers Description).	
								[Pennine Lower Coal Measures]	18
				18.00	119.00			COAL traces (Drillers Description).	
								[Better Bed Coal Seam]	19
								Dark MUDSTONE (Drillers Description).	
								[Pennine Lower Coal Measures]	20

Groundwater: Strata wet from 12m
 Backfill: Backfilled on completion, with a cementitious grout plug at the base, followed by arisings, with the upper 1m comprising a bentonite seal.
 Casing: Drill casing not used.
 Remarks: Strata description is based on drillers logs and adjusted by the engineers observations. Coal seams shown are indicative only.

Rotary Drilling Log

Borehole No.

R113

Sheet 2 of 2

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: 418365.00 - 417989.00	Hole Type RO
Location: Kirkheaton, Huddersfield		Level: 137.00	Date 10/05/2019
Client: Cockley Developments Ltd		Plant Used: Casagrande C6	Scale 1:100
Hole Dia.:	Bit Used:	Flush: Air	Rig Crew: CA,CB
			Logged CA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Mudstone with sandstone bands (Drillers Description). [Pennine Lower Coal Measures] End of Borehole at 18.000m Coal traces added for positional purposes only.	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	

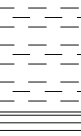




Groundwater: Strata wet from 12m

Backfill: Backfilled on completion, with a cementitious grout plug at the base, followed by arisings, with the upper 1m comprising a bentonite seal.

Casing: Drill casing not used.

Remarks: Strata description is based on drillers logs and adjusted by the engineers observations. Coal seams shown are indicative only.

Project Name: Cockley Hill Lane	Project No. CKD/02	Co-ords: 418360.00 - 418002.00	Hole Type RO
Location: Kirkheaton, Huddersfield		Level: 138.00	Date 10/05/2019
Client: Cockley Developments Ltd		Plant Used: Casagrande C6	Scale 1:100
Hole Dia.:	Bit Used:	Flush: Air	Rig Crew: CA,CB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.50	136.50		Dark grey/dark brown sandy gravelly CLAY (Drillers Description). [Residual soil derived from weathered bedrock] Grey MUDSTONE (Drillers Description). [Pennine Lower Coal Measures]	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
	▼				15.50	122.50		SOFT GROUND. No flush (Drillers Description).	
					16.00	122.00		[Probable backfilled working in the Better Bed Coal Seam]	
								SOLID GROUND. No flush (Drillers Description).	
					18.00	120.00		[Probable Pennine Lower Coal Measures]	
								End of Borehole at 18.000m	

Groundwater: Strata wet from 15m.

Backfill: Backfilled on completion, with a cementitious grout plug at the base, followed by arisings, with the upper 1m comprising a bentonite seal.

Casing: Drill casing not used.

Remarks: Strata description is based on drillers logs and adjusted by the engineers observations.



GROUND SOURCE DRILLING AND CONTRACTING

**DAILY RETURN
(DRILLING)**

Sheet No.	1
Date	Thursday 09/05/2019
Contract Name	COCKLEY HILL LANE - HUDDERSFIELD
Contract No.	5297
Working Day No.	1

Hole No.	Depth	Casing	Dia	Angle	From	To	Description
MOBILISED TO SITE :					PLANT	1 No.	CASAGRANDE C6 RIG
						1 No.	400 cfm COMPRESSOR
SITE ADDRESS - COCKLEY HILL LANE - HUDDERSFIELD						1 No.	VIVARO VAN
CLIENT - ARP ASSOCIATES						CREW	C. ATKINSON
							C. BROWN
DRILLING RIG AND ANCILLARY EQUIPMENT							M. COLE
LOADED UP IN GDC DEPOT AT 6.30am							J. BUTLER
ALL BOREHOLE POSITIONS / DEPTHS TO BE INSTRUCTED BY ENGINEER - COMMENCED DRILLING USING AIR FLUSHING METHODS							
R101	15.00	0.00	3 7/8"	V	0.00	0.40	TOPSOIL
					0.40	3.70	OVERBURDEN / BACKFILL
					3.70	10.70	MUDSTONE
FULL RETURNS MAINTAINED THROUGHOUT DRILLING					10.70	12.50	DARK MUDSTONE WITH COAL TRACES
BOREHOLE WET FROM 11.00 METRES					12.50	15.00	MUDSTONE / SANDSTONE BANDS
R102	15.00	0.00	3 7/8"	V	0.00	0.40	TOPSOIL
FULL RETURNS MAINTAINED THROUGHOUT DRILLING					0.40	11.50	BACKFILL
BOREHOLE WET FROM 9.00 METRES					11.50	15.00	MUDSTONE / SANDSTONE BANDS
R103	9.00	0.00	3 7/8"	V	0.00	0.40	TOPSOIL
FULL RETURNS MAINTAINED THROUGHOUT DRILLING					0.40	5.30	BACKFILL
BOREHOLE WET FROM 3.00 METRES					5.30	9.00	MUDSTONE / SANDSTONE BANDS
R104	9.00	0.00	3 7/8"	V	0.00	0.40	TOPSOIL
					0.40	3.50	BACKFILL
					3.50	6.20	MUDSTONE
					6.20	6.40	COAL
					6.40	6.60	MUDSTONE
FULL RETURNS MAINTAINED THROUGHOUT DRILLING					6.60	6.80	COAL
					6.80	9.00	MUDSTONE / SANDSTONE BANDS
R105	9.00	0.00	3 7/8"	V	0.00	0.40	TOPSOIL
					0.40	1.00	CLAY
					1.00	4.50	MUDSTONE
FULL RETURNS MAINTAINED THROUGHOUT DRILLING					4.50	4.70	COAL
					4.70	9.00	MUDSTONE / SANDSTONE BANDS
R106	9.00	0.00	3 7/8"	V	0.00	0.40	TOPSOIL
					0.40	1.00	CLAY
					1.00	3.00	MUDSTONE
FULL RETURNS MAINTAINED THROUGHOUT DRILLING					3.00	3.20	COAL
					3.20	9.00	MUDSTONE / SANDSTONE BANDS
6	66.00	0.00	Sheet Total		Crew		Plant
0	0.00	0.00	Previous Sheet Total		C. ATKINSON	C. BROWN	CASAGRANDE C6 RIG
6	66.00	0.00	Cumulative Total		M. COLE	J. BUTLER	400 cfm COMPRESSOR
					N. LEADBEATER		Client Copy
Signed By G.D.C.					Date		Q.S. Copy
Signed By Client					Date		Site Copy

NO CLAIM CAN BE ACCEPTED UNLESS REPORTED IN WRITING WITHIN 14 DAYS OF THIS RETURN



GROUND SOURCE DRILLING AND CONTRACTING

**DAILY RETURN
(DRILLING)**

Sheet No.	1
Date	Friday 10/05/2019
Contract Name	COCKLEY HILL LANE - HUDDERSFIELD
Contract No.	5297
Working Day No.	2

Hole No.	Depth	Casing	Dia	Angle	From	To	Description
R110	9.00	0.00	3 7/8"	V	0.00	0.40	TOPSOIL
					0.40	0.80	BACKFILL
FULL RETURNS MAINTAINED THROUGHOUT DRILLING					0.80	9.00	MUDSTONE / SANDSTONE BANDS
R111	18.00	0.00	3 7/8"	V	0.00	0.40	TOPSOIL
					0.40	1.00	CLAY
FULL RETURNS MAINTAINED THROUGHOUT DRILLING					1.00	12.90	MUDSTONE
WET FROM 12.00 METRES					12.90	14.50	DARK MUDSTONE WITH COAL TRACES
					14.50	18.00	MUDSTONE / SANDSTONE BANDS
R112	15.00	0.00	3 7/8"	V	0.00	0.40	TOPSOIL
					0.40	1.20	CLAY
WET FROM 9.00 METRES					1.20	12.70	MUDSTONE
NO RETURNS FROM 12.70 METRES					12.70	14.00	SOFT GROUND
					14.00	15.00	SOLID GROUND
R113	18.00	0.00	3 7/8"	V	0.00	0.40	TOPSOIL
					0.40	1.20	CLAY
FULL RETURNS MAINTAINED THROUGHOUT DRILLING					1.20	14.60	MUDSTONE
WET FROM 12.00 METRES					14.60	16.20	DARK MUDSTONE WITH COAL TRACES
					16.20	18.00	MUDSTONE / SANDSTONE BANDS
R114	18.00	0.00	3 7/8"	V	0.00	0.40	TOPSOIL
					0.40	1.50	CLAY
WET FROM 15.00 METRES					1.50	15.50	MUDSTONE
NO RETURNS FROM 15.50 METRES					15.50	16.00	SOFT GROUND
					16.00	18.00	SOLID GROUND
NO ABNORMAL GAS LEVELS DETECTED IN ALL HOLES DRILLED							
ALL BOREHOLES BACKFILLED USING DRILLING ARISINGS WITH A CEMENT / BENTONITE SEAL FORMED UP TO SURFACE							
NO FURTHER BOREHOLE POSITIONS ISSUED BY ENGINEER							
CONTRACT COMPLETED - COMMENCED DEMOBILISATION							
MATERIALS USED :							10 No. 25kg BAGS OF BENTONITE PELLETS
							10 No. 25kg BAGS OF CEMENT
5	78.00	0.00	Sheet Total		Crew		Plant
9	93.00	0.00	Previous Sheet Total		C.ATKINSON	C.BROWN	CASAGRANDE C6 RIG
14	171.00	0.00	Cummulative Total		M.COLE	J.BUTLER	400 cfm COMPRESSOR
Signed By G.D.C.							N.LEADBEATER
Signed By Client							Client Copy
Date							11/05/19
Date							Q.S. Copy
							Site Copy

NO CLAIM CAN BE ACCEPTED UNLESS REPORTED IN WRITING WITHIN 14 DAYS OF THIS RETURN

Project Id: CKD/02

Project Title: Cockley Hill Lane

Location: Kirkheaton, Huddersfield

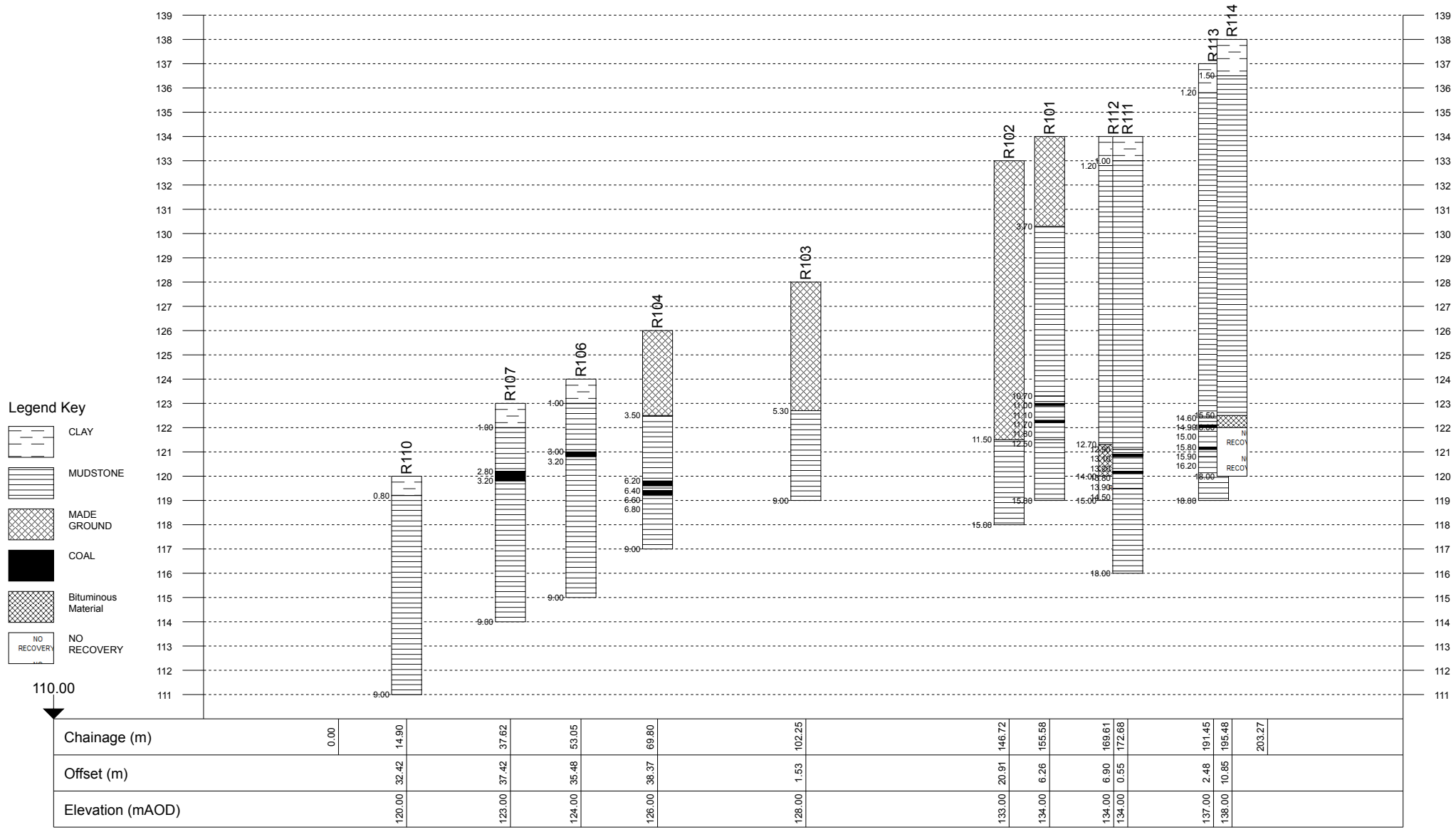
Client: Cockley Developments Ltd

Title: Section Line 1 - Northern Fault Block - Long Section

Vertical Scale: 1:222

Horizontal Scale: 1:1178

Engineer: EGH



Project Id: CKD/02

Project Title: Cockley Hill Lane

Location: Kirkheaton, Huddersfield

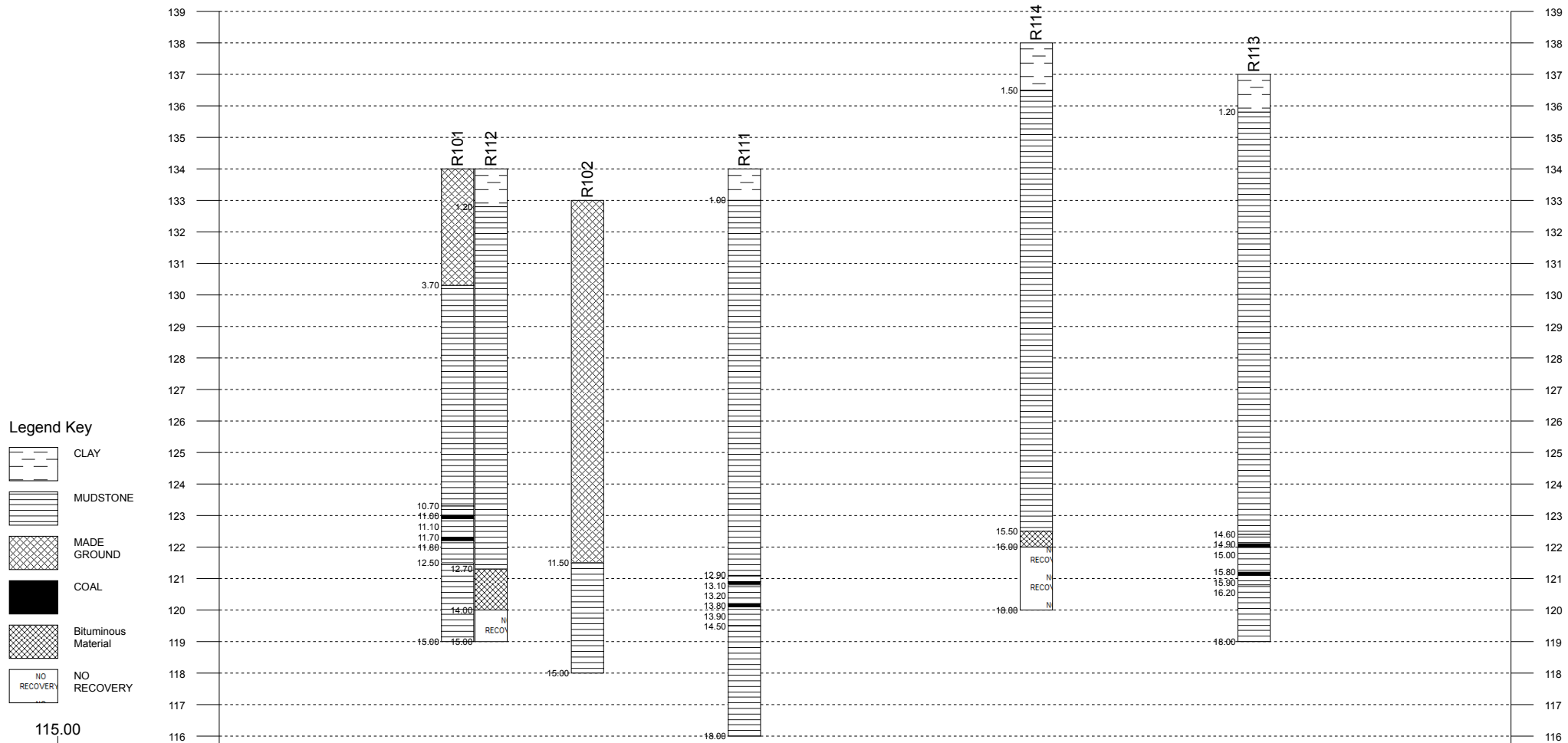
Client: Cockley Developments Ltd







Title: Section Line 2 - Northern Fault Block - NE Site

Vertical Scale: 1:184

Horizontal Scale: 1:169

Engineer: EGH



- Legend Key**
-  CLAY
 -  MUDSTONE
 -  MADE GROUND
 -  COAL
 -  Bituminous Material
 -  NO RECOVERY

115.00

Chainage (m)	0.00	2.71	3.69	6.50	11.07	19.58	25.93	29.07
Offset (m)		12.46	6.75	29.16	3.51	27.54	15.14	
Elevation (mAOD)		134.00	134.00	133.00	134.00	138.00	137.00	

Project Id: CKD/02

Project Title: Cockley Hill Lane

Location: Kirkheaton, Huddersfield

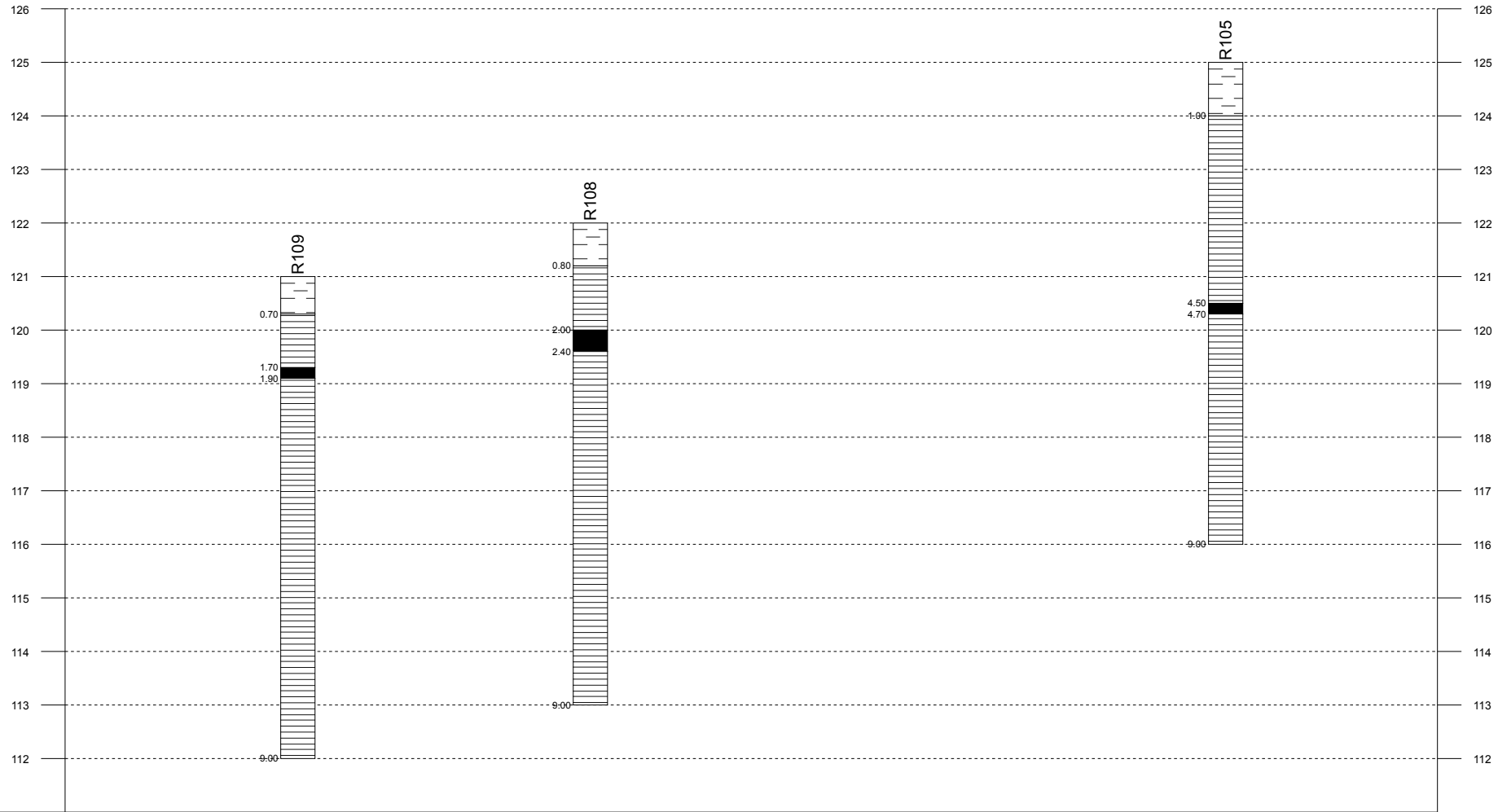
Client: Cockley Developments Ltd

Title: Section Line 3 -Southern Fault Block

Vertical Scale: 1:115

Horizontal Scale: 1:317

Engineer: EGH



Legend Key

- CLAY
- MUDSTONE
- COAL

111.00

Chainage (m)	0.00	4.03	19.09	51.78	54.86
Offset (m)		4.77	7.19	4.50	
Elevation (mAOD)		121.00	122.00	125.00	

APPENDIX J

LABORATORY TEST CERTIFICATES AND SCREENING VALUES



ARP GEOTECHNICAL LIMITED
IMPORTED SOIL CONTAMINANT SCREENING VALUES
RESIDENTIAL WITH HOME-GROWN PRODUCE

Determinand	S4UL (unless stated otherwise) (mg/kg)			C4SL (mg/kg)		
	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM
Arsenic	37			37		
Cadmium	11			22		
Chromium (trivalent) (MAFF)	400					
Chromium (hexavalent)	6			21		
Copper (MAFF)	80#					
Lead				200		
Inorganic Mercury	40			200		
Nickel (MAFF)	50#					
Selenium	250					
Zinc (MAFF)	200#					
Acidity (pH)	*Should be Greater Than 5			*Should be Greater Than 5		
	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM
Naphthalene	2.3	5.6	13	15	36	85
Acenaphthylene	170	420	920			
Acenaphthene	210	510	1,100			
Fluorene	170	400	860			
Phenanthrene	95	220	440			
Anthracene	2,400	5,400	11,000			
Fluoranthene	280	560	890			
Pyrene	620	1,200	2,000			
Benzo(a)anthracene	7.2	11	13			
Chrysene	15	22	27			
Benzo(b)fluoranthene	2.6	3.3	3.7			
Benzo(k)fluoranthene	77	93	100			
Benzo(a)pyrene	2.2	2.7	3			5
Indeno(1,2,3-cd)pyrene	27	36	41			
Dibenzo(a,h)anthracene	0.24	0.28	0.30			
Benzo(g,h,i)perylene	320	340	350			
Phenols	120	200	380			
Total TPH	*Above 500, speciate and compare with values below:					
C5 to C6 Aliphatic	42	78	160			
C6 to C8 Aliphatic	100	230	530			
C8 to C10 Aliphatic	27	65	150			
C10 to C12 Aliphatic	130	330	760			
C12 to C16 Aliphatic	1100	2,400	4,300			
C16 to C35 Aliphatic	65,000	92,000	110,000			
C35 TO C44 Aliphatic	65,000	92,000	110,000			
C5 to C7 Aromatic (Benzene)	70	140	300			
C7 to C8 Aromatic (Toluene)	130	290	660			
C8 to C10 Aromatic	34	83	190			
C10 to C12 Aromatic	74	180	380			
C12 to C16 Aromatic	140	330	660			
C16 to C21 Aromatic	260	540	930			
C21 TO C35 Aromatic	1100	1,500	1,700			
C35 TO C44 Aromatic	1100	1,500	1,700			
Asbestos	*Should be None Detected			*Should be None Detected		

* In House Value/Approach S4UL = Suitable 4 Use Level, CIEH/LQM 2014 C4SL = Cat 4 Screening Level, DEFRA, 2014

Blank cell indicates no published value or in-house value. Some values presented are above saturation limits.

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MAFF: Ministry of Agriculture, Fisheries and Food - "Code of Good Agricultural Practice for the Protection of Soil

#pH dependent. If exceeded, to be compared against appropriate MAFF value for the pH



ARP GEOTECHNICAL LIMITED
SOIL CONTAMINANT SCREENING VALUES
PUBLIC OPEN SPACE NEAR RESIDENTIAL

Determinand	S4UL (mg/kg)			C4SL (mg/kg)		
Arsenic	79			79		
Cadmium	120			220		
Chromium (trivalent)	1500					
Chromium (hexavalent)	7.7			21		
Copper	12000					
Lead				630		
Inorganic Mercury	120			610		
Nickel	230					
Selenium	1100					
Zinc	81000					
Acidity (pH)	*Should be Greater Than 5					
	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM
Naphthalene**	4900	4900	4900	11,000	15,000	17,000
Acenaphthylene	15000	15000	15000			
Acenaphthene	15000	15000	15000			
Fluorene	9900	9900	9900			
Phenanthrene	3100	3100	3100			
Anthracene	74000	74000	74000			
Fluoranthene	3100	3100	3100			
Pyrene	7400	7400	7400			
Benzo(a)anthracene	29	29	29			
Chrysene	57	57	57			
Benzo(b)fluoranthene	7.1	7.2	7.2			
Benzo(k)fluoranthene	190	190	190			
Benzo(a)pyrene	5.7	5.7	5.7			10
Indeno(1,2,3-cd)pyrene	82	82	82			
Dibenzo(a,h)anthracene	0.57	0.57	0.57			
Benzo(g,h,i)perylene	640	640	640			
Phenols	440	690	1300			
Total TPH	*Above 3,800, speciate and compare with values below:					
C5 to C6 Aliphatic	570000	590000	600000			
C6 to C8 Aliphatic	600000	610000	620000			
C8 to C10 Aliphatic	13000	13000	13000			
C10 to C12 Aliphatic	13000	13000	13000			
C12 to C16 Aliphatic	13000	13000	13000			
C16 to C35 Aliphatic	250000	250000	250000			
C35 TO C44 Aliphatic	250000	250000	250000			
C5 to C7 Aromatic (Benzene)	56000	56000	56000			
C7 to C8 Aromatic (Toluene)	56000	56000	56000			
C8 to C10 Aromatic	5000	5000	5000			
C10 to C12 Aromatic	5000	5000	5000			
C12 to C16 Aromatic	5100	5100	5000			
C16 to C21 Aromatic	3800	3800	3800			
C21 TO C35 Aromatic	3800	3800	3800			
C35 TO C44 Aromatic	3800	3800	3800			
Asbestos	*Should be None Detected			*Should be None Detected		

* In House Value/Approach S4UL = Suitable 4 Use Level, CIEH/LQM 2014 C4SL = Cat 4 Screening Level, DEFRA, 2014

Blank cell indicates no published value or in-house value. Some values presented are above saturation limits. considered separately.

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ARP GEOTECHNICAL LTD
Chartered Consulting Engineers

CONTROLLED WATERS SCREENING VALUES

Determinand	Screening Value for Potable Use * (µg/l)	Screening Value for Environment # (µg/l)
Arsenic	10	50
Boron	1000	2000
Cadmium	5	0.08-0.25
Chromium (total)	50	4.7
Copper	2000	1-28
Lead	10	7.2
Mercury	1	0.05
Selenium	10	-
Nickel	20	20
Zinc	5000	8-125
Sulphate	250,000	400,000
pH	6.5-10	6-9
Anthracene	-	0.1
Benzo(a)pyrene	0.01	0.05
Benzo(b)fluoranthene	Sum (4) <0.1	Sum (2) <0.03
Benzo(k)fluoranthene		Sum (2) <0.002
Benzo(g,h,i)perylene		
Indeno(1,2,3-c,d)pyrene		
Fluoranthene	-	0.1
Naphthalene	-	2.4
Phenols	0.5 (BWR)	7.7
Benzene	1	10
Toluene	700 (WHO)	50
Ethylbenzene	300 (WHO)	-
Xylene	30 (WHO)	30
Total TPH	-	200 (SWAD)

JUNE 2014

Sources, unless indicated otherwise above:

* = UK Drinking Water Standards (DWS)

= Environmental Quality Standards (EQS), hardness dependent where range shown.

WHO = World Health Organisation Drinking Water

BWR = Bathing Water (Classification) Regulations 1991

SWAD = Surface Water (Abstraction for Drinking Water) (Classification) Regulations 1996



Certificate of Analysis

Certificate Number 16-73934

29-Jul-16

Client ARP Geotechnical
5/6 Northwest Business Park
Servia Hill
Leeds
LS6 2QH

Our Reference 16-73934

Client Reference CKD/01

Order No (not supplied)

Contract Title Cockley Hill Lane, Kirkheaton

Description 12 Soil samples.

Date Received 25-Jul-16

Date Started 25-Jul-16

Date Completed 29-Jul-16

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the scope of UKAS accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

A handwritten signature in black ink, appearing to read "Rob Brown".

Rob Brown
Business Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 16-73934

Client Ref CKD/01

Contract Title Cockley Hill Lane, Kirkheaton

Lab No	1028404	1028405	1028406	1028407	1028408	1028409
Sample ID	TP1	TP1	TP2	TP3	TP4	TP6
Depth	1.20-1.50	3.20-3.50	0.00-0.20	0.00-0.30	0.00-0.20	0.00-0.20
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	18/07/16	18/07/16	18/07/16	18/07/16	18/07/16	18/07/16
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Metals									
Arsenic mg/kg	DETSC 2301#	0.2	mg/kg	7.0	11	50	51	46	47
Cadmium mg/kg	DETSC 2301#	0.1	mg/kg	< 0.1	< 0.1	0.4	0.3	0.4	0.3
Chromium III mg/kg	DETSC 2301*	0.15	mg/kg	23	19	29	28	32	20
Chromium, Hexavalent mg/kg	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper mg/kg	DETSC 2301#	0.2	mg/kg	40	42	48	45	44	40
Lead mg/kg	DETSC 2301#	0.3	mg/kg	23	24	75	75	81	90
Mercury mg/kg	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	0.09	0.10	0.10	0.16
Nickel mg/kg	DETSC 2301#	1	mg/kg	37	39	27	28	28	21
Selenium mg/kg	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	0.5	1.1	1.4	< 0.5
Zinc mg/kg	DETSC 2301#	1	mg/kg	91	94	100	98	100	77
Inorganics									
pH	DETSC 2008#			7.4	6.2	6.2	6.2	6.1	5.3
Organic matter %	DETSC 2002#	0.1	%	2.9	4.4	8.2	5.5	6.2	7.7
Sulphate Aqueous Extract as SO4 mg/l	DETSC 2076#	10	mg/l	240	740	39	33	32	13
Sulphate as SO4, Total %	DETSC 2321#	0.01	%	0.07	0.19	0.11	0.08	0.10	0.10
Petroleum Hydrocarbons									
EPH (C10-C40) mg/kg	DETSC 3311#	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
PAHs									
Naphthalene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1
Acenaphthylene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1
Fluorene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1
Phenanthrene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	1.1	< 0.1
Anthracene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1
Fluoranthene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.1	1.3	< 0.1
Pyrene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.2	1.1	< 0.1
Benzo(a)anthracene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.5	< 0.1
Chrysene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.5	< 0.1
Benzo(b)fluoranthene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH Total mg/kg	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	5.3	< 1.6
Phenols									
Phenol - Monohydric mg/kg	DETSC 2130#	0.3	mg/kg	< 0.3	0.5	1.0	0.5	0.8	0.7

Summary of Chemical Analysis

Soil Samples

Our Ref 16-73934

Client Ref CKD/01

Contract Title Cockley Hill Lane, Kirkheaton

Lab No	1028410	1028411	1028412	1028413	1028414	1028415
Sample ID	TP7	TP8	TP9	TP10	TP11	TP12
Depth	0.00-0.20	0.00-0.20	0.00-0.30	0.00-0.20	0.00-0.20	0.00-0.30
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	18/07/16	18/07/16	18/07/16	18/07/16	18/07/16	18/07/16
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Metals									
Arsenic mg/kg	DETSC 2301#	0.2	mg/kg	39	57	54	66	51	61
Cadmium mg/kg	DETSC 2301#	0.1	mg/kg	0.2	0.5	0.4	0.4	0.4	0.6
Chromium III mg/kg	DETSC 2301*	0.15	mg/kg	17	28	31	30	27	36
Chromium, Hexavalent mg/kg	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper mg/kg	DETSC 2301#	0.2	mg/kg	33	52	72	60	50	64
Lead mg/kg	DETSC 2301#	0.3	mg/kg	66	110	120	110	110	140
Mercury mg/kg	DETSC 2325#	0.05	mg/kg	0.15	0.25	0.22	0.22	0.16	0.20
Nickel mg/kg	DETSC 2301#	1	mg/kg	20	28	32	25	26	32
Selenium mg/kg	DETSC 2301#	0.5	mg/kg	0.5	0.8	1.0	0.8	< 0.5	1.3
Zinc mg/kg	DETSC 2301#	1	mg/kg	76	120	160	120	110	130
Inorganics									
pH	DETSC 2008#			6.3	6.2	6.3	5.3	5.3	5.5
Organic matter %	DETSC 2002#	0.1	%	6.1	7.1	7.2	9.8	9.7	9.1
Sulphate Aqueous Extract as SO4 mg/l	DETSC 2076#	10	mg/l	13	18	15	15	17	17
Sulphate as SO4, Total %	DETSC 2321#	0.01	%	0.06	0.11	0.09	0.14	0.14	0.13
Petroleum Hydrocarbons									
EPH (C10-C40) mg/kg	DETSC 3311#	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
PAHs									
Naphthalene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene mg/kg	DETSC 3301	0.1	mg/kg	0.2	0.2	0.4	0.2	0.2	< 0.1
Anthracene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	0.1	0.1	< 0.1	< 0.1	< 0.1
Fluoranthene mg/kg	DETSC 3301	0.1	mg/kg	0.3	0.4	0.5	0.3	0.5	< 0.1
Pyrene mg/kg	DETSC 3301	0.1	mg/kg	0.2	0.4	0.4	0.3	0.5	< 0.1
Benzo(a)anthracene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	0.2	0.3	< 0.1	< 0.1	< 0.1
Chrysene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	0.2	0.2	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene mg/kg	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH Total mg/kg	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	2.0	< 1.6	< 1.6	< 1.6
Phenols									
Phenol - Monohydric mg/kg	DETSC 2130#	0.3	mg/kg	0.4	0.7	0.5	1.0	1.0	1.0

Summary of Asbestos Analysis

Soil Samples

Our Ref 16-73934

Client Ref CKD/01

Contract Title Cockley Hill Lane, Kirkheaton

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1028404	TP1 1.20-1.50	SOIL	NAD	none	J Woodmansey
1028405	TP1 3.20-3.50	SOIL	NAD	none	J Woodmansey
1028406	TP2 0.00-0.20	SOIL	NAD	none	J Woodmansey
1028407	TP3 0.00-0.30	SOIL	NAD	none	J Woodmansey
1028408	TP4 0.00-0.20	SOIL	NAD	none	J Woodmansey
1028409	TP6 0.00-0.20	SOIL	NAD	none	J Woodmansey
1028410	TP7 0.00-0.20	SOIL	NAD	none	J Woodmansey
1028411	TP8 0.00-0.20	SOIL	NAD	none	J Woodmansey
1028412	TP9 0.00-0.30	SOIL	NAD	none	J Woodmansey
1028413	TP10 0.00-0.20	SOIL	NAD	none	J Woodmansey
1028414	TP11 0.00-0.20	SOIL	NAD	none	J Woodmansey
1028415	TP12 0.00-0.30	SOIL	NAD	none	J Woodmansey

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 16-73934
 Client Ref CKD/01
 Contract Cockley Hill Lane, Kirkheaton

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1028404	TP1 1.20-1.50 SOIL	18/07/16	GV, PG		
1028405	TP1 3.20-3.50 SOIL	18/07/16	GV, PG		
1028406	TP2 0.00-0.20 SOIL	18/07/16	GV, PG		
1028407	TP3 0.00-0.30 SOIL	18/07/16	GV, PG		
1028408	TP4 0.00-0.20 SOIL	18/07/16	GV, PG		
1028409	TP6 0.00-0.20 SOIL	18/07/16	GV, PG		
1028410	TP7 0.00-0.20 SOIL	18/07/16	GV, PG		
1028411	TP8 0.00-0.20 SOIL	18/07/16	GV, PG		
1028412	TP9 0.00-0.30 SOIL	18/07/16	GV, PG		
1028413	TP10 0.00-0.20 SOIL	18/07/16	GV, PG		
1028414	TP11 0.00-0.20 SOIL	18/07/16	GV, PG		
1028415	TP12 0.00-0.30 SOIL	18/07/16	GV, PG		

Key: G-Glass P-Plastic V-Vial G-Bag

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months



LABORATORY REPORT



4043

Contract Number: PSL16/3385

Report Date: 02 August 2016
Client's Reference: CKD/01/01
Client Name: ARP Associates
Northwest House
5/6 Northwest Business Park
Servia Hill
Leeds
LS6 2QH

For the attention of: Elliot Heatherington

Contract Title: Land At Cockley Lane, Kirkheaton
Date Received: 20/7/2016
Date Commenced: 20/7/2016
Date Completed: 2/8/2016

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

R Gunson
(Director)

A Watkins
(Director)

R Berriman
(Quality Manager)

D Lambe
(Senior Technician)

S Royle
(Senior Technician)

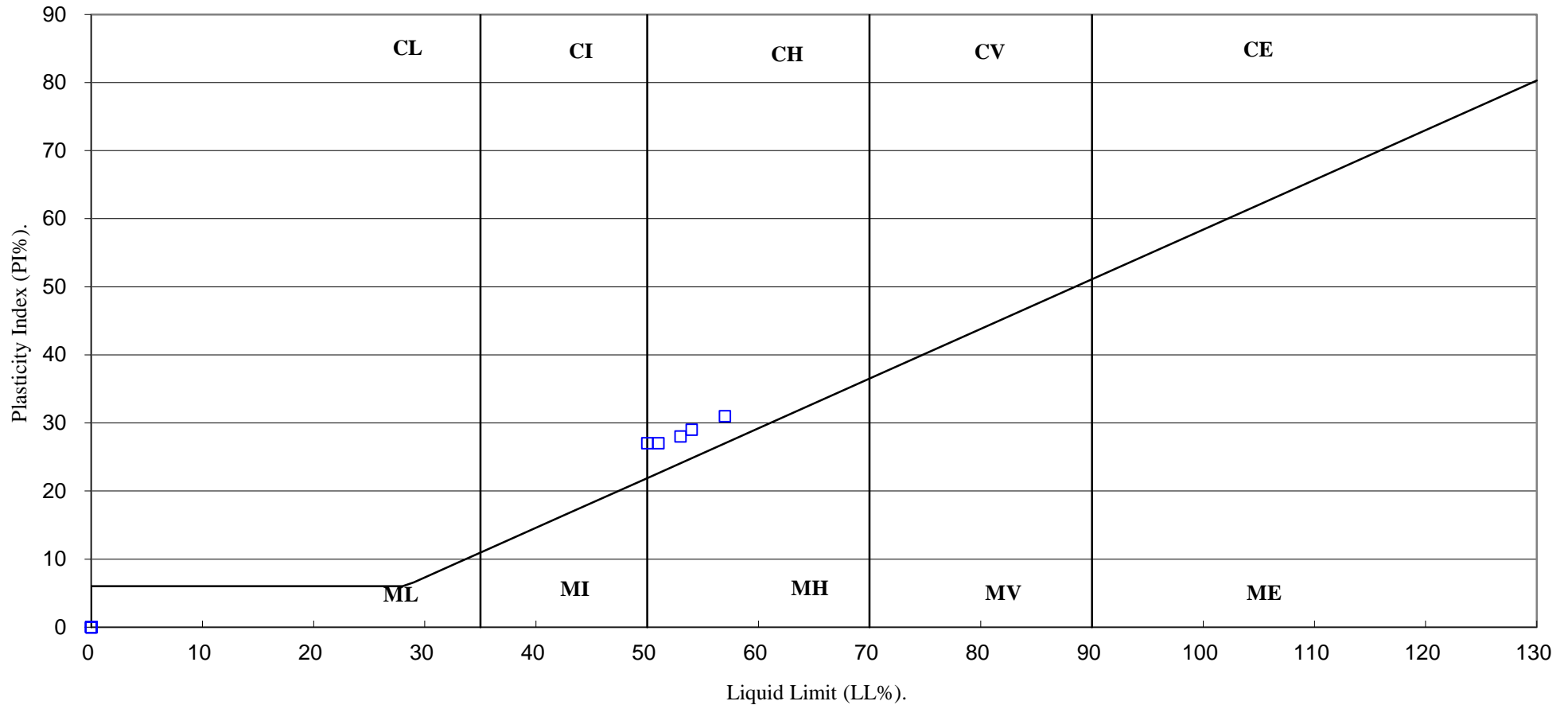
L Knight
(Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
tel: +44 (0)844 815 6641
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awatkins@prosoils.co.uk

Page 1 of

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(BS5930 :2015)



PSL
Professional Soils Laboratory

Checked /Approved

[Signature]

Date

02/08/16

Contract No:

PSL16/3385

Land At Cockley Lane, Kirkheaton

Client Ref:

CKD/01



Certificate of Analysis

Certificate Number 16-73870

28-Jul-16

Client Professional Soils Laboratory Ltd
5/7 Hexthorpe Road
Hexthorpe
DN4 0AR

Our Reference 16-73870

Client Reference PSL16/3385

Order No (not supplied)

Contract Title Land at Cockley Lane, Kirkheaton

Description 5 Soil samples.

Date Received 23-Jul-16

Date Started 23-Jul-16

Date Completed 28-Jul-16

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the scope of UKAS accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

A handwritten signature in black ink, appearing to read "Rob Brown".

Rob Brown
Business Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 16-73870

Client Ref PSL16/3385

Contract Title Land at Cockley Lane, Kirkheaton

Lab No	1028160	1028161	1028162	1028163	1028164
Sample ID	TP3	TP4	TP5	TP8	TP10
Depth	1.50-1.80	0.50-0.80	0.50-0.80	1.20-1.40	1.60-1.80
Other ID					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	n/s	n/s	n/s	n/s	n/s
Sampling Time	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units					
Inorganics								
pH	DETSC 2008#			6.4	6.9	7.3	7.7	6.9
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	74	340	98	40	< 10

Information in Support of the Analytical Results

Our Ref 16-73870
 Client Ref PSL16/3385
 Contract Land at Cockley Lane, Kirkheaton

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1028160	TP3 1.50-1.80 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1028161	TP4 0.50-0.80 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1028162	TP5 0.50-0.80 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1028163	TP8 1.20-1.40 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1028164	TP10 1.60-1.80 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months



Certificate of Analysis

Certificate Number 16-73935

28-Jul-16

Client ARP Geotechnical
5/6 Northwest Business Park
Servia Hill
Leeds
LS6 2QH

Our Reference 16-73935

Client Reference CKD/01

Order No (not supplied)

Contract Title Cockley Hill Lane, Kirkheaton

Description 8 Soil samples.

Date Received 25-Jul-16

Date Started 25-Jul-16

Date Completed 28-Jul-16

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the scope of UKAS accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

A handwritten signature in black ink, appearing to read "Rob Brown".

Rob Brown
Business Manager



Summary of Chemical Analysis Soil Samples

Our Ref 16-73935

Client Ref CKD/01

Contract Title Cockley Hill Lane, Kirkheaton

Lab No	1028416	1028417	1028418	1028419	1028420	1028421	1028422	1028423
Sample ID	TP2	TP4	TP5	TP6	TP7	TP9	TP11	TP12
Depth	1.20-1.50	1.50-1.80	2.10-2.40	1.50-1.80	1.60-1.80	1.80-2.00	0.60-0.80	1.20-1.30
Other ID								
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	18/07/16	18/07/16	18/07/16	18/07/16	18/07/16	18/07/16	18/07/16	18/07/16
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units								
Inorganics											
pH	DETS 2008#			6.8	7.4	7.7	6.9	6.7	7.3	6.1	6.6
Sulphate Aqueous Extract as SO4	DETS 2076#	10	mg/l	11	< 10	11	< 10	12	17	< 10	< 10

Information in Support of the Analytical Results

Our Ref 16-73935
 Client Ref CKD/01
 Contract Cockley Hill Lane, Kirkheaton

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1028416	TP2 1.20-1.50 SOIL	18/07/16	GV, PG		
1028417	TP4 1.50-1.80 SOIL	18/07/16	GV, PG		
1028418	TP5 2.10-2.40 SOIL	18/07/16	GV, PG		
1028419	TP6 1.50-1.80 SOIL	18/07/16	GV, PG		
1028420	TP7 1.60-1.80 SOIL	18/07/16	GV, PG		
1028421	TP9 1.80-2.00 SOIL	18/07/16	GV, PG		
1028422	TP11 0.60-0.80 SOIL	18/07/16	GV, PG		
1028423	TP12 1.20-1.30 SOIL	18/07/16	GV, PG		

Key: G-Glass P-Plastic V-Vial G-Bag

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months



Certificate of Analysis

Certificate Number 16-85734

12-Dec-16

Client ARP Geotechnical
5/6 Northwest Business Park
Servia Hill
Leeds
LS6 2QH

Our Reference 16-85734

Client Reference CKD/01

Order No (not supplied)

Contract Title Cockley Hill, Kirkheaton

Description 3 Soil samples, 3 Leachate samples.

Date Received 05-Dec-16

Date Started 05-Dec-16

Date Completed 12-Dec-16

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the scope of UKAS accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

A handwritten signature in black ink, appearing to read 'Rob Brown', with a period at the end.

Rob Brown
Business Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 16-85734

Client Ref CKD/01

Contract Title Cockley Hill, Kirkheaton

Lab No	1094216	1094217	1094218
Sample ID	H1	H2	H3
Depth			
Other ID			
Sample Type	SOIL	SOIL	SOIL
Sampling Date	01/12/16	01/12/16	01/12/16
Sampling Time	n/s	n/s	n/s

Test	Method	LOD	Units			
Metals						
Arsenic Gastric % Bioaccessible (% of "Total As")	DETSC 2400*	0	%	25	19	25
Arsenic Gastric mg/kg Bioaccessible	DETSC 2400*	0.5	mg/kg	15	6.2	12
Arsenic Gastro Intestinal % Bioaccessible (% of "Total As")	DETSC 2400*	0	%	7.1	5.3	6.1
Arsenic Gastro Intestinal mg/kg Bioaccessible	DETSC 2400*	0.5	mg/kg	4.1	1.7	2.8
Arsenic	DETSC 2301#	0.2	mg/kg	58	32	46

Summary of Chemical Analysis

Leachate Samples

Our Ref 16-85734

Client Ref CKD/01

Contract Title Cockley Hill, Kirkheaton

Lab No	1094219	1094220	1094221
Sample ID	H1	H2	H3
Depth			
Other ID			
Sample Type	LEACHATE	LEACHATE	LEACHATE
Sampling Date	01/12/16	01/12/16	01/12/16
Sampling Time	n/s	n/s	n/s

Test	Method	LOD	Units			
Preparation						
NRA Leachate Preparation	DETS 036*			Y	Y	Y
Metals						
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.23	< 0.16	< 0.16

Information in Support of the Analytical Results

Our Ref 16-85734
 Client Ref CKD/01
 Contract Cockley Hill, Kirkheaton

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1094216	H1 SOIL	01/12/16	GV, PG		
1094217	H2 SOIL	01/12/16	GV, PG		
1094218	H3 SOIL	01/12/16	GV, PG		
1094219	H1 LEACHATE	01/12/16	GV, PG		
1094220	H2 LEACHATE	01/12/16	GV, PG		
1094221	H3 LEACHATE	01/12/16	GV, PG		

Key: G-Glass P-Plastic V-Vial G-Bag

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months



ANALYTICAL TEST REPORT

Contract no: 76910(1)
Contract name: Cockley Hill Lane, Kirkheaton
Client reference: CKD/02
Clients name: ARP Associates
Clients address: 5 & 6 Northwest Business Park
Servia Hill
Leeds
LS6 2QH

Samples received: 20 February 2019
Analysis started: 20 February 2019
Analysis completed: 07 March 2019
Report issued: 07 March 2019

This is a supplementary report to report number 76910 issued 27 February 2019.

Notes: Opinions and interpretations expressed herein are outside the UKAS accreditation scope. Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling. Methods, procedures and performance data are available on request. Results reported herein relate only to the material supplied to the laboratory. This report shall not be reproduced except in full, without prior written approval. Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed. BTEX compounds are identified by retention time only and may include interference from co-eluting compounds.

Key: U UKAS accredited test
M MCERTS & UKAS accredited test
\$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing
NAD No Asbestos Detected

Approved by:

John Campbell
Director

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
76910-1	TP1	0.00-0.35	Clayey Sand with Gravel	-	-	19.5
76910-2	TP2	0.10-0.20	Clayey Sand with Gravel	-	-	21.8
76910-3	TP3	0.00-0.15	Clayey Sand with Gravel	-	-	28.5
76910-4	TP3	2.60-3.00	Clay with Gravel	-	-	9.5
76910-5	TP4	1.00-1.20	Clay with Gravel	-	-	20.4
76910-6	TP5	0.00-0.10	Clay with Gravel	-	-	25.4
76910-7	TP5	1.00-1.10	Clay with Gravel	-	-	15.9
76910-8	TP8	1.00-1.20	Clay with Mudstone	-	-	9.5
76910-9	WS1	0.10-0.20	Sandy Clay with Gravel	-	-	23.2
76910-10	WS1	0.50-0.60	Sandy Clay with Gravel	-	-	23.5
76910-11	WS2	0.10-0.20	Sandy Clay with Gravel	-	-	32.1
76910-12	WS3	0.10-0.20	Sandy Clay with Gravel	-	-	27.8
76910-13	WS4	0.10-0.20	Sandy Clay with Gravel	-	-	26.2
76910-14	WS5	2.50-2.60	Sandy Clay with Gravel	-	-	28.3
76910-15	WS5	4.50-4.60	Sandy Clay with Gravel	-	-	12.0
76910-16	WS6	0.10-0.20	Sandy Clay with Gravel	-	-	21.2
76910-17	WS7	0.20-0.50	Sandy Clay with Gravel	-	-	17.6

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SOILS

Lab number			76910-1	76910-2	76910-3	76910-4	76910-5	76910-6
Sample id			TP1	TP2	TP3	TP3	TP4	TP5
Depth (m)			0.00-0.35	0.10-0.20	0.00-0.15	2.60-3.00	1.00-1.20	0.00-0.10
Date sampled			18/02/2019	18/02/2019	18/02/2019	18/02/2019	18/02/2019	18/02/2019
Test	Method	Units						
Arsenic (total)	CE127 ^M	mg/kg As	50	51	38	4.7	12	24
Arsenic (bioaccessible)	CE124	mg/kg As	7.1	-	-	-	-	-
Arsenic (bioaccessible fraction)	CE124	% w/w	14.3	-	-	-	-	-
Cadmium (total)	CE127 ^M	mg/kg Cd	0.3	0.2	0.3	<0.2	<0.2	0.3
Chromium (total)	CE127 ^M	mg/kg Cr	48	50	50	40	40	59
Chromium (III)	-	mg/kg CrIII	48	50	50	40	40	59
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1	<1	<1	<1
Copper (total)	CE127 ^M	mg/kg Cu	71	38	38	32	33	39
Lead (total)	CE127 ^M	mg/kg Pb	227	68	78	22	33	94
Mercury (total)	CE127 ^M	mg/kg Hg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel (total)	CE127 ^M	mg/kg Ni	36	28	31	46	36	33
Selenium (total)	CE127 ^M	mg/kg Se	1.3	1.2	1.3	1.0	1.2	1.4
Zinc (total)	CE127 ^M	mg/kg Zn	162	86	105	106	84	109
pH	CE004 ^M	units	7.8	7.4	7.3	7.6	7.2	7.3
Sulphate (2:1 water soluble)	CE061 ^M	mg/l SO ₄	32	15	25	56	92	12
Sulphate (total)	CE062 ^M	mg/kg SO ₄	971	479	901	305	356	578
Phenols (total)	CE078	mg/kg PhOH	0.7	1.4	0.8	<0.5	<0.5	1.0
Total Organic Carbon (TOC)	CE072 ^M	% w/w C	6.9	3.5	4.5	0.8	4.3	3.9
Estimate of OMC (calculated from TOC)	CE072 ^M	% w/w	11.9	6.0	7.7	1.3	7.4	6.8
PAH								
Naphthalene	CE087 ^M	mg/kg	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Acenaphthylene	CE087 ^M	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Acenaphthene	CE087 ^M	mg/kg	0.03	0.03	0.06	<0.02	<0.02	<0.02
Fluorene	CE087 ^U	mg/kg	0.03	<0.02	0.04	<0.02	<0.02	<0.02
Phenanthrene	CE087 ^M	mg/kg	0.77	0.26	0.41	0.04	0.06	0.27
Anthracene	CE087 ^U	mg/kg	0.36	0.09	0.11	<0.02	<0.02	0.14
Fluoranthene	CE087 ^M	mg/kg	1.35	0.34	0.40	<0.02	<0.02	0.96
Pyrene	CE087 ^M	mg/kg	1.19	0.31	0.37	<0.02	<0.02	0.89
Benzo(a)anthracene	CE087 ^U	mg/kg	0.65	0.19	0.22	<0.02	0.04	0.57
Chrysene	CE087 ^M	mg/kg	0.64	0.16	0.21	<0.03	<0.03	0.49
Benzo(b)fluoranthene	CE087 ^M	mg/kg	0.84	0.19	0.23	<0.02	<0.02	0.65
Benzo(k)fluoranthene	CE087 ^M	mg/kg	0.36	0.09	0.10	<0.03	<0.03	0.34
Benzo(a)pyrene	CE087 ^U	mg/kg	0.68	0.16	0.17	<0.02	<0.02	0.59
Indeno(123cd)pyrene	CE087 ^M	mg/kg	0.43	0.10	0.10	<0.02	<0.02	0.37
Dibenz(ah)anthracene	CE087 ^M	mg/kg	0.09	<0.02	<0.02	<0.02	<0.02	0.05
Benzo(ghi)perylene	CE087 ^M	mg/kg	0.42	0.07	0.07	<0.02	<0.02	0.33
PAH (total of USEPA 16)	CE087	mg/kg	7.88	1.99	2.47	<0.34	<0.34	5.67
TPH								
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	-	-	-	-	-	-
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	-	-	-	-	-	-
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	-	-	-	-	-	-

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SOILS

Lab number			76910-1	76910-2	76910-3	76910-4	76910-5	76910-6
Sample id			TP1	TP2	TP3	TP3	TP4	TP5
Depth (m)			0.00-0.35	0.10-0.20	0.00-0.15	2.60-3.00	1.00-1.20	0.00-0.10
Date sampled			18/02/2019	18/02/2019	18/02/2019	18/02/2019	18/02/2019	18/02/2019
Test	Method	Units						
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	-	-	-	-	-	-
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	-	-	-	-	-	-
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	-	-	-	-	-	-
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	-	-	-	-	-	-
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	-	-	-	-	-	-
VPH Aliphatic (>C5-C6)	CE067	mg/kg	-	-	-	-	-	-
VPH Aliphatic (>C6-C8)	CE067	mg/kg	-	-	-	-	-	-
VPH Aliphatic (>C8-C10)	CE067	mg/kg	-	-	-	-	-	-
EPH Aliphatic (>C10-C12)	CE068	mg/kg	-	-	-	-	-	-
EPH Aliphatic (>C12-C16)	CE068	mg/kg	-	-	-	-	-	-
EPH Aliphatic (>C16-C35)	CE068	mg/kg	-	-	-	-	-	-
EPH Aliphatic (>C35-C44)	CE068	mg/kg	-	-	-	-	-	-
VPH (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EPH (>C10-C35)	CE033	mg/kg	144	48	57	<7	<7	70
TPH (>C8-C35)	-	mg/kg	144	48	57	<10	<10	70
Subcontracted analysis								
Asbestos (qualitative)	\$	-	NAD	NAD	NAD	NAD	NAD	NAD

Chemtech Environmental Limited

SOILS

Lab number			76910-7	76910-8	76910-9	76910-10	76910-11	76910-12
Sample id			TP5	TP8	WS1	WS1	WS2	WS3
Depth (m)			1.00-1.10	1.00-1.20	0.10-0.20	0.50-0.60	0.10-0.20	0.10-0.20
Date sampled			18/02/2019	18/02/2019	18/02/2019	18/02/2019	18/02/2019	18/02/2019
Test	Method	Units						
Arsenic (total)	CE127 ^M	mg/kg As	8.6	10	9.0	25	49	48
Arsenic (bioaccessible)	CE124	mg/kg As	-	-	-	-	6.2	-
Arsenic (bioaccessible fraction)	CE124	% w/w	-	-	-	-	12.9	-
Cadmium (total)	CE127 ^M	mg/kg Cd	<0.2	<0.2	0.3	<0.2	0.2	0.3
Chromium (total)	CE127 ^M	mg/kg Cr	72	71	63	37	40	52
Chromium (III)	-	mg/kg CrIII	72	71	63	37	40	52
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1	<1	<1	<1
Copper (total)	CE127 ^M	mg/kg Cu	36	50	14	36	39	36
Lead (total)	CE127 ^M	mg/kg Pb	27	31	39	64	107	106
Mercury (total)	CE127 ^M	mg/kg Hg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel (total)	CE127 ^M	mg/kg Ni	53	68	14	23	24	30
Selenium (total)	CE127 ^M	mg/kg Se	1.9	1.7	0.9	1.2	1.5	1.5
Zinc (total)	CE127 ^M	mg/kg Zn	100	194	56	54	71	103
pH	CE004 ^M	units	7.7	7.6	7.1	5.0	5.6	5.7
Sulphate (2:1 water soluble)	CE061 ^M	mg/l SO ₄	<10	27	11	37	15	40
Sulphate (total)	CE062 ^M	mg/kg SO ₄	132	376	444	1226	1625	785
Phenols (total)	CE078	mg/kg PhOH	<0.5	<0.5	1.2	10	4.4	<0.5
Total Organic Carbon (TOC)	CE072 ^M	% w/w C	0.9	2.0	2.5	6.2	7.5	4.1
Estimate of OMC (calculated from TOC)	CE072 ^M	% w/w	1.6	3.4	4.3	10.6	12.9	7.1
PAH								
Naphthalene	CE087 ^M	mg/kg	<0.02	<0.02	<0.02	0.07	0.03	<0.02
Acenaphthylene	CE087 ^M	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Acenaphthene	CE087 ^M	mg/kg	<0.02	<0.02	<0.02	0.07	0.03	<0.02
Fluorene	CE087 ^U	mg/kg	<0.02	<0.02	<0.02	0.04	<0.02	<0.02
Phenanthrene	CE087 ^M	mg/kg	0.07	0.07	0.04	0.97	0.36	0.24
Anthracene	CE087 ^U	mg/kg	<0.02	<0.02	<0.02	0.38	0.14	0.11
Fluoranthene	CE087 ^M	mg/kg	0.13	<0.02	0.07	2.14	0.75	0.36
Pyrene	CE087 ^M	mg/kg	0.14	<0.02	0.05	1.83	0.67	0.32
Benzo(a)anthracene	CE087 ^U	mg/kg	0.09	<0.02	0.06	1.02	0.42	0.19
Chrysene	CE087 ^M	mg/kg	0.08	<0.03	0.03	0.97	0.36	0.16
Benzo(b)fluoranthene	CE087 ^M	mg/kg	0.12	<0.02	0.06	1.36	0.57	0.20
Benzo(k)fluoranthene	CE087 ^M	mg/kg	0.06	<0.03	0.03	0.56	0.30	0.09
Benzo(a)pyrene	CE087 ^U	mg/kg	0.11	<0.02	0.04	0.99	0.38	0.16
Indeno(123cd)pyrene	CE087 ^M	mg/kg	0.07	<0.02	0.03	0.66	0.26	0.09
Dibenz(ah)anthracene	CE087 ^M	mg/kg	<0.02	<0.02	<0.02	0.13	0.02	<0.02
Benzo(ghi)perylene	CE087 ^M	mg/kg	0.05	<0.02	<0.02	0.63	0.22	0.07
PAH (total of USEPA 16)	CE087	mg/kg	0.92	<0.34	0.40	11.8	4.49	1.99
TPH								
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	-	-	-	-	-	-
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	-	-	-	-	-	-
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	-	-	-	-	-	-

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SOILS

Lab number			76910-7	76910-8	76910-9	76910-10	76910-11	76910-12
Sample id			TP5	TP8	WS1	WS1	WS2	WS3
Depth (m)			1.00-1.10	1.00-1.20	0.10-0.20	0.50-0.60	0.10-0.20	0.10-0.20
Date sampled			18/02/2019	18/02/2019	18/02/2019	18/02/2019	18/02/2019	18/02/2019
Test	Method	Units						
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	-	-	-	-	-	-
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	-	-	-	-	-	-
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	-	-	-	-	-	-
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	-	-	-	-	-	-
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	-	-	-	-	-	-
VPH Aliphatic (>C5-C6)	CE067	mg/kg	-	-	-	-	-	-
VPH Aliphatic (>C6-C8)	CE067	mg/kg	-	-	-	-	-	-
VPH Aliphatic (>C8-C10)	CE067	mg/kg	-	-	-	-	-	-
EPH Aliphatic (>C10-C12)	CE068	mg/kg	-	-	-	-	-	-
EPH Aliphatic (>C12-C16)	CE068	mg/kg	-	-	-	-	-	-
EPH Aliphatic (>C16-C35)	CE068	mg/kg	-	-	-	-	-	-
EPH Aliphatic (>C35-C44)	CE068	mg/kg	-	-	-	-	-	-
VPH (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EPH (>C10-C35)	CE033	mg/kg	<7	<7	32	402	91	44
TPH (>C8-C35)	-	mg/kg	<10	<10	32	402	91	44
Subcontracted analysis								
Asbestos (qualitative)	\$	-	NAD	NAD	NAD	NAD	NAD	NAD

Chemtech Environmental Limited

SOILS

Lab number			76910-13	76910-14	76910-15	76910-16	76910-17
Sample id			WS4	WS5	WS5	WS6	WS7
Depth (m)			0.10-0.20	2.50-2.60	4.50-4.60	0.10-0.20	0.20-0.50
Date sampled			18/02/2019	18/02/2019	18/02/2019	18/02/2019	18/02/2019
Test	Method	Units					
Arsenic (total)	CE127 ^M	mg/kg As	36	7.3	7.8	49	67
Arsenic (bioaccessible)	CE124	mg/kg As	-	-	-	-	-
Arsenic (bioaccessible fraction)	CE124	% w/w	-	-	-	-	-
Cadmium (total)	CE127 ^M	mg/kg Cd	<0.2	<0.2	<0.2	0.3	1.0
Chromium (total)	CE127 ^M	mg/kg Cr	45	36	33	48	57
Chromium (III)	-	mg/kg CrIII	45	36	33	48	57
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1	<1	<1
Copper (total)	CE127 ^M	mg/kg Cu	41	36	36	42	5032
Lead (total)	CE127 ^M	mg/kg Pb	104	25	24	70	331
Mercury (total)	CE127 ^M	mg/kg Hg	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel (total)	CE127 ^M	mg/kg Ni	26	42	40	32	51
Selenium (total)	CE127 ^M	mg/kg Se	1.1	1.0	1.1	1.4	1.7
Zinc (total)	CE127 ^M	mg/kg Zn	81	91	96	101	1910
pH	CE004 ^M	units	6.5	6.1	6.6	6.8	6.7
Sulphate (2:1 water soluble)	CE061 ^M	mg/l SO ₄	21	73	68	19	338
Sulphate (total)	CE062 ^M	mg/kg SO ₄	830	108	391	353	5290
Phenols (total)	CE078	mg/kg PhOH	0.8	<0.5	<0.5	1.0	0.8
Total Organic Carbon (TOC)	CE072 ^M	% w/w C	6.3	3.2	3.2	3.5	16.2
Estimate of OMC (calculated from TOC)	CE072 ^M	% w/w	10.8	5.6	5.5	6.1	27.9
PAH							
Naphthalene	CE087 ^M	mg/kg	0.02	<0.02	<0.02	<0.02	0.40
Acenaphthylene	CE087 ^M	mg/kg	<0.02	<0.02	<0.02	<0.02	0.77
Acenaphthene	CE087 ^M	mg/kg	<0.02	<0.02	<0.02	<0.02	0.44
Fluorene	CE087 ^U	mg/kg	<0.02	<0.02	<0.02	<0.02	0.98
Phenanthrene	CE087 ^M	mg/kg	0.14	0.08	0.09	0.13	11.53
Anthracene	CE087 ^U	mg/kg	0.04	<0.02	<0.02	0.02	3.04
Fluoranthene	CE087 ^M	mg/kg	0.16	<0.02	<0.02	0.19	17.20
Pyrene	CE087 ^M	mg/kg	0.14	<0.02	<0.02	0.18	14.20
Benzo(a)anthracene	CE087 ^U	mg/kg	0.10	0.03	0.03	0.12	7.58
Chrysene	CE087 ^M	mg/kg	0.08	<0.03	<0.03	0.10	7.38
Benzo(b)fluoranthene	CE087 ^M	mg/kg	0.09	<0.02	<0.02	0.17	9.55
Benzo(k)fluoranthene	CE087 ^M	mg/kg	0.05	<0.03	<0.03	0.06	4.54
Benzo(a)pyrene	CE087 ^U	mg/kg	0.10	<0.02	<0.02	0.09	8.30
Indeno(123cd)pyrene	CE087 ^M	mg/kg	0.07	<0.02	<0.02	0.07	5.49
Dibenz(ah)anthracene	CE087 ^M	mg/kg	<0.02	<0.02	<0.02	<0.02	1.23
Benzo(ghi)perylene	CE087 ^M	mg/kg	0.04	<0.02	<0.02	0.04	5.08
PAH (total of USEPA 16)	CE087	mg/kg	1.03	<0.34	<0.34	1.16	97.7
TPH							
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	-	-	-	-	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	-	-	-	-	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	-	-	-	-	<0.01

Chemtech Environmental Limited

SOILS

Lab number			76910-13	76910-14	76910-15	76910-16	76910-17
Sample id			WS4	WS5	WS5	WS6	WS7
Depth (m)			0.10-0.20	2.50-2.60	4.50-4.60	0.10-0.20	0.20-0.50
Date sampled			18/02/2019	18/02/2019	18/02/2019	18/02/2019	18/02/2019
Test	Method	Units					
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	-	-	-	-	<1
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	-	-	-	-	4
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	-	-	-	-	52
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	-	-	-	-	48
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	-	-	-	-	6
VPH Aliphatic (>C5-C6)	CE067	mg/kg	-	-	-	-	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	-	-	-	-	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	-	-	-	-	<0.1
EPH Aliphatic (>C10-C12)	CE068	mg/kg	-	-	-	-	8
EPH Aliphatic (>C12-C16)	CE068	mg/kg	-	-	-	-	142
EPH Aliphatic (>C16-C35)	CE068	mg/kg	-	-	-	-	1096
EPH Aliphatic (>C35-C44)	CE068	mg/kg	-	-	-	-	162
VPH (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EPH (>C10-C35)	CE033	mg/kg	59	<7	20	46	1350
TPH (>C8-C35)	-	mg/kg	59	<10	20	46	1350
Subcontracted analysis							
Asbestos (qualitative)	\$	-	NAD	NAD	NAD	NAD	NAD

Chemtech Environmental Limited

PREPARED LEACHATES

Lab number	76910-17L		
Sample id	WS7		
Depth (m)	0.20-0.50		
Test	Method	Units	
Arsenic (dissolved)	CE128 ^u	µg/l As	6.32
Copper (dissolved)	CE128 ^u	µg/l Cu	9.6
Lead (dissolved)	CE128 ^u	µg/l Pb	2.2

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE124	Arsenic (bioaccessible)	Extractions, ICP-MS	Dry		1	mg/kg As
CE124	Arsenic (bioaccessible fraction)	Calculation: (As (bio)*100)/As (total)	Dry		0.1	% w/w
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE127	Chromium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cr
-	Chromium (III)	Calculation: Cr (total) - Cr (VI)	Dry		1	mg/kg CrIII
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	M	10	mg/l SO ₄
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry	M	100	mg/kg SO ₄
CE078	Phenols (total)	Extraction, Continuous Flow Colorimetry	As received		0.5	mg/kg PhOH
CE072	Total Organic Carbon (TOC)	Removal of IC by acidification, Carbon Analyser	Dry	M	0.1	% w/w C
CE072	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry	M	0.1	% w/w
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE068	EPH Aromatic (>EC10-EC12)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC12-EC16)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC16-EC21)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC21-EC35)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC35-EC44)	Solvent extraction, GC-FID	As received		1	mg/kg

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE068	EPH Aliphatic (>C10-C12)	Solvent extraction, GC-FID	As received		4	mg/kg
CE068	EPH Aliphatic (>C12-C16)	Solvent extraction, GC-FID	As received		4	mg/kg
CE068	EPH Aliphatic (>C16-C35)	Solvent extraction, GC-FID	As received		4	mg/kg
CE068	EPH Aliphatic (>C35-C44)	Solvent extraction, GC-FID	As received		10	mg/kg
CE067	VPH (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE033	EPH (>C10-C35)	Solvent extraction, GC-FID	As received		7	mg/kg
-	TPH (>C8-C35)	Sum of VPH (>C8-C10) & EPH (>C10-C35)	As received		10	mg/kg
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

Chemtech Environmental Limited

METHOD DETAILS

METHOD	PREPARED LEACHATES	METHOD SUMMARY	STATUS	LOD	UNITS
CE001	Leachate preparation (EA)	L:S 10:1		-	-
CE128	Arsenic (dissolved)	ICP-MS	U	0.06	µg/l As
CE128	Copper (dissolved)	ICP-MS	U	0.4	µg/l Cu
CE128	Lead (dissolved)	ICP-MS	U	0.2	µg/l Pb

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
76910-1	TP1	0.00-0.35	N	
76910-2	TP2	0.10-0.20	N	
76910-3	TP3	0.00-0.15	N	
76910-4	TP3	2.60-3.00	N	
76910-5	TP4	1.00-1.20	N	
76910-6	TP5	0.00-0.10	N	
76910-7	TP5	1.00-1.10	N	
76910-8	TP8	1.00-1.20	N	
76910-9	WS1	0.10-0.20	N	
76910-10	WS1	0.50-0.60	N	
76910-11	WS2	0.10-0.20	N	
76910-12	WS3	0.10-0.20	N	
76910-13	WS4	0.10-0.20	N	
76910-14	WS5	2.50-2.60	N	
76910-15	WS5	4.50-4.60	N	
76910-16	WS6	0.10-0.20	N	
76910-17	WS7	0.20-0.50	N	



ANALYTICAL TEST REPORT

Contract no: 76973

Contract name: Cockley Hill Lane, Kirkheaton

Client reference: CKD/02

Clients name: ARP Associates

Clients address: 5 & 6 Northwest Business Park
Servia Hill
Leeds
LS6 2QH

Samples received: 20 February 2019

Analysis started: 21 February 2019

Analysis completed: 28 February 2019

Report issued: 28 February 2019

Notes: Opinions and interpretations expressed herein are outside the UKAS accreditation scope. Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling. Methods, procedures and performance data are available on request. Results reported herein relate only to the material supplied to the laboratory. This report shall not be reproduced except in full, without prior written approval. Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key: U UKAS accredited test
M MCERTS & UKAS accredited test
\$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing
NAD No Asbestos Detected

Approved by:

Dave Bowerbank
Customer Services Co-ordinator

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
76973-1	TP2	0.90-1.00	Sandy Clay with Gravel	-	-	10.0
76973-2	WS5	0.50-0.60	Sandy Clay with Gravel	-	-	13.9

Chemtech Environmental Limited

SOILS

Lab number			76973-1	76973-2
Sample id			TP2	WS5
Depth (m)			0.90-1.00	0.50-0.60
Date sampled			18/02/2019	18/02/2019
Test	Method	Units		
Arsenic (total)	CE127 ^M	mg/kg As	13	5.6
Cadmium (total)	CE127 ^M	mg/kg Cd	<0.2	<0.2
Chromium (total)	CE127 ^M	mg/kg Cr	27	33
Chromium (III)	-	mg/kg CrIII	27	33
Chromium (VI)	CE146	mg/kg CrVI	<1	<1
Copper (total)	CE127 ^M	mg/kg Cu	22	36
Lead (total)	CE127 ^M	mg/kg Pb	20	22
Mercury (total)	CE127 ^M	mg/kg Hg	<0.5	<0.5
Nickel (total)	CE127 ^M	mg/kg Ni	29	45
Selenium (total)	CE127 ^M	mg/kg Se	1.2	1.1
Zinc (total)	CE127 ^M	mg/kg Zn	70	98
pH	CE004 ^M	units	6.0	5.9
Sulphate (2:1 water soluble)	CE049 ^U	mg/l SO ₄	85	92
Sulphate (total)	CE062 ^M	mg/kg SO ₄	789	3507
Phenols (total)	CE078	mg/kg PhOH	<0.5	<0.5
Total Organic Carbon (TOC)	CE072 ^M	% w/w C	2.4	2.1
Estimate of OMC (calculated from TOC)	CE072 ^M	% w/w	4.1	3.6
PAH				
Naphthalene	CE087 ^M	mg/kg	<0.02	<0.02
Acenaphthylene	CE087 ^M	mg/kg	<0.02	<0.02
Acenaphthene	CE087 ^M	mg/kg	<0.02	<0.02
Fluorene	CE087 ^U	mg/kg	<0.02	<0.02
Phenanthrene	CE087 ^M	mg/kg	0.09	0.09
Anthracene	CE087 ^U	mg/kg	<0.02	<0.02
Fluoranthene	CE087 ^M	mg/kg	0.05	<0.02
Pyrene	CE087 ^M	mg/kg	<0.02	<0.02
Benzo(a)anthracene	CE087 ^U	mg/kg	<0.02	<0.02
Chrysene	CE087 ^M	mg/kg	<0.03	<0.03
Benzo(b)fluoranthene	CE087 ^M	mg/kg	<0.02	<0.02
Benzo(k)fluoranthene	CE087 ^M	mg/kg	<0.03	<0.03
Benzo(a)pyrene	CE087 ^U	mg/kg	<0.02	<0.02
Indeno(123cd)pyrene	CE087 ^M	mg/kg	<0.02	<0.02
Dibenz(ah)anthracene	CE087 ^M	mg/kg	<0.02	<0.02
Benzo(ghi)perylene	CE087 ^M	mg/kg	0.04	<0.02
PAH (total of USEPA 16)	CE087	mg/kg	<0.34	<0.34
TPH				
VPH (>C8-C10)	CE067	mg/kg	<0.1	<0.1
EPH (>C10-C35)	CE033	mg/kg	<10	<10
TPH (>C8-C35)	-	mg/kg	<10	<10
Subcontracted analysis				
Asbestos (qualitative)	\$	-	NAD	NAD

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE127	Chromium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cr
-	Chromium (III)	Calculation: Cr (total) - Cr (VI)	Dry		1	mg/kg CrIII
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE049	Sulphate (2:1 water soluble)	Aqueous extraction, IC- COND	Dry	U	10	mg/l SO ₄
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry	M	100	mg/kg SO ₄
CE078	Phenols (total)	Extraction, Continuous Flow Colorimetry	As received		0.5	mg/kg PhOH
CE072	Total Organic Carbon (TOC)	Removal of IC by acidification, Carbon Analyser	Dry	M	0.1	% w/w C
CE072	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry	M	0.1	% w/w
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE033	EPH (>C10-C35)	Solvent extraction, GC-FID	As received	M	10	mg/kg
-	TPH (>C8-C35)	Calculation from VPH & EPH	As received		10	mg/kg
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
76973-1	TP2	0.90-1.00	N	
76973-2	WS5	0.50-0.60	N	



LABORATORY REPORT



4043

Contract Number: PSL19/1182

Report Date: 26 February 2019
Client's Reference: CKD/02
Client Name: ARP Associates
Northwest House
5/6 Northwest Business Park
Servia Hill
Leeds
LS6 2QH

For the attention of: Elliot Heatherington

Contract Title: Cockley Hill Lane, Kirkheaton, Huddersfield
Date Received: 20/2/2019
Date Commenced: 20/2/2019
Date Completed: 26/2/2019

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:


R Gunson
(Director)

A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

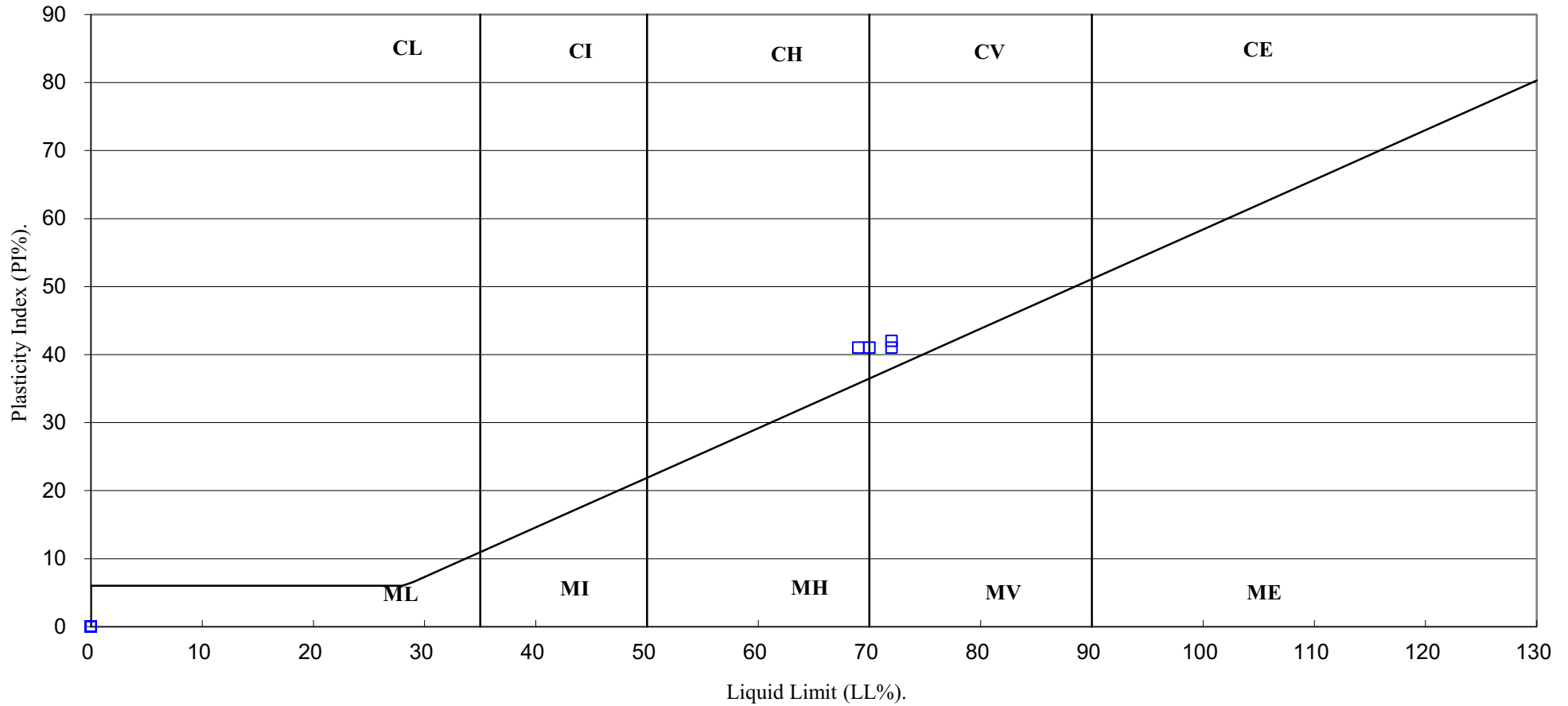
S Eyre
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Page 1 of

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



4043

PSL
Professional Soils Laboratory

Cockley Hill Lane, Kirkheaton, Huddersfield

Contract No:

PSL19/1182

Client Ref:

CKD/02



DETS

Certificate of Analysis

Certificate Number 19-03421

27-Feb-19

Client Professional Soils Laboratory Ltd
5/7 Hexthorpe Road
Hexthorpe
DN4 0AR

Our Reference 19-03421

Client Reference PSL19/1182

Order No (not supplied)

Contract Title Cockley Hill Lane, Kirkheaton, Huddersfeild

Description 6 Soil samples.

Date Received 22-Feb-19

Date Started 22-Feb-19

Date Completed 27-Feb-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 19-03421

Client Ref PSL19/1182

Contract Title Cockley Hill Lane, Kirkheaton, Huddersfeild

Lab No	1464358	1464359	1464360	1464361	1464362	1464363
Sample ID	TP1	WS4	WS2	WS6	TP5	TP7
Depth	0.90-1.00	1.70-1.80	0.20-0.50	1.80-1.95	2.50-2.60	0.90-1.00
Other ID	1	4	2	6	5	7
Sample Type	D	D	D	D	D	D
Sampling Date	n/s	n/s	n/s	n/s	n/s	n/s
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units	1464358	1464359	1464360	1464361	1464362	1464363
Inorganics									
pH	DETSC 2008#			6.6	6.1	6.5	5.9	7.4	6.8
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	62	34	24	70	39	76

Information in Support of the Analytical Results

Our Ref 19-03421
 Client Ref PSL19/1182
 Contract Cockley Hill Lane, Kirkheaton, Huddersfeild

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1464358	TP1 0.90-1.00 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1464359	WS4 1.70-1.80 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1464360	WS2 0.20-0.50 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1464361	WS6 1.80-1.95 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1464362	TP5 2.50-2.60 SOIL		PG	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
1464363	TP7 0.90-1.00 SOIL		PG	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub G-Bag

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

ARP GEOTECHNICAL LIMITED

PAH DOUBLE PLOT RATIOS TO DETERMINE PAH ORIGINS

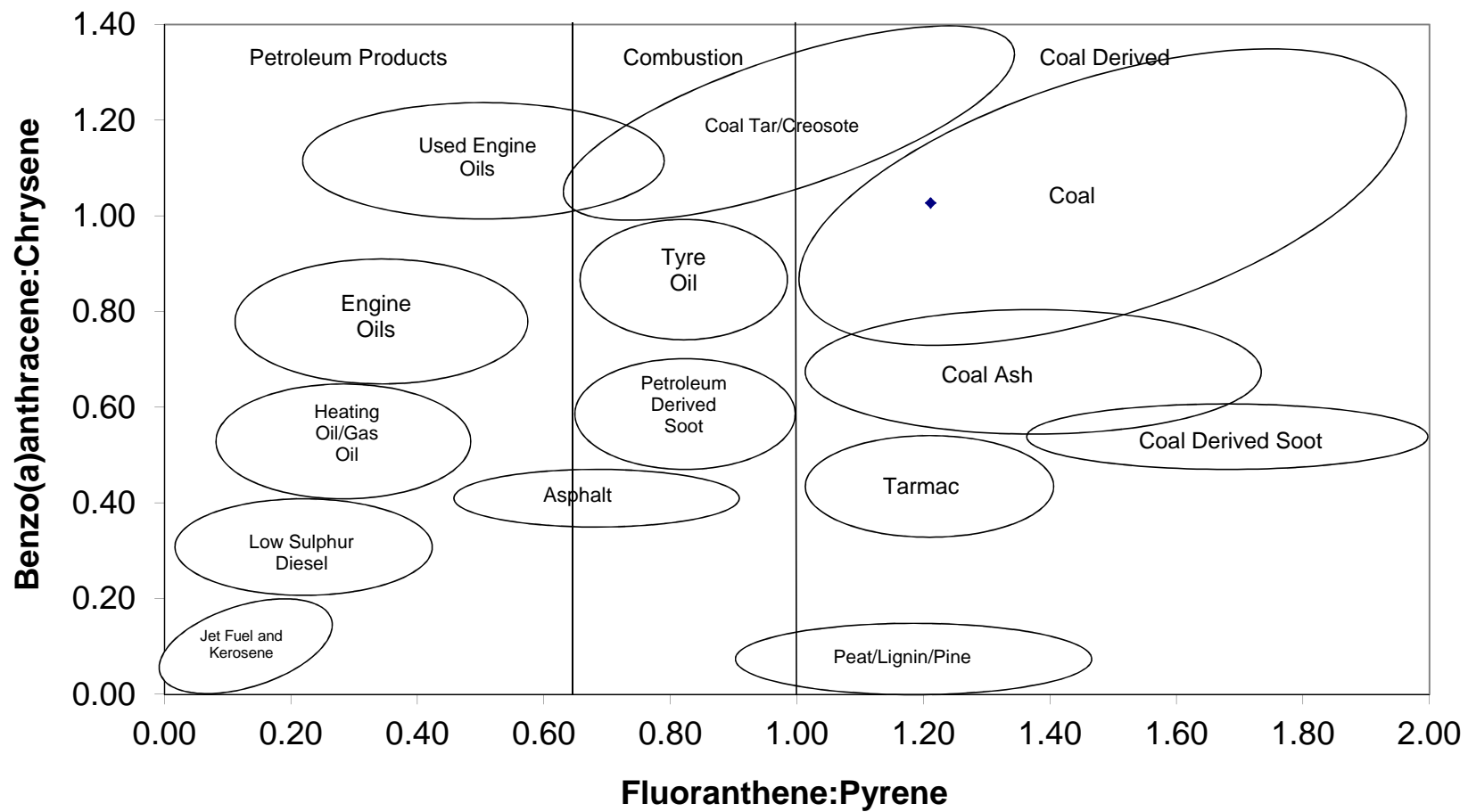
Material: GENERAL MADE GROUND AT/AROUND WS7

Site: COCKLEY HILL LANE, KIRKHEATON **Client:** COCKLEY DVELOPMENTS LTD **Job No:** CKD/02

Sample	Fluoranthene	Pyrene	Ratio Fl:Py	BAP Conc.	Benzo(a) anthracene	Chysene	Ratio B:Ch
WS7	17.2	14.2	1.21	8.3	7.58	7.38	1.03

If Fl/Py is >1 then petrogenic source is indicated (e.g coal). If <1, then pyrogenic source is indicated (from combustion)

PAH Double Ratio Plot



APPENDIX K

CLEA SOFTWARE RISK ANALYSIS FOR ARSENIC

STEP 1: REPORT DETAILS

Clear All Details

Back to Guide

User EGH

Company ARP Geotechnical Ltd.

Contact number

Report title Land at Cockley Hill Lane, Kirkheaton

Job Number CKD/01

Notes Arsenic only.

STEP 2: BASIC SETTINGS

Apply Settings to Model

Back to Guide

SELECT LAND USE Residential with produce

RATIO MODE

LAND USE OPTIONS

RECEPTOR Female (res)

BUILDING Small terraced house

SOIL TYPE Sandy loam

START AC 1

END AC 6

pH 7

SOM (%) 6

EXPOSURE PATHWAYS

ORAL ROUTES

- direct soil and dust ingestion
- consumption of homegrown produce
- soil attached to homegrown produce

DERMAL ROUTES

- indoor
- outdoor

INHALATION ROUTES

- indoor dust
- outdoor dust
- indoor vapour
- outdoor vapour

ADVANCED SETTINGS

Restore Defaults

Back to Menu

90th Percentile Consumption Rate (g FW kg⁻¹ BW day⁻¹) by Age Class

Home Produce		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	1
No.	Name																			
1	Green vegetables	7.12	6.85	6.85	6.85	3.74	3.74	3.74	3.74	3.74	3.74	3.74	3.74	3.74	3.74	3.74	3.74	2.94	2.94	0.00
2	Root vegetables	10.69	3.30	3.30	3.30	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.40	1.40	0.00
3	Tuber vegetables	16.03	5.46	5.46	5.46	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	1.79	1.79	0.00
4	Herbaceous fruit	1.83	3.96	3.96	3.96	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.61	1.61	0.00
5	Shrub fruit	2.23	0.54	0.54	0.54	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.22	0.22	0.00
6	Tree fruit	3.82	11.96	11.96	11.96	4.26	4.26	4.26	4.26	4.26	4.26	4.26	4.26	4.26	4.26	4.26	4.26	2.97	2.97	0.00

Gardener type **Average**

Apply Top 2

Mean Consumption Rate (g FW kg ⁻¹ BW day ⁻¹) by Age Class																	Dry Weight Conversion Factor	Homegrown Fraction (average)	Homegrown Fraction (high end)
2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	g DW g ⁻¹ FW	dimensionless	dimensionless
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.096	0.05	0.33
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.103	0.06	0.4
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.02	0.13
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.058	0.06	0.4
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.166	0.09	0.6
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.157	0.04	0.27

Soil loading factor	Preparation correction factor
$\text{g g}^{-1} \text{ DW}$	dimensionless
1.00E-03	2.00E-01
1.00E-03	1.00E+00
1.00E-03	1.00E+00
1.00E-03	6.00E-01
1.00E-03	6.00E-01
1.00E-03	6.00E-01

ADVANCED SETTINGS

Restore Defaults

Back to Menu

LAND USE		AGE CLASS						AGE CLASS						AGE CLASS					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
EF (soil and dust ingestion)	day yr ⁻¹	180	365	365	365	365	365	0	0	0	0	0	0	0	0	0	0	0	0
EF (consumption of homegrown produce)	day yr ⁻¹	180	365	365	365	365	365	0	0	0	0	0	0	0	0	0	0	0	0
EF (skin contact, indoor)	day yr ⁻¹	180	365	365	365	365	365	0	0	0	0	0	0	0	0	0	0	0	0
EF (skin contact, outdoor)	day yr ⁻¹	180	365	365	365	365	365	0	0	0	0	0	0	0	0	0	0	0	0
EF (inhalation of dust and vapour, indoor)	day yr ⁻¹	365	365	365	365	365	365	0	0	0	0	0	0	0	0	0	0	0	0
EF (inhalation of dust and vapour, outdoor)	day yr ⁻¹	365	365	365	365	365	365	0	0	0	0	0	0	0	0	0	0	0	0
Occupancy Period (indoor)	hr day ⁻¹	23.0	23.0	23.0	23.0	19.0	19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Occupancy Period (outdoor)	hr day ⁻¹	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Soil to skin adherence factor (indoor)	mg cm ⁻² day ⁻¹	6.00E-02	6.00E-02	6.00E-02	6.00E-02	6.00E-02	6.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Soil to skin adherence factor (outdoor)	mg cm ⁻² day ⁻¹	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Soil and dust ingestion rate	g day ⁻¹	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RECEPTOR		AGE CLASS						AGE CLASS						AGE CLASS					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Body weight	kg	5.60	9.80	12.70	15.10	16.90	19.70	22.10	25.30	27.50	31.40	35.70	41.30	47.20	51.20	56.70	59.00	70.00	70.90
Body height	m	0.70	0.80	0.90	0.90	1.00	1.10	1.20	1.20	1.30	1.30	1.40	1.40	1.50	1.60	1.60	1.60	1.60	1.60
Inhalation rate	m ³ day ⁻¹	8.50	13.30	12.70	12.20	12.20	12.40	12.40	12.40	12.40	12.40	13.40	13.40	13.40	13.40	13.40	13.40	14.80	12.00
Max exposed skin fraction (indoor)	m ² m ⁻²	0.32	0.33	0.32	0.35	0.35	0.33	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.21	0.21	0.33	0.33
Max exposed skin fraction (outdoor)	m ² m ⁻²	0.26	0.26	0.25	0.28	0.28	0.26	0.15	0.15	0.15	0.15	0.14	0.14	0.14	0.14	0.14	0.14	0.27	0.27

ADVANCED SETTINGS

Restore Defaults

Back to Menu

SOIL PROPERTIES for		Sandy loam
Porosity, total	$\text{cm}^3 \text{cm}^{-3}$	0.53
Porosity, air-filled	$\text{cm}^3 \text{cm}^{-3}$	0.20
Porosity, water-filled	$\text{cm}^3 \text{cm}^{-3}$	0.33
Residual soil water Content	$\text{cm}^3 \text{cm}^{-3}$	0.12
Saturated hydraulic conductivity	cm s^{-1}	3.56E-03
van Genuchten shape parameter (m)	dimensionless	3.20E-01
Bulk density	g cm^{-3}	1.21
Threshold value of wind speed at 10m	m s^{-1}	7.20
Empirical function (F_x) for dust model	dimensionless	1.22
Ambient soil temperature	K	283

BUILDING PROPERTIES for		Small terraced house
Building footprint	m^2	2.80E+01
Living space air exchange rate	hr^{-1}	0.50
Living space height (above ground)	m	4.8
Living space height (below ground)	m	0.0
Pressure difference (soil to enclosed space)	Pa	3.1
Foundation thickness	m	1.50E-01
Floor crack area	cm^2	4.23E+02
Dust loading factor	$\mu\text{g m}^{-3}$	5.00E+01

AIR DISPERSION MODEL		
Mean annual windspeed (10 m)	m s^{-1}	5.00
Air dispersion factor at height of 0.8 m	$\text{g m}^{-2} \text{s}^{-1}$ per kg m^{-3}	2400.0
Air dispersion factor at height of 1.6 m	$\text{g m}^{-2} \text{s}^{-1}$ per kg m^{-3}	0.0
Fraction of site with hard or vegetative cover	$\text{m}^2 \text{m}^{-2}$	0.75

VAPOUR MODEL		
Use default soil gas ingress rate	<input checked="" type="checkbox"/>	
Default soil gas ingress rate	$\text{cm}^3 \text{s}^{-1}$	25.00
Depth to top of source (beneath building)	cm	65
Depth to top of source (no building)	cm	0
Use limited source thickness	<input type="checkbox"/>	
Thickness of contaminant layer	cm	200
Time average period for surface emissions	years	6
User defined effective air permeability	cm^2	3.05E-08

STEP 1: REPORT DETAILS

Clear All Details

Back to Guide

User

EGH

Company

ARP

Contact number

Report title

Cockley Hill Lane, Kirkheaton

Job Number

CKD/02

Notes

STEP 2: BASIC SETTINGS

Apply Settings to Model

Back to Guide

SELECT LAND USE Residential with homegrown produce

RATIO MODE

LAND USE OPTIONS

RECEPTOR Female (res)

BUILDING Semi-detached house

SOIL TYPE Sandy clay loam

START AC 1

END AC 6

pH 6.6

SOM (%) 7.9

EXPOSURE PATHWAYS

ORAL ROUTES

- direct soil and dust ingestion E
- consumption of homegrown produce E
- soil attached to homegrown produce E

DERMAL ROUTES

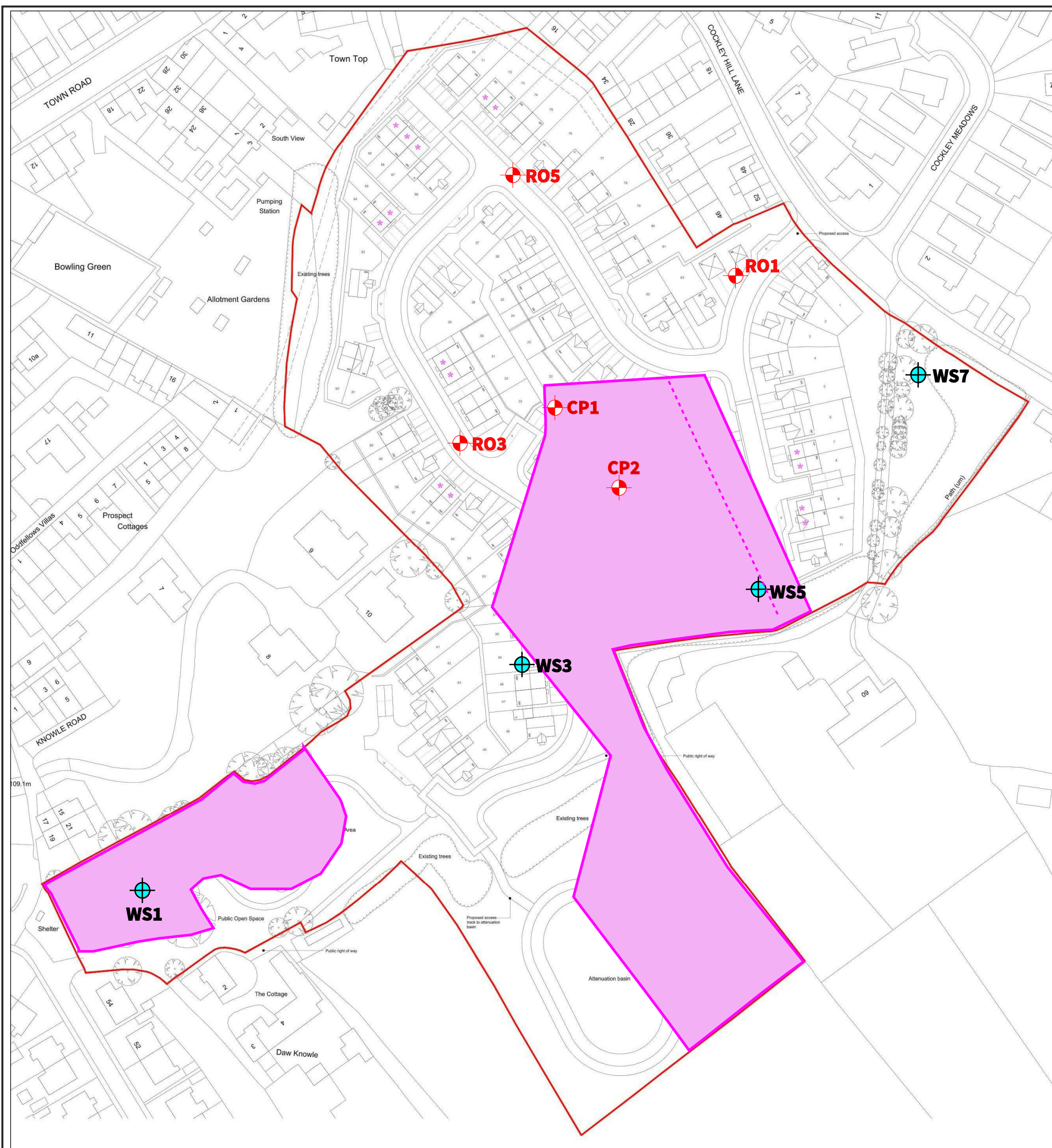
- indoor E
- outdoor E

INHALATION ROUTES




- indoor dust JE
- outdoor dust JE
- indoor vapour JE
- outdoor vapour JE

APPENDIX L

GAS MONITORING RESULTS

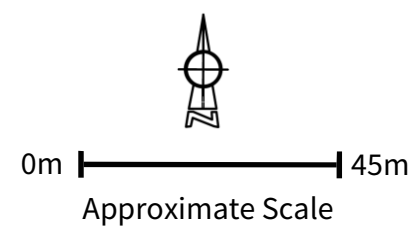


KEY:

-  **R01** Rotary borehole location August 2016
-  **CP1** Cable percussion borehole location August 2016
-  **WS1** Windowless sample borehole location February 2019



Project	COCKLEY HILL LANE KIRKHEATON, HUDDERSFIELD	Title	GAS MONITORING WELL LOCATION PLAN	Drawn	JR	Scale	AS SHOWN
Client	GLEESON HOMES LTD	Date	AUGUST 2025	Job No.	GHO/11		



ARP GEOTECHNICAL BOREHOLE MONITORING RESULTS

JOB NO: GHO/11 **CLIENT:** Gleeson Homes

SITE: Cockley Hill Lane, Kirkheaton

BH: CP1 Response Zone: 1.0m to 5.0m

Date	BH Steady Flow Rate (l/hr)*	Peak CH ₄ %	Qhg CH ₄ (l/hr)	Peak CO ₂ %	Qhg CO ₂ (l/hr)	Min. O ₂ %	Depth to G Water (m)	Comment
03/10/2016			0.000		0.000			Bung missing
26/10/2016	0.10	0.00	0.000	4.80	0.005	15.40	3.67	
01/12/2016	0.10	0.00	0.000	3.60	0.004	17.20	#	
04/01/2017	0.10	0.00	0.000	2.40	0.002	19.10	3.43	
24/01/2017	0.10	0.10	0.000	1.20	0.001	20.20	3.41	
18/04/2017	0.10	0.00	0.000	2.20	0.002	19.90	3.42	

* Where no flow is detected, detection limit of 0.1l/hr should be inserted

Qhg = Hazardous gas flow rate, in accordance with BS8485:2007

Reading not possible - faulty dip meter

ARP GEOTECHNICAL BOREHOLE MONITORING RESULTS

JOB NO: GHO/11 **CLIENT:** Gleeson Homes

SITE: Cockley Hill Lane, Kirkheaton

BH: CP2 Response Zone: 3.0m to 7.5m

Date	BH Steady Flow Rate (l/hr)*	Peak CH ₄ %	Qhg CH ₄ (l/hr)	Peak CO ₂ %	Qhg CO ₂ (l/hr)	Min. O ₂ %	Depth to G Water (m)	Comment
03/10/2016			0.000		0.000			Bung missing
26/10/2016	0.10	0.00	0.000	2.90	0.003	17.10	Dry	
01/12/2016	0.10	0.80	0.001	1.90	0.002	7.00	#	Surface waterlogged
04/01/2017	0.10	0.00	0.000	2.60	0.003	2.80	0.89	Surface waterlogged
24/01/2017	0.10	0.20	0.000	1.50	0.002	9.60	0.98	
18/04/2017	0.10	0.00	0.000	2.20	0.002	9.80	0.97	

* Where no flow is detected, detection limit of 0.1l/hr should be inserted

Qhg = Hazardous gas flow rate, in accordance with BS8485:2007

Faulty dip meter

Orange: data cannot be used as groundwater is above the response zone

ARP GEOTECHNICAL BOREHOLE MONITORING RESULTS

JOB NO: GHO/11 **CLIENT:** Gleeson Homes

SITE: Cockley Hill Lane, Kirkheaton

BH: R1A Response Zone: 1.0m to 3.0m

Date	BH Steady Flow Rate (l/hr)*	Peak CH ₄ %	Qhg CH ₄ (l/hr)	Peak CO ₂ %	Qhg CO ₂ (l/hr)	Min. O ₂ %	Depth to G Water (m)	Comment
03/10/2016	0.1	0.0	0.000	2.6	0.003	18.9	Dry	
26/10/2016	0.1	0.0	0.000	3.6	0.004	17.9	Dry	
01/12/2016	0.1	0.0	0.000	4.8	0.005	14.9	#	
04/01/2017	0.1	0.0	0.000	5.0	0.005	15.9	1.39	
24/01/2017	0.1	0.0	0.000	6.0	0.006	14.3	1.42	
18/04/2017	0.1	0.0	0.000	3.8	0.004	17.6	1.40	

* Where no flow is detected, detection limit of 0.1l/hr should be inserted

Qhg = Hazardous gas flow rate, in accordance with BS8485:2007

Faulty dip meter

ARP GEOTECHNICAL BOREHOLE MONITORING RESULTS

JOB NO: GHO/11 **CLIENT:** Gleeson Homes

SITE: Cockley Hill Lane, Kirkheaton

BH: R3A Response Zone: 1.0m to 3.0m

Date	BH Steady Flow Rate (l/hr)*	Peak CH ₄ %	Qhg CH ₄ (l/hr)	Peak CO ₂ %	Qhg CO ₂ (l/hr)	Min. O ₂ %	Depth to G Water (m)	Comment
03/10/2016	0.1	0.0	0.000	2.7	0.003	18.7	Dry	
26/10/2016	0.1	0.0	0.000	6.0	0.006	16.6	1.38	
01/12/2016	0.1	0.5	0.001	3.1	0.003	13.1	#	
04/01/2017	0.1	0.0	0.000	5.1	0.005	15.6	0.52	
24/01/2017	0.1	0.5	0.001	3.0	0.003	17.2	0.43	
18/04/2017	0.1	0.0	0.000	4.1	0.004	15.6	0.67	

* Where no flow is detected, detection limit of 0.1l/hr should be inserted

Qhg = Hazardous gas flow rate, in accordance with BS8485:2007

Faulty dip meter

Orange: data cannot be used as groundwater is above the response zone

ARP GEOTECHNICAL BOREHOLE MONITORING RESULTS

JOB NO: GHO/11 **CLIENT:** Gleeson Homes

SITE: Cockley Hill Lane, Kirkheaton

BH: R5A Response Zone: 1.0m to 3.0m

Date	BH Steady Flow Rate (l/hr)*	Peak CH ₄ %	Qhg CH ₄ (l/hr)	Peak CO ₂ %	Qhg CO ₂ (l/hr)	Min. O ₂ %	Depth to G Water (m)	Comment
03/10/2016	0.1	0.0	0.000	2.5	0.003	18.8	Dry	
26/10/2016	0.1	0.0	0.000	5.0	0.005	12.5	1.50	
01/12/2016	0.1	0.1	0.000	4.8	0.005	10.1	#	
04/01/2017	0.1	0.1	0.000	3.6	0.004	9.2	0.87	Surface Waterlogged
24/01/2017			0.000		0.000			Surface Waterlogged
18/04/2017	0.1	0.0	0.000	2.6	0.003	10.5	0.92	

* Where no flow is detected, detection limit of 0.1l/hr should be inserted

Qhg = Hazardous gas flow rate, in accordance with BS8485:2007

Faulty dip meter

Orange: data cannot be used as groundwater is above the response zone

ARP GEOTECHNICAL BOREHOLE MONITORING RESULTS

JOB NO. GHO/11

CLIENT: Gleeson Homes

SITE: Cockley Hill Lane, Kirkheaton

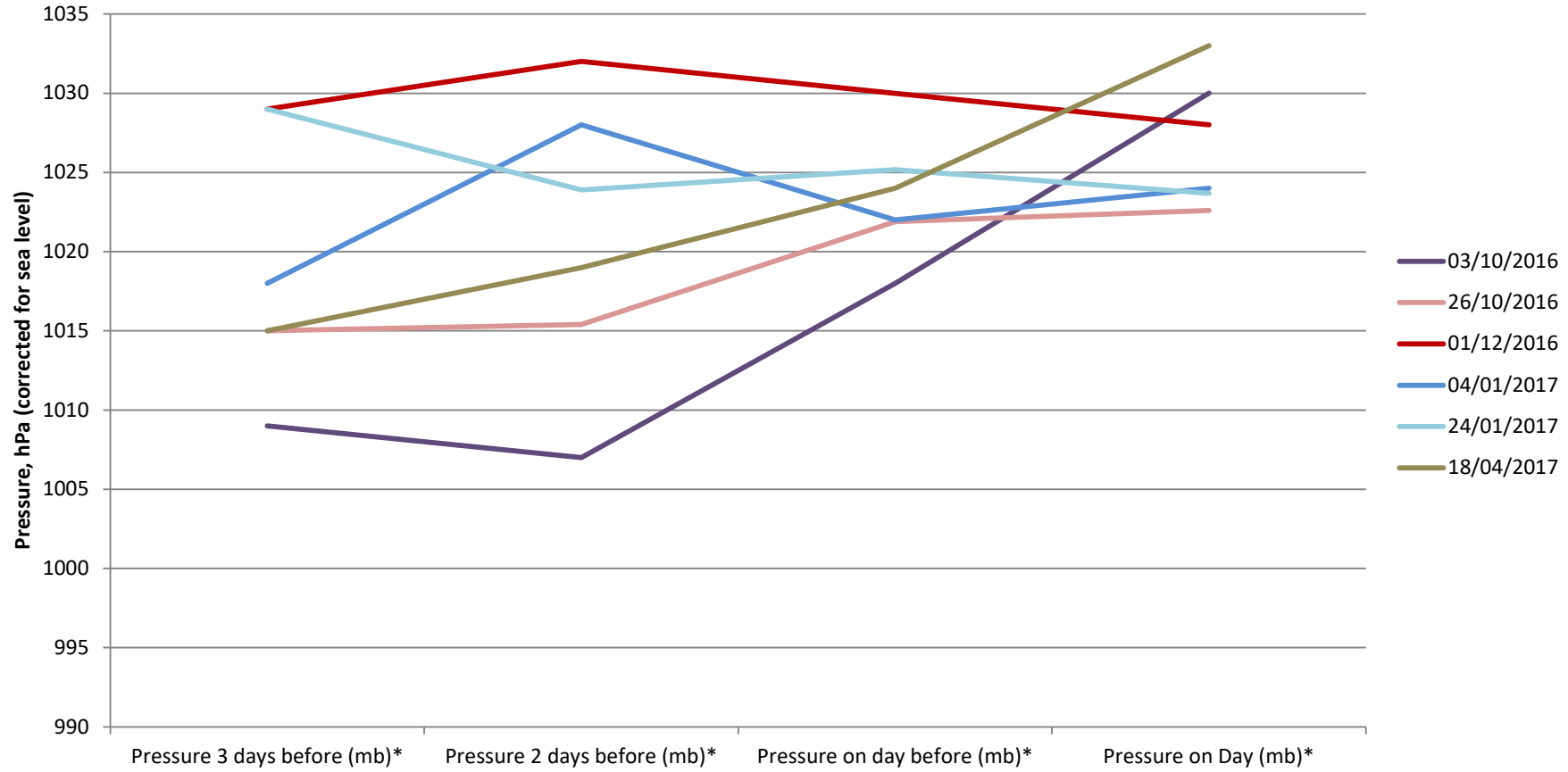
BAROMETRIC PRESSURES

Monitor Date	Weather on Day	Pressure on Day (mb)*	Pressure on day before (mb)*	Pressure 2 days before (mb)*	Pressure 3 days before (mb)*	3 Day Trend*
03/10/2016	Cold, sunny	1030	1018	1007	1009	Rising
26/10/2016	Cold, sunny	1023	1022	1015	1015	Rising
01/12/2016	Overcast	1028	1030	1032	1029	Falling
04/01/2017	Overcast, cold	1024	1022	1028	1018	Falling
24/01/2017	Cold, frost,	1024	1025	1024	1029	Generally high
18/04/2017	Cloudy	1033	1024	1019	1015	Rising

*Pressures at midday (EGNM) corrected to sea level.

<https://www.timeanddate.com/weather/uk/leeds/historic>

ATMOSPHERIC PRESSURE UP TO DAY OF MONITORING



ARP GEOTECHNICAL BOREHOLE MONITORING RESULTS

JOB NO: GHO/11 **CLIENT:** Gleeson Homes

SITE: Cockley Hill Lane, Kirkheaton

BH: WS1 Response Zone: 1.0m to 2.0m

Date	BH Steady Flow Rate (l/hr)*	Peak CH ₄ %	Qhg CH ₄ (l/hr)	Peak CO ₂ %	Qhg CO ₂ (l/hr)	Min. O ₂ %	Depth to G Water (m)	Comment
04/03/2019	1.00	0.00	0.000	0.40	0.004	20.20	Dry	
19/03/2019	0.50	0.00	0.000	0.80	0.004	19.80	1.83	
02/04/2019	0.40	1.00	0.004	1.80	0.007	18.40	Dry	
17/04/2019	0.10	0.00	0.000	1.20	0.001	19.60	1.99	
26/04/2019	0.30	0.00	0.000	0.40	0.001	20.00	Dry	
14/05/2019	0.40	0.00	0.000	1.00	0.004	16.60	Dry	

* Where no flow is detected, detection limit of 0.1l/hr should be inserted

Qhg = Hazardous gas flow rate, in accordance with BS8485:2007

ARP GEOTECHNICAL BOREHOLE MONITORING RESULTS

JOB NO: GHO/11 **CLIENT:** Gleeson Homes

SITE: Cockley Hill Lane, Kirkheaton

BH: WS3 Response Zone: 1.0m to 2.0m

Date	BH Steady Flow Rate (l/hr)*	Peak CH ₄ %	Qhg CH ₄ (l/hr)	Peak CO ₂ %	Qhg CO ₂ (l/hr)	Min. O ₂ %	Depth to G Water (m)	Comment
04/03/2019	1.00	0.00	0.000	0.80	0.008	19.8	0.69	
19/03/2019	0.60	0.00	0.000	0.70	0.004	20.1	0.60	
02/04/2019	1.00	0.30	0.003	0.90	0.009	4.7	Dry	
17/04/2019	0.10	0.00	0.000	0.30	0.000	20.7	0.71	
26/04/2019	0.70	0.00	0.000	0.60	0.004	19.4	Dry	
14/05/2019	0.40	0.00	0.000	0.70	0.003	9.7	Dry	

* Where no flow is detected, detection limit of 0.1l/hr should be inserted

Qhg = Hazardous gas flow rate, in accordance with BS8485:2007

Orange: data cannot be used as groundwater is above the response zone

ARP GEOTECHNICAL BOREHOLE MONITORING RESULTS

JOB NO: GH0/11 **CLIENT:** Gleeson Homes

SITE: Cockley Hill Lane, Kirkheaton

BH: WS5 Response Zone: 1.0m to 5.0m

Date	BH Steady Flow Rate (l/hr)*	Peak CH ₄ %	Qhg CH ₄ (l/hr)	Peak CO ₂ %	Qhg CO ₂ (l/hr)	Min. O ₂ %	Depth to G Water (m)	Comment
04/03/2019	1.0	0.0	0.000	0.3	0.003	20.2	Dry	
19/03/2019	0.6	0.0	0.000	0.6	0.004	20.4	dry	
02/04/2019	0.7	0.5	0.004	6.0	0.042	19.2	0.56	
17/04/2019	0.0	0.0	0.000	7.4	0.000	4.3	dry	
26/04/2019	0.1	0.0	0.000	0.1	0.000	20.4	0.68	
14/05/2019	0.1	0.0	0.000	6.1	0.006	19.1	0.79	

* Where no flow is detected, detection limit of 0.1l/hr should be inserted

Qhg = Hazardous gas flow rate, in accordance with BS8485:2007

Orange: data cannot be used as groundwater is above the response zone

ARP GEOTECHNICAL BOREHOLE MONITORING RESULTS

JOB NO: GHO/11 **CLIENT:** Gleeson Homes

SITE: Cockley Hill Lane, Kirkheaton

BH: WS7 Response Zone: 1.0m to 2.0m

Date	BH Steady Flow Rate (l/hr)*	Peak CH ₄ %	Qhg CH ₄ (l/hr)	Peak CO ₂ %	Qhg CO ₂ (l/hr)	Min. O ₂ %	Depth to G Water (m)	Comment
04/03/2019	1.8	0.0	0.000	0.5	0.009	19.9	Dry	
19/03/2019	0.7	0.0	0.000	0.6	0.004	19.8	dry	
02/04/2019	0.1	0.9	0.001	0.7	0.001	18.6	1.98	
17/04/2019	0.0	0.0	0.000	0.8	0.000	17.2	dry	
26/04/2019	0.4	0.0	0.000	0.7	0.003	19.7	1.89	
14/05/2019	0.3	0.0	0.000	0.4	0.001	20.1	Dry	

* Where no flow is detected, detection limit of 0.1l/hr should be inserted

Qhg = Hazardous gas flow rate, in accordance with BS8485:2007

ARP GEOTECHNICAL BOREHOLE MONITORING RESULTS

JOB NO. GHO/11 **CLIENT:** Gleeson Homes

SITE: Cockley Hill Lane, Kirkheaton

BAROMETRIC PRESSURES

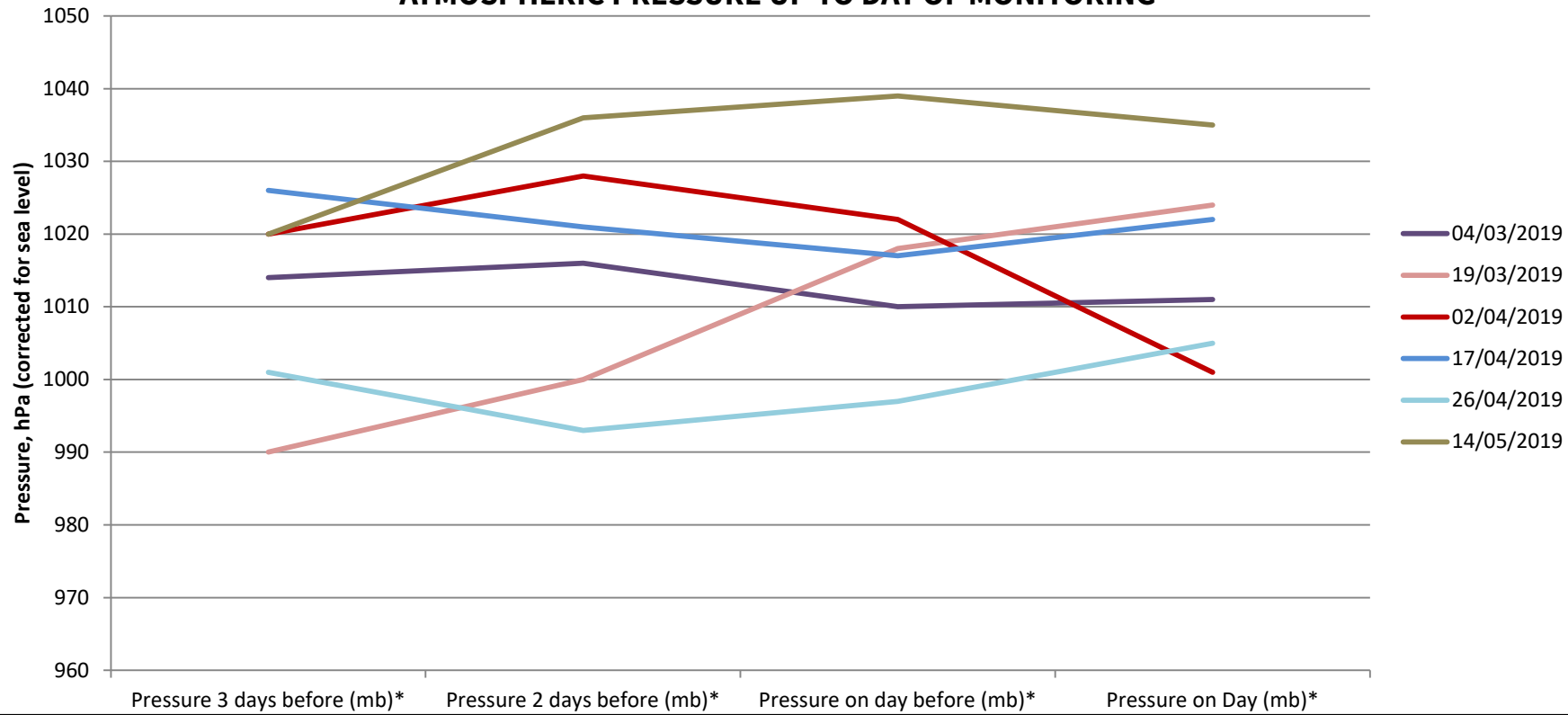
Monitor Date	Weather on Day	Pressure on Day (mb)*	Pressure on day before (mb)*	Pressure 2 days before (mb)*	Pressure 3 days before (mb)*	3 Day Trend*
04/03/2019	Cloudy	1011	1010	1016	1014	Steady
19/03/2019	overcast	1024	1018	1000	990	Increasing
02/04/2019	overcast	1001	1022	1028	1020	Falling
17/04/2019	overcast	1022	1017	1021	1026	steady
26/04/2019	Cloudy, light rain	1005	997	993	1001	Increasing
14/05/2019	sunny	1035	1039	1036	1020	Increasing

Check dates. Monitoring should be carried out over 3 months

*Pressures at midday (EGNM) corrected to sea level.

<https://www.timeanddate.com/weather/uk/leeds/historic>

ATMOSPHERIC PRESSURE UP TO DAY OF MONITORING



APPENDIX M

CONTAMINATION REMEDIATION STATEMENT



CONTAMINATION REMEDIATION STATEMENT

FOR

COCKLEY HILL LANE

KIRKHEATON

ON BEHALF OF

GLEESON HOMES LTD



ARP GEOTECHNICAL LTD

CHARTERED CONSULTING ENGINEERS



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CLIENT: GLEESON HOMES LTD
 JOB NUMBER: GHO/11
 PROJECT: COCKLEY HILL LANE, KIRKHEATON
 REPORT TYPE: CONTAMINATION REMEDIATION STATEMENT
 REPORT REFERENCE: GHO/11rem1

	Name	Signature
Prepared By:	John Race BSc CGeol FGS EurGeol	
Authorised By:	Owain Gwilym BSc MSc FGS	

ISSUE	DATE	STATUS
1	29 th OCTOBER 2025	V1 FINAL

1.0 Introduction

- 1.1 This document has been prepared to provide information for the Client and other interested parties, such as the regulatory authorities, outlining how contamination encountered on the site will be managed to ensure that the site is environmentally suitable for the intended residential use. The document should be agreed, prior to implementation, with the relevant regulatory authorities, usually the local planning authority and building control provider.

2.0 The Site

- 2.1 The ARP Geotechnical Ltd Stage 1/Stage 2 Geo-environmental Report, dated October 2025, under reference GHO/11r1, makes an assessment of contamination, along with other aspects.
- 2.2 The conceptual site model is for a residential development with private gardens.
- 2.3 The site is mainly a large sloping grassed agricultural field. In the eastern corner is a triangular shaped wooded area, separated from the field area by a gravel access road. In the southwestern corner is a cover of hardstanding, and sporadic young to mature trees. Ground levels slope downwards from northeast to southwest. The site is steeper in the northeast, and less steep in the southwest, with a maximum gradient of around 1 in 5.
- 2.4 Geological maps show the majority of the site to be underlain by undifferentiated strata of the Lower Coal Measures. Southwestern and northwestern areas of the site are shown to be underlain by Grenoside Sandstone. The Better Bed Coal seam outcrops on the site, roughly north to south, and a fault crosses the south of the site, from west to northeast.
- 2.5 The strata beneath the site are classed as a 'Secondary A' Aquifer. There are no sensitive groundwater abstractions within 1km of the site.
- 2.6 Any surface water run-off from the site is likely to be intercepted by the road drainage of Shop Lane, or adjoined residential side roads, probably eventually reaching Oxfield Beck approximately 800m to the southwest. There are no surface water abstractions within 1km of the site. The site is not at risk from river flooding.
- 2.7 Borehole monitoring has shown that CS₂ gas protection measures are required for the proposed properties, comprising a membrane and ventilated sub floor void. Methane up to 1%, and carbon dioxide up to 7.4%, was detected. CS₂ gas protection will also protect against radon.
- 2.8 Ordnance Survey Archive Maps show that the majority of site has remained undeveloped. A coal seam has been worked by opencasting, across the central portion, and a small portion of the southwest was quarried for sandstone, which later had a small building and associated car parking. A triangular area on the east once had cluster of small buildings. A well (and later trough) was present at or close to where the site abuts Shop Lane.

- 2.9 The majority of the site is generally underlain by up to 0.35m thickness of made ground, overlying natural residual soils derived from in situ weathering of solid strata. In the south-central area of the site, opencast backfill material is present (made ground of reworked natural material) to proven depths of up to 11.5m. In the southwest, a backfilled quarry is present, to depths of at least 3.2m, again generally infilled with reworked natural material.
- 2.10 Contamination testing showed the topsoil and made ground to be essentially uncontaminated and compatible with the proposed residential development. An exception was demolition rubble in the eastern triangle (WS7), which contained elevated copper at 5,032mg/kg, lead at 331mg/kg, and elevated PAH compounds, including benzo(a)pyrene at 8.3mg/kg. There was no significant leachability. There is a large ground slab at the southwestern boundary, which could not be penetrated during the investigations. This area is proposed for POS and any contamination beneath the slab is unlikely to present any significant contamination risk. However, if the slab is removed, the underlying material should be sampled and tested.

3.0 Remediation Strategy (Eastern Triangle Only)

- 3.1 The eastern triangle is proposed for POS. Therefore, where only turf is proposed, provision of clean topsoil of a minimum 0.3m thickness is likely to provide adequate protection. In any proposed planted areas, 0.6m thickness should be provided, and may include subsoil as well as topsoil. Alternatively, the made ground could be removed from site. It would be inadvisable to move the material to proposed residential plot areas, but if this was to occur, 0.6m cover would be required in the garden areas.
- 3.2 The proposed profile is provided on the table below. In areas of hardstanding or building footprints, the cover blanket or hard break layer are not required.

Proposed Profile in Turfed POS

Thickness (m)	Description
Minimum 0.3	Topsoil

Proposed Profile in Planted POS

Thickness (m)	Description
Minimum 0.3	Topsoil (full 0.6m thickness may be topsoil)
Minimum 0.3	Subsoil (if full 0.6m is not topsoil)

- 3.3 Any soils used in the cover blanket, whether imported or site-won, will need to be verified as suitable by inspection and testing, in accordance with guidance supplied in the document produced by the Yorkshire and Lincolnshire Pollution Advisory Group (YALPAG): "Guidance on the Verification Requirements for Cover Systems". The measures described below will be required to ensure compliance with the document.
- 3.4 If removal of made ground from site is required to achieve the cover soil thickness, the waste receiver may require Waste Acceptance Criteria Testing (WAC) and asbestos quantification.

4.0 Validation

- 4.1 Following placement of the cover soils in the eastern triangle, it will be necessary to confirm the required cover of uncontaminated soil has been placed, by excavating trial pits to 0.6m depth across these areas on the basis of a maximum 25m spacing. The trial pits will be photographed, to include a reference scale, and the photographs included within any report to enable the location on site to be identified.
- 4.2 If the contaminated made ground is removed from site to form an uncontaminated area or site, then the surface will need to be inspected by an Engineer, and sampled and tested on a maximum 25m spacing to confirm its uncontaminated status. The area will be photographed and all the details included within a Validation Letter Report. The disposal/transfer documents should be retained for inclusion in the Validation Report.

5.0 Laboratory Testing

- 5.1 If any imported subsoil and topsoil is to be used, the source will need to be confirmed, and the material tested for the attached suite of contaminants, to comply with the maximum screening values listed. The frequency of testing is given on the table below.

Material Type	Number of Samples
Topsoil or subsoil from greenfield / manufactured source	Minimum 3No. or 1 per 250m ³ (whichever is greater)
Topsoil or subsoil from brownfield / screened source.	Minimum 6No. or 1 per 100m ³ (whichever is greater)

- 5.2 When a potential source of soil is identified, the Client may provide ARP Geotechnical Ltd with supplier certificates, and we will comment on the apparent acceptability of the material. If no certificates are available, the Client may wish us to sample the material at source prior to import, or sample an example load delivered to site, to minimise potential for any problems later. The test results will be available approximately one week, or slightly more, after the site visit.
- 5.3 Provided the results of the above are acceptable, there are two options for validation:-
- A. Import a stockpile of material to site sufficient to complete the required areas, and invite ARP to take sufficient further samples of the stockpile for testing to fully approve it as a source. The stockpile should be isolated from any other materials on the site (becoming a "Quarantined Stockpile"), fenced off to avoid any cross contamination, and must not be added to without further testing. The test results will be available approximately one week, or slightly more, after the site visit.

OR:

- B. Import and place the material as and when required, and invite ARP to sample the material when in place, during the inspection pits noted in Section 4.1. The samples will be issued to the laboratory for contamination testing to confirm acceptability. The test results will be available approximately one week, or slightly more, after the site visit. Our letter report will be available a day or two later. Therefore, Clients should allow for receiving the final letter report two weeks after the site visit.

5.4 Any cross contamination of materials should be avoided, and further testing carried out where any cross contamination is suspected to have occurred.

5.5 The results of all the laboratory analysis, excavation logs, plans, photographs, and import documents will form part of the Remediation Validation Report for the group of plots.

6.0 Unexpected Contamination

6.1 Any unexpected contamination uncovered during the works (including below the concrete slab in the southwest, if this is to be removed) shall be inspected, sampled and analysed in laboratory for the suite of determinands appended to this Remediation Statement, and compared to the maximum concentration levels listed on the enclosure. Works on the affected materials shall cease until the appraisal is complete and, if necessary, a revised Remediation Statement is to be prepared and approved by the Planning Authority before work is recommenced.

7.0 Protection of Workers and the Public During Development Works

7.1 Damping down of the contaminated made ground must be implemented during dry periods, and timely placement of the contaminated material below barriers.

7.2 Washing facilities and a clean mess room should be provided.

7.3 Site fencing will be provided to exclude access to members of the public, and contaminated material will be contained within the site boundary and placed below barriers as soon as possible.

7.4 Workers will be educated to use adequate hygiene and PPE.

7.5 Movement of contamination off-site on vehicle wheels shall be minimised by cleaning of vehicle wheels and/or use of road sweeper, as required.



ARP GEOTECHNICAL LIMITED
IMPORTED SOIL CONTAMINANT SCREENING VALUES
RESIDENTIAL WITH HOME-GROWN PRODUCE

Determinand	S4UL (unless stated otherwise) (mg/kg)			C4SL (mg/kg)		
	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM
Arsenic	37			37		
Cadmium	11			22		
Chromium (trivalent) (MAFF)	400					
Chromium (hexavalent)	6			21		
Copper (MAFF)	80#					
Lead				200		
Inorganic Mercury	40			200		
Nickel (MAFF)	50#					
Selenium	250					
Zinc (MAFF)	200#					
Acidity (pH)	*Should be Greater Than 5			*Should be Greater Than 5		
	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM
Naphthalene	2.3	5.6	13	15	36	85
Acenaphthylene	170	420	920			
Acenaphthene	210	510	1,100			
Fluorene	170	400	860			
Phenanthrene	95	220	440			
Anthracene	2,400	5,400	11,000			
Fluoranthene	280	560	890			
Pyrene	620	1,200	2,000			
Benzo(a)anthracene	7.2	11	13			
Chrysene	15	22	27			
Benzo(b)fluoranthene	2.6	3.3	3.7			
Benzo(k)fluoranthene	77	93	100			
Benzo(a)pyrene	2.2	2.7	3			5
Indeno(1,2,3-cd)pyrene	27	36	41			
Dibenzo(a,h)anthracene	0.24	0.28	0.30			
Benzo(g,h,i)perylene	320	340	350			
Phenols	120	200	380			
Total TPH	*Above 500, speciate and compare with values below:					
C5 to C6 Aliphatic	42	78	160			
C6 to C8 Aliphatic	100	230	530			
C8 to C10 Aliphatic	27	65	150			
C10 to C12 Aliphatic	130	330	760			
C12 to C16 Aliphatic	1100	2,400	4,300			
C16 to C35 Aliphatic	65,000	92,000	110,000			
C35 TO C44 Aliphatic	65,000	92,000	110,000			
C5 to C7 Aromatic (Benzene)	70	140	300			
C7 to C8 Aromatic (Toluene)	130	290	660			
C8 to C10 Aromatic	34	83	190			
C10 to C12 Aromatic	74	180	380			
C12 to C16 Aromatic	140	330	660			
C16 to C21 Aromatic	260	540	930			
C21 TO C35 Aromatic	1100	1,500	1,700			
C35 TO C44 Aromatic	1100	1,500	1,700			
Asbestos	*Should be None Detected			*Should be None Detected		

* In House Value/Approach S4UL = Suitable 4 Use Level, CIEH/LQM 2014 C4SL = Cat 4 Screening Level, DEFRA, 2014

Blank cell indicates no published value or in-house value. Some values presented are above saturation limits.

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MAFF: Ministry of Agriculture, Fisheries and Food - "Code of Good Agricultural Practice for the Protection of Soil

#pH dependent. If exceeded, to be compared against appropriate MAFF value for the pH



ARP GEOTECHNICAL LIMITED
SOIL CONTAMINANT SCREENING VALUES
PUBLIC OPEN SPACE NEAR RESIDENTIAL

Determinand	S4UL (mg/kg)			C4SL (mg/kg)		
Arsenic	79			79		
Cadmium	120			220		
Chromium (trivalent)	1500					
Chromium (hexavalent)	7.7			21		
Copper	12000					
Lead				630		
Inorganic Mercury	120			610		
Nickel	230					
Selenium	1100					
Zinc	81000					
Acidity (pH)	*Should be Greater Than 5					
	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM
Naphthalene**	4900	4900	4900	11,000	15,000	17,000
Acenaphthylene	15000	15000	15000			
Acenaphthene	15000	15000	15000			
Fluorene	9900	9900	9900			
Phenanthrene	3100	3100	3100			
Anthracene	74000	74000	74000			
Fluoranthene	3100	3100	3100			
Pyrene	7400	7400	7400			
Benzo(a)anthracene	29	29	29			
Chrysene	57	57	57			
Benzo(b)fluoranthene	7.1	7.2	7.2			
Benzo(k)fluoranthene	190	190	190			
Benzo(a)pyrene	5.7	5.7	5.7			10
Indeno(1,2,3-cd)pyrene	82	82	82			
Dibenzo(a,h)anthracene	0.57	0.57	0.57			
Benzo(g,h,i)perylene	640	640	640			
Phenols	440	690	1300			
Total TPH	*Above 3,800, speciate and compare with values below:					
C5 to C6 Aliphatic	570000	590000	600000			
C6 to C8 Aliphatic	600000	610000	620000			
C8 to C10 Aliphatic	13000	13000	13000			
C10 to C12 Aliphatic	13000	13000	13000			
C12 to C16 Aliphatic	13000	13000	13000			
C16 to C35 Aliphatic	250000	250000	250000			
C35 TO C44 Aliphatic	250000	250000	250000			
C5 to C7 Aromatic (Benzene)	56000	56000	56000			
C7 to C8 Aromatic (Toluene)	56000	56000	56000			
C8 to C10 Aromatic	5000	5000	5000			
C10 to C12 Aromatic	5000	5000	5000			
C12 to C16 Aromatic	5100	5100	5000			
C16 to C21 Aromatic	3800	3800	3800			
C21 TO C35 Aromatic	3800	3800	3800			
C35 TO C44 Aromatic	3800	3800	3800			
Asbestos	*Should be None Detected			*Should be None Detected		

* In House Value/Approach S4UL = Suitable 4 Use Level, CIEH/LQM 2014 C4SL = Cat 4 Screening Level, DEFRA, 2014

Blank cell indicates no published value or in-house value. Some values presented are above saturation limits. Considered separately.

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