ARP GEOTECHNICAL LTD

CHARTERED CONSULTING ENGINEERS

STAGE 1 DESK STUDY REPORT

AT

LAND SOUTH OF DONCASTER ROAD
STAIRFOOT
BARNSLEY

ON BEHALF OF

BLACKSTONE DEVELOPMENTS LTD

MARCH 2016

Report No: BLD/01r1	Name	Signature	Date
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C O N T E N T S

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.
Site Description	Disused overgrown former railway sidings. Plateau with steep slopes to northwestern and northeastern boundaries.
Site History	Railway sidings with adjacent landfills and industry.
Geology	Undifferentiated Pennine Middle Coal Measures.
Coal Mining	Site can be considered stable.
Hydrogeology	Secondary A Aquifer. No sensitive abstractions within 1km.
Hydrology	Nearest watercourse is 700m to north. No surface water abstractions within 1km.
Radon	Basic protection measures recommended.
Landfill Gas	Four recorded landfills within 250m, and encroaching onto the southeast of the site. Gas wells will need to be installed and monitored. Properties may require vents and floor membranes.
Ground Conditions	Probable deep made ground, thickest in northwest and northeast. Probable natural clay subsoils below, over mudstone/siltstone.
Contamination	Potentially, from fill and activity. Site investigation required.
Foundations	Probable deep made ground may require piled foundations.
Excavations	Instability can be expected within made ground. Groundwater is not anticipated within typical excavation depths.
Soakaways	The use of soakaways is unlikely to be practical on the site.
Slope Stability	Stability assessment of steep slopes may be required.

2.0 TERMS OF REFERENCE

2.1 Blackstone Developments Limited are considering developing the site at Doncaster Road, Stairfoot, Barnsley, with residential properties. It was considered appropriate to implement a desk study to provide information to aid the planning process, viability assessment, and design of any subsequent development.

2.2 ARP Geotechnical Ltd was appointed by Michael Townsend Planning, acting on the authorisation of Blackstone Developments Limited, to implement the report, which involved a desk study assessment of the geological and coal mining aspects, site history, potential contamination sources and receptors, and other environmental aspects including radon gas and indicative flood risk. An Envirocheck Report, from Landmark Information Group, and a Coal Mining Report from the Coal Authority were obtained to facilitate the study.

2.3 This report is intended to cover a wide scope of geotechnical issues, along with a Stage 1 risk appraisal of potential contaminant source - pathway - receptor linkages.

2.4 The report does not include any intrusive assessment.

2.5 The study was carried out in March 2016.

2.6 The report has been prepared for the sole use and reliance of the Client. The report shall not be relied upon or transferred to any other parties without the written agreement of ARP Geotechnical Ltd. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party.

3.0 SITE DESCRIPTION

Site Location

3.1 The site, which is centred on Ordnance Survey Grid Reference 437440, 405510, is located off Doncaster Road, in Stairfoot, Barnsley.

3.2 A site location plan and site plan are presented in Appendix A.

On - Site Features

3.3 The site is a rectangular shaped piece of land extending to an area of 0.48 hectares, with overall dimensions of approximately 143m (northwest - southeast) by 40m (northeast - southwest).

3.4 The site has been unused for some considerable time, although there is evidence of a former structure in the centre of the site (possibly a signal box or similar) and overgrowth of brambles, bushes and trees has been cleared relatively recently over the main area of the site. There is a mound of cleared vegetation. There are also some man-made bunds, particularly to the southeastern corner, to prevent unlawful access onto the site. It is known that the site was used as railway sidings in the past.

3.5 The general area slopes to the northwest, but the site has been filled to create a level plateau which is increasingly higher in a northwesterly direction, above the adjacent Sandygate Lane (which forms the northeastern boundary). The site is slightly higher than the former railway line along the southwestern boundary, which is now a public footpath. This creates steep slopes to the northwestern and northern end of the northeastern boundary, but is level with Sandygate Lane at the southeastern corner.

3.6 The site has self-seeded vegetation on the slopes to the northwest and northeast, but the central area has now been cleared to create a plateau for development.

Site Boundaries and Surrounding Land Use

3.7 The site is now open on all boundaries, although plant and hedge growth is apparent on the northeastern and northwestern boundaries, which prevents access into the site. To the northwest, there is a steep slope down to Doncaster Road due to a former railway bridge which passes over the highway. The northeastern boundary is adjacent to Sandygate Lane, which slopes down from the southeastern corner to the junction with Doncaster Road to the north, and this forms a relatively steep slope on the northeastern side of the site. To the southwest, there is a public footpath and cycleway which runs along the line of the former railway. There is a McDonalds fast food restaurant and other commercial units beyond. To the southeast, the development narrows and there is open woodland present adjacent to the boundary.

Site History

3.8 Ordnance Survey archive maps were obtained for the site. Copies of the maps are included in Appendix B, and a summary of the findings is given below.

Map Date	**On-Site**	**Off-Site**
1855	Site is made up of three pieces of land with two field boundaries running northeast - southwest across the northern and southern thirds. Development just beyond northeastern boundary which encroaches onto the site.	Several buildings just beyond the sites northeastern boundary. South Yorkshire Railway Line adjacent to sites southwestern boundary. Cross Keys Public House 25m west. Village of Stairfoot just to the north and Ardsley 150m to the northeast. Reservoir 220m to the southwest. Stairfoot brickyard 200m to the southeast. Dearne & Dove Canal 100m southwest.
1892	Site now occupied by railway sidings. Evidence of filling to create level area.	New Oaks Colliery and associated buildings just beyond the site to the southeast. Station now present beyond railway line to the west.

1906	No significant change.	Manor Flint Glass Works 80m southwest.
1931	Some of the sidings on the site have been removed.	Oaks chemical plant has replaced New Oaks Colliery.
1948	No significant change.	Large excavation beyond Oaks Chemical Plant to southeast (pit for brickworks).
1955	No significant change.	Large excavation to southeast is now 200m from the site and referred to as a clay pit, with a tramway running through the centre.
1966	Stairfoot Station buildings encroach onto northwest of site.	Clay pit now 120m to the east. Manor Flint Glass Works is no longer present.
1973	Railway sidings no longer present.	Small electricity substation across the road to the southeast.
1974	No significant change.	Works building to southeast no longer present. Several works/warehouse buildings now present across railway line to southwest. Clay pit now disused.
1982	Embankments now shown along northwestern and northeastern boundaries, as present day.	Doncaster Road has been constructed adjacent to northwest, and the road adjacent to the northeast. Large roundabout to the west, across the railway lines.
1990	No significant change.	Clay pit now used as a refuse tip. Railway lines to southwest now dismantled.
1993	No significant change.	Railway line southwest of site has been dismantled.
Later maps	No significant change.	No significant change.

3.9 In summary, the site has been occupied by railway sidings from at least 1892 until the early 1970s. There is evidence that the site has been filled to provide a level area for the sidings, with the fill material progressively thicker towards the northwest. A large clay pit, later backfilled with refuse, was present approximately 120m to the east, a colliery and chemical plant adjacent to the southeast, and a glass works 80m to the southwest.

4.0 ENVIRONMENTAL SETTING

Geology

4.1 Extracts from the British Geological Survey (BGS) 1:50,000 Series Geology Maps are included within the Envirocheck Geology Report in Appendix C. The maps show the site to be underlain by Pennine Middle Coal Measures of the Carboniferous Period, comprising undifferentiated strata (usually mudstones, siltstones and minor sandstones). No drift cover is indicated and there are no faults shown to affect the site. A large area of made ground is shown to the east and southeast, possibly encroaching onto the southeastern boundary. There are no coal seam outcrops within 500m of the site.

Coal Mining

4.2 A Coal Mining Report was obtained from The Coal Authority. A copy of the report is included in Appendix D, and a summary is given below.

4.3 The site is in the likely zone of influence of workings in 8 seams of coal at 190m to 630m depth, and last worked in 1987. Any associated ground movement should by now have ceased.

4.4 The site is not affected by any present or future proposed underground coal mining. The Authority refers to reserves in the locality that could be worked at some time in the future. However, given the effective abandonment of the coalfields in this area, any future workings are considered highly unlikely.

4.5 There are no recorded mine entries on or within 20m of the site.

4.6 The site is unaffected by any past, present, or future proposed, opencast coal mining.

4.7 In view of the above, the site is considered stable with regard to coal mining.

Coal Recovery

4.8 There are no seams beneath the site at depths which could be worked by open excavation. There will be no arisings of coal during proposed development works, and it will not be possible to win any coal from the site before development.

Hydrogeology

4.9 The Landmark Envirocheck Report, included in Appendix E, indicates the Bedrock Aquifer Designation to be " Secondary A ". 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 two active groundwater abstractions within 1km of the site. Both relate to a single abstraction at 610m northwest, operated by C Soar & Sons, used for general washing/process washing purposes at a recycling plant. The abstraction is non-sensitive and is not down hydraulic gradient of the site.

4.11 The site is not within a groundwater Source Protection Zone.

Hydrology

4.12 The general area slopes to the northwest. The nearest downslope surface water is the River Dearne approximately 700m to the north.

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, and a separate specialist Flood Risk and Drainage Report should be commissioned if such risk needs to be quantified.

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 is one active Pollution Control Authorisation within 250m of the site. The authorisation is located 148m and relates to waste oil burners at a vehicle MOT centre.

4.15.2 There are no discharge consents relating to, or adjacent to, the site.

4.15.3 There are three historical landfills, and one BGS registered landfill, within 250m of the site. The nearest historical landfill site is adjacent to the southeast and is referred to as 'Stairfoot landfill site'. Plans show the landfill encroaches onto the southeastern boundary by around 20m, and possibly runs alongside the northeastern boundary. The landfill was operated by Barnsley Metropolitan Borough Council for deposition of inert/industrial/commercial/household and special waste and liquid sludge, between 1987 and 1992. A second landfill is located 5m southeast of the site and was also operated by Barnsley Metropolitan Borough Council for deposition of industrial/commercial and household waste. The third historical landfill is located 88m east and was operated by The Yorkshire Brick Company Limited for the deposition of inert/industrial/commercial/household and special waste. The BGS landfill is located 88m to the southwest and relates to filling of a disused canal.

4.15.4 There is a Registered Waste Treatment site (a scrap yard) across the disused railway line, 21m to the west.

4.15.4 No radon protective measures are stated to be necessary for new dwellings or extensions on the site. However, at least part 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, it may be prudent to assume basic radon protection is required, to prevent conveyancing difficulties.

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 are no fuel station entries within 250m of the site.

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 In September 2004, the Environment Agency published the Contaminated Land Report (CLR) 11, "Model Procedures for the Management of Land Contamination". The document is intended to provide the technical framework for structured decision making about land contamination, and is intended to assist all those involved in "managing" the land, in particular landowners, developers, financial service providers, planners and regulators. As the document currently provides the framework for best practice, the general principles are, therefore, followed in conducting the assessment below.

Conceptual Site Model

5.7 It is known that the site is proposed for residential development. An indicative proposed layout is presented in Appendix F. The site probably contains fill material (thickest in the northwest), overlying undifferentiated strata (usually mudstones, siltstones and minor sandstones, which will commonly weather in the upper few metres to a cohesive subsoil). A large area of landfill is present to the east and southeast. 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 downslope surface water is the River Dearne approximately 700m to the north. There are no surface water abstractions within 1km of the site.

5.8 The site operated as a railway siding from at least 1892 to the early 1970's. There are also a number of landfills within close proximity to the site.

5.9 The possible contamination sources are considered to be:

5.9.1 Fill material used to level the site/build up levels for tracks, including ballast - metals, inorganics, PAH, TPH, phenols, asbestos.

5.9.2 Herbicides used to inhibit weed growth on the tracks.

5.9.3 Possible leaked hydrocarbons from parked trains - PAH, TPH, phenols.

5.9.4 Possible chemicals from chemical plant adjacent to the southeast - metals, inorganics, PAH, TPH, phenols, VOCs, SVOCs.

5.9.5 Possible landfill gases from nearby/adjacent landfills, possibly encroaching by around 20m onto the southeast of the site.

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 in brackets).

Potential Source -Pathway - Receptor Matrix

Contamination Sources	Pathways	Receptors
Fill material - metals, inorganics, TPH, PAH, phenol, asbestos Possible herbicides from weed control Possible hydrocarbons from trains - PAH, TPH, phenols Possible chemicals from chemical plant adjacent to the southeast - metals, inorganics, PAH, TPH, phenols, VOCs, SVOCs.	• Inhalation, ingestion and dermal contact with soil and dust • Fruit and vegetable intake, with soil • Vapour inhalation outdoor • Vapour inhalation indoor	**Humans:-** • Future occupants • Construction workers • Maintenance workers • Adjacent residents and general public
	• Migration in surface water • Migration in groundwater	**Controlled waters:-** • Groundwater (Secondary A Aquifer, no sensitive abstractions within 1km) • Surface water (nearest downslope is 700m to north. There are no abstractions within 1km)
	• Root uptake	**Vegetation:-** • Landscape areas • Private gardens
	• Migration	**Services/Utilities:-** • Potable water supply
Landfills - methane and carbon dioxide	• Asphyxiation • Explosive risk	• Construction/demolition workers • Future occupants • Buildings

5.11 The above matrix indicates there are several potential source - pathway - receptor linkages applicable to the proposed development.

Further Investigation

5.12 The existence of the possible contamination sources is not yet known, and it is recommended that a ground investigation on a grid system is implemented, together with sampling and testing of the materials encountered for the potential contaminants of concern to assess this possibility. The investigation should be implemented in accordance with BS10175 : 2011 + A1 : 2013 "Investigation of potentially contaminated sites - Code of practice", and any targeted sampling should also be implemented. This will enable refinement of the conceptual model and a full assessment of the risks to be made, enabling any remedial strategy to be determined.

5.13 Samples of any made ground and topsoil should be issued for testing to a UKAS accredited laboratory for a broad suite of determinands including metals, inorganics, asbestos, phenols, speciated PAH, and TPH. A number of samples should also be tested for herbicides, due to the sites history, and samples targeted in the southeast for a broad suite plus VOCs and SVOCs, due to a historical chemical plant to the southeast. Speciated assessment of TPH will be required for any elevated levels.

5.14 Leachability testing should be undertaken where contamination levels are above the designated screening values.

5.15 Gas monitoring wells should be installed, and monitored once per fortnight on at least six occasions, to determine the presence of any harmful gases from nearby landfills.

6.0 COMMENTS AND CONCLUSIONS

Site Description

6.1 The site is currently a disused piece of land with evidence of a former structure in the centre of the site (possibly a signal box or similar) and overgrowth of brambles, bushes and trees has been cleared relatively recently over the main area of the site. There is a mound of cleared vegetation. The general area slopes to the northwest, but the site has been filled to create a level plateau which is increasingly higher in a northwesterly direction, resulting in steep slopes down to the northwestern and northeastern boundaries.

6.2 To the southwest, there is a public footpath and cycleway which runs along the line of the former railway, and this passes over Doncaster Road to the northwest of the site, by a railway bridge. The northeastern boundary is adjacent to Sandygate Lane, which slopes down from the southeastern corner to the junction with Doncaster Road. There is a McDonalds fast food restaurant and other commercial units beyond. To the southeast, the development narrows and there is open woodland present adjacent to the boundary.

Site History

6.3 Ordnance Survey archive maps show the site has been occupied by railway sidings from at least 1892 until the early 1970s. There is evidence that the site has been filled to provide a level area for the sidings, with the fill material progressively thicker towards the northwest. A large clay pit, later backfilled with refuse, was present approximately 120m to the east, a colliery and chemical plant adjacent to the southeast, and a glass works 80m to the southwest.

Geology

6.4 The geological map shows the site to be underlain by Pennine Middle Coal Measures of the Carboniferous Period, comprising undifferentiated strata (usually mudstones, siltstones and minor sandstones). No drift cover is indicated and there are no faults shown to affect the site. A large area of made ground is shown to the east and southeast, possibly encroaching onto the southeastern boundary. There are no coal seam outcrops within 500m of the site.

Coal Mining and Coal Recovery

6.5 The Coal Mining Report indicates the site is stable with regard to coal mining.

6.6 There will be no arisings of coal during proposed development works, and it will not be possible to win any coal from the site before development.

Environmental Data

6.7 The strata beneath the site are classed as a Secondary A Aquifer. There are no sensitive groundwater abstractions within 1km of the site.

6.8 The nearest downslope surface water is the River Dearne approximately 700m to the north. However, there are no surface water abstractions within 1km of the site.

6.9 No radon protective measures are stated to be necessary for new dwellings or extensions on the site. However, at least part 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, it may be prudent to assume basic radon protection is required, to prevent conveyancing difficulties. This is usually achieved by incorporating an appropriate barrier within a solid floor system, passing through the cavity wall.

6.10 There are four recorded landfills within 250m of the site, the nearest being along the northeastern boundary, and encroaching onto the southeast of the site. Gas monitoring wells should be installed, and monitored fortnightly on at least six occasions, as part of an intrusive investigation.

6.11 The site is not 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, and a separate specialist Flood Risk and Drainage Report should be commissioned if such risk needs to be quantified.

Likely Ground Conditions and Behaviour of Excavations

6.12 The subsoils beneath the site are likely to comprise made ground, including some railway ballast. The made ground will probably be thickest towards the northwest. Beneath the made ground, the natural subsoils derived from weathering of the underlying rocks are likely to be cohesive above the mudstone, siltstone and minor sandstones.

6.13 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, instability may be anticipated within any made ground present on the site.

6.14 The groundwater regime can only be confirmed by an intrusive investigation. However, it is considered unlikely that shallow groundwater is present, from the information available within the desk study appraisal.

6.15 Excavations into the natural subsoils will probably be readily achieved using conventional hydraulic plant. However, a breaker may be required for any buried structures or obstructions in the made ground.

Contamination Assessment

6.16 The desk study has identified the following potential contamination sources:

6.16.1 Fill material used to level the site/build up levels for tracks, including ballast - metals, inorganics, PAH, TPH, phenols, asbestos.

6.16.2 Herbicides used to inhibit weed growth on the tracks.

6.16.3 Possible leaked hydrocarbons from parked trains - PAH, TPH, phenols.

6.16.4 Possible chemicals from chemical plant adjacent to the southeast - metals, inorganics, PAH, TPH, phenols, VOCs, SVOCs.

6.16.5 Possible landfill gases from nearby/adjacent landfills, possibly encroaching by around 20m onto the southeast of the site.

and that there is a possibility of source - pathway - receptor linkages if the site is redeveloped with the proposed residential dwellings.

6.17 The existence of the possible contamination sources is not known, and it is recommended that a ground investigation is implemented, involving sampling on a grid system, along with any targeted sampling and testing. This will enable a refinement of the conceptual model and a full assessment of risks to be undertaken, enabling any Remediation Strategy to be determined.

6.18 Gas monitoring wells should be installed into boreholes, and monitored once per fortnight on at least six occasions, to determine the presence of any harmful gases from nearby landfills.

Foundations

6.19 On current evidence, it is considered unlikely that traditional strip or trench fill foundations will be acceptable for the site, due to the likely presence of deep fill materials, although the possibility of the use of trench fill is greatest towards the southeast. Alternative solutions, such as the use of piles, re-engineering for pseudo rafts, or vibro ground improvement, will probably need to be considered. Given the steep slopes and the likely variations in depths of fill material, piles are likely to be favoured. However, the appropriate options can only be confirmed following an intrusive investigation. The investigation will require a number of boreholes rather than only trial pits, in order to penetrate potentially deep fill material.

Slope Stability

6.20 The regulatory authorities may require evidence that the steep slopes on the northwest/northeast of the site are sufficiently stable. This may require slope stability analysis. Depending on the results, it is possible that some measure may be required to improve stability, such as reducing the slope angle or provision of retaining walls.

Road Pavement Construction

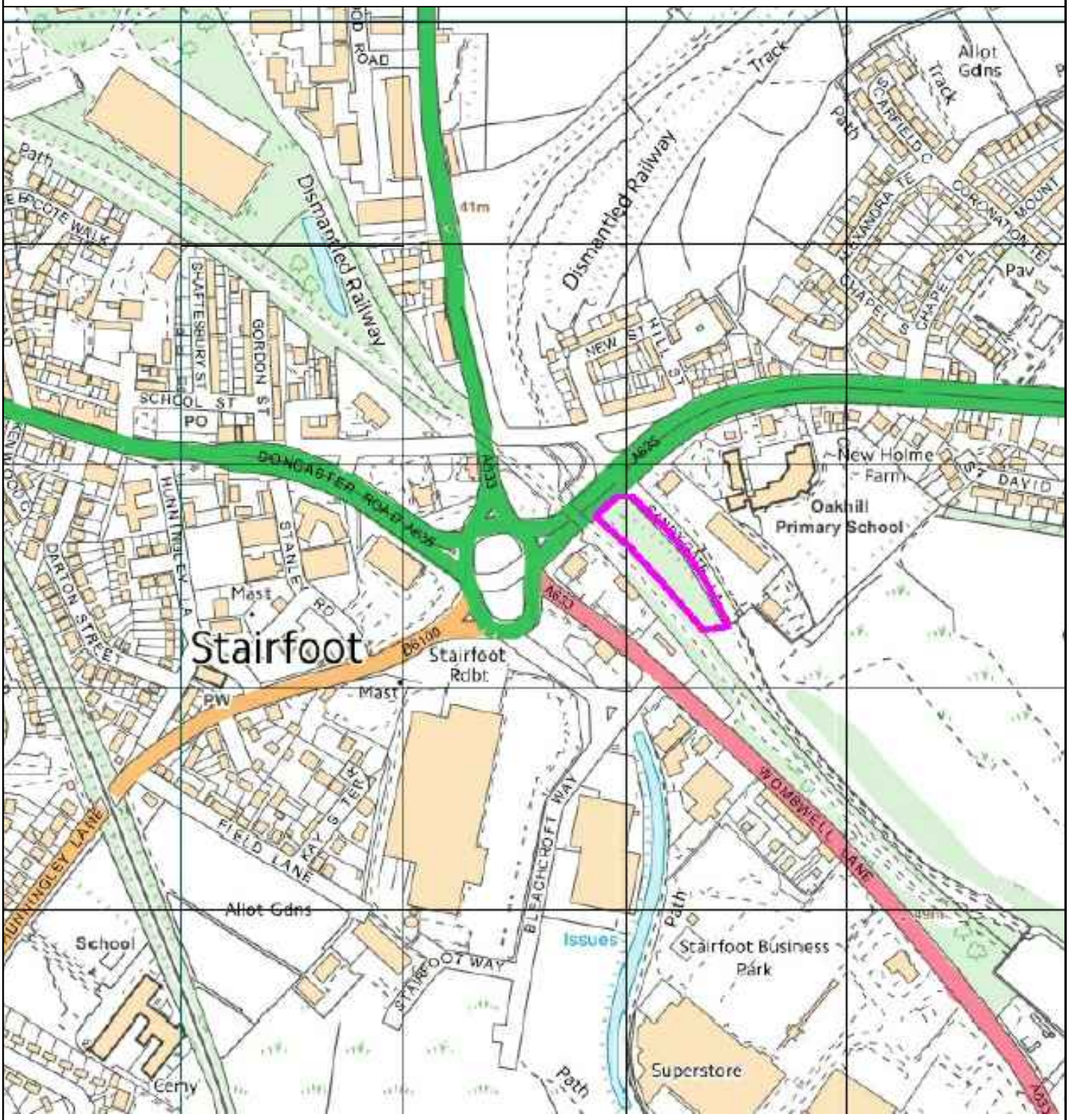
6.21 For any areas of road pavement, including car parking areas, the design California Bearing Ratio (CBR) will depend upon the exact nature of the formation. On natural subsoils, it is anticipated a design CBR of at least 2% will be applicable, but a formation on natural material is considered unlikely. Significant made ground is anticipated, but it may be possible to remove a nominal thickness of material to an agreed level, proof roll the formation, and replace to a controlled specification.

Soakaways

6.22 It is unlikely that the use of soakaway drainage will be feasible on the site.

A P P E N D I X A

SITE LOCATION PLAN AND SITE PLAN



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Title

SITE LOCATION PLAN

Project/Client

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BLACKSTONE DEVELOPMENTS LTD

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Date	Chk.
MAR 16	JR

Drg. No. BLD/01/SI.01

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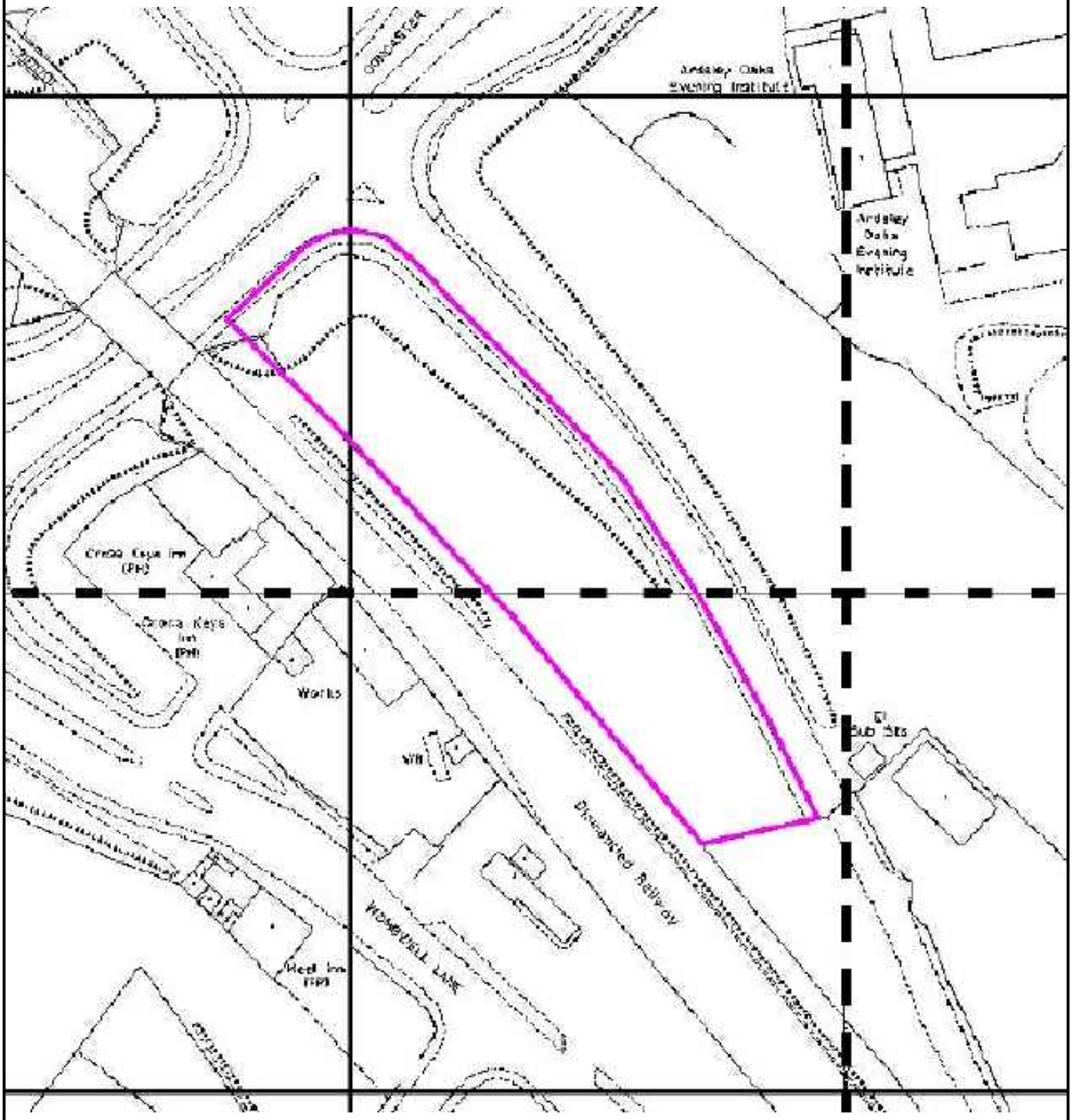

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SITE PLAN

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LAND SOUTH OF DONCASTER RD, STAIRFOOT
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Date	Chk.
MAR 16	JR

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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
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
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
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)
R.D. Bdy. 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
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Pylon
Electricity Transmission Line
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
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
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)
BM 123.45 m 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

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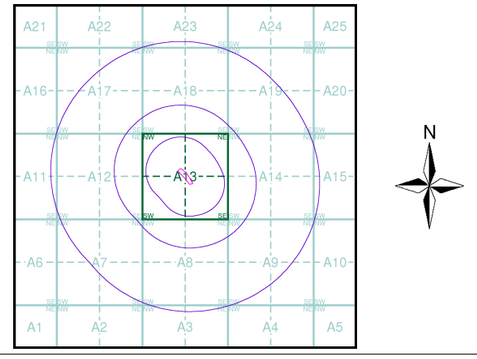
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Yorkshire	1:10,560	1854 - 1855	2
Yorkshire	1:10,560	1894	3
Yorkshire	1:10,560	1906 - 1907	4
Yorkshire	1:10,560	1931 - 1932	5
Yorkshire	1:10,560	1938	6
Yorkshire	1:10,560	1938 - 1948	7
Yorkshire	1:10,560	1948	8
Ordnance Survey Plan	1:10,000	1955 - 1956	9
Ordnance Survey Plan	1:10,000	1966	10
Ordnance Survey Plan	1:10,000	1974	11
Ordnance Survey Plan	1:10,000	1980 - 1984	12
Ordnance Survey Plan	1:10,000	1989	13
Ordnance Survey Plan	1:10,000	1993	14
VectorMap Local	1:10,000	2016	15

Historical Map - Slice A



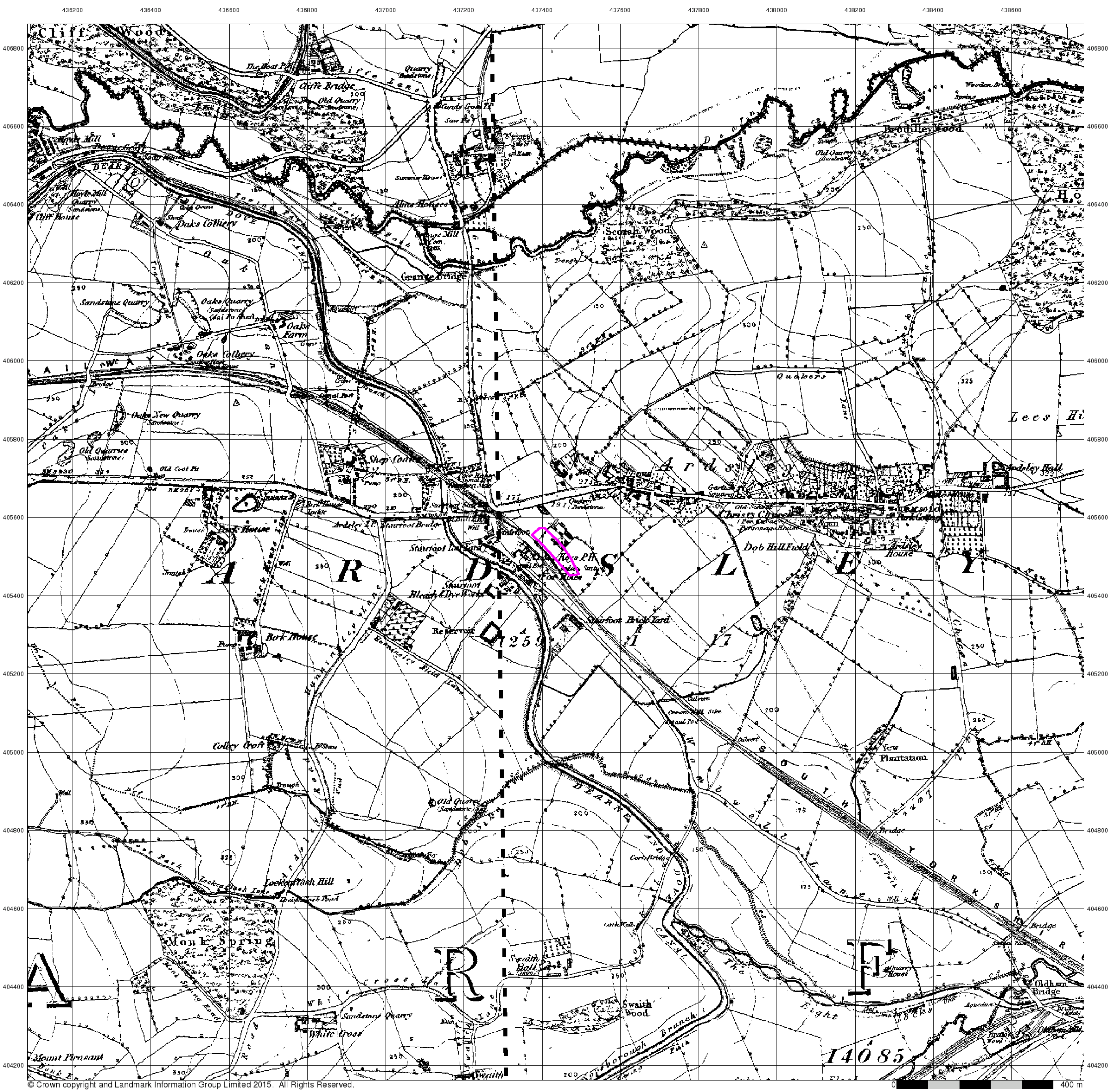
Order Details

Order Number: 82204602_1_1
Customer Ref: BLD/01
National Grid Reference: 437440, 405510
Slice: A
Site Area (Ha): 0.48
Search Buffer (m): 1000

Site Details

Land South of Doncaster Road, Stairfoot, BARNSLEY, South Yorkshire

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



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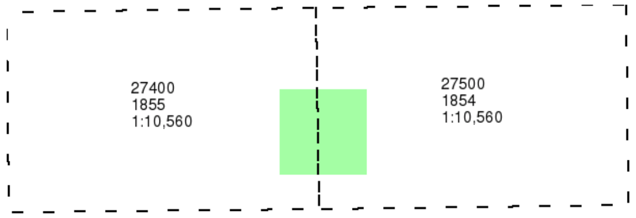
Yorkshire

Published 1854 - 1855

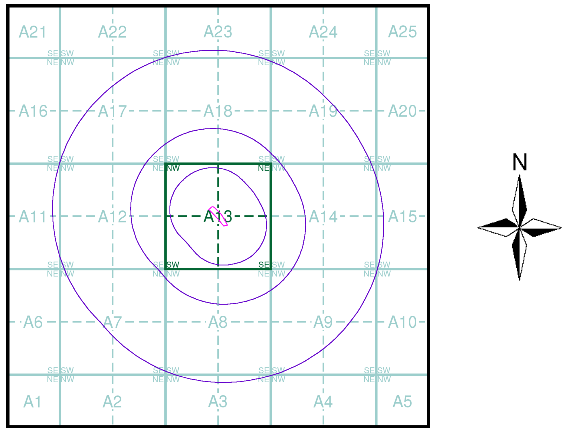
Source map scale - 1:10,560

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



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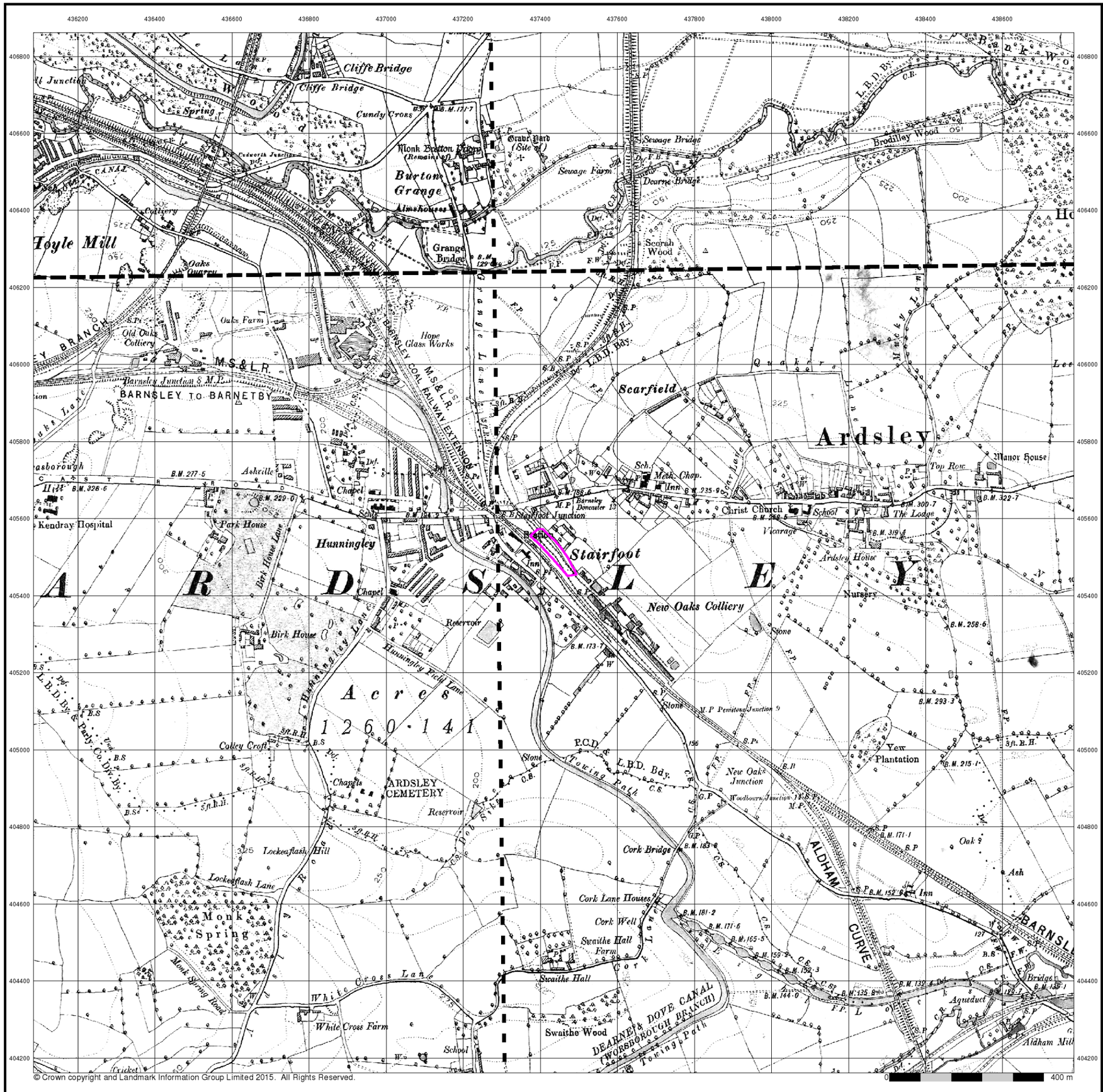

ARP GEOTECHNICAL LIMITED
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Yorkshire

Published 1894

Source map scale - 1:10,560

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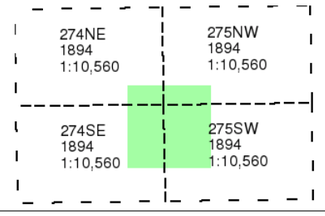
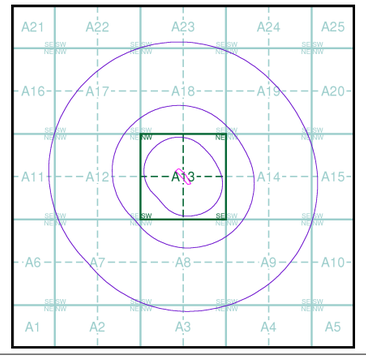


Historical Map - Slice A



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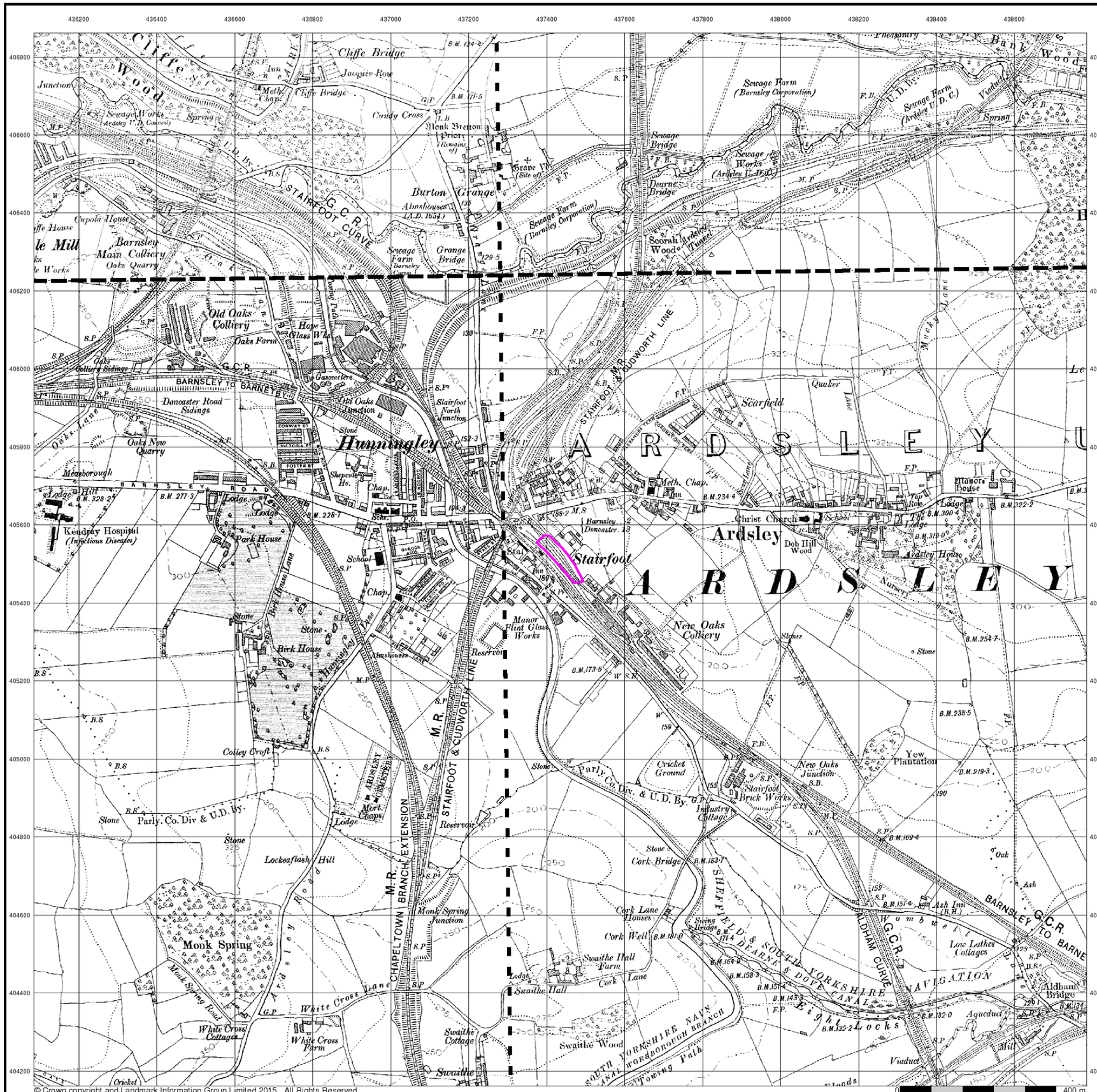

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Yorkshire

Published 1906 - 1907

Source map scale - 1:10,560

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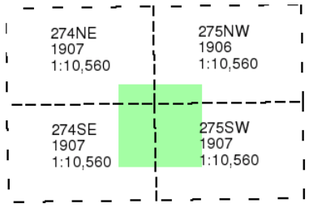
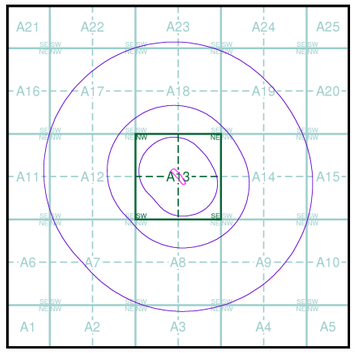
Map Name(s) and Date(s)



Historical Map - Slice A



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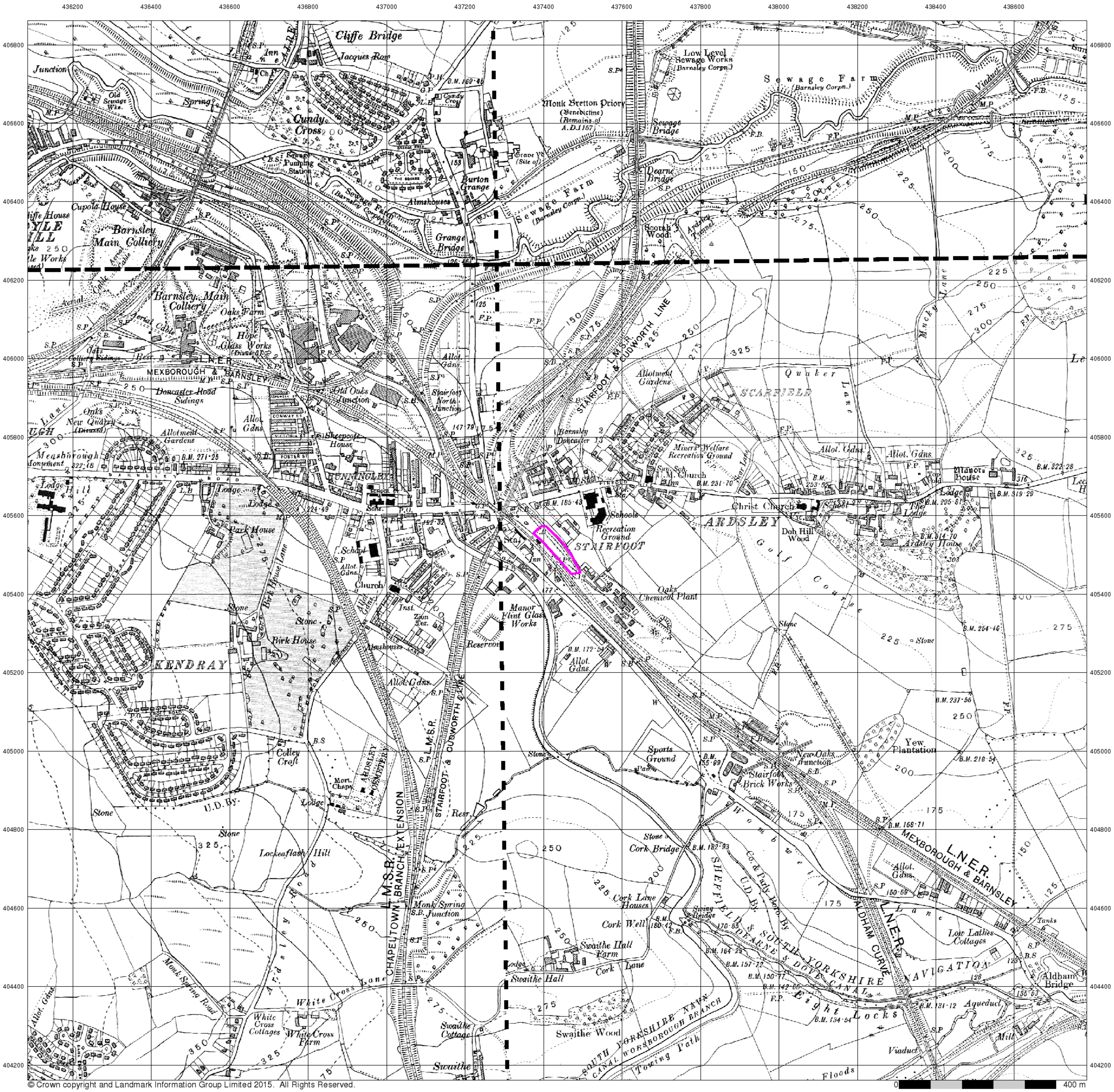

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Yorkshire

Published 1931 - 1932

Source map scale - 1:10,560

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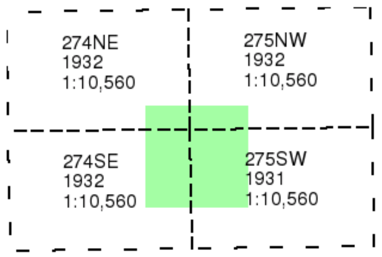
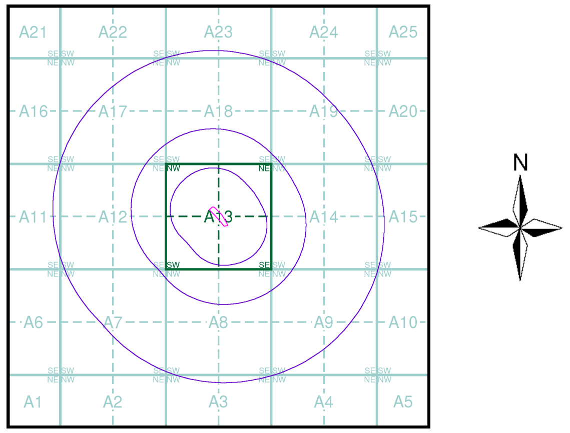
Map Name(s) and Date(s)



Historical Map - Slice A



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Order Number:	82204602_1_1
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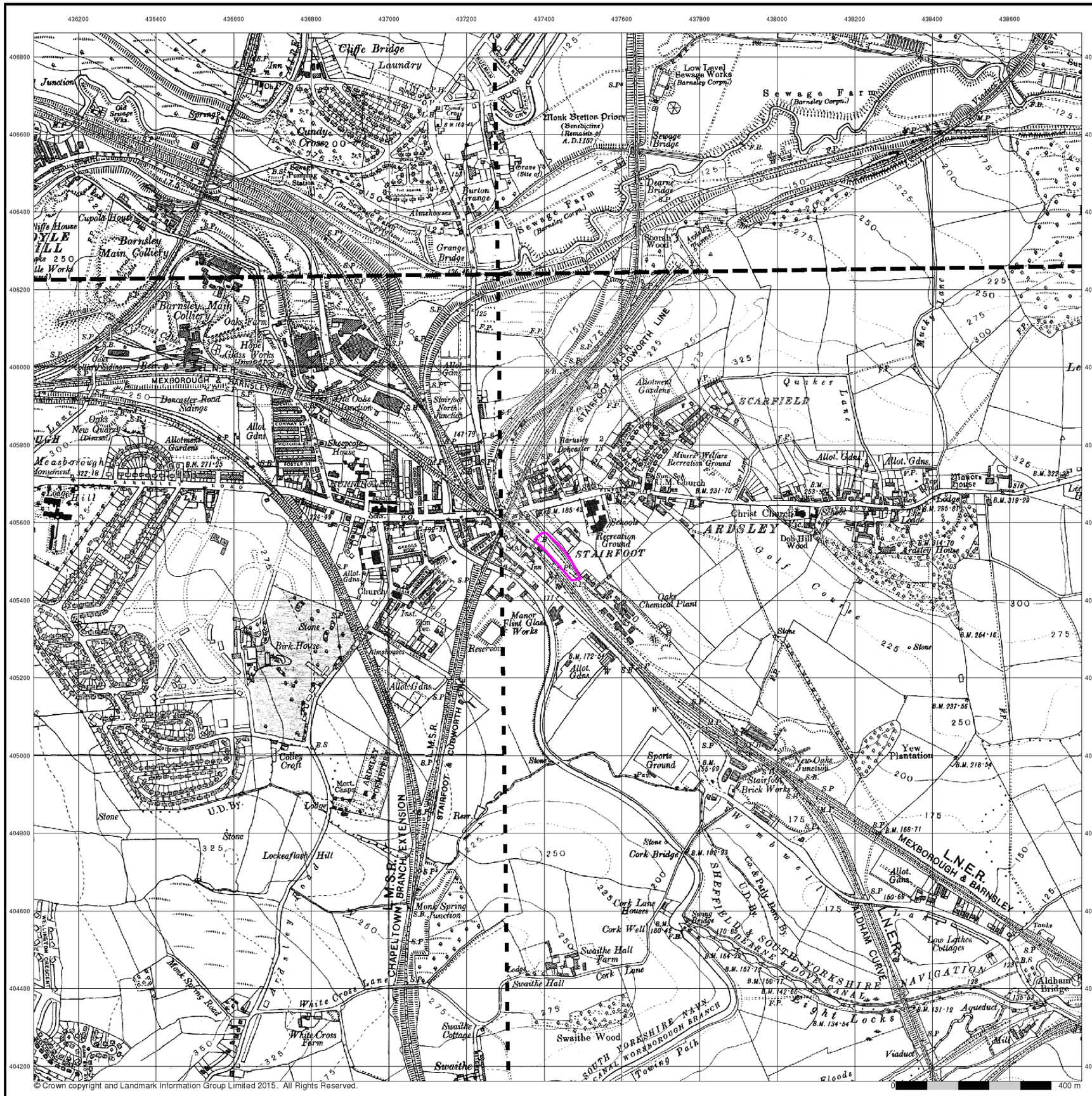

ARP GEOTECHNICAL LIMITED
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Yorkshire

Published 1938

Source map scale - 1:10,560

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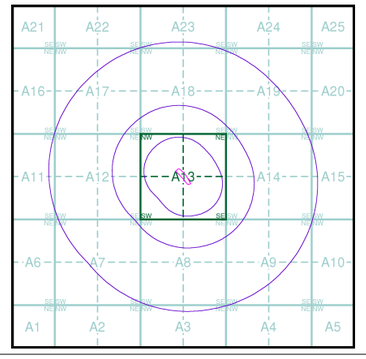
Map Name(s) and Date(s)

274NE 1938 1:10,560	275NW 1938 1:10,560
274SE 1938 1:10,560	275SW 1938 1:10,560

Historical Map - Slice A



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